

The Fiscal Contract: States, Taxes, and Public Services

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THE FISCAL CONTRACT

States, Taxes, and Public Services

By JEFFREY F. TIMMONS*

ANYONE who has traveled in poor areas of poor countries cannot help but notice the palpable absence of government—the dearth of roads, hospitals, and even basic sanitation in many cases. The absence of tax collectors may be less conspicuous but is just as important, according to the theory developed and tested in this article. Building on the neoclassical theory of the state and the tax morale literature, I argue that governments have pecuniary incentives to cater to taxpayers, thereby encouraging an overlap between the distribution of taxes and the distribution of public benefits.¹

Using a simple model of taxation, I show that if enforcing tax compliance purely through force is costly and if there is some probability that citizens respond to government demands for taxes based on their evaluation of government performance, then states have incentives to trade services for revenue. Furthermore, if there are systematic variations in social preferences and if states have different tax instruments, they can cut separate deals with different groups, much like discriminating monopolists. And by acting as discriminating monopolists, states are able to maximize their revenue; in return, however, they accept self-enforcing limits on their ability to redistribute to themselves and among groups of citizens. As a result, the people who pay for government obtain the bulk of its benefits.

I test this hypothesis against rival hypotheses using cross-sectional data from approximately ninety countries from 1975 to 1999 and panel data from eighteen OECD countries from 1975 to 1995, based on the

*Special thanks to Gary Cox, David Lake, Peter Gourevitch, Pablo Pinto, Eric Magar, Margaret Levi, Peter Lindert, Neal Beck, and three anonymous referees for their assistance along the way. A previous version of this paper was presented at the annual meeting of the American Political Science Association, Chicago, September 2004. All errors are mine.

¹See Douglass C. North, *Growth and Structural Change* (New York: W. W. Norton, 1981); Robert H. Bates and Da-Hsiang Donald Lien, "A Note on Taxation, Development, and Representative Government," *Politics and Society* 14 (March 1985); and Margaret Levi, *Of Rule and Revenue* (Berkeley: University of California Press, 1988). For tax compliance, see James Andreoni, Brian Erard, and Jonathan Feinstein, "Tax Compliance," *Journal of Economic Literature* 36 (June 1998).

following empirical assumptions: (1) lower-income groups especially want the state to provide basic public services and improve social welfare, while upper-income groups covet property rights; and (2) “regressive” taxes are a good proxy for taxes on the poor, while “progressive” taxes are a good proxy for taxes on the wealthy. Controlling for a variety of factors, my results show that the more money a state raises from regressive taxes as a percentage of GDP, the longer the average life expectancy, the higher immunization rates, the lower infant mortality, the more it spends on public health, and (within the OECD) the greater total social spending. The more money a state raises from progressive taxes as a percentage of GDP, by contrast, the better it protects property rights. The rub is that total revenue typically is not associated with either property rights or basic public services, progressive taxes are not associated with social benefits, and regressive taxes are not associated with property rights protection.

The results (reported in Section V) are not sensitive to changes in the sample or time period and are robust with a variety of control variables, including ethnolinguistic fractionalization, regime type, legal origin, and income inequality. They are important for at least three reasons. First, they account for as much as one-half of the variation in property rights protection, at least one-third of the variation in public health and social spending, and approximately one-fifth of the variation in infant mortality and life expectancy. Second, the results suggest that the contemporary practice of studying spending and taxation in isolation from one another is fundamentally flawed because half of the equation (either taxes or spending) is left out of the analysis. Third, they cast doubt on models of the state that endow government with overwhelming coercive power and assume that states are great instruments of redistribution. Although predation and redistribution are options, they are inefficient; in effect, it is cheaper for states to produce goods and induce compliance than to produce clubs and have to enforce it. As a result, states—both democratic and nondemocratic—operate like discriminating monopolists rather than like roving or stationary bandits.

This article is divided into six sections. Section I sets out three competing visions of the state, fiscal redistribution, and public services. Section II uses a simple model of taxation to show that our theories of redistribution and the state rest on a model of tax compliance. Section III sets out hypotheses about redistribution that follow from different theories of the state. Section IV establishes an empirical test to arbitrate between these competing claims. Section V discusses the results. Section VI offers conclusionary remarks.

Before proceeding, two points need underscoring. First, this article explains tax and spending equilibriums, not the origins of tax systems or social welfare. Historical institutionalists have shown that the development of a country's tax and benefit system is a complex historical process that is influenced by a host of factors, including the structure of the economy, the nature of a country's domestic institutions, the partisan composition of government, and the extent of domestic and international conflict.² Their work is important for a variety of reasons, not least of which is that it helps identify the origins of fiscal contracts and explains some of the cross-national and cross-temporal variation in fiscal contracts. In North and Weingast's account of the Glorious Revolution, for example, the rich cut a deal with the crown in which they agree to provide revenue in return for more secure property rights and influence over policy.³ Conversely, Kato documents the emergence of fiscal contracts between lower-income groups and the state, arguing that the size of welfare programs in rich countries "is path-dependent upon the institutionalization of regressive taxes."⁴ Both of those accounts are consistent with the more general theory and evidence presented in this article. The main theoretical point developed here is that the most efficient, sustainable path for citizens and the state is one in which services are traded for revenue: if a state begins taxing a group, it has strong incentives to provide that group with benefits to maintain that source of revenue, limiting redistribution; conversely, if a state is not taxing a group for some reason (for example, because there is no profit in it), it has no incentive to cater to that group. In empirical terms, European welfare states proved to be sustainable because they incorporated lower-income groups into the tax system, whereas the attempt by the United States to create a Great Society was unsustainable because it relied primarily on redistribution.

Second, the total amount of revenue raised from each social group is more important than the overall progressivity/regressivity of the tax system. The more money a state raises from the wealthy, the more it should provide the goods they desire; the more money it raises from the

² Important contributions include Max Weber, *Economy and Society*, ed. Guenther Roth and Claus Wittich (New York: Bedminster Press, 1968); Harley H. Hinrichs, *A General Theory of Tax Structure Change during Economic Development* (Cambridge: Harvard Law School, 1966); Otto Hintze, "Military Organization and the Organization of the State," in F. Gilbert, ed., *The Historical Essays of Otto Hintze* (New York: Oxford University Press, 1975); Sven Steinmo, *Taxation and Democracy: Swedish, British and American Approaches to Financing the Modern State* (New Haven: Yale University Press, 1993); and Peter H. Lindert, *Growing Public: Social Spending and Economic Growth since the Eighteenth Century* (Cambridge: Cambridge University Press, 2004), data: www.econ.ucdavis.edu/faculty/fzlinger/.

³ Douglass C. North and Barry Weingast, "Constitutions and Credible Commitments," *Journal of Economic History* 49 (December 1989).

⁴ Junko Kato, *Regressive Taxation and the Welfare State* (Cambridge: Cambridge University Press, 2003), 3.

poor, the more it should provide the goods they desire. A state could tax the poor intensely and still have a progressive system overall (like many OECD countries); in return, however, we would expect high levels of basic public services and considerable protections for property rights. Conversely, a state could have a regressive system in which neither upper- nor lower-income groups are taxed intensely (like many developing countries); in return, we would expect low levels of basic public services and insecure property rights.⁵

I. COMPETING THEORIES OF THE STATE

The question of how states work is arguably one of the most important questions in the social sciences. Three models of government (and, hence, redistribution and public services) stand out in this rich literature: the state-autonomy paradigm; the state-capture paradigm; and the fiscal contract paradigm. These three intellectual traditions have been sources of debate for centuries, but compelling answers remain elusive because they have not been compared head to head or framed in ways conducive to testing. Putting together cross-country evidence about tax revenue and state performance allows us to start untangling them.

THE AUTONOMOUS-STATE PARADIGM

In the autonomous-state tradition, including virtually all of the public finance literature, governments are endowed with sufficient coercive powers to act independently of major social forces. State-autonomy theories assume that enforcing tax compliance is relatively easy and that states enforce tax compliance purely through force. As a result, revenue collection and public spending are treated as separate endeavors. In terms of the provision of public services, the key issue is to identify what motivates these officials. In the mainstream public finance tradition, state leaders are benevolent guardians maximizing social welfare, suggesting that more revenue axiomatically translates into more services.⁶ In the public choice tradition, the opposite motivational assumption is made: since individuals are presumably self-interested in economic affairs, they should also be self-interested in political affairs. As a result, state leaders are cast as rational predators intent on maxi-

⁵ Developing countries have generally been characterized by low taxes and low services, but there are some notable exceptions: Jamaica, Chile, South Korea, and some Eastern European countries, for example, have typically collected two to three times as much revenue from regressive taxes as have other developing countries; they have also provided higher levels of services.

⁶ Richard A. Musgrave and Peggy B. Musgrave, *Public Finance in Theory and Practice*, 5th ed. (New York: McGraw-Hill, 1989).

mizing rents for themselves and their cronies, with the suggestion that taxation is theft.⁷ Whatever motivational assumption is made, the underlying logic of state-autonomy theories is the same: people pay taxes because they must; there is no relationship between the source of state revenue and state output; and spending is a function of rulers' whims.

THE STATE-CAPTURE PARADIGM

In the state-capture tradition, the state is not an actor with its own policy preferences but an instrument of key social groups, who use the state to transfer resources to themselves. Groups or classes influence politicians through lobbying, campaign contributions, and other political activities, including the threat of force. Policy outcomes reflect their relative power. In the Marxist tradition, the key group is the dominant social class (the bourgeoisie), which uses the state to keep the working class just above the subsistence level, redistributing income from bottom to top; in the populist (and median voter) version, lower classes use the state to exploit the rich, transferring wealth from top to bottom. In the interest-group tradition, the key players are organized interests, which take advantage of the state to milk unorganized groups.⁸ In the partisan tradition advanced by Hibbs and others, political parties use their control over the state to enact favorable policies for their constituencies.⁹ Like their state-autonomy counterparts, state-capture theories assume that people pay taxes because they must. Furthermore, the underlying logic of state-capture theories suggests that revenue collection and spending patterns should reinforce each other. That is, the most powerful groups in society—whoever they may be—should use their control of the state to tax other citizens and spend on themselves.

THE FISCAL CONTRACT PARADIGM

In the fiscal contract tradition, tax compliance itself serves as a means for regulating public authority because citizens can constrain states by withholding revenue.¹⁰ Fiscal contract proponents argue that collecting

⁷ Geoffrey Brennan and James M. Buchanan, *The Power to Tax: Analytical Foundations of Fiscal Constitution* (New York: Cambridge University Press, 1980).

⁸ See Mancur Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965).

⁹ Douglas Hibbs, "Political Parties and Macroeconomic Policy," *American Political Science Review* 7 (December 1977). Among the capture-based theories, partisan models of (democratic) government clearly have the most empirical support. Partisan effects are most notable in terms of transfers, spending, and macroeconomic policies, but less so in terms of taxes. Geoffrey Garrett, for example, found that countries with strong left-wing parties and powerful labor unions actually had more regressive tax systems than right-wing governments with weak labor unions—consistent with the fiscal contract model and the data presented in Figure 7; Garrett, *Partisan Politics in the Global Economy* (Cambridge: Cambridge University Press, 1998).

¹⁰ See North (fn. 1); Bates and Lien (fn. 1); and Levi (fn. 1).

		State	
		Trade	Coerce
Group	Comply	Quadrant I $G^*-T, T-G_c$	Quadrant II $-T, T$
	~Comply	Quadrant III $G^*, -G_c$	Quadrant IV $p(-T-S), p(T+S)-S_c$

FIGURE 1
THE TAX GAME

taxes is costly since rulers must build bureaucracies to monitor and sanction delinquent taxpayers. The more monitoring and sanctioning the government has to undertake, the more costly coercion becomes. As a result, rulers have incentives to reduce the cost of compliance by making credible commitments to citizens, giving them a say over policy, providing them directly with benefits, and/or investing in ideology, which can substitute for coercion. Their work opens the door for an exchange-based theory of the state, whereby governments sell services for revenue.

Using a simple model of taxation (Figure 1) I show that the following four conditions are sufficient for the existence of a fiscal contract(s). First, states must be able to produce goods for less than each individual can do for him/herself. Second, the state must be able to set the tax price above the costs of producing public services, allowing the state to cover its costs. Third, enforcing tax compliance purely through force must be more costly than producing goods, allowing for gains from trade. Fourth, there must be some probability that one of the players is hardwired to play Tit-for-Tat (TFT). In principle, either states or citizens could be TFT players; in practice, I presume it is citizens, an assumption that has considerable support in the evolutionary biology and tax morale literatures. Whereas evolutionary biology suggests that people are inclined to cooperate, but not unconditionally, the tax morale literature unequivocally shows that sanctions alone cannot explain compliance and that taxpayers partially respond to government demands for taxation based on state performance.¹¹

¹¹ For evolutionary biology, see David Axelrod, *The Evolution of Cooperation* (New York: Basic Books, 1984); and Ken G. Binmore, *Playing Fair* (Cambridge: MIT Press, 1994). For tax compliance, see James Alm, Gary McClelland, and William D. Schulze, "Why Do People Pay Taxes?" *Journal of Public Economics* 48 (June 1992); John T. Scholz and Neil Pinney, "Duty, Fear, and Tax Compliance: The Heuristic Basis of Citizenship Behavior," *American Journal of Political Science* 39 (May 1995); Joel Slemrod, "Trust in Public Finance" (Paper presented at Public Finances and Public Policy in the New Millennium Conference, Munich, January 12–13, 2001); and Andreoni, Erard, and Feinstein (fn. 1).

II. A SIMPLE MODEL OF TAXATION

Theories of the state must rest on a theory of tax compliance, because without taxes states can neither produce goods nor acquire much revenue. The tax game can be modeled as an iterated Prisoner's Dilemma with one side—the state—having an outside option: for some amount of money, the state can force people to comply. The higher the cost of the outside option relative to the cost of producing goods, the greater the state's incentive to trade services for revenue. For the state to act as a discriminating monopolist, the state needs to be able to identify individuals in society, discern their preferences, and assign taxes to them. In principle, the state could strike a separate bargain with every individual in society if it had perfect information about the distribution of social preferences and different tax instruments that it could calibrate to every individual. In practice, I assume that the world can be crudely divided into two groups based on income, labeled C_{lo} and C_{hi} . These groups have distinct preferences about what the state should do, stemming from the return from public provision of that good for each individual in the group as well as the opportunity cost of the revenue used to produce the good. I also assume that the state has two different tax instruments, T_{lo} and T_{hi} , which it can set to cover the costs of producing goods desired by each group, labeled G_{lo} and G_{hi} , which are at least partially nonrival and nonexcludable for members of the group. Figure 2 uses a Venn diagram to illustrate the argument. C_{lo} represents citizens that obtain utility from G_{lo} , but not G_{hi} , while C_{hi} represents citizens that receive utility from G_{hi} , but not G_{lo} ; T_{lo} is a regressive tax that primarily affects C_{lo} , while T_{hi} is a progressive tax that primarily affects C_{hi} .

Imagine that the state is bargaining with one of the groups for revenue, per the Venn diagram.¹² Consider the simple PD and ignore the outside option for now. Figure 1 shows the simple 2×2 game between one of those groups (either C_{lo} or C_{hi}) and a revenue-maximizing state,¹³ where T is the amount paid in taxes by that group; G^* is the value of the good to the group; G_c is the cost of producing the good to the state; p is the probability that the state catches the group; S is the amount of the sanction; and S_c is the cost of imposing the sanction. I assume that both the state and the group have utilities that are linear in outcomes and that the utility of T is T for both the group and the

¹²For the sake of simplicity, I assume that these games exist independent of one another and independent of other state/society relations.

¹³I drop the subscripts for now since it does not matter which group the state is playing against.

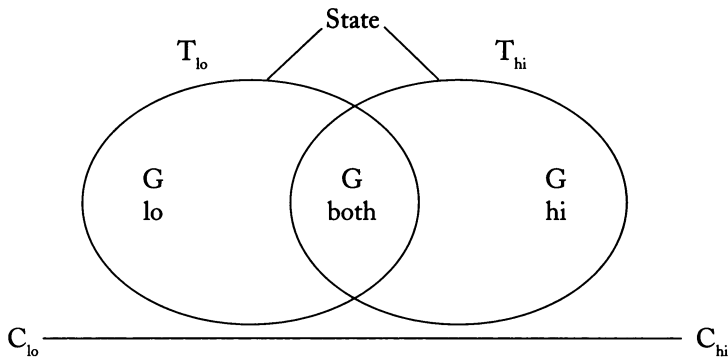


FIGURE 2
TWO GROUPS, TWO BARGAINS

state. Furthermore, I assume that the group's utility from G^* is G^* and the state's utility from G_c is G_c . Finally, I assume that taxes have no effect on economic growth and hence on people's incomes. If the payoffs satisfy the following conditions: $G^* - T > p(-T - S) > -T$ for the group and $T - G_c > p(T + S) - S_c > -G_c$ for the state, the game is a Prisoner's Dilemma and conditions 1–3 are met.

In a two-player PD, each player has two choices. The group can choose to Comply or not to Comply and the state can choose to Trade or to Coerce. In the basic game, there are four possible outcomes.

Quadrant I (Comply, Trade) represents the high-level equilibrium of the fiscal contract. If Quadrant I is the equilibrium outcome, the group is complying (quasi)-voluntarily and the state is expending few resources to assure compliance; in return, however, the state must cater to that group, rather than redistribute to itself or other groups.

Quadrant II (Comply, Coerce) represents most other theories of the state, notably state-autonomy models. If Quadrant II is the equilibrium outcome, the group is complying automatically (that is, there is no tax evasion) and the state is expending few resources to assure compliance; in this case, the state does not have to cater to that group and it suffers no revenue loss from redistribution to itself or to other groups.

Quadrant III (~Comply, Trade) represents the state-autonomy model with benevolent government. If Quadrant III is the equilibrium outcome, the group is not complying and the state is furnishing benefits, either by running a deficit or using exogenous revenue.

Quadrant IV (~Comply, Coerce) represents the standard model of tax compliance and the low-level equilibrium in the fiscal contract. If Quadrant

IV is the equilibrium outcome, the group is attempting to avoid taxes and the state is expending resources to catch them; the state acquires less revenue (relative to Quadrant I) or it must spend more to enforce compliance, but any revenue it acquires can be spent however it desires.

In a one-shot or finitely repeated PD with rent-seeking players, the group and the state both have incentives to defect because the game offers the highest cumulative payoff; as a result, the only Nash equilibrium is Quadrant IV (~Comply, Coerce). But if the game is played indefinitely and both players have sufficiently high discount factors, then the Folk Theorem shows that all of the quadrants can be part of the equilibrium path. Watson uses incomplete information to refine the equilibria in infinitely repeated games. Among other things, he shows that if there is a small probability that one of the players is a Tit-for-Tat type, there is bounded recall, and players are sufficiently patient, the pure strategy equilibria converge to cooperate-cooperate.¹⁴ In other words, if we restrict the game to pure-strategy equilibria, the tax game should converge to Comply, Trade under fairly general conditions.¹⁵ As a result, taxes and services should track each other fairly closely for any given group, shown in Figure 3.

Several points are noteworthy. First, the aforementioned analysis hinges on the unobserved costs of producing goods and imposing sanctions, the state's outside option. If there were more profit in imposing sanctions than in producing goods (that is, $S - S_c > T - G_c$), the state has a dominant strategy to coerce; its only reason to produce public services would stem from its status as residual claimant on social output, per the McGuire and Olson model.¹⁶ Similarly, if the group's expected utility from evasion were greater than the value of the public good minus the taxes (that is, $p(-T - S) > G^* - T$), the group has a dominant strategy to evade. If either of those conditions holds, there are no gains from trade and there could be no fiscal contract.

Second, the payoffs arbitrarily limit the audit and sanction rate. An alternative assumption is that the state can set the probability of an audit and/or the sanction high enough to make the group's expected utility from noncompliance lower than the tax rate itself, turning the

¹⁴ The TFT probability can be infinitesimal if the players have long time horizons. Joel Watson, "Cooperation in the Infinitely Repeated Prisoners' Dilemma with Perturbations," *Games and Economic Behavior* 7 (September 1994).

¹⁵ Ibid. Watson's results effectively rule out long chains of defections by either party, implying that Quadrants II and III are not sustainable; Quadrant I could be sustainable if the TFT probability is low and discount rates are high.

¹⁶ Martin McGuire and Mancur Olson's "encompassing interest" model of the state, for example, assumes that $S_c = 0$; McGuire and Olson, "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force," *Journal of Economic Literature* 34 (June 1996).

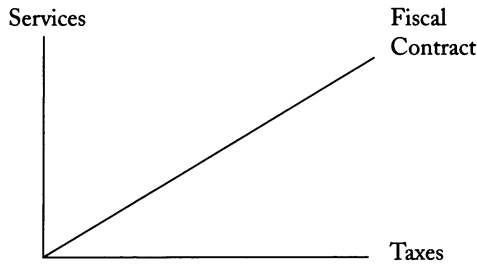


FIGURE 3
TAXES AND SERVICES FOR ANY GROUP

PD into a game of dominance. One reason to reject this alternative assumption is that by definition it rules out tax evasion with rational taxpayers. More important, arbitrarily limiting the penalty from sanctions does not rule out the concept of dominance since Quadrant II in the PD is essentially the same equilibrium.

Finally, even though I am betting that Quadrant I is the long-run equilibrium, there is not a unique fiscal contract.¹⁷ Not only could the tax price for different goods vary, but it is certainly possible that there could be a wedge between the cost of producing goods and the value of those goods, allowing for some redistribution. Imagine that G^* equals 1 and G_c equals 0.5; in this case the state could set the tax rate at 0.99, earning a profit of 0.49, which it could redistribute to itself or to other groups. Nevertheless, we would still expect the group to accept the deal since it would be better off with the taxes and the benefits than with the noncooperative equilibrium.

Now imagine the state playing the game with both groups simultaneously, per the Venn diagram in Figure 2. Assuming all four conditions are met and that the tax game is the same for both groups, the most efficient path for the state would be to impose T_{lo} on group C_{lo} to produce G_{lo} and to impose T_{hi} on group C_{hi} to produce G_{hi} . A revenue-maximizing state would have no financial incentive to impose T_{hi} on group C_{hi} to produce G_{lo} because this would engender tax resistance by C_{hi} ; nor would it have a financial incentive to impose T_{lo} on group C_{lo} to produce G_{hi} because this would engender tax resistance by C_{lo} . In other words, if the state could identify C_{lo} and C_{hi} , and assign taxes to them (T_{lo} and T_{hi}), it would receive more tax revenue from them by supplying each group with the

¹⁷ Since all of the quadrants can be equilibria under fairly reasonable conditions, I am really making an empirical bet that conditions 1–4 hold.

goods they want ($G_{lo} * G_{hi} *$) than from redistributing to itself or between them, if C_{lo} and C_{hi} abide by the terms of the fiscal contract.

III. GENERAL HYPOTHESES

Since different theories of the state are based on different equilibrium outcomes in the tax game, we can test them head to head by simultaneously comparing tax revenues, tax compliance, and state performance. Fiscal contract theories of the state hinge on Quadrant I being the equilibrium outcome in the tax game; taxes must be traded for services. This implies there should be a positive correlation between tax revenue and government performance with respect to any given group.

Fiscal Contract Hypothesis (H1). There should be a positive correlation between G_{lo} and T_{lo} and/or G_{hi} and T_{hi} , but not between G_{lo} and T_{hi} , and not between G_{hi} and T_{lo} .

State-capture theories hinge on Quadrant II or Quadrant IV being the equilibrium in the tax game (or, alternatively, the tax game must be one of dominance); taxes must be unrequited. Furthermore, the underlying logic of state-capture theories suggests that revenue collection and spending patterns should reinforce each other. In practice, the sort of transfer could take a variety of forms. In principle, however, we would expect systematic redistribution via the fisc, with taxes being paid by one set of citizens to provide benefits for another set of citizens.

State-Capture Hypothesis (H2). Either T_{lo} should correspond with G_{hi} , or T_{hi} should correspond with G_{lo} .

State-autonomy models hinge on Quadrant II being the equilibrium in the tax game (alternatively, Quadrant III would be the equilibrium with benevolent government). If states were truly autonomous, government performance should have no impact on compliance.

State-Autonomy Hypothesis (H3). There should be no correspondence between public spending patterns, tax compliance, and revenue collection; alternatively, if government were benevolent, total revenue should correspond with outcomes.

IV. THE EMPIRICAL TESTS

To test these general hypotheses, I assume that lower-income individuals have an especially strong desire for government provision of basic public services (proxied by health care and social welfare spending),

while upper-income groups especially covet property rights. These assumptions, while obvious simplifications of real-world preferences, are supported by empirical data from the United States and elsewhere that show that lower-income groups systematically prefer more government involvement in health care, social welfare, industry, and the economy.¹⁸ Upper-income individuals, by contrast, do not need—and may not even want—government to provide basic public services; but as holders of assets they have a strong desire for the protection of property rights. Property rights benefit everyone indirectly by promoting faster economic growth, but they disproportionately benefit property owners because the more assets an individual owns, the more that individual gains from state enforcement of property rights, which assures her that she alone will garner the returns on investment.

DEPENDENT VARIABLES

To measure basic public services, I use a combination of outcome and policy indicators: *Infant mortality* per thousand live births (INFANT, LOGINGANT), *Life expectancy* (LIFE), *DPT immunization* (DPT), *Measles immunization* (MEASLES), *Public health spending* as a percentage of GDP (HEALTH), and (for the OECD) *Total social spending* as a percentage of GDP (SOCIAL). None of these measures is perfect, but together they provide us with a broad sense of the direct and indirect activities that government undertakes to increase the quality of life for lower-income groups.¹⁹

To measure property rights, I use two indices that focus primarily on commercial transactions, as opposed to the general rule of law, which might appeal to all citizens and not just the wealthy. The first index is the *property rights measure* from the Heritage Foundation's Annual

¹⁸ According to the National Election Studies (NES) Guide to Public Opinion and Electoral Behavior, for example, support for government-sponsored health insurance in the United States is inversely related to income, with 57 percent of the bottom 15 percent of the income distribution preferring it compared with 29 percent among the wealthiest 5 percent (2004), a pattern that has been relatively stable since 1970. Similarly, NES, General Social Surveys, and World Value Surveys consistently show that lower-income groups prefer more state ownership of industry, greater control of prices, and more intervention in markets—all of which infringe on private property rights. See www.umich.edu/~nes/nsguide/nsguide.htm; the Survey Documentation and Analysis Web site, maintained by the Computer-assisted Survey Methods Program at the University of California, Berkeley, <http://sda.berkeley.edu:7502/index.htm>; and Miguel Basáñez, Ronald Inglehart, and Alejandro Moreno, *Human Values and Beliefs: A Cross-Cultural Sourcebook Based on the 1990–1993 World Values Survey* (Ann Arbor: University of Michigan Press, 1998).

¹⁹ It is certainly possible that these groups desire, receive, and pay for other goods besides the ones proxied herein. These are indicators, not the whole story. Education is not chosen, because it is not clear that lower-income groups have an especially strong desire for the provision of education. I presume the rich are willing to pay for their children (for example, Highland Park, Texas) but not for redistribution across districts.

Survey of Economic Freedom, which is based primarily on the sanctity of contracts and private property.²⁰ The survey's measure is scaled 1–5, which I invert to make higher values “better.” The second set of measures is taken from Djankov, La Porta, Lopez-de-Silanes, and Shleifer's survey of judicial formalism in common contract disputes.²¹ With the help of lawyers from 109 countries, Djankov et al. build two separate indices of formalism based on the time and costs associated with collecting a bad check (labeled FORMALCHECK) and evicting a tenant for nonpayment of rent (labeled FORMALLEVIC). *These measures are arguably the best indicator of property rights protection because they empirically document the price of enforcement for procedures that any holder of wealth could regularly confront* (that is, *how much money and time asset holders must expend to protect their property*). Formalism is scaled 1–6, with 6 indicating longer “judicial proceedings, less consistency, less honesty, less fairness in judicial systems, and more corruption.”²²

INDEPENDENT VARIABLES

My goal is to measure the tax burden borne by different income groups. The ideal measure would be incidence studies of taxation, but there are not enough for my purposes and they lack a common methodology, making comparisons difficult.²³ Absent incidence studies, the best way to measure the tax burden is via the composition of revenues.

Based on incidence studies and IMF guidance, I assign taxes to different economic groups in society. Taxes on consumption (also referred to as taxes on goods and services, REVGs) are assigned to lower-income groups because empirical studies show that they are usually regressive.²⁴ Taxes on income, corporate profits, and capital gains (REVCAP), by contrast, are assigned to upper-income groups because they are typically progressive; income tax rates, for example, are usually graduated and lower-income groups are sometimes

²⁰ Heritage Foundation, Annual Survey of Economic Freedom, 1995–2003, www.heritage.org/research/features/index. See the appendix for a more detailed definition.

²¹ Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes, and Andre Shleifer, “Courts: The Lex Mundi Project,” NBER Working Paper, no. 8890 (Cambridge, Mass., April 2002). See the appendix for a more detailed definition.

²² Ibid., 1.

²³ Most incidence studies evaluate *either* the spending *or* the revenue side of government accounts but not both simultaneously. The Luxembourg Income Studies (LIS) offer the best cross-national data about tax and expenditures, but they exclude consumption taxes. See www.lisproject.org/keyfigures/methods.htm.

²⁴ See Liam P. Ebrill, Michael J. Keen, Jean-Paul Bodin, and Victoria P. Summers, *The Modern VAT* (Washington, D.C.: International Monetary Fund, 2001); and Don Fullerton and Gilbert E. Metcalf, “Tax Incidence,” NBER Working Paper, no. 8829 (Cambridge, Mass., 2002). It is important to note that while regressive taxes typically account for a small fraction of the income of the rich, the dollar amounts can be sizable.

legally exempted.²⁵ Other taxes—including property, trade, social security, and payroll—are not assigned because it is more difficult to generalize about their incidence across time and space and data are much sparser.²⁶

Taxes on goods and services and taxes on income, profits, and capital gains were the largest components of tax revenue for most governments during the period under study, accounting for approximately two-thirds of total tax revenue between 1975 and 1999, a figure that remained relatively constant throughout the period.²⁷ To assess whether the exclusion of other sources of revenue is problematic, I include them in some cross-sections, notably SOCIAL SECURITY and TRADE TAXES.²⁸ Even though other forms of revenue are excluded from the general analysis, they are included in every regression as a residual category—OTHER REVENUE—which includes all revenue except that from REVGS and REVCAP.²⁹ I also run identical regressions using only TOTAL REVENUE, rather than the component parts. Comparing the two regressions allows us to ascertain whether it is total revenue or one (or more) of the component parts that drives outcomes. Following convention, revenue is measured as a percentage of GDP, which controls for size of the economy and national income.³⁰

²⁵To take some examples: until recently, the minimum level of taxable income in Brazil was more than three times per capita income; in Ecuador, Nicaragua, and Guatemala it was about ten times per capita income. See Inter American Development Bank, *Economic and Social Progress in Latin America, 1998–1999: Facing Up to Inequality in Latin America* (Washington, D.C.: Inter American Development Bank, 1999), 185.

²⁶In theory, payroll, trade, and social security taxes are regressive to the extent that they can be passed on to consumers and/or labor. In practice, the extent of pass on depends heavily on the elasticities of each factor. Unfortunately, these elasticities vary considerably from country to country and from time period to time period, making it difficult to make broad generalizations. Empirical studies suggest that social security and trade taxes tend to be regressive, while there is no consensus about property taxes. See Ebrill et al. (fn. 24); and Fullerton and Metcalf (fn. 24).

²⁷The correlation between revenue from goods and services and revenue from capital is approximately 0.3, suggesting that there is no trade-off between taxing the rich and taxing the poor.

²⁸Social security taxes are systematically related to outcomes, while trade taxes generally are not. These results and other related material can be found at my Web site, <http://allman.rhon.itam.mx/~jtimmmons/index%20english.html>.

²⁹Property taxes are included in the other revenue category. Because they are tiny relative to GDP (about 0.3 percent of GDP in developing countries), changing the assumption about the incidence of property taxes has no meaningful impact on the results (calculation made using IMF data from 1990–99; IMF Tax Revenue Database, Document no. 1338900, Washington, 2000).

³⁰By focusing on central government revenue and, by extension, performance, I am overlooking all of the subnational action. Excluding subnational data, which is unfortunately scarce, could create some problems, notably measurement error in the revenue variables and, hence, both biased and inconsistent estimates. To try to avoid these problems, I split the sample into centralized and federal countries based on the tax, spending, and legislative authority granted to subnational governments, labeled “author” by Thorsten Beck, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh, “New Tools in Comparative Political Economy: The Database of Political Institutions (2001/2003),” *World Bank Economic Review* 15 (September 2003). Surprisingly, perhaps, tests of means reveal no statistical difference in revenue collection between centralized and federal regimes, perhaps reflecting heterogeneity among federalisms. The results using non-federal countries, which account for roughly three-quarters of total observations, are very similar to those reported herein. The results for federal countries alone are also consistent with the reported results, though the significance levels are lower (around 85 percent) and the coefficients are marginally smaller, perhaps reflecting the sample size and attenuation bias. Those results are available from the author.

CASE SELECTION AND DATA MANAGEMENT

With the exception of social spending, which covers only eighteen OECD countries from 1975 to 1995, the sample includes all countries with populations greater than one million from 1975 to 1999, drawn from the World Bank.³¹ To address the problem of missing data, I created five cross-sections with five-year averages: 1975–79, 1980–84, 1985–89, 1990–94, and 1995–99, hereafter identified by the first year only.³² Structuring the data this way resulted in different cross-sections in different years, both in terms of the dependent variables and the countries involved. Infant mortality and life expectancy, for example, were available for five cross-sections, with Ns ranging from 88 to 100, while the Heritage and formalism data were available for one cross-section, with Ns of about 90 and 66.³³

CONTROL VARIABLES AND RIVAL EXPLANATIONS

For the analysis, I incorporated a variety of control variables, including per capita income, democracy (Polity), ethnolinguistic fractionalization (ELF), inequality (Gini), legal origin, land area, population, urban population, population age 14–65, trade as a percentage of GDP, aid as a percentage of GDP, fuel and mineral exports, federalism, and regional and income dummies. In addition, for the regressions using total social spending, I incorporated variables normally found in that literature, including presidentialism, proportional representation, voter turnout, neocorporatism, gross union membership, capital controls, and population age 65+.³⁴ Not all of these variables are included in the results presented below, but descriptions of most of these variables, their sources, and their specification are contained in the appendix.

TESTING

From a theoretical standpoint, the empirical challenge is to show positive correlations between the revenue and outcome variables, which reveal that groups that pay get what they want, while groups that do not pay do not. To test this hypothesis, I use a combination of cross-sections and panels, which demonstrate systematic correlations but not causality. Most of the tests were conducted using ordinary least squares

³¹ The spending data is drawn from Lindert (fn. 2). Unless otherwise mentioned in the text or data appendix, the remaining data are drawn from the World Development Indicators CD-Rom (Washington, D.C.: World Bank, 2001).

³² Three-year and ten-year averages produced results similar to the five-year averages.

³³ The N for each variable is available in Table 2.

³⁴ See, for example, David Bradley, Evelyn Huber, Stephanie Moller, François Nielsen, and John D. Stephens, "Distribution and Redistribution in Postindustrial Democracies," *World Politics* 55 (January 2003).

(OLS) with robust standard errors to correct for heteroskedasticity.³⁵ Although panel analysis would be a superior way of analyzing the data because it would detect changes over time on a country-by-country basis, persistent serial correlation makes it impossible to produce reliable time-series cross-sectional (TSCS) estimates for most of the variables, even using error correction methods.³⁶ The exception is with the social spending data, where it is proved possible to use TSCS using Stata's cluster command with year and country dummies. The method provides correct standard errors in the presence of any pattern of correlation among errors within units (including serial correlation and unit-specific effects).³⁷ In conjunction with time dummies that capture correlations across time and country dummies that capture unit-specific effects, the panel analysis shows that the key variables change together, while the cross-sections show that they are found together.

The statistical procedures do not shed light on the causal sequencing, nor do they rule out the possibility that the tax system is endogenous vis-à-vis other variables in the equation or some other unobserved characteristic. The former is not a problem in the sense that the theory of the fiscal contract is agnostic about the order of play: either the state or citizens could move first. (While understanding the causal pathways is important, it is beyond the scope of this article.) The latter could be a more of a problem since there are theoretical reasons to believe that the structure of the tax system is at least partially related to the structure of the economy, especially national income.³⁸ In fact, however, the revenue variables are not highly correlated with any of the institutional or structural variables in the equation, including national income (see Table 1a and b; c and d provide summary statistics). Furthermore, historical insti-

³⁵ Results using seemingly unrelated regression methods (SUR) are similar to those reported below. Arnold Zellner, "An Efficient Method for Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias," *Journal of American Statistical Association* 57 (June 1962).

³⁶ Arellano-Bond specifications using lagged levels and first differences of the variables as instruments were always the right sign and significant for the predictions of the fiscal contract, but I could not find a specification that rejected serial correlation and accepted the validity of the instruments. Panel estimates for infant mortality and measles and DPT immunizations using panel corrected standard errors (PCSE) and a generalized estimating equation (GEE) also supported the fiscal contract; they too were plagued by problems of serial correlation. See my Web site (fn. 28) for these results. The main problem is that my time series is too short to capture within-country changes, which are quite small, especially compared with the cross-country variation. Manuel Arellano and Stephen Bond, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *Review of Economic Studies* 58 (April 1991); Neal Beck and Jonathan Katz, "What to Do (and Not to Do) with Time-Series Cross-Section Data," *American Political Science Review* 89 (September 1995); Chris Zorn, "Generalized Estimating Equation Models for Correlated Data: A Review with Applications," *American Journal of Political Science* 45 (October 2001).

³⁷ William H. Rogers, "sg17: Regression Standard Errors in Clustered Samples," *Stata Technical Bulletin* 13 (1993).

³⁸ See Hinrichs (fn. 2).

TABLE 1
(a)
CORRELATION MATRIX—ALL COUNTRIES, ALL YEARS

	<i>REVGS</i>	<i>REVCAP</i>	<i>OTHREV</i>	<i>TOTALREV</i>	<i>GDP</i>	<i>POLITY</i>	<i>LAND</i>	<i>POPURB</i>
REVENUE GOODS & SERVICES	1							
REVENUE CAPITAL	0.29	1						
OTHER REVENUE	0.12	-0.01	1					
TOTAL REVENUE	0.59	0.54	0.76	1				
GDPPCPPP(LOG)	0.22	0.50	0.27	0.50	1			
POLITY	0.31	0.45	-0.02	0.30	0.46	1		
LAND (LOG)	-0.33	-0.09	-0.32	-0.39	-0.17	0.00	1	
URBAN POPULATION	0.09	0.29	0.23	0.33	0.71	0.27	-0.17	1

(b)
CORRELATION MATRIX—OECD, ALL YEARS

	<i>REVGS</i>	<i>REVCAP</i>	<i>OTHREV</i>	<i>SSREV</i>	<i>TOTALREV</i>	<i>GDP</i>	<i>POPURB</i>
REVENUE GOODS & SERVICES	1						
REVENUE CAPITAL	0.15	1					
OTHER REVENUE	0.36	-0.22	1				
SOC. SECURITY REVENUE	0.21	-0.21	0.94	1			
TOTAL REVENUE	0.76	0.33	0.76	0.65	1		
GDPPCPPP(LOG)	-0.23	-0.15	0.01	0.05	-0.16	1	
URBAN POPULATION	-0.00	0.51	0.14	0.14	0.30	0.23	1
POPULATION 65+	0.56	-0.19	0.59	0.49	0.58	0.28	0.18
GROSS UNION %	0.63	0.06	0.06	-0.12	0.35	-0.06	0.07
FEDERAL	-0.65	-0.24	-0.22	-0.14	-0.54	0.39	-0.12
PRESIDENTIAL	-0.15	-0.40	-0.06	0.05	-0.27	0.24	-0.41
SOCIAL SPENDING	0.75	0.05	0.65	0.52	0.80	0.10	0.25
TRADE GDP	0.46	0.27	0.50	0.45	0.66	-0.28	0.14

tutionalists from Weber to Steinmo have shown that the development of national tax systems is a complex historical process that depends on many factors, many of which are idiosyncratic rather than systematic.³⁹ Finally, many of the unobserved characteristics should be picked up by time and country dummies, which are used in the panel regressions. In short, while

³⁹ See Weber (fn. 2); and Steinmo (fn. 2). Endogenizing the tax system is devilishly difficult. When the tax variables are placed on the right-hand side and plausible explanatory variables (national income, urban population, industry value added, manufacturing value added, population age structure, country size, democracy, federalism, presidentialism, trade, fuel exports, and so on) are placed on the left-hand side, the regressions typically have an R-squared below 0.5, indicating that most of the explanation is in the error term; see Web site (fn. 28).

TABLE 1 (cont.)

(c)					
SUMMARY STATISTICS—ALL COUNTRIES, ALL YEARS					
	Observations	Mean	Std. Dev.	Min	Max
REV. GOODS					
& SERVICE	486	5.983	4.020	0	20.094
REVENUE CAPITAL	485	6.192	4.852	0	30.466
OTHER REVENUE	484	11.524	8.256	0.205	74.919
TOTAL REVENUE	487	23.717	11.313	0.205	76.961
INFANT MORTALITY	736	59.662	47.937	3.68	246.6
LIFE EXPECTANCY	738	62.262	11.359	33.039	80.262
MEASLES	544	65.806	25.848	1	100
DPT	575	66.853	27.181	0.8	100
HEALTH PUBLIC	276	3.167	1.992	0.325	9.5
HERITAGEPR	142	2.127	1.166	0	4
FORMALCHECK	90	3.718	1.026	1.58	6.01
FORMALEVIC	88	3.780	0.933	1.25	5.92

(d)					
SUMMARY STATISTICS—OECD, ALL YEARS					
	Observations	Mean	Std. Dev.	Min	Max
REV. GOODS					
& SERVICE	475	8.871	4.259	0.606	17.154
REV. CAPITAL	475	10.722	4.503	1.802	23.738
OTHER REV	475	11.962	6.359	−.0114	27.986
TOTAL REV	476	31.540	9.213	9.841	20.612
TOTAL SOCIAL					
SPENDING	378	18.928	5.928	6.44	34.69

endogeneity cannot be ruled out in the absence of a formal test, there appear to be no variables or set of variables that can readily explain the correlations found herein.⁴⁰

With the exception of social spending, the base model for the analysis is:

Level of public service = $\alpha + \beta_1$ (*gni per capita PPP logged*) + β_2 (*democracy index*) + β_3 (*urban population%*) + β_4 (*population logged*) + β_5 (*land area logged*) + β_6 (*Revenue Goods and Services as % of GDP*) + β_7 (*Revenue Capital as % of GDP*) + β_8 (*Other Government Revenue as % of GDP*) + *e*.

⁴⁰To address endogeneity from an econometric standpoint requires instrumental variables. Unfortunately, it is difficult to find instruments for the sources of revenue that have a high explanatory value and are not correlated with each other or the disturbance term. Within the OECD, for example, the variable with the highest correlation with consumption taxes is the dependent variable, social spending (corr = 0.75), followed by gross union membership (0.64) and population 65+ (0.56).

For the cross-sections using total spending, I tried a variety of different specifications using the variables mentioned above. With the exception of the revenue variables, which were consistently the right sign and significant vis-à-vis total social spending, most of the variables—including national income and population 65+—were inconsistent, insignificant, and/or lowered the adjusted R-squared. In the end, I settled on a relatively simple base model, which was fairly consistent across years:

$$\begin{aligned} \text{Total Social spending} = & \alpha + \beta_1 (\text{gni per capita PPP logged}) + \beta_2 (\text{urban population}\%) \\ & + \beta_3 (\text{Presidentialism}) + \beta_4 (\text{Federalism}) + \beta_5 (\text{Revenue Goods and Services as \% of GDP}) \\ & + \beta_6 (\text{Revenue Capital as \% of GDP}) + \beta_8 (\text{Other Government Revenue as \% of GDP}). \end{aligned}$$

The panels include most of the variables listed above as well as time and country dummies.

V. RESULTS

The results clearly show that there is a strong relationship between the source of revenue and the nature of state output. Regressive taxes are consistently associated with higher social spending and human development indicators but not better property rights protection, while progressive taxes are consistently associated with better property rights protection but not higher human development indicators. Total revenue—which comes from a separate regression with the same sample—is generally not associated with either better property rights protection or basic public services.

A summary of the health care and social spending results are shown in Tables 2–4. Table 2 presents the base regressions for health care from 1975 to 1995; Table 3 presents the 1995 results for the log of infant mortality with additional control variables; Table 4 presents the cross-sectional and panel results for social spending in OECD countries.

Table 2 shows the coefficients and standard errors of the four revenue variables, their predicted sign vis-à-vis various dependent variables, the effects of moving from the lowest to highest level of revenue (if significant beyond 90 percent confidence level), the R-squared of the base regressions, and the N associated with each regression.⁴¹ F-tests

⁴¹ The theory of the fiscal contract predicts that consumption taxes should be positively related to public services, while capital taxes should have no effect. Since the other revenue category contains social security, which finances medical expenditure in many parts of the place, it should be associated with public health spending.

are shown when consumption taxes cannot be distinguished from other variables in the regression at the 90 percent confidence level, a problem that arises primarily with measles immunization and total social spending.

There are four things worth noting. First, the predictions of the fiscal contract are clearly supported, while those of the capture and autonomous models are not. *In the base regression, for example, taxes from goods and services (REVGs) are positive with basic public services and social welfare expenditures in all twenty-nine regressions and are significant at the 90 percent confidence interval or better in twenty-seven of them. Taxes from capital (REVCAP), by contrast, are never positive and significant in terms of outcomes; they are, in fact, negative in twelve of the twenty-nine regressions and significant in five of them.* Total revenue and other revenue are inconsistent, at best. They typically have no association with infant mortality and life expectancy; they are sometimes positive and significant with immunizations and health expenditure; they are always positive and generally significant with social spending.⁴² Second, the results are fairly consistent across cross-sections and dependent variables, especially infant mortality, life expectancy, public health spending, and total social spending, which are the predicted sign and significant in every cross-section. Third, the R^2 is reasonably high in most regressions and the revenue variables typically add explanatory power, suggesting that the base model captures much of the variance.⁴³ Fourth, these results are not sensitive to changes in the sample. Not only do the results hold when any region is dropped, but they are fairly consistent even when the sample is split at the midpoint based on level of democracy or income (see, for example, Table 3, models 6 and 7). Fifth, within the OECD, there has been a perceptible shift from financing social expenditures with both consumption taxes and other revenue to financing social expenditures primarily through consumption taxes.

Assuming that Table 2 and Table 3 are mostly self-explanatory, I will elaborate only on infant mortality and life expectancy results in Table 2. With the log model for infant mortality, which provides the best fit, revenue from goods and services is the predicted sign (–) and significant beyond the 95 percent confidence level in all five cross-sections, with an

⁴² When the other revenue category is broken into its component parts, there are noticeable effects from social security taxes, which are clearly linked to basic public services; see Web site (fn. 28).

⁴³ The average R -squared for the ten base regressions with infant mortality and life expectancy is approximately 0.8 and the inclusion of the revenue variables raises the adjusted R -squared by as much as 0.05. The inclusion of the revenue variables typically raises the R -squared with social spending by 0.60 or more.

TABLE 2
SOURCES OF REVENUE AND PUBLIC HEALTH SUMMARY TABLE

Dependent Variable	Revenue from Goods and Services (SE)	Pre-dicted Sign	Effect of Moving from Lowest to Highest	Revenue from Other Sources (SE)	No Prediction	Effect of Moving from Lowest to Highest	Total Revenue (SE)	No Prediction	Effect of Moving from Lowest to Highest	N	R ²
Infant Mortality (log)											
1975	-0.041*** (0.014)	-	0.62	0.005 (0.010)	0/+		-0.002 (0.007)			89	0.8372
1980	-0.036*** (0.011)	-	0.72	0.001 (0.010)	0/+		-0.003 (0.005)			92	0.8498
1985	-0.028** (0.012)	-	0.50	-0.010 (0.010)	0/+		-0.002 (0.006)			88	0.8608
1990	-0.044*** (0.011)	-	0.66	0.004 (0.008)	0/+		0.004 (0.006)			100	0.8756
1995	-0.054*** (0.010)	-	0.98	0.014 (0.010)	0/+		0.008 (0.007)			92	0.8665
Infant Mortality (linear)											
1975	-1.631** (0.662)	% Change - -2.4		0.330 (0.564)	0/+		-0.117 (0.388)			89	0.7715
1980	-1.272** (0.517)	- -2.5		-0.027 (0.509)	0/+		-0.158 (0.250)			92	0.7865
1985	-0.912* (0.488)	- -1.6		-0.193 (0.466)	0/+		-0.256 (0.225)		-1.8	88	0.8043
1990	-1.530*** (0.481)	- -2.3		0.350 (0.380)	0/+		-0.022 (0.300)			100	0.7730
1995	-1.992*** (0.434)	- -3.6		1.025** (0.401)	0/+	2.1	0.470* (0.244)	1.8		92	0.7497

Life/Years	1975	0.404*** (0.128)	+ 6.1	-0.270* (0.136)	0/-	-8.2	0.049 (0.061)	0.020 (0.048)	88	0.8577
	1980	0.291*** (0.099)	+ 5.8	-0.150 (0.110)	0/-		0.032 (0.041)	0.024 (0.039)	92	0.8505
	1985 ^b	0.279*** (0.101)	+ 5.0	-0.149 (0.105)	0/-		0.076* (0.044)	0.057 (0.041)	88	0.8580
	1990	0.281** (0.120)	+ 4.3	-0.129 (0.107)	0/-		-0.004 (0.074)	0.022 (0.055)	100	0.8007
	1995	0.410*** (0.145)	+ 7.4	-0.350* (0.177)	0/-	-7.3	-0.202** (0.097)	-0.124 (0.079)	92	0.7238
								3.7		
Measles	1980	0.733 (0.826)	+ 17.0	0.068 (0.567)	0/-		0.689** (0.289)	0.563** (0.221)	81	0.3648
	1985 ^c	0.851** (0.407)	+ 13.7	-0.056 (0.398)	0/-		0.561*** (0.175)	0.458*** (0.161)	88	0.4995
	1990 ^d	0.770** (0.381)	+ 22.3	-0.325 (0.317)	0/-		0.292 (0.215)	0.229 (0.175)	99	0.3497
	1995 ^e	1.296*** (0.309)		-1.088*** (0.260)	0/-	-22.6	-0.130 (0.151)	-0.078 (0.148)	91	0.4299
								51.6	37.2	
								27.0	24.7	

TABLE 2 (cont.)

Dependent Variable	Revenue from Goods and Services (SE)	Pre-dicted Sign for Fiscal Contract	Effect of Moving from Lowest to Highest	Revenue from Capital (SE)	Predicted Sign	Effect of Moving from Lowest to Highest	Revenue from Other Sources (SE)	No Prediction	Effect of Moving from Lowest to Highest	Total Revenue ^e (SE)	No Prediction	Effect of Moving from Lowest to Highest	N	R ²
DPT			% change											
1980 ^f	1.773*** (0.630)	+	35.4	-0.151 (0.413)	0/-		0.674*** (0.232)		50.5	0.629*** (0.198)		41.6	85	0.5793
1985	0.661 (0.411)	+		0.116 (0.350)	0/-		0.711*** (0.160)		34.3	0.549*** (0.135)		42.2	88	0.6009
1990	0.780** (0.333)	+	11.8	-0.063 (0.274)	0/-		0.296 (0.204)			0.319** (0.151)		17.3	100	0.4877
1995	1.350*** (0.303)	+	24.4	-0.898*** (0.233)	0/-	-18.8	-0.003 (0.156)			0.047 (0.145)			91	0.4892
Health			Change % GDP											
1990	0.191*** (0.061)	+	2.89	0.020 (0.037)	0/-		0.059** (0.024)		1.85	0.077*** (0.020)		3.68	99	0.6200
1995 ^g	0.233*** (0.053)	+	4.22	-0.000 (0.029)	0/-		0.064*** (0.020)		2.52	0.080*** (0.021)		3.85	91	0.6639
Social ^h			Change % GDP											
1975	0.740*** (0.194)	+	12.5	0.091 (0.201)	0/-		0.413*** (0.117)		11.1	0.504*** (0.093)		2.3	17	0.8112
1980	0.662** (0.248)	+	10.1	0.001 (0.275)	0/-		0.424** (0.138)		7.8	0.500** (0.111)		2.2	17	0.7316
1985	0.627** (0.255)	+	14.0	0.157 (0.318)	0/-		0.446** (0.183)		5.2	0.526*** (0.103)		1.9	16	0.7067
1990	1.264*** (0.293)	+	27.2	-0.190 (0.293)	0/-		0.180 (0.189)			0.604*** (0.162)		1.5	18	0.7177

*significant at 10%; **significant at 5%; ***significant at 1%; robust standard errors in parentheses

^aTotal revenue comes from a separate regression using the same countries.

^bF-tests: Revenue from goods & services=Revenue from capital=0.31; Revenue from goods & services=Other revenue=0.19.

^cF-tests: Revenue from goods & services=Revenue from capital=0.54; Revenue from goods & services=Other revenue=0.95.

^dF-tests: Revenue from goods & services=Revenue from capital=0.15; Revenue from goods & services=Other revenue=0.50.

^eF-tests: Revenue from goods & services=Other revenue=0.31.

^fF-tests: Revenue from goods & services=GDPPC (log) PPP=0.14.

^gF-tests: Revenue from goods & services=GDPPC (log) PPP=0.27.

^hF-tests show that REVGs cannot be distinguished from many other variables in the regressions. See Table 4 and text for more details.

TABLE 3
INFANT MORTALITY (LOG)
(1995)

		<i>Pre- dicted Sign</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6 Low- Income Countries^c</i>	<i>Model 7 High- Income Countries^d</i>
REVENUE GOODS & SERVICES	-		-0.053*** (0.009)	-0.054*** (0.010)	-0.049*** (0.013)	-0.035** (0.017)	-0.039** (0.016)	-0.059** (0.023)	-0.048*** (0.016)
REVENUE	0/+		0.014 (0.010)	0.014 (0.010)	0.014 (0.010)	0.020** (0.010)	0.017* (0.010)	0.021 (0.013)	0.008 (0.019)
CAPITAL									
OTHER			0.008 (0.007)	0.008 (0.007)	0.009 (0.007)	0.013** (0.005)	0.012** (0.006)	0.018 (0.010)	-0.006 (0.010)
REVENUE									
TOTAL			-0.003 (0.007)	-0.002 (0.007)	0.001 (0.007)	0.008 (0.007)	0.008 (0.007)	0.012 (0.010)	-0.016** (0.007)
REVENUE ^a									
GDPPC (LOG)			-0.827*** (0.064)	-0.840*** (0.068)	-0.809*** (0.077)	-0.881*** (0.091)	-0.804*** (0.100)	-0.644*** (0.118)	-1.024*** (0.106)
PPP									
URBAN			-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.003 (0.003)	-0.003 (0.004)	0.000 (0.006)
POPULATION									
POPULATION (LOG)			-0.006 (0.036)	-0.003 (0.036)	0.004 (0.038)	0.047 (0.038)	0.065 (0.042)	-0.001 (0.046)	0.055 (0.061)
LAND AREA			0.060* (0.031)	0.058* (0.032)	0.054 (0.033)	0.034 (0.032)	0.025 (0.031)	0.061 (0.059)	0.015 (0.045)
POLITY ^b				0.004 (0.007)	0.002 (0.007)	0.006 (0.009)	-0.001 (0.008)	0.008 (0.009)	-0.003 (0.017)
ELF					0.249 (0.207)		-0.007 (0.197)		
GINI						0.021*** (0.006)	0.023*** (0.005)		
AIDGDP							-0.018*** (0.006)		
CONSTANT			9.784*** (0.572)	9.803*** (0.601)	9.392*** (0.735)	8.645*** (0.912)	8.118*** (1.048)	8.172*** (0.999)	11.364*** (1.160)
OBSERVATIONS			93	92	90	71	70	46	46
R-SQUARED			0.8662	0.8665	0.8704	0.9043	0.9242	0.7250	0.7293

* significant at 90%; ** significant at 95%; ***significant at 99%; robust standard errors in parentheses

^aTotal revenue comes from a separate regression.

^b Polity is not negative and significant in 1995 because of the entry of new democracies. In panels, which look at changes in democracy and changes in infant mortality, it is typically negative and significant, though it is hard to obtain meaningful results because of serial correlation.

^cBottom half of sample based on GDPPC, PPP adjusted.

^dTop half of sample based on GDPPC, PPP adjusted.

TABLE 4
TAXES AND TOTAL SOCIAL SPENDING
(% OF GDP)

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>
	<i>X-Section</i>	<i>X-Section</i>	<i>X-Section</i>	<i>X-Section</i>	<i>Panel</i>	<i>Panel w/</i>
	<i>1990-95</i>	<i>1990-95^a</i>	<i>1990-95</i>	<i>1990-95</i>	<i>w/ Cluster</i>	<i>Year &</i>
					<i>1975-95^b</i>	<i>Country</i>
						<i>Dummies^c</i>
REVENUE GOODS		1.264***		0.547**	0.695***	0.540***
& SERVICES		(0.293)		(0.142)	(0.156)	(0.160)
REVENUE CAPITAL		-0.190		0.067	0.151	0.102
		(0.293)		(0.136)	(0.145)	(0.187)
OTHER REVENUE		0.180		0.976***	0.632***	0.213*
		(0.189)		(0.102)	(0.079)	(0.121)
GDPPC (LOG) PPP	-6.428	1.242	-8.871	-8.761**	3.557	-6.018*
	(13.730)	(8.784)	(13.594)	(2.706)	(3.768)	(3.420)
PRESIDENTIAL	1.964	2.108	7.208	1.249		
	(4.210)	(2.260)	(4.367)	(1.048)		
FEDERAL	-5.087	0.605	-3.340	-0.091		
	(3.403)	(2.156)	(2.897)	(0.821)		
URBAN POP	0.116	0.123	0.065	0.118***	0.067	0.130
	(0.154)	(0.097)	(0.144)	(0.0261)	(0.045)	(0.167)
POP65+%			1.126	-1.390***	-0.489*	-0.359
			(0.841)	(0.241)	(0.271)	(0.250)
POP1564%			0.332	0.732**	0.343	-0.350
			(0.776)	(0.159)	(0.215)	(0.329)
VOTER TURNOUT			(0.143)	-0.124	-0.059	-0.011
			(0.204)	(0.060)	0.046	(0.051)
TRADE GDP			0.049	-0.076**	-0.028*	0.009
			(0.049)	(0.017)	(0.014)	(0.030)
UNION GROSS			9.966	29.286***	14.088***	15.298*
			(7.935)	(2.789)	(3.516)	(8.234)
NEO			1.966	-6.762**		
CORPORATISM			(6.490)	(1.422)		
PROP. REP.			-1.105	0.681		
			(4.833)	(0.981)		
CONSTANT	77.706	-13.236	47.901	56.244	-52.187*	71.649*
	(133.29)	(86.942)	(133.28)	(28.030)	(26.019)	(39.589)
OBSERVATIONS	18	18	18	18	328	328
GROUPS					18	18
ADJ. R-SQUARED	0.0064	0.7177	0.5082	0.9843	0.8646	0.9626
PROB>F	0.4295	0.0031	0.1262	0.0021	0.0000	N/A

^a Although the revenue variables are not highly correlated with the other variables in the regression (see Table 1b), the small sample makes it difficult to distinguish REVGs from some of the other variables in the regression, notably per capita income and other revenue. With the time and country dummies (Model 6) REVGs can be distinguished from everything at the 90% confidence interval, except other revenue (F-tests: Revenue from goods & services=other revenue=0.11)

^b In the pooled cross-sections and panels, nearly identical results are obtained with lags of the revenue variables, which should at least ensure contemporaneous exogeneity.

^c F-test indicate that country and time dummies are each jointly significant.

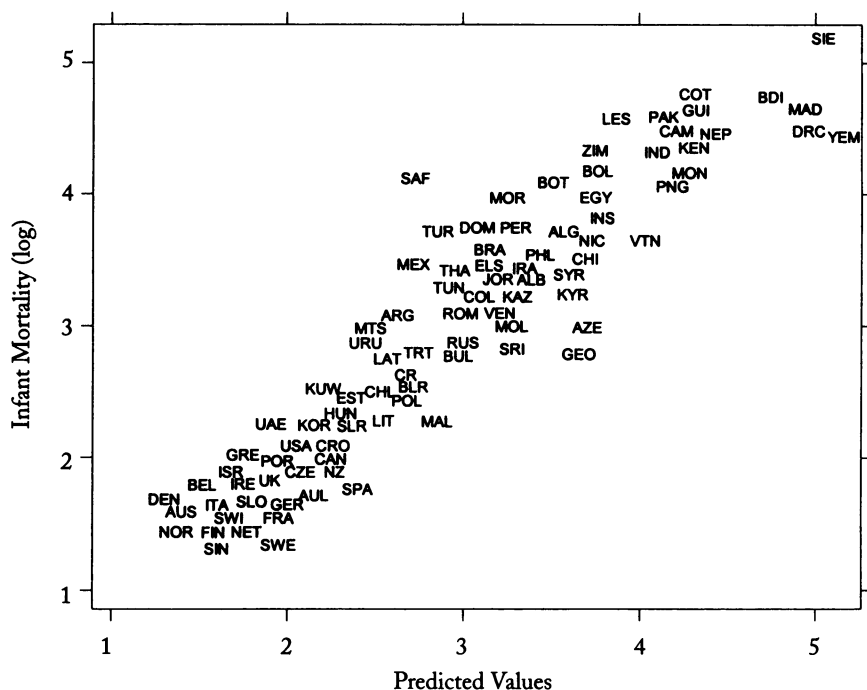


FIGURE 4

ACTUAL VS. PREDICTED VALUES FOR THE LOG OF INFANT MORTALITY (1995)

average coefficient of 0.04. REVCAP, by contrast, is never associated with lower infant mortality in either model; it is typically positive, but not significant, except with the linear model in 1995.⁴⁴ In tangible terms, this means that governments in two countries, identical in every respect save the tax structure, would provide vastly different levels of services for their citizens. Holding the other variables constant at their mean, a country that raised the maximum level of revenue from goods and services in 1995 (18 percent of GDP) would have had 36 fewer infant deaths per 1,000 live births than a country that raised the minimum amount (<1 percent of GDP), just over a standard deviation ($SD = 32$).⁴⁵ A similar difference in revenue from REVCAP, by contrast, would have been associated with 21.4 more infant deaths per 1,000 live births. Fig-

⁴⁴The 1995 results are slightly more compelling than the other cross-sections. Part of the reason is that the 1995 cross-section contains more countries from Eastern Europe and fewer from Africa.

⁴⁵A one standard deviation increase in revenue from goods and services translates into somewhere between one-tenth and one-quarter of a standard deviation decrease in infant mortality in both the linear and log models, depending on the year and control variables.

ure 4 graphs the predicted values for the log of infant mortality against the actual values from the base regression for 1995.

The results for life expectancy, public health expenditure, and immunization rates are similar to the results for infant mortality. With life expectancy, for example, REVGS is the predicted sign (+) and significant in all five cross-sections, with an average coefficient of 0.33. Moving from the lowest to the highest level of REVGS in 1995 would have been associated with an eleven-year increase in life expectancy, approximately one standard deviation in the sample.⁴⁶ REVCAP, by contrast, is always negative with life expectancy and is significant at conventional levels in 1975 and 1995. Hence, an increase in REVCAP from the lowest to the highest level would have been associated with a 6.7-year decrease in life expectancy in 1975 and a 7-year decrease in 1995.

Table 4 shows the relationship between the distribution of the tax burden and the level of total social transfers in the OECD. Models 1–4 present the cross-sectional results from 1990 to 1995 with and without the revenue variables and with a battery of control variables. The first things to note are that most of the control variables are not significant by themselves and that adding the revenue variables dramatically raises the adjusted R-squared—from 0.0064 in model 1 to 0.7177 in model 2 and from 0.5082 in model 3 to 0.9843 in model 4—indicating that the revenue variables are not highly correlated with the other variables in the regression. Second, with virtually every specification, REVGS is positive and significant with total social spending, while REVCAP switches signs and is never close to being positive and significant. While there is considerable variation in the coefficients across the specifications, in part because of the small sample, even the smallest coefficient on REVGS (0.547) is considerable. At a minimum, a one standard deviation increase in REVGS is associated with more than one-third of a standard deviation increase in social spending.⁴⁷ The panel regressions with and without time and country dummies, which are jointly significant, show a similar pattern as the cross-sections. Figure 5 graphs consumption taxes and social spending in eighteen OECD countries.

Table 5 shows the Heritage Foundation's property rights measure vis-à-vis the sources of revenue. REVCAP is always the predicted sign (positive) and significant at the 90 percent confidence interval or greater. The coefficient of approximately 0.05 is modest but not insub-

⁴⁶ A one standard deviation increase in revenue from goods and services translates into somewhere between one-tenth and one-fifth of a standard deviation increase in life expectancy, depending on the year and control variables.

⁴⁷ Other revenue is always positive and typically significant with total transfers.

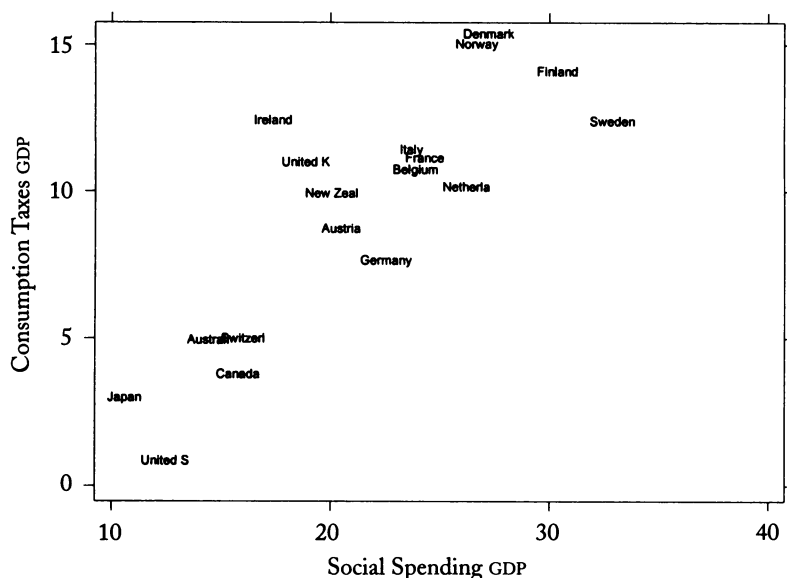


FIGURE 5
REVENUE FROM CONSUMPTION TAXES VS. TOTAL TRANSFERS IN 18 OECD COUNTRIES
(1990-95)*

*Although the graph shows only 1990-95 data, it is representative of most years.

stantial: a one standard deviation increase in REVCAP would translate into a 0.23 increase in property rights, approximately one-fifth of a standard deviation. REVGS, by contrast, is almost always negative and sometimes significant, while other revenue and total revenue have no effect. The main exception is with the English legal system, which is positively correlated with REVCAP, but not REVGS. A test of means shows that countries with the English legal system raise an average of 8.0 percent of GDP from capital, compared to 5.2 percent of GDP for everyone else. The difference is roughly two-thirds of a standard deviation and is statistically significant at the 99 percent confidence interval. In short, the English legal system may provide better property rights protection, but there is no such thing as a free lunch. Figure 6 graphs the actual versus the predicted values for the Heritage Property Rights Measure.

Table 6 presents the results with the formalism check measure.⁴⁸ REVCAP is the predicted sign (negative) and significant at the 95 percent confidence level or higher with every specification, while REVGS is typically positive and sometimes significant. The coefficient on REVCAP

⁴⁸ Because of space constraints, I present only the formalism check results; the results using eviction are similar.

TABLE 5
HERITAGE PROPERTY RIGHTS MEASURE
(1995)

	<i>Pre- dicted Sign</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7^b</i>
REVENUE	0/-	-0.030	-0.044**	-0.049**	-0.049*	-0.038	-0.006	-0.054*
G&S		(0.019)	(0.020)	(0.023)	(0.025)	(0.025)	(0.036)	(0.027)
REVENUE	+	0.042**	0.036**	0.050***	0.050***	0.036*	0.062**	0.044**
CAPITAL		(0.017)	(0.015)	(0.018)	(0.017)	(0.022)	(0.023)	(0.018)
OTHER		-0.010	-0.009	-0.000	-0.000	0.002	-0.026	0.001
REVENUE		(0.010)	(0.010)	(0.013)	(0.013)	(0.013)	(0.016)	(0.014)
TOTAL		-0.003	-0.006	-0.002	-0.002	-0.001	-0.001	-0.001
REVENUE ^a		(0.007)	(0.008)	(0.010)	(0.010)	(0.009)	(0.014)	(0.011)
LAND AREA		-0.073**	-0.085**	-0.068*	-0.067*	-0.063*	-0.071	-0.006
(LOGGED)		(0.034)	(0.035)	(0.038)	(0.040)	(0.038)	(0.044)	(0.086)
GDPPC		0.703***	0.588***	0.513***	0.515***	0.502***	0.465*	0.583***
(LOG, PPP)		(0.118)	(0.127)	(0.144)	(0.149)	(0.140)	(0.236)	(0.165)
URBAN		0.004	0.006	0.008	0.008	0.010*	0.008	0.016**
POP		(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.008)	(0.007)
POLITY			0.035**	0.025*	0.025*	0.023	0.016	0.012
			(0.014)	(0.014)	(0.014)	(0.014)	(0.017)	(0.020)
FUEL				-0.008*	-0.008*	-0.008*	-0.012**	-0.008*
EXPORTS				(0.005)	(0.005)	(0.005)	(0.006)	(0.004)
AFRICA					0.024			
					(0.276)			
ENGLISH						0.311		
						(0.231)		
ELF							0.110	
							(0.396)	
GINI							-0.001	
							(0.012)	
AIDGDP							0.002	
							(0.015)	
CONSTANT		-2.880***	-2.280**	-1.820	-1.852	-1.963	-1.428	-1.926
		(0.902)	(0.922)	(1.186)	(1.322)	(1.210)	(2.190)	(1.187)
OBSERVATIONS		92	91	83	83	83	65	63
R-SQUARED		0.6348	0.6642	0.6604	0.6605	0.6717	0.6451	0.6796

* significant at 90%; ** significant at 95%; ***significant at 99%; robust standard errors in parentheses.

^aTotal revenue comes from a separate regression.

^b Includes all countries except those with the English legal system.

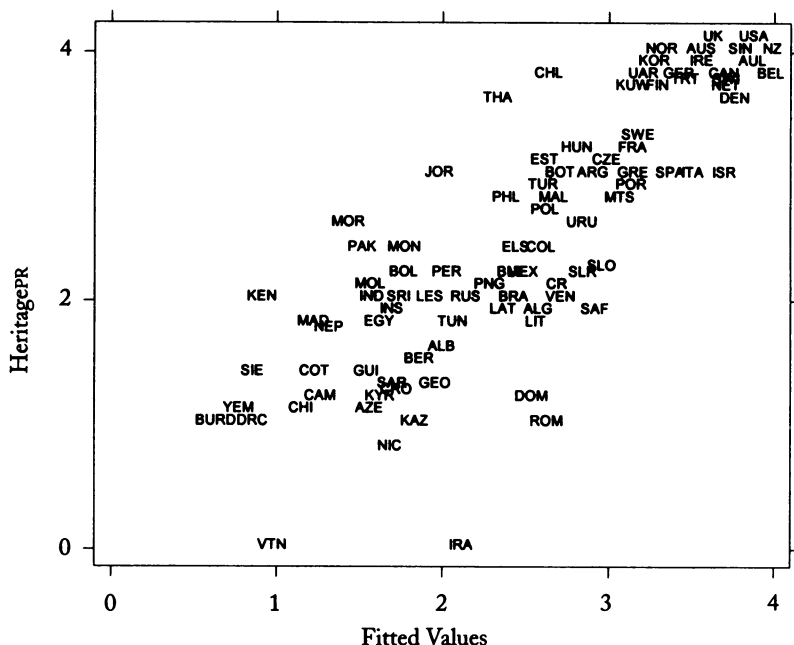


FIGURE 6
ACTUAL VS. PREDICTED VALUES FOR HERITAGE PR
(1995)*

*The Heritage property measures cluster on whole numbers. To make the country abbreviations readable, I made minor adjustments to some of the actual values. The original graph and data are available from the author.

is quite substantial (approximately -0.13); a one standard deviation increase in REVCAP would be associated with a one-half standard deviation decrease in formalism. Other revenue has no effect, while total revenue is typically negative, but not significant.

There are three other things worth noting about the statistical analysis.

1. Social security taxes are clearly linked to public goods outcomes (see Web site, fn. 28) but not property rights protection. This finding makes sense since social security taxes are typically regressive and are generally earmarked for medical expenditures and old-age benefits in many parts of the world. They are positive and significant with health care spending, with a sizable coefficient—a one standard deviation increase in social security taxes translates into roughly one-half a standard deviation increase in health expenditures. Social security taxes are also positive and sometimes significant with immunization rates, total social spending and life expectancy, and negative and sometimes significant with infant mortality. In most years trade taxes are positive and significant with immunization rates, but they are not systematically related to

TABLE 6
FORMAL CHECK
(1995)

	<i>Pre- dicted Sign</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
REVENUE	0/+	0.048**	0.040*	0.050*	0.048*	0.004	0.030	0.081*
G&S		(0.022)	(0.024)	(0.027)	(0.027)	(0.028)	(0.026)	(0.043)
REVENUE	-	-0.128***	-0.134***	-0.142***	-0.128***	-0.083***	-0.134***	-0.135***
CAPITAL		(0.022)	(0.022)	(0.026)	(0.031)	(0.029)	(0.026)	(0.029)
OTHER		0.004	0.007	-0.006	-0.003	-0.018	-0.005	-0.017
REVENUE		(0.013)	(0.012)	(0.018)	(0.018)	(0.016)	(0.018)	(0.020)
TOTAL		-0.014	-0.015	-0.018	-0.008	-0.027**	-0.024	-0.021
REVENUE ^a		(0.011)	(0.011)	(0.015)	(0.014)	(0.011)	(0.015)	(0.016)
LOGLAND		0.020	0.017	-0.011	-0.007	-0.040	-0.013	0.017
		(0.061)	(0.062)	(0.067)	(0.068)	(0.059)	(0.068)	(0.075)
GDPPPPLOG		-0.290*	-0.375**	-0.427**	-0.485**	-0.404**	-0.513***	-0.717***
		(0.163)	(0.183)	(0.184)	(0.201)	(0.173)	(0.189)	(0.238)
POPURB		0.011	0.011	0.011	0.010	0.004	0.012*	0.017**
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
POLITY			0.035*	0.037	0.032	0.040*	0.039	0.043
			(0.018)	(0.024)	(0.025)	(0.021)	(0.024)	(0.030)
FUEEXP				0.004	0.004	0.007	0.005	0.009
				(0.008)	(0.008)	(0.007)	(0.008)	(0.007)
AFRICA					-0.495			
					(0.410)			
ENGLISH						-1.048***		
						(0.254)		
ELF							-0.575	-0.480
							(0.365)	(0.420)
GINI								-0.010
								(0.013)
AIDGDP								0.048*
								(0.024)
CONSTANT		5.713***	6.084***	6.894***	7.452***	7.897***	7.974***	8.686***
		(1.439)	(1.667)	(1.637)	(1.831)	(1.518)	(1.641)	(1.889)
N		71	70	66	66	65	64	55
R-SQ _e		0.4021	0.4213	0.4731	0.4818	0.5876	0.4792	0.5659

* significant at 90%; ** significant at 95%; ***significant at 99%; robust standard errors in parentheses
^aTotal revenue comes from a separate regression.

the other variables. Likewise, fuel exports are almost always negative and frequently significant with basic public services and property rights. This makes sense theoretically since fuel exports are a major source of revenue from capital that obviates bargaining with citizens.

2. Gini is inconsistent across years and dependent variables, with or without the revenue variables. The inclusion of Gini tends to lower the coefficient and sometimes the significance level of the revenue variables, though the changes are relatively small in terms of standard deviations. The real surprise is that less unequal countries appear to be different, not more unequal ones. In countries with high levels of inequality, the coefficients are typically larger than the entire sample. In countries with low levels of inequality, consumption taxes pack less of a punch, while the other revenue variables remain largely unaffected. While the small number of low-inequality countries makes it difficult to parse out an explanation, one possibility is that the incidence of consumption and capital taxes is roughly equivalent in egalitarian countries.

3. Trade is not systematically linked with public service outcomes. It tends to be positive but is rarely significant. This result is obviously not a test of any globalization hypothesis, but it suggests that both criticisms and claims may be overblown. Not only are the preglobalization results (1975) quite similar to the postglobalization (1995) results, but countries that have increased their intake from regressive taxes over the past quarter century—due to globalization or other factors—have increased their output of basic services more than countries that obtain revenue from other sources, undermining claims that globalization eviscerates the state's ability to provide social services.

VI. CONCLUSION

I have sought to paint in broad brush strokes the relationship between states, taxes, and public services, particularly basic health care and property rights—the building blocks of human well-being and material prosperity. Using a relatively simple theory and model, I argued that states have incentives to match the distribution of the tax burden with the distribution of public benefits. I then showed that the more revenue states raise from lower-income groups, the more they provide basic public services and spend on social welfare; by contrast, the more revenue states raise from the rich, the better they protect property rights. There was no evidence that governments gouge the rich to benefit the poor (or vice versa), casting doubt on state-capture theories. Nor was there any evidence that taxes and spending are purely random, casting doubt on state-autonomy models. These findings hold across democracies and nondemocracies, at different levels of national income, and with a battery of control variables. They are important because they show that states respond to the people who pay for them, limiting the amount of real-world redistribution that

occurs. They suggest that one reason so many poor countries (and, arguably, the United States) fail to serve lower-income groups is because they do not tax them intensely. They also suggest that attempts to cut taxes on the rich in order to spur economic growth may be misguided. The protection of property rights, the fundamental underpinning of economic growth, rests on a bargain between holders of capital and the state, whereby the former turn over some of their money to the latter in return for policies that allow them to make more money. In other words, neither the poor nor the rich can have their cake and eat it too.

Undoubtedly, these findings will be disturbing to some people from both the left and the right. Not only do they challenge the belief that states rob Peter to pay Paul, but they suggest that states are far less powerful than typically presumed. Most states are not born with revenue. Instead, they have to bargain with citizens for it. This bargaining process allows ordinary people to obtain benefits from government at a lower price that they could obtain through the market, making citizens better off than they would be in the absence of taxes and services. In short, taxes are the price of civilization, and states, for all their deficiencies, are generally Pareto-improving devices.

This article aims to further our understanding of the modern state, but much remains to be done. The first task is to provide a complete mapping of preferences onto taxes and outcomes. Better data about preferences and tax incidence would allow us to undertake more comprehensive tests of the broad framework sketched out above. Not only would it help us discover just how good (or how bad) states are at being discriminating monopolists, but it would also allow for more refined versions of the contract, perhaps even laying out the conditions that would allow redistribution to be an equilibrium. The second task is to explain why countries move up (or down) the contract line with different groups. A detailed answer is beyond the scope of this article, but the Prisoner's Dilemma framework and the notion of credible commitment provide some important clues. The key to overcoming any prisoner's dilemma is the ability to make credible commitments. While there are many functional equivalents, at least two variables—democracy and left-wing parties—seem to have systematic consequences for taxes and services. First, while democracies are indistinguishable from nondemocracies in terms of total revenue, they acquire more revenue from taxes on consumption and capital and have higher levels of services.⁴⁹ The

⁴⁹ See David A. Lake and Matthew A. Baum, "The Invisible Hand of Democracy: Political Control and the Provision of Public Services," *Comparative Political Studies* 34 (August 2001).

simplest theoretical explanation is that representation allows for more taxation: by agreeing to share decision-making authority with citizens, politicians can credibly commit to undertake certain policies, enabling them to raise more revenue from the enfranchised. Second, countries with a long history of strong left-wing parties provide higher levels of services for lower-income groups; they also tax lower-income groups more intensely. These findings are illustrated in Figure 7, which graphs consumption taxes against the cumulative percentage of cabinets seats held by left-wing parties in different OECD countries between 1990 and 1995.⁵⁰

In sum, while there is ample room for refining and (one would hope) extending the findings of this article, three fundamental points should stand out. First, if we want to understand what states do, we need to understand where they get their money. Second, there is no such thing as a free lunch: by and large, groups get what they pay for. Third, because it is cheaper to trade services for revenue than purely to extort it, states operate like fiscal contracts, not roving or stationary bandits.

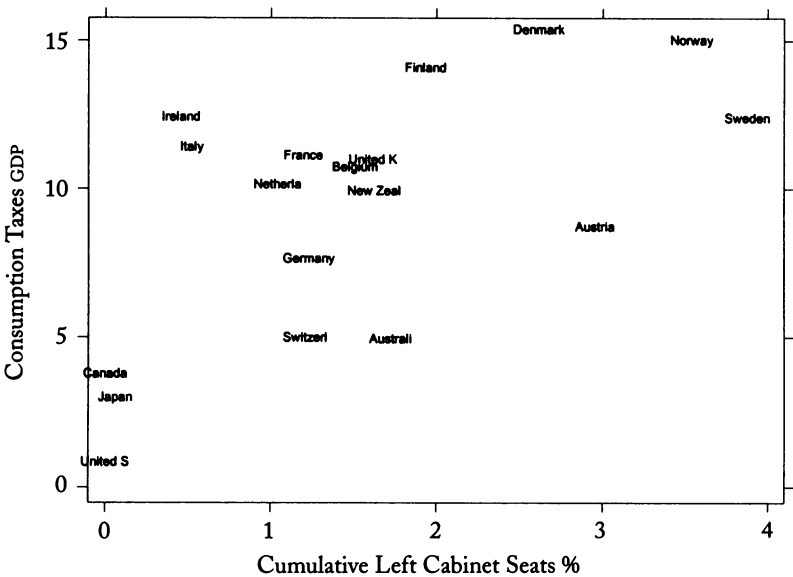


FIGURE 7
CONSUMPTION TAXES VS. CUMULATIVE LEFT CABINET, 1990-95, OECD

⁵⁰ For data, see Evelyn Huber, Charles Ragin, John D. Stephens, David Brady, and Jason Beckfield, Comparative Welfare States Data Set, Northwestern University, University of North Carolina, Duke University and Indiana University, <http://lissy.ceps.lu/compwsp.htm>, 2004.

APPENDIX 1: VARIABLE DEFINITIONS⁵¹

INDEPENDENT VARIABLES

TOTAL REVENUE

All revenue to the central government from taxes and nonrepayable receipts (other than grants), measured as a percentage of GDP.

REVENUE GOODS AND SERVICES

Includes general sales and turnover or value added taxes, selected excises on goods, selective taxes on services, taxes on the use of goods or property, and profits of fiscal monopolies.

REVENUE CAPITAL

Includes taxes levied on the actual or presumptive net income of individuals, the profits of enterprises and capital gains, whether realized on land, securities, or other assets.

OTHER REVENUE

Includes payroll, labor, property, import and export taxes, taxes not allocable to other categories, and nontax revenues.

INFANT MORTALITY

The number of infants dying before reaching age one per 1,000 live births.

DEPENDENT VARIABLES

DPT IMMUNIZATIONS

Percentage of one year olds vaccinated against DPT.

MEASLES IMMUNIZATIONS

Percentage of one year olds vaccinated against measles.

LIFE EXPECTANCY

Years a newborn would live if prevailing mortality patterns were to stay the same throughout its life.

PUBLIC HEALTH EXPENDITURES

Recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from in-

⁵¹ Unless otherwise mentioned, all data come from the World Development Indicators CD-Rom-Bank (fn. 31).

ternational agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.

TOTAL SOCIAL EXPENDITURES

Public spending on pensions, unemployment insurance, welfare, health care, and housing. Source: Lindert (fn. 2).

HERITAGE PROPERTY RIGHTS

0–5 index based on the existence of independent courts; the existence of a commercial code defining contracts; the sanctioning of foreign arbitration of commercial disputes; freedom from expropriation by government or other actors; procedural expediency; freedom from judicial corruption, and legally granted and protected private property. Source: Heritage Foundation (fn. 20).

FORMAL CHECK and FORMAL EVICTION

Formal check and formal eviction are based on the number of procedures that must be taken in order to collect a bad check or evict a tenant for nonpayment. Source: Djankov et al. (fn. 21).

MAIN CONTROL VARIABLES

POLITY

A 21-point linear scale of democracy ranging from least democratic (0) to most democratic (20). The index is based on the degree of political competition, the extent of political participation and the magnitude of the constraints on the executive. I also convert the index into a series of dummy variables, using different cut-points for democracy and non-democracy. Source: Marshall G. Montgomery, Keith Jagers, and Ted Robert, *Polity IV Project: Regime Characteristics 1800–2000*, Computer File (Washington, D.C.: University of Maryland, 2000).

ETHNOLINGUISTIC FRACTIONALIZATION (ELF)

The probability that any two randomly chosen individuals will not belong to the same group. Source: Philip G. Roeder, *Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985*, <http://weber.ucsd.edu/~proeder/elf.htm>, February 2001.

INEQUALITY

The Gini coefficient, taken from Klaus Deininger and Lyn Squire, "A New Data Set Measuring Income Inequality," *World Bank Economic Review* 10 (September 1996).

LEGAL ORIGIN

Dummy variables for the world's major legal systems—German, French, Scandinavia, English, and Socialist—drawn from Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, “Law and Finance,” *Journal of Political Economy* 106 (December 1998); and the CIA World Factbook (2002).

PER CAPITA INCOME (LOGGED)

Per capita gross national income adjusted for purchasing power parity in current international dollars. Similar results are obtained with other measures of GDP.

TRADEGDP

The sum of exports and imports of goods and services measured as a share of GDP.

REGIONAL AND INCOME VARIABLES

Dummy variables based on the World Bank's classification scheme: East Asia and the Pacific (ESPAC), Eastern Europe and Central Asia (EEURO), Sub-Saharan Africa (AFRICA), Middle East and North Africa (MENA), Latin America (LATIN), and OECD.

PRESIDENTIALISM

0–1 dummy, Beck et al. (fn. 30).

PROPORTIONAL REPRESENTATION

0–1 dummy; Beck et al. (fn. 30).

VOTER TURNOUT

Percentage of eligible voters; Huber et al. (fn. 50).

NEOCORPORATISM

0–1 continuous index. Source: Lane Kenworthy “Quantitative Indicators of Corporatism,” *International Journal of Sociology* 33 (Fall 2003).

UNION MEMBERSHIP

Gross union membership percentage of workforce. Source: Huber et al (fn. 50).