

A Research Statement

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This research statement presents a summary account of my current and past research and what I plan to do in years to come. I am mainly interested in the (very) long-run patterns of economic growth and development. More specifically, my research focuses on the dynamics of technology and population, and how they interact with economic growth and welfare over generations.

I mostly work with dynamic (general equilibrium) models featuring endogenous technology and/or endogenous population. I construct and analyze such models for early industrialized countries such as Britain and latecomer or follower countries such as Turkey. I also pursue theoretical research on entrepreneurship, population, and technology, and I plan to complete a few more theory papers in the next years.

Economic Growth and Development in Turkey

I have two, recently submitted papers on the Turkish economy; both have received positive reports and are now being revised. The paper titled “Economic Development in Turkey and South Korea: A Comparative Analysis” is being revised for *Bogazici Journal* and deals with the question of why Turkey fell behind South Korea after 1960s even if she has had better development prospects initially. The paper constructs a dual economy catching up model and calibrates the structural parameters of the model separately for Turkey and South Korea using a Simulated Method of Moments (SMM) type algorithm. Results indicate that South Korean economy operates with an efficiency level very close to its upper bound of 100%, but Turkey is located at the other end of the spectrum with efficiency less than 1%.

The title of the paper that is being revised for *METU Studies in Development* is “Economic Growth and Technological Progress in Turkey: An Analysis of Schumpeterian Mechanisms.” The main purpose of this paper is to test whether Schumpeterian mechanisms of product and process innovation work in Turkey. The paper builds upon Peretto and Connolly’s (2007, *JEconGrowth*) second-generation Schumpeterian model and identifies some structural parameters numerically. The paper then estimates reduced-form relationships originating from the dynamic general equilibrium of the model. Results show that, while both dimensions of innovation are active in Turkey, the contribution of vertical (process) innovation to economic growth is severely limited. Accordingly, the most appropriate policy under resource constraints seems to be strengthening the incumbent firms to support their growth and in-house R&D, and the formation of new enterprises may not be a policy priority.

Future Plans. Two other papers in progress are going to complement this research. One of them, “Turkey’s Transition to Sustained Growth: Some Econometric Evidence” is co-authored with Seda Başışoğlu and a part of her master’s thesis completed under my supervision. We construct a simple Structural Equation Model building upon the conceptual apparatus of Unified Growth Theory (UGT). We then estimate this model

via Maximum Likelihood using macroeconomic time-series data. Results indicate that Turkey entered her sustained growth episode in late 1950s during which the child quality-quantity trade-off seems to be activated.

The second complementary paper on Turkey is in its early development and titled “Long-Run Economic Growth in Turkey: Sources, Pitfalls, and Prospects.” I develop in this paper the first overlapping-generations general equilibrium (OLG-GE) model for Turkey where fertility, human capital accumulation, innovation, and firm entry are all endogenously determined. I have completed the model building, and I plan to use aggregate data for 1955, 1975, 1995, and 2015 to calibrate the structural parameters and initial values. I am going to use this model to analyze the past and the future of economic growth in Turkey.

Population Policy Controversies in Turkey

I have recently published two pieces on the formation of population policy in Turkey. The first one, *Growth and Demography in Turkey: Economic History vs. Pro-Natalist Rhetoric*, has been published as a booklet by TEPAV after being awarded with the 2012 Celasun Family Special Award. This study constructs a model with endogenous technology and endogenous population and analyzes the effects of exogenous fertility changes on the age distribution of population and real GDP per capita. Results show that a switch to pro-natalism would have adverse affects on real GDP per capita in the following decades.

The other work has been published as a conference proceeding by Hacettepe University Institute of Population Studies. The paper, originally in Turkish, is titled “Fertility Decisions, Rational Choice, and Population Policy in Turkey” and is motivated by modest baby bonuses introduced in 2015. It constructs a continuous-time OLG model and computes (i) minimum levels of cash transfers that effectively incentivize young people to have three children and (ii) maximum consumption levels associated with this choice. Results indicate that a modest cash transfer can only incentivize a poor couple and only if they already have a preference for two children. Importantly, families getting the cash transfer to have the third child remain below the empirically measured poverty lines.

Future Plans. These two studies ignore the stage of development at which an economy faces a switch to pro-natalism. In some endogenous growth models that incorporates the Boserup effect, however, the level of population has a scale effect on productivity growth, thereby making a baby-boom a potentially growth-accelerating shock in the early stages of population aging. I therefore plan to write a short paper that investigates the importance of such scale effects via simulations of a simple model.

Stagnation and Growth in Preindustrial England

This research primarily deals with the very long-run evolution of population and technology in England. The first paper that I have very recently completed and am now polishing to submit is titled “Technology and Survival in Preindustrial England: A Malthusian View.” Following Ashraf & Galor (2011, *AER*), I construct a simple Malthusian model with microeconomic foundations and use decennial data on population and living standards for the period of 1200–1800 to uniquely identify unobserved technology and survival terms. The main results are the following: First, econometric tests indicate that identified

technology and survival terms are pure random walks. Second, counterfactual simulations show that it is the cumulative effect of only the survival shocks that generates the Malthusian cycle between population and real wage. Third, there exists a long episode of slow but persistent productivity growth started at least 150 years before the first Industrial Revolution. These results are not sensitive to few arbitrary choices characterizing the analysis.

The other paper is titled “Beyond the Malthus Delusion: England’s Unified Growth Patterns Revisited” and is now in progress. I focus on conflicting national income accounts of preindustrial England: One dataset indicates that living standards were trendless before 1800, but the other set shows that a slow-growth trend existed before the Industrial Revolution. I study two models to resolve this controversy. First, I introduce different types of productivity growth to the simple Malthusian model, but calibration exercises indicate that productivity growth cannot explain preindustrial prosperity in the long run. I then extend Galor’s (2005, *HEconGrowth*) canonical model of UGT with mortality crises. Using an SMM type algorithm, I calibrate the size and persistence of mortality shocks and some other structural parameters of the extended model. This calibration successfully identifies a Post-Malthusian regime for England, and counterfactual experiments show that both productivity and mortality have an explanatory power in accounting for economic and demographic dynamics in preindustrial England.

Theoretical Papers on Entrepreneurship, Population and Technology

I have derived my first purely theoretical paper from my doctoral dissertation and published it in *Economics E-Journal* in 2015. Its title is “Entrepreneurship, Knowledge, and the Industrial Revolution.” In this paper, I develop a new unified growth model with endogenous population and technology where useful knowledge as described by Mokyr (2002, *Gifts of Athena*) incentivizes entrepreneurs to activate innovation and thus determines the timing of the industrial revolution.

I have another theoretical paper that is co-authored with Serdar Sayan and to be completed soon. The title of this paper is “Demography, Technology, and the North-South Trade,” and it extends Sayan’s (2005, *JEconDynControl*) OLG-GE framework with Ricardian productivity differences across the North and the South. The computational analyses indicate that both demography and technology have explanatory power to account for the North-South trade, defensive innovations by trading partners are effective, and immigration from the South to the North is welfare improving in the long-run.

Future Plans. I plan to complement my 2015 paper in a way first traveled by Peretto (2015, *EurEconRev*). His model has the unique feature of explicitly solving for important threshold dates of innovation activation in terms of parameters and initial values. It is going to be extremely illuminating, I believe, to incorporate useful knowledge within such a framework.

A question that haunts me for long is whether one can explain the gradual diffusion of entrepreneurship during the Industrial Revolution partially through status quo bias. The conjecture would be that early entrepreneurs were subject to status quo bias since they did not observe innovative action before. My plan is to extend a standard model of creative destruction with replicator dynamics that govern the process of selection into entrepreneurship.