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The Influence of Demographic Transition Factors on the Demographic Dividends in the Republic of Kazakhstan

Makpal S. Bekturganova[1], Gaukhar K. Kenzhegulova[1]*, Aruzhan . Jussibaliyeva[2], Saltanat S. Tleuberdiyeva[3]

[1] Institute of Economics CS MES RK, 28 Shevchenko Str., A25K1B0, Almaty, Kazakhstan

[2] Scientific and Production Enterprise "Innovator", 23 B.Momyshuly Ave., Z00P7F6, Nur-Sultan, Kazakhstan

[3]L. N. Gumilyov Eurasian National University, 2 Satpayev Str., Z19A0K6, Nur-Sultan, Kazakhstan

Abstract

The purpose of this article is to explore the relationship between factors of demographic transition and the demographic dividend in developing countries on the example of Kazakhstan. This literature review made it possible to identify two main factors that indirectly impact economic growth: the working-age population and the labor force. Correlation and regression analyses were conducted to investigate the relationship between these factors, taking into account urban and rural areas. The SPSS program was used to confirm four hypotheses. Where Working Age Total is the dependent variable and Women Working Age Urban Population, Women Working Age Rural Population are independent variables for the first two hypotheses. In the third and fourth hypotheses, Labor Force Total is the dependent variable, and Fertility Rate, Fertility Rate Urban, Fertility Rate Rural, Death Rate, Death Rate Urban, Death Rate Rural are independent variables. Data from the official open source information of the Bureau of National Statistics between 2007-2020 was used. According to the results, three hypotheses were partially accepted, one was rejected. The results showed little effect of changing demographic structure in rural areas on the working-age population, except for mortality rate. The birth rate has a positive impact on the working-age population only in cities. The female population of working age, although predominant in terms of the number, has a negligible effect on the labor force. The results of this study can be used to develop and improve existing programs and strategies for managing demographic factors by the government at various levels and in science.

Keywords: Economy, Demography, Strategy, Practice, Demographic Dividends, Demographic Structure, Kazakhstan.

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*** Corresponding author: Kenzhegulova G.K.** - PhD candidate, researcher, Institute of Economics CS MES RK, 28 Shevchenko Str., A25K1B0, Almaty, Kazakhstan, 87014522521, e-mail: gaukhar.kenzhegulova@gmail.com

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Демографиялық өтпелі факторлардың Қазақстан Республикасындағы демографиялық дивидендтерге әсері

Бектұрғанова М.С. [1], **Кенжегулова Г.К.** [1]*, **Джусибалиева А.К.** [2], **Тлеубердиева С.С.** [3]

[1] *ҚР БҒМ ҒК Экономика институты, Щевченко 28, A25K1B0, Алматы, Қазақстан*

[2] *Инноватор Ғылыми-өндірістік кәсіпорны, Б.Момышұлы 23, Z00P7F6, Нұр-Сұлтан, Қазақстан*

[3] *Л.Н. Гумилев атындағы Еуразия ұлттық университеті, Сәтпаев 2, Z19A0K6, Нұр-Сұлтан, Қазақстан*

Түйін

Бұл мақаланың мақсаты Қазақстан мысалында дамушы елдердегі демографиялық ауысу факторлары мен демографиялық дивиденд арасындағы байланысты зерттеу болып табылады. Әдебиеттердің бұл шолуы экономикалық өсуге жанама әсер ететін екі негізгі факторды анықтауға мүмкіндік берді: еңбекке жарамды халық пен жұмыс күші. Осы екі фактор арасындағы байланысты зерттеу үшін қалалық және ауылдық жерлерді ескере отырып корреляциялық және регрессиялық талдаулар жүргізілді. Төрт гипотезаны растау үшін SPSS бағдарламасы пайдаланылды. Мұндағы еңбекке жарамды жас жиыны тәуелді айнымалы болып табылады, ал әйелдердің еңбекке жарамды жастағы қала халқы және әйелдердің жұмыс істейтін жасындағы ауыл халқы алғашқы екі гипотеза үшін тәуелсіз айнымалылар болып табылады. Үшінші және төртінші гипотезаларда Жұмыс күшінің жалпы мөлшері тәуелді айнымалы болып табылады, ал Туу коэффициенті, Қалалық туу коэффициенті, Ауылдық жердегі туу коэффициенті, Өлім деңгейі, Қалалық өлім деңгейі, Ауылдық өлім деңгейі тәуелсіз айнымалылар. Факторларды есептеу үшін Ұлттық статистика бюросының 2007-2020 жылдар аралығындағы ресми ашық ақпарат көздерінің деректері пайдаланылды. Талдау нәтижелері бойынша үш гипотеза ішінара қабылданды, біреуі қабылданбады. Нәтижелер өлім-жітім деңгейін қоспағанда, ауылдық жерлердегі демографиялық құрылымның өзгеруінің еңбекке қабілетті халыққа аз әсер еткенін көрсетті. Туу көрсеткіші тек қалалардағы еңбекке қабілетті халыққа оң әсер етеді. Еңбекке қабілетті жастағы әйелдер ерлер саны бойынша басым болғанымен, жұмыс күшіне елеусіз әсер етеді. Бұл зерттеудің нәтижелері әртүрлі деңгейдегі мемлекеттік органдардан демографиялық факторларды басқарудың қолданыстағы бағдарламалары мен стратегияларын әзірлеу және жетілдіру үшін, сондай-ақ ғылыми зерттеулерде пайдаланылуы мүмкін.

Түйін сөздер: экономика, демография, стратегия, практика, демографиялық дивидендтер, демографиялық құрылым, Қазақстан.

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*** Хат-хабаршы авторы: Кенжегулова Г.К.** – PhD докторанты, ғылыми қызметкер, ҚР БҒМ ҒК Экономика институты, Шевченко 28, A25K1B0, Алматы, Қазақстан, 87014522521, , e-mail: gaukhar.kenzhegulova@gmail.com

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Влияние факторов демографического перехода на демографические дивиденды в Республике Казахстан

Бектурганова М. С.[1], Кенжегулова Г.К. [1]*, Джусибалиева А.К.[2], Тлеубердиева С.С. [3]

[1] Институт экономики КН МОН РК, ул. Шевченко 28, A25K1B0, Алматы, Казахстан

2 Научно-исследовательская компания «Инноватор», пр. Б.Момышулы 23, Z00P7F6, Нур-Султан, Казахстан

3 Евразийский национальный университет Л.Н. Гумилева, ул.Сатпаева 2, Z19A0K6, Нур-Султан, Казахстан

Аннотация

Цель данной статьи исследовать взаимосвязи факторов демографического перехода и демографического дивиденда в развивающихся странах на примере Казахстана. Приведенный обзор литературы позволил выделить два основных фактора, оказывающих косвенное влияние на рост экономики: население трудоспособного возраста и рабочая сила. Для исследования связи между этими двумя факторами были проведены корреляционный и регрессионный анализы с учетом городской и сельской местности. Для подтверждения четырех гипотез была использована программа SPSS. Где Working Age Total зависимая переменная, а Women Working Age Urban Population и Women Working Age Rural Population не зависимые переменные для первых двух гипотез. В третьей и четвертой гипотезе Labor Force Total являются зависимой переменной, а Fertility Rate, Fertility Rate Urban, Fertility Rate Rural, Death Rate, Death Rate Urban, Death Rate Rural являются независимыми переменными. Для расчета факторов были использованы данные из официального открытого источника информации Бюро национальной статистики с 2007 по 2020 годы. По результатам проведенного анализа три гипотезы были частично приняты, одна отвергнута. Результаты показали незначительное влияние изменения демографической структуры в сельской местности на население трудоспособного возраста, за исключением уровня смертности. Коэффициент рождаемости оказывает положительное влияние на население трудоспособного возраста только в городах. Женское население трудоспособного возраста, хотя и преобладает по количеству мужчин, но оказывает незначительное влияние на рабочую силу. Результаты данного исследования могут использоваться для разработки и совершенствования имеющихся программ и стратегий по управлению демографическими факторами со государственных органов разных уровней, а также в научных исследованиях.

Ключевые слова: экономика, демография, стратегия, практика, демографические дивиденды, демографическая структура, Казахстан.

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*** Корреспондирующий автор: Кенжегулова Г.К.** – PhD докторант, н.с., Институт экономики КН МОН РК, ул. Шевченко 28, A25K1B0, г. Алматы, Казахстан, 87014522521, e-mail: gaukhar.kenzhegulova@gmail.com

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Introduction

The demographic development of the world has the most serious impact on the world economic community. The population of the entire planet, its age and sex structure, the duration, and quality of life, the qualifications of the labor force, population migration, and its socio-economic consequences - all this largely determine the development trends of the modern world and its economy. Population growth varies from country to country. This phenomenon serves as a basis for maintaining long-standing ideas about optimal population and economic growth. These ideas are usually associated with the population of individual countries and regions and in recent decades - with the world population. This gives an impetus to economists to analyze the relationship between population growth and economic development.

Sustainable development is now on the worldwide agenda. Sustainable development definition takes its roots in the World Commission on Environment and Development (WCED) report in 1987. Initially, the report was entitled «Our common future». Eventually, it became known under the title «Brundtland Report». Based on this report there were developed major principles of sustainable development. The report's general goal reflected the need for the sustainable development of the economy, especially in developing countries. The highlighted issue was to reduce poverty, which could be managed through politics and state policies (Marien, 2021).

Sustainable development's goal lies in providing sustainable economic development, which is affected by different factors. Demography is one of the major factors of economic development and an indicator at the same time. During the last decade, the world has undergone extreme changes, especially there was a great change in the demographic structure worldwide. Kazakhstan is not an exception. The greatest impact on the demographic structure of the world population was caused due to COVID-19 pandemic, which counted 3,2 million deaths worldwide by 2021 (Agrawal et al., 2021). For the past year (January 1st 2021- January 1st 2022) in Kazakhstan, there were recorded 200 deaths caused by the COVID-19 pandemic (Johns Hopkins Coronavirus Resource Center 2021).

A decrease in the fertility and death rate opens the window of opportunities by reducing the number of dependencies. Post-war Japan (1965 to 1970) is a fine illustration of the impact of the decrease in fertility rate and decreased death rate (which was explained the increase in the life expectancy of the local population) called as East-Asian Miracle (Ogawa et al., 2021).

At the same time, it contributes to the development of the first demographic dividend as a working age population, with the age range 15-64. In other words, this is an increase in the number of the labor force. Most developed and developing countries are experiencing the first demographic dividend, but the results differ.

Therefore, it is essential to understand the relationship between demographic indicators. In addition, it is important to investigate the impact of demographic transition indicators on demographic dividends. The current study aims to contribute to the existing body of knowledge on the relationship between demographic transition factors and demographic dividend factors, which affect the economy development in the context of developing countries, on the example of Kazakhstan.

One approach to analyzing the relationship between population growth and economic development is that demographic variables are an essential aspect of socioeconomic development. This approach is based on the following scheme: rapid population growth reduces the growth of savings and savings, increases the growth of the labor force and makes it difficult to use it, lowers the quality of labor resources by reducing education and health care costs, weakens technical innovations, reduces the number of resources per person and ultimately slows the growth of GDP per capita.

Literature review

The body of knowledge focused on the study of demographic change is expanding. This study concerns in provision of research on the impact of demographic change on economic growth. Recent studies are primarily focused on the identification of the influence of the demographic structure change. Within this aspect, the structure of the literature review will be the following. First, existing studies will be discussed the three main procedures influencing demographic change. Next, there is the attention given to labor force structure, which is regarded as another demographic construct. It has a great influence on economic growth.

The demographic change includes the size and composition of the population. The structure of the population can be broken down into various aspects. For example, there have been considered education level, marital status, employment or income level in wide practice. First, it is demographic transition. This is when fertility rate along with death rate decreases. Second, in general is the outcome of the first trend, it is aging (Billari & Sciences, 2022).

Among the most popular and the main are age and gender (Hinde, 2014). However, significant processes should be identified which have a crucial impact on demographic change. They are fertility rate, death rate and immigration rate. Change in the demographic structure affects positive economic development. Moreover, according to Momota and Futagami, a country becomes a creditor when rates of fertility and death become low at the same time (Momota & Futagami, 2005). Population growth (which is explained by fertility and in-migration rates), as well as decrease (death rates and out-migration) shifts not only the working age of the population, but it also affects population structure in terms of gender, labor force rates and population aging. This results in a change in the employment rate. Therefore, demographic structure change is important and needs to be observed on a constant basis (Babiak & Mesaksudi, 2018).

It is worth mentioning that the change of demographic structure change process, for instance, decrease only in death rates results in a significant number of people at the same time and in the same place who need jobs. This increases the unemployment rate if the resident country is notorious for unstable politics, and low socio-demographic policy, in particular, education and healthcare system. Moreover, such a significant number of unemployed people could be easily involved in destructive movements, as in the case of Egypt. People, with the prevailing dominance of youth, participated in the protests (Korotayev & Zinkina, 2022).

The influence of immigration depends on the quality of arriving human capital. There is various research on immigration, including the level of education of immigrants, family structure, cultural specifications etc. The scientific interest of these studies was centered on the assimilation of immigrants, the influence of religious, national and cultural effect predominantly on the quality of education and marriages (Dribe & Lundh, 2011; Kalmijn & Tubergen, 2010).

Developed countries, to prevent the inflow of unskilled labor force, have set and put in practice a point-based system for immigrants. It collects information about education field and level, experience and contributions. Low skilled labor force prevents or slows down economy transition process. Developing countries are notorious for cheap labor force due to lack of professional qualification or skills. Nevertheless, the effect of positive impact of immigration on the economy developed is observed in both developed and developing countries (Boubtane et al., 2016).

Other scientist's emphasize significant influence on the demographic dividend, the working-age of the population, on economic development. This period of opportunities is developed due to decline in fertility and mortality rates. Thus, less amount of dependencies, which ensures increase in the working-age labor force in labor market. It is worth mentioning that demographic dividend is not only about the working age. It also includes women's labor force. The decrease in birth rate explains the increase in women labor force. This is attributed to the fact that women are focused on career more. Simultaneously, women improve their health condition and social status by gaining more independence due to personal income (Ross, 2004). This is, still dependent on the policy provided by the government. Wei & Hao (2010) state government is responsible for the productive period of demography dividend functioning. In a public sector, the government is focused on the planning of social policies, including the strategy of improving the employment rate and health policy improvement (Wei & Hao, 2010).

Therefore, it can be assumed that demographic dividend is highly dependent on public policies and strategies of economic development by the government, which include family related policy and education as well. For instance, in China, the period of demographic dividend is closing. Despite the fact that the state has started the strategy of increasing population number, precisely One-Child Policy is being amended, the process of population ageing transition is predicted to go much faster (Zhang et al., 2015). Golley and Wei (2015) showed that quality of working-age population if bad, could have a negative impact on the economy growth. Because one of the responsibilities of the government is provision of quality education and working places (Golley & Wei, 2015).

Uddin et al. (2016) underlined the coming problem of population aging as well, which is provoked by the age imbalance among population. Whereas prevailing proportion of the population is combined by the young and old generations. They underlined that government needs to take actions in developing policies for labor force increasing. This would provide productive investments for the country in the long run (Uddin et al., 2016). Based on the above mentioned, assumption that success of demographic dividend is dependent of the public policy is justified.

Demographic change has a great impact on the economy development with positive outcomes in the future. Despite the period of opportunities,

as described in the literature review, the future development of the economy must be well thought in combination with social policies. The government based on the demographic structure has the opportunity to build pension program planning, education and healthcare system, policy on creation of jobs to decrease unemployment and social policy focused on minorities, including women (Doker et al., 2016). It must be noticed that the majority of the studies were conducted during the period of significant changes in demographic transition and demographic dividend factors. Therefore, it is necessary to understand the change in the demographic structure in the context of developing countries. Also, it is important to understand is the effect the same if in developing countries the change is not as large as in developed countries. Therefore, there have been developed following hypotheses:

H1: There is impact of demographic transition factors in rural area (FR_R, DR_R) on the Demographic dividend factor (WA_Total).

H2: There is impact of demographic transition factors in urban area (FR_U, DR_U) on the Demographic dividend factor (WA_Total).

H3: There is impact of the number of women in working age (WWA_R, WWA_U) on the increase in the labor force (LF_Total).

H4: There is impact of men in working age (MWA_R, MWA_U) on the increase in the labor force (LF_Total).

Methodology

There are various works, which study the influence of the demographic changes on the economic growth of the economy. Along with this, there have been developed various ways of demography impact measurement based on the primary or secondary sources. Application of secondary sources includes statistical data predominantly. There are usually provided demographic impact forecasting, regression analysis etc. According to Hinde (2014), in terms of primary sources the data is usually obtained in several ways. The author defined three ways for data collections: population censuses, vital registration, surveys allowing to follow the change in the demography structure.

Provided literature review showed the importance of the demography structure. The economy development is dependent on the demographic structure. Apart from mentioned measurements of demography, there are other measurements, which have impact on the economy. Based on the research of Cruz and Ahmed, it is important to identify the impact of labor force share, reflected in the working age population (Cruz & Ahmed, 2018). Doker et al. (2016) underlined the contribution of women labor force.

Understanding of the demographic structure of the Republic of Kazakhstan has great importance. For this purpose, there will be provided analysis of the following factors. *Demographic transition processes*: fertility and death rate. Based on the provided literature review decrease in both fertility and death rates develops the phenomena of the "window of opportunities". In particular, this window effect results in the increase in the working-age of the population. Thus, it contributes to the labor force. To analyze the relationship between demographic indicators there were conducted correlation analysis.

Based on the provided literature review, two significant demographic factors were identified: labor force and working age population. Thus, an investigation of the impact of demographic change on the following demographic indicators will be revealed through regression analysis. Therefore, the several indicators were taken (Table 1).

Table 1 - Variables and Notations

Notation	Variable type	Variables	Source
WA_Total	Dependent variable 1	Working Age Total	Bureau of National Statistics (2022)
WWA_U	Independent variable	Women Working Age Urban Population	
WWA_R	Independent variable	Women Working Age Rural Population	
LF_Total	Dependent variable 2	Labor Force Total	
FR	Independent variable	Fertility Rate	
FR_U	Independent variable	Fertility Rate Urban	
FR_R	Independent variable	Fertility Rate Rural	
DR	Independent variable	Death y Rate	
DR_U	Independent variable	Death Rate Urban	
DR_R	Independent variable	Death Rate Rural	

Note: complied by the authors

First of all, provided literature review showed that decrease in the fertility rate and death rate at the same time is beneficial as it has positive effect on the working age population. Thus, working age population is the first dependent variable. Secondly, working age population has impact on the labor force. Some studies underlined the importance of women participation in the labor market. Due to this, Labor force is the second dependent variable.

Data for all variables was obtained from official open data source. The limitation for this research was lack of the latest data (for 2021) for fertility and death rates. Considered period of obtained data was from 2007 to 2020. For data processing, SPSS software was used.

It must be mentioned that for this research there were provided Pearson correlation analysis and multiple regression analysis instead of forecasting of future trends in the demographic change, as the goal of the research lies in the investigation of the impact and relation between demographic variables.

Pearson correlation coefficient is calculated by the formula below (1):

$$r_{xy} = \frac{\Sigma(x_i-\bar{x})*(y_i-\bar{y})}{\sqrt{\Sigma(x_i-\bar{x})^2*(y_i-\bar{y})^2}}. \quad (1)$$

Where – value for X variable;
$\underline{y}_i$ – value for Y variable;
$\overline{x}$ – is the arithmetic mean for X variable ;
$\overline{y}$ – is the arithmetic mean for Y variable .

Multiple linear regression analysis was carried out in accordance with the following formula of multiple regression analysis (2).

$$\gamma = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4. \quad (2)$$

Where – is the dependent variable;
$X_{1,\,2,\,3,\,4}$ – is independent variable /predictor

$\beta_{1,2,3,4}$ – is regression coefficient.

In order to conduct a regression analysis, there is provided correlation analysis to identify the relationship between variables. This allows seeing if a further provision of regression analysis is necessary. If the correlation analysis reveals insignificant relation between variables, further regression analysis is unnecessary, as due to the correlation analysis results the model is regarded as insignificant. It is common that SPSS software is applied for correlation and regression analyses provision (Korkmaz, 2020).

Results and analysis

To investigate the relation between variables correlation analysis was conducted first. For the correlation analysis there were included two dependent variables and independent variable. For the independent variables, there were taken working age population by women and men in urban and rural areas; birth and death rate divided into the urban and rural areas as well. In table 2, there are presented results of correlation analysis between dependent and independent variables.

Table 2 - Correlation

	LF_Total	WA_Total	MWA_R	WWA_R	MWA_U	WWA_U	FR_U	FR_R	DR_U	DR_R
LF_Total Pearson correlation	1	,977**	,624*	,456	,866**	,888**	,938**	,505	,734**	,633*
Sig. (two-tailed)		,000	,017	,102	,000	,000	,000	,065	,003	,015
WA_Total Pearson correlation	,977**	1	,599*	,449	,901**	,922**	,901**	,533*	,825**	,736**
Sig. (two-tailed)	,000		,024	,108	,000	,000	,000	,049	,000	,003
**. Correlation is significant at the 0,01 level (2-tailed). *. Correlation is significant at the 0,05 level (2-tailed).										

As it is clear from table 2, correlation of LF_Total and WA_Total (r = .977, p< .001), FR_U (r=.938, p< .001), WWA_U (r = .888, p< .001) and MWA_U (r = .866, p< .001) was found to be statistically significant. This indicates that the increase in the fertility rate and in the number of working age population, especially among women leads to the increase in the number of the labor force.

The correlation between WA_Total and LF_Total (r = .977, p< .001), FR_U (r=.901, p< .001), and DR_U (r = .825, p< .001). The results for WA_Total show that in the change in fertility and death rate in the urban area leads to an increase in the number of WA_Total, as there is a positive correlation between them. Next, there were conducted regression analysis for two dependent variables.

Obtained results for the correlation analysis showed that there is a strong relationship between the labor force and demographic dividend factors, thus working age population has an impact on the labor force. Next, demographic change factors such as death and fertility rate show a strong correlation as well, with both dependent variables.

Although it has been studied already and discussed that demographic change factors, to which we relate death and fertility rate have a strong impact on the working and thus on labor force as well, context plays a role as well. In this study, the context is Kazakhstan. Based on the results of the correlation analysis, which revealed strong relation between variables, further regression analysis on the worth of provision. Next, there are presented results for model summary data (Table 3).

Dependent variable 1 – WA_Total.

According to the results in table 3, R-square = ,973, which shows that 97,3% of the change in WA_Total is explained by the predictors (DR_R, FR_U, FR_R, DR_U). Further, there are presented results for ANOVA analysis (Table 4).

WA_Total is significantly predicted by the predictors in this model based on the F (81,139), p<0,001. Therefore, the model can be accepted as significant. In table 5, there are presented results for the regression coefficients for predictors used in this model.

Table 3 - Model summary – WA_Total

Model	R	R- square	Adjusted-R Square	Std.Error of the Estimate
1	,986[a]	,973	,961	81882,220
a. Predictors: (constant), DR_R, FR_U, FR_R, DR_U				

Table 4 - ANOVA – WA_Total

Model	F	Sig.
Regression	81,139	,000[b]
Residual		
Total		
a. Dependent variable: WA_Total		
b. Predictors: (constant), DR_R, FR_U, FR_R, DR_U		

Table 5 - Coefficients – WA_Total

Model	Unstandardized coefficients		Standardized coeff.error Beta	t	Sig.
	B	Stand. Error			
(Constant)	7907035,570	730207,167		10,828	,000
FR_U	17,800	2,701	,948	6,590	,000
FR_R	-4,751	4,417	-,101	-1,075	,310
DR_U	-18,418	10,337	-1,273	-1,782	,108
DR_R	35,956	14,656	1,662	2,453	,037
a. Dependent variable: WA_Total					

In table 5 presents results for the regression coefficients for predictors used in this model. As it is clear from the data Tolerance is more than 1,96 which supports the significance of the model. In particular, it shows the level of impact of used predictors for this model on the dependent variable WA_Total. Regression coefficients for FR_R and DR_U are insignificant as p-values for these predictors are higher than the significance level .310, .108 and .037 respectively. Hypothesis 1 is supported partially. While for FR_U (.000) and DR_U (.037) *(Sig. p=.000) p*-values is less than the significance level (α = 5 %). Thus, there are two significant variables FR_U and DR_R. Hypothesis 2 is supported partially.

Obtained results for hypothesis 1 showed that the death rate in the rural area is significant and therefore has an impact on the working age population. This can be explained by the fact that Kazakhstan is among those countries where urban growth and urban area development are usually achieved by internal migration from rural areas to urban. This is caused by the fact that rural areas are notorious for high rates of unemployment. Therefore, urban areas with higher salaries are attractive to the rural population as a source of income. It is predicted that in the long run, the gap between cities and rural areas reduces, but economic development is not promised (Brooks, 2021). One of the reasons is the high rate of self-employed population in villages, which makes up about 34% economically active population in rural area, which makes up 3,6 million people. The self-employed population is often involved in the shadow economy. Therefore, it is not economically beneficial for the country.

Obtained results for hypothesis 2 showed that the fertility rate in an urban area has a significant impact on working age population. Based on the statistical data, the fertility rate in the urban area is gradually increasing while in rural it is the opposite, gradually decreasing. In Kazakhstan, in every fifth rural family, women take care of the family budget and stand out as the main source of income for families. As women get more involved in the labor force the fertility rate decreases. Therefore, this could be taken as one of the mechanisms of demography regulation (Van den Broeck & Maertens, 2015). In addition, women's socio-economic independence positively affects the fertility rate. This is explained by the fact that women are more independent in decision-making processes. However, this conclusion cannot be generalized to all cases. Therefore, it is important to analyze cultural habits as well (Samari, 2019). Next, there are presented results of the analysis for the second dependent variable LF_Total. Accordingly, model summary (Table 6) presents results for R-square.

Table 6 - Model Summary – LF_Total

Model	R	R- square	Adjusted-R Square	Std.Error of the Estimate
1	,992[a]	,984	,971	48786,259
Predictors: (constant), FR_R, MWA_U, MWA_R, FR_U, WWA_R, WWA_U Dependent variable 2 – LF_Total				

According to the results in table 6, R-square = ,984, which shows that 98,4% of the change in LF_Total is explained by the predictors (MWA_U, MWA_R, WWA_R, WWA_U). In table 7, there are provided results of the ANOVA analysis.

Table 7 - ANOVA – LF_Total

Model	F	Sig.
Regression	72,319	,000[b]
Residual		
Total		
a. Dependent variable: LF_Total		
b. Predictors: (constant), MWA_U, MWA_R, WWA_R, WWA_U		

The ANOVA table (table 7) shows that LF_Total is significantly predicted by the predictors in this model based on the F (72,319), p<0,001. Therefore, the model can be accepted as significant. Coefficient analysis results for the second dependent variable are presented in the table 8.

Table 8 - Coefficients – LF_Total

Model	Unstandardized coefficients		Standardized coeff.error		
	B	Stand. Error	Beta	t	Sig.
(Constant)	1054831,469	446804,284		2,361	,043
MWA_U	-,643	2,090	-,388	-,307	,765
WWA_U	1,574	1,936	1,026	,813	,437
MWA_R	4,342	1,043	1,260	4,163	,002
WWA_R	-2,637	,965	-,835	-2,733	,023
a. Dependent variable: LF_Total					

In table 8 presents results for the regression coefficients for predictors used for the second model. The level of Tolerance for this model is more than 1,96 which shows that the level of impact of current predictors on the dependent variable LF_Total is significant. Based on the provided results, there is one predictor which has a significant impact on the dependent variable MWA_R (p <.002). Hypothesis 3 is rejected, and hypothesis 4 s accepted partially.

Obtained results for hypothesis 3 show that women of working age in rural and urban areas do not have an impact on the labor force. In the case of the current study, it is clear from the above partially supported hypotheses (1 and 2). Women of working age in rural area are involved in the labor force, but there is a high probability that they make up half of the self-employed population. Next, the overall women employment rate for the last decade was about 60% of total women. The change in the number of employed women was insignificant and fluctuated below and above 61% (Bureau of National Statistics, 2022).

Obtained results for hypothesis 4 showed that men of working age in a rural area has a significant impact on the total labor force. Moreover, for the past year, the number of unemployed men in rural areas stayed without changes, while the number of urban males in the labor force increased. There could be related various factor. However, it must be mentioned that majority of rural area in Kazakhstan is represented as depressive or vulnerable settlements.

To summarize obtained regression analysis, three hypotheses were accepted partially, and one rejected:

– Hypothesis 1- is supported partially. *There is impact of demographic transition factors in rural area (FR_R, DR_R) on the Demographic dividend factor (WA_Total).*

– Hypothesis 2- is supported partially. *There is impact of demographic transition factors in urban area (FR_U, DR_U) on the Demographic dividend factor (WA_Total).*

– Hypothesis 3 – is rejected . *There is impact of the number of women in working age (WWA_R, WWA_U) on the increase in the labor force (LF_Total).*

– Hypothesis 4 - is supported partially. *There is impact of the number of men in working age (MWA_R, MWA_U) on the increase in the labor force (LF_Total).*

Analysis

Demography has a great impact on economic growth and determines its further development. As it is a constantly changing environment, it is important to observe its development. Current analysis includes statistics of demographic transition factors, which include fertility and death rate, working age population in rural and urban areas among men and women, and labor force for the period 2007-2020 (Table 9).

Working age of the population for both women and men had insignificant changes over the period in urban and rural areas (Table 10). Interestingly, that the number of women urban population is greater than men urban population. In 2007, it was 58,78% and 56,84% respectively. Throughput the period the indicators for both genders increased gradually (59,51% for women and 57,52% for men), leaving men behind with insignificant difference. The situation was opposite in rural areas. Where the difference between women and men in 2007 made up 43,16% people in favor of men. By the end of the period, the number of the population for men in rural area decreased gradually (42,48%). At the same time, the population of working age among women fluctuated and by the end of the period, it decreased slightly (40,49%).

Table 9 - Demographic factors for 2007-2020

Year	Demographic transition factors		Demographic dividend factors	
	Fertility rate	Death rate	Working age population (15-64 y.o.)	Labor force
2007	321 963	9 858	10497310	8 274 942
2008	356 575	9 196	10635608	8533075
2009	356378	143238	10994551	8573098
2010	367942	146370	11171090	8721578
2011	372801	144944	11321458	8816456
2012	381005	142880	11424370	8899357
2013	387227	135950	11488271	8972219
2014	399309	132287	11553669	9045894
2015	398458	130811	11597179	9115881
2016	400694	131231	11638091	9064290
2017	390262	129009	11675181	9004270
2018	397799	130448	11720086	9 169 408
2019	402310	133128	11768164	9227219
2020	426824	161333	11823165	9196321

Note: compiled by the author based on Bureau of National Statistics (2022)

In the table 9 there is presented statistics on the fertility and death rates. In the beginning of the period, the difference between fertility was about two times more than death rate, 321963 and 158297 respectively. Fertility rate had gradual increase over the period for about 100 000. Death rate on the contrary decreased during the period and in 2019, there were 133128 deaths registered in the beginning of the year. With the burst out of COVID-19, the number of deaths increased and in 2020, the number of deaths increased and reached 161333. The overall difference between fertility and death rate increased (265491) almost two times more by the end of the period compared to the numbers in 2007.

The working age population included all populations in the age range 15-64. The working age population increased gradually over the period to about 1,1 mln. In 2020, the population of working age made up 11823165 people. The labor force was less than working age population in 2007 for about 2,2 mln. and made up 8274942. The number of the labor force increased insignificantly throughout the period to less than 1 mln. and made up 9196321 in 2020. Based on the provided statistics, in table 9, the number of working age population throughout the period was larger than the number of total labor force. By the end of the period, the difference increased slightly to about 2,5 mln. Further, the dynamics for the transaction factors, including working age population both for women and men and death and fertility rate in urban and rural areas are presented in table 10.

Changes in death and fertility rate in rural and urban areas had similar trends. Thus the death rate dropped by the end of the period for 13,47% and made up 37,7,1%, compared to 51.1% in 2007. Fertility rate in rural area decreased as well. But, the change was insignificant 41.5% in 2020 compared to 45,8% in 2007. On the contrary, the trends in urban area increased. Death rate increased by 13,46% and made up 62.29% in 2020. The fertility rate increased as well, but insignificantly to 4,33% and comprised 58,48% in 2020.

Data provided in the statistical analysis showed that overall change in all factors is insignificant. First, although there is a slight increase in both fertility and death rate, there is a significant difference between them. Second, there is a great difference between the number of people of working age and the number in the labor force, which also reflects that the difference could also be attributed to the unemployed population.

Despite the fact that the fertility rate and death rate provided insignificant change, the economic development failed to involve as much of the working age population by providing and creating jobs. Due to this, the difference in the labor force and the working age population has a great gap. In addition to that, the number of women working age population is overall larger than men. Nevertheless, their impact on the economic development is insignificant. Again, this could be explained that women make up a majority of the unemployed population. The employment rate for men during last decade fluctuated over and above 72%-73%, while for women over and above 60%-61%. This supports the results of the provided regression analysis that women have insignificant or no impact at all on the increase in the number of labor force. While men have significant contribution.

Table 10 - Demographic transition factors, 2007-2020

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Working age Population													
Women Working age Rural Population													
41,22%	45,54%	43,85%	43,74%	43,69%	43,63%	43,65%	43,67%	42,28%	42,07%	41,28%	41,12%	40,90%	40,49%
Women Working age Urban Population													
58,78%	54,46%	56,15%	56,26%	56,31%	56,37%	56,35%	56,33%	57,72%	57,93%	58,72%	58,88%	59,10%	59,51%
Men working age population													
Men Working age Rural Population													
43,16%	47,56%	45,61%	45,55%	45,54%	45,54%	45,58%	45,62%	44,17%	43,98%	43,21%	43,08%	42,91%	42,48%
Men Working age Urban Population													
56,84%	52,44%	54,39%	54,45%	54,46%	54,46%	54,42%	54,38%	55,83%	56,02%	56,79%	56,92%	57,09%	57,52%
Death rate													
Rural Death rate													
51,17%	51,20%	42,45%	42,49%	42,36%	41,95%	42,20%	41,19%	40,89%	40,56%	40,32%	39,31%	38,73%	37,71%
Urban Death rate													
48,83%	48,80%	57,55%	57,51%	57,64%	58,05%	57,80%	58,81%	59,11%	59,44%	59,68%	60,69%	61,27%	62,29%
Fertility rate													
Rural Fertility rate													
45,85%	44,80%	46,93%	47,57%	47,02%	45,88%	46,03%	44,20%	43,33%	42,67%	41,29%	40,92%	40,47%	41,52%
Urban Fertility rate													
54,15%	55,20%	53,07%	52,43%	52,98%	54,12%	53,97%	55,80%	56,67%	57,33%	58,71%	59,08%	59,53%	58,48%

Conclusions

Current research provided investigation of the relations and impact of the demographic transition factors and demographic dividend factors. There were developed four hypotheses, where hypothesis 3 was rejected. It stated that the women working age population have an impact on the total number of the labor force. The rest three hypotheses were accepted partially.

The results for the first hypothesis showed that the death rate in the rural area has a positive impact on the total number of the working population. The results for the second hypothesis showed that the fertility rate in an urban area has a positive impact on the total working age population. The results for the fourth hypothesis showed that the number of men of working age has a positive impact on the total number of the labor force.

Provided statistical analysis showed that there was insignificant change in the number of working age population and labor force. Thus, identified deliberate changes have an insignificant impact on economic growth. Therefore, the greatest importance makes up the study of the impact of indirect factors on economic development, as it can have long-term effect.

The results of the current study showed that opportunities provided through demographic change must change in line with public policy**.** The insignificant impact of demographic dividends (fertility and death rate) showed that an exceeding number of the population, even the working age population, must be well managed. This is especially relevant in developing countries. In the result of increasing number of population with poor socio-demographic policy, they fail to perform in the economic labor market. This gives rise to unemployment in particular among minorities, including women.

In terms of women there must be considered several factors. First, cultural habits in different countries have different impact on women participation in the labor market. Second, at this stage there must be also taken into account the quality of the labor force. Women make up half of the world population. Their career development, financial independence plays a crucial role by improving the economic structure of a country.

The government through well-established socio-demographic policies could manage demographic factors considered in this study. There are important components of such policies as education and healthcare. Governments must provide financial support and invest in the quality education and improve healthcare system. Improvement in the quality of life of the population, functions as another mechanism for death rates reduction, labor force quality improvement etc.

Major limitation of this research was lack of essential data on demographic development of the population of Kazakhstan. Therefore, used data covered only the period from 2007-2020. It is recommended that government could use experience of Europe Union for data collection. This includes not only provision of surveys, but also provision of social policies and programs for migrants in order to improve the quality of in-migration flow.

Future works can direct their focus to the study of the following issues. As it was revealed women, working age population has little or no influence on the total number of the labor force in Kazakhstan. In order to address the issue by the government productively, it is important to analyze the cultural differences between rural and urban women and provide recommendations on how to engage women in the labor market. Next, the composition of the labor force in Kazakhstan needs to be analyzed based on more factors. This includes data related to migration ratio. Moreover, migration could be analyses from different angles. First, the temporary migration of foreign labor force to Kazakhstan. Second, the number of immigrants by age, gender, and occupation. This will give a broader view of the perspective for developing the state policy on immigrants supporting.

Because studies can be limited because of the lack of data, the research could be provided in the context of a large city, for instance of the republic's significance.

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Information about the authors

Makpal S. Bekturganova – Ph.D., leading researcher, Institute of Economics CS MES RK, Kazakhstan, e-mail: maka_91@inbox.ru, ORCID ID: https://orcid.org/0000-0003-1708-8208

*** Gaukhar K. Kenzhegulova –** PhD student, researcher, Institute of Economics CS MES RK, Kazakhstan, e-mail: gaukhar.kenzhegulova@gmail.com, ORCID ID: https://orcid.org/ 0000-0002-1232-4788

Aruzhan K. Jussibaliyeva – Candidate of Economic Science, Associate Professor, «Scientific and Production Enterprise "Innovator"» LLP, Kazakhstan, e-mail: _aruzhan2011@.ru, ORCID ID: https://orcid.org/0000-0002-4841-4742

Saltanat S. Tleuberdiyeva – PhD, associate professor, L. N. Gumilyov Eurasian National university, Kazakhstan, e-mail: tleuberdieva@yandex.ru, ORCID ID: https://orcid.org/0000-0001-7841-257

Авторлар туралы мәліметтер

Бектұрғанова М.С. – PhD, жетекші ғылыми қызметкер- ҚР БҒМ ҒК Экономика институты, Қазақстан, e-mail: maka_91@inbox.ru, ORCID ID: https://orcid.org/0000-0003-1708-8208

*** Кенжегулова Г.К.** – Докторант, ғылыми қызметкер, ҚР БҒМ ҒК Экономика институты, Қазақстан, e-mail: gaukhar.kenzhegulova@gmail.com, ORCID ID: https://orcid.org/ 0000-0002-1232-4788

Джусибалиева А.К. – э.ғ.., қауымдастырылған профессор, Инноватор Ғылыми-өндірістік кәсіпорны, Қазақстан , Қазақстан, e-mail: _aruzhan2011@.ru, ORCID ID: https://orcid.org/0000-0002-4841-4742

Тлеубердиева С.С. – PhD, доцент, Л.Н. Гумилев атындағы Еуразия Ұлттық университеті, Қазақстан, e-mail: tleuberdieva@yandex.ru, ORCID ID: https://orcid.org/0000-0001-7841-257

Сведения об авторах

Бектурганова М. С. - PhD, в.н.с., Институт экономики КН МОН РК, Казахстан, e-mail: maka_91@inbox.ru, ORCID ID: https://orcid.org/0000-0003-1708-8208

*** Кенжегулова Г.К.** – докторант, н.с., Институт экономики КН МОН РК, Казахстан, e-mail: gaukhar.kenzhegulova@gmail.com, ORCID ID: https://orcid.org/ 0000-0002-1232-4788

Джусибалиева А.К. - к.э.н., ассоциированный профессор к.э.н., ассоциированный профессор , ТОО «-производственное «Инноватор»», Казахстан, e-mail: _aruzhan2011@.ru, ORCID ID: https://orcid.org/0000-0002-4841-4742

Тлеубердиева С.С. – PhD, доцент, Евразийский национальный университет Л.Н. Гумилева, Казахстан, e-mail: tleuberdieva@yandex.ru, ORCID ID: https://orcid.org/0000-0001-7841-257