Secular Stagnation: An Evaluation of Demographic Transition

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1. Introduction

Anaemic recovery after economic crises in the developed world should precipitate a watershed in macroeconomic thought. While severe crises–economic, political, and environmental alike–loom, too little thought had been given to the demographic factors that influence economic development. This paper serves as a call for economic research to stress the importance of demographic dynamics to determine viable policy responses. In this paper, I look at secular stagnation in the developed world through the lens of demographic dynamics. I argue that secular stagnation is both a supply- and demand-side problem brought on by low capital investment, increased saving, capital outflows and decreasing labour productivity, of which the main determinant is a new demographic transition in the developed world. While this paper does not take account of heterogeneity between countries, nor does it purport to find evidence of causality, its aim is to emphasise a re-evaluation of the headwinds faced by economic growth in the developed world through a descriptive account of demographic dynamics.

2. A Demographic Journey to Economic Stagnation

The prevailing theory regarding the historical evolution of economic development arises from Malthusian stagnation; which was escaped through demographic transition; and sustained by productivity growth brought on by technological change (Galor & Weil, 2000:826; Gordon, 2014:49). However, post-crisis economic growth[1] has been sluggish and proponents of the secular stagnation thesis (SST) predict stubbornly slow growth for the foreseeable future (Gordon, 2014:47). This, in fact, does not reflect a slowdown in technological growth. Rather, it is a resiliently low interest rate, slowed productivity growth and low capital investment due to what one may term a 'new demographic transition'.

Even so, there exists much confusion on what secular stagnation entails. In reality, however, the SST is fairly simple: slowed productivity growth and a persistent excess of desired saving over desired investment, that exerts downward pressure on interest rates, which then generates a pertinacious output gap (Eichengreen, 2015:66; Eggertsson, Mehrotra & Summers, 2016:503; Gordon, 2015:54)[2]. The roots of the SST can be traced back to Hansen's (1939) seminal work

[1] Specifically economic growth after the 2008 financial crisis (Rachel & Summers, 2019)

[2] As formulated by the present foremost scholars of the SST, among who economists such as Barry Eichengreen, Lawrence Summers, and Bob Gordon.

on demographic transition and declining population growth (Teulings & Baldwin, 2014:3; Summers, 2015:60) and it is where this paper finds its point of departure. Hansen (1939:7) posits gradual economic contraction due to slowing population growth relative to capital formation in the developed world. Though, unsupportive to Hansen's SST, the developed world would see substantial economic and population growth as well as technological progress in the decades to come (Summers, 2015:61; Scaperlanda, 1977:228). However, recent developments in the literature argue for a re-evaluation of the SST.

3. Labour Productivity, Investment and Saving

Population growth rates in the developed world have slowed significantly in the past century along with increased life expectancy and lowering mortality rates, leading to rapidly aging populations (Krueger & Ludwig, 2007:50; Scaperlanda, 1977:226). Figures 1 to 4 show the evolution of demographic indicators in several developed regions[3]. Almost a century has passed since Hansen issued a stark warning: "overwhelmingly significant, but as yet all too little considered by economists, is the profound change which we are currently undergoing in the rate of population growth" (1939:2) and even still, we do not give due diligence to secular demographic developments[4]. Barry Eichengreen, one of the foremost SST scholars also dismisses the pervasive impact of demographic change; citing that historical data do not indicate a clear relationship between population growth rates and GDP (2015:69). The issue at hand, however, is not necessarily that population growth rates directly influence GDP, but that it may causally effect productivity, investment and saving rates – which in turn exert downward pressure on interest rates.

The effect of demographic development on secular stagnation is most evident in labour productivity. More specifically, lower fertility rates and population decline lead to reductions in the marginal productivity of capital, which negatively influences output growth (Gordon, 2015:58). Hence, there exists an interesting interplay between supply and demand, where slower productivity growth translates into declining output growth and lower expected future wages which induces higher savings and decreased demand, in turn reinforcing lethargic productivity growth and declining capital investment (Gordon, 2015:58; Devriendt & Heylen,

[3] Here the Euro Area (EA), Japan (JPN), OECD member countries, and United States (USA) are used.

[4] There is, however, an increasing interest in the literature regarding aging, positing it as one of the main determinants for the modern economic growth slowdown (Catalano & Pezzolla, 2016:758).

2020:94). Studying the effects of aging on output growth, Catalano & Pezzolla (2016:783) additionally find evidence of causality between aging and output growth for Germany, Italy and France by using an OLG model. Figure 5 indicates labour productivity growth, showing a clear declining trend.

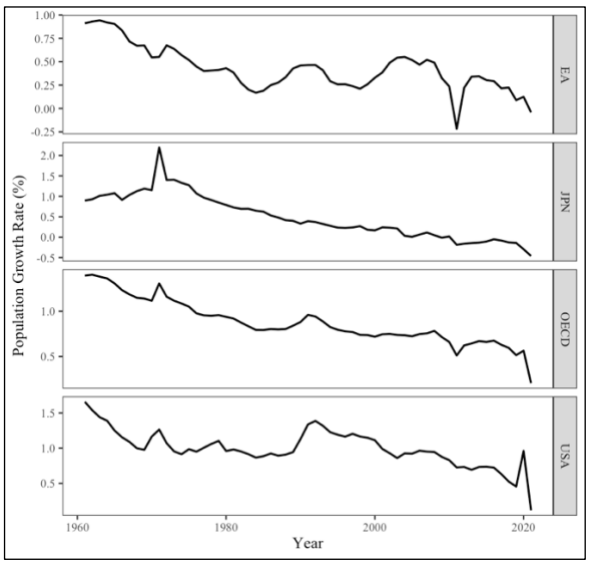

Figure 1: Population growth rate of developed regions. Source: the author's own. Data: World Bank (n.d.)

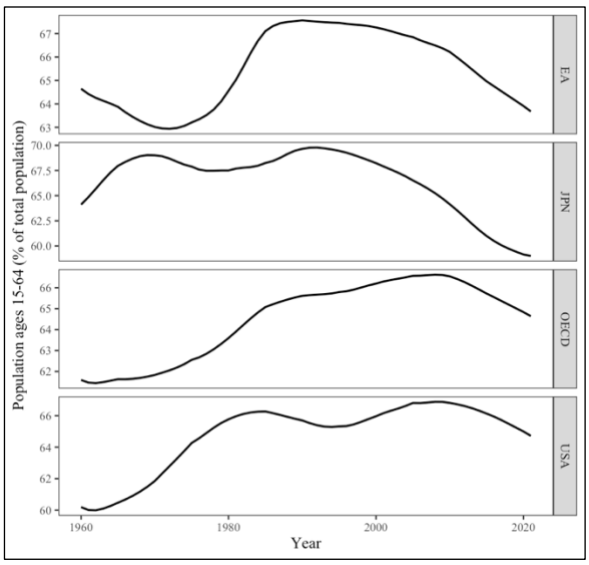

Figure 2: Working age population of developed regions. Source: the author's own. Data: World Bank (n.d.)

Both investment and saving are regarded as determinants of the interest rate (Blanchard, Furceri & Pescatori, 2014). A widely accepted assumption regarding individual behaviour is that individuals prefer to smooth consumption over their lifetime. That is, younger and older generations may be regarded as dissavers, whereas middle-aged generations typically save much more of their income (Devriendt & Heylen, 2020:93). Hence, intuitively one would expect to see less saving given an aging population. This is the conclusion made by Krueger & Ludwig (2007:80). Although interest rates and savings are negatively related (Eggertsson, Mehrotra & Robbins, 2019:11), their [Krueger & Ludwig] model concurrently predicts decreases in interest rates and decreases in savings. While they correctly argue that increases in interest rates are offset by a dominant effect of the reduction in the future labour supply[5]– thereby leading to a decrease in interest rates–they fail to account for the relative increase in savings due to large increases in life expectancy and expected lower future income due to lowering productivity. As Summers (2015:62) also argues, increases in savings can also be

[5] Reduction in the future labour supply due to aging populations and lowering fertility rates.

accounted for due to increasing average propensity to save brought on by rising inequality as well as increasing costs of financial intermediation. In fact, figure 7 shows that savings have indeed increased dramatically relative to capital investment.

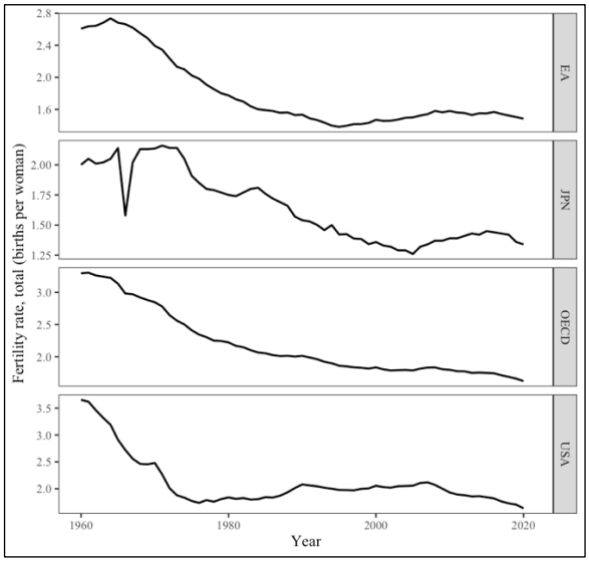

Figure 3: Fertility rate of developed regions. Source: the author's own. Data: World Bank (n.d.)

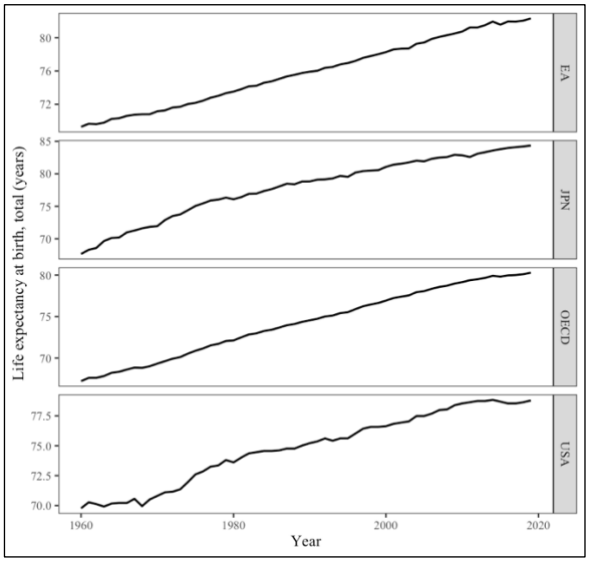

Figure 4: Life expectancy of developed regions. Source: the author's own. Data: World Bank (n.d.)

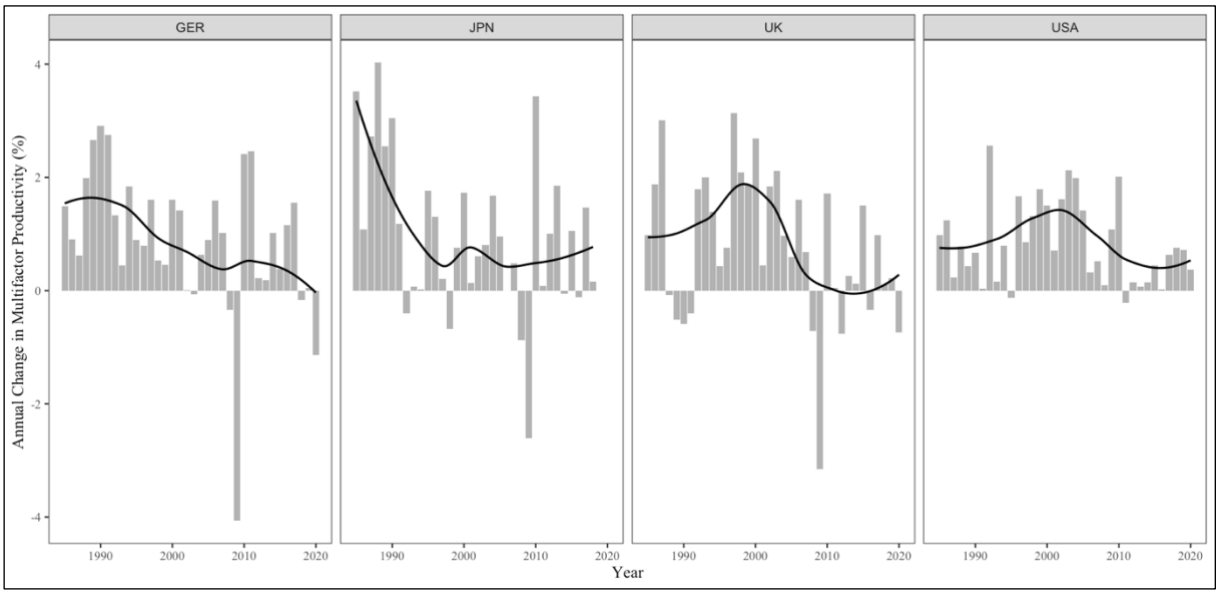

Figure 5: Annual change in multifactor productivity growth. A loess trend was fitted to visualise a smooth curve through the data points. Source: the author's own. Data: OECD (n.d.).

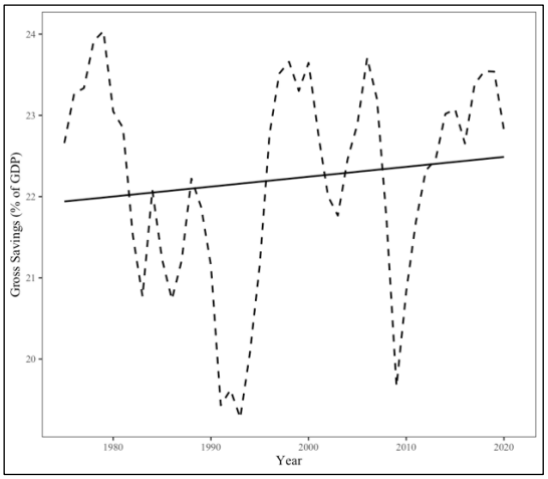

Figure 6: Gross savings as a proportion of GDP for high income countries. A linear trendline was fitted. Source: the author's own. Data: World Bank (n.d.).

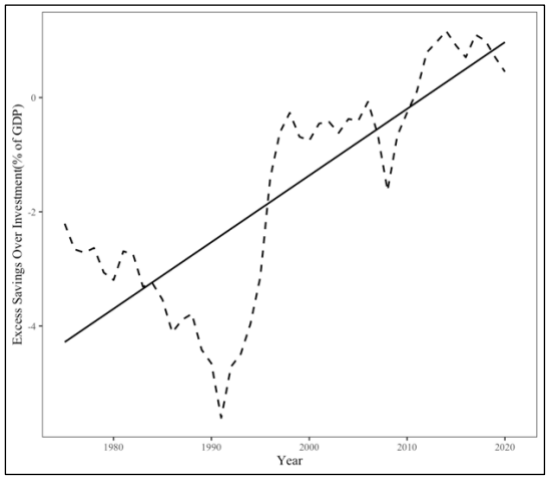

Figure 7: Excess savings over investment for high income countries. A linear trendline was fitted. Source: the author's own. Data: World Bank (n.d.).

Similarly, the observed demographic transition influences investment. Krueger & Ludwig (2007) and Bielecki, Brzoza-Brzezina & Kolasa (2020) study the role of slow population growth on interest rates in OECD countries and the euro area respectively using overlapping generations (OLG) models. Both predict declines in interest rates[6] due to aging populations and slowed population growth. Eichengreen (2015:69) further identifies unattractive investment opportunities as an explanation for low interest rates. However, the result of the population dynamics observed necessarily leads to declines in labour force participation, which in turn has a negative effect on returns to capital (Krueger & Ludwig, 2007:58; Devriendt & Heylen, 2020:94). This suggests that low investment rates (graphically represented in figures 8 and 9) may indeed be the result of demographic transition. However, higher savings rates and lower interest rates reduce the cost of investment (Devriendt & Heylen, 2020:94), though one does not observe increasing capital investment, suggesting that low returns to capital offsets incentive to invest in relatively cheaper capital.

[6] Krueger & Ludwig predict a 1-percentage point decline between 2000 and 2060, whereas Bielecki, et al., predict a 2-percentage point decline between 1985 and 2030 in equilibrium interest rates for OECD countries and in the euro area respectively.

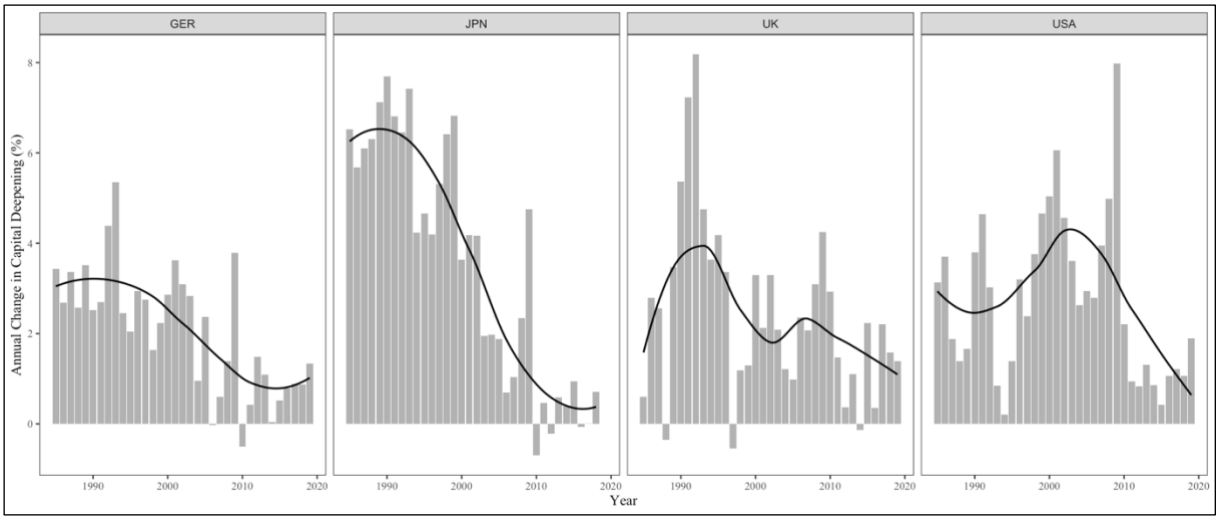

Figure 8: Annual change in the proportion of the capital stock to the number of labour hours worked. Source: the author's own. Data: OECD (n.d.).

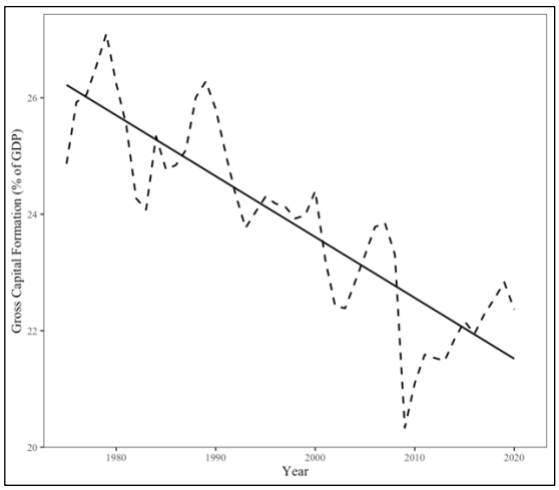

Figure 9: Gross capital formation for high income countries as a proportion of GDP. A linear trend line was fitted to the data. Source: the author's own. Data: World Bank (n.d.).

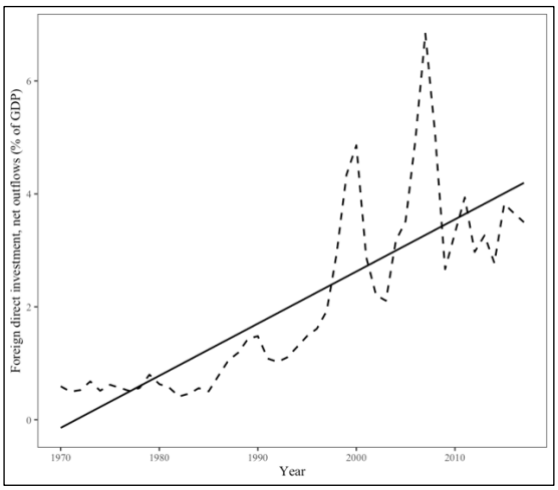

Figure 10: Capital outflows for high income countries as a proportion of GDP. A linear trend line was fitted to the data. Source: the author's own. Data: World Bank (n.d.).

These contradictory results are precisely what makes the SST debate a baffling ordeal. One can easily see that low capital investment, higher saving and labour productivity tend to lower interest rates. However, it is excess saving over investment that is often cited as the 'big bad stagnatory wolf'. Hence, the question one ought to consider is why these increases in savings do not translate into higher capital investment. Devriendt & Heylen (2020:94) attribute this to capital outflow. This is an issue facing Japan in particular, with domestic firms investing heavily

into emerging Asian markets (Akram, 2014:163). Furthermore, Eggertsson, et al., (2016:505) find that capital outflows have the tendency to lower interest rates for the domestic economy and alleviate secular stagnation for the foreign economy. The result is that supply in the domestic country suffers due to declining capital investment, while demand stagnates owing to higher saving and capital outflow. Figure 10 indicates that foreign direct investment as net outflows for high income countries have indeed been rising dramatically over the past 50 years, confirming that savings may be redirected in the form of capital outflows.

4. Discussion

The developments identified throughout the paper sketch a dire situation for developed economies, which may require extensive policy discussions and implementation. Hence, identifying the problem necessarily leads to discussions regarding possible solutions. This is the aim of this section.

Firstly there is the political side, which mainly concerns the reform of policies that could increase the size of the working age population. Storesletten (2000) studies the implications for increased immigration on future fiscal issues given an aging population in the US. They find that while there exists opposition toward increased immigration, policy should be geared toward attracting high- and medium-skilled working-age migrants (2000:321). Even moreso is the opposition toward immigrants in Japan, who is currently facing the problem of a rapidly aging population (Akram, 2014:161). The intuition is that effective immigration policies might increase the size of the working age population, while also raising marginal returns to capital. This is same conclusion reached by Bielecki, et al. (2020:18) and Gordon (2014:57), of which the latter also recommends increasing the retirement age and prison reforms.

A second consideration consists in increasing educational attainment. While educational attainment have realised sharp increases in productivity throughout the past century, a current issue (mainly plagueing the US) is the quality of tertiary education, affordability, and rising student debt (Gordon, 2015:57). By increasing access to university-level education and reforming educational programmes, one could stimulate more productive labour thereby increasing returns to capital. Furthermore, Vogel, Ludwig, & Börsch-Supan (2017:105) concur that the most effective policy options for labour productivity are to be found in adjustments in educational attainment as well as increasing the retirement age.

5. Conclusion

It is the responsibility of scholars to join the ongoing debate surrounding the SST in order to produce a viable assessment of its causes and solutions. In essence, one cannot view low capital investment and high savings, low interest rates or reduced productivity growth as isolated events – secular stagnation is the simultaneous interaction of these factors which are all inherently related to demographic dynamics. In this paper I argued for increased caution surrounding demographic change in the developed world. All the dynamics of the SST may thus be traced back to demographic dynamics. Lower fertility rates and an aging population lowers labour productivity and induces lower gains on capital, which disincentivises capital investment. Higher life expectancy and lower expected future labour supply induce higher savings, which in turn lead to capital outflows. All these developments exert downward pressure on interest rates, which exacerbates the output gap problem faced by developed economies. If developed regions are to divert from their current course, more research must be undertaken to understand current demographic development.

6. Bibliography

Akram, T. 2014. The Economics of Japan's Stagnation. *Business Economics,* 49(3): 156-175.

Bielecki, M., Brzoza-Brzezina, M. & Kolasa, M. 2020. Demographics and the natural interest rate in the euro area. *European Economic Review,* 129: 1-21.

Blanchard, O. J., Furceri, D. & Pescatori, A. 2014. A prolonged period of low real interest rates?. In: C. Teulings & R. Baldwin, eds. *Secular Stagnation: Facts, Causes, and Cures.* London: CEPR, pp. 101-110.

Catalano, M. & Pezzolla, E. 2016. The effects of education and aging in an OLG model: long-run growth in France, Germany and Italy. *Empirica,* 43: 757-800.

Devriendt, W. & Heylen, F. 2020. Macroeconomic and distributional effects of demographic change in an open economy – the case of Belgium. *Journal of Demographic Economics,* 86: 87-124.

Eggertsson, G. B., Mehrotra, N. R. & Robbins, J. A. 2019. A Model of Secular Stagnation: Theory and Quantitative Evaluation. *American Economic Journal,* 11(1): 1-48.

Eggertsson, G. B., Mehrotra, N. R. & Summers, L. H. 2016. Secular Stagnation in the Open Economy. *The American Economic Review,* 106(5): 503-507.

Eichengreen, B. 2015. Secular Stagnation: The Long View. *The American Economic Review,* 105(5): 66-70.

Galor, O. & Weil, D. N. 2000. Population, Technology, and Growth: From Malthusian Stagnation to the Demographic Transition and Beyond. *The American Economic Review,* 90(4): 806-885.

Gordon, R. J. 2014. The turtle's progress: Secular stagnation meets the headwinds. In: C. Teulings & R. Baldwin, eds. *Secular Stagnation: Facts, Causes and Cures.* London: CEPR, pp. 41-60.

Gordon, R. J. 2015. Secular Stagnation: A Supply-Side View. *American Economic Review,* 105(5): 54-59.

Hansen, A. H. 1939. Economic Progress and Declining Population Growth. *The American Economic Review,* 29(1): 1-15.

Krueger, D. & Ludwig, A. 2007. On the consequences of demographic change for rates of return to capital, and the distribution of wealth and welfare. *Journal of Monetary Economics*, 54: 49-87.

OECD. n.d. *OECD.Stat.* [Online] Available at: https://stats.oecd.org/Index.aspx?DataSetCode=PDB_GR
[24 08 2022].

Rachel, L. & Summers, L. H. 2019. On Secular Stagnation in the Industrialized World. *Brookings Papers on Economic Activity*, Spring: 1-54.

Scaperlanda, A. 1977. Hansen's Secular Stagnation Thesis Once Again. *Journal of Economic Issues*, 11(2): 223-243.

Storesletten, K. 2000. Sustaining fiscal policy through immigration. *Journal of Political Economy*, 108(2): 300-323.

Summers, L. H. 2015. Demand Side Secular Stagnation. *The American Economic Review*, 105(5): 60-65.

Teulings, C. & Baldwin, R. 2014. Introduction. In: C. Teulings & R. Baldwin, eds. *Secular Stagnation: Facts, Causes and Cures.* London: CEPR, pp. 1-24.

Vogel, E., Ludwig, A. & Borsch-Supan, A. 2017. Aging and pension reform: extending the retirement age and human capital formation. *Journal of Pension Economics & Finance*, 16(1): 81-107.

World Bank. n.d. *World Bank Open Data.* [Online] Available at: https://data.worldbank.org/ [12 08 2022].