

# Political Participation, Income Distribution, and Public Transfers in Developed Democracies

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**Abstract:** In the postwar era until recently, public-transfer shares of GDP have risen dramatically in every developed democracy. Much positive theory purports to explain this development as a direct consequence of differing distributions of political (votes) and economic (money) resources. This literature concludes, *inter alia*, that tax-and-transfer-system (T&T) sizes increase in the skew of the income distribution. This paper builds from that basis, suggesting theoretical additions and amendments deriving from further consideration of the democratic processes that transform resources into influence. It especially emphasizes that not everyone participates politically and that who participates is non-randomly selected. This implies that aggregate participation rates will mediate T&T responses to income inequality, and, conversely, that income inequality will mediate T&T responses to aggregate participation rates. Specifically, since the relatively wealthy have higher propensity to participate politically, higher aggregate participation rates will generally coincide with increased democratic representation of the relatively less well-off, suggesting that democratic governments will respond to greater inequality with larger T&T increases the higher the participation rate and, *vice versa*, higher participation induces larger T&T responses the more skewed the underlying income distribution. Regression analysis of the postwar T&T experiences of developed democracies support that hypothesis empirically.

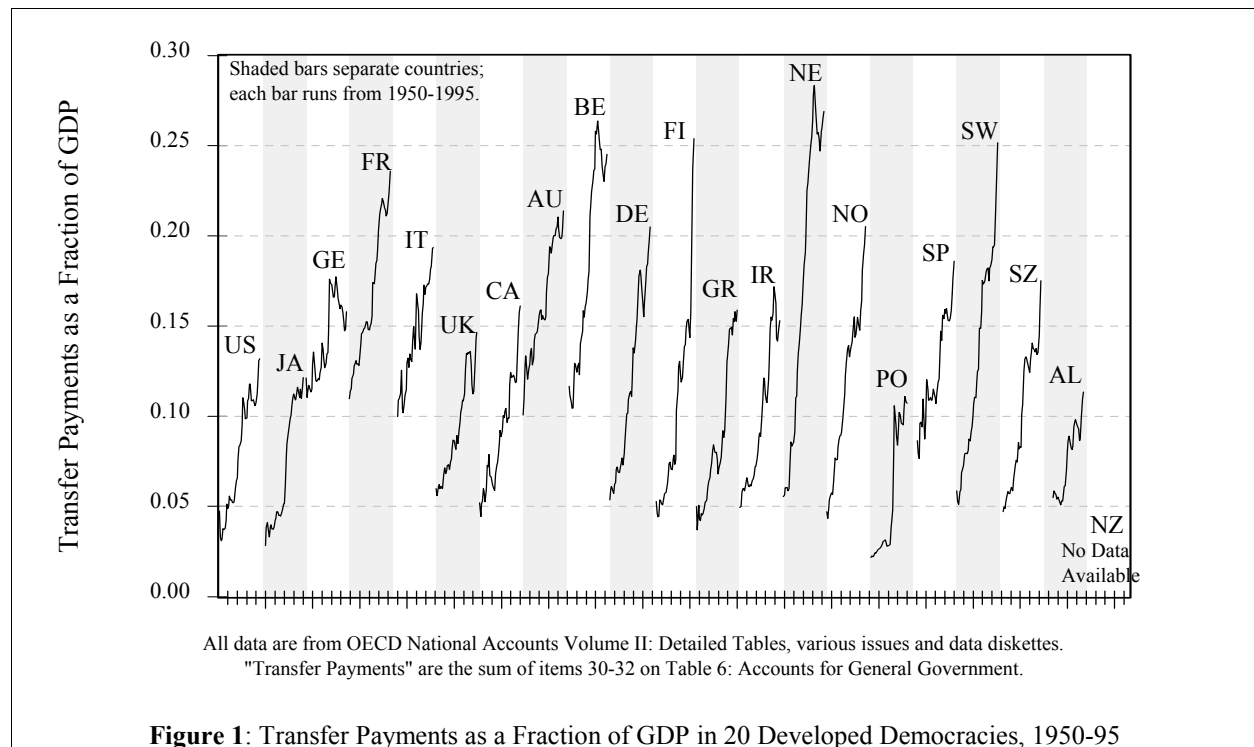
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<sup>1</sup> Previous versions presented at the American Political Science Association (APSA) Meeting, September 1998, at the Harvard-MIT Research Training Group in Positive Political Economy, Spring 1996, and at the 1996 APSA. Some of these arguments and related extensions also appear in [references omitted for anonymity]. I gratefully acknowledge helpful comments, criticisms, and suggestions from Steve Ansolabahere, Torben Iversen, Thomas Cusack, Carles Boix, Michael Thies, Chris Achen, Jim Alt, Nancy Burns, Ken Kollman, Bill Clark, and Michael Wallerstein. The remaining shortcomings are my own and are the more inexcusable given such excellent advice.

## Political Participation, Income Distribution, and Public Transfers in Developed Democracies

**Abstract:** In the postwar era until recently, public-transfer shares of GDP have risen dramatically in every developed democracy. Much positive theory purports to explain this development as a direct consequence of differing distributions of political (votes) and economic (money) resources. This literature concludes, *inter alia*, that tax-and-transfer-system (T&T) sizes increase in the skew of the income distribution. This paper builds from that basis, suggesting theoretical additions and amendments deriving from further consideration of the democratic processes that transform resources into influence. It especially emphasizes that not everyone participates politically and that who participates is non-randomly selected. This implies that aggregate participation rates will mediate T&T responses to income inequality, and, conversely, that income inequality will mediate T&T responses to aggregate participation rates. Specifically, since the relatively wealthy have higher propensity to participate politically, higher aggregate participation rates will generally coincide with increased democratic representation of the relatively less well-off, suggesting that democratic governments will respond to greater inequality with larger T&T increases the higher the participation rate and, *vice versa*, higher participation induces larger T&T responses the more skewed the underlying income distribution. Regression analysis of the postwar T&T experiences of developed democracies support that hypothesis empirically.

### I. Introduction and Motivation



This paper explores the differential development of tax-and-transfer systems (T&T) in twenty developed democracies since World War II. **Figure 1** illustrates the broadly shared trend of rapidly expanding T&T shares of GDP;<sup>1</sup> from 1950 to 1995, transfers doubled or more in every country but

<sup>1</sup> T&T sums direct transfers: items 30 (social security), 31 (social assistance), and 32 (welfare and pensions) from National Accounts Volume II 1996 disks. These items are nearest the *welfare spending* and *social transfers* data used elsewhere (e.g., Pampel and Williamson 1988, Hicks and Swank 1984, 1992, Hicks et al. 1989). This broad definition includes transfers to working and non-working, so, especially controlling for unemployment, the redistribution aspect of transfers likely dominates its insurance aspect (see Moene and Wallerstein 1999) in empirical estimation below.

Germany, which saw 50%± growth. Yet, cross-country and over-time variation is at least as striking. Whereas transfers exceeded 20% of GDP in nine countries in 1995, five had closer to 10%; whereas Dutch transfers nearly sextupled before growth abated, the German less than doubled before growth ebbed; and, whereas transfers grew fairly steadily in some places, e.g., Finland, they fluctuated sharply in many others, e.g., Germany, the UK, and Australia. Much positive theory purports to explain these developments, commonalities and differences, as direct consequences of the differing distributions of political and economic resources (i.e., of votes and money). Crudely summarizing: democracies respond to median voters' interests because political influence is, in principle, distributed evenly (one person, one vote) and because majorities rule; free-market capitalism typically distributes income such that the median person is poorer than average; therefore, median voters desire positive net-transfer systems and, under reasonable assumptions about the effects of taxes on economic performance, desire more T&T the greater the difference between median and mean income. Thus, *ceteris paribus*, transfers rise in the skew of the (pre-T&T) income-distribution.

This paper explores more-carefully some of the connections in the above argument from the distributions of political and economic *resources* to those of policy *influence*. Unadulterated, fully participatory, median-voter democracy describes no actual political system; rather, the translation of resources into influence occurs in highly institutionalized environments that amplify some voices and mute others. What theoretical modifications and extensions, for example, do the existence of parties and institutionally-structured electoral-competition suggest? Empirically, how well can the emergent theory, with these amendments and additions, explain the commonalities and differences in the T&T experiences of developed democracies over the postwar era illustrated in **Figure 1**?

The paper unfolds to answer these questions thus. Section II offers a highly stylized model of T&T determination intended to reflect with minimal formality the core intuitions and implications of the influential static, median-voter, neoclassical-economy model (e.g., Romer 1975; Meltzer and Richard 1981) and then adds a dynamic element similarly intended to reflect a stylized Alesina-Rodrik (1994) model. Section III discusses three heretofore under-emphasized complications that modify the predictions of such models. First, time-inconsistencies likely plague T&T as they do other fiscal policies; here, policymakers have incentives to extract lump-sum, non-distortionary levies on fixed capital to fund transfers. Second, representative democracy operates through political parties, which likely only imperfectly reflect median voters. Third, and most centrally, not everyone in the economy participates in the polity; indeed, previous empirical work suggests that the interests of the

politically active and inactive will differ systematically. Section IV details the methods and data used to evaluate empirically the emergent state of positive theory. Section V conducts presents and discusses the results, and Section VI concludes with implications and suggestions for future research.

## II.A. A Static Model of Tax-and-Transfer-System Determination in Median-Voter Democracy

A simplified, reduced-form of the influential static median-voter model of democratic choice over a strictly proportional T&T system (Romer 1975; Meltzer and Richard 1981) highlights the key determinants of the median-voter's ideal T&T rate in a static world: pre-tax income-distribution, total wealth in the economy, and marginal rates at which taxes decrease output. The model stresses the differing distributions of electoral and economic power (Meltzer and Richard 1978), arguing that the impetus for redistribution derives from the median voter having less wealth than the economy's average. The greater that discrepancy, the more redistribution the median voter desires.<sup>2</sup>

To simplify, first assume individual  $i$ 's output (pre-tax income) declines in tax rates:  $y_i = y_i(\tau)$ ,  $y_i' < 0$ .<sup>3</sup> Next, consider only T&T systems that tax all income and redistribute all revenues evenly. I.e., everyone is taxed at rate  $\tau$  on all their income,  $y_i$ , and all resulting revenues is redistributed equally,  $\tau \sum y_i / N \equiv \tau \bar{y}$  to each of  $N$  citizens. This reduces a complicated (multidimensional) T&T-design-and-choice problem to a simple, one-dimensional decision over a single parameter: the T&T rate,  $\tau$ .<sup>4</sup> Finally, for analytic ease, assume  $i$ 's utility simply increases in her (log) disposable income:

$$u_i \propto \ln[y_i(\tau) + \tau\{\bar{y}(\tau) - y_i(\tau)\}] \quad (1)$$

Let subscript  $m$  denote the median-income person. A full-participation median-voter polity will implement her optimal T&T rate, found by maximizing (1) with respect to  $\tau$ .<sup>5</sup>

$$\tau^* = a + b(\bar{y} - y_m) \quad \text{where } a \equiv -\frac{y_m'}{y' - y_m'}, \quad b \equiv -\frac{1}{y' - y_m'} \quad (2)$$

The term in parentheses is the difference between average and median income (income-distribution

<sup>2</sup> In stressing partisanship (e.g., Castles 1982, Hicks and Swank 1984, 1992, Hicks et al. 1989) or demography (e.g., Pampel and Williamson 1988), most previous empirical work ignored this hypothesis. Perhaps despairing of finding adequate income-distribution measures, even the public-choice literature, where these models originated, had not tested it directly until Husted and Kenney (1997) and Rodriguez (1999), neither of whom find support in US state-level data.

<sup>3</sup>  $y(\tau)$  could, e.g., be equilibrium output in a model where workers substitute leisure for labor as taxes increase. Key is that, at least beyond some point, higher taxes reduce aggregate efficiency. Theorists and practitioners, regardless of their ideological predispositions, generally accept that contention (see, e.g., Esping-Andersen 1982, Offe 1984).

<sup>4</sup> This obviously grossly simplifies any actual T&T system, but the hypotheses derived remain substantively unchanged provided feasible T&T systems have net transfers weakly decreasing in income and the function is reasonably smooth.

<sup>5</sup> I.e., the first-order condition; second-order conditions will hold for well-behaved (defined below)  $u(\cdot)$  and  $y(\tau)$ .

skew). With many poor and middle-class and few-but-very rich, it is invariably positive (right-skew). The denominator in  $b$  is the difference between the responsiveness (elasticity) of average and of the median's output to increases in  $\tau$ . If wealthier people respond more (have greater output-elasticity) to tax rates than do poorer—a property decreasing marginal utility of income would assure—this term will be negative, so  $b$  is positive.<sup>6</sup> Thus, the median's optimal T&T rate lies between zero and one (with a few simple and plausible further conditions<sup>7</sup>) and depends on average income,  $\bar{y}$ , median income,  $y_m$ , and the responsiveness of each to tax-rates,  $\bar{y}'$  and  $y_m'$ . In particular, the core prediction of such models is that the median voter's desired T&T rate, which a pure, full-participation, median-voter democracy will enact, typically<sup>8</sup> increases in the skew of pre-tax income,  $(\bar{y}-y_m)$ :<sup>9</sup>

**Hypothesis 1:** The median-income voter desires a larger T&T system the greater the pre-tax income-distribution skew.

## II.B. Dynamic Considerations: the Optimal Plan

For present purposes, a reduced form capturing the relationship between growth and the T&T rate will suffice to consider dynamic issues (Alesina and Rodrik 1994 offer a full model). First, summarize the impact on growth rates,  $\gamma$ , of investment decisions optimized given tax rates,  $\tau$ .

$$\gamma = \gamma(\tau) ; \quad \gamma' < 0, \gamma'' < 0 \quad (3)$$

Beyond the output effects from above, higher  $\tau$  also increasingly diminishes growth (i.e., higher

<sup>6</sup>  $a$ 's numerator, the response of the median's own output to taxes, is negative, so  $a$  is negative.

<sup>7</sup> Sufficient conditions for  $0 < \tau < 1$  derived from (2) are quite plausible empirical generalizations, so weaker necessary-and-sufficient conditions are not sought. First, as empirically true everywhere, the income distribution must be right-skewed (positive). Given that, the remaining three sufficient conditions are:

$$(2a) \quad \frac{\partial^2 y}{\partial \tau \partial y} < 0, \quad (2b) \quad \lim_{\tau \rightarrow 1} y_i(\tau) = 0, \quad (2c) \quad |y_m'(0)| < \sum_{j=1}^n \frac{y_j(0)}{N} - y_m(0)$$

Condition (2a) states that higher-income people have greater tax elasticity of output, ensuring positive  $b$ . (2c) states that marginal tax-rate increases from  $\tau=0$  do not so lower the median's output that the redistribution she garners does not compensate, ensuring non-zero  $\tau$ . (2b), states that 100% tax rates reduce output to zero, ensuring  $\tau < 1$ .

<sup>8</sup> Only *typically* because one could imagine income distribution changes that increase the skew, but, given condition (2a), the denominator in  $b$  rises in absolute value even more.

<sup>9</sup> Several ancillary results surround the tax-elasticity of output (i.e., the magnitudes of  $y'$  and  $\partial y / \partial y$ ). E.g., the more the wealthy substitute leisure for labor relative to poor (i.e., more negative  $\partial y / \partial y$ ), the more average income decreases as taxes rise, implying that the median will want less T&T. Similarly, a *distribution-neutral* increase in total income leaves the income skew unaffected but increases the denominator of  $b$  in absolute value, and so reduces the median's desired T&T. Intuitively: each case describes larger deadweight losses from taxes—because everyone is wealthier and so more willing to substitute leisure for labor or because the wealthy do so especially—so the median desires less T&T:

**Hypothesis 2:** The median voter's desired T&T decreases with distribution-neutral increases in aggregate income.

**Hypothesis 3:** The more negatively output responds to taxes and the more that responsiveness increases (absolutely) with income, the less T&T the median voter desires.

Unfortunately, Wagner's Law confounds the testing of Hypothesis 2, and testing Hypothesis 3 would require estimates by country and individual-income-level of the tax-elasticity of output: a task well beyond the current enterprise's scope. They are listed here only to illustrate that many other hypotheses could easily be derived from this framework.

taxes not only induce some not to work as much but also induce some not to invest as much). Next, simply extend the static utility from (1) to model intertemporal utility for each person  $i$  as:<sup>10</sup>

$$U_{i,t} \propto \sum_{t=0}^{\infty} \{1 + \delta\}^{-t} \{1 + \gamma(\tau)\}^t \ln \left[ y_{i,t}(\tau) + \tau \{ \bar{y}(\tau)_t - y(\tau)_{i,t} \} \right] \quad (4)$$

Close comparison of (4) and (1) amply reveals the main differences from the static case, so an explicit solution for the median's optimal  $\tau$  is unnecessary. The rightmost term,  $\ln[\cdot]$ , is utility from static-model, so the additional issues in the dynamic model are that individuals discount the future,  $\{1 + \delta\}$ , and that, beyond their output-*level* effects, taxes also reduce output *growth*:  $\{1 + \gamma(\tau)\}$ . Thus, given positive discount and growth rates, median voters prefer lower T&T rates in the dynamic than the static model. Alternatively, with more empirical relevance, median voters desire smaller T&T systems the more they weigh the future (i.e., the longer their *time-horizons*):<sup>11</sup>

**Hypothesis 4:** Median voters desire smaller T&T systems the less they discount the future.

Direct empirical evaluation of Hypothesis 4 is beyond the present scope, but some logical extensions derived below can and will be at least preliminarily evaluated.

### III.A. Extension: Time-Inconsistency Problems

These models assume that the intertemporally optimal T&T rate is credible and thus ignore any time-inconsistency issues. (N.b.,  $\tau$  has no time subscript in (4), indicating it is chosen once, is irrevocable, and is known to be so.) However, once investments that raise next-period income are made based on the existing  $\tau$ , the median voter can safely raise  $\tau$ , garnering more transfers without reducing growth. The implications of such time-inconsistency problems can be profound (Kydland and Prescott 1977). To illustrate, suppose the current median voter is certain she will not be median next period and cannot know her successor. Next period's  $\tau$  would then be whatever the next median wants whatever she does. Therefore, her preferred T&T size will depend on this period's outcome only,<sup>12</sup> so she chooses her static optimum from (2), which, as noted, is higher than her intertemporal optimum. Thus, the median-voter raises  $\tau$  as her uncertainty of the identity of next period's median-voter increases. Intuitively, greater uncertainty about the identity of next period's median-income-voter is analogous to a higher discount rate, and Hypothesis 4 could be restated accordingly:

<sup>10</sup> Only the difference between dynamic and static models matters for present purposes. That difference does not depend qualitatively on whether one models infinitely-lived family-units or finitely-lived individuals.

<sup>11</sup> Analogously to Hypothesis 3 (in its intuition and in the difficulties confronting empirical evaluation):

**Hypothesis 5:** The more negatively sensitive the growth rate to increases in taxes (i.e., the more negative  $\gamma'$  and  $\gamma''$ ), the smaller the median's desired T&T.

<sup>12</sup> Not controlling next-period  $\tau$ , her choice of  $\tau$  affects only current investment, which has vanishingly small impact relative to level effects. These conditions also leave typical contrary concerns like policymaking reputation little force.

**Corollary 4a:** The median voter desires a larger T&T system the more uncertain she is that she will be the median in the future.

If, then, there were no political entities with more durable control of the policy agenda than the current median voter, democratic economies would risk serious redistributive overload. The fears (or hopes) of Mill, Marx, and the classical theorists that capitalism and democracy could not coexist would seem warranted. *Representative* democracy, however, aggregates voters into fewer groups of competing interests (parties) with correspondingly larger spaces between each party's median income than between each voter's. Perturbations of the income distribution thus have less effect on which party controls the agenda than on which voter would control it in pure median-voter settings.<sup>13</sup> Since parties control agendas longer on behalf of their constituencies than would median voters in pure democracy, and since parties, like firms, are long- and indefinitely-lived entities, reputationally tied to the future (Kreps 1990), they are less vulnerable to time-inconsistencies than individual median voters. Therefore, partisan representation renders democracy less susceptible to time-inconsistencies, thereby reducing the size of the implemented T&T system relative to pure median-voter democracy.

The comparative-static implication is simple: the longer a party expects to control policy, the more it weighs the future and so the smaller its desired T&T system. The logic extends easily to the horizon-length of any potential agenda-controlling entity. If governments effectively control policy, as in most actual democracies, then governments' expected duration of agenda-control, as opposed to voter(s)'s or party(s)'s, establishes the relevant horizon for T&T-size determination.

**Corollary 4b:** Governments implement less T&T the longer they expect to control policy.

### **III.B. Extension: Partisan Redistributive Politics**

Party systems typically array ideologically such that the median voter in the median party in government does not precisely correspond to the median-income voter in society. Empirically, a system's parties more commonly jointly straddle society's median, and governments oscillate left to right of her. Even in a two-party system, parties may have extra incentive to appeal to activists who are usually more extreme than the median (Aldrich 1983ab, 1995; Aldrich and McGinnis 1989), so they do not converge to society's median but rather straddle it, with the left-party median poorer than the polity's median and the right-party median richer. Equation (2) then implies directly that left parties will seek higher T&T rates than right. Obviously, class-based theories relying less directly on median-voter principles (e.g., Heclo 1974; Castles 1982; Esping-Andersen 1990; Hibbs 1987;

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<sup>13</sup> This complements other mitigating aspects of competitive party democracy (see Offe 1984).

Korpi 1980, 1983) predict similarly.<sup>14</sup> The point here is more the converse that, adding Aldrich's insights, government partisanship remains relevant *even controlling for the median voter's position*.

**Hypothesis 6:** Left governments implement larger T&T systems than right governments.

### III.C. Extension: Political Participation and Redistribution

Section II implicitly assumed that all of society participates equally in the democratic process and, therefore, that government policies respond to the *unweighted* distribution of societal interests. Yet not everyone votes, for example, even in the most participatory democracies. Many (Dye 1979, Pampel and Williamson 1988) suggest a link between more participatory democracy and *progressive* policy and, assuming larger T&T to be *progressive*, argue that higher voter turnout favors larger T&T.<sup>15</sup> Even granting the assumption, however, the effect of voter participation logically must depend on who joins the electoral pool as participation rises. Thus, although empirical correlations between turnout and T&T size seem fairly strong (Hicks and Swank 1992, Pampel and Williamson 1988), why higher electoral participation should necessarily increase the pro-transfer share of the politically active population (i.e., greater electoral representation of the relatively poor) remains less explained. Most—Meltzer and Richard (1978, 1981) and Tocqueville, Mill, Marx, and Aristotle alike before them—simply assume that franchise expansion increases the political influence of the less well-off. Historically, suffrage obviously expanded from the wealthiest downward, but whether higher participation *given universal suffrage* produces greater government responsiveness (i.e., T&T increases) to inequality remains more assumed than established (but see Husted and Kenney 1997).

Verba et al. (1978), Wolfinger and Rosenstone (1980), Conway (1985), Harrop and Miller (1987) and many others have firmly established that the relatively wealthy have higher propensity to vote than the relatively poor. Nagel (1987:117-9) takes the next step to show that US voters, at least, are generally wealthier than non-voters.<sup>16</sup> That participation rates vary dramatically across democracies and, less so, over time is also well-established (see, e.g., Jackman and Miller 1995). Do these observations link more generally to imply that country-times with higher participation rates generally have wealthier median voters relative to median persons than those with lower rates so that the relationship between participation and T&T hypothesized by Dye (1979) and found by Pampel

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<sup>14</sup> That centrist parties, e.g. Christian-Democrats, may support T&T for other reasons (Wilensky 1981; Castles 1982; Esping-Andersen 1990; Hicks and Swank 1992) translates less seamlessly into one-dimension median-voter models.

<sup>15</sup> The degree of electoral competition, typically operationalized as the evenness of the vote distribution across legislative parties, is also emphasized. This variable has not proven robustly predictive, though, so it is omitted here.

<sup>16</sup> Using the 1980 US Census, he estimated the median income as \$18,267 and the median-voter's as \$20,698.



and Williamson (1988) and Hicks and Swank (1992) can be derived from the models above?<sup>17</sup>

Consider a simple model of the voting decision in which citizens choose to vote or not by a cost-benefit analysis where the (perhaps largely subjective) net benefits of voting vary by country, time, and individual. Importantly, to observe the strong positive correlation that all empirical work has found between individual income and propensity to vote, net benefits of voting must generally increase with individual income. Furthermore, since scholars have observed this positive correlation in many different country-times having widely varying average incomes, and since no general rise participation has materialized as average incomes have risen, relative rather than absolute income must determine voting propensity. Thus, an individual's decision to vote might be characterized:

- (5A)** Vote if:  $b(y_{ijt}, X_{ijt}) \geq 0$ , otherwise abstain.  
Define:  $y_{ijt}$  as  $i$ 's income at time  $t$  relative to country  $j$ 's mean income at time  $t$ ,  
 $X_{ijt}$  as a vector of other characteristics of  $i, j, t$  relevant to the voting decision.  
Assume:  $b(\cdot)$ , the net benefit of voting function, is the same for all  $i, j, t$   
 $E[\partial b/\partial y] > 0$ ;  $E[\partial^2 b/\partial y \partial x] = 0 \forall x \in X$

The key features are that, *on average*, the net benefits of voting increase in *relative* income ( $E[\partial b/\partial y_{ijt}] > 0$ ), are determined similarly for all voters ( $b(\cdot)$  is invariant), and other factors  $X_{ijt}$  that affect propensity to vote fall similarly on the relatively rich and poor ( $E[\partial^2 b/\partial y \partial x] = 0$ ). The  $X_{ijt}$  are purposefully left unspecified and understood to reflect institutional or cultural differences. For example, whether individuals or governments bear registration responsibility differs across countries, and individuals' voting costs are clearly lower where governments bear responsibility. Next, total participation in country  $j$  at time  $t$  just sums all persons,  $i$ , with net benefits from voting:

$$\text{(5B)} \quad VP_{jt} = \sum_i [ b(y_{ijt}, X_{ijt}) > 0 ]$$

**(5A)** plus **(5B)** implies that country-times with higher voter participation will generally have a poorer (in relative terms) marginal voter—i.e., person for whom voting just has positive net benefits:

$$\text{(5C)} \quad VP_{00} > VP_{11} \Rightarrow E(y_{i00} | b_{i00} = 0) < E(y_{i11} | b_{i11} = 0)$$

If this characterization of the voting decision is accurate on average, then, comparing across country-times, higher voter participation will correlate positively with increases *from right (rich) to left (poor)* in the proportion of the income distribution that votes. Therefore, for any given underlying median income in society, the effective median income represented by electoral input to the political process decreases in the voter-participation rate (*ceteris paribus*), and so the raw income-skew and the voter-participation rate will interact in T&T-size determination:

**Hypothesis 7:** The positive effect of the underlying income-distribution skew on T&T size

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<sup>17</sup> Nagel's finding that low turnout favors Republican presidential candidates is highly suggestive in this regard.

(Hypothesis 1) is itself increasing in the voter-participation rate.

The new point here is two-fold. First, as just stated, the positive effect on T&T of raw income disparity should be increasing in voter participation. The logical converse is also new; the positive effect of voter participation on T&T should likewise increase in the underlying income disparity. Generally positive effects of voter participation have been hypothesized and found before (Dye 1979, Pampel and Williamson 1988, Hicks and Swank 1992); the argument here is more subtle: the impact of increased voter-participation depends on the interests of those joining the pool of voters.

**Corollary 7a:** The effect of the voter-participation rate on T&T-system size increases in the skew in the underlying income distribution.

The above focused on voting, but other modes of participation—lobbying, directly contacting representatives, campaign contributions, letters to editors, etc.—also yield political influence. Indeed, considering the minuscule probabilities that individual votes will alter election outcomes, these other forms of participation are likely more influential than mere voting. Far from undermining empirical relevance for Hypothesis 7 and Corollary 7a, however, this actually strengthens it for two reasons. First, as voting declines, the relative prevalence and influence of alternative modes of participation logically tend to increase. Second, socioeconomic status correlates even more strongly with other forms of participation than with voting (Verba et al. 1978, 1995; Rosenstone and Hansen 1993):

“[C]lass differences in mobilization typically aggravate rather than mitigate the effects of class differences in political resources,” Rosenstone and Hansen (1993: 241).

Therefore, as voter participation declines, not only does electoral representation of the relatively poor decline, but the political influence of extra-electoral participation rises and the poor are even less-well represented there. For our purposes, then, voter participation legitimately summarizes political participation more generally; indeed, it was (is) intended as such in the analyses above (below).

#### **IV.A. Data**

The dependent variable here is transfers (social-security benefits, social-assistance grants, and welfare and pension payments) share of GDP (*T&T*) (see note 1 and **Figure 1**). All data are available from *[address withheld]*; the appendix gives descriptive statistics. Several controls common in the empirical literature are added to variables reflecting the hypotheses above. First, most obviously, transfers should respond to unemployment, that being much of their purpose, so unemployment rates (*UE*: internationally comparable data from OECD sources<sup>18</sup>) are controlled. The

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<sup>18</sup> “OECD sources” mean *OECD National Accounts, Volume II* (1996 disks), *OECD Economic Outlook and Reference Supplement #62* (1998 disks), and their print editions, and *OECD Labor Force Statistics* (various issues).

broad definition of T&T and controlling unemployment are especially crucial here given Moene and Wallerstein's (1999) demonstration (in a different model) that median demand for unemployment-insurance aspects of transfers *decreases* in the income skew. The broad **T&T** measure and control for unemployment in the empirical analysis below highlights the redistributive aspect of transfers, demand for which roughly monotonically increases in skew in their model too. Second, as obviously, pensioners receive transfers, so that age group's population share is controlled (**POP65**: population 65+ share of total: *UN Demographic Annual*). Third, many studies allow inflation a direct effect. If T&T systems are insufficiently indexed, inflation will fairly automatically reduce **T&T**, a real measure; conversely, systems could over-compensate or voters press policymakers to alter systems to over-compensate. Control for consumer-price inflation (**CPI**: IMF sources<sup>19</sup>) is therefore prudent.

Empirical studies of fiscal activity also frequently employ at least six other controls without distinguishing whether effects should occur in transfers or elsewhere. First, nearly every study begins with Wagner's Law: public-sector share of total spending rises with aggregate wealth because, in short, public goods are luxuries. If the law applies specifically to T&T, which depends on whether transfers are national luxury or necessity,<sup>20</sup> it counters Hypothesis 2 that distribution-neutral wealth increases reduce T&T (see note 9). The estimated effect of wealth ( $Y$ =natural log of real GDP per capita: *Penn World Tables 5.6*) will net these opposing but not logically exclusive forces. Second, Cameron (1978) argues and finds that trade openness increases government size; Katzenstein (1985) and others expect this specifically in demand for public insurance. Garrett (1995, 1998ab) argues, alternatively, that openness<sup>21</sup> constrains *market-subverting* but if anything fosters *market-augmenting* public spending. **T&T** could be market subverting or augmenting depending on system details, so control for openness (**OPEN**= $\{\text{exports+imports}\}/\text{GDP}$ : IMF sources) seems prudent. Third, scholars in social-democratic-corporatist traditions, especially, stress labor's organizational strength (and left-party strength), so union density (**UDEN**=union labor-force share: Lange et al. 1995) is controlled.<sup>22</sup> Fourth, others stress fiscal decentralization. Coordination problems from geographically fragmented representation may spur spending (Weingast et al. 1981); decentralized budgeting may hinder local authorities' from externalizing program costs to aggregates (Sharpe 1988), or decentralization could

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<sup>19</sup> "IMF sources"=*International Financial Statistics* (6/96 CD), supplemented from hardcopy as necessary and possible.

<sup>20</sup> Poorer countries generally eschew transfers, so likely they are luxuries.

<sup>21</sup> This argument works *via* financial openness especially, but trade and financial openness correlate highly.

<sup>22</sup> Union strength *per se* or *coordinated* strength may be causal. Bargaining coordination may aid political impact, or strong but fragmented unions might lobby as effectively. Both have received strong empirical support, so either likely serves as a control. Whether corporatism is supported by generous T&T as one can infer from Alvarez et al. (1991) or strong but fragmented unions exercise less restraint, raising unemployment, boosting transfers, awaits exploration.

induce tax-competition *races to the bottom* (Peterson 1990). Fiscal centralization is measured as central-government share of all-government revenues (**CTAX**: OECD sources). Penultimately, still others expect complicated budgeting to induce *fiscal illusion*: voter mis-assessment of cost and benefits of public activity. Buchanan and Wagner (1977) argue such illusion favors under-estimation of net costs; Downs (1960) argues as logically for net-benefit under-estimation. Either way, more fiscal complexity spawns greater illusion and so more/less spending; indirect-tax (**ITAX**: complexity) and total-tax (**TTAX**: simplicity) shares of all-government revenue (OECD sources) will gauge this factor. Lastly, at least since Tufte (1978), political economists have suspected incumbents of manipulating net transfers to purchase electoral boons from (perhaps fiscally illuded) voters. Accordingly, a variable equal to 1 in pre-election years (**ELE**) is also controlled.<sup>23,24</sup>

In core arguments, Hypothesis 1 predicts T&T increases in the mean to median income-skew in society, and Hypothesis 7 and its corollary extend that familiar proposition, predicting higher voter participation will augment this relationship.<sup>25</sup> These require measures of voter participation and the pre-T&T income skew, each of which is problematic. First, unlike the annual dependent variable, voter-participation rates (**VP**=voters share of voting-age population: Mackie and Rose 1991, *EJPR Data Annual* various issues) have irregular observable frequency. Annual estimates of the electorally active population are obtained by fixing turnout from one election<sup>26</sup> to the next and smoothing the resulting series by moving average of the current and previous three<sup>27</sup> years. Comparably measuring income disparity is notoriously more difficult. *GDP per capita* gauges mean income directly enough, but cross-nationally and cross-temporally comparable measures of median income are unavailable. An alternative can be offered though. First, index pre-tax manufacturing-wages (*w*: IMF sources) and *GDP per capita* (*y*) to 100 in 1986. Insofar as manufacturing workers are the median actors or their wage-income reasonably tracks the median's, *y/w* will measure the mean-to-median ratio cross-time and *within*-country comparably with *y/w*=1 in 1986. Then, normalize cross-country comparable GINI

<sup>23</sup> To be precise, election-year  $ELE_t = M/12 + (d/D)/12$ , with *M* the number of complete months pre-election, *d* the day of, and *D* the number of days in, the incomplete month.  $1 - ELE_t$  accrues to  $ELE_{t-1}$ . Here and below, French and Finnish presidents and cabinets are simply assumed 1/2 the government each and the US president and each house 1/3 each.

<sup>24</sup> Schultz (1995) notes that electioneering has costs (e.g., lost reputation or future economic woes), so incumbents likely attempt pre-electoral manipulation only when, e.g., they *expect close* elections. Ideal measures would therefore gauge the *expected closeness* of *foreseen* elections, but doing so comparably across countries must remain for future research.

<sup>25</sup> Jobless and pensioners should also seek more T&T, and age and employment also relate to voting propensity, so participation should also condition the T&T impact of unemployment and age distributions. Colinearity befools testing these hypotheses, which remain open empirical matters that the methodology of Franzese (1999) might help address.

<sup>26</sup> Elections to the lower house of national government only in cases where all elections do not coincide.

<sup>27</sup> The four-year blocks each contain one presidential election-year in the US, thus smoothing spurious upward spikes in measured electorally relevant population that would otherwise occur there.

indices of inequality as near 1986 as possible *Luxembourg Income Study* to 1 in a base country (US), and multiply by  $y/w$  to get “manufacturing workers’ relative wage position” ( $RW$ ), which is cross-country and cross-time comparable and indexes all country-years to US 1986 where  $RW=1$ .<sup>28,29</sup>

Hypothesis 4 and corollaries related T&T positively to the median voter’s discount-rates or uncertainty and negatively to policymakers’ expected-duration of agenda-control. Neither is directly measurable, but if variation within the income distribution over time correlates with variation of its skew over time—intuitively appealing, but not strictly necessary—then a (5-year, centered) moving standard-deviation of  $RW$  approximates the median’s uncertainty of remaining so ( $SDRW$ ). Second, to the degrees governments control agendas, face constant hazard rates of collapse over their terms, and predict their own hazard rates well (small mean-squared error), governments’ expected-duration of agenda-control is well approximated by inverse of their actual duration (i.e., their hazard rates,  $HR$ : government-duration data from Woldendorp et al. 1994, 1998 and Lane et al. 1991).<sup>30</sup>

Hypothesis 6, lastly, predicts left governments implement more T&T, even controlling for participation-adjusted median-voter income. To measure partisanship, all parties in government in 21 democracies since 1945 are coded 0 (left) to 10 (right), rescaling and averaging previous expert-indices in Laver and Hunt (1992) and Laver and Schofield (1991).<sup>31</sup> These codes and numbers of cabinet ministers of each party in every government (Lane et al. 1991, Woldendorp et al. 1994, 1998) provide the average left-right position of each government: its partisan *center of gravity* ( $CoG$ ).<sup>32</sup>

#### IV.B. Methodology

Tests reveal that  $T\&T$  may have a unit root,<sup>33</sup> so simple lagged-dependent-variable methods may be misleading. Error-correction models (ECM) are advised. Beck (1992) suggests an alternative, requiring no stark *a priori* decisions regarding cointegration, to common two-stage ECM methods. Simply regress changes in the dependent variable on (a) its lagged level, (b) its lagged differences as necessary, (c) the lagged level of each potential cointegrating factor, and (d) other differences or

<sup>28</sup> [reference suppressed] further details this variable and the arguments and assumptions underlying its applicability.

<sup>29</sup> Construction of a broad-coverage comparable GINI-index proxy was also attempted. Other inequality measures were first scaled to GINI by linear regression. Gaps in these GINI+ series, which ranged in coverage from annual 1967-90 US data to one observation in Greece and New Zealand, were filled by linear extrapolation between observations and by linear forecasting and back-casting 1950-95 as necessary. Repeating this process for ratios of available comparative-study indices to this country-specific series then gave a cross-country, cross-time comparable proxy. The resulting index performed broadly similarly, but with larger standard errors, to  $RW$ , which more directly and correctly measures skew.

<sup>30</sup> ½ president and ½ cabinet  $HR$  in France and Finland; 1/3 each president, house, and senate in US.

<sup>31</sup> See also [reference suppressed] for more details.

<sup>32</sup> “CoG” is Tom Cusack’s apt terminology. For years with more than one government,  $CoG$  weighs each by the fraction of the year it held office. French, Finnish, and US governments treated as before.

<sup>33</sup> ADF tests, with various lagged differences and with and without trends or fixed-effects, fell far shy of the .10 level in levels, even with fixed-effects (more appropriate here). In differences, rejection was always overwhelming.

levels of independent variables as theory or empirics suggest. One-stage methods are asymptotically equivalent to two-stage and yield statistically valid estimates provided lagged dependent-variable levels have comfortably negative coefficients.<sup>34</sup> Coefficient interpretation is intuitive. Coefficients on independent variable changes and levels reflect momentum-like change-effects and equilibrium-like level-effects respectively. Both propagate geometrically over time through coefficients on lagged dependent-variable levels, which reflect slow adjustment to equilibrium level-relations, and those on its lagged differences (if present), which reflect slow adjustment of momentum in changes. If X increases once and remains at the new level, the *transitory* impulse to Y given by the coefficient on  $\Delta X$  also lasts just one period and then dissipates as given by Y's estimated dynamics. Through the coefficients on X, that same one-time, permanent increase in X produces a *long-run* or *equilibrium* change in the level of Y, again as propagated through the latter's estimated dynamics.<sup>35</sup>

In this application, some variables should affect *T&T* immediately and virtually automatically (*UE, POP65, CPI,  $\Delta Y$* ) but may also have longer-run effects, perhaps by changing interest structures in the polity. For example, higher *POP65* implies a greater share of the population drawing pensions, which would raise *T&T* directly, but may also increase political pressures on policymakers to enlarge *T&T*, creating an indirect longer-term effect. Such variables enter the model in contemporaneous differences and lagged levels. Other variables relate directly to current government (*ELE, CoG, HR*). These too should have immediate effects that may persistent, so they also enter in current differences and lagged levels. The third set (*CTAX, ITAX, TTAX, UDEN, SDRW, VP, RW, VP·RW*) relates to the interests or perceptions of the polity and so need time to work from there through government representation to affect policy, but they should have persistent impacts once they have done so. Thus, these variables enter in lagged level only.<sup>36</sup> These considerations suggest estimating the following:

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<sup>34</sup> A t-statistic large enough to have satisfied an ADF test, say near or below -4, likely would suffice. The *proviso* is the author's not Beck's; the author accepts full responsibility for its validity.

<sup>35</sup> Moreover, one-stage ECM still interprets thus even if it does not actually encompass a cointegrating relationship yet coefficients on lagged *y* remain highly significantly negative (i.e., if unit-root concerns were unfounded).

<sup>36</sup> Also, if direct, indirect, or central taxes comprise transfers' primary finance, estimating contemporaneous effects for tax-structure would greatly risk endogeneity. Lagging allows control for last year's *T&T*, ameliorating the danger. Economic variables, esp. unemployment, also risk simultaneity, but their main purpose here is to control for economic conditions when estimating other effects more central to present arguments, so less concern regards mis-estimating their impact than would regard poorly instrumenting for them and so undermining their strength as controls.

$$\begin{aligned}
\Delta T\&T_t = & \mathbf{C}' \mathbf{B}_0 + \beta_1 T\&T_{t-1} + \beta_2 \Delta UE_t + \beta_3 UE_{t-1} + \beta_4 \Delta POP65_t + \beta_5 POP65_{t-1} \\
& + \beta_6 \Delta CPI_t + \beta_7 CPI_{t-1} + \beta_8 \Delta (\Delta Y_t) + \beta_9 \Delta Y_{t-1} + \beta_{10} Y_{t-2} \\
& + \beta_{11} OPEN_{t-1} + \beta_{12} CTAX_{t-1} + \beta_{13} ITAX_{t-1} + \beta_{14} TTAX_{t-1} + \beta_{15} UDEN_{t-1} \\
& + \beta_{16} \Delta ELE_t + \beta_{17} ELE_{t-1} + \beta_{18} \Delta CoG_t + \beta_{19} CoG_{t-1} + \beta_{20} \Delta HR_t + \beta_{21} HR_{t-1} \\
& + \beta_{22} SDRW_{t-1} + \beta_{23} VP_{t-1} + \beta_{24} RW_{t-1} + \beta_{25} VP_{t-1} \cdot RW_{t-1} + \varepsilon_t
\end{aligned} \tag{6}$$

with  $\mathbf{C}$  the set of time-series-cross-section controls determined appropriate: (a) one lagged difference of the dependent variable ( $\Delta T\&T_{t-1}$ ), (b) the set of country indicators, (c) a non-democracy indicator, and (d) a variable equal to the average  $T\&T$  in the other sample countries in that year.<sup>37</sup> Note that the natural log real GDP-*per-capita*,  $Y$ , enters in second differences,  $\Delta(\Delta Y)$ , lagged first-differences,  $\Delta Y_{t-1}$ , and twice-lagged levels,  $Y_{t-2}$ . As a property of logs,  $\Delta Y$  is the real per capita growth rate, which likely has automatic/immediate  $T\&T$  effects that may persist. Thus, growth,  $\Delta Y_t$ , enters in current-differences,  $\Delta(\Delta Y)$ , and lagged-levels,  $\Delta Y_{t-1}$ . Hypothesis 2 (see note 9) and Wagner's Law argue for inclusion of wealth levels,  $Y_{t-2}$ . The next section uses developed democracies<sup>38</sup> postwar experiences to estimate (6) and applies the results to evaluate the emergent positive political economy of T&T.

## V. Evaluating the Positive Political Economy of Tax-and-Transfer Systems

Table 1 below summarizes results. Note first the small negative coefficient on lagged  $T\&T$ , -.06, implying a very slow adjustment process.<sup>39</sup> 94% of a one year's shock persists into next, 94% of that into the following, etc. Thus, the long-run effect of any permanent shock is  $.06^{-1}=16.7\pm$  times its immediate impact, and 11 (37) years pass before 50% (90%) of such long-run effect accumulates. The discussion proceeds next quickly through the economic-conditions and other controls suggested in the literature (see [reference suppressed] for more-detailed discussion of the estimation results).

Not surprisingly, unemployment has a statistically strong ( $p\approx 0$ ) positive impact on  $T\&T$ ; +1%  $UE$  induces an immediate 0.22% of GDP increase. Longer-term effects are small though; a permanent +1%  $UE$  induces an insignificant ( $p\approx .24$ ) .2% of GDP long-run  $T\&T$  decline. If anything,

<sup>37</sup> *Further Methodological Notes*: (1) The use of cross-section dummies is disputed in time-series-cross-section analysis. If they are absent but should be present, results can be misleading, but, if present, they monopolize cross-national variance thoroughly atheoretically. Here, Wald tests rejecting their omission were too significant to ignore:  $p < .000001$ . (2) The non-democracy indicator ( $DICT$ ) and its three lags are included ( $p\approx .035$ ) to parallel the period covered by the moving-average in  $VP$ . Since  $VP$ ,  $CoG$ ,  $ELE$ , and  $HR$  involve arbitrary assumptions about non-democracy, including  $DICT$  also prudently ensures that non-democratic country-years do not overly influence our estimates. (3) Controlling for  $\Delta T\&T_{t-1}$ , Ljung-Box Q and Lagrange-multiplier tests fail by large margins to reject nulls of no remaining serial correlation in residuals. (4)  $\Delta T\&T_{t-1}$  is included to bring spatial correlation of the dependent variable into the model's systematic component and should add some efficiency to the consistency of Beck-Katz PCSE's, which are also applied.

<sup>38</sup> The usable sample is US, Japan, Germany, France, Italy, UK, Canada, Austria, Belgium, Denmark, Finland, Greece, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Australia 1956-91 (with some missing data).

<sup>39</sup> Its large  $|t| > 4.3$  would likely satisfy ADF tests, so inferences should be free of unit-root concerns.

the rising costs of transfers stemming from persistently higher unemployment eventually persuade governments to reduce their largesse slightly. Inflation also has quite statistically significant ( $p \approx 0$ ) but small (+1% *CPI* reduces *T&T* only 0.04% of GDP) immediate effect, and negligible, insignificant long-term effect ( $p \approx .46$ ). Thus, transfers are generally slightly inadequately indexed to inflation, but neither statistically nor substantively so longer-term. Lastly, the *T&T* impact of the age distribution, though positive as expected, is surprisingly weak statistically ( $p \approx .32, .38, \text{ and } .44$  in changes, levels, and jointly). Likely, the low significance arises because the upward trend in over-65 population-shares was very common across the sample and so the control for average *T&T* in other countries each year will have absorbed its effect.<sup>40</sup> The *T&T* effects of growth and wealth are more dramatic. The immediate and longer-term negative *T&T* effects of growth, given in coefficients on  $\Delta(\Delta Y_t)$  and  $\Delta Y_{t-1}$  respectively, are both very strong statistically ( $p \approx 0$ ) and substantively. Counter to this, though, the wealth effect is positive and mildly significant ( $p \approx .07$ ). However, these are the effects of growth changes, holding wealth constant, and of wealth changes, holding growth constant: neither is logically possible. Consider instead a permanent 1% increase in real-per-capita growth. The negative growth effect dominates in the first 10-12 years, during which *T&T* declines by  $3 \pm \%$  of GDP. After that, Wagner's Law swamps such effects, producing an explosive increase in *T&T* as wealth accumulates ever more rapidly. As a more concrete example: OECD-average real-GDP-per-capita rose from \$4200 to \$13,400 (constant 1985 US) since 1950, though at slowing growth rates. The estimated *T&T* response to that path, reflecting both growth effects and the accumulating impact of Wagner's Law, would have been a fairly steadily accumulated 6.25% of GDP higher *T&T* (see [reference suppressed] for graphical illustration).

**Table 1: T&T-Size Determination—Estimation Results**  
**Dependent Variable = Change in Transfers as a Fraction of GDP ( $\Delta T \& T_t$ )**

Variable	Coefficient	Panel-Corrected Standard Errors	<i>t</i> -Tests <i>p</i> -Levels	Joint Hypothesis (Wald $\chi^2$ ) Tests
<i>CONTROLS</i>	—	—	—	—
$T \& T_{t-1}$	-0.0601	0.0139	0.0000	—
$\Delta UE_t$	+0.2238	0.0308	0.0000	$p \approx 0.0000$
$UE_{t-1}$	-0.0131	0.0113	0.2446	
$\Delta POP65_t$	+0.1382	0.1393	0.3215	$p \approx 0.4426$
$POP65_{t-1}$	+0.0265	0.0300	0.3762	
$\Delta CPI_t$	-0.0365	0.0075	0.0000	$p \approx 0.0000$
$CPI_{t-1}$	-0.0049	0.0066	0.4559	

<sup>40</sup> If these point estimates are trusted, the substantive effect is non-negligible though. +1% *POP65* induces just 0.14% of GDP higher *T&T* immediately, but an appreciable 0.44% of GDP long-run *T&T* increase if permanent.



$\Delta(\Delta Y_t)$	-8.0556	0.9409	0.0000	
$\Delta Y_{t-1}$	-5.0930	1.3323	0.0001	$p \approx 0.0000$
$Y_{t-2}$	+0.3621	0.2023	0.0739	
$OPEN_{t-1}$	+0.1602	0.3565	0.6534	—
$CTAX_{t-1}$	-0.2131	0.5175	0.6806	—
$ITAX_{t-1}$	+0.8443	0.8535	0.3229	—
$TTAX_{t-1}$	+0.1051	1.0002	0.9164	—
$UDEN_{t-1}$	+0.0078	0.0035	0.0266	—
$\Delta ELE_t$	+0.1043	0.0535	0.0518	
$ELE_{t-1}$	+0.2259	0.0847	0.0078	$p \approx 0.0274$
$\Delta CoG_t$	-0.0391	0.0239	0.1030	
$CoG_{t-1}$	-0.0215	0.0155	0.1670	$p \approx 0.1755$
$\Delta HR_t$	-0.1010	0.1072	0.3465	
$HR_{t-1}$	-0.0105	0.1081	0.9223	$p \approx 0.5567$
$SDRW_{t-1}$	+2.4838	1.4956	0.0972	—
$VP_{t-1}$	-0.3688	0.5498	0.5026	$p \approx 0.0203$
$VP_{t-1} \cdot RW_{t-1}$	+1.1382	0.4720	0.0162	$p \approx 0.0496$
$RW_{t-1}$	-0.3280	0.3396	0.3346	$p \approx 0.0451$
<b>Number of Observations (Degrees of Freedom)</b>			<b>701 (650)</b>	
<b>Adjusted R<sup>2</sup> (Std. Err. of the Estimate)</b>			<b>0.477 (0.478)</b>	
<b>Lagrange-Multiplier Residual Correlation Test, 1 Lag</b>			<b>0.4949</b>	

**NOTES:** Estimated by ordinary least-squares with panel-corrected standard-errors. *CONTROLS*, as described in the text, suppressed to conserve space. *t*-test *p*-levels are probabilities of false rejection in two-sided tests. Wald-test *p*-levels are the probabilities at which null hypotheses that the relevant coefficients are simultaneously zero are rejected. The single-lag Lagrange-multiplier test is the least favorable of such tests up to seventh lag.

Moving to the controls from the literature, neither trade openness nor any of the tax-structure variables seem significantly related to *T&T*. However, these variables also exhibit mostly cross-national variation: trade-openness (82% of total), fiscal centralization (80%), indirect tax-shares (60%), and total tax-shares (52%). Thus, this regression, in which country fixed-effects absorb all cross-national variation, was biased against finding effects for such variables.<sup>41</sup> Even so, the estimate for indirect taxes, substantively largest (a permanent +10% *ITAX* yielding a long-run 1.4% of GDP *T&T* rise) and statistically most-significant ( $t \approx 1$ ), suggests that non-negligible fiscal-illusion might be present. Contrarily, despite much recent debate, these estimates, if trusted, suggest that there is little to gain or fear from decentralizing *T&T*. Neither a competitive race downward (Peterson 1990) nor an overspending-inducing collective-action-problem (Weingast et al. 1981) appears. The effect of openness, finally, may be just-noticeable—by these untrustworthy estimates, a permanent +10% *OPEN* produces a long-run .27% of GDP *T&T* rise—but there is far too little cross-time variation in *OPEN* to obtain a sufficiently precise estimate ( $t < .5$ ) to warrant further comment.

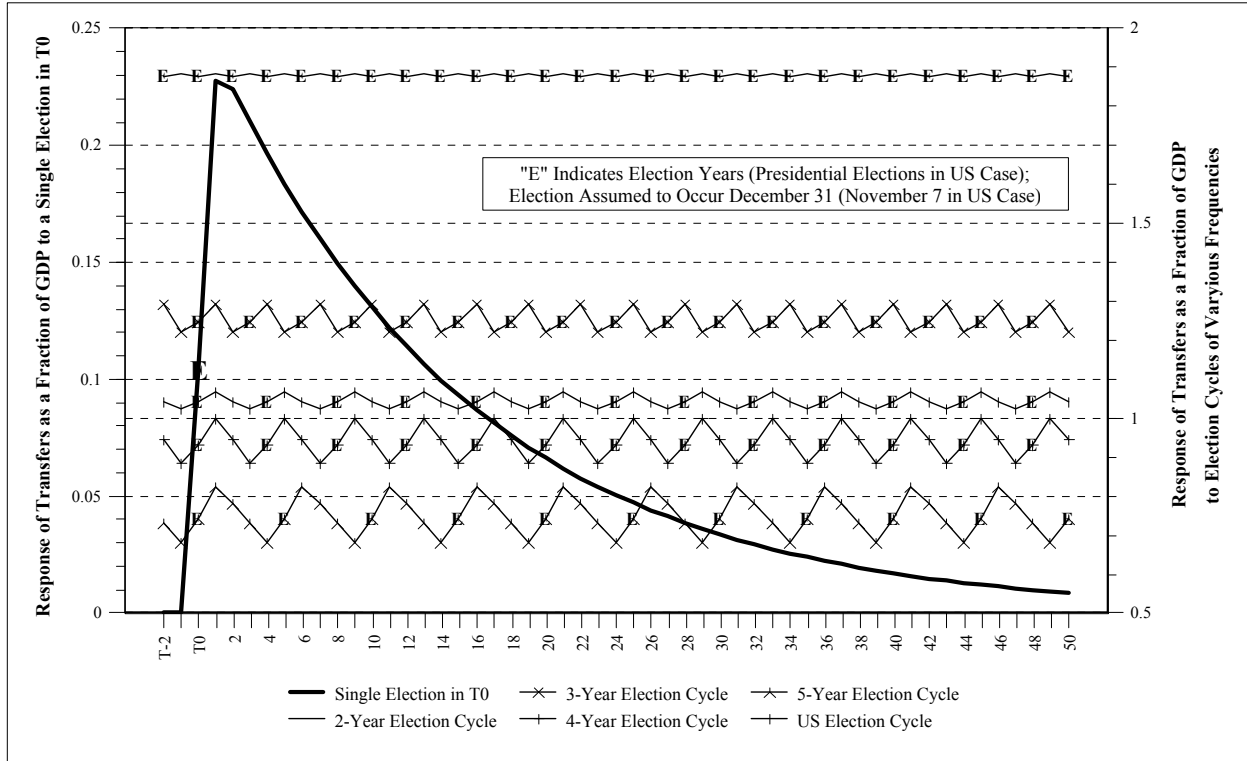
<sup>41</sup> *OPEN*, *CTAX*, and *ITAX*, but not *TTAX*, become more significant in models without country fixed-effects.

Union density's *T&T* impact, contrarily, was substantively large and statistically significant ( $p \approx .03$ ). A 5% increase in *UDEN*, which the OECD averaged from 1950-79, would have induced governments to raise *T&T* .65% of GDP in the long-run, about equal to what aging populations are estimated to have produced over the same period. However, country experiences with unionization varied radically. For example, the relatively steady decline in US union-density accounts for a 1.5% of GDP drop in *T&T* over the postwar era. Swedish *UDEN*, contrarily, hovered between 64-70% until 1970, when it began a steady rise from 66% to 83% by 1990, inducing +3.1% of GDP *T&T* over the latter period. Italy, meanwhile, saw sharper fluctuations: *UDEN* declining from 40% to 23% 1955-66, rising to 45% by 1978, then back to 33% by 1991. The estimated *T&T* response was -1.2% of GDP by 1970, +1.9±% of GDP from there by 1985, and down again -.2±% from there by 1991.

Turning from societal characteristics to those of government, pre-electoral *T&T* manipulation is strongly evident, contrary to recent pessimism about such electoral budget-cycles (e.g., Alesina et al. 1997).<sup>42</sup> Coefficients on  $\Delta ELE_t$  and  $ELE_{t-1}$  reveal transfers rise in the year before elections by 0.10±% of GDP ( $p \approx .05$ ) and rise 0.12±% of GDP ( $p \approx .02$ ) further the year *after* (joint significance:  $p \approx .03$ ). Plus 0.22% of GDP is noticeable electoral manipulation in itself, but, with slow adjustment of *T&T*, and since all democracies hold elections minimally every five years, one pre-electoral manipulation has hardly faded when another starts, perhaps conducted by a different government. **Figure 2** illustrates the interesting implications, three aspects of which merit elaboration.

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<sup>42</sup> Likely, a combination of the following explains how many previous studies missed this evidence. First, Tufte's (1978) emphasis on transfers policy seems well-founded but has been too-often ignored. Policymakers wish to time and to target economic gifts carefully and to receive full credit, so directly manipulable and easily recognized benefits, like transfer-payments, will be their preferred tools. Second, the dynamics of the policy instruments in question and those of the electoral cycle itself have received insufficient attention. Transfers, like most fiscal policies, re-adjust neither automatically nor quickly, and elections involve campaigns before and sometimes changes in policymakers after (see below). Third, previous empirical studies focused too often on frequent-election countries like the US where budget-cycle magnitudes will be small (see below). Political scientists may have prematurely abandoned electoral-budget-cycle theory on greatly exaggerated rumors of its empirical demise (*pace* Twain). Whereas economists returned to Nordhaus' (1975) *political business cycles*, adding voter and economic-actor rational-expectations to derive *equilibrium budget cycles* (Rogoff and Sibert 1988, Rogoff 1990), these results suggest that political scientists should likewise return to Tufte's (1978) *Political Control of the Economy* because more politics are afoot than mere election-year dummies will locate. E.g., Schultz (1995) argues and finds (see note 24) that policymakers will not manipulate *T&T* equally before every election; likely they manipulate only to the degree *close* elections are *foreseen*. Estimates here and elsewhere effectively average such variations, under- (over-) estimating electoral manipulation in close (easy) contests.



**Figure 2: Estimated T&T Responses to a Single Election and to Regular Elections of Various Frequencies**

First, the cycle peaks the year *after* an election.<sup>43</sup> This may just reflect a lingering difference between calendar- and fiscal-year measured *ELE* and *T&T* or, nearly as uninteresting, slower-than-average post-election retrenchment of election-year largesse.<sup>44</sup> More interestingly, this could reflect the potentially differing identities of pre- and post-election policymakers and that winning candidates usually fulfill their promises (Alt 1985, Hofferbert et al., Gallagher et al.). As Tufte (1978) noted, campaigns spur spiraling promises from candidates, and those who more credibly promise more tend to win. If so, compare pools of pre-election (incumbents) and post-election policymakers (winners). Incumbents include some who credibly offer enough or more to win, but also some who offered too little and lost. Both must act somewhat on promises for credibility. Winners, contrarily, include only those who offered enough or more. This would explain *both* the post-electoral surges and the slightly larger and more-significant coefficient on  $ELE_{t-1}$  than on  $\Delta ELE_t$ . Second, election frequency also has sizable impact on long-run T&T size. Democracies with elections every 2 (3,4) years accumulate over 1% (0.5%, 0.2%) of GDP more *T&T* than those with elections every 5 years. This, as noted, is because T&T adjusts slowly enough for one pre-electoral manipulation to linger into the next; how

<sup>43</sup> Leads/lags of up to five years on the pre-election-year indicator were explored; only these two years were significant, and comfortably so in all specifications attempted.

<sup>44</sup> These post-election adjustments would have to be slower than average for all spending because estimated dynamics already reflect an average adjustment process.

much remains depends on the time between elections. Third, for the same reason, *T&T* electoral-cycle amplitude increases in the time between elections: .01%, .07%, .12%, and .14% of GDP for 2-, 3-, 4-, and 5-year cycles respectively. The US, with early-November elections for representatives, president, and 1/3 of the Senate every 2, 4, and 2 years, has an odd electoral calendar that illustrates all three points. US *ELE* cycles { .05, .28, .11, .66 }, with the last the presidential-election year. Given the estimated *T&T* dynamics and coefficients on  $\Delta ELE_t$  and  $ELE_{t-1}$ , this induces *T&T* cycle of { 1.07, 1.04, 1.02, 1.04 }. The US cycle thus peaks a year *after* the presidential election and, compared to a simple four-year cycle (0,0,0,1 $\Rightarrow$ 1.00,.95, .88,.93), has smaller amplitude and larger long-run *T&T* reflecting the more-frequent but also partial and staggered election of its government.

Turn now to the political-economic conditions emphasized in Hypotheses 1-7. First, consider the *T&T* effects of government partisanship. The estimates do indicate the right lowers and left raises *T&T* but attain only marginal statistical significance:  $p \approx .10, .17, .18$  in changes, levels, and jointly. Earlier studies find stronger results, but their estimates were statistically suspect<sup>45</sup> and did not control for income distribution or, usually, this breadth of controls. Still, Hypothesis 6 adds Aldrich insights to a Romer-Alesina/Rodrik model to suggest that government partisanship should retain *T&T* effect even controlling for income skew and other underlying interest structures. These estimates indicate such remainders may exist but are not large. A unit rightward *CoG* shift lowers *T&T* 0.04% of GDP immediately, 0.18% by the end of a 12-year stint in office, and 0.36% in the long run if the shift were permanent.<sup>46</sup> For example, typical majoritarian (coalitional) systems might have governments, say, three (one) *CoG*-unit(s) apart that alternate every four (one) years; partisan *T&T* cycles would then have moderate (0.2% of GDP) and tiny (0.05% of GDP) amplitude in majoritarian and coalitional democracies respectively. Thus, the *T&T* effects of government partisanship, while perhaps noticeable and occasionally appreciable, are not usually very large, *controlling for the interest*

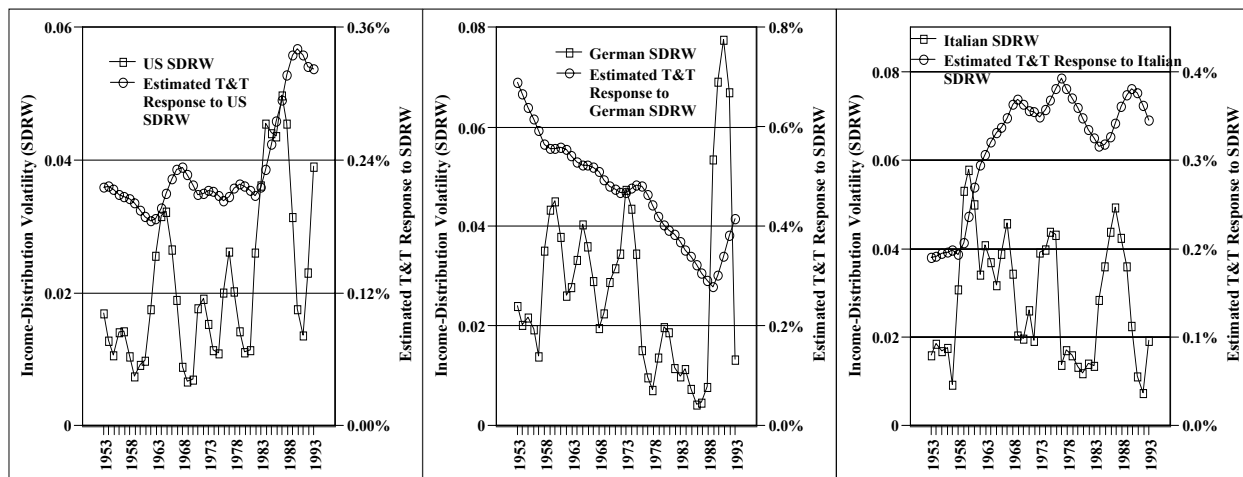
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<sup>45</sup> Previous results were likely over-stated for statistical reasons now better-understood. Pampel and Williamson (1988) and Hicks and Swank (1992) find significant positive effects for left parties; the latter also find strong interactions of government and opposition partisanship. However, both applied FGLS procedures that Beck and Katz (1995, 1997) subsequently showed problematic in samples where T does not greatly exceed N. In the former,  $N > T$ , so estimation was mathematically undefined, but they also reported a defined lagged-dependent-variable model. There, left-party effects were positive but insignificant. In the latter,  $T = 23 > N = 18$ , so the results presented were defined, but Beck and Katz estimate FGLS standard errors in samples that size are 3 to 4 times over-confident. If so, results here are actually stronger. They also found center parties as or more welfare expansive, which was not considered here, confounding the comparison. Finally, Hicks et al. (1989) estimate an IV-GLS model by Cochrane-Orcutt with fixed effects. They find left governments *in corporatist democracies* raise transfers, at  $t \approx 2$ , slightly stronger support than found here, and noted but did not report negligible effects in other democracies; results here will have averaged across all democracies. Thus, the present results are much less surprising, about the same as, or even stronger than elsewhere.

<sup>46</sup> Permanent partisan shifts are unlikely in democracies, but 90% of long-run *T&T* effects occur within 37 years, which Swedish Socialists and Japanese Liberal Democrats (and many others in coalition) exceeded.

structure in the society, and especially among voters, that elected those governments.<sup>47</sup>

Corollaries 4a and 4b argued that the median-income-voter's and the current government's uncertainties they will remain such should each increase transfers. These estimates show no evidence that government instability raises transfers. If anything, *HR* reduces them near term, but the relevant coefficients are quite insignificant ( $p \approx .35, .92, .56$  in changes, levels, and jointly). *SDRW*, contrarily, has moderately significant ( $p \approx .07$ ) effect; standard-deviation rises in income-skew volatility (+0.023) induce almost +1% of GDP *T&T* long term. However, skew volatility fluctuated more than trended in this sample, suggesting it relates more to country-time-unique variation in *T&T* than to any shared time-path. Figure 3 illustrates, plotting income-skew volatility and its impact in three countries with widely differing experiences. The US saw erratic skew volatility and *T&T* responses until a sustained and sharp *SDRW* rise in the eighties. Germany saw smooth and steady downward popular pressure on *T&T* from citizens feeling (less-smoothly) declining income volatility, until post-unification turmoil reversed both trends. Italy, lastly, saw *T&T* rise through the sixties as skew volatility rose while a poorer economy grew quickly through the ranks, followed by more erratic experiences since.



**Figure 3: Estimated T&T Responses to Income-Distribution Volatility in Three Countries**

Thus, median-voter uncertainty over their future place in the income-distribution may create popular pressure for *T&T*, but no significant effect of governmental uncertainty emerged. Perhaps time inconsistencies are less problematic in *T&T* than they have proven in other policies. Policymakers may, e.g., find *ex post* levies easier to extract with relatively technocratic and fluid instruments like monetary policy, where voters may need some economic sophistication to notice the levy extraction, than in stickier and simpler policies like *T&T* (no economic expertise is needed

<sup>47</sup> Conversely, when the effect of income inequality and all other factors are controlling for government partisanship.

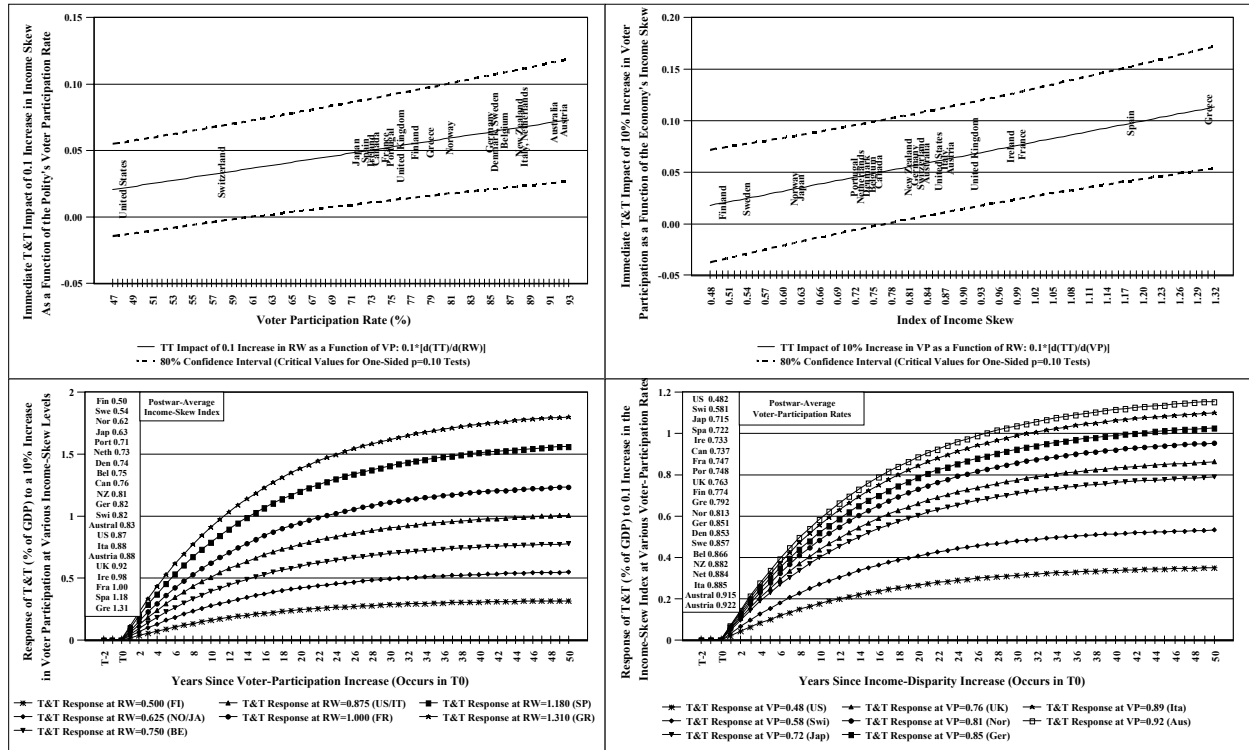
to notice a larger tax bill). The *T&T* response to *SDRW* may instead reflect citizen demand for social insurance against income volatility (Cameron 1978, Iversen and Cusack 1998, Garrett and Mitchell 1999, Rodrik 19xx). Alternatively, time-inconsistencies could be as strong in T&T as elsewhere but more evident in response to individual than governmental uncertainty because other considerations induce governments to reduce transfers as their expected tenure decreases. Governments, e.g., may become secure in some part precisely by raising transfers. Conclude for now only that income-skew volatility correlates moderately positively with *T&T* while government instability does not.

Finally, consider the interactive effects of voter participation, *VP*, and income skew, *RW*: the core of the amended model. The joint significance ( $p \approx .05$ ) of *RW*, *VP*, and *VP·RW* establishes that income skew, voter participation, and/or their interaction affect *T&T*, broadly supporting Hypotheses 1 and 7. Other tests determine that income skew, by itself and/or interacting with *VP*, affects *T&T* ( $b_{rw} = b_{vp·rw} = 0 \Rightarrow p \approx .045$ ) and the analogous for voter participation ( $b_{vp} = b_{vp·rw} = 0 \Rightarrow p \approx .02$ ). Finally, the significant ( $p \approx .015$ ) positive coefficient on the interaction term implies that the effects of *RW* and of *VP* on *T&T* each become less-negative/more-positive as the other variable increases: strong direct support for Hypothesis 7. Graphics will help interpret the substance of these results since the *effects* reflected in the coefficients on interactive terms and the standard errors of those effects depend upon, and so can only be interpreted as a function of, the levels of each variable (Franzese et al. 1999).

The top-left of Figure 4 plots estimated first-year *T&T* responses to a 0.1 rise in the societal income-skew index, as a function of voter-participation rates over their sample range; i.e., it plots  $b_{rw} + b_{vp·rw}VP$ , plus an 80% confidence interval (marking one-sided .10 t-tests,<sup>48</sup> with countries labeled on the effect line at their postwar-average *VP*.<sup>49</sup> As seen, governments respond to high income skews by raising transfers at any *VP* rate, and more so at higher *VP* (Hypotheses 1,7). Governments in the least-participatory democracies, US and Switzerland, respond least—indeed, indistinguishable from zero statistically—to rising income-skew. Contrarily, government responses to higher income-skews in the most-participatory democracies, Australia and Austria, are quite statistically and substantively significant: +0.1 *RW* induces short-run +.08% and, if permanent, long-run +1.2% of GDP *T&T*.

<sup>48</sup> The interaction's general significance is already established; significance varies across specific levels of the other term; so holding the effect to standard significance levels over the entire range is excessive (see Franzese et al. 1999).

<sup>49</sup> The labels are informative as VP variation is 68% cross-national, excluding non-democracies.



**Figure 4: Estimated Immediate and Longer-term T&T Response to Increases in Income Skew as a Function of Voter Participation Rate and to Increases in Voter Participation as a Function of Income Skew**

The top-right analogously plots estimated  $T&T$  responses to a 10% increase in participation as a function of income skew, over  $RW$ 's sample range, with country labels at their sample-average  $RW$ ,<sup>50</sup> plus confidence intervals. Voter participation generally raises  $T&T$ , as argued before, and this relation becomes more positive and significant as underlying income-skew increases, as Corollary 7a added. These effects can be appreciable: in the US in 1986 ( $RW=1$ ), +10% voter-participation raises  $T&T$ .08% of GDP short-run and, if permanent, 1.3% long-run. Thus, the impact of expanding the politically active population depends on the characteristics of those joining the voting pool.

The bottom of Figure 4 facilitates further substantive interpretation, plotting  $T&T$  responses over time to sustained 10% increases in the income-skew index and in voter-participation rates at revealing levels of the other variable. For example, the bottom-left plots  $T&T$  responses to  $RW$  at US postwar-average  $VP$ , .48 (near the sample-minimum of .41); the Swiss average, .58; Japan's .72, (a standard deviation below mean); the UK's .76 and Norway's .81 (bridging the mean of .79); Germany's .85; Italy's .89 (a standard deviation above mean); and Austria's .92 (just below the maximum of .94). The bottom-right plots analogous  $T&T$  responses to  $VP$  increases at substantively revealing levels of  $RW$ . All countries' postwar-average  $VP$  (democratic periods only) and  $RW$  are

<sup>50</sup> 69% of total  $RW$  variation is cross-national.

listed, so approximate *T&T*-responses at any country's average *VP* or *RW* can be visualized.

Figure 4 shows the clear empirical support for Hypothesis 7. Higher underlying income skew raises popular demand for transfers, but *popular* demand translates to *politically* effective demand at rates depending on participation. The bottom-left shows that where nearly everyone votes, as in Austria or Australia, e.g., which fine(d) for abstaining, a sustained standard-deviation rise in income skew,  $+0.22$  *RW*, would lead governments to raise *T&T* 2.6% of GDP in the long run. Where, instead, participation lies near its democratic nadir, the US's average 48%, a sustained 10% income-skew rise draws only a statistically insignificant and substantively small 0.37% of GDP long-run *T&T* response from governments. Conversely, the bottom-right shows a 10% rise in voter-participation produces a 4.8% of GDP long-run *T&T* increase at sample-maximum income-skew (1.54 in Greece 1965) and a negligible decrease at sample minimum (.29 in Japan 1956). These differences are statistically as well as substantively significant.<sup>51</sup> Moreover, as Figure 5 shows, OECD-average paths of *VP* and *RW*, slightly downward and erratically upward respectively, yielded net popular pressures on governments accounting for about 1% of GDP of the common upward *T&T* time-path, about half of the cross-country-shared time variation left unexplained by economic conditions alone.

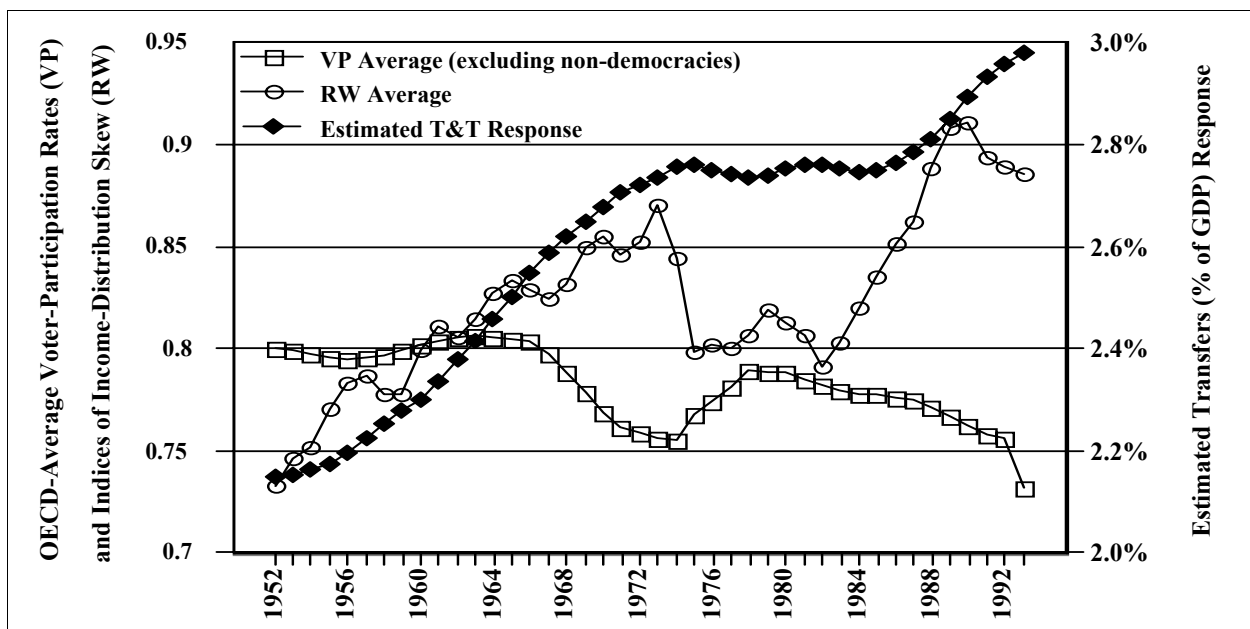


Figure 5: Estimated T&T Responses to OECD-Average Paths of Voter Participation and Income Skew

## VI. Conclusions

Consider, lastly, the other question raised above: how well can the positive political economy of tax-and-transfer systems, as expanded here, explain the similarities and differences in the postwar

<sup>51</sup> I.e., the general proposition that the effects differ depending on voter-participation rates is statistically significant ( $b_{vp,rw}=0 \Rightarrow p \approx .016$ ). Whether any two country-times differ significantly will depend on their exact *VP* rates.



*T&T* experiences of developed democracies? Table 2 begins an answer, giving first-year and long-run effects of permanent standard-deviation rises in each independent variable. As seen, the factors with most impact were economic conditions—unemployment, inflation, growth, wealth—plus labor-organizational strength, electioneering, government partisanship, income volatility, and interactions of income skew and voter participation. Age-demographics and fiscal complexity may also have contributed. These factors together can explain almost an adjusted half of the total variation in *T&T* experiences depicted in Figure 1. For its part, the OECD-average *T&T* trend, +14.5% of GDP *T&T* 1950-93, seems to have stemmed from common growth and wealth developments primarily. OECD-average real-GDP-per-capita, trending upward at slowing growth rates, accounts for +6% of GDP *T&T*, over 40% of total trend, including both growth slow-down and wealth-accumulation effects. The over-65 age-group, meanwhile, rose 8.75-14.25% of total population 1950-93, which accounts for another +1.7% of GDP *T&T*, if its insignificant coefficient estimate ( $p \approx .37$ ) is trusted. Other economic conditions, unemployment and inflation, had smaller long-term effects, but especially *UE* sizably impacted shared short-term fluctuations around the trend.<sup>52</sup> All told, over half the OECD-average upward *T&T* trend and about half the shared fluctuations around that trend are attributable to fairly automatic responses of existing transfers policies to economic and demographic conditions.

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<sup>52</sup> The OECD-average *UE* path—flat around 2.5% 1955-74, up to 8% by 1983, to under 7% in 1990, back to 10% in 1992-3, before ebbing—can account for +1% of GDP *T&T* 1974-83, -1.2% 1983-90, +.6% 1990-2, and -.5% 1993-6.

**Table 2: Independent Variables' Short-Run and Long-Run Impacts on T&T-Size**

Independent Variable	Std. Dev.	T&T Impact of 1 Std. Dev. Increase in Indep. Var.	
		Short-Run	Long-Run
UE	3.5808	0.8013***	-0.7817
POP65	2.4373	0.3368	1.0758
CPI	5.1406	-0.1875***	-0.4196
$\Delta Y$	0.0291	-0.2344***	-2.4660***
Y	0.4418	-2.2501***	2.6615*
OPEN	0.2416	0.0387	0.6439
CTAX	0.1402	-0.0299	-0.4971
ITAX	0.0907	0.0766	1.2742
TTAX	0.0322	0.0034	0.0563
UDEN	16.2137	0.1262**	2.1000**
ELE	see note	0.2259*	1.1278***
CoG	1.8134	-0.0709*	-0.6485
HR	0.3231	-0.0326	-0.0567
SDRW	0.0203	0.0504*	0.8390*
VP at RW mean-2sd	0.2168	0.0143	0.2387
VP at RW mean-1sd		0.0693	1.1527
VP at RW mean		0.1242	2.0667
VP at RW mean+1sd		0.1791**	2.9806**
VP at RW mean+2sd		0.2341***	3.8946***
RW at VP mean-2sd	0.2226	0.0040	0.0671
RW at VP mean-1sd		0.0575	0.9573
RW at VP mean		0.1110*	1.8474*
RW at VP mean+1sd		0.1645**	2.7375**
RW at VP=1		0.1757**	2.9227**

NOTES: *Short-run* impacts are estimated first-year effects of 1-standard-deviation increases in independent variables. *Long-run* impacts are estimated long-run effects of permanent 1-standard-deviation increases in independent variables. \*= $p \leq .10$ , \*\*= $p \leq .05$ , \*\*\*= $p \leq .01$ ; two-sided. Short-run impact for ELE combines the two-year T&T-impulses from one election; the long-run impact reflects a permanent increase in electoral frequency from every 5 to every 2 years.

Structural-political developments also had strong effects. E.g., labor-organizational strength: a standard-deviation rise in union density (+16%) induces +2.1% of GDP *T&T*, a substantively and statistically significant amount. Voter *fiscal illusion* and budgetary complexity may also have been important, with effect magnitude equal to age-demographics if its mildly insignificant coefficient is trusted. However, unionization and tax-complexity trends, up-then-down and toward simplicity, worked against the upward *T&T* trend, pushing up-then-down and down on *T&T*,  $\pm 0.25\%$  and  $-1.4\%$  of GDP respectively. Election-years, electoral frequency, partisanship, and income-distribution volatility similarly played key roles in explaining cross-country-average and country-time-unique variation, but none had much-shared time-path, and so none were central to the shared upward *T&T* trend. Voter participation and income skew, contrarily, added strongly to transfers trends in some

countries; standard-deviation adverse shifts in either adds +3% of GDP *T&T* where both were high, though they were less central in country-times where one or both were low. As **Figure 5** showed, the OECD-average paths of *VP* and *RW* actually account for a sizable +1% of GDP average.

Thus, the full political-economic model can explain about half the common upward trend in transfers (6+1.7+1 -1.4%=7.3% of 14.5%) and also about half the shared fluctuation around it, which together represent about 46% of total variance in *T&T*. And the interaction of participation and inequality stressed here is an important element of that explanation. Moreover, despite failing to render the atheoretical country-indicators statistically redundant, the model could also explain almost half the variation across country-averages in *T&T*, 43±% of the total. Table 3 demonstrates.<sup>53</sup>

The last few rows of Table 3 show that the key conditions behind cross-country variation in *T&T*-size are *not* transitory macroeconomic conditions like growth, unemployment, and inflation but more-durable socioeconomic conditions like, especially, aggregate wealth and, also though less-so, society's age distribution. Note that such factors foster governments *T&T* largesse at least partly through their effects on the polity's structure of interests. Economic forces, while important, do not solely drive either the relationship between aggregate wealth and *T&T*-size or that between age-demographics and *T&T*-size. Wealthier and older polities also demand more social transfers from their governments as a normative luxury (i.e., Wagner's Law) and because more citizens benefit directly from public pensions and so work to increase/defend them politically.

**Table 3: Estimated Long-Run T&T Impacts of Countries' Postwar-Average Political-Economic Conditions**

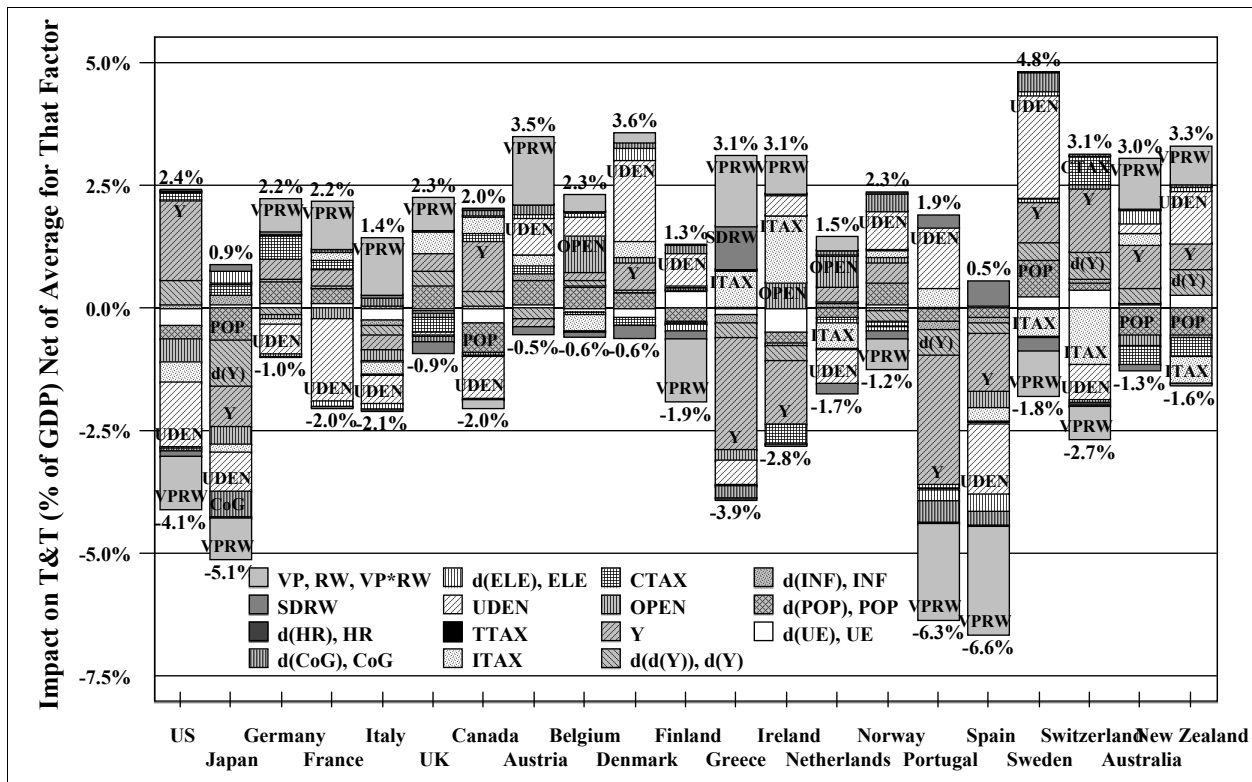
	UE	POP	INF	d(Y)	Y	OPEN	CTAX	ITAX+ TTAX	UDEN	ELE	CoG	HR	SDRW	VPRW	SUM	Fixed Effect	NET	T&T
<b>US</b>	-0.7	2.5	-0.2	-0.7	30.1	0.2	-1.0	3.0	1.6	0.5	-1.2	0.0	0.5	0.1	<b>34.8</b>	<b>-29.4</b>	<b>5.4</b>	<b>8.0</b>
<b>JA</b>	-0.2	2.1	0.0	-2.2	27.7	0.3	-1.0	3.3	2.1	0.8	-1.6	-0.1	0.7	0.4	<b>32.3</b>	<b>-27.4</b>	<b>5.0</b>	<b>7.2</b>
<b>GE</b>	-0.2	3.2	-0.2	-1.4	28.9	0.5	-0.7	3.3	2.3	0.5	-1.1	0.0	0.6	1.9	<b>37.8</b>	<b>-30.4</b>	<b>7.4</b>	<b>14.2</b>
<b>FR</b>	-0.2	3.1	-0.2	-1.2	28.8	0.4	-1.0	3.6	1.3	0.5	-1.1	0.0	0.5	2.2	<b>36.7</b>	<b>-26.4</b>	<b>10.2</b>	<b>16.7</b>
<b>IT</b>	-0.5	2.9	-0.3	-1.4	28.2	0.4	-1.2	3.2	2.3	0.5	-1.0	-0.1	0.6	2.4	<b>35.9</b>	<b>-27.3</b>	<b>8.6</b>	<b>14.5</b>
<b>UK</b>	-0.4	3.3	-0.3	-0.9	28.8	0.5	-1.4	3.9	2.9	0.5	-1.2	0.0	0.3	1.9	<b>37.9</b>	<b>-32.2</b>	<b>5.6</b>	<b>9.4</b>
<b>CA</b>	-0.6	2.2	-0.2	-0.9	29.5	0.6	-1.0	3.7	2.1	0.6	-1.0	0.0	0.5	1.0	<b>36.5</b>	<b>-30.5</b>	<b>6.0</b>	<b>9.0</b>
<b>AU</b>	-0.2	3.3	-0.1	-1.4	28.3	0.6	-1.0	3.7	3.7	0.6	-0.9	0.0	0.4	2.6	<b>39.5</b>	<b>-29.9</b>	<b>9.6</b>	<b>16.4</b>
<b>BE</b>	-0.4	3.2	-0.2	-1.1	28.6	1.4	-1.2	3.1	3.3	0.7	-1.1	-0.1	0.5	1.5	<b>38.3</b>	<b>-26.1</b>	<b>12.2</b>	<b>18.5</b>
<b>DE</b>	-0.5	3.1	-0.2	-1.2	29.0	0.7	-1.3	3.8	4.6	0.8	-1.0	-0.1	0.3	1.4	<b>39.5</b>	<b>-31.3</b>	<b>8.2</b>	<b>11.9</b>
<b>FI</b>	0.1	2.5	-0.3	-1.2	28.5	0.6	-1.1	3.4	3.6	0.4	-0.9	0.0	0.4	-0.1	<b>35.9</b>	<b>-28.3</b>	<b>7.6</b>	<b>10.2</b>
<b>GR</b>	-0.4	2.8	-0.4	-1.5	26.2	0.4	-1.1	4.2	2.4	0.5	-1.4	-0.1	1.4	2.6	<b>35.8</b>	<b>-29.3</b>	<b>6.4</b>	<b>8.9</b>
<b>IR</b>	-0.8	2.6	-0.3	-1.5	27.2	1.1	-1.6	4.8	3.3	0.6	-1.1	0.0	0.6	2.0	<b>36.8</b>	<b>-30.6</b>	<b>6.3</b>	<b>9.9</b>
<b>NE</b>	-0.3	2.6	-0.1	-1.2	28.8	1.3	-1.2	2.9	2.2	0.6	-1.0	0.0	0.4	1.5	<b>36.3</b>	<b>-23.0</b>	<b>13.3</b>	<b>17.3</b>
<b>NO</b>	-0.2	3.2	-0.3	-1.4	28.9	0.8	-1.3	3.6	3.7	0.5	-0.7	0.0	0.4	0.6	<b>37.6</b>	<b>-28.8</b>	<b>8.8</b>	<b>11.5</b>
<b>PO</b>	-0.3	2.5	-0.4	-1.8	25.8	0.7	-1.2	3.8	4.1	0.3	-1.5	-0.1	0.8	-0.8	<b>32.1</b>	<b>-31.1</b>	<b>1.0</b>	<b>5.5</b>

<sup>53</sup> Table 3 assumes coefficients, which country dummies assure rely solely upon time-variation, will correctly reflect long-run *T&T*-size differences. Actually, though, all fixed-coefficient time-series-cross-section model assume so.

<b>SP</b>	-0.2	2.6	-0.3	-1.4	27.3	0.3	-1.2	3.1	1.5	0.2	-1.4	-0.1	1.1	-1.0	<b>30.4</b>	<b>-25.3</b>	<b>5.1</b>	<b>12.5</b>
<b>SW</b>	0.0	3.5	-0.3	-0.9	29.3	0.6	-1.1	2.8	5.0	0.7	-0.7	0.0	0.3	0.3	<b>39.5</b>	<b>-29.9</b>	<b>9.7</b>	<b>13.1</b>
<b>SZ</b>	0.1	2.9	-0.1	-0.7	29.8	0.7	-0.6	2.3	2.2	0.5	-1.1	-0.1	0.5	0.5	<b>37.0</b>	<b>-30.2</b>	<b>6.8</b>	<b>10.0</b>
<b>AL</b>	-0.2	2.2	-0.2	-0.9	29.3	0.4	-1.5	3.7	3.1	0.8	-1.1	0.0	0.5	2.2	<b>38.3</b>	<b>-34.1</b>	<b>4.2</b>	<b>7.6</b>
<b>NZ</b>	0.0	2.2	-0.3	-0.7	29.0	0.6	-1.5	2.9	4.0	0.7	-1.1	-0.1	0.5	2.0	<b>38.3</b>			
<b>Avg.</b>	<b>-0.3</b>	<b>2.8</b>	<b>-0.2</b>	<b>-1.2</b>	<b>28.4</b>	<b>0.6</b>	<b>-1.1</b>	<b>3.5</b>	<b>2.9</b>	<b>0.6</b>	<b>-1.1</b>	<b>-0.1</b>	<b>0.6</b>	<b>1.2</b>	<b>36.4</b>	<b>-29.1</b>	<b>7.4</b>	<b>11.6</b>
<b>% of</b>																		
<b>T&amp;T</b>	<b>-3%</b>	<b>24%</b>	<b>-2%</b>	<b>-11%</b>	<b>245%</b>	<b>5%</b>	<b>-10%</b>	<b>30%</b>	<b>25%</b>	<b>5%</b>	<b>-9%</b>	<b>0%</b>	<b>5%</b>	<b>10%</b>	<b>314%</b>	<b>-250%</b>	<b>63%</b>	<b>100%</b>
<b>Avg.</b>																		
<b>Var.</b>	<b>5e<sup>-6</sup></b>	<b>1.6e<sup>-5</sup></b>	<b>1e<sup>-6</sup></b>	<b>1.2e<sup>-5</sup></b>	<b>1.2e<sup>-4</sup></b>	<b>1e<sup>-5</sup></b>	<b>6e<sup>-6</sup></b>	<b>2.8e<sup>-5</sup></b>	<b>1e<sup>-4</sup></b>	<b>2e<sup>-6</sup></b>	<b>5e<sup>-6</sup></b>	<b>3.8e<sup>-8</sup></b>	<b>7e<sup>-6</sup></b>	<b>1.1e<sup>-4</sup></b>	<b>5.8e<sup>-4</sup></b>	<b>6.4e<sup>-4</sup></b>	<b>7.7e<sup>-4</sup></b>	<b>1.3e<sup>-3</sup></b>
<b>% of</b>																		
<b>T&amp;T</b>	<b>0.4%</b>	<b>1.2%</b>	<b>0.1%</b>	<b>1.0%</b>	<b>9.2%</b>	<b>0.7%</b>	<b>0.5%</b>	<b>2.2%</b>	<b>7.8%</b>	<b>0.2%</b>	<b>0.4%</b>	<b>0.0%</b>	<b>0.6%</b>	<b>8.8%</b>	<b>45.0%</b>	<b>49.3%</b>	<b>59.3%</b>	<b>100%</b>
<b>Var.</b>																		

**NOTES:** Table lists the level of *T&T* after 35 years of constant levels and changes at that country's postwar-average levels and changes. Some estimates not significant (see Table 1). The antepenultimate and ultimate rows are the preceding rows' as a percent of the cross-sectional average and variance, respectively, which latter are given as the italicized entries of the last column.

Moreover, after wealth, the most important factors behind cross-national variation in *T&T*-size are, first, voter participation and the income skew and, second, labor-organizational strength. These factors foster larger *T&T* systems *via* their impacts on the share of the population favoring transfers (income skew, blue-collar shares of employment) and on the effectiveness with which those societal preferences are brought to bear upon government (political-participation rates and labor-organizational strength). Finally, the only other factor with appreciable cross-sectional importance is revenue-generation complexity (*ITAX*); again, varying fiscal illusion, though not quite statistically significant, could perhaps have substantively sizable effects.



**Figure 6: Postwar-Average Impacts of Independent Variables on Democracies' Postwar-Average T&T**

In sum, while shared exposure to macroeconomic shocks explains much of the OECD-shared *T&T* time-path; broader socio-political conditions, especially the participation-inequality interaction stressed here, tended to drive the wide variation across democracies. Figure 6 illustrates, plotting the amount of *T&T* (% of GDP) that each country's deviation from the OECD postwar-average on each political-economic condition in the model can explain. Factors that explain more than 0.5% of GDP of each country's average *T&T*-size deviation from the OECD average are labeled. As seen, wealth (*Y*) and its distribution among voters (*VPRW*) explain a large part of most countries' deviation from OECD-average *T&T*. Unionization (*UDEN*) and tax complexity (*ITAX*) also show strong effects in many countries and demographics (*POP*) and growth (*dY*) in a few. Other factors enter noticeably only in extreme cases: right government (*CoG*) in Japan (Liberal-Democrats held office this whole period); perhaps trade exposure in Belgium, Ireland, and the Netherlands and very-decentralized Swiss budgeting added to *T&T* there, although these last two are insignificant.

Concluding empirically: wealth (*Y*), participation-adjusted income-disparity (*VP·RW*), and labor-organizational strength (*UDEN*), with less input from three other factors—fiscal complexity (*ITAX*), age demographics (*POP65*), and growth (*dY*)—can explain almost half (45%) of the cross-sectional variation among developed democracies in postwar-average *T&T* size. These same factors,

especially wealth and growth but also the others, plus other economic conditions like unemployment and inflation, explain also explain almost half the shared time-path of *T&T*: a 14±% upward trend, with fluctuations fairly well-explained by macroeconomic conditions. Finally, other considerations, like election-year politics (*ELE*), government partisanship (*CoG*), and income-distribution volatility (*SDRW*) also exhibited statistically significant and, in some country-times, substantively large impacts. These last add to the others in explaining the variation that is unique to particular country-times. A very rough calculation of the amounts explained might be: 45% of cross-country variation, which is 43% of the total, explained, plus 50% of the shared time-path, which is 46% of the total, explained gives approximately 43% of total variation explained so far. The complete model explains  $R^2=51\%$ , so the model explains  $51\%-43%=8\%$  more than just accounted, which is fully 85% of the country-time-unique variation that remains. In other words, the positive political economy of tax-and-transfers, as extended here, performs moderately well in telling 40-50% of the cross-national and shared cross-time stories, and especially well in explaining individual country-years' deviations from their postwar average and the shared time-path, i.e., loosely, *at the margins*.

Concluding more theoretically, many of the arguments offered here or drawn from previous literature provide appreciable explanatory leverage, and, in particular, the core prediction of the basic neoclassical model receives support here as it has not elsewhere.<sup>54</sup> Democratic governments do seem to respond to medians' desires for larger transfers as the income skew rises; however, what matters theoretically and empirically is the income distribution among the politically relevant subset of the population. The key point here is that size and composition of that subset (critically, the share and parts of the income distribution it represents) varies across democracies over time depending on the interaction of their political (electoral) institutions and economic structure. Specifically, democratic pressure for redistribution derives from the difference between the median-voter's income and that of the *population*-(tax-payer-) average's income. Thus, the effective political pressure emanating from some degree of income disparity in the economy depends on the relative political participation of different income groups, which, in turn, depends on institutions that foster or hinder turnout because the relatively well-off vote and otherwise participate effectively everywhere while the less-well-off participate much more effectively only where they turnout to vote.

#### **Data Appendix: Descriptive Statistics for the T&T Data Set**

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<sup>54</sup> Some less inspiring results for the basic model also emerged; most notably, its dynamic extension produced no predictions for T&T systems that were both readily testable and unambiguously passed that test at usual significance. That extension, however, also had other (growth) implications that Alesina and Rodrik (1994) tested successfully.

	<b>TT</b>	<b>Δ(TT)</b>	<b>Δ(UE)</b>	<b>UE</b>	<b>Δ(POP65)</b>	<b>POP65</b>	<b>Δ(CPI)</b>	<b>CPI</b>	<b>UDEN</b>
<b>Mean</b>	12.137	0.286	0.129	4.484	0.137	11.679	0.115	6.556	42.099
<b>Median</b>	11.759	0.186	0.006	3.370	0.149	11.630	0.130	5.010	38.610
<b>Maximum</b>	28.332	3.885	4.166	20.940	1.414	18.282	17.610	29.300	84.600
<b>Minimum</b>	2.710	-2.168	-2.403	0.002	-0.725	5.641	-13.530	-0.800	9.867
<b>Std. Dev.</b>	5.163	0.661	0.820	3.581	0.151	2.437	2.878	5.141	16.214
	<b>Δ(Δ(Y))</b>	<b>Δ(Y)</b>	<b>Y</b>	<b>OPEN</b>	<b>CTAX</b>	<b>ITAX</b>	<b>TTAX</b>	<b>Δ(ELE)</b>	<b>ELE</b>
<b>Mean</b>	-0.001	0.029	9.040	0.452	0.599	0.354	0.906	-0.001	0.282
<b>Median</b>	-0.002	0.029	9.139	0.406	0.601	0.357	0.906	0.000	0.115
<b>Maximum</b>	0.122	0.126	9.803	1.396	0.863	0.714	1.000	1.552	1.711
<b>Minimum</b>	-0.116	-0.105	7.601	0.068	0.263	0.147	0.796	-1.580	0.000
<b>Std. Dev.</b>	0.033	0.029	0.442	0.242	0.140	0.091	0.032	0.501	0.337
	<b>Δ(CoG)</b>	<b>CoG</b>	<b>Δ(HR)</b>	<b>HR</b>	<b>SDRW</b>	<b>VP</b>	<b>RW</b>	<b>VP·RW</b>	
<b>Mean</b>	-0.020	5.821	-0.005	0.510	0.026	0.738	0.827	0.593	
<b>Median</b>	0.000	5.607	0.000	0.376	0.020	0.795	0.814	0.628	
<b>Maximum</b>	5.000	10.000	1.279	2.363	0.146	0.943	1.801	1.254	
<b>Minimum</b>	-6.948	2.785	-1.656	0.195	0.002	0.000	0.291	0.000	
<b>Std. Dev.</b>	0.797	1.813	0.225	0.323	0.020	0.217	0.223	0.211	

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