

DEMOGRAPHIC WINDOW OF OPPORTUNITY, FIRST AND SECOND DEMOGRAPHIC DIVIDENDS: EVIDENCE FROM THE WORLD

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Abstract. *Current trends in population age composition led to increased interest in the potential economic impact of these trends. “The demographic window of opportunity” and “demographic dividend” present the two phenomena that address these concerns from an optimistic viewpoint. Over a certain period, a particular configuration of the population’s age structure when the working-age population predominates - the “demographic window of opportunity”- can create incentives for economic development, thus obtaining the demographic dividend. This paper aims to compare the demographic window of opportunity period and demographic dividend manifestation in selected countries from various parts of the world. The growth rate of support ratio was used to identify the demographic window of opportunity. The methodology for estimating the demographic dividend is that proposed by the NTA project. In addition, within NTA methodology, it is possible to capture both accounting and productivity aspects of the impact of the population by age group and differentiate the demographic dividend into the first and second demographic dividend. Hence, although manifested in an ageing population, certain economic behaviours, such as increasing savings and investments, can positively influence economic development, thus obtaining the second demographic dividend. This article presents evidence from selected countries on the demographic window of opportunity period as well as the first and second demographic dividends. It concludes by underlying the importance the demographic window of opportunity concept for the demographic dividend analysis.*

Keywords: *demographic window of opportunity, first demographic dividend, second demographic dividend.*

JEL: *A14, J10, J11, N30*

UDC: *314.114*

Introduction. The demographic factor influencing economic development is an old debate actualised in the context of current demographic diversity around the world. Interest in the issue has been renewed within the demographic dividend concept-a framework interlinking demographic dynamics and economic

development, offering an optimistic outlook on population and development. The demographic dividend concept suggests that within a certain age structure, economic development can be accelerated, given that necessary conditions in terms of policies and institutions are provided.

To date, a mainstreaming framework for analysis of the age structure and economic effects represents the NTA methodology. In particular to the demographic dividend analysis, NTA proposes a decompositional framework separating the demographic dividend into the first and second demographic dividend. Essentially, the former represents the accounting effect of age structure changes, while the latter is the productivity effect of the demographic processes. While this framework provides a systematic insight for analysis of the age structure changes as well as comparable data, there is still a quest for the assessment of the demographically beneficial period, called the demographic window of opportunity. This study aims to assess the demographic window of opportunity and first and second demographic dividends from selected countries. By taking evidence from countries around the world, it is aimed to observe to what extent the configuration of the demographic window of opportunity could influence perspectives of demographic dividends achievement. The article consists of two parts: the first is dedicated to the analysis of the demographic window of opportunity in selected countries from different parts of the world, and the latter to the assessment of the demographic dividends in comparison to the beneficial period of the demographic window of opportunity. The study has found that, while the demographic dividend achievement is policy-dependent, the configuration and duration of the demographic window of opportunity is also an important determinant for the demographic dividend results.

Literature review. The demographic dividend has become one of the main frameworks in the population and economic development debate since its emergence in the late 1990s (Bloom and Williamson, 1998). The demographic transition brings a demographically beneficial period where the growth rate of the working-age population is faster than the overall population growth rate; the period presents a sort of bonus for economic development (ibid). Asian tigers became a hallmark example in this sense - its economic miracle during 1965 and 1990 was attributed for about one-third to the demographic factor (ibid). The question that arises is, to what extent, given the universality of the demographic transition process, are or were able other countries to take advantage of the demographically beneficial period and to obtain the demographic dividend - the acceleration of its economic development as Asian Tigers did?

An important aspect on the demographic dividend analysis represents its applicability part: the policy dependence and ability of governments to react to the demographic changes (Bloom et al., 2003; Groth et al., 2019; World Bank, 2016). Another aspect of the demographic dividend analysis is the chosen methodological framework on the issues (James, 2018; Oosthuizen and Magero, 2021). These methods, along with the demographic dividend estimation, is, while assessing causality between demographic changes and economic outcomes is to observe the

main drivers underlying the demographic dividend achievement, again, with the purpose of guiding policy formulation (Oosthuizen and Magero, 2021).

The mainstreaming framework for demographic dividend analysis to date is National Transfers Accounts, which decompose the demographic dividend into first and second demographic dividends (Dramani and Oga, 2017; Mason et al., 2017). Thus far, the demographically beneficial period, i.e. labelled by the United Nations (2004), the demographic window of opportunity, is the period when the young population decreased below 30% while the population is still undergoing an ageing society (United Nations, 2004). To account for the demographic window of opportunity, it has also utilized dynamics of the demographic indicators, such as the working-age percentage of the population, dependency ratio and support ratio (Aiyar and Mody, 2011; James, 2008; Navaneetham, 2002).

This study's objective is to compare the estimation of the demographic window of opportunity with the NTA estimations of the first and second demographic dividends.

Data and methods. *Data.* The analysis is based on the World Population Prospects of 2022 and National Transfers Account data time series, actualized according to the World Population Prospects of 2022.

Methods. To assess the demographic window of opportunity, the working-age dynamics of the population, the non-working-age population and support ratio dynamics have been used as proxies. First, the demographic window of opportunity period presents the period when the working-age population growth rate prevails over the growth rate of the dependent population (James, 2018). The estimation of the demographic window by this method corresponds also with the growth rate of the support ratio, while the demographic window of opportunity period presents the period when the growth rate of the support ratio is positive.

The National Transfers Accounts approach in estimating the potential economic effect of the demographic dynamics, utilizes the economic support ratio - a combined indicator of consumption and production profiles added to the age structure of the population (Mason et al., 2017). Again, the growth rate of the economic support ratio is proposed to estimate the first demographic dividend. The second demographic dividend represents the productivity effect of the demographic changes (ibid). Methodology of the demographic dividends within NTA approach is detailed described by Mason et al. (2017).

Countries selection. Six countries were chosen for this analysis: Singapore, Ireland, the Republic of Korea, Georgia, Moldova, and Uzbekistan. Those countries, experienced a demographic transition after 1950: according to data from the World Population Prospects 2022, they started their age structure transitions after 1960 and, except of Uzbekistan, finished it by 2010. Similar to Singapore and the Republic of Korea, Ireland has been experiencing an important economic developmental boost during its demographic transition (Bloom et al 2003). Moldova and Georgia are two post-soviet countries that have had relatively similar demographic dynamics, reflected in their fluctuations in age structure. Uzbekistan is representative for our study for two reasons: first, it is also a country from post-soviet space, and second,

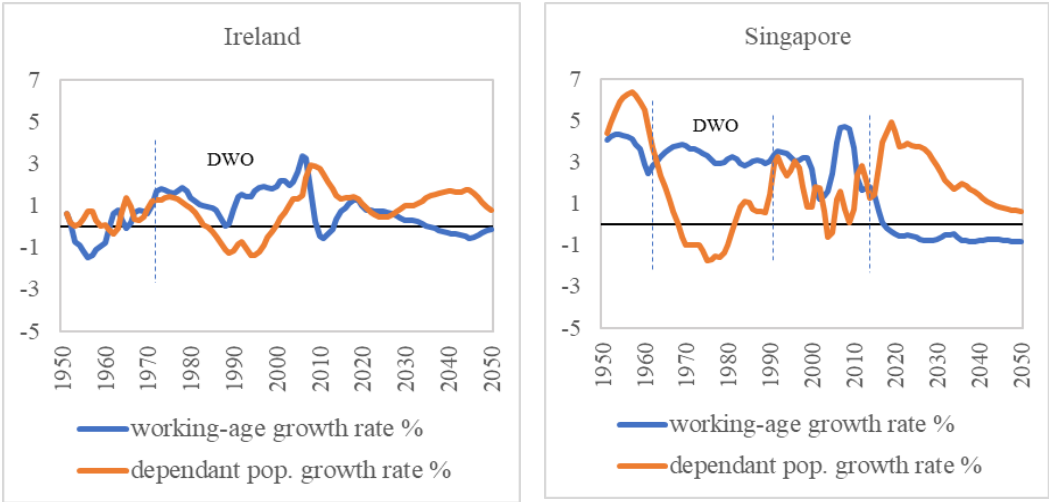
it is representative of the late transitional countries for which age structure transition is still in process. By taking evidence from these countries, it is aimed to observe how the dynamics of the age structure, the demographic window of opportunity particularly, are manifested in comparison with the NTA estimates of the first and second demographic dividends.

Main results. Demographic window of opportunity in selected countries.

This section presents results for selected countries on the evolution of age structure changes and its demographic window of opportunity. It is a period related to the demographic transition induced by the different time lags of decrease in death and birth rates. This study provides evidences of selected countries experiencing the demographic window of opportunity after the 1950s.

Ireland, the Republic of Korea, and Singapore's fertility decline led to the opening of the demographic window of opportunity after 1960 (Figure 1). The growth rate of the working-age population prevails over that of the non-working-age population between 1972 and 2007 in Ireland, between 1963 and 1992 in Singapore and between 1967 and 1989 in Republic of Korea, offering thus the window of opportunity period for about three decades.

As age structure is contingent on demographic and political events, the period of working-age population prevailing to dependent population may manifest differently. The large cohorts that create the window of opportunity when entering the working-age period in Moldova and Georgia have been smaller and, thus, in a shorter period: between 1964 and 1979 in Moldova and between 1970 and 1987 in Georgia. After 1990, the population shrunk in those two countries. Still, the specific age structure determined by the larger cohorts followed by the smaller ones has given to another window of opportunity, a period when the age population prevails, inducing a beneficial period for economic development: between 1990 and 2012 in Moldova and between 1998 and 2011 in Georgia (Figure 1).



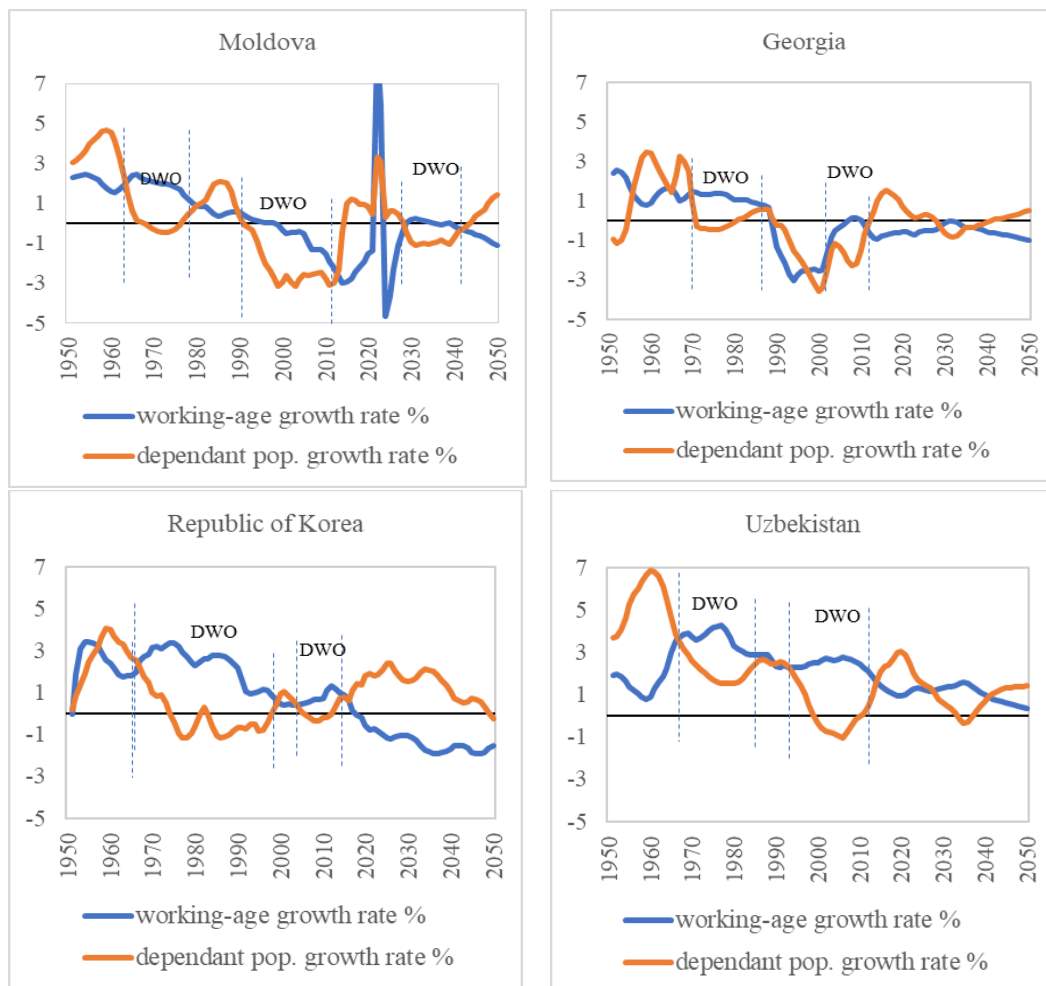


Figure 1. **Demographic window of opportunity between 1950 and 2050, selected countries, %**

Source: *World Population Prospects (2022) of the UN DESA, own calculations*

In Uzbekistan, the demographic window of opportunity has been opened between 1967 and 1989, but also between 1994 and 2014 and also will be followed by yet another window after 2030. The specific in Uzbekistan is, that, while in other countries, the dependent population growth rate registers negative values during the window of opportunity period, the growth rate of the dependent population in Uzbekistan remains still positive due to high child dependency ratio. It is just the following window of opportunity that provides negative trends in dependent population growth rate (Figure 1, Uzbekistan). Nevertheless, the dependent population growth rate is volatile in Uzbekistan, and demographic transition has not been completed by 2040 (Figure 1, Uzbekistan).

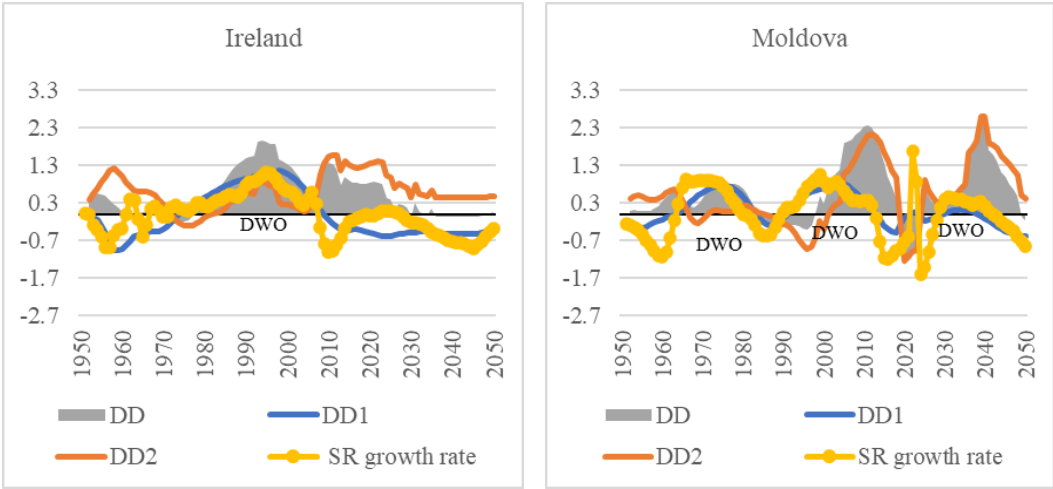
Ireland's demographic transition, with its demographic window of opportunity, presents a classical representation of a one-time opportunity of a beneficial period during demographic transition (Figure 1). As in the case of Singapore, the period of the window of opportunity is followed by the period on which the working-age and dependent population dynamics follow a classical pattern (Figure 1). Further, in

Ireland, Singapore, and the Republic of Korea, after the demographic window of opportunity period, the elderly population prevails, as these countries follow an age structure of ageing.

First and second demographic dividend in selected countries.

Demographic dividend present potential economic development resulting from the dynamics of age structure changes. The distinctions between the demographic dividend as a first and second demographic dividend - a formalization within NTA methodology - lie in the two effects that demographically beneficial periods have on economic development (Dramani and Oga, 2017; Mason et al., 2017). Thus, the compositional effect of age structure changes working within the labour participation increase was formalized as being the first demographic dividend. Yet, there is another effect of the population on economic development concerning the productivity effect, which, within the NTA approach, is described as the second demographic dividend (Mason et al. 2017). The productivity effect is characterised by an increase in income per worker due to human capital accumulation as well as investment and wealth accumulation resulting from savings increase (ibid).

Further are compared periods of the demographic window in selected countries with the demographic dividends, first and second, accounted within NTA methodology for selected countries. The productivity effect of the demographic dynamics - the second demographic dividend - contrasting with the first, may manifest irrespectively of the window of opportunity period and presents the income per worker increase (Mason et. al 2017).



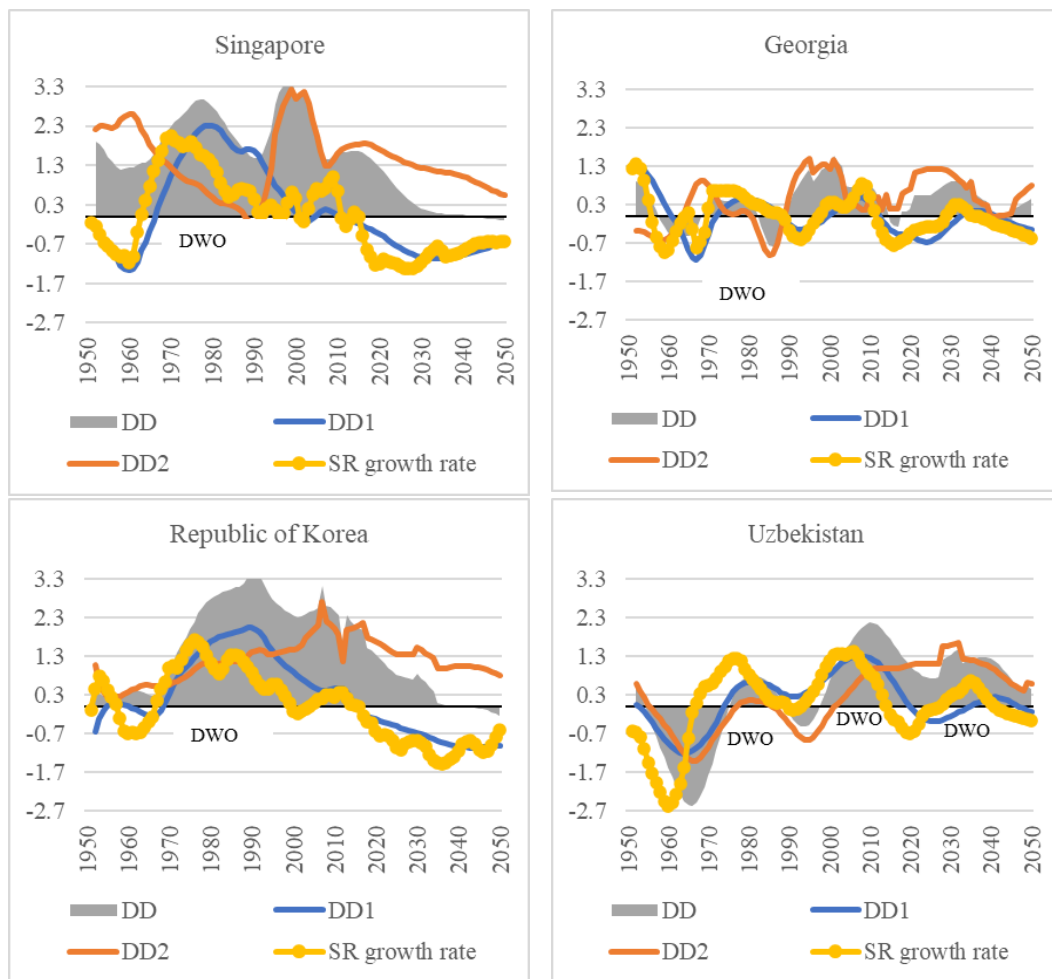


Figure 2. Demographic window of opportunity (DWO), demographic dividend (DD), first and second demographic dividends (DD1 and DD2), selected countries, 1950-2050, %

Data source: NTA Network (2022) and World Population Prospects (2022) of the UN DESA, own calculations

This second demographic dividend is quite significant compared with the first demographic dividend in all selected countries (*Figure 2*). In all selected countries, to a different extent, the first demographic dividend follows the pattern of the demographic window of opportunity (*Figure 2*). Nevertheless, there are different important distinctions between the magnitude of the first demographic dividend in relation to windows of opportunity in selected countries. While in post-soviet countries, the first demographic dividend has been smaller than the window of opportunity, in Ireland, Singapore and the Republic of Korea, the first demographic dividend has been quite a good response to demographic changes, and the first dividend in these countries is more pronounced than the window of opportunity (*Figure*). The difference was that the labour market reacted well in Ireland; it took a little of a period for labour markets to adapt in Singapore and the Republic of Korea. Nevertheless, while the window of opportunity has closed in Singapore, the first demographic dividend continues to manifest due to a beneficial ratio of

producers to consumers. By contrast, in Ireland, the first demographic dividend is not noticed after the demographic window of opportunity period.

In Georgia and Moldova, with its small windows of opportunity, the first demographic dividend followed the same pattern, occurring quite after the demographic window opening, confirming in this way that usually there is a need for time of the labour market for adaptation to react to beneficial age structure settings provided by the demographic window of opportunity period.

Discussions and conclusions. In this article, the demographic window of the opportunity period and the first and second demographic dividends are compared for the selected countries. The demographic window of opportunity, a demographic phenomenon, is accounted within the demographic analysis of age structure changes: working-age population percentage and support ratio. The estimation for the demographic dividend utilizes the NTA method, where the economic support ratio presents a tool to assess the characteristics of working age within the production and the consumption profile according to age.

Contrasting with the first demographic dividend, the second demographic dividend (the productivity effect of population changes) is indirectly linked to the age structure setting and presents the income per worker increase. Nevertheless, its contribution may be significant to the overall demographic dividend during the demographic window of opportunity.

While it is usually stated that demographic dividend achievement is contingent upon institutional settings and policy context, the empiricism presented in this study adds additional insights. The data presented for six selected countries show that while Ireland, the Republic of Korea, and Singapore benefited largely from the period of the demographic window of opportunity, the demographic dynamics have been quite different from the demographic window of opportunity in Moldova, Georgia and Uzbekistan. Their age structure dynamics differ significantly from those of the Asian and Celtic tigers, leading to the different magnitudes of the first demographic dividend. While institutional, political, and economic contexts during the demographic window of opportunity are essential determinants for demographic dividend achievement, another factor is essential: the demographic window of opportunity configuration. In a shorter period, such as in the case of Moldova and Georgia, time for harnessing demographically advantageous periods for economic development is limited. In addition, for all three post-soviet countries, the configuration of the age groups follows a more sophisticated pattern than in Asian and Celtic tigers, challenging the adaptability of the institutions required for demographic dividend achievement. Thus, along with policy and institutional settings, the demographic dividend will also be determined by the specifics of demographic dynamics and the way the demographic window of opportunity is manifested.

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particularities, socioeconomic implications and demographic resilience straightening (TDRM, 2024-2027)”.

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