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 the size of tax-and-transfer systems (T&T) increases 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 participants and non-participants are not randomly selected. Together these facts imply 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*, increased participation will produce larger T&T increases the more unequal the underlying income distribution. The postwar T&T experiences of developed democracies support that hypothesis empirically.

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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;¹ from 1950 to 1995, transfers doubled or more in every country but

¹ T&T sums direct transfers: 30 social security, 31 social assistance, and 32 welfare and pensions from National Accounts Volume II 1996 diskettes. These 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). The broad definition here includes transfers to the working and non-working. Thus, especially controlling for unemployment, the redistribution aspect of

Germany, which saw $50\% \pm$ growth. Yet, variation across countries over time is at least as striking as the sizable and largely-common trend. While transfers exceeded 20% of GDP in 9 countries in 1995, 5 had closer to 10%; while Dutch transfers nearly sextupled before growth abated, the German less than doubled before growth slowed; and, while 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, both the commonalities and the differences, as direct consequences of the differing distribution of political (votes) and economic (money) resources. Crudely summarizing: (1) Democracies respond to the median voter's interests because political influence is, in principle, distributed evenly (one person, one vote) and because majorities rule. (2) Free-market capitalism typically distributes income such that the economy's median is poorer than average, so median voters desire positive net-transfer systems. (3) Indeed, under certain reasonable assumptions about the effects of taxes on economic performance, median voters desire more T&T the greater the difference between median and mean income. Therefore, *ceteris paribus*, transfers increase in the (pre-T&T) skew of the income distribution.

This paper explores more-carefully some of the connections in the above argument from the distribution of political and economic *resources* to that 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 do, for example, the existence of parties and institutionally-structured electoral-competition suggest? Then, empirically, how well can the emergent theory, with the amendments and additions, explain the commonalities and differences in the T&T experiences of developed democracies over the postwar era illustrated in **Figure 1**?

I structure the paper to answer these questions thus. Section II offers a highly stylized model transfers likely dominates its insurance aspect (see Moene and Wallerstein 1999) in the empirical estimation here.

of T&T-size determination intended to reflect core elements of the influential static, median-voter, neoclassical-economy model (e.g., Romer 1975; Meltzer and Richard 1981). I then add a dynamic element similarly intended to reflect a simplified Alesina-Rodrik (1994) model. The aim here is to motivate with minimal formality the key intuitions and predictions of such models. Section III then discusses three issues arising, but previously under-emphasized, in this standard framework. 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 existing 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 politically active and inactive groups will differ systematically. Section III asks how these considerations alter the predictions emerging from the standard models. Section IV details the data and methods applied to evaluate empirically the emergent state of positive theory. Section V conducts the empirical estimation and discusses its 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) will highlight the key determinants of the median-voter's ideal T&T rate in a static world: pre-tax income-distribution, total wealth of the economy, and marginal rates at which taxes decrease output. Such models stress the differing distributions of electoral and economic power (see also 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.²

² 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.

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

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

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 J .⁵

$$t^* = a + b(\bar{y} - y_m) \quad \text{where } a \equiv -\frac{y_m'}{y' - y_m'}, \quad b \equiv -\frac{1}{y' - y_m'} \quad (2)$$

The term in parentheses is the difference between average and median income (income-distribution 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 J . 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.⁶ Thus, the median's optimal T&T rate lies between zero and

one (with a few simple and plausible further conditions⁷) and depends on average income, $\bar{y}$, median

³ $y_i(J)$ 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).

⁴ This obviously grossly simplifies any actual T&T system, but the hypotheses derived will remain substantively unchanged provided feasible T&T systems have the properties that taxes are weakly increasing in income, redistributive payments are weakly decreasing in income, and both functions are reasonably smooth.

⁵ I.e., the first-order condition; second-order conditions will hold for well-behaved (defined below) u and $y(J)$.

⁶ a 's numerator, the response of the median's own output to taxes, is negative, so a is negative.

⁷ Some sufficient conditions derived from (2) for $0 < J^* < 1$ are quite plausible empirical generalizations, so I do not seek weaker necessary-and-sufficient conditions. First, as empirically true everywhere, the income distribution must be right-skewed (positive). Given that, the remaining three sufficient conditions are:

$$(2a) \quad \frac{y''}{y'} < 0, \quad (2b) \quad \lim_{t \rightarrow 1} y_i(t) = 0, \quad (2c) \quad |y_n'(0)| < \sum_{j=1}^n \frac{y_j'(0)}{N} - y_m'(0)$$

Condition (2a), stating that higher-income people have greater tax elasticity of output, ensures positive b . Condition (2c)

income, y_m , and the responsiveness of each to tax-rates, $\frac{\partial y_m}{\partial \tau}$ and $\frac{\partial y_m}{\partial \tau}$. 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, typically⁸ increases in the skew of pre-tax income, $(\frac{\partial y_m}{\partial \tau})$:⁹

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 (see Alesina and Rodrik 1994 for a full model). First, summarize the impact on growth rates, g , of investment decisions optimized given tax rates, τ :

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

I.e., additional to the output effects from above, higher τ diminishes growth increasingly. Not only do higher taxes induce some not to work as much, but they 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:¹⁰

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

The main differences from the static case are perfectly apparent from close comparison of states that marginal increases in tax rates from $\tau=0$ do not so lower the median's output that the redistributive revenues she garners do not compensate. This ensures non-zero optimal τ for the median person. Condition (2b), stating that 100% tax rates reduce output to zero, ensures that the median's ideal rate is less than one.

⁸ 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.

⁹ Several other results surround the tax-elasticity of output (i.e., the magnitudes of $\frac{\partial y_m}{\partial \tau}$ and $\frac{\partial y_m}{\partial \tau}$). E.g., the more the wealthy substitute leisure for labor relative to poor (i.e., more negative $\frac{\partial y_m}{\partial \tau}$), 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 does not alter the income skew but does increase 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, so I list them here only to illustrate that many other hypotheses could easily be derived from this framework.

¹⁰ 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.

(4) and (1), so an explicit solution for the median's optimal T&T rate is not needed. The expression following the discount and growth rates, $\ln[q]$, is just the static-model utility, so the only additional concerns in the dynamic model are that individuals discount the future ($1 + \star$) and that, beyond the output-level effects from the static case, increases in J also reduce output *growth*. 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, the median voter desires a smaller T&T system the more she weights the future in evaluating policy (i.e., the longer are her *time-horizons*):¹¹

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

Direct empirical evaluation of Hypothesis 4 is beyond the scope of the present paper, but certain logical extensions derived below can 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., J has no time subscript in (4), indicating that it is chosen once at time zero, is irrevocable, and is known to be so.) However, once investments that increase next-period income are made based on the existing J , the median voter can safely raise J , garnering more transfers without reducing growth.¹² The implications of such time-inconsistency problems can be profound (Kydlund and Prescott 1977). Suppose, e.g., that the current median voter is certain she will not be median next period and has no way of knowing who will succeed her. She would then have no way to affect next period's J ; it will be whatever the next median wants. Therefore, her preferred T&T size depends only on this period's outcome,¹³ and so she chooses the static optimum from (2), which, as noted in above, will be higher than the intertemporal optimum. Thus, the median-voter

¹¹ Analogously to Hypothesis 3 (in its intuition and in the difficulty of empirically evaluating it):

Hypothesis 5: The more negatively sensitive the growth rate to increases in taxes (i.e., the more negative $\mathbb{N}$ and (0) , the smaller the median's desired T&T.

¹² Against this incentive are arrayed the usual contrary concerns like policy-making reputation, etc.

¹³ Not controlling next period's J , she affects only this period's investment, which has vanishingly small impact on her utility relative to the level effects of this year's J .

raises J relative to her infinite-horizon optimum as her uncertainty about 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:

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 Marx, Mill, and the classical theorists that capitalism and democracy could not coexist might have been warranted. *Representative* democracy mitigates this problem because its political parties aggregate voters into smaller numbers of competing interests with correspondingly larger spaces between the median incomes of each party than those between each voter. Thus, perturbations of the income distribution have less effect on which party controls the policy agenda than they would on which voter controls it in a pure median-voter setting.¹⁴ Since parties control the policy agenda 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 some voter's or parties', establishes the relevant horizon for T&T-size determination.

¹⁴ This complements other mitigating aspects of competitive party democracy (see Offe 1984).

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

III.B. Extension: Partisan Redistributive Politics

Party systems are usually organized so that, when parties obtain government-control, the median voter in the median party of 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 and right around her. Even in a two-party system, parties may have extra incentive to appeal to activists who are generally more extreme than the median (Aldrich 1983a, 1983b, 1995; Aldrich and McGinnis 1989). If so, they will not converge to society's median but rather straddle it, with the left-party median typically poorer and the right-party median typically richer than the polity's median. Equation (2) then implies directly that left parties will seek higher T&T rates than do right parties. Obviously, class-based theories relying less directly on median-voter principles (e.g., Heclo 1974; Castles 1982; Esping-Andersen 1990; Hibbs 1987; Korpi 1980, 1983) predict similarly.¹⁵ The critical point here is more the converse that, incorporating Aldrich's insights, government partisanship remains relevant *even controlling for the position of the median voter*.

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

III.C. Extension: Political Participation and Redistribution

The above model implicitly assumes 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. Indeed, many (e.g., Dye 1979, Pampel and Williamson 1988) propose some loosely specified link between more participatory democracy and *progressive* policy and, assuming that larger T&T is *progressive*, argue that higher voter turnout should produce more T&T.¹⁶ Even granting the assumption, however,

¹⁵ Arguments that centrist governments, especially Christian-Democrats, favor large T&T for their own reasons (e.g., Castles 1982; Esping-Andersen 1990; Hicks and Swank 1992; Wilensky 1981), are less amenable to translation into a single-dimensional median-voter framework.

¹⁶ The degree of electoral competition, typically operationalized as the evenness of the vote distribution across

the effect of voter participation logically must depend on who joins the electoral pool as participation increases. Thus, while empirical correlations between voter participation and T&T size seem fairly strong (Pampel and Williamson 1988, Hicks and Swank 1992), solid theoretical reasons to expect higher electoral participation to increase pro-transfer shares of the politically active population (e.g., greater electoral representation of the relatively poor) are more lacking. Most—Meltzer and Richard (1978, 1981) and political philosophers of all ideological views before them (Aristotle, Mill, Marx, and De Tocqueville alike)—simply assume that franchise expansion increases the political influence of the less well-off. This is indubitably accurate historically, but whether increases in participation *given universal suffrage* produce greater government responsiveness (in terms of raising T&T) to higher 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.¹⁷ 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? If so, the relationship between participation and T&T that Dye (1979) hypothesized and Pampel and Williamson (1988) and Hicks and Swank (1992) found can be derived from the models above.¹⁸

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 positive correlation the empirical literature firmly

legislative parties, is also emphasized. This variable has not proven robustly predictive, though, so it is omitted here.

¹⁷ Using the 1980 US Census, he estimated the median income as \$18,267 and the median-voter's as \$20,698.

¹⁸ Nagel's finding that low turnout favors Republican presidential candidates is highly suggestive in this regard.

established 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:

$$\begin{aligned}
 (5A) \quad & \text{Vote if: } b(y_{ijt}, X_{ijt}) \geq 0, \text{ otherwise abstain.} \\
 & \text{Define: } y_{ijt} \text{ as } i\text{'s income at time } t \text{ relative to country } j\text{'s mean income at time } t, \\
 & \quad X_{ijt} \text{ as a vector of other characteristics of } i, j, t \text{ relevant to the voting decision.} \\
 & \text{Assume: } b(\theta), \text{ the net benefit of voting function, is the same for all } i, j, t \\
 & \quad E[Mb/M_y] > 0 \\
 & \quad E[M^2b/M_y M_x] = 0 \text{ } \forall x \in X
 \end{aligned}$$

The key features of this model are that, on average, net benefits of voting increase in *relative* income, $E[Mb/M_y] > 0$, and are determined similarly for all voters, $b(\theta)$ is invariant, and that other factors, X_{ijt} , that affect propensity to vote fall similarly on the relatively well-off and worse-off on average, $E[M^2b/M_y M_x] = 0$. I leave these X_{ijt} , which might reflect institutional or cultural differences, unspecified. For example, whether individuals or governments bear registration responsibility differs across countries; 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 positive net voting benefit:

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

(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:

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

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*). Therefore, the raw income-skew and the voter-participation rate will interact in T&T-size determination:

Hypothesis 7: The positive effect of the raw income-distribution skew on T&T-system size (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.

I focused on voting above, but other modes of participation—e.g., lobbying, directly contact of representatives, campaign contributions, letters to editors, etc.—provide also 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. One might wonder, therefore, whether this undermines the empirical relevance of Hypothesis 7 and Corollary 7a, but two considerations suggest to the contrary that it actually strengthens them. First, as voter-participation 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 political participation than with voting (Verba et al. 1978, Rosenstone and Hansen 1993, Verba et al. 1995):

“[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

An appropriate dependent variable for testing these hypotheses is the share of GDP allocated to transfers (***T&T***), which I measure by social security benefits, social assistance grants, welfare and pension payments as a share of GDP.¹⁹ **Figure 1** shows the data, and the data appendix provides descriptive statistics. The entire data set is available from [*address withheld for anonymity*].

To the hypotheses derived above, I add a set of controls common in the empirical literature. First, most obviously, transfer payments should respond to unemployment, that being much of their purpose, so I control for unemployment rates (***UE***=internationally comparable annual figures: OECD sources²⁰). This broad definition and control are especially crucial in view of Moene and Wallerstein (1999), who demonstrate in a different model that the median's demand for the insurance aspect of transfers, i.e., unemployment subsidies, *decreases* in the income-distribution skew. By using a broad definition for ***T&T*** and controlling for unemployment directly, the empirical analysis highlights the redistributive aspect of transfers, which is more-nearly monotonically increasing even in their model. Second, as obviously, pensioners receive transfers, so I also control for that age group's share of the population (***POP65***=population 65+ as a percent of total: *UN Demographic Yearbook*). Third, many studies allow an automatic ***T&T*** response to inflation rates. On the one hand, to the degree systems are insufficiently indexed to maintain unchanged real payments, inflation will automatically reduce ***T&T***, a ratio to GDP and so a real measure. On the other hand, systems could over-compensate for and/or societies might prod policymakers to respond over-zealously to inflation. Accordingly, I also

¹⁹ Data are items 30-32 from *OECD National Accounts, Volume II*. Usable data are maximized by merging disk and print sources (ratio-splicing from 1993 backward, thus resolving conflicts in favor of the later, magnetic publication).

²⁰ "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).

control for inflation (*CPI*=consumer-price inflation: IMF sources²¹).

Empirical studies of fiscal activity also frequently employ at least six other controls without typically distinguishing whether their impacts should occur in transfers or elsewhere on the budget.

First, nearly every empirical study begins with Wagner's Law: public-sector share of total spending increases in aggregate wealth because, in short, public goods are luxuries. Note that if the law applies specifically to *T&T*, it contradicts Hypothesis 2 (see note 10) that distribution-neutral increases in wealth decrease *T&T*. The law's applicability to *T&T* depends on whether transfers are luxury or necessity from a national viewpoint. If transfers are luxuries—poorer countries generally eschew them, so they probably are—the estimated effect of wealth (*Y*=natural log of real GDP per capita: *Penn World Tables* 5.6) will net these two, countervailing but not logically exclusive, forces.

Second, Cameron (1978) argued and demonstrated that trade openness increases government size measured as its revenues share of GDP. Katzenstein (1985) and others argued that specifically demand for public insurance increases with trade openness, which would imply that openness spurs *T&T*. Garrett (1995, 1998ab) argues, alternatively, that openness²² should reduce *market-subverting* government action but, if anything, increase *market-augmenting* intervention. *T&T* could be market-subverting or market-augmenting depending on the system's details. Either way, controlling for trade openness (*OPEN*= {exports+imports}/GDP: IMF sources) seems prudent.

Third, especially scholars in social-democratic-corporatist traditions stress the organizational strength of labor in the political economy (in addition to left-party strength in government). Whether union strength *per se* or *coordinated* union strength is causally relevant is debatable. I suspect that, as an impetus to *T&T*, whether unions coordinate in bargaining makes little difference; strong but fragmented unions will push as hard and effectively for increases in transfers. Both union density

²¹ "IMF sources" mean *IMF International Financial Statistics* (6/96 CD-ROM), supplemented by print editions where necessary and possible.

²² This argument works *via* financial openness especially, but trade and financial openness correlate highly.

and coordination indices have produced strong results in previous empirical work, so either will likely serve well for control purposes.²³ I choose the simpler union density (*UDEN*=union members percent of the labor force: Golden et al. 1995) since the concept is more transparently measured.

Fourth, some scholars argue that (de-)centralization of fiscal activity can profoundly affect total government spending (e.g., Weingast et al. 1981) and transfers in particular (e.g., Sharpe 1988). Geographically fragmented fiscal policymaking may foster greater spending if coordination problems among the localities conspire to make the sum of their separate decisions exceed what the national aggregate would have chosen. Contrarily, decentralized policymaking may reduce fiscal authorities' ability to externalize the costs of their locally desired spending to the aggregate. Decentralized fiscal policymaking could also induce a "race to the bottom" as localities reduce taxes to compete for investment (Peterson 1990). Either of the last two suggest decentralization would reduce *T&T*; the first implies the opposite. To control for either possibility, I measure fiscal centralization as the central government's share of general government revenues (*CTAX*: OECD sources).

Penultimately, some scholars argue that complicated fiscal systems can cause *fiscal illusion*: voter mis-assessment of cost and benefits of government programs. Buchanan and Wagner (1977) argue the illusion induces under-estimation of net costs, but Downs (1960) argues as logically for under-estimation of net benefits. In either case, the more complex the fiscal system, the greater the illusion, and so the more/less public overspending. Again, I am mainly concerned to control for either possibility in using indirect taxes (*ITAX*: complexity) and total taxes (*TTAX*: simplicity) as fractions of total revenues of general government (OECD sources).

Lastly among the controls: at least since Tufte (1978), political economists have suspected incumbents of manipulating transfer payments (taxes) to rise (fall) before elections to earn electoral

²³ Whether (a) corporatist institutions are supported by larger T&T systems as might be inferred from Alvarez et al. (1991) or (b) strong but fragmented unions exercise less restraint than coordinated ones and thereby represent a greater impetus toward transfers spending (by raising unemployment) remains an interesting but unaddressed issue.

boons from voters. Accordingly, I add a control variable equal to 1 in pre-election years (*ELE*).^{24,25}

Turning to the core arguments, Hypothesis 1 argued that T&T increases with the gap from median to mean income in society. Hypothesis 7 and its corollary extended that familiar proposition, noting that this relationship should itself increase with voter-participation rates.²⁶ Thus, we need measures of raw (pre-T&T) inequality and effective participation rates, each of which is problematic.

First, unlike the annual dependent variable, voter-participation rates (*VP*=voters as a share of voting-age population: Mackie and Rose 1991, *EJPR Data Annual* various issues) have irregular observable frequency. An annual estimate of the electorally active population is obtained by holding voter turnout from each election²⁷ fixed until next election and then smoothing the resulting series by a moving average covering this and the previous three²⁸ years.

Obtaining comparable annual measures of income disparity is notoriously more difficult. Hypotheses 1 and 7 require specifically the skew of the income distribution, i.e., mean relative to median. *GDP per capita* gauges the latter directly. Unfortunately, median income proved impossible to measure cross-nationally and cross-temporally comparably so directly, so I suggest an alternative expedient. Take pre-tax manufacturing-wages (*w*: IMF sources) and *GDP per capita* (*y*), each indexed to 100 in 1986. Then, to the degree manufacturing workers are median actors or their wage-income plight reasonably tracks that of median actors, *y/w* yields a cross-time, within-country

²⁴ To be precise, in election years $ELE_t = M/12 + (d/D)/12$, with *M* the number of complete months before election, *d* the day of, and *D* the number of days in, the incomplete month. $1 - ELE_t$ is attributed to ELE_{t-1} . The US, French Vth Republic, and Finland are problematic, being presidential systems. Throughout, I assume simply that French and Finnish presidents and cabinets are each ½ the government and that the US president and each house are 1/3.

²⁵ Schultz (1995) argues that, since manipulating the economy has costs (e.g., lost reputation for sound policy or costly future economic repercussions, incumbents likely employ pre-electoral manipulation only when most necessary, say, when the upcoming election is expected to be close. E.g., governments obviously cannot manipulate budgets in years prior to unforeseen elections. Thus, a more ideal measure would increase in the *expected closeness* of *foreseen* elections. Creating such a variable comparably across countries remains a project for future research.

²⁶ Since the unemployed and pensioners should also seek more T&T, and since age and employment status also relate to voting propensity, participation should also condition the T&T impact of unemployment and age distributions. These hypotheses remain open empirical matters that the methodology suggested in Franzese (1999) might help address.

²⁷ Elections to the lower house of national government only in cases where all elections do not coincide.

²⁸ Four-year blocks will each contain exactly one presidential election-year in the US; thus, the measure smooths the likely-spurious upward spikes in measured electorally relevant population that would otherwise occur there.

comparable measure of the mean-to-median ratio with $y/w=1$ in index-year 1986. I then take cross-country comparable GINI-indices of inequality for as near 1986 as possible from the *Luxembourg Income Study*, normalize them to 1 in a base country (US), and multiply by y/w . The resulting cross-country and cross-time comparable index of income skew—call it manufacturing workers’ relative wage position (**RW**)—compares all other country-years to the US situation in 1986 where **RW**=1.^{29,30}

Hypothesis 4 and its corollaries related T&T positively to median voter’s discount-rates or uncertainty and negatively to policymakers’ expected-duration of agenda-control. Although neither concept is directly measurable, I make some attempt. First, if variation within the income distribution over time correlates with variation of its skew over time—intuitively appealing, but not strictly necessary—then a (five-year, centered) moving standard-deviation of **RW**, **SDRW**, approximates the median’s uncertainty that she will remain such. Second, policymakers’ expected-duration of agenda-control will be well approximated by the inverse of the actual duration of current government (i.e., their hazard rate: **HR**) to the degree governments control the agenda, hazard rates are constant within government, and governments’ predictions of their own hazard rates have small mean-squared error (government-duration data from Woldendorp et al. 1994, 1998 and Lane et al. 1991).³¹

Hypothesis 6, finally, predicts that left governments implement larger T&T systems than right, even controlling for participation-adjusted median-voter income. To measure partisanship, I first compiled a data base coding all parties that have been in government in 21 democracies since 1945 from 0 at far left to 10 at far right.³² The codes rescale and then average previously published

²⁹ [reference suppressed] provides further details on this variable and the arguments and assumptions underlying its use as a measure of income skew.

³⁰ I also considered proxies for income skew using several inequality indices from the *LIS*. I constructed a broad-coverage estimate of a comparable GINI index thus. Take sets of country-specific-estimates of GINI and other indices, (from annual 1967-90 data for the US to one observation in Greece and New Zealand), scale other indices to GINI by linear regression, and fill years between observations by linear extrapolation. Then forecast and “back-cast” to 1950-95 using Box-Jenkins techniques. Make the series cross-country comparable by repeating the above process for ratios of available comparative-study indices to the country-specific series just generated. The resulting index performed broadly similarly to the **RW** measure, which I consider better, though with larger standard errors.

³¹ ½ president and ½ cabinet **HR** in France V and Finland; 1/3 each president, house, and senate in US.

³² See also [reference suppressed] for more details.

expert-indices for that party given in Laver and Hunt (1992) and Laver and Schofield (1991). Using these codes and the number of cabinet ministers of each party in every government (from Lane et al. 1991, supplemented by Woldendorp et al. 1994, 1998), I obtain an average left-right position of each government, calling the resulting measure its partisan *center of gravity* (*CoG*).³³

IV.B. Methodology

Tests reveal that *T&T* may have a unit root,³⁴ so simple lagged-dependent-variable methods could be highly misleading. An error-correction model (ECM) is advised. Beck (1992) suggests an alternative, requiring less stark *a priori* decisions about which variables cointegrate, to the common two-stage ECM method. Simply regress the change 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) whatever other levels or differences of independent variables theory or empirics may suggest. The one-step method is asymptotically equivalent to the two-stage method and produces statistically valid estimates provided the coefficient on the lagged dependent-variable level is comfortably negative.³⁵

Interpretation of ECM coefficients is intuitive. Coefficients on the changes in and levels of independent variables reflect “transitory” momentum-like and “permanent” equilibrium-like effects, respectively. Both accumulate and dissipate geometrically over time through the coefficients on the lagged dependent-variable level, which reflects slow adjustment of levels to equilibrium relations, and those on its lagged differences (if present), which reflect slow adjustment of momentum in changes. “Transitory” effects are the effects of *changes* in X on *changes* in Y. If X increases once and remains at the new level, the transitory impulse to Y given by the coefficient on ΔX also lasts only that one period and then dissipates as determined by the estimated dynamics in Y. Contrarily,

³³ I borrow Tom Cusack’s “CoG” terminology. For years with more than one government in office, *CoG* weighs each by the fraction of the year it held office. French, Finnish, and US governments treated as before.

³⁴ 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.

³⁵ A t-statistic large enough to have satisfied an ADF test, say below -4, likely would suffice. The *proviso* is the author’s “rule-of-thumb” not Beck’s, so the former bears full responsibility for its validity.

the “permanent” effects given by the coefficients on X model long-run or equilibrium relationships between the *levels* of X and Y. By these, the same one-time, permanent increase in X produces a permanent change in the level of Y as propagated through the latter’s estimated dynamics.³⁶

In this application, some variables should affect *T&T* virtually automatically and immediately (*UE, POP65, CPI, Y*) but may also have longer-run effects, perhaps operating through the changes they induce in the polity’s structure of interests. For example, larger over-65 populations increase the 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 the current government (*ELE, CoG, HR*). These too should have immediate effects that may also persistent, so they also enter in current differences and lagged levels. The third category (*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.³⁷ These considerations combine to produce the following equation for estimation:

$$\begin{aligned} \Delta T\&T_t = & \mathbf{C}'\mathbf{B}_0 + \mathbf{b}_1 T\&T_{t-1} + \mathbf{b}_2 \Delta UE_t + \mathbf{b}_3 UE_{t-1} + \mathbf{b}_4 \Delta POP65_t + \mathbf{b}_5 POP65_{t-1} \\ & + \mathbf{b}_6 \Delta CPI_t + \mathbf{b}_7 CPI_{t-1} + \mathbf{b}_8 \Delta (\Delta Y_t) + \mathbf{b}_9 \Delta Y_{t-1} + \mathbf{b}_{10} Y_{t-2} \\ & + \mathbf{b}_{11} OPEN_{t-1} + \mathbf{b}_{12} CTAX_{t-1} + \mathbf{b}_{13} ITAX_{t-1} + \mathbf{b}_{14} TTAX_{t-1} + \mathbf{b}_{15} UDEN_{t-1} \\ & + \mathbf{b}_{16} \Delta ELE_t + \mathbf{b}_{17} ELE_{t-1} + \mathbf{b}_{18} \Delta CoG_t + \mathbf{b}_{19} CoG_{t-1} + \mathbf{b}_{20} \Delta HR_t + \mathbf{b}_{21} HR_{t-1} \\ & + \mathbf{b}_{22} SDRW_{t-1} + \mathbf{b}_{23} VP_{t-1} + \mathbf{b}_{24} RW_{t-1} + \mathbf{b}_{25} VP_{t-1} \cdot RW_{t-1} + \mathbf{e}_t \end{aligned} \quad (6)$$

where *C* is the set of time-series-cross-section controls determined to be appropriate: (a) one lagged

³⁶ Moreover, even if the one-stage ECM does not actually encompass a cointegrating relationship and yet the coefficient on the lagged level of the dependent variable remains very highly significantly negative—i.e., if unit-root concerns were actually unfounded—the regression is still interpretable in this way.

³⁷ Also, if direct, indirect, or central taxes primarily finance transfers, estimating contemporaneous effects of tax-structure would greatly risk endogeneity. Lagging a year allows one to 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.

difference of the dependent variable ($\Delta T\&T_{t-1}$), (b) a complete set of country indicators, (c) a set of indicators for non-democratic periods in Greece, Portugal, and Spain, and (d) a variable equal to the average $T\&T$ in the other countries in the sample in that year.³⁸ Note that natural logs of real GDP-*per-capita*, Y , enter the equation in second differences, $\Delta(\Delta Y_t)$, lagged first-differences, ΔY_{t-1} , and twice-lagged levels, Y_{t-2} . As a property of logs, ΔY is the real per capita growth rate, which likely has automatic and immediate effects on $T\&T$ and may also have persistent effects. Thus, growth, ΔY_t , is an economic condition entering in current-differences, $\Delta(\Delta Y_t)$, and lagged-levels, ΔY_{t-1} . Hypothesis 2 (see note 10) and Wagner's Law, in turn, argue for the inclusion of wealth levels, Y_{t-2} . The next section uses the postwar experiences of developed democracies³⁹ to estimate (6) and applies the results to evaluate the emergent positive political economy of T&T-size determination.

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

Table 1 summarizes the results. Note first that the small negative coefficient on lagged $T\&T$, -.06, implies a very slow adjustment process.⁴⁰ 94% of a shock in one year persists into the next, 94% of that into the next year, 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).

³⁸ 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 in thoroughly unsatisfying ways theoretically. Here, Wald tests rejecting their omission were too significant to ignore: $p<.000001$.

(2) I include the non-democracy indicator ($DICT$) and three lags of it ($p=.035$) 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) Finally, I include $\Delta T\&T_{-i,t}$ to bring spatial correlation of the dependent variable into the model's systematic component. This should add some efficiency to the consistency of the Beck-Katz PCSE's, which I also applied.

³⁹ The usable sample is US, Japan, Germany, France, Italy, UK, Canada, Austria, Belgium, Denmark, Finland, Greece, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Australia from as early as 1956 through as late as 1991 (the sample is not quite rectangular due to some missing data).

⁴⁰ Its large $|t|>4.3$ would likely satisfy ADF tests, so inferences should be free of unit-root concerns.

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 P^2) Tests
<i>CONTROLS</i>	—	—	—	—
$\Delta T&T_{t-1}$	-0.0601	0.0139	0.0000	—
ΔUE_t	+0.2238	0.0308	0.0000	p . 0.0000
UE_{t-1}	-0.0131	0.0113	0.2446	
$\Delta POP65_t$	+0.1382	0.1393	0.3215	p . 0.4426
$POP65_{t-1}$	+0.0265	0.0300	0.3762	
ΔCPI_t	-0.0365	0.0075	0.0000	p . 0.0000
CPI_{t-1}	-0.0049	0.0066	0.4559	
ΔY_t	-8.0556	0.9409	0.0000	p . 0.0000
ΔY_{t-1}	-5.0930	1.3323	0.0001	
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	—
ΔELE_t	+0.1043	0.0535	0.0518	p . 0.0274
ELE_{t-1}	+0.2259	0.0847	0.0078	
ΔCoG_t	-0.0391	0.0239	0.1030	p . 0.1755
CoG_{t-1}	-0.0215	0.0155	0.1670	
ΔHR_t	-0.1010	0.1072	0.3465	p . 0.5567
HR_{t-1}	-0.0105	0.1081	0.9223	
$SDRW_{t-1}$	+2.4838	1.4956	0.0972	—
VP_{t-1}	-0.3688	0.5498	0.5026	p . 0.0203
$VP_{t-1} @ RW_{t-1}$	+1.1382	0.4720	0.0162	p . 0.0496
RW_{t-1}	-0.3280	0.3396	0.3346	
Number of Observations (Degrees of Freedom)				701 (650)
Adjusted R^2 (Std. Err. of the Estimate)				0.477 (0.478)
Lagrange-Multiplier Residual Correlation Test, 1 Lag				0.4949

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.

Not surprisingly, unemployment has a statistically strong (p. 0) positive impact on $\Delta T&T$; +1% UE induces an immediate 0.22% of GDP increase. Longer-term effects are small though; a permanent +1% UE induces an insignificant (p. .24) .2% of GDP long-run $\Delta T&T$ decline. If anything, 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. 0) immediate but negligible, insignificant long-term effect (p. .46). While statistically clear, even the former is small; +1% *CPI* reduces *T&T* only 0.04% of GDP. Thus, transfers are generally slightly inadequately indexed to inflation, but neither statistically nor substantively significantly so longer-term. Lastly, the *T&T* impact of the age distribution, though positive as expected, is surprisingly weak statistically (p. .32, .38, and .44 in changes, levels, and jointly). Likely, this low significance arises because the upward trend in over-65 population-shares was very common across the sample, and so the control for the average *T&T* in other countries each year would have absorbed its effect.⁴¹

The *T&T* effects of growth and wealth are more interesting; e.g., the immediate and longer-term negative *T&T* effects of growth, given in the coefficients on ΔY_t and ΔY_{t-1} respectively, are both very strong statistically (p. 0) and substantively. Counter to this, though, the effect of wealth is positive and moderately significant (p. .07). However, these are the effects of changes in growth, keeping wealth constant, and of changes in wealth, keeping growth constant. Neither is logically possible, so substantive interpretation requires counterfactual examples. Consider a permanent 1% increase in real-per-capita growth. The automatic impact of growth in reducing transfers dominates in the first 10-12 years, during which the higher growth rate reduces *T&T* 3±% of GDP. After that, Wagner's venerable law dramatically takes over, producing an explosive increase in *T&T* as wealth accumulates ever more rapidly. A more substantive example: OECD-average real-GDP-per-capita increased from 4200 to 13400 (constant 1985 \$US) over the postwar era, though at slowing growth rates. The estimated *T&T* response to that path, reflecting both the automatic impact of growth and the accumulating impact of Wagner's Law, would have been a fairly steadily-accumulated 6.25% of GDP increase in *T&T* (see [reference suppressed] for graphical analysis).

⁴¹ 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.

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.⁴² 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. 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.

Union density's *T&T* impact, contrarily, was substantively large and statistically significant (p. .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.

⁴² *OPEN*, *CTAX*, and *ITAX*, but not *TTAX*, become more significant in models without country fixed-effects.

Turning from societal characteristics to those of government, pre-electoral manipulation of transfers is strongly evident, contrary to some recent pessimism about such electoral budget-cycles in the literature (e.g., Alesina et al. 1997).⁴³ Coefficients on ΔELE_t and ELE_{t-1} reveal that transfers rise in the year before an election by $0.10\pm\%$ of GDP (p. .05) and increase $0.12\pm\%$ of GDP (p. .02) further the year *after* an election (joint significance: p. .03). An extra 0.22% of GDP is noticeable electoral manipulation in itself, but, given the slow adjustment of $T\&T$, and since all democracies hold elections minimally every five years, the impact of one pre-electoral manipulation has hardly faded when another, perhaps conducted by a different government, occurs. **Figure 2** illustrates the interesting implications, three aspects of which merit particular attention.

First, the cycle peaks the year *after* an election.⁴⁴ I can propose three possible reasons for this. It may just reflect, uninterestingly, lingering differences between calendar- and fiscal-year measured ELE and $T\&T$. It could, nearly as uninterestingly, simply reflect slow budgeting processes that delay post-election governments' retrenchment of election-year largesse. Or, it might reflect the fact that pre-election and post-election policymakers sometimes differ and that, once in office, candidates tend to fulfill their promises. As Tufte (1978) noted, election campaigns often spark spiraling rounds of promises between incumbents and challengers. Suppose candidates who promise greater largesse,

⁴³ Likely, some combination of the following explains how so many previous studies missed this evidence. First, Tufte's (1978) emphasis on pre-electoral manipulation of transfers policy seems well-founded but has been too-often ignored (*cf.*, Schultz 1995). Since policymakers wish economic gifts to arrive around election time, directly manipulable outcomes, like transfer-payments, will be the tools of choice. Second, the dynamics of the policy variables 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 democratic competition involves campaigns before and sometimes changes in policymakers after elections. 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; rumors of its empirical demise have been greatly exaggerated. Economists returned to reconsider Nordhaus' (1975) *political business cycles* from a rational-expectations macroeconomics view, culminating in *equilibrium budget cycles* (Rogoff and Sibert 1988, Rogoff 1990). The results here suggest that political scientists should likewise return to Tufte's (1978) *Political Control of the Economy*; more politics are afoot than mere election-year dummy-variables will locate. E.g., Schultz (1995) argues and finds (see note 25) that policymakers will not manipulate $T\&T$ equally before every election (as the operationalization here also implicitly assumes); likely they manipulate only to the degree *close* elections are *foreseen*. Estimates here and elsewhere effectively average such variations, under-estimating (over-estimating) electoral manipulation in close contests (landslides).

⁴⁴ Leads and lags up to five years on the pre-election-year indicator were considered. Only these two years were significant, and comfortably so in all specifications attempted.

more credibly win more often. Then, while pools of pre-election policymakers (incumbents) will contain some who seek to buy votes by increasing current transfers, post-election pools will contain returned incumbents and freshman who, more frequently still, promised greater still transfers because some incumbents will have promised/given too-few transfers and so lost. Indeed, this would also explain the slightly larger and more-significant coefficient on ELE_{t-1} than on ELE_t .

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

Second, the frequency of elections also has sizable impact on long-run T&T-system size. Democracies with elections every 2 (3,4) years accumulate over 1% (0.5%, 0.2%) of GDP higher $T\&T$ than those with elections every 5 years. This, as noted above, is because T&T adjusts slowly enough for one pre-electoral manipulation to linger into the next. How much remains depends on the time between elections, so democracies with more-frequent elections accumulate greater long-run $T\&T$. Third, for the same reason, the amplitude of electoral $T\&T$ cycles is increasing in the time between elections: .01%, .07%, .12%, and .14% of GDP for 2-, 3-, 4-, and 5-year cycles respectively.

The US, with presidents and representative elected every 4 and 2, and 1/3 of the Senate every 2 years (all in early November), has an odd electoral-cycle pattern that illustrates all three points. *ELE* codes this cycle { .05, .28, .11, .66 }, ending the presidential-election year. Given the estimated *T&T* dynamics and the coefficients on ΔELE_t and ELE_{t-1} , this pattern produces an equilibrium *T&T* cycle of { 1.07, 1.04, 1.02, 1.04 }. The US cycle peaks the year *after* the presidential election; and, compared to a simple 4-year cycle (0,0,0,1) Δ 1.00,.95, .88,.93), the US cycle has smaller amplitude and larger long-run *T&T*: the former because off-presidential-election years still have some electoral activity and so induce a *T&T* response; the latter because, relatedly, of its more-frequent elections.

I turn now to the impact of the political-economic conditions emphasized in Hypotheses 1-7.

First, consider the *T&T* effects of government partisanship. Although estimates do indicate the right lowers and left raises *T&T*, the effects attain only marginal statistical significance: p. .10, .17, and .18 for change, level, and joint effects respectively. Previous studies found stronger results, but their estimates were statistically suspect⁴⁵ and did not control for income distribution or, usually, for the breadth of controls included here. Still, Hypothesis 6 added Aldrich's insights to a Romer-Alesina/Rodrik type model to suggest that government partisanship should retain *T&T* effect even controlling for income skew and other underlying structures of interests in the polity. These estimates indicate that such a remainder may exist but is not over-large. A unit rightward *CoG* shift reduces *T&T* 0.04% of GDP immediately, 0.18% of GDP by the end of a 12-year stint in office, and 0.36%

⁴⁵ 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 between government and opposition partisanship. However, both employed FGLS procedures Beck and Katz (1995, 1997) subsequently demonstrated to be 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 simple, 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 that FGLS standard errors in a sample that size are likely 3 to 4 times over-confident. Thus, the results here are likely actually somewhat stronger than true there. They also found center parties as or more expansive in welfare spending than the left. This possibility 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 countries* raise transfers with t. 2: slightly stronger support than found here. They also noted but did not report negligible effects in other democracies, so averaging across all democracies as done here may dampen partisanship estimates. The present results are thus much less surprising and even about the same as others in light of these reinterpretations.

of GDP in the long run if the shift were permanent.⁴⁶ Figure 3 plots estimated transfers responses to the first and last of these (right scale). It also plots (left scale) estimated partisan transfer cycles for typical majoritarian and coalitional governments, assuming these to be three and one *CoG*-unit(s) apart and to exchange office every four and one year(s) respectively. As shown, partisan *T&T* cycles are typically moderate (0.2% of GDP amplitude) in majoritarian democracies but tend to be tiny in coalitional democracies (0.05% of GDP). Thus, the *T&T* effects of government partisanship, while perhaps noticeable and occasionally appreciable, are not usually very large, *controlling for the structure of interests in society, and especially among voters, that elected those governments.*⁴⁷

Figure 3: Estimated T&T Responses to Short- and Long-Term Fluctuations in Government Partisanship

Corollaries 4a and 4b argued that the median-income-voter's uncertainty that she will remain such and that the current government's uncertainty that it will remain in office should each increase transfers. This regression gives no evidence that government instability raises transfers. If anything,

⁴⁶ 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.

⁴⁷ Conversely, when the effect of income inequality is analyzed below, recall that it is the effect controlling for the partisanship of government. Similar interpretations, of course, apply to all the effects estimated here.

HR reduces transfers in the short run, but all the relevant coefficients are quite insignificant (p. .35, .92, and .56 for change, level, and joint effects). The moderately significant (p. .07) coefficient on *SDRW*, contrarily, suggests that a standard deviation rise in income-distribution volatility (+0.023) induces almost +1% of GDP *T&T* in the long run. However, income volatility fluctuated more than trended in this sample (OECD-average *SDRW* is just 5±% of its total variation), suggesting that skew volatility might explain some country-time-unique variation in *T&T* but not much of its cross-country shared time-path. Figure 4 illustrates the variation across country-times in income-skew volatility and its impact on *T&T* in three countries with widely differing experiences.

Figure 4: Estimated T&T Responses to Income-Distribution Volatility in Three Countries

The US experienced moderate fluctuations in *T&T* responses to greater skew volatility until the sharply increasing *SDRW* in the eighties triggered steadily rising upward pressure. Germany saw smooth and steady downward political pressure on *T&T* from a population feeling (less-smoothly) falling income-skew volatility, until post-unification turmoil reversed both trends dramatically. Italy, finally, saw *T&T* rise in response to a sharp increase in skew volatility in the early-sixties, as a less-wealthy economy expanded quickly through the ranks, followed by more erratic volatility thereafter.

Thus, increasing median-voter uncertainty over their future place in the income-distribution creates upward popular pressure on *T&T*, but governmental tenure-uncertainty has no significant

effect. This may suggest that time inconsistency is less a problem for T&T systems than it has proven for other policies. Perhaps policymakers find *ex post* levies easier to apply with relatively fluid and technocratic instruments like monetary policy, where voters need some economic sophistication to notice the levy extraction, than in stickier and simpler policies like T&T: no economic expertise is needed to notice a larger tax bill. The ***T&T*** response to ***SDRW*** may instead reflect citizens' demands for social insurance against income volatility (see, e.g., Iversen and Cusack 1998, Garrett and Mitchell 1999). Alternatively, time-inconsistencies could be as strong in T&T as elsewhere but more evident in response to individual than governmental uncertainty because some other consideration induces governments to reduce transfers as their expected tenure decreases. Governments, e.g., may be secure precisely because they raise transfers. For now, only that income-skew volatility correlates moderately positively with ***T&T*** while government instability does not is safe to conclude.

Finally, consider the interactive effects of voter participation, ***VP***, and income skew, ***RW***: the core of the amended model. The joint significance ($p = .05$) 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*** ($b_{rw} = b_{vp@rw} = 0$ Y $p = .045$), and analogously for voter participation ($b_{vp} = b_{vp@rw} = 0$ Y $p = .02$). Finally, the significant ($p = .015$) positive coefficient on the interaction term implies the ***T&T*** effects of ***RW*** and of ***VP*** each become less-negative/more-positive as the other increases, giving strong direct support to Hypothesis 7. Graphics will again 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 5 plots estimated short-run ***T&T*** responses to a 0.1 rise in the index of underlying income-skew, as a function of voter-participation rates over the sample range of ***VP***;

i.e., it plots $b_{rw} + b_{vp@w}VP$ (with 80% confidence interval, which gives one-sided .10 t-tests). Countries are labeled on that effect line at their postwar-average VP .⁴⁸ As seen, governments tend to respond to greater income skew at any voter-participation rate by increasing transfers (Hypothesis 1), and do so more at higher VP (Hypothesis 7). Governments in the least-participatory democracies, US and Switzerland, respond least to rising income-skew; indeed, their transfers-responses are statistically indistinguishable from zero. Contrarily, government responses to higher income-skews in the most-participatory democracies, Australia and Austria, are statistically and substantively significant: +0.1 on the RW index induces short-run +.08% and long-run (if permanent) +1.2% of GDP $T\&T$.

Figure 5: Estimated Immediate and Longer-term T&T Response to Increases in Income Skew as a Function of Voter Participation and to Increases in Voter Participation as a Function of Income Skew

The top-right plots estimated $T\&T$ responses to a 10% increase in participation as a function

⁴⁸ The labels are informative as VP variation is 68% cross-national, excluding non-democracies.

of the income skew, over RW 's sample range, with country labels at their sample-average RW ,⁴⁹ plus confidence intervals. Voter participation generally raises $T\&T$, as argued before, *and* this relation also becomes more positive and significant as the underlying income-skew increases, as Corollary 7a added. Substantively, 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 who joins the voting pool.

The bottom of Figure 5 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 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, .41); the Swiss average, .58; Japan's .72, (a standard deviation below the mean); the UK's .76 and Norway's .81 (bridging the mean, .79); Germany's .85; Italy's .89 (a standard deviation above the mean); and Austria's .92 (just below the maximum, .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 listed, so approximate $T\&T$ -responses at any country's average VP or RW can be visualized.

Figure 5 shows the clear empirical support for Hypothesis 7. Higher underlying income skew raises popular demand for transfers, but *popular* demand is only as *politically* effective as the share of the population that votes is high. The bottom-left shows, e.g., that where nearly everyone votes as in Austria or Australia, which fine(d) for abstaining, a sustained standard-deviation rise in income skew, +.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

⁴⁹ 69% of total RW variation is cross-national.

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 the sample minimum (.29 in Japan 1956). These differences are statistically as well as substantively significant.⁵⁰ Moreover, finally, as Figure 6 shows, OECD-average paths of *VP* and *RW*, slightly downward and erratically upward respectively, yielded net 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 6: Estimated T&T Responses to OECD-Average Paths of Voter Participation and Income Skew

VI. Conclusions

Concluding, I turn to the other question raised at the start: how well can the positive political economy of tax-and-transfer systems, as expanded here, explain the similarities and differences in postwar *T&T* experiences of developed democracies? Table 2 begins an answer, giving short- and long-run effects of standard-deviation increases in each independent variable. As seen, the factors with largest impact were economic conditions—unemployment, inflation, growth, and wealth—plus

⁵⁰ I.e., the general proposition that there are differing effects depending on the level of voter participation is statistically significantly supported (the t-test on $b_{vp@w}$ Y_p . .016). Whether any two country-times differ significantly will depend on the exact difference in their participation levels in the year being tested.

labor-organizational strength, electioneering, government partisanship, income volatility, and the interactions of income skew and voter participation stressed here. Also age-demographics and tax-structure complexity possibly made some contribution. These factors together can explain almost an adjusted half of the total variation in *T&T* experiences depicted in Figure 1.

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
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. .10, **=p. .05, ***=p. .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.

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 could account for another +1.7% of GDP *T&T*, if its insignificant coefficient estimate (p. .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. The OECD-average *UE* path—flat around 2.5% 1955-74, up to 8% by 1983, to below 7% in 1990, back to 10% in 1992-3, before abating—can account for +1% of GDP *T&T* 1974-83, -1.2% 1983-90, +.6% 1990-2, and -.5% 1993-6. 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.

Structural-political developments also had strong effects. E.g., labor-organizational strength: a standard-deviation rise in union density (+16%) would induce +2.1% of GDP *T&T*, a substantively and statistically significant amount. Voter *fiscal illusion* and the complexity of revenue-generation may also have been important: its *T&T*-effect magnitude would equal estimated demographic effects if its mildly insignificant coefficient is trusted. However, unionization and tax-complexity trends (up-then-down and toward simplicity) worked against the upward transfers trend, pushing for increased-then-decreased and decreased *T&T*, $\pm .25\%$ and -1.4% of GDP respectively. Election-years, electoral frequency, partisanship, and income-distribution volatility similarly played important roles in explaining cross-country-average and country-time-unique variation, but none had much OECD-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 6** 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 trend in transfers

($6+1.7+1-1.4\%=7.3\%$ of 14.5%) and also about half the shared fluctuation around that upward trend, 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 $T\&T$, $43\pm\%$ of the total. Table 3 demonstrates.⁵¹

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
US	-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	34.8	-29.4	5.4	8.0
JA	-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	32.3	-27.4	5.0	7.2
GE	-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	37.8	-30.4	7.4	14.2
FR	-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	36.7	-26.4	10.2	16.7
IT	-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	35.9	-27.3	8.6	14.5
UK	-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	37.9	-32.2	5.6	9.4
CA	-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	36.5	-30.5	6.0	9.0
AU	-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	39.5	-29.9	9.6	16.4
BE	-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	38.3	-26.1	12.2	18.5
DE	-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	39.5	-31.3	8.2	11.9
FI	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	35.9	-28.3	7.6	10.2
GR	-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	35.8	-29.3	6.4	8.9
IR	-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	36.8	-30.6	6.3	9.9
NE	-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	36.3	-23.0	13.3	17.3
NO	-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	37.6	-28.8	8.8	11.5
PO	-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	32.1	-31.1	1.0	5.5
SP	-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	30.4	-25.3	5.1	12.5
SW	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	39.5	-29.9	9.7	13.1
SZ	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	37.0	-30.2	6.8	10.0
AL	-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	38.3	-34.1	4.2	7.6
NZ	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	38.3			
Avg.	-0.3	2.8	-0.2	-1.2	28.4	0.6	-1.1	3.5	2.9	0.6	-1.1	-0.1	0.6	1.2	36.4	-29.1	7.4	11.6
% of T&T	-3%	24%	-2%	-11%	245%	5%	-10%	30%	25%	5%	-9%	0%	5%	10%	314%	-250%	63%	100%
Avg.																		
Var.	5e ⁻⁶	1.6e ⁻⁵	1e ⁻⁶	1.2e ⁻⁵	1.2e ⁻⁴	1e ⁻⁵	6e ⁻⁶	2.8e ⁻⁵	1e ⁻⁴	2e ⁻⁶	5e ⁻⁶	3.8e ⁻⁸	7e ⁻⁶	1.1e ⁻⁴	5.8e ⁻⁴	6.4e ⁻⁴	7.7e ⁻⁴	1.3e ⁻³
% of T&T	0.4%	1.2%	0.1%	1.0%	9.2%	0.7%	0.5%	2.2%	7.8%	0.2%	0.4%	0.0%	0.6%	8.8%	45.0%	49.3%	59.3%	100%
Var.																		

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.

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

⁵¹ 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.

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.

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.

In sum, while shared exposure to macroeconomic shocks explains much of the OECD-shared time path of $T\&T$; broader socio-political conditions, again including especially the participation-inequality interaction stressed here, tended to drive the wide variation across democracies. Figure 7 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. The factors that importantly (more than 0.5% of GDP) impact 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 appreciably only in extreme cases: right government (*CoG*) in Japan (Liberal-Democrats held office this whole period); perhaps trade exposure, though it is statistically insignificant, in Belgium, Ireland, and the Netherlands; and possibly very-decentralized Swiss budgeting added to *T&T* there, though *CTAX* is highly insignificant.

Figure 7: Postwar-Average Impacts of Independent Variables on Democracies' Postwar-Average T&T

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.⁵² 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

⁵² 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 levels. That extension, however, also had other (growth) implications that Alesina and Rodrik (1994) tested successfully.

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

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

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