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INTERACTIONS BETWEEN INCOME TAXATION AND EMPLOYMENT IN THE CONTEXT OF ECONOMIC DEVELOPMENT: THE CASE OF ARMENIA

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Abstract. *The purpose of this paper is to study trends in the labor market and employment dynamics in the context of the inclusive development of the economy of the Republic of Armenia, and to identify the nature and main features of the primary factors determining them, including: taxation of labor income, investments, and the impact of labor productivity. According to the results of this research, the impact of labor income taxation on employment in the Armenian labor market is restraining increases in labor productivity, contributes to the reduction of the percentage of the labor force involved in the economy, and increases unemployment. Conversely, the acceleration of growth rates of gross fixed capital formation has a positive impact on employment.*

Keywords: *employment; income tax; investment; labor productivity; development; labor market; additional taxation; cyclical gap.*
Reikšminiai žodžiai: *užimtumas; darbo mokestis; investicijos; darbo našumas; plėtra; darbo rinka; papildomi mokesčiai; ciklinis atotrūkis.*

Introduction

The relationship between personal income taxes and employment is of paramount importance in any modern economic order. These problems are even more urgent in the context of abrupt technological changes, when many traditional professions are rapidly becoming outdated and new professions, radically and qualitatively different from previous occupations, appear in the labor market. These circumstances present a serious challenge to both employees and employers within traditional professions, as well as to the state and

educational institutions. According to the World Economic Forum (2023, 6), in the next 5 years, the reduction of 83 million obsolete jobs and the creation of 69 million new jobs are expected in the global labor market. At the same time, job cuts will be more intense in medium and low-tech industries, and in the transport, finance, trade, and services sectors.

In the conditions of rapid technological changes and structural shifts in the labor market, it should be noted that the labor markets in post-Soviet countries are more complicated. This is because, despite liberal reforms, their institutional structures have not yet been formed and their regulation tools are not yet adapted to new technological and investment challenges. One of the main reasons for this situation is that the liberal reforms of the 1990s led to the disintegration of industrial systems and a severe reduction in investment, resulting in massive job losses and unemployment. From this point of view, the economy of the Republic of Armenia is not an exception. However, in the case of Armenia, the complex geopolitical situation in the region played an additional strongly negative role in the dynamics of the labor market, which, in turn, led to the large-scale emigration of unemployed people.

Nevertheless, currently, the most important factor affecting the structure of the dynamically developing labor market of Armenia and determining its development vector continues to be investment activity caused by technological changes in the economy. Current investment activity in the Armenian economy, especially in the context of digitalization and the introduction of new telecommunications technologies, is also a serious factor in increasing labor productivity (Margaryan, Terzyan and Grigoryan 2020, 8).

Tax policy systems in emerging markets are involved in the process of institutional formation and dynamic development. In this sense, state regulation of the labor market is not systemic in nature, and is often subordinated to the situational and short-term goals of fiscal policy, rather than solving issues of the progressive structural transformation of the labor market.

In addition, the challenge of ensuring the inclusiveness of tax policy arises from the requirement of establishing and continuously ensuring a reasonable balance between fairness and efficiency. The fact that income taxation policy should solve not only fiscal (short-term) but also structural (long-term) issues of labor market development stems from the need to increase the competitiveness of the economy.

From the viewpoint of the dynamics of income taxation in Armenia, the choice of income taxation regime remains an important issue. Until 2020, a progressive personal income taxation system was operating in Armenia; starting from 2020, a transition was made to the principle of flat-rate taxation. It is difficult to give an unequivocal answer as to what the effects of this system have been due to the short length of the period time after the reform, although some preliminary conclusions can be made even now.

This study discusses the dynamic effects of income tax collection on the labor market of Armenia, taking into account investment in the economy. In this context, it considers the effects of changes in labor productivity on labor market movements.

Literature review

The impact of taxes on labor market components is direct and decisive. Tax rates and tax collection regimes affect both labor supply and demand. This refers to both personal income and salary taxation systems. There are many publications in the economic literature regarding the effects of the tax system, and income (wage) taxes especially, on the supply of labor. These studies approach the formulation of the problem from very different points of view, and also record different results. The discourse among researchers on this issue has undergone an evolution as a response to dynamic changes in the labor market caused by both internal and external factors.

Lowering the tax burden and expanding the tax base creates serious grounds for stimulating investment and business activity. From this point of view, it is also necessary to mention the significance of taxation thresholds, because the lowering of the threshold is usually accompanied by the creation of new jobs, as well as the disclosure of shadow jobs and the expansion of employment (Jensen 2019, 33). Analysis of the relationship between tax policy changes and the labor market has led a number of researchers to the conclusion that, depending on the level of development, the reduction of income taxes in some countries leads to the reduction of gender disparities in employment. Accordingly, the participation of women in low-income groups in the labor market increases. This phenomenon has been observed in Italy in particular (Rubolino 2022, 47).

In the 1960s and 1990s, the dominant view in the literature was that raising taxes on labor income by increasing labor costs led to a reduction in labor demand among employers, while tax cuts, on the contrary, increased demand, which in turn favored households by increasing the labor supply (Baran and Industry Canada 1996). Later researchers (Arpaia and Carone 2004, 59) consider the interactions between the tax system and the labor market in a more targeted manner, and the effects of tax factors on changes in both labor supply and labor demand are discussed separately. As a result of their study, Arpaia and Carone concluded that if the increase in income taxes in the short term reduces the supply of labor to some extent, then in the long term the supply adapts to the changes made and the balance of the labor market is restored.

A number of researchers (Barany 2018, 21–22) have studied the impact of income tax changes on structural shifts in the labor market from the perspective that income taxation policy should be structured in such a way as to take into account the requirement to ensure an optimal balance between employment and self-employment. However, earlier research (Long 1982, 211–212) was dominated by the view that increases in income taxes push wage earners into self-employment. A number of researchers have discussed this issue from the perspective of the effects of technological changes and innovative entrepreneurship. In particular, Hansson (Hansson 2008, 17–18), based on micro-data from the Swedish labor market, noted that changes in both average and marginal tax rates have a minor impact on the business behavior of subjects, with a tendency towards innovative entrepreneurship,

while factors such as age, education, and marital status have more significant impact. Rapid technological changes over the last two decades have created new realities in terms of the effects of tax leverage on work and employment.

In order to ensure the effectiveness and inclusiveness of development-oriented tax policy, it is very important to correctly combine its functional and spatial aspects. From this point of view, the decentralization of tax policy is quite an interesting approach (Sakti et al. 2024, 65). Experience shows that the use of tax decentralization tools allows the equalization of differences between regions with different levels of development to be achieved.

Moreover, some researchers are of the opinion that an increase in taxes has a negative impact on economic growth and employment. There is a wide variety of views among researchers on this issue. Theorists especially emphasize the different manifestations of the behavioral response to tax changes by different groups of workers. According to a research group led by Emmanuel Saez (Saez, Slemrod and Giertz 2012, 42–43), estimates of the elasticity of taxable income regarding changes in the marginal tax rate in the long run are characterized by extremely difficult identification problems. According to Matthew Gudgeon and Simon Trunkle (2020, 30–31), there is some variability in the response to tax changes among firms as a whole, as well as among different groups of workers in those firms, so tax policymakers should consider these factors due to asymmetric responses when planning tax changes. Some researchers (Ivashko 2022, 154–155) pay attention to the fact that the reduction or increase of tax rates in a country sometimes cannot provide the desired results – that is, lead to an increase in both jobs and the state budget. This is because, especially in the case of small, open economies, labor outflow will occur (in the case of an increase in income taxes), while at the same time foreign direct investments will decrease alongside the reduction of the tax competitiveness of the country.

The viewpoint according to which investments are one of the most important factors affecting employment dynamics is widely observed in the economic literature. Especially in the conditions of a small, open economy, the investment component can be of decisive importance for the formation and maintenance of the natural level of unemployment. In particular, this issue has been comprehensively considered (Hoon, Margarita and Zoega 2019, 2–3) using the example of Singapore, where increases in investment in such countries reduce the unemployment rate both in the short term and in the long term.

In the economic literature, in the context of studying factors influencing the employment problem, the study of the interactions between labor productivity and real wages is the subject of wide discussion. Combining many theories and models that reflect the interaction of these indicators, a number of researchers have come to the conclusion that changes in both real wages and labor productivity have contradictory effects on employment levels. According to some researchers (Okudaira, Takizawa and Tsuri 2013, 26–27), institutional factors have a significant impact on the labor market, under the influence of which problems arise when adjusting labor supply and increasing labor productivity. According to Carl Magnus Bjuggren's (Bjuggren 2018, 146) observation, the more flexible and

adaptive the labor market, the higher labor productivity. The increase in labor productivity is mainly due to the increase in the efficiency of the use of production factors.

Research Methodology and Database

Within the framework of this research, the interactions between employment time, income tax,* the gross accumulation of fixed assets, and labor productivity were studied using the example of the economy of Armenia. The basis for the research was the time series included in the database of the Statistical Committee of the Republic of Armenia (ARMSTAT) and the Ministry of Finance of the Republic of Armenia. The quarter-on-quarter growth rates of these variables from the 4th quarter of 2006 to the 4th quarter of 2023 were considered as a statistical sample for modeling. During the modeling process, the sample was automatically adjusted from the 4th quarter of 2007 to the 3rd quarter of 2023.

The time series is stationary, and was also adjusted for seasonality. In the case of income tax, the historical trend of taxation growth was evaluated and the difference between the trend of taxation growth and its actual size was considered, representing a cyclical gap of income taxation in the model. This made it possible to identify the effect of additional taxation (cyclical gap), differing from the growth rate of trend taxation, on employment (see Figure 1).

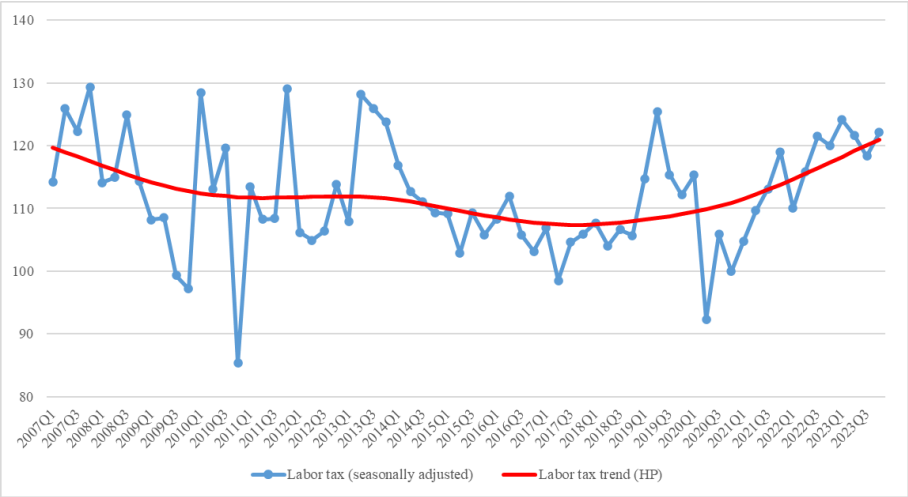

Figure 1. Dynamics of actual income tax collection and trend rates for 2007–2023

Source: ARMSTAT (n.d.); Ministry of Finance (n.d.).

* In order to more accurately approximate the tax burden of the employed, the amount of income tax paid from salary, social contributions, the income tax refund (which is provided to income tax payers for the purpose of servicing mortgage loan interest payments), tuition fee compensation, and the refunds received from dividends were considered as income tax in the research.

The trend growth of taxation and the cyclical gap were estimated using the Hodrick–Prescott filter. The model was estimated using the method of least squares, with the following specification:

$$Empl_t = \beta_0 + \beta_1 Inv_t + \beta_2 Lab\_Tax\_Cyc_t + \beta_3 Prod_t + \beta_4 Empl_{t-1} + \varepsilon_t$$

Where: $Empl_t$, $Lab\_Tax\_Cyc_t$, Inv_t, $Prod_t$ are the subsequent growth rates of employment, income tax cycle, gross fixed capital formation, and productivity in quarter t. $\overline{t = 2006q4{,}2023q4}$

Analysis and Results

Within the framework of the research, the long-term behavioral effects of the factors determining employment in the considered period under the conditions of the Armenian economy were studied.

In particular, the study revealed that during the 2006–2023 period, changes in income tax collection were somewhat comparable to changes in employment rate. The observed feature here was that during the crisis periods of the given sample (2007–2008, 2013–2014, 2019–2020), sharp jumps in income tax collection were accompanied by milder changes in employment growth (see Figure 2). At the same time, at the end of the considered period (2021–2023), there is a noticeable divergence of the curves, which should perhaps be explained by the disclosure of a significant number of shadow-economy jobs caused by political changes in Armenia representing large-scale labor income taxation.

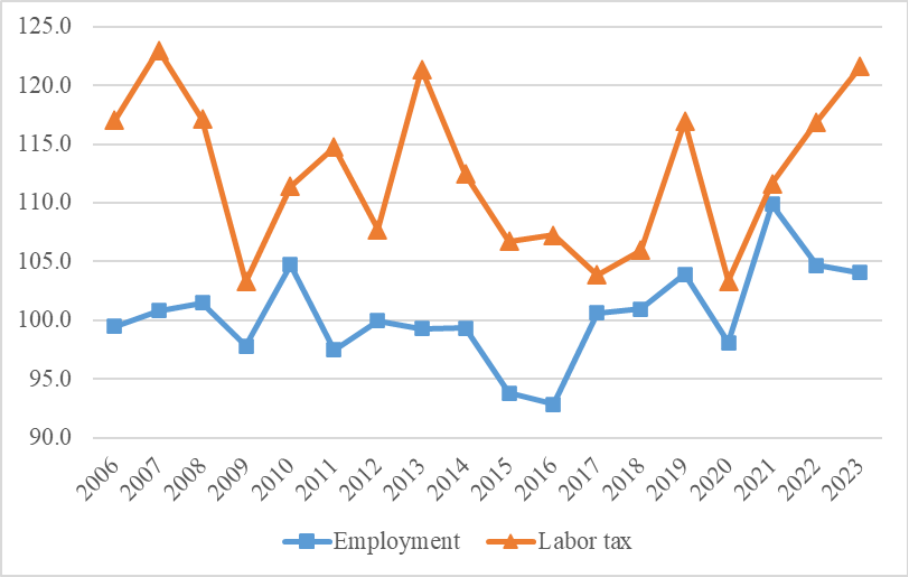

Figure 2. Dynamics of average annual growth rates of employment and income tax collection in Armenia, 2006–2023

Source: ARMSTAT (n.d.); Ministry of Finance (n.d.).

In Armenia, investment plays a significant role in the factors determining the dynamics of employment. In our model, the dynamics of gross fixed capital formation are included as an indicator describing investments. Such an approach allows for a more complete understanding of the dynamics of the effects of both domestic and foreign direct investment on employment. In the observed period, curves representing the dynamics of investments and employment had cyclical-oscillating trajectories. In certain periods (2007–2013, 2015–2021), the growth of these indicators had the same direction, and in other periods (2006–2007, 2014–2015, 2022–2023) the trajectories of these indicators diverged (see Figure 3). In the 2006–2009 period, employment was characterized by a relatively weak fluctuation, while the decline of investments was significant, up to around 40% (see Figure 3).

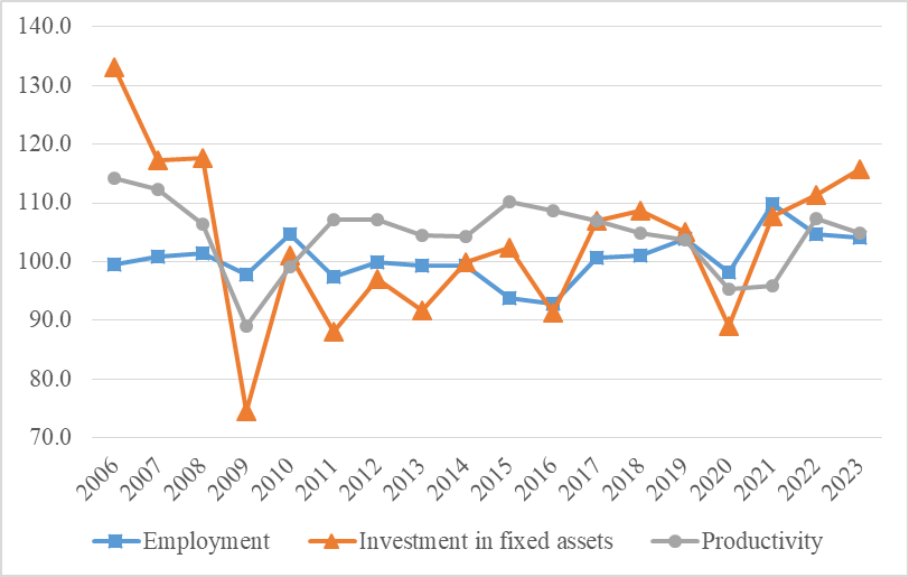

Figure 3. Dynamics of indicators of employment and gross fixed capital formation in Armenia, 2006–2023

Source: ARMSTAT (n.d.); Ministry of Finance (n.d.).

In 2006–2008, there was a sharp decline in labor productivity in Armenia by around 27%. Nevertheless, during this period, employment continued to experience a small increase, which was followed by a decline. Then (2009–2019), labor productivity and employment indicators diverged, after which the curves representing these indicators continued to experience comparable dynamics (see Figure 3).

Based on an econometric model built on the foundation of the chosen methodology, the impacts and interactions between the relevant indicators were assessed. The results can be summarized in the following model:

$$Empl_t = 89.24 + 0.22\, Inv_t - 0.12\, Lab\_Tax\_Cyc_{t-3} - 0.41\, Prod_t + 0.32 Empl_{t-1} + \varepsilon_t$$

The adjusted *R*-squared of the model is close to 1 (0.7), which indicates its high explanatory power. The coefficients of the explanatory variables are significant, as the Durbin–Watson statistic is close to 2, which proves the absence of autocorrelation (see Annex 1). The absence of heteroskedasticity in the model was also confirmed by the Breusch–Pagan–Godfrey and White tests.

The abovementioned criteria for the quality of the model provide grounds for forming certain conclusions.

- An increase in additional taxation of one percentage point above the historical income tax trend (cyclical gap) results in a 0.1 percentage point decline in employment after three quarters.
- An increase in additional taxation of one percentage point in gross fixed capital formation results in a 0.2 percentage point increase in employment.
- An increase in additional taxation of one percentage point in labor productivity results in a 0.4 percentage point decrease in employment.
- The impact of the inertial component of employment is 0.3.

Conclusions

1. From the study of the interactions between financial (income tax system) and real factors (investments and labor productivity) affecting the dynamics of employment in Armenia, it follows that the volume of income tax and the dynamics of collection significantly affect the behavior of labor market components, and these impacts are cyclical in nature. This is also due to institutional factors – in particular, the increase in income taxes play a significant restraining role in expanding the supply of jobs and creating new jobs. Increasing the volume of taxation leads to a decrease in the level of employment, with a certain lag (after three quarters).
2. According to the results of the study, increasing labor productivity also works towards reducing the employed labor force in Armenia. All other things being equal, an increase in labor productivity leads to a decrease in the level of employment, since the use of new, more productive technologies leads to an intensification of the process of replacing labor with capital.
3. The use of new technologies and technical means, machinery, and digital solutions exerts considerable pressure on the labor market, forcing some workers in certain sectors to requalify and change the nature of their work or become self-employed or unemployed. On the other hand, the implementation of investments on the new technological basis – that is, the accumulation of fixed capital – creates an additional demand for the preparation of a new labor force with an appropriate level of education, qualification, abilities, and skills, and for the implementation of programs of inclusion in the economy.
4. One of the interactions revealed within the framework of the research refers to the significance of the impact of the inertial component of employment. In Armenia, both the business and the labor market as a whole are significantly influenced by informal rules and routine factors. On the one hand, institutional factors play a role here. In particular, employment based on informal standards leads to a loss of efficiency (productivity) as a result of job occupation. On the other hand, rapid technological changes and innovations pose serious challenges to labor market

entities and force them to fit within the framework of the general trend of efficiency. However, this general trend experienced certain deviations in the post-COVID-19 period: at the beginning (2020), the increase in investments was accompanied by an increase in employment; later (2021–2023), the further increase in investments was combined with a decrease in employment.

5. According to the results of the model, the elasticity of the labor market or the inertial component of employment is 0.3, which implies the existence of a certain level of flexibility and adaptability of the labor market. On the other hand, this represents an impetus for both business and government to improve the tools of labor market regulation and adapt them to the requirements of technological changes. From this point of view, income tax policy is considered the most effective tool. However, in Armenia, fiscal problems were primarily solved through income tax policy for a long period of time, rather than problems of development and welfare growth.

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Andranik A. Margaryan

DARBO PAJAMŲ MOKESČIO IR UŽIMTUMO SĄVEIKA EKONOMIKOS PLĖTROS KONTEKSTE: ARMĖNIJOS ATVEJIS

Anotacija. Tyrimo tikslas – ištirti darbo rinkos ir užimtumo dinamikos tendencijas įtraukiosios Armėnijos Respublikos ekonomikos plėtros kontekste, nustatyti pagrindinių jas lemiančių veiksnių – darbo apmokestinimo, pajamų, investicijų ir darbo našumo poveikio – pobūdį ir pagrindinius bruožus. Remiantis tyrimo rezultatais galima teigti, kad, viena vertus, darbo pajamų apmokestinimo įtaka užimtumui Armėnijos darbo rinkoje ir jų tendencijų pokyčiai yra varžantys, kita vertus, darbo našumo didėjimas prisideda prie ekonomikoje dalyvaujančios darbo jėgos mažinimo ir nedarbo didėjimo. Ir atvirkščiai, bendrojo pagrindinio kapitalo formavimo augimo tempų spartėjimas teigiamai veikia užimtumą.

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Annex 1. Estimation output

Dependent Variable: EMPLOYMENT_SA
Method: Least Squares
Date: 04/03/24 Time: 15:53
Sample (adjusted): 2007Q4 2023Q3
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	*t*-statistic	Prob.
LABOR_TAX_SA_CYCLE(-3)	-0.120927	0.047049	-2.570232	0.0127
INVESTMENTS_SA	0.215277	0.033276	6.469452	0.0000
EMPLOYMENT_SA(-1)	0.319120	0.080318	3.973235	0.0002
PRODUCTIVITY_SA	-0.409694	0.060755	-6.743383	0.0000
C	89.23754	9.908734	9.005948	0.0000

***R*-squared**	0.691305	Mean dependent var	100.5379
Adjusted *R*-squared	0.670377	S.D. dependent var	5.209332
S.E. of regression	2.990824	Akaike info criterion	5.103879
Sum squared resid	527.7566	Schwarz criterion	5.272542
Log likelihood	-158.3241	Hannan–Quinn criterion	5.170324
***F*-statistic**	33.03184	Durbin–Watson stat	1.993451
Prob(*F*-statistic)	0.000000		