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HOW FAR FISCAL DOMINANCE MATTER FOR A DEVELOPING ECONOMY

Abstract. The growing public debt that intensifies with a frequency of economic crises grasps a high rating in the current economic debates. There is an urgent need for implementing an effective policy regime targeted at handling the public debt problem. The fiscal dominance policy, usually practiced to ensure strong recovery and growth, has a strict guideline for identifying a degree of fiscal expansion and monetary accommodation. Given a dilemma between growth and debt burden, the government should mobilize the most effective policy instrument targeted at the highest fiscal multiplier and does not cross a debt-to-GDP threshold ratio. Following an effective practice of fiscal management, this instrument is associated with public investment. The paper aims to assess the magnitude of the public investment multiplier by following a stable growth path limited by a prescribed debt limitation for a developing economy. To achieve the goal, we use an elaborated New Keynesian model, which besides an active fiscal and monetary stances, also includes a high share of non-Ricardian households, the separability in preferences between private and government consumption, a low level of public investment efficiency, and the substantiated degree of nominal and real rigidities. The obtained present value cumulative output multiplier for public investment grasps the point 2.0 in maximum over two years of the impulse response function. The multiplier effect proves to be high enough to offset temporary public debt growth and maintain a sustainable growth path over the long run. The verified measure of fiscal dominance contradicts an active monetary stance and, among other things, has to be counterbalanced by an appropriate efficiency and productivity of public investment and degree of price stickiness.

***Keywords*:** fiscal policy, monetary policy, fiscal-monetary interaction, fiscal dominance, fiscal multiplier, DSGE modeling.

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ОБҐРУНТУВАННЯ МЕЖІ ФІСКАЛЬНОГО ДОМІНУВАННЯ ДЛЯ ЕКОНОМІКИ, ЩО РОЗВИВАЄТЬСЯ

Анотація. Державний борг, зростання якого активізувалося в результаті частого перебігу економічних криз, займає рейтингові позиції в економічних дебатах. Існує нагальна потреба у проведенні ефективної економічної політики, націленої на розв'язання проблеми надмірного зростання державного боргу. Політика фіскального домінування, яка зазвичай використовується для сприяння відновленню та економічному зростанню, базується на принципах, що регламентують ступінь фіскальної експансії за умов пасивної монетарної акомодації. Зважаючи на існування дилеми між економічним зростанням і надмірним обсягом запозичень, урядовому менеджменту слід зосередитися на мобілізації найбільш ефективного інструменту фіскальної політики, результатом використання якого є досягнення найвищого мультиплікативного ефекту, не допускаючи перевищення граничного рівня боргу. Практика податково-бюджетного регулювання доводить, що таким інструментом є державні інвестиції. Мета написання статті — визначення величини фіскального мультиплікатора за інструментом державних інвестицій, продуктивне використання яких

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здатне забезпечити тривале економічне зростання без перевищення граничного рівня боргу на прикладі економіки, що розвивається. Для досягнення поставленої мети використано розроблену автором неокейнсіанську модель, вагомими ознаками якої, крім використання активної фіскальної і монетарної політики, є відносно висока питома вага нерікардівських домогосподарств, розмежування переваг між приватним і державним споживанням, низький рівень ефективності державних інвестицій та обґрунтовані рівні номінальних і реальних обмежень структурних компонентів. Отримане значення приведеної теперішньої вартості кумулятивного мультиплікатора державних інвестицій упродовж дворічної перспективи сягає в максимумі величини 2,0. Ефект мультиплікатора є достатньо високим, щоб компенсувати тимчасове зростання державного боргу, і забезпечує стійке економічне зростання в довготривалому періоді. Визначений рівень фіскального домінування контрастує з активною монетарною позицією і, серед іншого, має врівноважуватися належним рівнем ефективності і продуктивності державних інвестицій, а також обґрунтованим ступенем цінових обмежень.

***Ключові слова*:** фіскальна політика, монетарна політика, фіскально-монетарна взаємодія, фіскальне домінування, фіскальний мультиплікатор, DSGE-моделювання.

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Introduction. Fiscal-monetary interaction is still at the center of economic debates. The frequency of economic crises aggravates a debt problem, the level of which in the world economy in 2020 has come close to the GDP volume. COVID-19 pandemic put up new challenges in the face of civilization survival that has to be solved using all practical implements, including economic ones. In many ways, the growing public debt is an issue of fiscal dominance that comes to the fore when Government calls for preventive measures under the pressure of crisis destructive consequences. The interplay and contribution of fiscal and monetary steps are a great deal of economic value that must be taken into account in elaborating the anti-crisis strategy. In this regard, the point of fiscal dominance is an essential factor for clarifying the influential policy position, and this point has to be considered for validating the right decision.

The case for a developing economy takes a special place of fiscal dominance in the field of fiscal-monetary interaction. In terms of public debt level, the developing economy is rating far back from the developed world, but the fiscal space is subtle, giving less room for maneuver. In this regard, the value of fiscal dominance is a significant concern wherever the monetary stance is passive or active, giving a solid signal to anchor a debt-to-GDP ratio. Concerning the debt threshold ratio, the dominance has a strict guideline that identifies a degree of fiscal expansion. So, the given scenario directs to a dilemma between growth and debt burden. The problem is to ensure an available growth path and does not cross a debt-to-GDP threshold ratio. The government should mobilize the most effective policy instrument targeted at the highest fiscal multiplier. Following the effective practice of fiscal management, this instrument is associated with public investment.

The paper aims to assess the magnitude of the public investment multiplier by following a stable growth path limited by a prescribed debt limitation for a developing economy. The contribution of the paper is twofold. The available extent of government borrowing is outlined for maintaining a sustainable growth path given the active stance of fiscal and monetary policy. The measure of fiscal dominance contradicts an active monetary position and, among other things, has to be counterbalanced by an appropriate efficiency and productivity of public investment and degree of price stickiness.

The rest of the paper is organized as follows. Section 2 summarizes the findings of previous studies. Section 3 outlines the methodology. Section 4 illustrates results and discusses the sensitivity of the fiscal multiplier to several structural parameters. Section 5 concludes.

Literature review. Fiscal dominance is a well-known phenomenon that anticipates monetary accommodation for maintaining an active fiscal position in budget deficit financing. The imposing obligation of public debt growth has much to do with an active monetary stance. The scarce literature points out a negative spillover of extremely volatile inflation (Kumhof et al., 2010).

J. M. Keynes was among the first who advocated an active Government position and demonstrated effective fiscal measures to cope with the negative consequences of crises. The loose market forces prove to be inappropriate in the challenge of crises' destructive effects. The active government position envisages two fiscal-monetary forms of interplay that deal with passive and active monetary stances. The first scenario guarantees an accommodative monetary position that does not intervene in the money market regulation even if there is a threat to price stability. One of the negative spillovers of the open fiscal dominance is progressive public debt growth. To prevent the debt from uncontrollable growing, over and above the own Government's responsibility, the monetary policy has to be proactive, appointed at suppressing the pressure of fiscal expansion. Considering the last statement, we follow the second of the two possible scenarios with an active fiscal and monetary policy stance.

The well-known fiscal instruments deal with manipulating budget revenues and expenditures and the internal and external sources of budget deficit financing for implementing expansion measures. There is a difference between short-run and long-run results considering a fiscal multiplier value. If extended budget revenues and expenditures are financed using debt instruments, the short-run results are more applicable. However, the highest output multiplier can be recorded in a more extended period for public investment. According to empirical results, the output multipliers for public investment are smaller in developing economies than in developed ones (Kraay, 2012). The permanent and persistent positive effect of public investments on output in both the short and long run is confirmed in the study by Deleidi et al. (2020). Employing the Local Projections (VAR alternative) method and localizing 11 European countries for 1970—2016, the public investment multiplier reaches 1.0 on impact and 2.0 on the following cumulative rule over five years. Ilzetzki et al. (2013) encounter the government investment multiplier equals 0.57 on impact, and the highest cumulative one is 1.6 after five years.

The output multiplier for public investment proves to be close to unity and above in the real business cycle framework or New Keynesian models. The conducted study for Austria is demonstrated that the output multiplier for public investment is close to 1.0 on impact, and the cumulative 30 years one reaches 1.6 (Schuster, 2019). In terms of the general equilibrium framework, the most crucial parameters to justify the scope of a fiscal multiplier are the degree of rigidities, government spending complementarity for private consumption, and the interplay of monetary and fiscal policy (Leeper, 2017). The literature indicates that when private consumption and public expenditures exhibit Edgeworth complementarity, the households demonstrate a strong motivation to work and consume more that link with a higher fiscal multiplier (Fève et al., 2013, Coenen et al., 2013).

Public investment impact on growth varies in the term of considered period. The short-run impact is due to demand-side factors, and the long-run results depend on supply-side ones. The public investment expansion boosts demand through fiscal multiplier and the crowding-in of private investment. The supply-side factors associate with economic productivity. The given effects may be different because of several issues. They are the degree of economic slack and monetary accommodation, public investment efficiency, and how public investment is financed (IMF, 2014). It is crucial how an economy survives in crisis, as the Government usually employs fiscal stimulus packages. If they are productive, countercyclical fiscal measures add a few points to uplift the fiscal multiplier value. Monetary policy stance is also an essential element that influences the productivity of fiscal measures. In monetary accommodation, the aftereffects can be more substantial because a fixed interest rate does not prevent prices from moving up that accompanies fiscal expansion and seigniorage in particular (Davig and Leeper, 2011). So, in the view of fiscal-monetary interaction, the highest reported multiplier is in the case of active fiscal and passive monetary stance, in this time for the combination of fiscal and monetary expansions (Pyun and Dong-Eun, 2015).

The impact of public investments on growth mainly depends on two factors. The first is the output elasticity of public capital (the responsiveness of output to a change in the stock of public capital), the critical value of which is verified by Baxter and King (1993). The second factor, which plays a significant part in implementing fiscal policy, is public investment efficiency. Developing

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economies usually demonstrate low efficiency of public investment despite the vast infrastructure needs. That is because of undeveloped institutions, corruption, and improper administration (Berg et al., 2019). As verified by Shen et al. (2018), the output multiplier for public investment in developing economies does not exceed unity in the long run because of its low efficiency.

The issue of financing sources serves as a significant element in implementing fiscal policy. The necessity of diversification puts up a dilemma of making the right decision to choose between internal and external sources. The common practice is to keep a reasonable balance between the two. If depression is on the go, there is a rare occasion for an economy, especially for a developing one, to satisfy credit needs by realizing the planned amount of external borrowing. In this case, internal borrowing is becoming the main debt instrument to meet the budget deficit constraint.

There are two transmission channels for assessing fiscal multiplier in the view of fiscal-monetary interaction. The one deals with an interest rate that regulates the credit market. That is, loans become more expensive on increasing government demand for funds to cover a budget deficit. The increasing government demand crowds out private consumption dampening the fiscal multiplier effect. The second channel concerns the Ricardian equivalence theorem, which postulates indifference to fiscal stimulus, whereby Ricardian households expect rising taxation soon to compensate expansion policy and do not respond by consuming more.

Contrary to Ricardian, the non-Ricardian or liquidity constraint households behave as there is a good chance of becoming better-off and boosting consumption. The non-Ricardian households act as a factor that makes the fiscal multiplier to be higher. Galí et al. (2007) and Forni et al. (2009) confirm that non-Ricardian consumers' factor adds to the public spending multiplier in terms of real and nominal rigidities.

There is a tendency for pro-cyclical fiscal and countercyclical monetary policy usually implemented in developing economies. Vegh and Guillermo (2012) utilize the terms «fear of free falling» and «fear of capital inflows». The former corresponds to the monetary authority's unwillingness to lower interest rates in a recession facing the threat of uncontrolled currency depreciation. The latter term refers to the apprehension of pressing up interest rates and attracting unexpected capital inflows that contribute to currency appreciation when the economy goes on a solid recovery path.

The review of the fiscal dominance issue outlined vital points that have to be taken into account in carrying out the following empirical study. Summing up the fiscal multiplier determinants, the general intention is to justify the magnitude of the multiplier values proceeding from the above-composed robust analytical results. In this regard, the fiscal dominance integrity is estimated in the New Keynesian general equilibrium framework under the active fiscal and passive monetary stance in the term of output multiplier for public investment and accounted for specific assumptions native to a typical developing economy. These assumptions include a high share of non-Ricardian households, separability in preferences between private and government consumption, a low level of public investment efficiency, and the substantiated degree of nominal and real rigidities.

Methodology. In the case of a developing economy, the international capital mobility is mainly imperfect, and the fiscal multiplier can be almost as large as that in a closed economy (Sin, 2016). Therefore we deploy the New Keynesian model of a closed developing economy with money in the utility function, lump-sum taxes, and nominal and real rigidities. The most crucial assumptions that account for a persistently high fiscal multiplier are the high share of non-Ricardian households, separability in the preferences between private and government consumption, and low public investment efficiency.

Setting up the New Keynesian model structure, we follow the author's one to examine the golden rule of public finance under an active monetary stance (Shvets, 2020). The utility generating function of households includes real money balances, labor supply, private consumption in the current and lagged periods, and «utility-generating» or «welfare-enhancing» government purchases. We allow government spending to interact with consumption through preferences and directly affect its marginal utility.

All households separate into two fractions, intertemporal or Ricardian and «rule-of-thumb» or non-Ricardian. There are two kinds of firms that do their operations on wholesale and retail markets. The wholesale firms decide the price and the number of factor endowments using the Cobb-Douglas production function that exhibits constant returns to scale for the private production inputs of private capital and labor force and increasing returns to scale for the incorporated public capital.

The Government finances public investment, public consumption, and the repayment of interest along with the principal of the public debt. The financing sources are lump-sum taxes, one-period real bonds, and seigniorage — the revenue of money creation expressed by the difference of real money balances of the current and previous periods. We assume that investment efficiency is not perfect, which is actual for a developing economy. The Monetary authority becomes one of the decision-making agents. We employ alternative Taylor rule specification that, apart from the response to the inflation and output deviations from the steady-state, also accounts for the public debt-to-output ratio motion. The given policy setup anticipates a ruling disposition for both fiscal and monetary authority.

Woodford (2011) noted that the impact multiplier is meaningful only if the output goes up the same pathway as public spending. Given the last statement, we follow Mountford and Uhlig (2009) and calculate a present value cumulative multiplier:

$$\mu_t = \frac{\sum_{k=1}^{t} r_{ss}^{-k} \Delta Y_k}{\sum_{k=1}^{t} r_{ss}^{-k} \Delta GI_k},$$

where ΔY_k is the output deviation from its steady-state at time k, ΔGI_k is the public investment deviation from its steady-state at time k, and r_{ss} is the steady-state real interest rate.

The textbook edition of the fiscal multiplier usually records as $\Delta Y_k/\Delta G_0$, where the denominator relates to an initial change in government spending. The given edition is not appropriate if the change in government spending creates dynamics in both the output and the government spending.

Results and discussion. The impulse responses of the key macro variables to the public spending positive shock generated using the elaborated dynamic stochastic general equilibrium framework calibrated for a developing economy in a quarterly frequency. The timeline covers 40 quarters corresponding to 10 years. The impulse response results fix the present value of the cumulative output multiplier for public investment, which hits the highest point 2.0. The multiplier comes up to the cumulative peak within two years, and after that, the dynamics transform into a moderate slump trend. The given indicator outlines 90% of the peak in the first year and proceeds to rise but with much less pressure in the second year (*Fig. 1*).

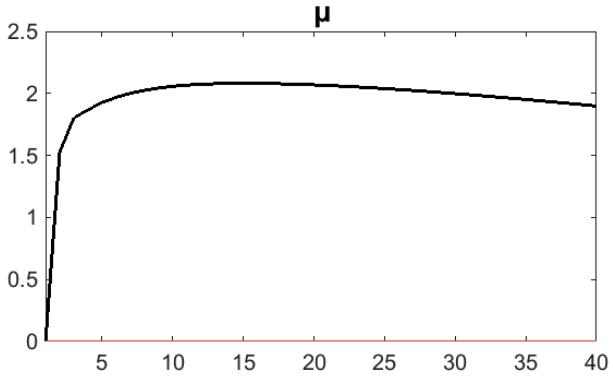

Fig. 1. **Output cumulative multiplier for public investment**

Source: author's calculation results.

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The relatively high peak value of the fiscal multiplier demonstrates a strong capacity of the economy to renovate sustained growth after the government spending shock. The preserve order of parameters in the launched New Keynesian framework for a closed developing economy motivates the committed fiscal dominance to re-establish the long growth path. Under the given setup of fiscal-monetary interplay, the productive public investment factor proves to be an effective instrument to stimulate leading dynamics for a considerable period.

The following sensitivity analysis demonstrates how much the obtained output multiplier for public investment depends on the most crucial structural parameters. These parameters are the output elasticity to public investment (public investment productivity), the efficiency of public investment, and a degree of price stickiness. For comparative analysis, all three characteristics localize in one plot by normalizing the magnitude of the indicators on the scale of their average value (*Fig. 2*).

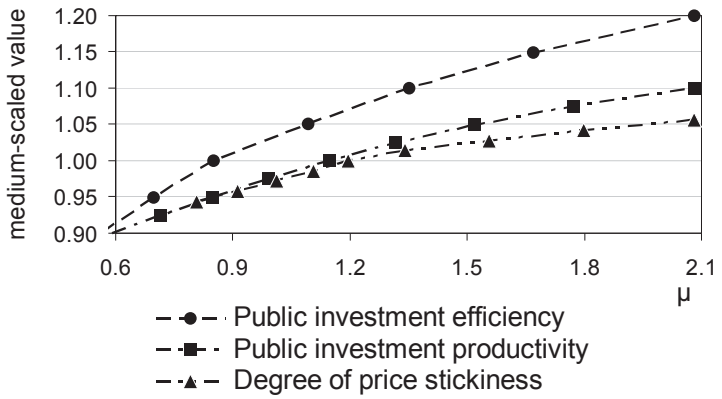

Fig. 2. **The multiplier sensitivity to significant structural parameters**

Source: author's calculation results.

The efficiency and productivity of public investment are the elements of the production function specification. Therefore, they are significant factors that generally shape the scope of the fiscal multiplier. The consolidating action of the given parameters is more remarkable in a low value of the fiscal multiplier, gradually reducing its intensity in the culmination. The developing economies usually have a relatively low efficiency but high productivity of public investment. That is why the multiplier sensitivity to efficiency is greater than the one for productivity (see *Fig. 2*). The examined factors are crucial in elaborating fiscal policy, and they have to be taking into account while deciding fiscal dominance.

The degree of price stickiness has a lower position in the presented rating of the fiscal multiplier factors. The parameter illustrates how the postponed reaction of the system to change prices in response to the government spending shock is a positive factor that adds to the fiscal multiplier. The overall reaction is rather complex to produce a consolidated impact generated by economic agents with a high capacity because of different interplay processes. In any case, the stickiness price factor is one of the three most important for strengthening the output multiplier for public investment under fiscal dominance.

Conclusion. There is an attempt in the current paper to verify fiscal dominance strategy by employing New Keynesian dynamic equilibrium framework and imposing individual conditions inherent to a typical developing economy. The common practice is to evolve a passive monetary stance for warranting maximum outcome and achieving prescribed goals in a summarizing period. One of the possible adverse outcomes of fiscal dominance is the risk of uncontrolled public debt growth. The general intention of the research is to eliminate the mentioned risk by ordering limits to monetary accommodation for dampening the public debt burden.

Besides an active monetary stance, the imposed individual conditions include several structure parameters. They are a high share of non-Ricardian households, the separability in

preferences between private and government consumption, a low level of public investment efficiency, and the substantiated degree of nominal and real rigidities. The obtained present value cumulative output multiplier for public investment grasps the point 2.0 in maximum over two years of the impulse response traceable route. The multiplier effect proves to be high enough to offset temporary public debt growth and maintain a sustainable growth path over the long run. The most significant factors contributing to the fiscal multiplier dynamics are productivity and efficiency of public investment and a degree of price stickiness.

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