Empirical Studies in Public Economics in Developing Countries

by

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Abstract

This thesis consists of three empirical studies that address issues of public economics in developing countries. Two broad questions motivated me in turn: one, the effect of household institutions on the provision of old age security; and two, the effect of political institutions on government policy and performance.

Chapter 1, entitled ***Inter-generational Transfers and Intra-household Bargaining: Evidence from Indonesia***, examines whether there is bargaining between husbands and wives within the donor household over transfers to their respective parents, using a household survey from Indonesia. The evidence is that wives' education and income have a significant positive effect on transfers to their parents, and no effect on transfers to their husbands' parents. In addition, women who are gainfully employed and who have greater dowries from the time of their marriage are more likely to make transfers to their parents. This evidence is consistent with a model of collective decision-making where education and income influence the bargaining power of women and therefore the allocation of household resources. It also implies that intergenerational transfers may be viewed as returns to dowry and human capital investments made by parents. These interpretations are not incompatible-- parental investment may endow daughters with the bargaining power to channel resources towards their parents. In conclusion, the evidence addresses both gender roles in providing support to elderly parents and returns to parental investment in old age security, in the context of developing countries with no public social security system. Both issues have enormous policy ramifications for income redistribution programs and the design of formal social security institutions for economies with traditional inter-household arrangements.

Chapter 2, entitled ***Effect of Electoral Accountability on Economic Policy in India***, studies the effect of state legislative assembly elections on the economic policies of state governments in 14 major states of India, over the period 1960-1994. The effect of the timing of elections on economic policies is identified using an instrument for the electoral cycle that distinguishes between constitutionally scheduled elections and midterm polls. Election years have a negative effect on commodity taxes, a positive effect on capital spending, and a positive effect on road construction by public works

departments. The Indian political cycle is of greater magnitude than any comparable cycle in the developed countries. In addition, unlike political budget cycles in OECD countries that are accompanied with higher budget deficits, state elections in India have no effect on state deficits. This evidence is consistent with a moral hazard model where career concerns persuade politicians to improve performance. The electoral cycle in policy is generated by high discounting of the future in an uncertain political environment. The pattern suggests that state governments strategically manipulate economic policies to increase the provision of public services, without increases in taxes and deficits, in order to influence the probability of reelection.

Chapter 3, entitled ***Partisan Politics and Intergovernmental Transfers in India***, studies the effect of partisan politics on budgetary transfers from the central to the state governments in India. Using a panel of 14 major Indian states, from 1960 to 1994, it tests for the effect of the party affiliation of a state government on grants and loans from the center, and its share in central taxes. The results indicate that when a state government is politically affiliated with the party governing at the center it receives significantly greater grants per capita, 10 per cent higher than the average per capita grants. The timing of state elections has no significant effect on central grants. These results are consistent with a model of partisan manipulation of grants within a system of centralized decision-making. Central governments give greater grants to affiliated states in order to exercise greater control over state spending.

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1 Inter-generational Transfers and Intra-household Bargaining : Evidence from Indonesia

1.1 Introduction

In less developed economies old age security is primarily provided by informal family arrangements, the most common being that children take care of elderly parents upon adulthood. A World Bank study reports that the percentage of parents who expect financial help from sons and daughters is 75 per cent (on average) in developing countries in contrast to only 12 per cent in the developed world.[1] There have been some studies that test whether such intergenerational transfers are indeed altruistic. In effect, these studies test for the presence of incentive devices or bargaining mechanisms between donors and recipients, that is, methods by which old people extract support from the young. The purpose of this paper is to examine whether there is bargaining between husbands and wives *within* the donor household, over the occurrence or amount of transfers to their respective parents.

Recently, theoretical and empirical work has studied resource allocation within the household to determine whether the allocation pattern is consistent with the standard "unitary" model of the household developed by Becker (1981). These studies have found that the *distribution* of income between members of the household has a strong impact on allocation outcomes, a finding that contradicts the implications of the collective budget constraint inherent to the unitary model. In particular, several studies have found strong evidence that relative to men, resources in the hands of women tend to have a stronger impact on the health, education and well-being of children (Thomas, 1990, 1994). Perhaps some may find it unpalatable to interpret these results as evidence that fathers care less than mothers for the well being of their

[1] *Averting the Old Age Crisis*, A World Bank Policy Research Report, Oxford University Press.

children. However, in the case of private transfers to parents, it may be reasonably assumed that individuals care more for the well-being of their own parents than do their spouses. Hence, if husbands and wives do indeed bargain over household resource allocation, the evidence for bargaining should be particularly strong in the case of transfers to their own parents.

The difference in treatment of husband's parents and wife's parents could also provide valuable insight into the complex nature of intergenerational linkages. Specifically, it would allow us to contrast the behavior of married sons and daughters towards their parents. Conventional wisdom in the traditional family arrangements of low income countries dictates that sons provide more support than daughters. In fact, this is one of the chief reasons cited for the phenomena of "son-preference" in poor societies where investment in sons is expected to yield higher returns than investment in daughters. Therefore, if women with greater bargaining power over household decisions are expected to increase transfers to their parents, then the differential treatment of sons and daughters should start to fade as the relative bargaining position of women improves.

This paper uses household-level data from Indonesia which asks separate questions to the household head and his spouse about transfers given to and received from their respective parents. The econometric analysis provides a robust description of the determinants of transfers by exploiting the richness of the data contained in the Indonesian survey. The evidence with respect to bargaining between husbands and wives is much more complex than previous such evidence. The results indicate that wives' education has a significant positive effect on transfers to their parents, and no effect on transfers to their husbands' parents. In addition, women who are gainfully employed and who have greater dowries from the time of their marriage, are more likely to make transfers to their parents. Surprisingly, there is no significant difference between the effect of income in the hands of women and income in the hands of men. However, when women's income is interacted with education, the

effect becomes significant. That is, the income accruing to women who are educated at the high school level or beyond has a negative effect on transfers to their husbands' parents and a positive effect on transfers to their own parents. It is therefore argued that education and employment status play a more significant role than income in determining women's decision-making power in the family.

The above results may be interpreted as evidence for bargaining between husbands and wives over transfers to their respective parents. They could also imply that intergenerational transfers can be viewed as returns to dowries and human capital investments made by parents. These views are not incompatible– parental investments may very well endow daughters with the bargaining power to channel household resources towards their parents. This paper attempts to distinguish between the two stories but with limited success.

The paper is organized as follows: first, the existing literature on intergenerational transfers and intrahousehold bargaining is reviewed; second, the theoretical framework for studying transfer behavior is laid out, and the predictions of the unitary and collective models of household decision-making are compared; third, the model is estimated and results are reported; finally, the interpretation and implications of the results are discussed.

1.2 Existing literature

1.2.1 Intergenerational Transfers

The literature on intergenerational transfers in developing countries has primarily focussed on ascertaining whether patterns of transfer are indeed consistent with the idea that transfers provide support in old age. Knowles and Anker (1981) report that more than a quarter of private transfers in Kenya were given to parents by children. Butz and Stan (1982) find significant transfers from young to old in Malaysia. In addition to monetary transfers, children provide time-intensive assistance to parents in old age. Ravallion and Deardon (1988) estimate transfer receipt equations for rural

households in Java that suggest significant targeting of the elderly. They also find that transfer outlays by age exhibit an inverted u relationship, with a turning point at 45 years for net outlays.

An issue that has attracted recent attention is whether these transfers are altruistically motivated or whether old people have to exact compliance from the young. This introduces a spirit of "exchange" in the transfer: transfers could represent payments made for services provided by the elderly, or, the elderly could use strategic devices such as the threat of disinheritance to bargain for support by retaining control of household assets such as land, housing, cattle, jewelry etcetera. As explained by Becker (1974) and Barro (1974) the strictly altruistic model predicts that government redistributive programs like social security will be rendered ineffective by adjustments in private intergenerational transfers. Exchange motives, on the other hand, could prevent the crowding out of private transfers by government programs. Cox and Jimenez (1992) use Peruvian data to measure the extent to which social security programs in that country crowd out private transfers to the elderly. They find that private transfers from the young to the old would have been 20 per cent higher in the absence of social security benefits. However, the paper has no evidence regarding the nature of the supposed "exchange" between parents and children that prevents complete crowding out by social security. Using US data Bernheim, Shliefer and Summers (1985) find evidence that parents use bequests to manipulate child behavior: the greater the magnitude of bequeathable wealth in the hands of the parents (as opposed to annuity wealth), the more frequent are children's visits to parents. Hoddinott (1992) tests the Bernheim -Shliefer-Summers model of manipulative bequests in the context of a developing country. He finds that in elderly households in Karateng in western Kenya, parents that own more land receive higher levels of care and monetary transfers from sons. In Karateng land is passed from fathers to their sons, hence, to test the model of the threat of disinheritance attention was restricted to assistance provided by sons. Therefore, this study provides no explanation for why

daughters provide support.

Other studies using US data have found evidence to reject the altruistic motive for transfers from parents to children. Cox (1987) and Cox and Rank (1992) find a significant positive relationship between recipient income and the amount of transfers, a relationship, they argue, that only holds under the "exchange" hypothesis. Instead of directly studying transfers, Altonji, Hayashi and Kotlikoff (1992) look at consumption patterns of parents and children. Since altruistically linked agents face a collective budget constraint, the distribution of consumption among them should be independent of the distribution of income. In fact, their paper finds that own income is a significant determinant of own consumption of parents and children.

As is clear from the above review, there is significant dearth of studies on developing countries where substantial transfers are made to parents by children. This lacking is primariliy due to the paucity of suitable data on inter-vivos transfers. The existing studies are usually unable to match characteristics of parents with those of their children to get a richer description of the nature of the transfers between them. The Indonesian Family Life Survey used in this paper overcomes many of the data problems associated with transfers– we are able not only to match characteristics of parents and children, but also to contrast the determinants of transfers to husbands' and wives' parents.

1.2.2 Intrahousehold Bargaining

There is a recent trend towards analyzing household behavior in a so-called "collective" model, in contrast to the Becker-style "unitary" model which assumes that the household behaves as if it has one set of preferences represented in a single household utility function. Several empirical studies have cast doubt on the appropriateness of the simplifying assumption of common preferences, and suggested that the policy consequences of employing the "wrong" model could be serious. One of the strongest challenges to the empirical validity of the unitary model has been posed by economet-

ric tests of the "income-pooling" hypothesis. Schultz (1990) finds that in Thailand income in the hands of women tend to reduce fertility more than income in the hands of men. However, women's income may have a negative coefficient because it also represents the opportunity cost of child care since women are traditionally responsible for home production. Therefore, standard labor income measures are endogenous to the choice problem. Using survey data from Brazil, Thomas (1990) finds that increases in the mother's *unearned* income improves the probability of child survival by 20 times that of a similar increase in the father's unearned income. However, nonlabor income (like interest earnings) is not decidedly exogenous because it reflects previous labor supply decisions. Moreover, it may have substantial measurement error that will bias the parameter estimates. To overcome these objections, Thomas (1994) uses a "difference-in-difference" technique to identify intra-household bargaining. He finds that the non-labor income of women in Brazil has a significantly larger effect on the height of daughters than the height of sons. In addition, the differences in the effect of non-labor income on sons and daughters are different depending on whether the income is attributed to the father or mother. Hence, this difference in the differences appears to confirm that mothers tend to be more egalitarian than fathers in resource allocation by gender.

Other studies investigate whether conditions in the marriage market that shift out women's "threat-point", or reservation utility in a Nash-bargaining framework, result in outcomes that are preferred by them. Rao and Greene (1991) estimate the regional relationship between fertility and the ratio of males to females of marriageable age, the latter variable being a plausible measure of female bargaining power. They find that in regions where this ratio is larger, implying that women have greater choices for spouses in the marriage market, fertility is significantly lower.

The collective models proposed to replace the unitary model of the household can be divided into two broad classes, one that uses a game theoretic approach to represent the decision process as some specific bargaining process (Lundberg and

Pollak, 1993), and the other that only assumes that household decision-making leads to Pareto efficient outcomes (Chiappori, 1992). In this second class of models it is argued that it is not necessary to put too much structure on the model by imposing an equilibrium concept, because testable restrictions can be obtained of the simple efficiency hypothesis (Chiappori, 1992). Bourguignon et al (1993) and Browning et al (1994) have conducted direct tests of the efficiency hypothesis using French and Canadian household expenditure data, and find that the cooperative restrictions are not rejected. However, Udry (1996) rejects Pareto efficiency of household allocations in production decisions. Using data on agricultural production by sub-Saharan farm households he finds that plots controlled by women receive less inputs and have significantly lower yields than other plots within the household, even after controlling for various dimensions of land quality.

Clearly, the intra-household bargaining literature has not considered bargaining with respect to inter-generational transfer decisions. Testing for bargaining in this choice setting could be particularly important because parental investment in children's human capital may well be the strongest determinant of future bargaining power in marital relationships. Hence, there may be a feedback effect between investments in children and bargaining for transfers to elderly parents.

1.3 The Model

In this section the theoretical framework underlying the transfer decision is discussed. It is assumed that parents do not provide any services to their offspring in exchange for the transfer. Thus, here we abstract from exchange motivated transfer behavior that has been the subject of much of the received literature.[2] Instead, we concentrate on the collective decision-making process between the husband and wife who decide on altruistic transfers to their respective parents. First, the implications of a unitary

[2]We will justify this decision to ignore exchange motives when we discuss patterns of transfers between parents and children in Indonesia.

model of household behavior are discussed. Second, a collective model of household decision-making is developed where each individual is characterized by specific preferences. Finally, the predictions of the afore-mentioned models are compared, and an empirical test to distinguish between them is specified.

1.3.1 The Unitary Model of Household Decisionmaking

The unitary model of household behavior is so called because it treats the household as though it were a single individual, represented by a single utility function. In effect, this amounts to assuming that household decisions are made by a dictatorial head who is altruistic towards the other members. The relevant "household" in our case consists of a couple. If the relation between the husband and wife is one of altruism then the transfer decision problem is formulated as:

$$Max\ U_c = U_c(C_c, V_{hp}(C_{hp}), V_{sp}(C_{sp}))$$

where U_c is the couple's level of well being, C_c is the couple's consumption, V_{hp} is the level of well being of the husband's parents, V_{sp} is the level of well being of the spouse's parents, C_{hp} is husband's parents' consumption, and C_{sp} is wife's parents consumption. Both parent and couple consumption are assumed to be normal goods. We assume that the couple is altruistic towards its parents, so that $\partial U_c/\partial V_{hp} > 0$ and $\partial U_c/\partial V_{sp} > 0$.

The budget constraints for this problem are:

$$C_c \leq E_c - T_{hp} - T_{sp}$$
$$C_{hp} \leq E_{hp} + T_{hp}$$
$$C_{sp} \leq E_{sp} + T_{sp}$$

where E_i, $i = c, hp, sp$, denote parent and couple incomes, and T_i, $i = hp, sp$, denote transfers to husband's parents and his spouse's parents.

The two first order conditions for the optimal choices of T_{hp} and T_{sp} are:

$$MU_c(E_c - T_{sp}) = MU_{hp}(E_{hp} + T_{hp}) \qquad (1)$$
$$MU_c(E_c - T_{hp}) = MU_{sp}(E_{hp} + T_{sp}) \qquad (2)$$

where MU_c is the marginal utility of the couple's consumption, and $MU_{ip} = (\partial U/\partial V_{ip} * \partial V_{ip}/\partial C_{ip})$ for $i = h$ and s.

There are two latent variables that determine the transfer decision:

$$t^*_{hp} = MU_{hp}(E_{hp}) - MU_c(E_c - T_{sp})$$
$$t^*_{sp} = MU_{sp}(E_{sp}) - MU_c(E_c - T_{hp})$$

If $t^*_{hp} > 0$, then a positive transfer will be made to the husband's parents, that is $T_{hp} > 0$. If $t^*_{sp} > 0$, then a positive transfer will be made to the wife's parents, that is $T_{sp} > 0$.

We can express t^*_{ip}, for the i^{th} parent, in terms of variables that are observable to the econometrician:

$$t^*_{ip} = \alpha_{ip} + \beta E_{ip} + \gamma(E_c - T^*_{j\neq i,p}) + \delta X_{ip} + \varepsilon_{ip}$$

where E_{ip} is the pre-transfer income of the parent, $(E_c - T^*_{j\neq i,p})$ is the post-transfer income of the couple, and X_{ip} is a variable proxying for the level of caring the couple feels for the parent. These X_{ip} need to be included because the transfer decision depends on caring through the $MU_{ip} = (\partial U/\partial V_{ip} * \partial V_{ip}/\partial C_{ip})$ function. Assuming diminishing marginal utility of consumption for the couples and their parents implies the following comparative statics results:

$$\partial t^*_{ip}/\partial E_{ip} < 0, \text{ or, } \beta < 0$$
$$\partial t^*_{ip}/\partial(E_c - T^*_{j\neq i,p}) > 0, \text{ or, } \gamma > 0$$
$$\partial t^*_{ip}/\partial X_{ip} > 0, \text{ or, } \delta > 0$$

We estimate a probit model for the transfer decision based on the underlying specifications of t^*_{ip} and test whether $\beta < 0$, $\gamma > 0$, and $\delta > 0$ as implied by the theoretical discussion above.

1.3.2 The Collective Model of Household Behavior

In contrast to the unitary model, we now assume that the husband and wife each have a separate utility function. But this assumption alone is not enough to generate different predictions from those of the unitary model described earlier, because individually distinct utility functions could be of the form:

$$U^i = F^i(x^h, x^s, y)$$

for $i = h, s$, where x^h and x^s represent vectors of private goods consumed by h and s respectively, and y represents a vector of public goods. These preferences, where each person cares about allocation of goods to the other, are termed "altruistic" by Browning et al (1994). A more restrictive form of preferences which allows us to derive empirically testable predictions that are different from the unitary model is:

$$U^i = F^i(u^h(x^h, y), u^s(x^s, y))$$

Browning et al (1994) refer to these preferences as "caring". In contrast to altruistic preferences, caring preferences imply that each person cares about the other's allocation only to the extent that it contributes to the other person's well-being. The aggregator function F^i is assumed to be increasing in both subutility functions. Browning et al (1994) prove that if preferences are caring and household allocations are efficient, the household decision-making process can be seen as a two-stage procedure: in the first stage, total household income is allocated to public goods and each of the individual members for expenditure on private goods; in the second stage, each individual makes his/her own decision about the consumption of private goods by maximizing his/her subutility function subject to his/her individual share of the household income devoted to private goods. In essence, household decisions are efficient if and only if a sharing rule exists. We use this "sharing rule" interpretation of efficient collective decision-making to define the bargaining mechanism by which transfer decisions are made.

In addition to assuming efficiency and caring preferences, we assume that well-being of parents is a private good, that is, each person only cares about the well-being of their own parent.[3] For notational brevity, we assume there are no public goods. Hence, the household decision-making problem can be formulated as follows:

$$Max\ U^h = F^h(u^h(C^h, V^{hp}(C^{hp})), u^s(C^s, V^{sp}(C^{sp})))$$

subject to

$$U^s = F^s(u^h(C^h, V^{hp}(C^{hp})), u^s(C^s, V^{sp}(C^{sp}))) \geq \bar{U}^s$$
$$C^h + C^s + T^{hp} + T^{sp} \leq E^h + E^s$$
$$C^{hp} \leq E^{hp} + T^{hp}$$
$$C^{sp} \leq E^{sp} + T^{sp}$$

for some fixed utility level $\bar{U}^s$. The functions F^i, $i = h, s$, denote the individual aggregator functions of the husband and wife; C^i, $i = h, s, hp, sp$, denote individual consumption; E^i, $i = h, s, hp, sp$, denote individual incomes; and T^i, $i = hp, sp$, denote transfers. The sharing rule interpretation of the above program is: h and s first divide total income between them, according to some predetermined sharing rule. Then, each member makes his/her own decisions through constrained utility maximization of their individual subutility functions, facing individual budget constraints. This interpretation of the household problem is formalized as follows:

$$Max\ u^i(C^i, V^{ip}(C^{ip}))$$

subject to

$$C^i + T^{ip} \leq \theta^i(E^h + E^s)$$
$$C^{ip} \leq E^{ip} + T^{ip}$$

[3]Of course, each person cares *indirectly* about the well-being of the other's parent through the other's subutility function.

where $i = h, s$, and θ^i is the share of total income received by i. Hence, $\theta^h + \theta^s = 1$. Now, as derived in the previous section, the latent variables underlying the transfer decision are given by the first order conditions to the utility maximization problems:

$$t^*_{sp} = MU_{sp}(E^{sp}) - MU^s_c(\theta^s E)$$
$$t^*_{hp} = MU_{hp}(E^{hp}) - MU^h_c(\theta^h E)$$

where $E = E^h + E^s$, and MU^s_c and MU^h_c are the marginal utilities of private consumption of the wife and husband respectively. As before, $T^{hp} > 0$ iff $t^*_{hp} > 0$, and $T^{sp} > 0$ iff $t^*_{sp} > 0$. The sharing rule parameter θ should be a function of exogenous variables that affect the decision process but do not influence preferences. Chiappori (1992) and Browning et al (1994) suggest that the arguments of θ should consist of own income, plus a host of "extra-environmental parameters", or EEPs (in the terminology of McElroy(1990)) such as sex ratios in the marriage market, alimony and child support laws, and in developing countries the ability of women to support themselves in the event of a breakdown of the marriage contract.

1.3.3 Empirical distinction between the unitary and collective models

If the collective decision-making model described above is more appropriate than the unitary model of the previous section, then the expression for t^*_{ip}, the underlying variable for the econometric specification, will have other variables in addition to $E_{ip}, E_c - T_{ip}$, and, X_{ip}. These additional variables will be those that capture the effect of θ^i on t^*_{hp} and t^*_{sp}. If a variable Y_{ip}, is positively related to θ^s it will be interpreted as increasing the bargaining power of the wife, because it increases her share of the total household income. An increase in θ^s implies that $MU^s_c(\theta^s E)$ will fall, under the assumption of declining marginal utility of consumption. On the other hand, an increase in θ^s implies that $MU^h_c(\theta^h E)$ will rise, also because of declining marginal utility of consumption. Therefore, the comparative statics suggested by the collective model is:

$$\partial t^*_{sp}/\partial Y_{ip} > 0$$
$$\partial t^*_{hp}/\partial Y_{ip} < 0$$

Separate probit equations based on the latent variables t^*_{hp} and t^*_{sp} , will be estimated for transfers to the husband's parents and to the wife's parents respectively. The new t^*_{ip} appropriate for the econometric specification under the collective model is:

$$t^*_{ip} = \alpha_{ip} + \beta_{ip}E_{ip} + \gamma_{ip}(E_c - T^*_{j\neq i,p}) + \delta_{ip}X_{ip} + \psi_{ip}Y_{ip} + \omega_{ip}$$

The test for choosing the collective model over the unitary model would be to test if $\psi_{sp} > 0$, and ψ_{hp} insignificant or $\psi_{hp} < 0$, where ψ_{sp} is the coefficient on Y_{ip} in the equation for transfers to the wife's parents, and ψ_{hp} is the coefficient on Y_{ip} in the equation for transfers to the husband's parents. Recall that Y_{ip} is a vector of variables that increase the wife's bargaining power, that is, her share of the total household income.

In summary, the generally vague concept of *bargaining power* is defined in this model as an individual's ability to increase his/her share of the total household income. Since parental well-being is interpreted as a private good, the relation between transfer decisions and the arguments of θ are explicitly derived. Thus, some determinants of transfers (Y) can also be interpreted as determinants of bargaining power.

Underlying the above discussion is the implicit assumption that the process of matching couples in the marriage market is exogenous to the problem on hand. This allows us to interpret Y purely as an argument of θ , ignoring any effect it may have on the matching process in the marriage market. However, if this assumption is incorrect, Y will be correlated with the individual unobserved characteristics ω_{ip} leading to a violation of the classic regression assumption. But, if only cross-section data is available for estimation, we cannot adequately address this issue.

1.4 Empirical Implementation

1.4.1 Data

The data used to estimate the model described in the previous section comes from the Indonesian Family Life Survey (IFLS), a survey of about 7200 households across Indonesia conducted in 1993 by RAND and *Lembaga Demografi* (LD), the Demographic Institute at the University of Indonesia. The households were selected from 13 provinces in the islands of Java, Sumatra, Bali, West Nusa Tenggara, Kalimantan and Sulawesi, and reflect much of the heterogeneity of the Indonesian population. As explained in the *Overview and Field Report*, the IFLS contains a broad range of demographic and economic information on individuals, households and communities, which enables the study of inter-related issues that was not possible in single-purpose surveys. The special feature of the survey that this paper exploits is the information on intergenerational transfers separately collected for the household head and spouse. This information on transfers to the respective parents of the head and spouse can be linked to data on individual characteristics of the head and spouse, characteristics of their household, and retrospective marriage histories provided by the spouse. This last information is available from a questionnaire administered to all ever-married women 15 to 49 years old.

The Indonesian provinces are furthur subdivided into municipalities or *kabupatens*, which in turn are divided into subdistricts or *kecamatans*, and *kecamatans* consists of villages or *desas*. Each household in the IFLS has associated with it a code for the *kabupaten* in which it resides, which can be matched with nationally representative surveys conducted by the Central Bureau of Statistics in Indonesia. Using the information on one of these surveys, the SUPAS 1995 Intercensal Population Survey, some *kabupaten* level information on education, employment and wages was matched to the IFLS households.

1.4.2 Pattern of Transfers

The household head and his spouse were separately asked questions relating to transfers made to and received from their respective parents who are alive and reside in other households. Hence, our analysis focuses on inter-vivos transfers between married children and non-coresident parents. The restriction to non-coresident parents may imply that we ignore the implicit transfers made to those parents who reside in the same household as the married couple. However, for 95 per cent of the sample of married couples in the IFLS the respective parents are either dead or non-coresident. Thus, ignoring the transfers made to cohabitating parents should not bias our results.

Table 1 shows the pattern of transfers made to and received from parents. Information on transfers to and from the husbands' parents is available for 2773 couples, of which 62 percent make transfers to parents and only 22 percent receive transfers from parents. Information on transfers to and from the wives' parents is available for 3500 couples, of which 55 percent report transfers to parents and 29 percent report the receipt of a transfer from parents. Therefore, it is clear that in Indonesian families, married sons are far more likely to make transfers to parents rather than receive transfers from them. Married daughters also tend to give more than they receive, but they are more likely to receive transfers than are sons. For 2112 couples, where both sets of parents are alive, couples are more likely to make transfers to the husband's parents than to the wife's parents, and more likely to receive transfers from the wife's parents rather than the husband's parents.

The survey questionnaire also asks the type of transfers taking place, where the categories are: monetary transfers, school tuition transfers, health-care assistance, food provision, and assistance with household chores. Table 2 describes the composition of transfers according to these categories: the entry for each category reports the percentage of transfers where that category of assistance is provided. Transfers can include any combination of the types of assistance, so the columns do not add up to 100%. More than three quarters of the transfers made to parents include monetary

assistance, and about a quarter of transfers include food assistance. The transfers received from parents are also predominantly monetary and food assistance. Only 7% of transfers received from husbands' parents, and 12% of transfers received from wives' parents include assistance with household chores. This leads us to doubt a story of exchange-motivated transfers from married children to parents, because most services that parents can provide in exchange for transfers are related to household chores, specifically child-care.[4]

1.4.3 Determinants of θ

According to the model of collective decision-making developed in this paper, the determinants of θ are synonymous with the determinants of bargaining power, because the latter is defined in our context as the ability to extract a bigger "share of the pie". Thus, the empirical challenge is to identify those observable characteristics that may be arguments of θ and whose effects on transfers may be estimated and interpreted as operating through the sharing rule. Since our theory puts no concrete structure on the form or content of θ other than suggesting that it is a function of the socio-cultural and economic environment, it becomes an empirical excercise to find those variables. This paper focuses on examining the role of education, income and employment status as determinants of bargaining power. In addition to the standard information about individual education and employment, the Indonesian survey contains data on individual *non-labor* income and married women's dowry wealth. Furthermore, the household survey can be matched with *kabupaten* level data on women's education, employment and wages. These aggregate level variables can be included in the individual level equations as EEPs (McElroy, 1990) that determine the ability of women to support themselves in the event of the breakdown of the marriage contract.

[4]Non-altruistic transfers are still possible if there are manipulative bequests (Bernheim, Shliefer, Summers, 1985)

We would expect education to have a positive effect on θ and therefore the bargaining hypothesis would imply a positive effect of women's education on transfers to their parents and negative or no effect on transfers to their husbands' parents. Similarly, men's education would have a positive effect on transfers to their parents and not on transfers to their wives' parents. However, the same pattern would hold under the unitary model if better educated children feel obliged to "repay" their parents for investing in their education. Thus, it is difficult to empirically distinguish between these two stories.

In other studies that test for intra-household bargaining, women's employment status is ususally endogenous to the choice problem because women simultaneously choose between spending time on home production, such as child care, or in the labor market. However, in the context of transfers to parents there is no such endogeneity problem. Under the bargaining hypothesis we would expect that women who are gainfully employed are more likely to make transfers to their parents.

The significance of the dowry variable has to be understood in the Indonesian cultural context. Geertz (1961) gives a detailed description of marriage customs and traditions in Javanese society, from which it appears that the expenditures for the marriage celebration are undertaken by the bride's parents as their traditional duty. In fact, the occasion is used by the parents to impress their society and improve their social standing. It appears that in the Indonesian survey "dowry" represents the value of all gifts received by the bride, that were not consumed at the wedding feast. Thus, it appears that the dowry is better viewed as a *gift* from the parents to their daughter, rather than as a loan that the child is expected to repay at a later stage. In this sense, dowry represents personal wealth of the woman at the time of marriage and can be a potential determinant of bargaining power. However, larger dowries could merely imply greater caring between the parents and their daughter, a strong caveat to any bargaining interpretation of dowry.

Most of the studies that test for intra-household bargaining test for the equality

of coefficients on income accruing to men and women. Since labor income is usually endogenous these studies use non-labor income as an arguably exogenous measure of individual resources. In the context of transfer decisions, non-labor income is problematic because a large portion of it usually consists of transfers from family and friends. Therefore, for this study we use only non-gift-non-labor income, henceforth known as non-gift income.

The aggregate levels of women's education, employment and income can potentially represent the ability of women in a society to support themselves independently, in case of the dissolution of the marriage contract. Hence, if these aggregate indicators are large, women can use credible threats to increase their share of household income. However, aggregation also introduces the possibility that the variables are capturing some general characteristic of the region, such as economic well-being since regions with well educated, employed women could be economically richer regions. Then, we would expect that if the aggregate variable has an identical effect on transfers to the husband's parents and transfers to the wife's parents, it is representing a general characteristic of the region. On the other hand, if the effects are distinguishable then we may interpret the variable as affecting female bargaining power in the household.

1.4.4 Summary Statistics

The explanatory variables used in the estimations are those that represent E_{ip}, the pre-transfer well-being of parents, $E_c - T^*$, the post transfer well-being of the donor household, X , the level of caring for the parents, and Y , the determinants of θ . We use parental education (years of schooling), employment status, asset ownership and health shocks to appriximate E_{ip} . The health shock is measured by a dummy variable equal to 1 if the parents were reported ill in the past year. We also include the number and average years of education of siblings of the husband and wife as alternate sources of support for parents. The post-transfer well-being of the donor household is approximated by household expenditure per capita on food and non-food items

(excluding education expenses). We also include other household characteristics such as religion of the household head, age of the household head and spouse, and dummy variables for the province of residence and urban-rural categories. The frequency with which children visit parents is used to approximate X . In answer to the question of how often they see their parents, if the children answer "never", X equals 0, if they answer at least once a year, X equals 1, if they answer at least once a month, X equals 12, and if they answer at least once a week, X equals 52. The determinants of θ have been discussed in the previous section. The summary statistics of these variables in the relevant samples used for estimation, are reported in Table 3.

More than 50 per cent of the households in the relevant samples reside in Java, the province for which we have anecdotal evidence. The household head and spouse are consistently better educated than their parents. Women, on average, are less educated than men but more than 50 per cent of them have completed primary school. About 42% of the women in the sample are employed in the labor market. Only 12% of the men and 18% of the women report positive non-gift income. Most women report positive dowry wealth, with only 0.2% reporting zero value for dowry.

At the aggregate level, there is a lot of variation across *kabupatens* in the percentage of women who have studied at the senior high school level or beyond, with values ranging from 1.67% at the minimum to 43.91% at the maximum. There is also considerable variation in the percentage of women working and the average wage accruing to them.

1.4.5 Estimates

Evidence for the "bargaining" hypothesis The estimation strategy focuses on ascertaining the effects of the arguments of the sharing rule function on the transfer decision. As derived in the theoretical section, there are two latent variables, t^*_{hp} and t^*_{sp} , that determine whether transfers are made to the parents of the husband and wife respectively :

$$t^*_{hp,c} = \alpha_{hp} + \beta_{hp}E_{hp} + \gamma_{hp}(E_c - T^*) + \delta_{hp}X_{hp,c} + \psi_{hp}Y_c + \varepsilon_{hp} + \varepsilon_c$$
$$t^*_{sp,c} = \alpha_{sp} + \beta_{sp}E_{sp} + \gamma_{sp}(E_c - T^*) + \delta_{sp}X_{sp,c} + \psi_{sp}Y_c + \varepsilon_{sp} + \varepsilon_c$$

where ε_i , $i = c, hp, sp$, are unobserved characteristics of the couple and their respective parents. The empirical challenge is to estimate ψ_{hp} and ψ_{sp} consistently and efficiently so that we may appropriately interpret the relationship between transfers and the determinants of bargaining power.

For estimation purposes, the total observations on transfers to the husband's parents were reduced from 2781 to 2771 because we dropped some observations which appeared to have unusually large values for dowry and non-gift income. The nature of the entries for these dropped observations suggest that there may have been some errors in the process of data entry. For transfers to the wife's parents, dropping these observations resulted in reducing the sample size from 3501 to 3485. Another problem with the data is that of losing more than 40 per cent of the observations on transfers due to missing values in some of the explanatory variables. We substitute the missing values of a few variables, that are the biggest contributors to the loss of observations, with sample means after checking that the observations are randomly missing and not due to reasons of self-selection. A detailed discussion of the treatment of missing observations is relegated to Appendix A. Our final sample consists of 2513 observations on transfers to the husband's parents and 3117 observations on transfers to the wife's parents, with a loss of about 10 per cent of the total observations on each kind of transfers.

Tables 4a and 4b report the probit estimates for transfers to the wife's and husband's parents respectively, based on the latent variables t^*_{sp} and t^*_{hp} . The vector Y_c in these estimates contains : two linear splines for husband's and wife's education corresponding to high school and primary school education, non-gift income accruing separately to each individual, indicators for whether either individual reported a positive non-gift income, dowry, and a dummy variable equal to 1 if the wife is employed in the labor market. The pattern of coefficient signs and sizes on these variables

confirms the existence of bargaining. Women who are better educated, have greater dowry, and who are gainfully employed are more likely to make transfers to their parents, but their education, dowry and employment has no effect on the likelihood of transfers to their husbnd's parents. This supports the hypothesis of the collective model developed earlier, because all these variables are likely to increase women's share of total household income, θ . Moreover, men who are better educated, and who have greater non-gift income are more likely to give to their parents, but their education and income has no effect on the probability of giving to their wive's parents. However, a variable that we would expect to be strongly positively related to θ , namely women's non-gift income, is not significant in either equation, although it has the right sign, being positive for transfers to women's parents and negative for transfers to husband's parents.

The marginal effects of all variables on the probability of transfer, calculated at the sample means, are also reported in Tables 4. We find that an additional year of schooling beyond the high school level for the husband at the sample mean increases the probability of a transfer to his parents by .01, and an additional year of schooling for the wife at the sample mean increases the probability of giving to her parents by .006. A woman who is employed in the labor market has .05 greater probability of giving to her parents than a woman who is not employed. If the dowry for a woman at the sample mean increases by 1000 rupiah, the probability of giving a transfer to her parents increases by .009. More than 50 per cent of the women with dowry greater than the sample mean are making positive transfers to their parents.

As discussed earlier, there are important caveats to our interpretation of these results as supporting the bargaining story of household decision-making. Women whose parents have invested a lot in their education and dowries could feel more obliged to help their parents, than less educated and less endowed women. Education and dowry could also proxy for the amount of caring and affection between parent and child. We do find additional evidence that would cast doubt on these alternative

explanations. Firstly, the variable recording the frequency of visits to parents is positive and highly significant in both equations, and is at least a partial measure of the degree of caring between parents and children, and the suggested "bargaining" variables are significant even after controlling for that. Secondly, anthropological anecdotes (Geertz, 1961) about Javanese family relations indicates that there is no feeling of reciprocity associated with dowry, that is, dowry is simply a gift from parents to their daughter and is not expected to be repaid in any way. This anecdotal evidence is the only justification we can provide for interpreting dowry as a bargaining variable. Interestingly, a dummy variable which equals 1 if the household resides in the province of Java, has a significant negative effect on the probability of transfers to the husband's parents. This is very much in accordance with the anecdotal evidence which describe matrifocal kinship relations in Java, that is, where the strongest family ties are maintained through women.

To defend the interpretation of education as a determinant of bargaining, we re-estimated the probit equations presented in Tables 4 by replacing the linear splines for women's education with a indicator variable that equals 1 if the wife is strictly better educated than the husband, and a spline for the years of education attained by a better educated wife. These results are reported in Table 5. We find that the education of women who are better educated than their husbands has a significant negative effect on the probability of transfers to the husband's parents. The indicator variable, on the other hand, is positive and significant, probably because it picks up some wealth effect because families where women are better educated must be wealthier families. These variables are insignificant in the equation for transfers to the wife's parents, probably because better educated women tend to have parents who are much better-off than others. This may be evidence in favor of the bargaining hypothesis, but it could also be picking up some non-linearity in the effect of education on transfers.

The issue of the statistical insignificance of women's non-labor income needs to be investigated furthur, both because income is an intuitively appealing determinant of bargaining power and because the received literature finds very strong evidence that individual incomes affect household decisions. We tried different specifications of the model and found that women's non-gift income has a significant positive effect on transfers to their parents if the indicator variable for reporting positive non-labor income was excluded from the specification. This would imply that women's non-labor income is accounting for wealth effects, because families where women have positive non-labor income tend to be wealthy families. In fact, the indicator variable is very significant and positive in both transfer probits. However, this does not explain why non-gift income accruing to husbands and wives should have *different* effects on the probabilities of giving to his and her parents: the husband's non-gift income has a significant positive effect on transfers to his parents, but no effect on transfers to his wife's parents, and the wife's non-gift income has a negative (albeit insignificant) effect on transfers to her husband's parents.

We then interacted education with women's non-gift income to test the hypothesis that women are able to use their bargaining power due to income only after a certain level of education. The new interaction variable is obtained by multiplying women's non-gift income with a dummy variable that equals 1 if the woman is educated at the high school level or beyond. This variable is negative and significant (at the 10% level) in the probit for transfers to the husband's parents, but still insignificant in the probit for transfers to the wife's parents.

The limited success with the interaction of education and income suggests that other variables should be included in the specification that potentially capture a general sense of female autonomy in a society, and that these variables should also be interacted with income. As discussed earlier, these variables have been termed EEPs or extrahousehold environmental parameters in the received literature (see McElroy, 1990). For this study the variables used as EEPs are at the *kabupaten* level. They

are: the percentage of women, above the age of 15, who are educated at the senior high school level and beyond, the percentage of women over 15 who are employed in the labor market, and the average wage of women workers in a *kabupaten*. The results with respect to these variables are reported in Table 6. We only report the interaction of income with *kabupaten*-level education because the other interactions were insignificant. The non-gift income of women who live in *kabupatens* where a higher percentage of women are educated at the senior high school level or beyond, has a significant positive effect (at the 10% level) on transfers to women's parents and a significant negative effect (at the 10% level) on transfers to their husband's parents. However, if the household belongs to a *kabupaten* where a higher percentage of women are educated at the senior high school level, then the probability of transfers to *both* the women's parents and the men's parents falls. Similarly, if the household belongs to a *kabupaten* where a higher percentage of women are employed, probabilities of both types of transfers are reduced. But, if the average wage earned by women in a *kabupaten* is higher, then the probability of transfers to women's parents increases significantly, but there is no significant effect on transfers to men's parents. Thus, average *kabupaten* wage does seem to affect women's bargaining power, probably by improving women's ability to support themselves if they leave the marital institution. Education and employment at the *kabupaten* level do not have the same effect, even if the wage variable is omitted to reduce the effect of multicollinearity amongst these aggregate variables. But, education does make the effect of women's non-gift income significant.

Other results The results of this paper also contribute to an understanding of the nature and motives of intergenerational transfers, even though we do not test explicitly for altruistic or exchange motives as other studies have done. In all specifications, we find that the coefficient estimates on parents' charcateristics and general characteristics of the donor households are very robust. The estimates are reported in

Tables 4a and 4b. As expected, the vector β of coefficients on variables that measure the pre-transfer well-being of parents, has negative components. Better educated parents and parents who are still working have a significantly lower probability of receiving a transfer. Parents who have sufferred an illness in the past year are significantly more likely to receive a transfer. The evidence on asset ownership of parents is mixed: while house ownership does not significantly affect transfers to either parents, parental ownership of a family business significantly increases transfers to the wife's parents but not to the husband's parents. This evidence may support the Bernheim, Shliefer and Summers (1985) theory of manipulative bequests, though only in the case of transfers to the wife's parents.

In order to investigate further the existence of manipulative bequests, we estimated the probability of transfer to the wife's parents only for couples where the wife has more than two siblings. The coefficient estimates did not change significantly. We then estimated the probability for couples where the wife has less than (or equal to) two siblings and the coefficient on parental ownership of the family business was insignificant. This would seem to support the story of manipulative bequests which suggests that the threat of disinheritance is credible only in families where there are many siblings to compete for the inheritance.

The average years of schooling, above the high school level, of the siblings of the husband and wife significantly reduces transfers to the respective parents. This could be because average sibling education is a good indicator of parental wealth, and also because well educated siblings represent a viable alternate source of support for parents.

As mentioned earlier, children who meet parents more frequently are significantly more likely to make transfers to them. The frequency of meetings is directly related to place of residence: a cross tabulation of meetings with residence indicates that those who meet parents most frequently are also those who live in the same village or the same *kecamatan*, while those that meet very infrequently tend to live in another

province or country.

The post-transfer well-being of the donor household is approximated by per capita monthly expenditure on items of common consumption, a measure of household permanent income. This variable has a positive and highly significant effect on the probability of transfers to both parents.

The *differences* between the equations estimating the probability of transfers to husbands' and wives' parents is not restricted to the variables representing the determinants of bargaining. The difference with respect to parental ownership of a family business has already been discussed: if the wife's parents own a business they are significantly more likely to receive a transfer, while ownership by the husband's parents has no effect on their transfers. In addition, households living in urban areas are significantly less likely to make transfers to the wife's parents, but the area of residence has no effect on transfers to the husband's parents. These differences imply that couples are less altruistic towards the wives' parents relative to the husband's parents.

Issues of robustness There is a possibility that some of our results are sensitive to the fact that we have not accounted for transfer receipts from parents. Some variables could have a significant effect on transfers made to parents because they have an effect on transfers received from parents, by the principle of reciprocity. We re-estimated our model by restricting the sample to those couples who receive no transfers from their parents. None of the results discussed above are significantly affected. We also restricted the sample used for estimation to those couples where transfer information is available for both sets of parents. The only coefficients that are affected in this restricted sample are those on dowry and the wife's employment status, which become statistically insignificant in the equation for transfers to the wife's parents. We checked whether dowry and employment status of women are significantly different in couples where the husband's parents are alive, and found

no such evidence. We therefore conclude that these coefficients became insignificant because of the loss in efficiency due to the restricted sample.

Issues of model misspecification The econometric specification we employ to obtain estimates of the parameters of interest has been the probit specification because it is directly based on an underlying response variable that we define in our theoretical model. This appealing link between the theoretical and econometric specification is lacking in linear probability models that simply extend the linear regression analysis to the case of dichotomous dependent variables. The more popular discontent with the linear probability model seems to be that it is possible for its predicted values to be outside the permissible (0,1) interval. However, in non-linear specifications like the probit and logit any kind of misspecification results in inconsistency of the estimates. In particular, the presence of heteroskedasticity causes inconsistency, a fact that is troublesome since we use a cross-section data where possibilities of heteroskedasticity cannot be ignored.

Fortunately, Deaton (1997) and others have pointed out that this problem need not be taken too seriously, because we are very rarely concerned with the index function itself. Instead, we want the effect of the covariates on the calculated probability, and it does not generally matter whether the effect works through the means or the variances. Since the heteroskedasticity is captured in the probit normalization, we still get the right marginal probabilities to calculate the marginal effects of a change in X on Y .

Most surveys and textbooks on the analysis of qualitative dependent variables conclude that the three commonly used models, the probit, logit and the linear probability model, generally yield similar conclusions about estimates. Therefore, we compare our estimates using the probit specification with estimates using the linear probability model corrected for the inherent heteroskedasticity. None of our inferences change significantly. Also, the number of observations in the relevant sample

for which the predictions are outside the admissible range, are as small as 10 for over 2500 observations.

1.5 Conclusion

This paper finds evidence in favor of intra-household bargaining over decisions of inter-generational transfers. The generally vague concept of bargaining power is interpreted in this study as an individual member's ability to extract a greater share of household income, in order to increase individual utility in the household. To identify the determinants of bargaining power we focus on transfers to parents from married children, where transfers to own parents is interpreted as a private good for individuals who care about the well-being of their parents. Our empirical estimates seem to indicate that women's education, employment, own-income, and overall status in society have a significant impact on their bargaining power. This conclusion is based on four broad results: first, educated and employed women are significantly more likely to make transfers to their parents; second, amongst women who are educated at the high school level, or who live in a region where women are more educated, women's non-gift income has a significant positive effect on transfers to their own parents and a significant negative effect on transfers to their husbands' parents ; third, women with greater dowry wealth from the time of marriage are significantly more likely to make transfers to their parents; fourth, women who live in regions where the average female wage is higher are also significantly more likely to make transfers to their parents. Furthermore, there is evidence that education and income also enhance men's bargaining power– men's education and income have a significant positive effect on transfers to their parents, and no effect on transfers to their wives' parents.

This evidence also suggests that there are significant returns to parental investment in education and dowries. Although we have been unable to formally distinguish between transfers as returns to prior investments, and transfers as gains from bargaining, it seems reasonable to conclude that both elements are operative in household

transfer behavior. Parental investment endows children with the bargaining power in marital decision-making to make transfers to those they care about. The pattern of transfers in the data, presented in Table 1, clearly indicates that married couples are more likely to make transfers to the husband's parents. Yet the multivariate analysis shows that if daughters are educated and gainfully employed, with independent resources such as dowry and income, then the likelihood of transfers to their parents increases significantly. Hence, it may be possible to extend the conclusions of this study to other traditional societies where daughters appear not to yield as high returns as do sons. The differential in returns from sons and daughters may be entirely explained by the gender differential in parental investment in children.

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Table 1
Pattern of Transfers

	Transfers to Husbands' Parents		Transfers to Wives' Parents	
Receipts from Respective Parents	Provide	Not Provide	Provide	Not Provide
Receive	15%	7%	19%	11%
Not Receive	47%	31%	36%	34%

Table 2
Composition of Transfers

	Transfers to Husbands' Parents		Transfers to Wives' Parents	
Type of Assistance	Provide to Parents	Receive from Parents	Provide to Parents	Receive from Parents
Monetary Assistance	81%	62%	77%	60%
Health Care	6%	2%	7%	3%
Food Purchases	25%	34%	35%	39%
Household Chores	11%	7%	10%	12%
Tuition and Other	1%	5%	.01%	1%

Table 3
Summary Statistics

	Transfers to Husbands' Parents		Transfers to Wives' Parents	
VARIABLE	MEAN	STD. DEV.	MEAN	STD. DEV
Parent education	2.503	3.046	2.751	3.146
Parent working	0.542	0.497	0.594	0.491
Parent ill	0.267	0.439	0.261	0.437
Parent owns house	0.482	0.499	0.438	0.496
Parent owns business	0.358	0.480	0.332	0.471
Number of siblings	4.571	2.272	4.560	2.259
Education of siblings	3.547	4.539	3.796	4.680
Frequency of meetings	33.225	23.056	31.630	23.228
Per capita expenditure	37607.75	31661.04	37047.64	31336.4
Reside in Java	0.561	0.496	0.562	0.496
Reside in Sumatra	0.219	0.414	0.222	0.416
Reside in urban area	0.499	0.500	0.484	0.500
Muslim household head	0.865	0.342	0.856	0.351
Husband's age	37.482	9.192		
Wife's age			33.748	9.065
Husband's years of schooling	6.805	4.365	6.601	4.364
Wife's years of schooling	5.705	4.063	5.504	4.071

Table 3 continued

	Transfers to Husbands' Parents (2513 observations)		Transfers to Wives' Parents (3117 observations)	
VARIABLE	MEAN	STD. DEV.	MEAN	STD. DEV
Husband completed high school	0.412	0.492	0.394	0.489
Wife completed high school	0.311	0.463	0.300	0.458
Husband completed primary school	0.506	0.500	0.511	0.500
Wife completed primary school	0.554	0.497	0.546	0.498
Husband's non-gift income	54857.49	318539.2	62051.28	348651.6
Wife's non-gift income	42888.5	207430.4	45554.5	268178.1
Husband's non-gift income>0	0.125	0.331	0.122	0.327
Wife's non-gift income>0	0.182	0.386	0.180	0.384
Dowry	86585.16	301670.1	88059.01	304618.5
Wife working	0.418	0.493	0.424	0.494
Percentage of women completed sr. high school	16.635	11.149	16.700	11.228
Percentage of women working	30.721	10.112	30.859	10.175
Average wage	143808.2	53723.57	144135.9	54031.26

Table 4a
PROBIT ESTIMATES
Dependent Variable: Transfer to Wife's Parents
1= yes, 0= no

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
RECIPIENT CHARACTERISTICS		
Parent education	-0.02037** (0.00897)	-0.00804**
Parent working	-0.20547*** (0.05377)	-0.08112***
Parent ill	0.19742*** (0.05377)	0.07794***
Parent own house	-0.06021 (0.58343)	-0.02377
Parent own business	0.10576* (0.06152)	0.04162*
Number of siblings	-0.00189 (0.01053)	-0.00075
Education of siblings	-0.01846*** (0.00736)	-0.00729***
Frequency of meetings	0.00657*** (0.00104)	0.00300***
DONOR HOUSEHOLD CHARACTERISTICS		
Per capita expenditure *1000	0.00667*** (0.00091)	0.00263***
Residing in Java	0.00482 (0.06292)	0.00190
Residing in Sumatra	-0.08834 (0.07273)	-0.03498
Residing in urban area	-0.12101** (0.05415)	-0.04776**
Muslim household head	0.43904*** (0.07152)	0.17375***
Wife's age	0.01934 (0.01584)	0.00764
(Wife's age)^2	-0.00018 (0.00021)	-0.00007

Table 4a (continuation)

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
DETERMINANTS OF BARGAINING		
Husband' education above high school	0.00684 (0.00787)	0.00270
Husband's education above primary school	0.01352 (0.01352)	0.00534
Wife's education above high school	0.01731* (0.00956)	0.00683*
Wife's education above primary school	0.02106* (0.01313)	0.00832*
Husband's non-gift income *10000	0.00059 (0.00082)	0.00023
Wife's non-gift income *10000	0.00180 (0.00133)	0.00071
Husband's non-gift income>0	0.04398 (0.08359)	0.01732
Wife's non-gift income>0	0.14170** (0.07033)	0.05547**
Dowry*1000	0.00022*** (0.00008)	0.0009***
Wife working	0.13152*** (0.04898)	0.05181***
CONSTANT	-1.12477*** (0.31031)	
Log-likelihood	-2018.876	
Likelihood Ratio	248.11***	

[a] Normal density function evaluated at $X\beta$ where X is the vector of sample means and β is the coefficient vector

*** significant at 1% level

** significant at 5% level

* significant at 10% level

Table 4b
PROBIT ESTIMATES
Dependent Variable: Transfer to Husband's Parents
1= yes, 0= no

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
RECIPIENT CHARACTERISTICS		
Parent education	-0.03546*** (0.01024)	-0.01340***
Parent working	-0.26315*** (0.05915)	-0.09948***
Parent ill	0.08689 (0.06102)	0.03285
Parent own house	-0.01918 (0.06439)	-0.00725
Parent own business	-0.03472 (0.06738)	-0.01314
Number of siblings	-0.00447 (0.01180)	-0.00169
Education of siblings	-0.01541* (0.00852)	-0.00583*
Frequency of meetings	0.00736*** (0.00119)	0.00278***
DONOR HOUSEHOLD CHARACTERISTICS		
Per capita expenditure *1000	0.00607*** (0.00108)	0.00229***
Residing in Java	-0.17595*** (0.07106)	-0.06620***
Residing in Sumatra	-0.08458 (0.08196)	-0.03221
Residing in urban area	-0.03685 (0.06120)	-0.01393
Muslim household head	0.42248*** (0.08042)	0.16482***
Husband's age	0.02174 (0.01929)	0.00822
(Husband's age)^2	-0.00027 (0.00023)	-0.00010

Table 4b (continuation)

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
DETERMINANTS OF BARGAINING		
Husband' education above high school	0.03149*** (0.00971)	0.01191***
Husband's education above primary school	0.06124*** (0.01585)	0.02315***
Wife's education above high school	0.00436 (0.00988)	0.00165
Wife's education above primary school	0.01818 (0.01500)	0.00687
Husband's non-gift income *10000	0.00201* (0.00119)	0.00076*
Wife's non-gift income *10000	-0.00160 (0.00150)	-0.00061
Husband's non-gift income>0	0.16990* (0.09642)	0.06271*
Wife's non-gift income>0	0.27681*** (0.08189)	0.10099***
Dowry*1000	-0.00011 (0.00008)	-0.00004
Wife working	0.03733 (0.05493)	0.01410
CONSTANT	-0.90503** (0.41218)	
Log-likelihood	-1569.9681	
Likelihood Ratio	197.71***	

a. Normal density function evaluated at $X\beta$ where X is the vector of sample means and β is the coefficient vector

*** significant at 1% level

** significant at 5% level

* significant at 10% level

Table 5
Transfers to husband's parents

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
Husband' education above high school	0.03997*** (0.00947)	0.01511***
Husband's education above primary school	0.07816*** (0.01627)	0.02954***
Wife better educated	0.31211** (0.14467)	0.11380**
Years of schooling of better educated wife	-0.03560** (0.01683)	-0.01346**

*** significant at 1% level
** significant at 5% level
* significant at 10% level

Table 6a
Transfers to husband's parents

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
Husband's non-gift income *10000	0.00206* (0.00119)	0.00078*
Wife's non-gift income *aggregate education*10000	-0.00009* (0.00006)	-0.00003*
% women completed sr. high school	-0.00615* (0.00369)	-0.00232*
% women working	-0.00741*** (0.00292)	-0.00280***
Average female wage*1000	0.00041 (0.00069)	0.0002

*** significant at 1% level
** significant at 5% level
* significant at 10% level

Table 6b
Transfers to wife's parents

VARIABLE	Coefficient (Std. Error)	$\Phi(X\beta)\,\beta$ [a]
Husband's non-gift income *10000	0.00057 (0.00082)	0.00022
Wife's non-gift income *aggregate education*10000	0.00007* (0.00004)	0.00003*
% women completed sr. high school	-0.00628* (0.00330)	-0.00248*
% women working	-0.00499** (0.00259)	-0.00197**
Average female wage*1000	0.00130** (0.00061)	0.00051**

*** significant at 1% level
** significant at 5% level
* significant at 10% level

2 Effect of Electoral Accountability on Economic Policy in India

2.1 Introduction

For the past two decades the relationship between political and economic cycles has been widely studied by scholars of political economics, one of the key questions of interest being the effect of electoral cycles on economic outcomes and policies.[1] Thus far, the theoretical and empirical literature has concentrated on the US states and OECD countries. There are few comparable studies that test for economic policy effects of electoral cycles in developing countries.[2] Such studies would facilitate a contrast between electoral cycle effects in developed and underdeveloped countries, an exercise that could potentially address questions regarding the effect of political institutions on economic development. This paper studies the effect of state legislative assembly elections on the policies of state governments in 14 major states of India, over the period 1960-1994.

India is a reasonable place to search for these electoral effects because it is an underdeveloped economy with a history of popular participation in democratic elections. The country established a system of universal adult suffrage upon becoming a republic and drafting a constitution in 1950. Since the first elections in 1952, there have been 10 general elections for membership of the Lok Sabha, the lower house of Parliament in New Delhi, and over 300 state elections for the Vidhan Sabhas or state legislative assemblies, and for district and village councils. The average voter turnout

[1] An excellent summary of this literature is provided by Alesina et al (1997).

[2] There are some studies that focus on the effect of electoral institutions on budget deficits in Latin American countries (Stein, Talvi and Grisanti, 1997; Jones, Sanguinetti and Tommasi, 1997). Kraemer (1997) provides some evidence of electoral cycles in revenues and spending in Latin American countries.

in general elections has been 56.6 per cent, varying from a low of 45.7 per cent in 1952 to a high of 64.1 per cent in 1984 (Butler, Lahiri and Roy, 1995). The turnout in state elections is even greater, averaging about 65 per cent in half the states in the sample. Moreover, there is substantial variation across the Indian states in political and economic variables, over a period of time, which is conducive to properly identifying the relationship between political cycles and economic policies.

There are two distinct sets of political economy models to explain the economic effects of electoral cycles.[3] The first is pioneered by Nordhaus (1975) and predicts business cycles where incumbents keep growth high and unemployment low just before an election. These opportunistic policies at election times lead to post-electoral recessions. However, little empirical support was found for this "political business cycle".[4] Some believe that the lack of evidence is consistent with a theoretical weakness in the Nordhaus model, that is, voters are myopic and have no understanding of macroeconomic principles. The second set of models attempt to reconcile rational expectations on the part of voters with the Nordhaus insight of opportunistic policy manipulation by incumbent politicians. The driving assumption in these "rational opportunistic" models is the existence of temporary information asymmetries about the incumbent government's level of competence. This leads to short-term political

[3]Here, the focus is on "opportunistic" political models where policymakers maximize their probability of re-election. For the U.S. and OECD countries, there are also "partisan" models where different political parties represent the economic ideology of different constituencies. Specifically, left-wing parties prefer to keep unemployment low, while right-wing parties are more concerned with inflation (Hibbs, 1977; Alesina, 1987). These partisan models are not relevant in the Indian context, because there are no clearly defined ideologocal coalitions based on specific economic policies. There are two states (Kerala and West Bengal) where communist parties have consistently been in government, but the politics of these states do not focus on the same kind of partisan issues described in the OECD countries.

[4]McCallum (1978) and Golden and Poterba (1980) find no significant evidence of a political business cycle in U.S. unemployment and inflation. Paldam (1979) finds no evidence for OECD economies.

budget cycles, as opposed to multi-year cycles in output and unemployment (Rogoff and Sibert, 1988; Rogoff, 1990) where the incumbent government manipulates fiscal policy to signal competency in providing greater consumption. Voters deduce the level of competency, in equilibrium, by the degree of distortion in tax and spending policies.

Alesina et al (1997) find that in OECD countries, fiscal policy is relatively loose in election years, with low taxes, high spending, and high budget deficits. Inflation tends to increase after elections, probably because of the preelectoral expansionary policies (Alesina and Roubini, 1992). However, these cycles are small in dimension and do not occur very frequently. There is also limited support for political budget cycles at the national level in the US. Tufte (1978) finds evidence for political manipulation of fiscal instruments, particularly transfers, only in some presidential elections. Besley and Case (1994) examine economic policy effects of electoral accountability in the US states based on gubernatorial term limits. They find that "lame duck" terms are systematically associated with higher taxes and higher spending, and interpret it as the result of lack of effort on the part of political agents that no longer care about re-election. However, they report no electoral cycle in taxes and spending *within* a term in office. Apart from fiscal instruments, there is some evidence of political manipulation of public services in election years in the US. Levitt (1997) finds that the size of police forces in big cities increases in mayoral and gubernatorial election years. This evidence is consistent with Rogoff's (1990) model, since incumbents increase police forces to signal to voters their commitment to lower crime.

This paper studies the effect of state elections in India on state governments' fiscal policies, namely taxes and spending, and on their provision of a specific public service, namely roads. The fiscal variables are obvious instruments that may be directly manipulated to influence political outcomes such as in models of political budget cycles. The public provision of roads is included to determine the effect of elections

on government management of a capital asset.[5] The primary motivating question is whether governments strategically manipulate economic policies to influence political outcomes.

The effect of state elections on the policy variables is identified by using an instrument for the electoral cycle that distinguishes between constitutionally scheduled elections and midterm polls. State assembly elections are scheduled to occur every five years; hence, an election that occurs five years after the previous election is termed a scheduled election. Midterm elections, on the other hand, are relatively unanticipated and occur one, two, three or four years after the previous election.[6] Various tests are undertaken to ensure as confidently as possible that the instrument for the electoral cycle is indeed exogenous to policy choices.

The results may be summarized as follows. Incumbent state governments lower taxes, increase capital spending and increase road construction in election years. Commodity tax revenues are lower in election years, while there is no significant effect on nontax revenues and property tax revenues. Case studies of some state budgets show that this reduction is driven by rate-cuts on items of mass consumption and on inputs in agricultural production. Spending on the current account decreases in an election year, but the capital outlay for asset creation is greater. Road construction increases in election years even after controlling for spending on roads. The Indian political budget cycle differs from that found for OECD countries in that there is no significant electoral increase in state deficits, even though pre-election taxes are lower and capital spending is higher. The deficit is unaffected primarily because

[5] The state governments are largely responsible for the following infrastructures: road construction, electric power, irrigation facilities and water supply. Ideally, the electoral effect should be estimated for all of these public services. But, for this paper data is only available on roads at the state level over a reasonable period of time.

[6] "Midterm" elections in this case are elections that take place in the middle of an incumbent's constitutionally established five year term. It is not akin to midterm Congressional elections in the USA, that are perfectly scheduled and anticipated events.

spending on the revenue account is lower in an election year. More importantly, the magnitude of the political cycle in economic policies in the Indian states is far greater than any comparable evidence of political budget cycles in the developed countries. These differences need to be accounted for in any theoretical model of political budget cycles.

The key ingredient in most models that attempt to reconcile short-term electoral cycles in economic policies with rational expectations of voters, is temporary information asymmetry between voters and politicians with regard to the government's competence. Political cycles are viewed as costly distortions of policies from their optimal levels, although some of the cost is mitigated by the information provided to voters to make the right decision, that is, to elect the competent government. In this light, it is perhaps not surprising that opportunistic cycles in developed countries occur only occasionally and are usually rather small in magnitude. The political cycle in India differs in both the pattern and the size of the effects. There are several different hypotheses that could be explored to explain the electoral effects in the Indian states, not the least of which is that uneducated voters in a developing country are myopic and hence susceptible to short-term policy manipulations. This paper argues in favor of another hypothesis that preserves voter rationality: career concerns persuade politicians to exert greater effort (less shirking) in the provision of public services in an election year, as compared to earlier years in their term in office, due to high discounting of the future. The discount rate is high enough to generate an electoral cycle in policy because of political uncertainties in a multi-party parliamentary democracy.

The rest of the paper is organized as follows. The next section outlines the empirical strategy employed to identify the effect of elections on state economic policies. Section III describes the data and variables used in the analysis. Section IV presents the empirical evidence for the effect of elections on economic policies. Section V describes existing models of political budget cycles and discusses their limitations

in explaining the electoral effects on economic policy in the Indian states. A moral hazard model of career concerns is then presented as a plausible explanation of the empirical evidence. Section VI concludes and discusses directions for future research.

2.2 The Empirical Strategy

The purpose of this paper is to identify the effect of the timing of elections on economic policies of state governments. In order to accomplish this, the electoral cycle must be exogenous to government policy choices. Exogeneity is a reasonable assumption because the electoral cycle is relatively fixed by constitutional arrangements. The first state assembly elections took place in 1952 along with the first general elections for the Lok Sabha (India's lower house of Parliament). Thereafter, elections were constitutionally scheduled to take place every five years. However, there have been several midterm elections for various state legislative assemblies due to shifting political alignments. In fact, of the 116 state elections over the period 1960-1994 in the sample states, 39 elections (i.e. 34 per cent) are midterm elections. This casts doubt on the identification assumption that the timing of elections is exogenous to government policy choices. The problem is addressed by identifying the effect of *scheduled* elections on economic policy and contrasting that with the correlation of midterm elections and economic policies. Scheduled elections are defined as those elections that occur five years after the previous election, that is, following the constitutionally established pattern. Midterm elections are those that occur one, two, three or four years after the previous election, that is, before the completion of the five year constitutional term.[7] It is important to make the distinction not only because

[7]There are four occasions in the sample period where elections took place six years after the previous election. In the states of Andhra Pradesh, Assam, Karnataka and Maharashtra, elections took place in March 1972 and then in February 1978. This seems to be the effect of the Emergency imposed by the central government from June 1975 to March 1977. In these cases, the years 1975 (March 31st 1975 to March 31st 1976) and 1976 (March 31st 1976 to March 31st 1977) are both considered as one year before a scheduled election.

midterm elections are potentially endogenous to policy choices but also because their exact timing is generally sudden and unanticipated, so it is not reasonable to expect incumbent governments to plan economic policies to influence election outcomes.

2.2.1 The Basic Strategy

The strategy employed to circumvent the endogeneity of midterm elections is to define an instrument for the actual electoral cycle that is plausibly exogenous to policy choices, and correlated with the actual cycle, and then estimate the reduced form effect of the instrument on policy choices. The instrumental electoral cycle follows a five-year cycle that begins anew after every midterm election. Election years in the instrument coincide exactly with scheduled elections, but midterm elections are treated as one, two, three or four years before a scheduled election. The year after a midterm election is always labelled as four years before a scheduled election. The time-line of the instrument is described pictorially in Figure 1. This instrument, henceforth referred to as the electoral cycle, is the natural choice if the timing of midterm elections is viewed as the result of a shock whose effect is limited to the period of the shock.

The frequency of midterm elections in a state could be driven by some fixed, unobservable state characteristic, such as its socio-political make-up that is invariant over the sample period. In the sample of 14 states, there are 7 states where only one or two midterm elections occurred in the period 1960-1994, 4 states where three or four midterm elections happened, and 3 states (namely Kerala, Punjab and Uttar Pradesh) which experienced five to six midterm elections. Amongst the high frequency states, political volatility is a constant feature over the entire sample period; in Kerala owing to the politics of its communist parties; in Punjab and Uttar Pradesh due to religious and communal politics. In light of these fixed state characteristics, the specification to estimate the effect of the instrumental cycle should control for state-level fixed effects.

The existence of midterm elections in all states of India provides for variation in the dates of scheduled elections across states, which is necessary to distinguish the effect of elections from the effect of other shocks in the years in which they take place. Hence, the effect of elections can be estimated after controlling for year effects. The resulting empirical model to estimate the effect of the electoral cycle on government policies is the following:

$$Y_{it} = \alpha_i + \delta_t + \sum_{\tau=0}^{4} E_{it}^{\tau}\beta_\tau + \varepsilon_{it} \qquad (1)$$

where Y_{it} is an economic policy choice of the government of state i in year t ; E_{it}^{τ} , for $\tau = 0, ...4$, is a set of indicator variables for the electoral cycle: $E_{it}^{0} = 1$ if t is a scheduled election year in state i, $E_{it}^{1} = 1$ if t is one year before a scheduled election in state i, and so on. To avoid omitted variable bias, the above specification is estimated including some observable state characteristics X_{it}. The effect of state characteristics may not be orthogonal to the electoral effects if there is a correlation between the government's electoral strategy and observed state conditions. Hence, we also report regressions including state domestic product (SDP), proportion of agriculture in SDP, total population, proportion of rural population, and average monthly rainfall. Equation (1) would therefore be modified as follows:

$$Y_{it} = \alpha_i + \delta_t + \sum_{\tau=0}^{4} E_{it}^{\tau}\beta_\tau + X_{it}\lambda + \varepsilon_{it} \qquad (1a)$$

where X_{it} is a vector of characteristics of state i in year t.

There is a problem with this empirical strategy to identify the policy effects of scheduled elections if the shocks generating midterm elections are in fact persistent. Persistence would imply that the "survivors" lasting the whole term of five years are systematically different from non-survivors, in which case the electoral effect could simply be attributed to the differences in policies adopted by survivors and non-survivors. This necessitates further scrutiny of the determinants of midterm state elections in India, and empirical tests to rule out the confounding effect of persistent shocks.

2.2.2 Causes of Midterm Elections

The direct cause of a midterm election is either shifting alignments within the ruling party, breakdown of coalition governments, or partisan pressure from the federal government. In order to enjoy majority power in the state assembly, a party needs to win two-thirds of the total seats in the assembly. In the sample, the number of midterm elections with coalitions is equal to the number of elections where parties control the majority of the seats. This implies that midterm elections in the Indian states are not primarily driven by the collapse of tenuous coalitions.

The most remarkable feature of the midterm elections is the following. Of all the midterm elections an overwhelming 85 per cent have incumbents that are not affiliated with the party governing at the center. In contrast, only 25 per cent of scheduled elections have incumbents that are not affiliated with the center. This, of course, indicates that political volatility leading to mid-term polls is more likely in states and in years when the dominant parties are not aligned with the centre. In view of the traditional dominance of a single party at the center, and the fact that the Indian federation is very centralized, it is quite likely that state midterm elections are fuelled by pressures from the central government. In fact, under Article 356 of the Constitution of India, the central government has the authority to recommend that a state government be removed, irrespective of whether it controls majority seats in the assembly, and Presidential Rule be imposed on the state if "a situation has arisen in which the government of the state cannot be carried on in accordance with the constitution" (Hardgrave, 1980, pp 58). Typically, Presidential Rule lasts for a few months and is followed by midterm elections. About 45 per cent of the midterm elections in the sample followed the imposition of Presidential Rule in the state. Many political studies document that the imposition of Presidential Rule is driven by strikingly partisan motives.[8] Political affiliation certainly qualifies as a "persistent shock", since the electoral cycle could be the result of comparing systematically different policies

[8]See Hardgrave (1980), Dua(1979), Maheshwari (1977) and Guhan (1995).

adopted by aligned and non-aligned states, and not the result of strategic manipulation by governments facing elections. It is highly likely, in the Indian context, that the effect of political affiliation is accounted for simply through the state fixed effects, since "pro-center" or "anti-center" attitudes are relatively constant across the years in individual states, irrespective of the party currently controlling the legislative assembly. However, to test for the effect of political affiliation in a more general manner, we estimate the following model:

$$Y_{it} = \alpha_i + \delta_t + \sum_{\tau=0}^{4}(E_{it}^{\tau} * AFF_{it})\beta_\tau + \sum_{\tau=0}^{4}(E_{it}^{\tau} * (1 - AFF_{it}))\theta_\tau + AFF_{it}\gamma + \varepsilon_{it} \qquad (2)$$

where AFF_{it} is an indicator of political affiliation that equals 1 when the incumbent in state i at time t is aligned with the party in power at the center at time t, and 0 otherwise. Therefore, $E_{it}^{\tau} * AFF_{it}$ represents the electoral cycle where the incumbent is affiliated and $E_{it}^{\tau} * (1 - AFF_{it})$ represents the cycle where the incumbent is not affiliated with the central party. The equality of the coefficients β_τ and θ_τ indicates that state electoral effects are independent of party affiliation. We also test that political affiliation does not confound electoral effects by estimating equation (1) and (1a) separately for states with $AFF_{it} = 0$, and states with $AFF_{it} = 1$. If an electoral cycle is found in both subsamples, then the story of strategic manipulation of economic policy to affect political outcomes is viable. However, the cycles could be different for the aligned and non-aligned samples if the two types of governments follow different political strategies.[9]

The effect of persistent unobservable shocks is tested by isolating the policy effects of those election cycles that do not follow midterm elections. An indicator variable

[9] Affiliation with the central government could influence economic policies of state governments via intergovernmental grants and loans, and the sharing of taxes collected by the center and distributed to the states. A companion study (Khemani, 1999) finds that grants-in-aid and share in central taxes are unaffected by state elections. However, non-affiliated incumbents borrow more from the central government in election years. Grants, on the other hand, are lower in all years for non-affiliated states.

that equals 1 if the previous election was a midterm election is included by itself and interacted with the electoral cycle. The specification is modified to:

$$Y_{it} = \alpha_i + \delta_t + \sum_{\tau=0}^{4}(E_{it}^{\tau} * D_{it})\beta_\tau + \sum_{\tau=0}^{4}(E_{it}^{\tau} * (1 - D_{it}))\theta_\tau + D_{it}\gamma + \varepsilon_{it} \qquad (3)$$

where D_{it} is an indicator variable which equals 1 if the previous election was a midterm election and 0 if the previous election was a scheduled election. $E_{it}^{\tau} * D_{it}$ represents the electoral cycle that midterm elections and $E_{it}^{\tau} * (1 - D_{it})$ represents the electoral cycle that follows scheduled elections. The test of the equality of the coefficients β_τ and θ_τ is the test that the midterm election shocks are not persistent, that is, the instrument identifies the effect of the electoral cycle on economic policies.

National elections could be viewed as temporary shocks that determine the timing of midterm elections. In fact, some midterm elections that occurred only one year before the regular schedule coincide exactly with national elections to avoid duplicating the costs of electioneering by waiting to hold state elections in the immediately following year. In general, in politically volatile situations, cost considerations lead the Election Commission to coordinate the timing of midterm elections with that of national elections. In total, 56 per cent of state midterm elections coincided with general elections. To test the hypothesis that state economic policies respond to state elections and not to national elections, the same strategy described above is employed, that is, testing the equality of the election year coefficient when it coincides and does not coincide with a national election.

2.2.3 An Alternate Instrument for the Electoral Cycle

An alternate instrument could also be employed to test for the effect of elections on economic policies.[10] This instrument treats the fifth year after every election, that is after both midterm and scheduled elections, as a scheduled election year, irrespective of whether an election actually occurred or not. Some elections in this instrument coincide exactly with actual scheduled elections, but there are many additional election

[10] I am grateful to Michael Kremer for first suggesting this alternate instrument.

years. In fact, this instrument has 115 scheduled elections of which only 77 coincide with actual scheduled elections in the sample period. The advantage of this instrument relative to the previous one described in Figure 1 is that it is more likely to be exogenous to economic policies, since it gives precedence to events that occurred further back in time and are therefore less likely to have persistent effects. The drawback, however, is that it is less correlated with the actual cycle, leading to the standard problem of weakly correlated instruments. This alternate instrument is used in all specifications to conduct a Hausman test of the exogeneity of the instrument described in Figure 1.

2.3 The Data

The data set for this study is compiled from diverse sources for 14 major states of India over the period 1960-1994.[11] The political data on elections is taken from the publication *India Decides* (1995). The public finance data on taxes and expenditure is available from the 1960-1994 volumes of the *Reserve Bank of India Bulletin*, a quarterly publication of the central bank of India with annual issues on the finances

[11]The States Reorganization Act of 1956 divided the Indian federation into 14 states and 5 union territories that were administered by the Central government. In 1960, the state of Bombay was divided into Gujarat and Maharashtra. In 1966, the PEPSU (Patiala and E. Punjab States Union) was divided into its two main constituents, Haryana and Punjab. This study includes 13 states that were already established in 1960, namely Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The fourteenth state in 1960, Jammu and Kashmir, has been excluded because of the political uncertainties in the region that continue to this day. The state of Punjab is included after 1966, when it attained separate statehood. Haryana is not included because data for this state is not available across many explanatory variables.

Currently, India has 25 states because several union territories have attained statehood over the years, the most recent converts occurring as recently as 1991. Therefore, to maintain consistency in our analysis over a reasonable time period, we only include those states that existed since 1960 and 1966.

of state governments. Highways and roads data is compiled from the 1961-1995 volumes of the *Basic Roads Statistics*, an annual publication of the Ministry of Surface Transport of India and from various state *Statistical Abstracts*[12]. State demographic and economic characteristics, and a state-level price index to convert all variables into real terms, are available from an Indian data set put together at the Poverty and Human Resources Division, Policy Research Department of the World Bank. A detailed description of these variables is available in Ozler et al. (1996).

Following is a description of the policy instruments included in this analysis. The fiscal variables are included because they are obvious candidates for direct manipulation by incumbent governments to influence political outcomes. The roads network is included to assess the effect of elections on government management of a capital asset. Elections could have a positive effect on road construction both because incumbents would like to signal greater effort and competency in the provision of public services, and because it would lead to greater public employment. Ideally, a range of publicly provided goods should be included in this analysis. The most important infrastructures provided by state governments are irrigation, electricity, water supply and the roads network. However, for this study data is only available for roads at the state level, over a reasonable period of time. Further research on electoral effects on the other public services would be worthwhile.

- *Fiscal Variables:* The tax variables included in this analysis are total tax revenues collected by state governments, the two most important components of which are property and commodity taxes. The single most important source of tax revenues of state governments are commodity taxes, which accounted for 53 per cent of the total tax revenues in 1951-52 and for 79 per cent in 1997 (Datt and Sundharam, 1998).

[12]Data on state roads was taken from a district-level data set put together by Robert Evenson at Yale University using official Government of India sources. Evenson, Pray and Rosegrant (1994) provide a detailed description of this data set.

The expenditure of state governments on the current account is categorized into development and non-development expenditure. Development expenditure in its turn is divided into spending on social services, and spending on economic services. Social services provided by the government consist primarily of education, family planning and public health, housing, water supply and sanitation. Economic services consist primarily of agriculture and allied activities, irrigation and flood control, electricity, rural and community development projects, industry and minerals, and transport and communications. Non-development expenditure consists of spending on administrative and fiscal services. Development spending is also undertaken on the capital account. It consists of capital outlays for the creation of assets, again under the separate categories of social services and economic services. Figure 2 tabulates this classification of state government expenditure.

- *Road Network:* The two main categories of roads in India are national highways and state roads. Funds for the development of national highways are provided by central government budgets on an annual basis, but the management is undertaken by state Public Works Departments (PWDs). Though national highways constitute only about 2 per cent of the total road network, they carry 40 per cent of the total road traffic (*Infrastructure in India*, CMIE, 1998). Funds for state roads (consisting of state highways and district and village roads) come from the respective state government budgets. State highways are also managed by PWDs and carry about 30 per cent of the total traffic (CMIE, 1998). The management of district and village roads is sometimes decentralized to local governing bodies within the state. Figure 3 tabulates the sources of funding and management of different roads in India.

  Data for this analysis is available for national highways and for total state roads, that is, state highways, district and village roads. Since highways appear to be strategically more important in the economy, it would be beneficial to

distinguish the effect of elections on highways and on other roads. But, separate data for state highways is not available for this study. Data on national highways is taken from the *Basic Roads Statistics of India.* There are several missing values because states fail to regularly update the information with the Ministry of Surface Transport. In addition, the publication of roads statistics was very irregular in the decade of the 1970s. Most of the missing values belong to that period. Data on state roads is available for 12 states[13] and only upto 1987.

Table 1 presents means and standard deviations of the variables. Because of the diversity of sources, the time period covered varies across variables, so the number of observations is different for different variables. The empirical analysis tests the robustness of the evidence in the face of changing samples when variables are excluded or included in the analysis.

2.4 Empirical Evidence

2.4.1 Effect of elections on tax revenues

The analysis of the effect of elections on taxes begins with a simple specification estimating the effect of the election year indicator variable on commodity tax revenues collected by state governments. All regressions involving commodity taxes are first differenced to account for the persistence in commodity tax revenues over the years.[14] Table 2a reports the separate regression results for scheduled and midterm election year indicators. The growth in commodity taxes falls by about Rs. 1.4 per capita in a scheduled election year, but *increases* by about the same amount in a midterm poll. The coefficients are significant only around the 10 per cent level. This contrast in the

[13]The excluded states are Assam and Kerala. Data is available compositely for the states of Punjab and Haryana.

[14]Moreover, from the budget speeches of Finance Ministers of different state governments, it appears that tax changes are made specifically with reference to previous years' taxes.

However, the levels specification is reported in Table 7.

effect of scheduled and midterm elections confirms the need to distinguish between the two in order to identify a causal effect of elections on taxes.

The three columns of Table 2b present regression estimates of equations (1) and (1a) to determine the effect of the whole election cycle on commodity taxes, using the instrument defined in Section III. The regressions are, once again, first differenced versions of equations (1) and (1a) since commodity taxes exhibit considerable persistence. The coefficient estimates in column 2, including controls for state characteristics, are different in size and significance than the estimates without the controls in column 1. This suggests that observable state characteristics are not orthogonal to the effect of the election cycle, probably because state governments decide electoral strategies contingent upon state economic conditions.[15]

The growth in commodity taxes is significantly lower in election years compared to other years. Figure 4a plots the coefficients on the election cycle (with the election year coefficient set equal to 0). It indicates that taxes are lower as the time of election comes closer. In column (2), the coefficient on the year just before the election is not equal to the other years at the 10 per cent level of significance. The results in column (3) indicate that taxes are lower in the year just before elections and in the election year. Growth in commodity taxes in election years is about Rs 1.50 lower per capita than the average of the other three years. The size of this reduction implies that in election years the increment in commodity taxes is 56 per cent lower than the sample average, that is less than half the average increment.

Equations (2) and (3) were estimated to test whether the electoral cycle in taxes presented in Tables 2a and 2b are properly identified. Including political affiliation and controlling for years following midterm elections does not affect the electoral cycle in taxes.[16] There is also no difference in the effect of elections that are coincident

[15]The difference in estimates is not driven by the reduction in the number of observations when controls are included. If the equation is re-estimated without the controls, but limited to the same observations, there is no significant difference in the coefficients.

[16]There is evidence that the electoral cycle in taxes is different for states where the incumbent

and not coincident with general elections. The alternate instrument for the timing of elections does not yield significant results. However, the Hausman test indicates that it is consistent with the results of the reported instrument.

There is no significant effect of the electoral cycle on non-tax revenues, such as revenues from interest receipts, dividends and profits, general services, and social, economic and fiscal services. There is also no evidence of an electoral cycle in property taxes. This lack of evidence further supports the hypothesis that commodity tax cuts are driven by political motives rather than by some unobservable shocks that affect all variables, since it is difficult to explain why these shocks only affect commodity taxes and not property taxes and interests and dividends. Indian public finance analysts (Mundle and Rao, 1992) claim that commodity taxes are predominantly regressive, falling heavily on middle and low-income groups. This makes the commodity tax a viable political tool, as opposed to the property tax which is paid by smaller groups of voters in upper income brackets and to non-tax revenues that are not directly visible to voters.

The description of the type of tax cuts in election years in the state budgetary speeches of Finance Ministers clearly indicates that rates are cut on items of mass consumption and on inputs of agricultural production. Both measures indicate that electoral tax cuts are driven by political motives to woo the majority of voters that belong to lower income groups. The case of one particular state, West Bengal, in the decade of 1980 is discussed in some detail here. Figure 5 shows the graph of the growth in commodity taxes in West Bengal from 1981 onwards. After 1984, taxes begin to fall, reaching a low point in 1986, an election year, and then rise again. A perusal of the speeches of the Finance Minister of West Bengal in 1984, 1985, 1986 and 1987 shows that rate cuts were instituted on several items of mass consumption

is affiliated with the central government and where it is not. In non-affiliated states, taxes are significantly lower one and two years before elections. In affiliated states, taxes are lower only in the election year. This could be driven by the greater electoral uncertainty facing non-affiliated incumbents.

in 1985 and 1986, while rates were raised from previous levels in 1984 and 1987. The rhetoric of the speeches also indicates the use of tax measures to influence the common voter. In 1986, the election year, the Minister claims: "The main thrust of my proposal would be to provide relief to the people and to ensure growth in revenue from the increased turnover in business and trade and better administrative efforts". The speech then goes on to describe substantial tax cuts in hosiery goods (4% to 1%), readymade garments below Rs. 100 (8% to 2%), fluorescent tubes (15% to 8%), mercury vapor lamps (15% to 8%), bicycles and bicycle components (8% to 6%), insecticides, fungicides, herbicides and germicides (8% to 4%). Similarly, in 1985, the speech declares: "The majority of my proposals are for reducing tax rates; most of the additional resources I expect to accrue would be the by product of greater efficiency in collection and administration." Tax cuts are announced on tractors (11% to 4%), tea processing machinery (8% to 4%), coir ropes (11% to 8%), ice and ice creams (15% to 8%), and milk powder used in tea stalls (11%-8%). In contrast, in the 1984 speech, the Minister asserts: "...efforts to raise extra resources have to be continued during the coming year." Taxes are increased on motor cars, scooters, mopeds, tractors, fork lift trucks (to 11%), and on powdered milk, lubricating oil and grease, soda water, shaving sets, shoe polish, coir yarn, weighing machines, and on the sale of lottery tickets. Similarly, in 1987, taxes are increased on moulded furniture and luggage, including brief cases, suitcases etcetera, from 8% to 15%. Several measures are also described to check tax evasion and improve the administration of tax collection. That is, along with rate increases, the government intensifies the enforcement of tax laws.

The above anecdotal evidence indicates that the election year fall in commodity taxes is driven by actual rate cuts on products that are widely consumed, particularly by low and middle income groups.

2.4.2 Effect of elections on expenditure

Table 3a reports the effect of scheduled and midterm election years on capital outlays for asset creation. Capital spending increases in a scheduled election year, but falls in a midterm election. Spending increases by almost Rs 3 in scheduled election years, and falls by about Rs 2 in midterm elections.

Table 3b presents the electoral cycle in capital spending. Capital spending in non-election years is significantly lower. Figure 4b plots the coefficients on the different years of the electoral cycle, while constraining the election cycle coefficient to equal 0. The four coefficients on the lags of the electoral cycle, reported in column (2), are statistically indistinguishable from each other. Hence, the electoral cycle is adequately captured by only including the indicator variable for the election year. As noted earlier, capital spending in the election year increases by Rs 2.8 per capita. This increase is 11 per cent of the average level of capital spending per capita in the states in the sample period. This electoral cycle in capital spending is unaffected by the political affiliation of incumbents and holds even after the incidence of a midterm election. Employing the alternate instrument to test the effect of elections on capital spending yields the same conclusions.

The scheduled election year has a negative effect on spending on the current account, but this effect is not statistically significant. The results are reported in Table 3c. The point estimate indicates that current spending falls by about Rs 3 per capita. Therefore, it appears that the composition of spending changes in elections, in favor of spending on the capital account. This is somewhat counter-intuitive, especially given the theoretical framework provided by received models of political budget cycles. Rogoff (1990) predicts that it is government consumption spending that should increase and capital spending that should decrease. In contrast, Columns (3) and (4) of Table 3c show that midterm elections are associated with higher spending on the capital account.[17]

[17]The point estimate of the coefficient on midterm elections falls drastically when other state

Why does spending not increase across the board in a scheduled election year? In order for that to happen, the budget constraint would require that government receipts increase in order to fund the rising expenditure. Since elections are accompanied by tax cuts, one source for increasing state funds are capital receipts, which could imply an increase in the budget deficit. Such a strategy is predicted by Rogoff and Sibert (1988). However, in the Indian political budget cycle, current spending tends to decrease while the budget deficit is unaffected. The next section describes the effect on the state budget deficit.

2.4.3 Electoral policy manipulation and budget deficits

Table 4a reports the effect of elections on the state revenue deficit, that is, the difference between spending and receipts on the current account. There is no significant electoral cycle in the revenue deficit, although the point estimates of the coefficients suggest that the revenue deficit tends to fall in scheduled election years. This negative tendency is driven by the fall in spending on the current account discussed in the previous section.

On the other hand, the revenue deficit significantly increases in the year before a midterm election. This evidence for state deficits in India is in accordance with empirical evidence found in other developing countries, namely, the Latin American countries. Stein, Talvi and Grisanti (1997) find that greater political fragmentation is associated with higher deficits. In this paper, the evidence shows that greater political volatility associated with midterm elections is also associated with higher revenue deficits.

Table 4b reports the effect of elections on the growth of public debt held by the state government, consisting of market borrowings and loans from the central

covariates are introduced in column (4). This is driven by the exclusion of the years after 1990 because no rainfall data is available. These later years are associated both with high current spending and frequent midterm elections owing to economic and political instability in India.

government. The point estimate indicates that state debt increases in the election year, but it is not statistically significant. The 95 percent confidence interval indicates that the election year effect on state debt could range between an increase of Rs 6 or a fall of Rs 3 per capita. Therefore, it is clear that state elections do not have a significant and systematic effect on the budget deficit.

The reduction in taxes and increase in capital spending in election years is not systematically funded by any one budget variable, as is clear from the lack of statistically significant effects on any other variables. Rather, it appears that the election year manipulations are financed alternatively by three different instruments: reducing current spending, increasing borrowing, and increasing non-tax revenues. The 95 percent confidence interval on nontax revenues (interests and dividends) indicates that revenue in the election year, in comparison to other years, ranges between an increase of Rs 4 to a fall of Rs 1 per capita. The same confidence interval for current spending indicates that it ranges between a fall of Rs 8 to an increase of Rs 2.

When the electoral cycle in state debt is distinguished for states that are politically affiliated and not affiliated with the center, then it appears that non-affiliated incumbents increase borrowing of funds in state election years, although the difference is barely significant at the 10 per cent level. It appears that affiliated incumbents finance election year tax cuts and capital spending by increasing non-tax revenues more than non-affiliated states. Non-tax revenues, consisting of interest receipts, dividends and profits, and income from public services, increases by Rs 4 per capita, at the 10 per cent level of significance, for affiliated incumbents in election years.

2.4.4 Effect of elections on roads

The effect of elections on roads is reported in Table 5. The first two columns present the effect of elections on national highways, and the next three columns report the equations for state roads. The coefficients on the electoral cycle for roads are presented in Figure 6.

National Highways The election year has a significant positive effect on the completion of new roads in the network of national highways in a state. Including only the indicator variable for the election year adequately captures the cycle because the null hypothesis of equality between the coefficients on the lag years cannot be rejected. The electoral cycle in national highways is unaffected by the indicator variable for years following midterm elections. The effect of political affiliation is considered below.

The length of new roads added to national highways increases by about 47 kilometers (or 29 miles) in an election year. This figure is one and a half times the average length of new roads added in a year to the national highways network of states. This is a remarkably large effect, and therefore surprising, since it's unclear how governments are able to manipulate a long-term investment project such as road construction. It is highly possible that the significant jump in highways in an election year need not be due to projects started and completed within the span of the election year. The election year effect could be driven by the rapid completion of existing projects in the face of imminent elections. If that is the case, then elections could be interpreted as enhancing the efficiency of government management.

On the other hand, the government could be pumping money for "ribbon-cutting" publicity, to start and finish new projects within an election year. As noted earlier, the funds for the development of national highways are provided by the central government, but the actual construction and management is undertaken by the state PWDs. Data on central government financing of roads is not available for this study, so it is not possible to control for the actual spending on national highways. However, if the electoral surge in the length of new national highways is driven by increasing transfer of funds from the centre to the states, then the electoral effect should only be relevant for those states where the incumbents are politically aligned with the party in power at the center. It would be unreasonable to expect the central government to increase the supply of funds to non-affiliated incumbents in a critical election year.

Hence, in the context of national highways, testing for the effect of political affiliation becomes a test of the effect of elections after controlling for spending on roads. If the increase in highway construction is not driven by sudden increases in funds, then the electoral effect should be identical across affiliated and non-affiliated states, since all the financing for national highways is undertaken by central governments.

In Table 5a, equation (2) is estimated for national highways. We are unable to reject the equality of the coefficients on the election cycle when the incumbent is aligned and when not-aligned with the center. Recalling that the data on national highways suffers from several missing values, the robustness of the election result is tested against any sample selection bias. The electoral cycle is estimated separately for the two samples where the state government is affiliated and not affiliated with the center. The positive effect of elections on national highways holds in both samples, but now only at the 10 per cent level of significance for affiliated states and insignificantly for non-affiliated states. This statistical discrepancy is probably driven by the substantially fewer observations on national highways in non-affiliated states. Thus, both affiliated and non-affiliated state governments increase road construction on national highways in an election year. The election year coefficient is smaller for the sample of non-affiliated states, a result that is consistent with the negative coefficient on the affiliation indicator in Table 6a: non-affiliated states tend to have lower mileage of national highways than affiliated states in all years, irrespective of the electoral cycle.

The evidence shows that even though funds for national highways are controlled by central governments, incumbents in state governments are able to manipulate the management of state PWDs to influence road construction in an election year.[18]

[18]Some anecdotal evidence on this issue might be helpful at this point. I discussed the possibility and nature of an electoral effect on national highways with a senior engineer in the PWD Roads Department of the Government of West Bengal. In his view, the length of new roads is greater in an election year because of the pressure exerted by ministers of state to complete existing projects rapidly. He claimed that since road development plans are very long-term plans, sudden injections

The equations for national highways are also estimated after controlling for state budgetary spending on roads, despite the official rule that state budgets do not contribute to national highways. As expected, the coefficient on state road spending is highly insignificant.

State Roads Columns (3) through (5) of Table 5 present the estimates for the electoral cycle in state roads. The electoral cycle in state roads (state highways and district and village roads) is not as significant as in national highways. Election year road construction in state roads is significantly greater than four years and two years before elections, but no different from road construction one and three years before elections. The size of the effect is rather large. New state roads increase by 925 kilometers (or 575 miles) compared to the average of other years, which is 56 per cent of the average annual growth in state roads. Perhaps the statistical insignificance is due to the fact that the dependent variable lumps together different types of roads with different strategic values. Elections may only be affecting state highways, so the effect is confounded by the "noise" added through district and village roads.

Data on spending on roads and bridges in state government budgets is available since 1972, hence it is possible to control for state spending on roads in the equation for the construction of new state roads. But, since the data on state roads is only available upto 1987, including roads expenditure reduces the sample size by 40 per cent. The regression results are reported in column (5) of Table 5. Expenditure on roads has a positive coefficient but is not statistically significant. Road construction in the election year is higher than construction in the next year only at the 10 per cent level of significance. The lack of significance could be as much due to the loss of observations as due to the inclusion of the spending variable.

A separate regression of state spending on roads and bridges finds that the estimate of the effect of elections on spending is highly insignificant. Putting together the two

of extra funds to build significantly more roads in an election year did not seem feasible.

pictures of increases in road construction without corresponding increases in spending could suggest that the election year effect is driven by greater efficiency in government management. However, this is rather tentative owing to the lack of observations on road spending, and given that in the previous section strong evidence was found for the positive effect of elections on the overall level of capital spending.

Electoral effect on state roads for big versus small states This section explores whether the electoral effect on roads is different across big and small states, as measured by the geographic area of the states. The underlying assumption is that the internal state roads network has greater importance for bigger states in order to link all centers of commercial significance within its boundaries, with each other and with the national highways. On the other hand, national highways are relatively more important for smaller states because they may suffice to link major nodes of communication within the state.

The five states with the largest area are, in order, Madhya Pradesh, Rajasthan, Maharashtra, Uttar Pradesh, and Andhra Pradesh. An indicator variable is employed for state size equalling 1 for the five largest states and 0 for the remaining nine smaller states. Table 6 reports the results for the differential electoral effect on state roads for the big versus the smaller states. The results show that state roads increase significantly in election years for the big states. The difference between the electoral effect for big and small states is significant at the 10 per cent level.

2.4.5 Correlation with midterm elections

It is striking to note that if a significant correlation of midterm elections with the policy variables exists, then it is exactly opposite in sign to the effect of scheduled elections on economic policies. Midterm elections are associated with significantly higher taxes, lower capital spending, higher current spending and higher revenue deficits. This correlation cannot be interpreted as a causal relation since midterm

elections are potentially endogenous to policy choices. In particular, revenue deficits are significantly higher in the year *before* a midterm election, which is curious since the timing of midterm elections is sudden and unexpected. Therefore, the policy changes around midterm elections cannot be understood as due to strategic manipulation by incumbent governments to influence election outcomes.

The correlation could be driven by some unobserved variable, which could be interpreted as political volatility, that affects both policy variables and the incidence of a midterm election. In this interpretation, greater political instability leads to higher taxes, higher deficits and higher current spending, but lower outlays for asset creation. This is an interesting pattern, perhaps suggesting that politically weak governments are unable to maintain fiscal discipline, thereby leading to higher taxes and deficits, and higher consumption, as opposed to investment, spending. The budgetary procedures for passing a current versus a capital spending bill are no different. Hence, it is not clear why weak governments are able to increase current spending but actually reduce capital spending. There are several hypotheses that could be explored to explain the distinction between current and capital spending, in both midterm and scheduled elections. Any theoretical model to explain the political cycle in the Indian states would have to account for the differential pattern of political effects on capital and current spending. In the next section it is argued that a moral hazard model of career concerns and high political discounting of the future is consistent with the empirical pattern of the composition of government spending.

2.5 Models of Political Budget Cycles

This section considers the theoretical framework that could explain the empirical results described above. First, the shortcomings of existing models of electoral cycles in explaining the Indian cycle are discussed. Second, a model of career concerns with high political uncertainty is presented as an alternative explanation for the empirical evidence. This presentation is incomplete, since this model is still under construction.

The existing models of political budget cycles, with rational voters, are based on information asymmetry between politicians and voters with regard to the level of competence of incumbent governments.[19] The description of one of these models, developed by Rogoff (1990), is undertaken here.

Rogoff considers two types of incumbents, the highly competent and the less competent, that face the following production function for the public provision of goods:

$$g_t + k_{t+1} = \tau_t + \eta_t$$

where g is a public "consumption" good, k is a public "investment" good whose returns accrue with a one-period lag, τ represents lump-sum taxes, and η represents the administrative competency of the government. A highly competent government, with a high value of η, is able to provide a given level of public goods at a lower level of taxes. Competency follows a moving average process, that is, each period's competency depends on the previous period's level and on the realization of a competency "shock" in the current period:

$$\eta_t = \alpha_t + \alpha_{t-1}$$

The "shock" α is an independent draw from a Bernoulli distribution over two outcomes, high ability given by α_h, and low ability given by α_l. The timing of events in the Rogoff model is as follows: In period t the incumbent observes α_t and chooses τ_t, g_t, and k_{t+1}; voters observe τ_t, g_t, k_t, α_{t-1} and then vote. The winner of the period t election takes office for two periods, and the next election occurs in $t+2$.

The information asymmetry is that voters only observe g_t, τ_t, and k_t in period t, but not k_{t+1}nor α_t. Therefore, while voters can deduce the previous period's competency (η_{t-1}) after observing k_t, they are unable to observe the realization of η_t before

[19]Cukierman and Meltzer (1986) present a model of competence where governments differ in their ability to predict outcomes. Rogoff and Sibert (1988) present a model where competent governments use seigniorage to signal their competency in providing public services to voters. This model predicts a pre-electoral increase in inflation. It is not appropriate for the Indian states since state governments do not have seigniorage authority.

taking their vote decision. Rogoff shows that a separating equilibrium exists where the incumbent with competency shock α_h signals her "high type" to the voters by reducing k_{t+1} below the full information level, raising g_t and lowering τ_t relative to the optimal level. The rational voters correctly deduce the level of competency from the extent of distortion of taxes and current government spending in equilibrium, and reelect the competent incumbent.

The electoral cycle is therefore generated by competent incumbents that distort tax and spending policies relative to their optimal levels to signal high levels of competency to rational voters. The empirical predictions of this model are lower taxes, higher consumption spending and lower capital spending in election years. However, since this cycle is driven by only high type incumbents distorting policies, they are not expected to occur in every election, nor should they be of very large dimension. The Indian political budget cycle differs from this in important ways.

First, the effect of elections on the composition of state government spending is the opposite of that predicted by Rogoff (1990). In the Indian states, capital spending increases and consumption spending decreases in an election year. Second, the size and significance of the election effect on taxes, spending and roads is much greater than similar evidence for the developed countries. The differences in the pattern of electoral effects on policy variables can still be reconciled with models of competency shocks and information asymmetry by adjusting the concept of the government budget constraint and the preferences of voters over different types of spending. However, it is not intuitively apparent that competency shocks would be large enough to generate such significant electoral cycles in policy variables. Finally, the interpretation of electoral cycles as costly distortions of policy instruments from their optimal levels does not seem as appealing for a developing country, since the equilibrium of underdevelopment can hardly be characterized as efficient.

This paper argues that the empirical evidence is more consistent with a career concerns model along the lines developed by Holmstrom (1982). If the future is

highly discounted by politicians, then the career concerns model yields a short term electoral cycle in economic policy. The basic model may be outlined as follows. There are three periods, the pre-election period, the election period and the post election period. After observing output in the first two periods, the electorate votes at the end of period 2. In period 3, the output is consumed and the world ends.

Risk neutral voters care about the output or performance variable that is denoted by y_t, and depends on the incumbent politician's ability θ (time invariant) and her effort e_t. The production technology is linear and stochastic, given by:

$$y_t = \theta + e_t + \varepsilon_t$$

where the ε_t are drawn independently from a normal distribution with mean 0 and variance σ_ε^2. Both politicians and voters are uncertain about the value of θ, but have beliefs about its distribution in the population. In particular, at the beginning of period 1, θ is assumed to be distributed normally with mean m_1 and variance σ_1^2. While output is observable, effort and the stochastic term are not.

The politician is also assumed to be risk neutral. The politician gets some fixed rents x in every year of office, irrespective of the level of output, and has a cost of effort function given by $c(.)$. Therefore, the politician's utility function is:

$$U_p = (x - c(e_1)) + \delta(x - c(e_2)) + \delta^2 x * \Pr(reelection)$$

where δ is the discount rate. Effort in the third period is 0 because the game ends in that period. In order to decide on the optimal levels of e_1 and e_2, the politicians need to calculate their effect on the probability of reelection. They know that voters will use the observations on y_1 and y_2 to update their beliefs about the underlying ability θ. It follows from the assumption of normality that expected ability of the incumbent in the post-election period, that is after observing y_1 and y_2, is given by:

$$m_3 = E(\theta|y_1, y_2) = [\sigma_\varepsilon^2(m_1) + \sigma_1^2(y_1 + y_2)]/(\sigma_1^2 + \sigma_\varepsilon^2)$$

Since there is no way of updating beliefs about the opposition, the expected ability of the opposition is given by m_1, that is, the expected value of θ in the first period. Hence, politicians would like to manipulate effort so that $m_3 > m_1$, which is satisfied if $(y_1 + y_2) > \gamma^*(m_1, \sigma_1^2, \sigma_\varepsilon^2)$, where γ^* is a critical value that depends on m_1, σ_1^2 and σ_ε^2.

Politicians decide on the optimal levels of effort by maximizing

$$E(U_p) = E[x - c(e_1) + \delta x - \delta * c(e_2(y_1)) + \delta^2 x * (1 - F(\gamma^*))]$$

where $F(.)$ is the cumulative distribution function of the random variable $(y_1 + y_2)$. If δ is small enough, that is, the future is heavily discounted, then there exists an equilibrium where $e_2^* > e_1^*$, that is, politicians exert greater effort in the election year.

However, voters are also equipped to solve the above optimization problem of politicians and can, in equilibrium, calculate the optimal effort functions e_1^* and e_2^*. Rational voters decide the reelection rule based on their inference about the politician's choice of e_1^* and e_2^*.

Upon observing y_1 and y_2, voters update their beliefs about the expected value of the incumbent's θ, but only after accounting for their belief about the politician's optimal choice of effort, e_t^*. In equilibrium, voters observe:

$$z_t = y_t - e_t^* = \theta + \varepsilon_t$$

and reelect the incumbent if and only if $E(\theta|z_1, z_2) > m_1$, where m_1 is the expected value of the opposition's ability. As before, it follows from the assumption of normality that

$$E(\theta|z_1, z_2) = [\sigma_\varepsilon^2(m_1) + \sigma_1^2(z_1 + z_2)]/(\sigma_1^2 + \sigma_\varepsilon^2)$$

Therefore, voters reelect the incumbent if and only if $(z_1 + z_2) > \gamma^*(m_1, \sigma_1^2, \sigma_\varepsilon^2)$.

Voters are not fooled, in equilibrium, by the politician's manipulations, but the latter is trapped into providing greater effort in the election period because not doing so would bias the process of inference against her.[20]

In a parliamentary system of government, such as that which exists in the Indian states, there is justifiable reason to expect δ to be substantially less than one. The primary architects of state government policy are the chief ministers, who are leaders of the majority party in the state legislature. These leaders face the risk of losing control over the party, and be replaced by other individuals, even in the middle of the party's elected term in office. In fact, in 60 percent of the five-year terms in the Indian sample, the chief minister of a state changed (sometimes more than once) during the majority party's term in office. Manor (1995) describes the extraordinary political pressures on Indian chief minsters to retain control over their party, because of the lack of party discipline and organization, and the presence of constant political intrigue. If the chief minister associates each period with an exogenous probability p of losing power, then the effective discount rate is $\delta = \beta * (1 - p)$, where β is a standard discount parameter that may be close to one, but $(1 - p)$ may be very small if losing political control of the party is highly probable.[21] The interpretation is that chief ministers spend the first periods in office working towards cementing their control over the party, and enact policies to woo voters only when elections are round the corner and reelection is actually meaningful to them.

The particular pattern of policy manipulation, namely, increase in capital spending at the expense of current spending, may be explained within a multiple tasks model of

[20]There is no Nash equilibrium with politicians exerting no effort. If politicians exert no effort then the best reponse of voters is to re-elect if $(y_1 + y_2) > \gamma^*(m_1, \sigma_1^2, \sigma_\varepsilon^2)$. However, then it is in the interest of politicians to deviate and choose e_1^* and e_2^* to maximize $E(U_p)$. The voters' best response now is to re-elect if $(z_1 + z_2) > \gamma^*(m_1, \sigma_1^2, \sigma_\varepsilon^2)$.

[21]Matters would be far more complicated if p were itself a function of policy, or in the terms of the model, of effort e. For the sake of simplicity, we ignore these concerns here. In defence of the exogeneity of p to effort choices for public good provision, it may be stated that p in fact depends on effort applied towards party-building activities, which have no first order effect on public policy.

career concerns where performance can be interpreted in multiple ways. Voters may have more to learn from observing government performance in developing capital assets, while effort in maintaining existing assets may be relatively uninformative about underlying ability. This idea is similar to models developed by Tirole (1994). A related idea would be that spending on the current account is a relatively easy task, while spending on creating capital assets requires better management. This is supported by the contrasting correlations of midterm elections and capital and current spending: weak governments are able to increase current spending but actually reduce capital spending.

2.6 Conclusion

This paper finds evidence for substantial political budget cycles in the Indian states: commodity taxes are lower, capital spending is higher, and road construction by public works departments is higher in election years. Electoral fiscal manipulations have no significant effect on state budget deficits. This evidence cannot fully be explained within the framework of existing models of political budget cycles. However, it may be consistent with a moral hazard model of electoral cycles where incumbents are persuaded by career concerns to exert greater effort in providing public services, without increases in taxes and budget deficits. The tax cuts in essential commodities and increase in spending on the creation of assets are strategies that are directly visible to voters, potentially affecting their evaluation of the incumbents' postelectoral performance. The electoral cycle is generated by high discounting of the future by politicians, in an environment of substantial political uncertainties.

Future research could fruitfully focus on voters' response to these electoral strategies, and to economic conditions in general. In concert with the evidence for electoral changes in government behavior found here, studies of voter behavior may provide further support for the career concerns model to explain electoral cycles in developing countries.

This line of research has important implications since it shows that political factors have significant economic effects in a developing country. The strategy of using the exogeneity of the instrumental election cycle could be employed to study the effect of other political institutions on economic performance. One area of research is the effect of elections and political affiliations on inter-government fiscal relations within a federation, an issue that could add to explanations of the pattern of inequality in regional development. Another potential study is the evaluation of the impact of government decentralization on economic outcomes. With data on public services (such as roads, electricity and irrigation schemes) managed by different levels of government (state PWD, district council, village council), one could test for the differential effects of elections across the various levels of decentralization. This strategy would address the question of whether more decentralized governments exhibit greater electoral accountability, a fundamental issue in assessing the impact of decentralization. It could also be worthwhile to study the effect of elections interacted with "initial conditions" such as caste composition, literacy level etcetera, to gauge the role of social conditions in determining the political responsiveness of government.

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Figure 1.

S=Scheduled Election

M=Midterm Election

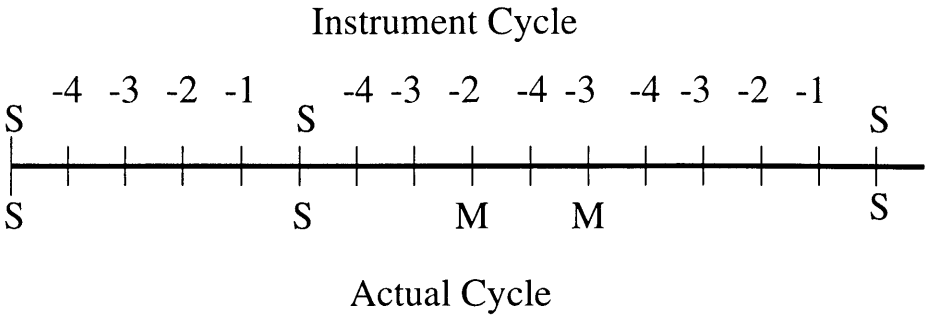


Figure 2:

STATE GOVERNMENT EXPENDITURE

REVENUE ACCOUNT	CAPITAL ACCOUNT
Developmental Spending:	***Developmental Spending:***
(1) Social Services	(1) Social Services
(2) Economic Services	(2) Economic Services
(includes spending on Roads)	(includes spending on Roads)
Non-developmental Spending:	***Discharge of Internal Debt***
(1) Organs of State	
(2) Fiscal Services	***Repayment of Loans to the Centre***
(3) Interest Payments	
(4) Administrative Services	***Loans and Advances by State Governments***
(5) Pensions	

Figure 3:

ROADS: MANAGEMENT AND FUNDING

	NATIONAL HIGHWAYS	STATE ROADS
Management:	State PWDs	State PWDs District and Village Councils
Funding:	Central Budget	State Budget

Table 1

Summary Statistics[a]

Variable	Obs	Mean	Std. Dev.
Scheduled Election	513	0.16	0.36
Midterm Election	513	0.08	0.27
Political Affiliation[b]	513	0.39	0.49
Growth in National Highways	318	19.5	98.4
Growth in State Roads	330	1686.3	3583.8
Commodity Taxes	456	58.1	40.4
Growth in Commodity Taxes	442	2.68	6.35
Property Taxes	456	7.00	3.82
Total Taxes	456	65.07	42.90
Development Spending (current)	456	95.88	57.39
Non-development Spending	456	46.28	20.83
Total Current Spending	456	144.54	76.05
Capital Spending	469	23.43	11.72
DEVCAP/TOTDEV	469	0.22	0.09
State Domestic Product	464	1101.6	576.7
Share of Agriculture in SDP	464	0.43	0.11
Total Population	513	41626	25195
Proportion of Rural Population	483	0.79	0.08
Average Monthly Rainfall	428	263.82	128.83
Inflation rate	469	8.17	10.31

a. Taxes, spending and SDP variables are in percapita 1973 rupees

b. Indicator variable equals 1 if incumbent is affiliated with central government

Table 2a

Effect of Elections on Commodity Taxes[a]

(t-statistics in parenthesis)

	(1)	(2)	(3)	(4)
Independent Variables[b]:				
Scheduled election year	-1.43	-1.34		
	(-1.52)	(-1.68)		
Midterm Election Year			1.78	1.57
			(1.77)	(1.80)
State domestic product (SDP)		0.03		0.03
		(9.75)		(9.82)
Share of agriculture in SDP		-9.48		-9.52
		(-2.04)		(-2.01)
Proportion of rural population		5.51		-18.66
		(0.03)		(-0.09)
Average monthly rainfall		-0.01		-0.01
(in millimeters)		(-1.68)		(-1.43)
Number of Observations	442	406	442	406
R-sq	0.4258	0.5662	0.4269	0.5667

a. All taxes and SDP are in 1973 rupees per capita.

Regressions include year and state effects.

b. All variables, including taxes, are first differenced.

Table 2b

Effect of Elections on Commodity Taxes[a]

(t-statistics in parenthesis)

	(1)	(2)	(3)
Independent Variables[b]:			
Election year			-1.55
			(-1.92)
1 yr before Elections	1.00	0.48	-1.16
	(0.82)	(0.46)	(-1.47)
2 yrs before Elections	0.78	1.13	
	(0.71)	(1.19)	
3 yrs before Elections	1.72	1.85	
	(1.54)	(1.90)	
4 yrs before Elections	2.27	1.73	
	(2.03)	(1.80)	
State domestic product (SDP)		0.03	0.03
		(9.73)	(9.82)
Share of agriculture in SDP		-9.89	-9.54
		(-2.11)	(-2.05)
Proportion of rural population		2.94	4.57
		(0.01)	(0.02)
Average monthly rainfall		-0.01	-0.01
(in millimeters)		(-1.87)	(-1.80)
Number of Observations	442	406	406
R-sq	0.4300	0.5697	0.5688

a. All taxes and SDP are in 1973 rupees per capita.

Regressions include year and state effects.

b. All variables, including taxes, are first differenced.

Table 3a

Effect of Elections on Capital Outlays[a]

(t-statistics in parenthesis)

	(1)	(2)	(3)	(4)
Independent Variables:				
Scheduled election year	2.45	2.77		
	(1.75)	(2.08)		
Midterm election year			-2.45	-1.98
			(-1.72)	(-1.36)
State domestic product (SDP)		0.001		0.001
		(0.22)		(0.17)
Share of agriculture in SDP		-3.64		-4.32
		(-0.41)		(-0.49)
Proportion of rural population		-108.25		-107.08
		(-2.15)		(-2.12)
Average monthly rainfall		0.02		0.02
(in millimeters)		(2.66)		(2.39)
Number of Observations	469	421	469	421
R-sq	0.4821	0.5223	0.4820	0.5192

a. Capital outlays and SDP are in 1973 rupees per capita.

Regressions include state and year effects.

Table 3b
Effect of Elections on Capital Outlays[a]
(t-statistics in parenthesis)

	(1)	(2)
Independent Variables:		
1 yr before Elections	-0.71	-1.19
	(-0.41)	(-0.72)
2 yrs before Elections	-1.33	-1.43
	(-0.83)	(-0.91)
3 yrs before Elections	-2.43	-3.60
	(-1.49)	(-2.24)
4 yrs before Elections	-3.58	-3.25
	(-2.18))	(-2.06)
State domestic product (SDP)		0.001
		(0.26)
Share of agriculture in SDP		-2.33
		(-0.26)
Proportion of rural population		-110.95
		(-2.20)
Average monthly rainfall		0.02
(in millimeters)		(2.76)
Number of Observations	469	421
R-sq	0.4864	0.5265

a. Capital outlays and SDP are in 1973 rupees per capita.
Regressions include state and year effects.

Table 3c

Effect of Elections on Current Spending[a]

(t-statistics in parenthesis)

	(1)	(2)	(3)	(4)
Independent Variables:				
Scheduled election year	-3.72	-3.00		
	(-1.00)	(-1.22)		
Midterm Election Year			12.66	5.91
			(2.92)	(2.21)
State domestic product (SDP)		0.07		0.07
		(13.86)		(13.97)
Share of agriculture in SDP		-51.37		-49.76
		(-3.15)		(-3.07)
Proportion of rural population		-603.80		-604.52
		(-6.49)		(-6.53)
Average monthly rainfall		-0.01		-0.001
(in millimeters)		(-0.35)		(-0.07)
Number of Observations	456	422	456	422
R-sq	0.9155	0.9625	0.9170	0.9628

a. Capital outlays and SDP are in 1973 rupees per capita.

Regressions include state and year effects.

Figure 4a

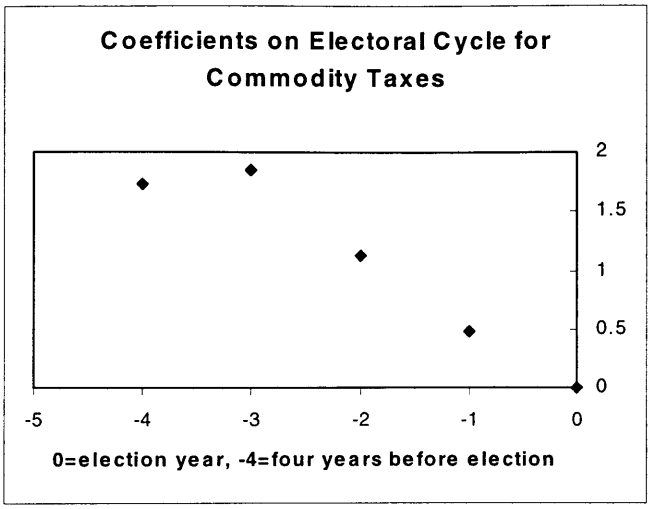
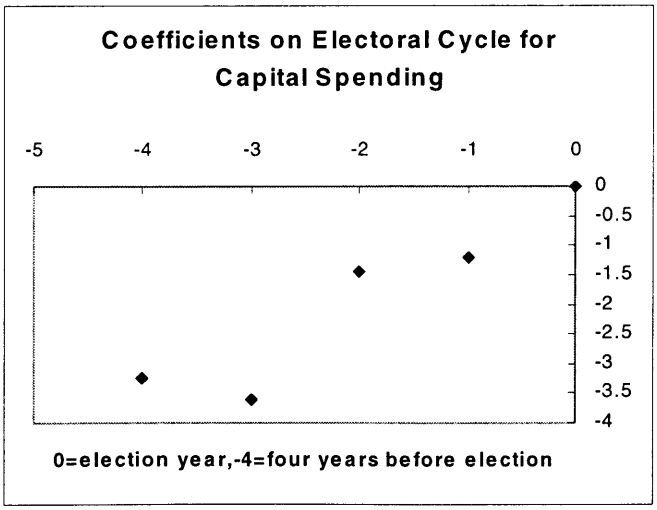


Figure 4b



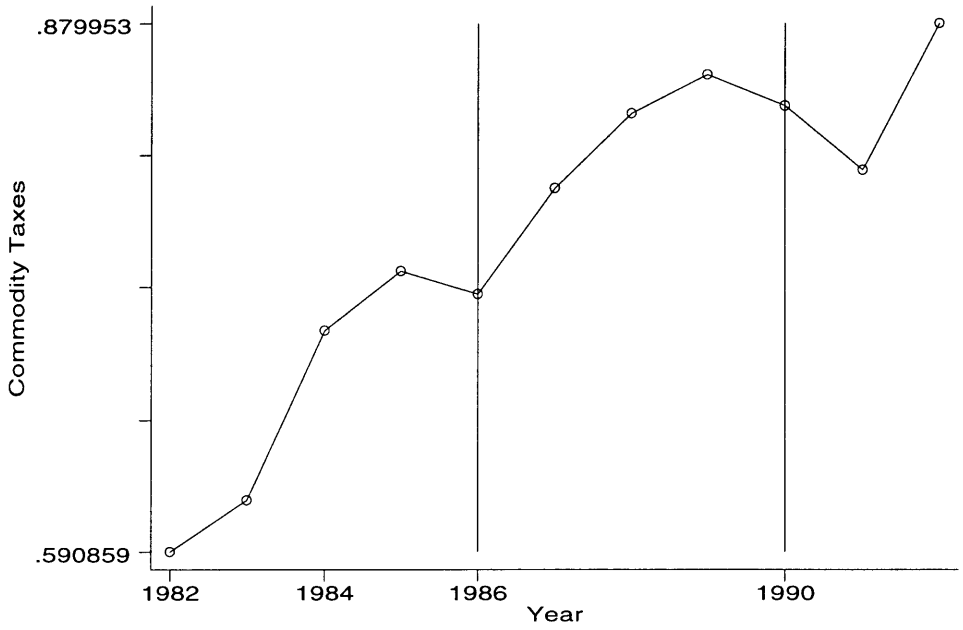

.879953
.590859
Commodity Taxes
1982
1984
1986
1990
Year

Figure 5

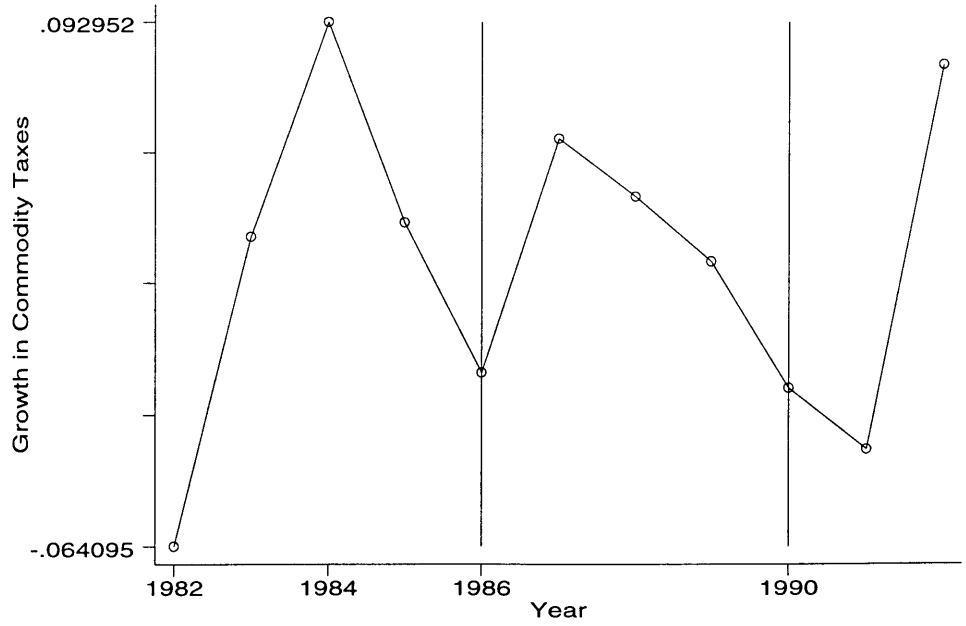

.092952
-.064095
Growth in Commodity Taxes
1982
1984
1986
1990
Year

Table 4a
Effect of Elections on Revenue Deficit[a]
(t-statistics in parenthesis)

	(1)	(2)	(3)	(4)
Independent Variables:				
Scheduled election year	-1.09	-1.50		
	(-0.44)	(-0.72)		
Midterm election year[b]			2.80	5.39
			(1.10)	(2.43)
State domestic product (SDP)		0.01		0.01
		(2.74)		(2.66)
Share of agriculture in SDP		-16.24		-14.71
		(-1.18)		(-1.07)
Proportion of rural population		38.71		42.02
		(0.49)		(0.54)
Average monthly rainfall		-0.0001		0.0002
(in millimeters)		(-0.02)		(0.03)
Number of Observations	470	422	470	422
R-sq	0.4206	0.4819	0.4231	0.4898

a. Revenue deficit and SDP are in 1973 rupees per capita.
Regressions include state and year effects.

b. Indicator variable for the year before a midterm election.

Table 4b Effect of Elections on State Debt[a] (t-statistics in parenthesis)		
	(1)	(2)
Independent Variables:		
Scheduled election year	1.98	1.72
	(0.72)	(0.64)
State domestic product (SDP)		0.001
		(0.14)
Share of agriculture in SDP		-25.64
		(-1.42)
Proportion of rural population		83.81
		(0.81)
Average monthly rainfall		-0.01
(in millimeters)		(-0.95)
Number of Observations	456	408
R-sq	0.3223	0.3258

a. The dependent variable is the growth in state debt. State debt and SDP are in 1973 rupees per capita. Regressions include state and year effects.

Table 5

Effect of Elections on Road Construction[a]

(t-statistics in parenthesis)

	National Highways		State Roads		
Independent Variables[b]:	(1)	(2)	(3)	(4)	(5)
Election year	47.06	61.48			
	(2.22)	(2.21)			
1 yr before Elections			-297.34	-196.41	-314.17
			(-0.33)	(-0.19)	(-0.22)
2 yrs before Elections			-1275.21	-1400.39	-1249.08
			(-1.60)	(-1.52)	(-0.98)
3 yrs before Elections			-239.36	-150.69	-236.95
			(-0.30)	(-0.16)	(-0.19)
4 yrs before Elections			-1887.82	-1983.58	-2220.26
			(-2.34)	(-2.12)	(-1.70)
Spending on Roads					0.19
					(0.72)
State domestic product (SDP)		0.02		0.71	
		(0.30)		(0.32)	
Share of agriculture in SDP		-170.34		-5613.92	
		(-1.05)		(-1.27)	
Proportion of rural population		115.67		-36047.95	
		(0.10)		(-1.02)	
Average monthly rainfall		-0.01		0.40	
(in millimeters)		(-0.06)		(0.09)	
Number of Observations	318	243	330	308	172
R-sq	0.1611	0.1850	0.2088	0.2328	0.2195

a. State domestic product is in 1973 rupees per capita.

Roads lengths are in kilometers. All regressions include year and state effects.

Figure 6a

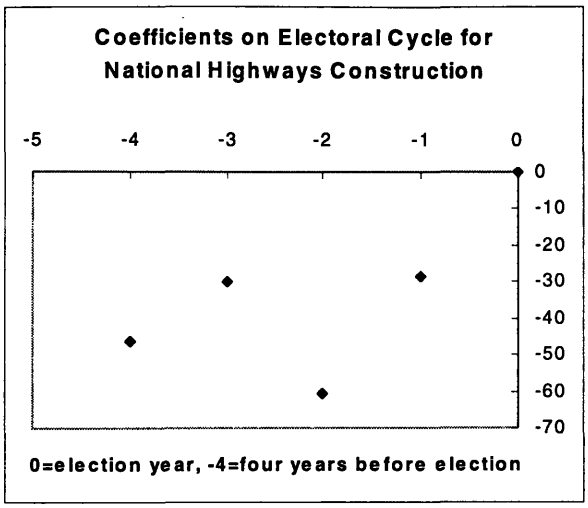


Figure 6b

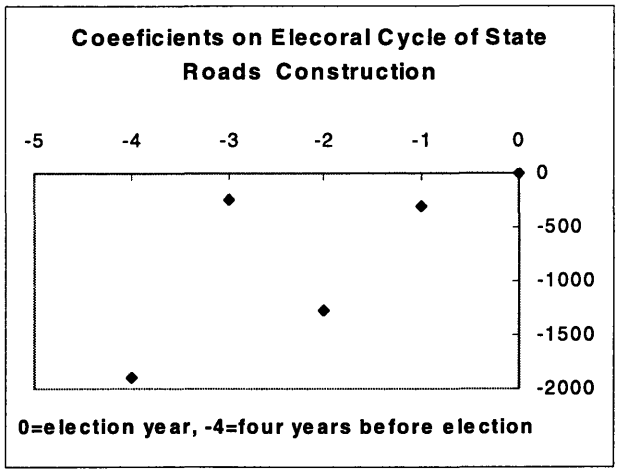


Table 5a Effect of Political Affiliation on National Highways[a]	
1 yr before Elections* Affiliated	-40.36
	(-1.30)
2 yrs before Elections*Affiliated	-79.92
	(-2.60)
3 yrs before Elections*Affiliated	-33.95
	(-1.15)
4 yrs before Elections*Affiliated	-47.88
	(-1.41)
1 yr before Elections* Non-affil.	-5.26
	(-0.15)
2 yrs before Elections* Non-affil.	-29.93
	(-0.81)
3 yrs before Elections* Non-affil.	-14.58
	(-0.40)
4 yrs before Elections* Non-affil.	-33.63
	(-1.00)
Political Affiliation[b]	-28.90
	(-0.90)
Number of Observations	318
R-sq	0.1715

a. Regression includes state and year effects.

b. Indicator equals 1 if the incumbent is affiliated with the centre.

Table 6
State Roads in Big and Small States[a]
(t-statistics in parenthesis)

	(1)	(2)
Independent Variables:		
Election Year*Big	1637.02	1825.07
	(1.86)	(1.93)
Election Year*Small	30.00	233.79
	(0.04)	(0.26)
State domestic product (SDP)		1.01
		(0.46)
Share of agriculture in SDP		-5567.94
		(-1.26)
Proportion of rural population		-34203.37
		(-0.97)
Average monthly rainfall		0.36
(in millimeters)		(0.08)
Number of Observations	330	308
R-sq	0.2002	0.2254

a. Big=1 for the 5 largest states, and Small=1 for the 9 smaller states. Regressions include state and year effects.

Table 7

Effect of Elections on Commodity Taxes[a]

(t-statistics in parenthesis)

	(1)	(2)	(3)	(4)
Independent Variables[b]:				
Scheduled election year	-3.42	-2.28		
	(-1.16)	(-1.29)		
Midterm Election Year			4.97	3.79
			(1.57)	(1.97)
State domestic product (SDP)		0.06		0.06
		(15.96)		(16.05)
Share of agriculture in SDP		-36.63		-35.57
		(-3.13)		(-3.05)
Proportion of rural population		-861.65		-862.31
		(-12.90)		(-12.95)
Average monthly rainfall		0.003		0.01
(in millimeters)		(0.37)		(0.63)
Number of Observations	456	422	456	422
R-sq	0.7731	0.9104	0.7737	0.9110

a. All taxes and SDP are in 1973 rupees per capita.

Regressions include year and state effects.

b. All variables are in levels.

3 Partisan Politics and Intergovernmental Transfers in India

3.1 Introduction

The principles of fiscal federalism are based on the Tiebout hypothesis (Tiebout, 1956), whereby interjurisdictional competition leads to an efficient provision of public goods and services. However, redistribution concerns, market failures (externalities, imperfect competition) and economies of scale in administration pose important limitations to fiscal decentralization. Administrative convenience often leads central governments to play a greater role in revenue collection, even if only on behalf of local governments, and then distribute the proceeds amongst the federated units in a constitutionally prescribed manner. In developing countries, such transfers from the central government tend to be the predominant source of revenue for most subnational governments (Shah, 1994). However, there is a potential concern that the distribution of resources from the center to the states does not adhere to constitutional principles, but is instead motivated by political concerns.

In India, there is substantial decentralization of the provision of public services, and therefore state governments receive and administer the greater share of total revenues. However, a large proportion of state revenues consists of intergovernmental transfers of revenues not directly collected by the individual state governments. The purpose of this paper is to examine whether these intergovernmental transfers in the Indian federation are influenced by the partisan politics of a multi-party democracy.

India has a parliamentary form of government, where members of the national lower house (the Lok Sabha) are elected from local electoral districts. The political party with a majority number of seats in the Lok Sabha forms the cabinet of ministers and appoints the Prime Minister to lead the executive branch of the government.

The federated states have their own legislative assemblies (the Vidhan Sabhas) whose members are directly elected by the people. Analogous to the national executive, the state executive consists of a cabinet of ministers headed by a Chief Minister and appointed by the majority party in the Vidhan Sabha. The political parties are at the center of Indian democracy– opinion polls in India have repeatedly shown that voters are influenced more by their image of the party rather than the candidate (Butler, Lahiri and Roy, 1995). Therefore, party politics could influence intergovernmental transfers as the party in control at the center seeks to increase its regional electoral support.

In addition, partisan influences may allow the central government to strengthen its control over state government decision-making. As it stands, the Indian Constitution concentrates political and economic power at the center, giving the central government wide powers of intervention in local governments (Brecher, 1966; Frankel, 1978). But it was especially in the 1970s and 1980s that the country experienced increasing centralization under Prime Minister Indira Gandhi (Kochanek, 1976; Brass, 1990). She created a process of centralized decision-making whereby even state and local government spending programs were regulated by the central control of resources. Party affiliation may serve to strengthen such centralized control.

In recognition of these political forces, the Indian constitution provides for the appointment of an independent semi-judicial body, the Finance Commission, to lay down the rules governing the bulk of intergovernmental transfers. The Planning Commission, another independent body constituted as the architect of planned economic development of the country, is also responsible for the devolution of grants and loans to the states to implement State Plan programs. However, a part of total transfers consists of discretionary grants and loans primarily to finance specific sectoral projects referred to as Centrally Sponsored Schemes.[1] Intergovernmental transfers constitute

[1]This study is only concerned with the distribution of resources amongst sub-national units, that is, the so-called "secondary distribution" (Kraemer, 1997, pp 8). It does not discuss the "primary distribution" of central government revenues, that is, what percentage of revenues should be shared

a significant portion of state finances, increasing from 38.6 per cent of state revenues in 1975-76 to 43.8 per cent in 1992-93. As a proportion of central revenues, the transfers increased from 31.8 per cent to 35.6 per cent over the same period. They constituted 5.5 per cent of India's GDP in 1992-93 (Rao and Sen, 1996). This paper examines empirically whether the intergovernmental transfers to 14 major states over the period 1960-1994 have indeed been insulated from party politics.

There is no formal analysis in the existing literature of the potential political effects on intergovernmental transfers in India. Most of the studies on Indian fiscal federalism are descriptive in nature, providing detailed accounts of the legal and administrative framework, with some analysis of the trends in levels and shares of different categories of transfers.[2] There are some studies of the political economy of intergovernmental transfers in Latin America. Kraemer (1997) finds that in Argentina, Mexico and Brazil political institutions are important determinants of transfers. Even though the Argentinian and Brazilian constitutions lay down well defined rules of devolution of resources, the evidence is that transfers are greater to those provinces that have greater representation in the respective Senates of the two countries. In Mexico party politics played a stronger role than the power of individual senators; greater transfers were made to states that showed greater support for the PRI, the party in command at the center. There is also an electoral cycle in transfers: transfers are greater in gubernatorial election years in those states where the incumbent PRI candidate faces a powerful opposition party.

There are three types of transfers from the center to the states in India: grants, loans, and share in taxes collected by the center. The allocation of certain tax revenues, collected by the center but shared with the states, is decided entirely by the Finance Commissions according to specified formulas based on economic and demographic indicators. However, grants include substantial discretionary components. Therefore, we expect the effect of party politics, if any, to be most evident in the

with the states or provinces.

[2]See Rao and Chelliah (1991) for a detailed survey of the literature on Indian fiscal federalism.

case of intergovernmental grants. Loans from the center are partially determined by the Planning Commission, but are also demand-driven since the center is the most important source for borrowing funds for the state governments.

The results of the empirical analysis undertaken here show that there is no effect of party affiliation on the devolution of tax revenues to the states. However, when states have governments belonging to the same party in control at the center, they receive significantly greater grants. This partisan effect on grants is robust to alternative definitions of political affiliation. The amount of grants per capita to an affiliated state is about 10 per cent higher than the average amount of grants per capita. With regard to loans from the center, there is evidence that loans are greater to *non*-affiliated governments in state election years. It is argued that this effect seems to be demand-driven, that is, non-affiliated governments borrow more from the center in state election years.

There is no evidence of an electoral cycle in intergovernmental grants, that is, the timing of state elections does not have a significant effect on grants from the center. This is surprising since there is strong evidence for electoral cycles in state fiscal variables (Khemani, 1999)[3] and a strategy of increasing transfers to an affiliated incumbent could assist the latter to implement greater election-year tax cuts and spending increases. The lack of an electoral cycle in grants may be explained by the limited ability of all state governments to treat central grants as lump-sum transfers that shift out their budget set. Discretionary grants from the center to the states consist of financing specific sectoral projects, and of providing relief for natural disasters, and their spending is heavily circumscribed by the programs for which they are intended (Grewal, 1975). Rao and Chelliah (1991) describe that specific purpose transfers made for the Centrally Sponsored Schemes are accompanied by various con-

[3]Khemani (1999) finds that state commodity taxes are lower and spending on developing capital assets is higher in election years. However, there is no significant effect on state deficits primarily because current account spending tends to fall in election years.

ditionalities and regulations imposed by the central government that severely limit the control of state governments.

The evidence on intergenerational transfers found in this study is consistent with partisan manipulation within a highly centralized political system that has characterized India for much of the period of study in this paper. The central government increases discretionary grants to its affiliated states, relative to non-affiliated states, for two potential reasons: one, to elicit greater electoral support for its political party; and two, to be better able to control grant spending through greater control of state leaders belonging to the same party. If the latter concern of greater centralized decision-making primarily drives partisan transfers, then there is no reason to expect an electoral cycle. If the former motive of influencing voters is operative, an electoral cycle in transfers that are specifically targeted to center-controlled projects only makes sense in the presence of voter myopia. Khemani (1999), on the other hand, argues that the electoral cycle in state government activity is driven by high political discounting of the future by state leaders, and not by myopic behavior on the part of the state electorate.

The rest of the paper is organized as follows. The next section provides important details about intergovernmental transfers in India. Section III outlines the empirical framework to test the effect of party affiliation on budgetary transfers, and describes the data and variables used in this analysis. Section IV presents the empirical evidence for the effect of party politics on intergovernmental transfers. Section V concludes and discusses directions for future research.

3.2 Fiscal Federalism in India

There are three channels of direct budgetary transfers from the center to the states: tax devolution and statutory grants determined by the Finance Commission; grants and loans determined by the Planning Commission; and discretionary transfers by various central ministries directed towards specific sectors. Each of these is discussed

below.

a) *Awards of the Finance Commission:*

Tax devolution: Individual income tax and union excise duties are levied and collected by the central government, but the proceeds are shared with the state governments in a manner prescribed by the Finance Commission. The primary criteria determining the tax distribution are state population, state income, and tax contribution, and the relative weights given to them have changed over the years. While tax contribution is the basis for devolution of 10-20 per cent of the income tax proceeds, the distribution of union excise duties is motivated largely by equity considerations. More than 60 per cent of the states' share of excise duties are devolved on the basis of "backwardness" indicators such as poverty, percentage of minority population etcetera.

Statutory grants: These grants are made to offset revenue deficits of states, and are therefore determined on the basis of projected gaps between current account expenditures and post-tax-devolution revenues. They traditionally constitute only a small portion of total grants to the states: over the period 1969 to 1992, statutory grants accounted for between 22 and 12 per cent of total grants (Rao and Sen, 1996).

b) *Awards of the Planning Commission:* Under a system of public sector planning for economic development, the Planning Commission formulates Five Year Plans for state and central investment and spending. Funds are devolved to the state governments to finance State and Central Plan Schemes. Since 1969, plan assistance has been distributed on the basis of a formula decided by the National Development Council and based primarily on population, state fiscal management, the inverse of state income and its distance from the highest income state. For the 14 major states studied here, the grants to loans composition of plan assistance was prescribed to be around the ratio 30:70, although the grants component has been increasing over the years.

c) *Discretionary grants and loans:* These consist of specific purpose transfers

made by various central ministries for sectoral development, assistance for meeting relief expenditure, and various loans including overdrafts and ways and means advances. During 1974-84, a period for which detailed breakdown of the data is available, transfers to Centrally Sponsored Schemes accounted for 35 per cent of the total discretionary transfers (George, 1987). As mentioned earlier, these transfers have been criticized because they provide the center with the means to intervene in state government decision-making (Rao and Chelliah, 1991). There is no established rule governing the grants:loans composition of discretionary transfers, although they tend to be more oriented towards grants than the transfers of the Planning Commission (George, 1987, pp 248).

Over the period 1951-1984, the share of transfers from the Finance Commission amounted to 39 per cent, Plan transfers accounted for 30 per cent, and discretionary transfers for 31 per cent of total transfers (George, 1987). Therefore, it appears that discretionary transfers account for a substantial portion of total transfers, thereby creating significant potential for political manipulation.

The above description allows the following conclusions to be drawn about the three broad categories of intergovernmental transfers.

Share in central taxes: This is determined entirely according to a formula based on state economic and demographic conditions, and therefore appears to have no room for political discretion. The bases for devolution embody the trade-off between equity and efficiency, that is, between redistributing to poorer states or devolving according to tax contribution.

Grants: The discretionary portion of grants should be substantial, given that statutory grants form a small component of grants; Plan and discretionary transfers are equally important overall; and discretionary transfers tend to have higher grant components than Plan transfers. As an indicator, during the Sixth Plan (1979-84) discretionary grants constituted 46.4 per cent of the total grants given by the center to the states (George, 1987).

Loans: Loans are divided about equally between Plan and discretionary transfers, because the Finance Commission does not make any transfers in this category.[4] Again, during the Sixth Plan, non-Plan loans formed 50 per cent of the total loans.

Therefore, we would expect any evidence of political manipulation of transfers to be most pronounced in the case of grants and loans, as opposed to the share in central taxes which is largely circumscribed by regulations.

3.3 The Empirical Model

The strategy employed in this paper to test for partisan effects in fiscal policy is to test whether transfers are greater to states when the governing party in the state is affiliated with the party controlling the center. In addition, we test whether there is an electoral cycle in transfers, that is, whether affiliated incumbents receive greater transfers in an election year, as opposed to non-affiliated incumbents. The basic empirical model is the following:

$$Y_{it} = AFF_{it}\gamma + (E_{it} * AFF_{it})\beta + (E_{it} * (1 - AFF_{it}))\theta + X_{it}\lambda + \alpha_i + \delta_t + \varepsilon_{it} \qquad (1)$$

where Y_{it} is a transfer from the center to state i in year t ; AFF_{it} is an indicator of political affiliation that equals 1 when the governing party in state i at time t is affiliated with the party in power at the center at time t, and 0 otherwise; E_{it} is an election year indicator variable that equals 1 if t is an election year in state i. Therefore, $E_{it} * AFF_{it}$ equals 1 when the incumbent facing state elections is affiliated with the center, and $E_{it}^{\tau} * (1 - AFF_{it})$ equals 1 when the incumbent is *not* affiliated with the central party. Time variant economic and demographic characteristics of states are included in the vector X_{it}, while α_i controls for state-level fixed effects. The effect of political affiliation and state elections is estimated after controlling for

[4]The Finance Commissions are, however, called upon periodically to make recommendations concerning any matter of financial relations between the center and the states.

various shocks to the state economy in a given year, that is, after controlling for year effects, δ_t.

The tests for partisan politics in intergovernmental transfers would involve testing the coefficients γ, β, and θ. The expectation is that the central government would try to strengthen the political power of its party by increasing transfers to its affiliated states, and even more so in election years. That is, we would expect $\gamma > 0$, $\beta > 0$, and either $\theta < 0$ (the stronger condition) or θ insignificant.

There are two potential problems with the above interpretations of the specification in (1): firstly, political affiliation and transfers may be endogenously determined. Political parties that build a reputation for "doing more" for the people may get elected both at the national and state levels, and their active interventionist policies (greater government spending, for example) may necessitate greater transfers;[5] secondly (and relatedly), the coefficients γ, β, and θ could be picking up the "demand" for funds by state governments, rather than the "supply" of funds by the central government, and the latter interpretation is necessary for a story of deliberate partisan manipulation by the center.

With regard to the first issue, a companion study (Khemani, 1999) finds no difference between the total government spending undertaken by affiliated and non-affiliated state governments. In addition, by controlling for state fixed effects, we are controlling for individual states' "pro-center" or "anti-center" attitudes that would lead voters to have preferences defined over both the level of intergovernmental transfers and party affiliation with the center. These voter attitudes should be relatively constant across the years in individual states and can therefore be accounted for through state fixed effects.

The second issue of disengaging demand-supply stories is less of a problem in the case of grants and share in taxes since these are not designed to be responsive to

[5] Particularly since some transfers (Finance Commission's statutory grants and some portion of Plan assistance) are specifically linked to projected state revenue deficits. (See Section II)

individual state needs at any given time. However, the loans component of transfers can vary because of individual state demand for borrowing funds from the central government, particularly since states' ability to borrow from the market is severely constrained. In addition, state demand for funds may be particularly important during election times, and therefore the election-affiliation interaction is more likely to capture demand effects for central loans. Khemani (1999, footnote 16) finds that there is a difference between affiliated and non-affiliated incumbents in the electoral cycle in state commodity taxes: in non-affiliated states taxes are significantly lower just before elections. Thus, different electoral strategies followed by affiliated and non-affiliated states may create different demands for loans from the central government in election years.

There is a third issue with the specification in (1) relating to the exogeneity of the electoral cycle since 34 per cent of state elections in the sample period 1960-1994 have been midterm elections, that is, an unscheduled early election occurring in the middle of a constitutionally established term. In order to circumvent the problem of potentially endogenous midterm elections we use an instrument for the election year indicator, E_{it}, which equals 1 only when the state election occurs in a scheduled election year. This instrumental variable procedure is described in detail by Khemani (1999).

The data set for this study is compiled from diverse sources for 14 major states of India over the period 1960-1994.[6] These states account for 95 per cent of the total

[6]The States Reorganization Act of 1956 divided the Indian federation into 14 states and 5 union territories that were administered by the Central government. In 1960, the state of Bombay was divided into Gujarat and Maharashtra. In 1966, the PEPSU (Patiala and E. Punjab States Union) was divided into its two main constituents, Haryana and Punjab. This study includes 13 states that were already established in 1960, namely Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The fourteenth state in 1960, Jammu and Kashmir, has been excluded because of the political uncertainties in the region that continue to this day. The state of Punjab is included after 1966, when it attained separate statehood. Haryana is not included because data for this state is

population. The political data on elections and party affiliation is taken from the publication Butler, Lahiri and Roy(1995). The public finance data on intergovernmental transfers, state taxes and expenditure is available from the 1960-1994 volumes of the *Reserve Bank of India Bulletin*, a quarterly publication of the central bank of India with annual issues on the finances of state governments. State demographic and economic characteristics, and a state-level price index to convert all variables into real terms, are available from an Indian data set put together at the Poverty and Human Resources Division, Policy Research Department of the World Bank. A detailed description of these variables is available in Ozler et al. (1996).

The political affiliation indicator variable needs to account for varying levels of affiliation between the central and state governments over the period 1960-1994. National politics in India has been dominated by one party, the Congress party, although state politics have been significantly more competitive with the emergence of several powerful regional parties. Over the sample period the center was controlled by a clear majority of the Congress party on all but three occasions: from 1977-1980, a coalition of opposition parties headed by the Janata Party wrested central control from the Congress; from 1989-1990, another coalition headed by the Janata Dal controlled the center; and finally, from 1990-1994 the Congress party was once again in power, but this time supported by a coalition of opposition parties rather than enjoying a clear majority. The most restrictive affiliation indicator, the Congress affiliation indicator, equals 1 only if the party governing at the center and in a state is the Congress party. The second affiliation indicator, the leading party indicator, also equals 1 if the Janata Party controlled a state government during 1977-1980 and if the Janata Dal formed a state government during 1989-1990, the periods during which each party respec-

not available across many explanatory variables.

Currently, India has 25 states because several union territories have attained statehood over the years, the most recent converts occurring as recently as 1991. Therefore, to maintain consistency in our analysis over a reasonable time period, we only include those states that existed since 1960 and 1966.

tively headed a coalition government at the center. The third affiliation indicator, the coalition affiliation indicator, also equals 1 if a state government's party supports a coalition government at the center. These three indicators of political affiliation are summarized in Table 1. If the Congress party is the only one capable of partisan manipulation of intergovernmental transfers, owing to its dominance at the center, then the other two indicators may be less significant than the Congress indicator. The coalition affiliation indicator may be the least significant because of the tenuous links between two different parties in a potentially unstable coalition.

The *Reserve Bank of India Bulletin* provides data on intergovernmental transfers under the categories of state share in central taxes, grants, and loans from the central government. The share in central taxes consists of share in income tax, estate tax and union excise duties. Grants from the center are divided into grants from 1) Plan schemes, 2) Centrally Sponsored Schemes, 3) statutory grants from the Finance Commission, and 4) relief grants on account of natural calamities. Loans from the central government are divided into: 1) Plan schemes, 2) Centrally Sponsored Schemes, 3) ways and means advances, and 4) other miscellaneous loans. At this point, data is only available for aggregate tax devolution, grants and loans, and not for their individual break-downs. This is unfortunate since it does not allow the separate analysis of statutory, Plan, and discretionary transfers, each of which is governed by different rules. The lack of a detailed break-down is particularly problematic for grants and loans since each of these is made up of transfers from all three channels, the Finance Commission, the Planning Commission, and discretionary transfers from the central government.

Table 2 highlights the importance of transfers in the economy of the states in this sample. The average share of state spending in the state domestic product is 20 per cent, thus indicating the prominent role of state governments in providing public services. The share of states' own income in the SDP is 11 per cent on average, while intergovernmental transfers are 9 per cent of the state economy. Therefore, almost

half of state spending is financed out of transfers from the central government. The prominence of individual categories of transfers is also evident in the state budgets. Share in central taxes accounts for 34 per cent of total tax revenues; grants from the center account for 48 per cent of the total non-tax revenues; and loans from the center account for 74 per cent of total state debt. This last figure showing the overwhelming dependence of state governments on loans from the center is not surprising, given the limitations on state market borrowings.

Table 3 presents means and standard deviations of all the variables used in this analysis. Because of the diversity of sources, the time period covered varies across variables, so the number of observations is different for different variables. The empirical analysis tests the robustness of the evidence in the face of changing samples when variables are excluded or included in the analysis.

3.4 The Results

3.4.1 Partisan politics and the *amount* of transfers

The results of estimating the empirical specification described in equation (1) are reported in Tables 4a, 4b, and 4c, corresponding to the equations for share in central taxes, grants, and loans, respectively. In column (1) of each table, the Congress affiliation indicator is used; in column (2) the leading party affiliation indicator is used; and in column (3) the coalition affiliation indicator is used.

Table 4a shows no evident pattern that the transfer of central taxes is motivated by partisan politics. The coefficients on all three types of affiliation indicators and their election-year interactions are insignificant. There is also no statistically significant difference between the election year effect of affiliated and non-affiliated incumbents.

Columns (1) and (2) of Table 4b show a significant effect of political affiliation on central grants to state governments. Grants are higher by more than Rs 2 per capita when a state is governed by a party belonging to the same party as that at the center. The coefficient estimates indicate that central grants to same-party states are higher

by 10 per cent of the average grants per capita to the states. Column (3) also shows a positive effect of political affiliation on grants, but the coefficient is only significant at the 10 per cent level because the indicator variable also includes coalition supporters in addition to same-party governments. Thus it appears that coalition supporters are not rewarded with greater grants from the leading party at the center.

The coefficients on the election-affiliation indicators are insignificant, thereby indicating that there is no significant electoral cycle in central grants. However, the point estimates indicate that grants tend to fall to affiliated incumbents in state election years. This could be because state leaders are more accountable to the state electorate rather than to the party bosses in election years, and they reduce the importance of Centrally Sponsored Schemes relative to other state spending programs in election years.[7]

The results for per capita central loans is presented in Table 4c. In election years, loans to non-affiliated incumbents increases by an amount between Rs 6 and Rs 8 per capita, which is about 20 per cent of the average loans per capita to the states. As indicated in Section III there is a problem of disengaging demand and supply interpretations in the case of central loans. Therefore, this election year effect may be driven by greater demand for central loans on the part of non-affiliated governments.

Perhaps the central government rewards those states whose electorate provided greater support for the central party in the preceding national elections, irrespective of the political leanings of the state government. In order to test this hypothesis, a variable recording the percentage of valid votes cast in favor of the central party in each state was included in the regressions, both in levels and interacted with political affiliation and state elections. There is no effect of state electorate support for the central party on any category of intergovernmental transfers.

Scholars of fiscal federalism in India have been concerned about the equity effects

[7]See Khemani (1999) for a model with high political discounting that would generate greater accountability of state leaders to voters in election years.

of intergovernmental transfers, in the face of enormous regional differences in economic development in the country (Bagchi, 1988; George, 1987; Grewal, 1975). The empirical analysis undertaken here sheds some light on this issue.

The share in central taxes is determined on the bases of both the contribution factor and the extent of "backwardness". Consequently, in Table 4a, the effect of state income on the devolution of taxes is quadratic: the share in taxes first increases with income, but after a certain level of income (about Rs 1200 per capita, an amount 20 per cent higher than the average per capita state income) the relation becomes negative, that is when a state is poorer it gets higher shares. Moreover, the higher is the share of the agricultural sector in the state income, the lower is the state's share in central taxes. This may be because states with a smaller industrial sector contribute less in taxes. On the other hand, when the proportion of rural population is higher, states receive significantly higher shares. This reflects the redistributive motivation of transfers, towards less modernized and urbanized states.

Central grants to the states appear to be more equitable as may be seen from Table 4b, being significantly higher when states are poorer. The proportion of rural population also has a significant positive effect. However, the share of agriculture in total state income has a significant negative coefficient. Loans from the central government initially vary inversely with state income, but very soon (around an income level of Rs 1000 per capita, which is less than the average per capita income) the relation between loans and income becomes positive. Therefore, it does appear that overall, transfers to the states are not really going to the poorest states, but rather to the middle and upper income states. In addition, transfers seem to be biased against states with larger agricultural sectors.

3.4.2 Partisan politics and the *share* of transfers

In addition to testing for partisan effects on the total *amounts* of transfers made by the center to the states, we also tested whether transfers are more important as

shares in the budgets of states that are affiliated. Perhaps, the partisan effect works more through the lowering of effort in raising own revenue on the part of affiliated states, thereby creating greater fiscal dependence on the center. Table 5 reports the effects of partisan politics on the share of transfers in state budgets. The affiliation variable used here is that of the leading party affiliation. The results for the other two definitions of political affiliation were indistinguishable from those reported in Table 5.

The first column reports the results for the share of central taxes in the total tax revenue of states. There is no effect of political affiliation on the relative importance of central taxes in total tax revenue of states. It appears that the relative importance of central taxes falls as states get richer. However, the effect of state income is quadratic, that is, for higher income states the contribution factor in tax devolution becomes more important and the share of central taxes in total tax revenue increases with state income. The "flip" in the relation between the proportion of central taxes and state income occurs around an income level of Rs 2000 per capita which is much higher than the average state domestic product of about Rs 1100. Central taxes are also more important in the budgets of those states that are more rural: the proportion of rural population in a state has a positive effect on the proportion of central taxes in state budgets. This is intuitive since less urbanized and industrialized states have a diminished tax base to raise own revenue, and hence they rely more on the devolution of central taxes.

In column (2) of Table 5, the results are reported for the share of grants in the total non-tax revenue of states. The coefficient on political affiliation is positive and significant. The share of grants in the total non-tax revenue is 3 per cent higher for states that are politically affiliated with the center. Thus it appears that affiliated states are more dependent on grants from the center than are non-affiliated states. More rural states are again more dependent on central grants, as the proportion of grants increases with the proportion of the rural population.

In column (3) the results are reported for the share of loans from the center in the total debt incurred by states. There is no significant effect of party politics on the relative importance of central loans in state debt. The results also show that when states are richer the share of central loans is higher.

3.5 Conclusion

There has been no formal analysis in the received literature of the potential political manipulation of intergovernmental transfers in India, a country where such transfers are exceedingly important for the provision of public services by state governments. This study has undertaken such a political analysis and found evidence for partisan manipulation of budgetary transfers. Grants from the center to a state are significantly higher when the state government is politically affiliated with the central government. There is no evidence of an electoral cycle in central grants, that is, the timing of state elections has no significant effect on grants. These results are consistent with a model of partisan manipulation within a system of centralized decision-making. Central governments in India increase grants to affiliated states in order to have greater control over state spending decisions.

There is no effect of partisan politics on the devolution of central taxes to the state governments. This is consistent with the institutional structure wherein tax devolution is heavily circumscribed by the recommendations of an independent statutory body. Therefore, despite the prolonged single-party dominance of the Congress at the center, a significant portion of intergovernment budgetary transfers have been insulated from political control.

This study has only focussed on partisan effects on well specified budgetary transfers from the center to the states and therefore cannot shed light on other forms of transfers by which a party at the center may assist its state affiliates. Although, some results of the analysis undertaken here suggest that there may be substantial differences in the fiscal capacities of affiliated and non-affiliated states. Specifically, we find

that non-affiliated incumbents borrow significantly more from the central government than affiliated incumbents do in state election years. However, there is no systematic difference between the electoral strategies of state governments for affiliated and non-affiliated states (Khemani, 1999). This suggests that non-affiliated governments have to incur greater debt to finance election-year spending, while affiliated states are better able to raise non-tax revenues to fund election-year spending (Khemani, 1999).

Future research on intergovernmental transfers in India could fruitfully focus on two important questions: first, on the role of transfers in promoting equity across the different regions of the country, and second, on the effect of transfers on state deficits. Some of the description of the determinants of transfers in India undertaken in this study show that transfers attempt to fill the gap between state revenues and spending. This approach may provide disincentives to state governments to increase their own revenue raising efforts and to economize on spending.

These questions about the determinants and the impact of intergovernmental transfers in India are especially important in view of the recent trend towards greater decentralization in the country. They would also have powerful implications for the appropriate devolution and impact of international institutional aid.

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Table 1 Indicators of Political Affiliation		
	Center	State
(1) Congress Affiliation: =1 if	Cong.	Cong.
(2) Leading Party Affiliation: =1 if	Cong.	Cong.
	Janata	Janata
	Dal	Dal
(3) Coalition Party Affiliation: =1 if	Cong	Cong
	Cong	Coalition Affil.
	Janata	Janata
	Janata	Coalition Affil.
	Dal	Dal
	Dal	Coalition Affil.

Table 2[a] The Importance of Transfers in the State Economy	
Total Spending/State Domestic Product	20%
Own Income/State Domestic Product	11%
Transfers/State Domestic Product	9%
Central Taxes/Total Tax Revenue	34%
Grants/Total Non-tax Revenue	48%
Central Loans/Total Debt	74%
a. Table shows sample averages of each variable	

Table 3

Summary Statistics[a]

Variable	Obs	Mean	Std. Dev.
Share in central taxes	377	32.68	15.50
Grants from the center	456	23.61	15.78
Loans from the center	456	36.23	22.73
Central taxes/Total tax revenue	377	0.34	0.12
Grants/Total non-tax revenue	456	0.48	0.15
Central Loans/Total Debt	456	0.74	0.14
Political Affiliation[b]	513	0.39	0.49
Scheduled Election	513	0.16	0.36
State Domestic Product	464	1101.6	576.7
Share of Agriculture in SDP	464	0.43	0.11
Total Population	513	41626	25195
Proportion of Rural Population	483	0.79	0.08

a. Transfers and SDP variables are in per capita 1973 rupees

b. Indicator variable equals 1 if incumbent is affiliated with central government

Table 4a
Partisan Politics and Central Taxes[a]
(t-statistics in parenthesis)

	Congress	Lead Party	Coalition
Independent Variables:	(1)	(2)	(3)
Affiliated Government	-0.12	-0.48	-0.24
	(-0.14)	(-0.58)	(-0.30)
Election year X Affiliated govt.	1.15	1.18	1.11
	(0.85)	(0.91)	(0.85)
Election year X Non-affil. govt.	0.24	0.10	0.17
	(0.16)	(0.06)	(0.11)
State domestic product (SDP)	0.12	0.01	0.01
	(2.82)	(2.81)	(2.83)
SDP-squared	−3.6e-06	-3.6e-06	-3.6e-06
	(-5.28)	(-5.27)	(-5.28)
Share of agriculture in SDP	-23.40	-22.92	-23.23
	(-3.27)	(-3.20)	(-3.24)
Proportion of rural population	227.00	225.14	226.69
	(6.34)	(6.29)	(6.35)
Number of Observations	376	450	450
R-sq	0.8881	0.8882	0.8881

a. Transfers and SDP are in per capita 1973 rupees.

All regressions include state and year effects.

Table 4b
Partisan Politics and Central Grants[a]
(t-statistics in parenthesis)

	Congress	Lead Party	Coalition
Independent Variables:	(1)	(2)	(3)
Affiliated Government	2.37	2.27	1.67
	(2.24)	(2.19)	(1.67)
Election year X Affiliated govt.	-2.25	-2.70	-2.53
	(-1.37)	(-1.70)	(-1.59)
Election year X Non-affil. govt.	-0.53	1.09	0.95
	(-0.27)	(0.52)	(0.46)
State domestic product (SDP)	-0.01	-0.01	-0.01
	(-2.17)	(-2.08)	(-2.17)
Share of agriculture in SDP	-15.80	-15.62	-14.71
	(-1.84)	(-1.82)	(-1.71)
Proportion of rural population	240.10	238.31	231.46
	(5.66)	(5.63)	(5.48)
Number of Observations	450	450	450
R-sq	0.6948	0.6953	0.6938

a. Transfers and SDP are in per capita 1973 rupees.

All regressions include state and year effects.

Table 4c
Partisan Politics and Central Loans[a]
(t-statistics in parenthesis)

	Congress	Lead Party	Coalition
Independent Variables:	(1)	(2)	(3)
Affiliated Government	-2.27	-0.81	-2.18
	(-1.15)	(-0.42)	(-1.19)
Election year X Affiliated govt.	1.40	0.14	0.61
	(0.46)	(0.05)	(0.21)
Election year X Non-affil. govt.	6.46	8.58	7.92
	(1.80)	(2.23)	(2.05)
State domestic product (SDP)	-0.02	-0.02	-0.02
	(-1.98)	(-2.03)	(-2.00)
SDP-squared	0.00001	0.00001	0.00001
	(8.65)	(8.68)	(8.69)
Share of agriculture in SDP	-12.70	-14.34	-11.91
	(-0.80)	(-0.90)	(-0.75)
Proportion of rural population	102.36	108.87	106.51
	(1.28)	(1.36)	(1.35)
Number of Observations	450	450	450
R-sq	0.6120	0.6125	0.6137

a. Transfers and SDP are in per capita 1973 rupees.

All regressions include state and year effects.

Table 5

Partisan Politics and Transfer Shares[a]

(t-statistics in parenthesis)

	Taxes[b]	Grants[c]	Loans[d]
Independent Variables:	(1)	(2)	(3)
Leading Party Affiliation	0.004	0.03	-0.01
	(0.65)	(2.40)	(-0.63)
Election year X Affiliated govt.	0.01	-0.03	-0.02
	(1.03)	(-1.69)	(-0.82)
Election year X Non-affil. govt.	-0.001	-0.004	0.003
	(-0.06)	(-0.14)	(0.09)
State domestic product (SDP)	-0.0002	-0.00002	0.0001
	(-5.62)	(-0.55)	(1.72)
SDP-squared	1.6e-08		2.3e-08
	(3.54)		(1.77)
Share of agriculture in SDP	0.003	-0.04	0.05
	(0.07)	(-0.48)	(0.34)
Proportion of rural population	2.12	0.89	0.35
	(9.22)	(1.64)	(0.53)
Number of Observations	376	450	450
R-sq	0.5459	0.2311	0.3878

a. Transfers and SDP are in per capita 1973 rupees.

All regressions include state and year effects.

b. Central Taxes/Total Tax Revenue

c. Grants/Total Non-tax Revenue

d. Loans/Total Debt

A Appendix to Chapter 1 : The Treatment of Missing Observations

The analysis undertaken here involves the merging of several different modules of the IFLS survey, as a result of which there are missing values for a number of explanatory variables of the transfer decision. The variables that contributed the most towards the loss of observations on transfers were parental education and dowry. Of the observations available for estimation of the probability of transfers to parents, information on the parents' education was missing for 20% of the observations, and on dowry for 17% of the observations. Without any treatment of missing observations, only 60% of the observations on transfers was available to estimate the appropriate multivariate model. An improvement in the efficiency of the estimators may be attained by replacing some of the missing values with the sample means of the variables (Haitovsky, 1968; Afifi and Elashoff, 1966). The estimates reported in Tables 4 employ 90% of the observations on transfers by replacing the missing values of the variables measuring parents' characteristics (education, asset ownership, illness, employment and frequency of visits) and dowry, with the relevant sample means.

The estimates obtained with the larger sample are identical to the estimates obtained using only 60% of the data on transfers where missing observations are dropped from the estimation, in terms of the pattern of coefficient signs. However, as we would expect, some variables that are insignificant in the smaller sample, namely, ownership indicator for family business, sibling education, wives' education and the indicator for wives' having positive non-gift income, are statistically significant in the larger sample. The surprising exception is the coefficient on women's non-gift income which is significant in the 60% sample and insignificant in the 90% sample. In fact, in the equation estimating the probability of transfers to the wives' parents, the coefficient on women's non-gift income (in the smaller sample) is significantly larger than the coefficient on men's non-gift income. This is the standard evidence in favor of the

bargaining hypothesis in the received literature. Women's non-gift income continues to have a significant effect (and their education continues to be insignificant) when we replace the missing observations only on parents' characteristics and use 75% of the data to estimate the model. These results are reported in Table A.1. Since the difference between the results in Table 4 and Table A.1. are sensitive to the treatment of the missing values of the dowry variable, we re-estimated the model by dropping dowry altogether. The resulting estimates based on 90% of the sample are identical to those in Table 4: education is significant, non-gift income is not, except when it is interacted with education. These exercises seem to reveal that the coefficient on non-gift income is very sensitive to the range of observations used for estimation.