

Overall Assessment:

The paper in hand proposes a new unified growth model that captures the economic transformation that took place around the time of the Industrial Revolution that focus on role of entrepreneurship in this context. Specifically the model highlights how entrepreneurial agents can facilitate the transition from primitive to advanced stages of economic development by shifting resources from production to innovation activities. The main conclusions that the author offers from this exercise is that entrepreneurial decisions about the allocation of resources between production and innovation are crucial in order to understand the timing of the industrial revolution.

Generally, I find the overall idea of the paper quite interesting and I agree with the author that paper fills an important gap in the literature. It is indeed the case that while most of the narratives about the Industrial Revolution stress the important role of innovators and entrepreneurs, such agents are absent from the majority of the formal economic models that aim at capturing developments around this time period. Instead these models focus largely on the actions of workers, capitalists and land owners, and not entrepreneurs. Hence, the model proposed by the author is quite novel in that respect.

What puzzles me with the paper in its present form not seeing clearly what the key insights about the Industrial Revolution are that emerge from conducting this exercise. Some of the results that the paper offers can be more easily obtained by simpler models where entrepreneurs play no active role. Other results seem new, but it is unclear how they link with the model structure and the assumptions made by the author. In general, some more caution is necessary in distinguishing the results obtained from the present analysis from those of Strulik and Weisdorf 2008. The model clearly builds upon the simpler framework of Strulik and Weisdorf, which already captures several key features of the Industrial Revolution. Given that, the author needs to be very clear regards which of his findings are driven by the introduction of entrepreneurship into this framework and which are not.

I consider this to be my main concern about the paper. Below I list a few more in order of importance.

Additional Concerns:

1. The main focus of the present paper is on understanding the timing of the Industrial Revolution and the resulting economic transformation from Regime 1 to Regime 4 through Regimes 2 and 3. Yet, as the discussion in the appendix reveals, the equilibrium path of the economy might now always transition through the four regimes in this sequence. The author makes additional assumptions to ensure that this is the case. Yet, these assumptions are not stated and motivated very clearly. Some more clarity regarding these assumptions I think would benefit the reader.

2. The Industrial Revolution is typically associated with a structural transformation from a primarily agrarian to a primarily industrial economy. In the context of the present paper, however, these two processes are distinct. The Industrial Revolution is defined as the point where entrepreneurs in the manufacturing sector start innovating. The shift, though, from agriculture to manufacturing will most likely have begun before that, though, as a result of productivity improvements in agriculture due to the process of learning-by-doing. This needs to be explained better in the paper and connected with the discussion about the inevitability of the Industrial Revolution. Without any technological progress in agriculture the Industrial Revolution is not an inevitable outcome.

3. When modeling fertility choice the author imposes the constraint that each agent has at least one offspring. This constraint is quite uncommon in the literature and also far from innocuous because it eliminates the possibility of population decline. The author motivates the constraint as a boundary restriction, but this argument is not very convincing as fertility can in principle be below replacement. The constraint may be a reflection of parental preferences, but this idea clashes with quasi-linearity. In light of all this I would encourage the author to discuss how the model results would differ if this constraint was not imposed or if the constraint was introduced in a different way.

4. The model dynamics rely on the presence of strong scale effects, as the arrival rate of new innovations increases with the number of active entrepreneurs. Yet, one can imagine that there are also limits to the number of innovations that can be produced for a given stock of useful knowledge due to fishing-out effect. In that case the presence of more entrepreneurs will not automatically lead to more innovations. This is a possibility that the author might want to explore in the context of the model.

5. I am a little bit confused regarding how Result 3 is obtained. As a reader I would appreciate some more discussion about the intuition behind this result.

6. I feel that the term “discoveries” is used in a fuzzy way in the paper. I would suggest to the author to eliminate its use and instead talk about the stock of useful knowledge.