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# Politico-economic equivalence[☆]

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ABSTRACT

Traditional "economic equivalence" results, like the Ricardian equivalence proposition, define equivalence classes over exogenous policies. We derive "politico-economic equivalence" conditions that apply in environments where policy is endogenous and chosen sequentially. A policy regime and a state are equivalent to another such pair if both pairs give rise to the same allocation in politico-economic equilibrium. The equivalence conditions help to identify factors that render institutional change non-neutral and to construct politico-economic equilibria in new policy regimes. We exemplify their use in the context of several applications, relating to social security reform, tax-smoothing policies and measures to correct externalities.

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## 1. Introduction

Important neutrality results in public economics, macroeconomics and other fields establish classes of "economically equivalent" policies that give rise to the same equilibrium allocation (conditional on initial states). For example, in a simple model of household choice, policies relying on different combinations of consumption, capital-income and labor-income taxes form equivalence classes, and in the standard overlapping-generations model, pay-as-you-go social security policies are economically equivalent to certain policies relying on taxes and explicit government debt.

While proving very useful in a variety of contexts, these neutrality results only apply when policy is exogenous. In politico-economic models or theories with a Ramsey planner, policy constitutes an equilibrium outcome and the primitives of the analysis include policy regimes rather than policies. These regimes constrain the choice sets of political decision makers and are reflected in admissibility restrictions that limit the available policy instruments.[3]

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[3] Policy regimes are distinct from political institutions. The latter determine the aggregation of preferences in the political process.

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This raises the question how equivalence of policy regimes can be defined, and what the conditions for such equivalence are. Answers to this question are of direct relevance for important policy debates. Consider for example the proposal to "privatize" social security and debt finance the transition. From a narrow economic point of view, moving from a pay-as-you-go financed social security regime to a regime with taxes and explicit government debt could be deemed irrelevant because specific pay-as-you-go and debt policies are economically equivalent. From a politico-economic point of view, however, such a regime change might be expected to result in a different equilibrium allocation. In fact, the disagreement about the merits of social security reform suggests that many policy makers hold exactly that view.

In this paper, we propose answers to the question posed above. We define a policy regime and state to be "politico-economically equivalent" to another such pair if both pairs give rise to politico-economic equilibria and the same equilibrium allocation. We derive conditions under which politico-economic equivalence follows. And we apply the conditions to environments with taxes, public debt or corrective policy measures. To the best of our knowledge, the notion of politico-economic equivalence is novel in the literature. It differs from the standard economic equivalence notion—with Ricardian equivalence as a special case—because it conceptualizes equivalence classes of *policy regimes* rather than *individual policies*.[4]

Our results are derived within a general dynamic framework comprising a household sector, firms and a government. We do not impose restrictions on the commitment power of political decision makers. As a consequence, the results hold in environments with either sequential policy choice or policy choice once and for all, as for example with Ramsey policies. Nor do we impose restrictions on political objective functions except that these functions must not directly depend on regime specific policy instruments. Our results therefore hold under a variety of assumptions about the political process or the structure of government, political parties and interest groups.

In a first step, we define economic equivalence of exogenous policies (conditional on states) and we extend well-known economic neutrality propositions (e.g., Barro, 1974; Sargent, 1987; Rangel, 1997; Coleman, 2000; Ghiglino and Shell, 2000; Bassetto and Kocherlakota, 2004) to derive a general economic equivalence result. In the second step, we define politico-economic equivalence of policy regimes (conditional on states) and derive sufficient conditions for politico-economic equivalence. In parallel to the economic equivalence result which emphasizes the implications of exogenous policy for the choice sets of households and firms, the politico-economic equivalence result emphasizes the consequences of policy regimes for the choice sets of political decision makers. These choice sets are constrained fourfold: By the state; the admissibility restrictions on policy instruments under the control of political decision makers; the continuation policy functions of subsequent political decision makers; and the requirement that policies implement a competitive equilibrium. Accordingly, our conditions for politico-economic equivalence relate to state spaces and policy spaces.

Intuitively, these conditions guarantee that the choice set of political decision makers in the "new" policy regime is sufficiently large but not too large relative to the choice set in the "initial" regime: The equilibrium allocation in the initial regime must also be implementable in the new regime, but political decision makers in the new regime must not be able to implement allocations on or off the equilibrium path that cannot be implemented in the initial regime. If these requirements are satisfied then revealed preference implies politico-economic equivalence.

To bring this intuitive argument to bear it is necessary to render the state spaces comparable across policy regimes while allowing for regime specific policy instruments and commitment structures. To that end, we define a relation between states across regimes: A state in the initial regime is *strongly associated* with a state in the new regime if for every admissible and feasible sequence of policy instruments in the initial regime there exists an admissible sequence of policy instruments in the new regime such that the two pairs of states and sequences are economically equivalent.

The first equivalence condition requires that the initial states under both regimes are associated. The choice set of political decision makers in the new regime then is sufficiently large and the first intuitive criterion is met. The second equivalence condition stipulates that for every possible state in the new regime there exists a unique strongly associated state in the initial regime. The set of equilibrium allocations that can be implemented in the new regime (conditional on a state) then is weakly smaller than the set that can be implemented in the initial regime (conditional on the strongly associated state). Accordingly, the second intuitive criterion is met as well and politico-economic equivalence follows.

When state spaces are strongly associated (as they are in some examples considered in the applications section) politico-economic equivalence follows independently of the equilibrium policy functions in the initial regime. This has two important consequences. First, *robust* politico-economic equivalence for arbitrary political aggregation mechanisms is guaranteed. And second, equivalence can be established even if no information about the equilibrium in the initial regime is available and without having to first characterize that equilibrium. Both these features prove very useful in applied work.

For situations where strong association is too strong a condition to impose, we provide an alternative equivalence result that relaxes the second condition but requires information about the policy functions in the initial regime instead. The weaker condition builds on the notion of association rather than strong association of state spaces: A state in the initial regime is *associated* with a state in the new regime if the latter and a sequence of admissible policy instruments in the new regime are economically equivalent to the former and the *equilibrium* sequence of policy instruments in the initial regime.

The second equivalence condition now requires that for every state in the new regime there exists a unique associated state in the initial regime. If this requirement is met an equivalent continuation policy function can be defined; it maps

[4] It also differs from Correia et al.'s (2008) notion of equivalent *economic environments* with different frictions (with identical optimal allocations) and from Chari et al.'s (2007) notion of equivalent *frictions* (giving rise to identical wedges).

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