

**Title:** A Technology-Gap Model of Premature Deindustrialization

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**Abstract:**

This paper presents a simple model of what Rodrik (2016) called premature deindustrialization (PD); the tendency that, compared to early industrializers, late industrializers reach their peaks of industrialization later in time but at earlier stages of development, measured in per capita income, with the lower peak manufacturing shares.

In the baseline version of the model, the hump-shaped path of the manufacturing share is driven by the Baumol effect, with the productivity growth rates of the frontier technology being the highest in agriculture and the lowest in services. The countries are heterogeneous only in the “technology gap,” their capacity to adopt the frontier technology, which might affect adoption lags across sectors differently.

In this setup, we show that PD occurs when the following three conditions are met; i) the impact of the technology gap on the adoption lag is the largest in the service sector, ii) although the adoption lag is shorter in the agriculture than in the service, the productivity growth rate is sufficiently higher in agriculture than in service that the cross-country productivity differences are larger in agriculture than in service; and iii) the impact of the technology gap on the adoption lag is not too large in manufacturing. It turns out that these conditions jointly imply that the cross-country productivity differences are the largest in agriculture.

Then, we consider two extensions. In the first extension, we introduce the Engel effect on top of the Baumol effect by letting the hump-shaped path of the manufacturing share driven also by nonhomothetic demand with the income elasticities being the largest in services and the smallest in agriculture. Even though combining the Engel effect with the Baumol effect changes the shape of the time path, it does not change the main implications on the role of technology gap on generating PD. We also show that if we had relied solely on the Engel effect without the Baumol effect, PD would occur only under the conditions that would generate some counterfactual implications. In the second extension, we allow late industrializers to catch up by narrowing the technology gaps over time and show that the main results carry over, as long as the catching-up speed is not too high.

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