

Time Horizons and Political Economy of Technological Development

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Under what conditions will politicians deploy economic policies that stimulate growth by catalyzing economic innovation and technological progress? Received wisdom from economics strongly suggests that government policies are useful in stimulating technological progress. Policies like education spending and a host of other fiscal instruments can offset the substantial costs, risks, and market failures associated with endeavors at innovation and technology adoption and consequently, those government policies can greatly enhance the prospects of sustained economic growth over time. A puzzling issue for researchers of political economy, however, is that while the extant literature shows persuasively that politicians are shortsighted, the returns to the technology policies alluded to above are delayed substantially from the point at which the policy was initially deployed—often on the order of a decade or more. Policies that intend to forge human capital at the post-primary level, for example, have returns that are long deferred even as legislators must bear a large share of the costs of those projects upfront. Similarly, programs like research and design (R&D) subsidies require that governments pay steep upfront costs even though the returns to their efforts are deferred until future periods. In short, there is a clear tension between the politically-induced time horizons of rulers and the time horizons necessary to value technology-oriented policies. One might expect then that policymakers would rarely, if ever, supply such policies, but observation reveals that countries vary substantially in the effort governments take to encourage innovation, technology adoption, and technological progress. How can we explain these variations? Under what conditions will governments accept the delayed returns associated with technology policy?

One important aspect of this research topic is the recognition that a policy portfolio that intends to stimulate growth through technological progress and development represents only one option at an incumbent's disposal. Governments can instead, or in some combination, use policies that encourage

the accumulation of capital and labor to generate growth as well. Thus, understanding why governments might deploy technology policy requires that we assess the political value of these policies relative to those that operate through mobilizing labor and capital at their status quo levels of productivity. I show that the upside of accumulation-oriented policies—relatively more immediate returns—is offset by the fact that such policies cannot sustain growth over time due to the well-known property of decreasing economic returns. I extend this further, arguing that accumulation-oriented policies also experience diminishing *political* returns, which further detract from the value of these kinds of policies. If politicians have long time horizons they find these constraints to accumulation-oriented policies particularly salient and will be more inclined to promote technological change in an effort to avoid accumulation's decreasing returns.

With that in mind, I propose a model that highlights how the nature of political parties and the systems in which they operate affect politicians' time horizons. Following Crèmer (1986) and Alesina and Spear (1988), I develop an overlapping generations model of political parties in which durable, indefinitely long-lived (i.e., institutionalized) parties may be associated with a longer shadow of the future and consequently may have members more inclined to value policies with delayed returns if those returns are sustainable over time. I argue that where the party(ies) that control government approximate closely the ideal “overlapping generations” organization, we can expect the government to place a greater premium on technology policy precisely because the returns to alternative growth strategies with more immediate returns (namely accumulation-oriented economic policies) also exhibit diminishing economic and political returns, which jeopardize the party's ability to manage the economy in future periods and extend their hold on power.

I continue, arguing that an intra-party overlapping generations bargain can obtain wherein an upcoming generation of party leaders can achieve the support for technology policies from the present generation of party leaders. In payment for this support, the upcoming generation of party leaders concedes party influence and the targetable and distributable pork elements of whatever technology-

oriented economic policies are agreed upon to the current generations of party leaders. In this way, a burden-sharing agreement is reached within the ruling party that allows technology policies to be deployed even though the returns to such policies are relatively delayed. This kind of bargain is unlikely to emerge from within a weakly-institutionalized ruling party. Nor is a government controlled by a politician unaffiliated with a party likely to value technology policy. That said, ruling parties, even well-institutionalized ones, must also expect to hold a sufficient share of future governments to make technology-oriented economic policy politically palatable. Without such expectations an appropriability problem emerges in which no politician has an incentive to value policies with deferred returns and upfront costs.

I test the model using a sample of over 50 democratic countries at all levels of economic development between the years 1975-2000.