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Economic growth in a politically fragmented world ☆

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ABSTRACT

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I explore the effects of economic and political integration on economic growth in a model of vintage human capital and sequential intergenerational bargains. Adoption of a new technology raises not only the productivity but also the bargaining position of the future generations, creating a bias for the current generations to preserve the current technology. Economic integration (i.e., the sharing of frontier technology among countries) promotes growth if there is a diversity in human capital distribution or a coordination failure across countries. On the other hand, political integration (i.e., the merging of countries into a single bargain) promotes stagnation as it eliminates the diversity and coordination failures. *Journal of Comparative Economics* **42** (2) (2014) 402–416. CERGE-EI, a joint workplace of Charles University in Prague and the Economics Institute of the Academy of Sciences of the Czech Republic, Politickych veznu 7, 111 21 Prague, Czech Republic.

1. Introduction

A number of authors suggested political fragmentation as an important determinant of the modern economic growth in Europe. This is based on the observation that a country alone may go through a spurt of growth but invariably loses the growth momentum and that European countries took turns in maintaining the growth momentum, thus avoiding the stagnation of Europe as a whole for centuries. A plausible inference is that a single country could determine its growth path (i.e., political autonomy) but the growth path was constrained by the diffusion of technology across countries (i.e., economic integration). In other words, the European growth may have to do with the growth imperative that each country faces under economic integration and political fragmentation.

The economic integration defined in terms of diffusion of technology was probably at a continental scale a couple of hundred years ago.[1] In comparison with the European growth then, an economically and politically integrated China stagnated after remarkable spurts of growth in preceding centuries. In Section 2, I review theses along this line in the literature. Since the European growth, the economic integration has expanded to a global scale and every country faces the growth imperative in

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[1] In terms of the model to be presented, the diffusion of technology is the opportunity for a country to adopt the frontier technology within one generation. This is not to deny the global diffusion of technology in the long run.

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an economically integrated and politically fragmented world. Growth-oriented reforms in Asia, Latin America, and former-communist countries in recent decades provide the examples.

In Sections 3–7, I explore the above notion of the growth imperative in a model environment where human capital is transmitted from the old to the young generation, but the young generation can opt out for a new technology. The choice of technology adoption is made in an intergenerational bargain in each period. The adoption of new technology raises tomorrow's productivity at today's cost of not fully utilizing the existing human capital. Further, it allows tomorrow's young generation to adopt an even better technology, strengthening the bargaining position of tomorrow's young generation relative to that of tomorrow's old generation or, equivalently, today's young generation. This creates a bias against adopting a new technology, leading to a stagnation if the average human capital of the old generation is close enough to the new technology.

I examine the variations of the environment along two dimensions. First, I consider economic integration, that is, the sharing of the frontier technology among two countries initially separated from each other. A condition for perpetual growth in economic integration is the diversity of human capital distribution among countries: In each period, the world economy grows as long as the country furthest from the frontier technology has the incentive to adopt the frontier technology. When the diversity is limited, the world economy may still grow due to a coordination failure among countries: Each country adopts the frontier technology since, from the perspective of an individual country, stagnation is advantageous only when the other country stagnates as well. Second, I consider political integration, that is, the merging of countries into a political union with a single intergenerational bargain. The political union corrects the coordination failure and aligns the incentives of individual countries for stagnation by means of side payments that are implicit in bargaining. Thus, political integration can lead to a stagnation.

The growth mechanics of the model builds on the vintage human capital model of Chari and Hopenhayn (1991). The assumed embodiment of technology in human capital delivers a conceptually simple and tractable trade-off between the future productivity gain and fully utilizing the existing human capital. In this aspect, the model is close to Krusell and Rios-Rull (1996) in which a segment of population with human capital in existing technologies may outvote the others and block the adoption of a new technology, thereby creating rents for themselves. An alternative political mechanism explored in the literature is the lobbying model in which various interest groups bid to influence policy. In Bridgmman et al. (2007), old skilled workers lobby against technology adoption in their industries and a government decides on technology adoption across industries weighing the aggregate output and the bribes from industry lobbies. Related works outside the vintage human capital framework include Bellettini and Ottaviano (2005) in which the young and the old bid for and against the upgrading of the aggregate technology to a regulator who maximizes the collection of bids, facing the trade-off between the current gain from the maturing of the old technology and the future gain from switching to a new technology. Acemoglu et al. (2006) presents a model that combines elements of technology adoption and innovation and shows that old firms with financial resources but a limited innovative capacity may bribe the government to maintain their monopoly rents retarding innovation.

In this paper, the society-wide decision process is modeled as a bargain between the old and the young generations. The bargain delivers efficient adoption and matching behavior *for the current generations within a country* and assigns a payoff to each generation. The aggregate path of the economy is independent of individual activities and payoffs as long as they aggregate to the bargaining outcome. I consider efficient bargaining as a means of abstracting from the variations in the details of economic and political institutions that add up to deliver efficient adoption and matching behavior for the current generations. This abstraction is in contrast with the previous studies, some of which are mentioned above, that focused on the conflict among the current generations under a particular institutional arrangement. In comparing Europe and China over a period lasting centuries, any sharp institutional assumptions seem unwarranted. Rather, the logic of growth and stagnation is assumed to rely on the sequential structure of intergenerational bargaining under various international economic and political environments: Bargaining is generally not efficient in the sense of maximizing the sum of the discounted utilities of all generations of all countries due to the segmentation of bargaining between the current and the future generations and between the current generations across countries.

Although the model is about the effects of economic and political integration on economic growth and not its causes, in Section 7, I characterize the welfare effects of economic and political integration and the incentives to form or break-up a political union under simplifying assumptions. The incentives for integration and fragmentation are due to the growth dynamics under the bargaining structure. In comparison, the models of integration and fragmentation such as Alesina and Spolaore (1997) and Bolton and Roland (1997) focused on the incentives due to the provision of public goods and redistribution. These models are in part motivated by events such as the formation of the European Union and the break-up of the Soviet Union in an economically integrated world. This paper has little to say about such a regional integration and fragmentation since an economically integrated world needs a worldwide political union, a possibility in the future, to hold back the advancement of technology.

2. Review of literature on political fragmentation and growth

Mokyr (1990) frames the effect of political fragmentation on the modern economic growth in Europe in terms of what he calls Cardwell's Law. "Cardwell (1972, p. 210) has pointed out that "no nations has been (technologically) very creative for more than an historically short period." As stated, Cardwell's Law is no more than an empirical regularity, and a crude one at