

June 6, 2014

Dear Sergey:

I will include my comments on Gurgen's thesis in this letter. I apologize for being late; I have been traveling with MBA students and also to conferences outside of the U.S.

Gurgen Aslanyan's thesis is a collection of three papers on how immigration policy interacts with human capital and fertility to influence the welfare of current and future generations in an economy with redistributive public policy (unfunded pension system).

The three components of the thesis correspond to three related essays. The first explores whether the nature of immigration policy (allowing skill-biased immigration or not) poses an intergenerational conflict in the sense that current versus future generations have different preferences over what type of immigration policy to implement. Since only current generations vote, this paper has a clear implication on what kind of immigration policy may be politically feasible.

The second essay specializes in the evaluation of the unfunded pension system and explores the decision to reform social security (privatization or laissez faire) depending on the type of immigration reform. The third essay extends the model to a closed economy setting and argues that unskilled immigration may be undesirable given its negative impact on pension benefits.

I have read the three essays and the preface that ties them together. Let me first state that all three essays further our understanding of the interaction between immigration and pensions significantly. Therefore, based on my evaluation, this draft certainly warrants a dissertation defense and fulfills the "thesis" requirement of a doctoral degree.

Overall, I find the topic very interesting, relevant, and economically significant. Immigration policy has had significant public policy implications in United States through their impact on the labor market and public finances. Europe has been less open than United States in terms of immigration but they still have significant populations of immigrants and this is a very timely issue for Europeans.



The country for which immigration may have an even bigger impact is Japan because Japan already has the highest (net) debt to GDP ratio among advanced economies (at 150%) and the aging is projected to require resources approximately equal to 7% of GDP. They need more workers to pay taxes. In February 2014, the Abe government announced a preliminary project of possible immigration into Japan. The initial proposal allows for both skilled and unskilled guest workers with a combined total of 200,000 per year, and eventually a stock of guest workers equal to 20 million in 20 years. This stock would represent a significant portion of the working age population in Japan in 2035. However, this proposal seems to have received significant backlash, casting serious doubts about the political feasibility of allowing guest workers in Japan.

Another interesting application of Gurgun's modeling would be to study the internal migration in China. There is a large number of workers flooding Shanghai and cities like it due to higher wages, opportunities, schools and pensions which depend on average "local" wages. However, rural area Chinese citizens need permits to qualify for pensions and the right to send their kids to schools in large cities like Shanghai. I urge Gurgun to consider incorporating some of the features of the Chinese pension/schooling system into his framework to study the effects of internal migration on the domestic labor markets, skill accumulation, and pensions in China.

Gurgun Aslanyan provides the relevant literature survey and sufficient motivation for the topic but I wanted to provide additional context to highlight the importance of the topic for nearly all of the developed and developing economies.

I will now provide specific comments on the three essays.

### ESSAY 1:

There is a small, open economy populated by two-period lived natives and immigrants. Individuals work in the first period, pay taxes to the government, and retire in the second period when get a pension and consume all their income, including their saving.

A fraction of natives are skilled; there is a different fraction of immigrants who are skilled. Fertility depends on human capital and native/immigrant background.

Effective labor is a function of the working-age population which depends on the size of the immigrant population in addition to that of the natives, and their efficiency.

The government taxes labor income; since labor is exogenous this is equivalent to a lump sum tax. Therefore any expenditures the government makes, possibly due to immigrants, will have zero distortion on labor supply.

In the Status Quo economy, there is no immigration, no debt, population is constant and the replacement rate equals the tax rate. The net return to social security is zero, which is the rate of growth of the economy.

The economy with immigration has population growth that depends on the ratio of immigrants to natives, and, the expected human capital of natives and immigrants. Immigrants enter as young workers, pay taxes and receive pensions when old. Their descendants become natives. The rate of growth of population is positive which means this economy has a higher return to pensions than the SQ economy and hence welfare is higher in the immigration economy.

This is a debt financed PAYG system and whether the immigrants inherit their own fertility and/or human capital as opposed to becoming native in either respect can change this result. The government can borrow and finance any fiscal problem associated with immigration or pensions subject to a transversality condition.

With full assimilation, a numerical example is used to see which way a particular inequality condition goes, and this suggests that welfare decreases with the share of skilled immigrants. This is counterintuitive at first; the intuition is given on page 22. I am not still clear on what the costs of immigration are on public finances and how immigration helps solve some of the problems. Also, is it possible to find another country for which the inequality goes the other way?

This is where a two-period model may not be a good measurement device to evaluate the welfare effects of immigration and a large-scale and calibrated overlapping generations model would be useful. I urge the author to consider taking his theoretical implications to more realistic models. I believe he has very interesting channels that create the possibility of allowing unskilled immigration (the U.S. model to a large extent) over other policies. It would be very interesting to quantify this in a calibrated overlapping generations model.

With government debt equal to zero, skilled immigration raises effective labor supply and the return to public pensions. Therefore, in this PAYG economy, the first period young are better off with skill-biased immigration and the first period old are indifferent between zero versus positive skilled immigration.

Different types of assimilation may overturn this result as lower fertility would reduce the return to public pensions in the future. Overall, whether skilled immigration raises welfare of the natives (that would allow this policy to be selected) seems to be a quantitative question depending on the skill heterogeneity, fertility rates among the natives and immigrants, and the degree to which immigrant “become like” natives. A large scale overlapping generations model is called for.

### ESSAY 2:

This essay utilizes the same economic environment as in essay 1 but allows for eliminating pensions except for the initial old. (A very minor note is that  $\beta$  is the subjective time discount factor and not the rate of time preference.)

The thought experiment in this essay is to start the economy off with a PAYG social security system by giving pensions to the initial old but allowing the possibility of immediately eliminating the public pension system. I would have liked to see an experiment where some cohorts had already paid taxes and then they would be allowed to switch from the unfunded to a private system.

In this essay, the author finds that immigration is Pareto superior; immigration allows the first young cohort to distribute resources in their favor and they dismantle the unfunded system. However, I would like to point out that two extensions are needed to convince the reader: endogenous labor with a depressing effect on local wages of increased immigration. These issues quickly will produce opposing effects and a large scale overlapping generations model will be required to numerically evaluate the welfare effects of immigration in the presence of endogenous labor with the wages of the native workers possibly depressed with a larger influx of immigrants.

In the section on joint analysis, it is assumed that the initial old always gets their pensions and therefore they do not have any influence on which immigration/pension policies are to be followed. The fact that the open economy assumption shields the return to their assets (that are exogenously brought into the economy) also makes them indifferent to any policy. Therefore, the first generation makes the call. Depending on the assimilation assumption, the first generation may open up the doors to immigrants and dismantle the unfunded system. The degree to which the descendants of the immigrants inherit the skills/fertility of their parents versus those of the natives makes a difference, and once again, calls for a large quantitative life cycle model to assess the overall appeal of immigration/privatization policies in richer and more realistic environments.

### ESSAY 3:

In this third essay, the author uses a general equilibrium version of the 2-period overlapping generations model of the previous two essays, still with exogenous labor, but now with immigration allowed such that the skills of immigrants are less than those of natives, although the fertility rates are the same.

Starting from a steady state, immigration is allowed and the new steady state is studied. One result is that the new steady state capital does not depend on the immigrants' skill level. Again in the new steady state, if a certain parameter restriction is satisfied (essentially, if the skill level of immigrants is sufficiently low), then (lump sum) pension benefits decrease with the size of immigrant population. The earnings-related pensions, on the other hand, increase with immigration (as long as capital's share of output is less than 50%). So, the total pensions may go up or down with immigration, once again suggesting the use of a large scale overlapping generations model to evaluate policy.

There are more results in the paper that can go either way depending on certain parameter restrictions but since this paper is based on the author's forthcoming paper in the Journal of Population Economics, I would like to restrict my main comment to what I have repeatedly mentioned: Immigration, fertility, human capital are central themes in the design of optimal retirement and population policies. The thesis makes an important contribution to our knowledge in these areas with a simple two period model (with exogenous labor and mostly with a partial equilibrium concept). At least some of the important results on whether eliminating social security or allowing immigration can raise or lower welfare depending on certain parameter configurations. As a result, the question becomes one of quantifying the effects in larger, more realistic models in which precise demographic patterns can be incorporated. I urge the author to develop the necessary tools to take his important economic questions to carefully calibrated life cycle models as he develops his research program.

Please let me know if you have further questions.

Best regards,



Selahattin (Selo) Imrohoroğlu