THE DIRECT IMPACT OF
THE RECOVERY AND
RESILIENCE FACILITY
FUND IN MALTA

Article published in the Research Bulletin 2022
Soon after the onset of the COVID-19 pandemic, the European Commission launched a number of measures targeted to help EU governments in preventing mass unemployment, stimulate demand and restructure their economies by improving infrastructure and facilitate the transition to a green and digitalised economy. The flagship EU program in this respect is the NextGenerationEU recovery programme, of which the vast majority of funds were allocated to the Recovery and Resilience Facility (RRF) fund. Under the latter programme, Malta has been allocated almost €260 million which will be disbursed over a 6-year period. These funds will be utilised by Government to finance a number of infrastructural projects which are expected to boost Malta’s aggregate demand and productive capacity. In this light, this article uses a New Keynesian model with a detailed fiscal block to estimate the macroeconomic effects of the agreed recovery and resilience plan on the Maltese economy. Baseline results show that the effects of RRF-funded government investment projects are expected to lie between 0.3% and 0.6% of steady-state output with peak gains materialising between 2025 and 2027, depending on the assumed productivity of public capital and the length of the capital gestation period. Moreover, these projects are expected to translate to a fall in government debt-to-GDP ratio of between 0.2 percentage point and 0.5 percentage point.

Introduction

The repercussions of COVID-19 deeply altered the macroeconomic scenario. The health concerns surrounding the pandemic led to the introduction of various mitigation measures and to a fall in business and consumer confidence across the world, leading to a steep fall in economic activity. This prompted national governments to intervene through unprecedented macroeconomic packages in an effort to prevent mass unemployment, stimulate demand and limit extensive defaults of private firms so as to maintain financial stability. In addition to these national stabilisation measures, EU-wide policy has responded in an unprecedented way to provide financial support for public investment and structural reforms.

Soon after the onset of the pandemic in Europe, the European Commission launched the Coronavirus Response Investment Initiative (CRII) and a follow-up program labelled CRII+. These were intended to assist governments of EU member states in beefing up national healthcare systems and enacting economic support measures. Governments were also given greater room for manoeuvre through the temporary lifting of debt and deficit ceilings with the suspension of the Stability and Growth Pact. In terms of monetary policy, the European Central Bank (ECB) introduced an additional asset purchase program, the Pandemic Emergency Purchase Program (PEPP), together with loosening of banks’ capital requirements and other measures aimed to boost lending and economic activity within the bloc.

NextGenerationEU

The EU’s flagship economic recovery program, termed NextGenerationEU or NextGenEU (NGEU) was subsequently adopted by the European Council in December 2020, together with the 2021-2027 Multiannual Financial Framework. NGEU comprises a total envelope of €750 billion in 2018 prices, of which €672.5 billion are allocated to the RRF. The RRF makes available to member states a maximum of €360 billion in loans and €312.5 billion in the remainder of the funds were allocated to other (new and pre-existing) funding programs including React-EU, Horizon Europe and the Just Transition Funds (JTF).
grants (both in 2018 prices), allocated between member states in accordance with several socio-economic indicators.\(^2\) 70% of the grants available under RRF are to be paid out by the end of 2022, and allocated according to member states’ population, GDP per capita, and unemployment rates in the period 2015-2019. The allocation for the remaining 30%, which is to be disbursed in 2023, is to consider the path of real GDP in 2020 and 2021 instead of pre-pandemic unemployment rates, and has been revised in June 2022.

Broadly speaking, the RRF entails a two-pronged approach, whereby member states receive fiscal support for well-targeted productive government investment implemented together with structural reforms. This approach is aimed at exploiting the synergies between these two kinds of interventions. On the one hand, targeted fiscal interventions in terms of public investment are likely to boost demand in the short-run (thus reducing short-run output costs associated with structural reforms) while increasing productive capacity in the medium-to-long run. On the other hand, structural reforms can both facilitate the roll-out of public investment, thus increasing the absorption of EU grants, as well as strengthen the institutional framework. The latter should in turn improve the conditions for private investment complementing public investment, thus increasing further the productive capacity of member states.

In the months following the legal adoption of the RRF legislation in February 2021, countries were required to submit plans to the European Commission detailing their planned uses of the allocated funds, subject to the requirements of the Commission. Recovery plans submitted by member states were required to take into account challenges and country-specific recommendations for 2019 and 2020, identified and adopted by the European Council within the European Semester framework. Planned investments and reforms were to be consistent with one of six policy themes or pillars: (i) green transition; (ii) digital transformation; (iii) smart, sustainable and inclusive growth; (iv) social and territorial cohesion; (v) health and economic, social and institutional resilience, and (vi) policies for the next generation. Priority was given to the first two pillars, with plans required to allocate at least 37% of total expenditure to projects that support climate objectives, whereas at least a further 20% of funds were to be allocated to measures supporting the digital transition.

**Malta’s allocation under the RRF**

Malta’s recovery and resilience plan was adopted by the European Council in October 2021, with a subsequent update on overall allocation of funds enacted in June 2022. Under the updated package of close to 50 reforms and investments, subdivided into 138 milestones and targets to be completed by the end of 2026, Malta is to receive an allocation of €258.3 million in grants (in current prices) whilst no loans were requested.\(^3\) As required, the planned measures focus significantly on green and digital ‘twin transition’, with over half of the funds earmarked for investments targeting climate objectives and another 25.5% of funds supporting the digital transition. The plan also addresses structural deficiencies identified in recent country-specific recommendations. In fact, several measures and reforms are intended to tackle issues relating to educational attainment and skill gaps, together with investments to strengthen the health and justice systems and foster greater institutional resilience.\(^4\)

“This article seeks to estimate the direct macroeconomic effects of the agreed recovery and resilience plan on the Maltese economy. It is important to note that Malta will receive additional funds under NGEU programs other than the RRF. Specifically, Malta has been allocated €105 million (in 2018 prices) under React-EU, an additional €12 million (2018 prices) under the JTF, and €8.8 million (in current prices) under the European Agricultural Fund for Rural Development. Other funds may be obtained or utilised as needed by Maltese individuals and entities from funds such as Horizon Europe and InvestEU, which have been allocated increased funding under NGEU. In this paper, we consider solely the expected injection of investment spending relating to funds received under the RRF.\(^5\)\(^6\)\(^7\)\(^8\)

\(^2\) Specifically, the allocation is proportional to each member state’s population and unemployment rates, but inversely proportional to GDP per capita. For additional detail, refer to European Council (2021).

\(^3\) See [https://ec.europa.eu/info/sites/default/files/2022_06_30_update_maximum_financial_contribution_rff_grants.pdf](https://ec.europa.eu/info/sites/default/files/2022_06_30_update_maximum_financial_contribution_rff_grants.pdf)

Moreover, we only model the effects of aggregate grants allocated to Malta and do not estimate the impact of specific projects, nor do we seek to estimate the impact of reforms or other programs beyond those defined as public investment. Finally, we will only estimate the effects of investment projects that are directly financed through the RRF. Therefore, any additional investment made by government in the completion of these projects is not for the time being internalised in these estimates.

Moreover given Malta’s open economy and substantial trade with countries which will also be benefitting from the RRF, the indirect economic impact of the RRF on the Maltese economy may be even more substantial, given that the NGEU is expected to increase Euro area GDP between 0.7% (Bankowski et al., 2022) and 1.2% (Pfeiffer et al., 2021) when considering only increases in public investment. These figures are expected to be even larger, estimated in the region of 1.5%, when taking in consideration the positive effects of the structural reforms that are part of the NGEU package (Bankowski et al., 2022).

Model

Simulations are performed using a general equilibrium New Keynesian model for the Maltese economy (MEDSEA) with a detailed fiscal block (Rapa, 2017). The model is specifically designed to account for Malta’s characteristics. In particular, the production sector of the model allows to exactly pin down the import content of all aggregate demand components of Maltese output. In view of the very open nature of the Maltese economy, together with the considerable import content of its aggregate demand components, this feature is very important to correctly measure the impact of changes in government investment.

Public sector investment is assumed to enter both domestic and export-oriented sectors in Malta, in line with Elekdag and Muir (2022) and Baxter and King (1993):

\[ Y_t^i = A_t^i K_t^{1-\gamma} N_t^{\gamma} K_t^G \gamma g \quad \text{for } i \in [N, XD] \]  

(1)

Where sector \( i \) refers to domestic (\( N \)) and export-oriented (\( XD \)) industries respectively, \( A_t^i \), \( K_t^i \) and \( N_t^i \) are technology, private capital stock and labour hours used in sector \( i \), \( K_t^G \) is the public capital stock, while \( \gamma_t \) and \( (1 - \gamma_t) \) are the sector-specific pseudo shares of labour and capital inputs respectively. Finally, \( \gamma_g \) governs the productivity of public capital stock, which plays a crucial role in driving the results following public investment shocks.

The baseline model documented in Rapa (2017) has been modified in two ways for the purposes of this study. First, the original fiscal version of MEDSEA models public investment while allowing for both implementation and time-to-build delays. The timeline of the projects modelled in this study are mostly dictated by strict deadlines. Thus, it is realistic to assume that Government will keep in line with the projected outlays in view of the tight deadlines posed by the RRF program. However, even in case of no implementation delays, investment projects will only become operational and thus positively affect the productivity of the economy when finalised and not when the initial investment outlays begin. In order to allow exclusively for time-to-build delays and remove any implementation delays, we modify the capital accumulation function within MEDSEA as follows and assume that public capital moves according to this law of motion:

\[ K_{t+1}^G = (1 - \delta_g)K_t^G + I_t^G \]  

(2)

Where \( \delta_g \) denotes public sector capital stock depreciation rate, \( I_t^G \) denotes public sector investment and \( N \) denotes the periods required by any investment outlays decided in time period \( t \) to start affecting the supply side of the economy. For the baseline results, we assume no time-to-build delays and set \( N = 1 \) and thus assume, that any investment outlay becomes immediately productive. It is important to note that in the specification of the model used for this study we abstract completely from the concept of planned investment \( I_t^P \) which is used in Rapa (2017) to model implementation delays.

Secondly, we extend the model to allow for the fact that all of these investment projects are to be financed through external sources. This means that government investment outlays will not result in tax rises or expenditure cuts neither in the short or long run. Given the nature of these models, correctly capturing the financing requirements of any
government intervention is very important to correctly capture the macroeconomic effects of an increase in public investment.

The baseline calibration of the model utilised in this study is in line with Rapa (2017). With regards to the calibration of public sector capital stock productivity, baseline results are consistent with $\gamma_g$ set to 0.1, in line with reduced form estimates published in Rapa and Rapa (2019).

**Simulations**

To simulate the effects of RRF funds, we introduce to the model a sequence of shocks to government investment scaled to the planned path of fund disbursement as a proportion of nominal output. Specifically, funds disbursed are normalised to 2019 GDP, to abstract from any base effects related to the 2020 figure. Figures for projected investment per quarter, from which we obtain the quarterly shocks, are based on internal estimates of the quarterly breakdown of the projected RRF-financed investment per annum as obtained from the 2022 Draft Budgetary Plan and rescaled to take in consideration the lower maximum allocation as described in the update of the maximum financial contribution published by the European Commission in June 2022. The bulk of the investment spending is projected to take place between 2022 and 2024. As seen in Chart 1, after initial low levels of spending up to the end of 2021, investment will ramp up to a peak of 0.59% of 2019 GDP in 2024 before stabilising at just below 0.1% of 2019 output in 2025 and 2026.

**Results**

**Baseline**

Baseline results shown in Chart 2 are estimated under the standard calibration of MEDSEA and show the effects of the RRF fully-funded government investment in the next decade. The baseline scenario assumes there are no delays in the government utilisation of RRF funds and that government capital stock becomes immediately productive. Furthermore, we assume that the government does not seek to balance any changes in the government debt-to-GDP ratio that occur as a result of utilising RRF funds.

An increase in government investment is expected to lead to immediate yet subdued demand-side effects driven by the production of government investment goods and services. The increased demand for factors of production leads to some subdued and brief inflationary pressures. Due to the considerable import content of government investment production, the demand-side effects of RRF in Malta are bound to be smaller than those of larger and relatively more closed economy member states.

“This leads to an increase in overall economic activity in Malta, which peaks at slightly less than 0.6% between 2024 and 2026”

However, as government capital stock starts to accumulate, these effects start to be outweighed by significant supply-side effects. Indeed, a higher government capital stock helps increase productivity of private factors of production, reducing marginal costs and helping to crowd-in other private factors of production. The reduction in economy-wide marginal costs transmits itself to lower overall prices, boosting Malta’s competitiveness and significantly raising exports. This effect is clear in the trajectory of the trade balance. After a period of negative balance with imports outstripping exports due to an increase in imported investment goods, the trade balance turns positive.
by 2025 and remains into positive territory till the end of the simulation horizon. This leads to an increase in overall economic activity in Malta, which peaks at slightly less than 0.6% between 2024 and 2026.

Despite an increase in hours worked and in net real wages, private consumption first dips briefly, driven by general equilibrium effects. The expected increase in government investment boosts expectations of private investment productivity, driving agents to immediately start increasing private investment, thus leading to a brief reduction in consumption as households save to finance the increased investment flows. However, strong income effects help to boost consumption considerably from 2024 onwards, reaching a peak increase of almost 0.2% in 2026. The Government balance improves as the fiscal stimulus increases aggregate demand and consequently tax receipts, leading to a reduction in the government debt-to-GDP ratio. This implies that the implementation of RRF investment grants is likely to lead to an increase in fiscal space that can be used either to consolidate the Maltese Government's fiscal position or else to further stimulate the economy should the need arise.

Sensitivity to productivity and time-to-build assumptions

The above results assume that government investment does not experience any delay between the announcement made by government and implementation of such investment and that public capital becomes immediately operational and can contribute to the supply side of the economy. Even when assuming no implementation delays, time-to-build assumptions could have important implications on the dynamics of prices, private consumption and therefore output (Leeper et al., 2009).
To better study this factor, in these sensitivity simulations we assume that it can take up to 6 quarters since the start of the investment outlays for a project to become productive, and therefore set \( N \) in equation 2 to 6. Results in Chart 3 show that under time-to-build delays (red broken line) there are similar peak effects, especially when looking at overall output, private consumption and exports. Despite similar peak effects, results show that the dynamics of the main variables of interest are considerably altered. Most importantly, the period of increased inflation which characterised the first six months since the start of the RRF programme under the baseline calibration, is significantly lengthened also reaching a higher peak in the process, taking a toll on exports and in turn partly outweighing the positive demand-side effects of government investment on output. Indeed, the negative impact on the trade balance is exacerbated as the impact on exports turns marginally negative for the first three years of the simulation. The delays associated with time-to-build assumptions have a knock-on effect on delaying the increase in the productivity of private factors of production, translating into significantly lower increases in private investment and to a less extent, hours worked. These developments in macro variables translate into a less pronounced improvement in government finances, with the drop in the public debt to GDP ratio standing at half of that measured under the baseline assumptions by 2025.

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Chart 3
MACROECONOMIC EFFECTS OF RRF INVESTMENT – SENSITIVITY
(per cent of steady state GDP)

Source: Author’s estimates.
Shocks to government investment are very sensitive to the efficiency parameter $\gamma^G$. Lower productivity of public capital stock implies that the positive supply-side effects of government investment remain fairly muted. This implies that there is a lower reduction in economy-wide marginal costs and consequently limited crowding-in effects on private factors of production.

To assess this we set $\gamma^G$ to 0.05, half the value found in the baseline scenario and equal to less than half of the average estimate found in a meta-study by Bom and Lighart (2014). Results in black dotted lines show that the peak impact of the RRF on the Maltese economy is considerably lower when allowing for the possibility of a lower level of public capital stock productivity. Under no building and implementation delays, the peak effect of the RRF programme on the Maltese economy rests at around 0.3%. Under such a scenario there is also a short-lived fall in exports as the demand for factors of production used to produce investment goods crowds out resources utilised by the private sector, temporarily leading to an increase in inflation and a marginal and short-lived fall in international competitiveness. Due to lower falls in economy-wide marginal costs in the medium-to-long run when compared to the baseline results, the increases in hours worked, in net real wages and in private investment are considerably more muted under this scenario. Limited productivity effects also lead to subdued positive wealth effects, which barely outweigh the negative distortionary effects associated with government expenditure, leading to an almost unchanged profile for private consumption in the medium run. Despite the fact that in this case public investment is fully financed through external sources, thus having no impact on the current or future borrowing requirements of Government investment decisions, it still has important distortionary effects. Indeed, the Government’s decision to increase its investment outlays leads to a less than optimal allocation of factors of production, as resources are diverted from the production in the private sector to the production of government investment goods. In case of low public capital productivity, this effect almost completely outweighs the falls in marginal costs and gains in productivity brought about by the accumulation of public capital stock. In this respect, this result shows the importance of adequately targeting government investment decisions and to ensure that the projects undertaken are truly able to boost private sector productivity in the medium run, even when these public projects are almost fully financed through EU funds. Adding time-to-build delays to a low productivity scenario (solid green lines), produces an even more prolonged and pronounced drop in economic activity in the short-run, driven by a short-lived overheating of the economy which hurts international competitiveness. The magnitude and timing of the peak effects of RRF-financed public investment under a low productivity with time-to-build assumptions are in line with the other scenarios considered.

Conclusion

Our baseline estimates indicate that the direct effects of the RRF-funded government investment projects on Maltese economic activity lie at around 0.6% of steady-state output. These peak output gains are expected to materialise between 2025 and 2027, depending on any capital gestation delays that might affect the timing of the supply-side effects associated with public investment. Under the assumption of a lower productivity of public capital, the peak figure is expected to fall to less than 0.3%. These figures are expected to translate to a fall in government debt between 0.2 and 0.6 percentage points when compared to GDP by 2030.

At the current juncture, this study abstracts from several factors. First, apart from the funds falling under the RRF, the NGEU package also foresees the introduction of a number of structural reforms, which are expected to lead to improvements in economic output in the long-run. Moreover, in view of the coordinated nature of the RRF programme, Malta’s national output is expected to be further boosted by the effects of international spillovers, which are likely to propagate through the trade and financial channels. This effect is expected to take place since the increase in public spending in the rest of the EU should create import demand which drives up output in the trading partners’ economies, including that of Malta. Moreover, the drop in public debt ratio could also drive down government spreads providing further relief to public finances.

Our study does not model neither the structural reforms which are part of the NGEU deal nor the spillover effects. With regards to the former, at the moment it is still early to reliably calibrate the extent to which these structural reforms and the exact timing when these will be taking place. With regards to the spillover effects, apart from the potential issues in calibrating such shocks in a small open economy model with no multi-country elements (such as MEDSEA), one would need to carefully assess the extent to which such spillover effects would really positively
impact the Maltese economy. This point is especially important given the nature of investment that is being proposed under the NGEU funding scheme. Given the nature of Maltese exports, an increase in our trading partners’ public spending in green initiatives, infrastructure and digitisation might not necessarily directly translate in an increase in the demand for Maltese output.

References


