Routledge
Taylor & Francis Group

Review of Political Economy

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/crpe20

Are EU Policies Effective to Tackle the Covid-19 Crisis? The Case of Italy

Rosa Canelli, Giuseppe Fontana, Riccardo Realfonzo & Marco Veronese Passarella

To cite this article: Rosa Canelli, Giuseppe Fontana, Riccardo Realfonzo & Marco Veronese Passarella (2021) Are EU Policies Effective to Tackle the Covid-19 Crisis? The Case of Italy, Review of Political Economy, 33:3, 432-461, DOI: 10.1080/09538259.2021.1876477

To link to this article: https://doi.org/10.1080/09538259.2021.1876477

Published online: 09 Mar 2021.

REVIEW OF POLITICAL ECONOMY
2021, VOL. 33, NO. 3, 432–461
https://doi.org/10.1080/09538259.2021.1876477

Routledge
Taylor & Francis Group

Are EU Policies Effective to Tackle the Covid-19 Crisis? The Case of Italy

Rosa Canelli[a], Giuseppe Fontana[a,b], Riccardo Realfonzo[a] and Marco Veronese Passarella[b]

[a]Università del Sannio, Benevento, Italy; [b]Leeds University Business School (LUBS), University of Leeds, Leeds, UK

ABSTRACT

In response to the economic crisis unleashed by the Covid-19 pandemic, the EU authorities have launched extraordinary fiscal and monetary measures in support of member states. The impact of these measures is of great significance for Italy, the EU third-largest economy, which as a result of the pandemic has suffered a dramatic decline in GDP, and a further rise in the government debt to GDP ratio. Building on a stock-flow consistent, structural macro-econometric model, this paper shows that the currently planned EU measures are insufficient to boost the recovery of the Italian economy, and to ensure the sustainability of its government debt. The paper also assesses two potential alternative policies. A fiscal consolidation (i.e. austerity) policy would exacerbate the decline in GDP and further deteriorate the government debt to GDP ratio. By contrast, a money-financed fiscal stimulus policy could lead the Italian economy on a path of sustainable growth, with positive outcomes for employment and government finances.

ARTICLE HISTORY
Received 1 May 2020
Accepted 13 January 2021

KEYWORDS
Covid-19; Next Generation EU; government debt sustainability; Italy; SFC model; money-financed fiscal policy

JEL CLASSIFICATION
E17; 52; E62; E63; H68

1. Introduction

The Covid-19 pandemic has had a strongly negative impact on both aggregate supply and aggregate demand, triggering an unprecedented economic shock during 2020. The national lockdowns have blocked the production of goods and services, and disrupted value chains. The shrinking revenue of businesses and the lost income of many households have lowered aggregate demand. Overall, the contractions in GDP and employment recorded in 2020 are generally greater than those of the 2007–2008 Global Financial Crisis (GFC). In the European Union (EU), in contrast to what happened during the GFC, the monetary and fiscal authorities have tried to limit the negative economic impact of the pandemic via expansionary policies. The European Central Bank (ECB) has kept the discount rate low, and it has launched the Pandemic Emergency Purchase Programme (PEPP), namely a programme of buying private and public sector securities on the secondary market, without taking the population and GDP of member

CONTACT Giuseppe Fontana G.Fontana@leeds.ac.uk Leeds University Business School (LUBS), University of Leeds, Leeds, LS2 9JT, UK; Università del Sannio, Benevento, 82100, Italy

states (capital key) strictly into account. This programme is to be completed by mid-2022, and it is estimated to be worth 1850 billion euros. The European Council has approved a package of fiscal interventions to re-launch investments, including the so-called Next Generation EU (NGEU), which includes loans and grants to member states that are worthy 360 billion euros and 390 billion euros, respectively. The NGEU will be financed through the issue of European securities during the 2021–2027 budget period. The other main extraordinary EU measures are the 'European instrument for temporary Support to mitigate Unemployment Risks in an Emergency' (SURE), the 'European Stability Mechanism (ESM) Crisis Support' and the European Investment Bank (EIB) instruments to support European companies. Furthermore, since the Stability and Growth Pact and other institutional budget constraints have been suspended, individual European governments have adopted extraordinary expansionary fiscal measures to support businesses and households, in the form of higher government spending (on current and capital accounts), and lower taxes. This has led to a rise in the government debt/GDP ratio in all the EU countries.

The obvious question is whether these EU policies would be effective to tackle the Covid-19 crisis. Several European countries have very little policy space due to their high levels of government debt, and they cannot obtain funding directly from the ECB.[1] The impact of the planned EU policies is of great significance for Italy, and for the stability of the Euro Area as a whole, due to the significant role of the Italian economy in the EU.

Italy is the third-largest economy in the EU. It is also the main EU economy that had not yet recovered the pre-GFC level of GDP at the end of 2019. Moreover, even before the Covid-19 crisis, Italy had the highest government debt/GDP ratio in the EU after Greece. In 2020, the Italian government launched additional fiscal measures to contain the negative impact of the Covid-19 crisis. As a result, the budget deficit rose of circa 108.2 billion euros (Ufficio Parlamentare di Bilancio 2020). With a contraction of real GDP estimated to be 9 percent, this is going to increase the debt/GDP ratio of about 25 points, bringing it close to 160 percent. During 2020, the main benefit that Italy gained from EU policies was the PEPP, that affected the costs of refinancing the Italian government debt, which at the end of December 2020 still recorded a spread of 110 points over the ten-year German bonds. As for the future, according to the *Nota di Aggiornamento del Documento di Economia e Finanza* (NADEF), the NGEU funds available for Italy during the entire 2021–2027 period are expected to be approximately 127.6 billion euros in loans, and 77.4 billion euros in grants (Italian Government 2020; 2021). The use of the ESM and EIB measures by Italy is uncertain. On the contrary, the European Council has already approved 27.4 billion euros of loans to Italy as part of the SURE measures. Italy has received 16.5 billion euros in 2020, and the remaining 10.9 billion euros will be assigned before the end of 2022.

The main goal of this paper is to assess the impact on the Italian economy of the EU policies to tackle the Covid-19 crisis, with particular reference to their effects on GDP,

[1]The EU fiscal and monetary measures to tackle the Covid-19 crisis have generated a wide debate in Europe, with particular reference to the questions of how to fund the fiscal measures, the role of ECB, the size and composition of the NGEU, the stability of the Euro Area, and the sustainability of the government debt (see, among others, Baldwin and Weder di Mauro 2020; Blanchard and Pisani-Ferry 2020; Brancaccio et al. 2020; De Grauwe 2020; Draghi 2020; European Commission 2020; Gali 2020; Münchau 2020). The Bank of Italy (2020), Cassa Depositi e Prestiti (2020), and Italian Government (2020) discuss the effects of the NGEU on the Italian economy. Papadimitriou, Zezza, and Zezza (2020a) explores the potential post-Covid-19 path of the Italian economy.

employment and government finances. The paper also assesses the potential impact on the Italian economy of two alternative set of scenarios, namely an austerity (i.e. fiscal consolidation) scenario, and four expansionary scenarios, including two money-financed fiscal stimulus policies. For this purpose, the paper will use a medium-scale, stock-flow consistent (SFC), structural macroeconometric model. Six macro-sectors are considered: firms, banks (including financial intermediaries), the central bank (ECB), the government, households (including non-profit institutions serving households) and the foreign sector. The model has been coded and calibrated using the Bank of Italy (BoI) software framework *Bimets* (Luciani and Stok 2020). Model coefficients are all estimated from Eurostat data. Annual time series over 1995–2019 have been used, both for the balance sheet entries, and the transactions-flow variables.

2. Literature Review

During the last decade, the international literature has shown a growing interest in adopting the SFC approach to macroeconomics (Nikiforos and Zezza 2017), recognising the advantages of the model developed by Godley (1999) and Godley and Lavoie (2007) in providing realistic projections, compared e.g. to the standard DSGE theoretical framework used by central banks and policymakers around the world (Bezemer 2010; Hendry and Muellbauer 2018). The GFC has highlighted that DSGE-type models have performed poorly (Blanchard 2018), mainly due to the lack of a monetary framework, and of a proper examination of the role of banks, leaving out the interactions between the real and financial sectors (Caiani et al. 2016; Fontana and Passarella 2018, 2020). SFC models address those missing links, by explicitly modelling in a discrete dynamic framework the monetary and financial sides of the economic system, and their interactions with the real economy.

Although the roots of SFC models could be traced back in time (e.g. Copeland 1949; Tobin 1982), the publication of the seminal book by Godley and Lavoie (2007) paved the way for the flourishing of the SFC literature. At first, most of the new studies were theoretical, extending Godley and Cripps (1983), and especially Godley and Lavoie (2007). Recently, there has been an increasing interest in developing empirical SFC models. This evolution has been affected by the success of SFC models in forecasting the GFC (e.g. Chancellor 2010; Wolf 2012; Schlefer 2013; Bezemer 2010).

The empirical SFC literature can be broadly classified into two main groups, namely a 'data-to-theory' (DTT) approach and a 'theory-to-data' (TTD) approach, respectively. The first approach characterises the early empirical SFC contributions, including the work of Godley at the Cambridge Economic Policy Group (CEPG) in the 1970s (e.g. Godley and Cripps 1974, 1983; Cripps and Godley 1976, 1978). It is grounded on the data of the economy under investigation, namely sectoral balance sheets and flow of funds statistics. Today the approach is associated with SFC analyses made at the Levy Economics Institute in USA.

A common aspect of DTT models or so-called 'Godley-CEPG-Levy' models is the consolidation of the private sector. This leads to the representation of the economy as a 3-sectors (private, public and foreign) system. There are two main effects outcomes of this choice. First, DTT models represent private domestic demand as an aggregate function of the stock of real financial wealth, and real disposable income. This implies

creating a stable stock-flow norm toward which the economy converges in the long run, though this norm can be relaxed by introducing additional variables linked to credit, and net capital gains. Secondly, since in DTT models the financial sector is not considered explicitly, the Tobinesque principles that determine the portfolio choice of economic agents (Tobin 1969) play a negligible role. Therefore, the macroeconomic consequences of shifts in financial portfolios are often overlooked in these models. Moreover, in order to overcome the Lucas critique (Lucas 1976), parameters in DTT models are estimated using econometric procedures that lead to stable values over the given simulation period. DTT models are renowned for projecting turning points, as in Godley (1999) predicting the 2001 recession.

DTT models have often been used to study national economies, including the UK economy (e.g. Cripps and Godley 1976), Denmark (e.g. Godley and Zezza 1992), and United States (e.g. Godley 1999; Zezza 2009; Godley et al. 2007). In this regards, a benchmark contribution of this approach is Zezza (2009), which also represents the building block for the Levy Institute Model for Greece (LIMG) (Papadimitriou, Nikiforos, and Zezza 2013a, 2013b). These two models are routinely used at the Levy Institute for examining the medium-run prospects and simulating macroeconomic scenarios for the US and Greek economies (e.g. Papadimitriou, Nikiforos, and Zezza 2020b; Papadimitriou et al. 2020c, respectively). More recently, Pierros (2020) has extended the LIMG model, introducing distributional features and labour market institutions, which allow for an analysis of an internal devaluation policy. Finally, Valdecantos (2020) has recently set up an econometrically estimated quarterly model for assessing different economic policy combinations aimed at bringing more stable and sustainable dynamics for the Argentinian economy.

The second approach to empirical SFC models characterises many recent SFC contributions. In this case, modellers start from theoretical models, define the set of equilibrium conditions and behavioural equations, and then they estimate the model coefficients based on observed time series data. TTD models are arguably more suitable for cross-policy comparisons. This approach also features other methodological innovations compared with DTT models. For instance, Kinsella and Aliti (2012) propose a model for the analysis of the Irish economy, calibrated to fit the available time series. Given the lack of some statistical information for flows and stocks, the so-called 'Limerick model' adopts calibration methods for determining coefficients values, which are not estimated as fixed parameters and they may actually change over time (Godin, Tiou-Tagba Aliti, and Kinsella 2012; Caverzasi and Godin 2015). The model represents a useful tool for evaluating alternative scenarios implemented in the past, rather than for forecasts and future projections. A similar parameter calibration approach has been used by Miess and Schmelzer (2016a, 2016b) for the Austrian economy, providing a detailed description and disaggregation of the financial sector.

On the wave of the increasing popularity gained by SFC models, the Bank of England has recently developed a sophisticated TTD SFC model of the UK economy for performing scenario analysis over the medium term (Burgess et al. 2016). Compared to similar SFC models, the model provides a much more detailed decomposition of the economy, made of six sectors (households, nonfinancial corporations, government, banks, insurance companies and pension funds, and the foreign sector), with a complex variety of financial assets. Parameters are defined using econometric

estimations, calibration, and coefficient restrictions. Similarly, the Department for Production Development (DEDP), supervised by the Minister of Production of Argentina (MIPROD), has developed a SFC model for the analysis of Argentinian economy (Michelena et al. 2017), lately enhanced by Guaita and Michelena (2019). There are also TTD models for other South-American countries, including Colombia (Escobar-Espinoza 2016), small economies like Moldova (Le Heron and Yol 2019), and Iceland (Raza et al. 2019). There is also an empirical analysis of the South Africa economy using a combination of DSGE and SFC framework (Makrelov et al. 2018).

Finally, empirical SFC models for the Italian economy have been developed using either the TTD approach or the DTT approach. For instance, drawing upon the work released by the Bank of England, Veronese Passarella (2019) presents a medium-scale, TTD SFC model, which is applied to the case of Italy in order to provide comparative scenario analyses and forecasts, based on different shocks to government spending. Model coefficients are estimated (or calibrated) using Eurostat annual data. By contrast, Zezza and Zezza (2020) adopt a DTT approach. They build a quarterly SFC structural model of the Italian economy, stressing the importance of analysing the sectoral balance sheets and flow of funds of the country in order to capture the specific institutional features of the country. The model is an evolution of Zezza (2018). It is set up by integrating data released by ISTAT and BoI, which allows decomposing the economy with a certain level of detail. Using a pragmatic strategy for the estimation of the behavioural equations, Zezza and Zezza (2020) provide a tool for evaluating different policy scenarios.[2] The model has been recently used for evaluating the latest OECD (2020a, 2020b) projections for Italy, and the economic impact of Covid-19 on the main GDP aggregates (Papadimitriou, Zezza, and Zezza 2020a).

3. Method

3.1. Basic Features of the Model

This paper uses an empirical, TTD SFC macroeconomic model to assess and compare the impact of the Covid-19 shock to the Italian economy, together with different potential policy responses. The Italian economy is split into six macroeconomic sectors:

(a) non-financial firms;
(b) households (including non-profit firms serving households);
(c) banks (including non-bank financial intermediaries);
(d) the government sector;
(e) the central bank;
(f) the foreign sector.

[2]In terms of macroeconomic modelling, it is worth noting that most of the models used for policy analysis and forecasting of the Italian economy are grounded on the DSGE methodology, which gives a prominent role to the supply side of the economy, with aggregate demand having only a short-run role (see, for a critical assessment of this feature, Arestis and Sawyer 2009; Fontana 2010). For instance, this is the case, among others, of the Bank of Italy Quarterly Model (Bulligan et al. 2017; Visco and Bodo 1986), the Italian Treasury Econometric Model (Cicinelli et al. 2008), and the Italian Multi-Country Model (Angelini, D'Agostino, and McAdam 2006).

The balance sheet (BS) and the transactions-flow matrix (TFM) of the six macroeconomic sectors are displayed in Tables A1 and A2 in the Appendix. They are both based on *Eurostat* annual data over the 1995–2019 period. Since the original matrices were too 'dense', they have been reclassified in such a way to keep the model to a manageable size, while avoiding loss of generality. Tables 1 and 2 below are the model counterparts of Table A1 and A2. The two key simplifying assumptions are that: a) households and banks are the main holders of financial assets issued by domestic non-financial firms; 2) domestic non-financial firms produce the whole output (on the behalf of other sectors). Other assumptions are discussed below. Tables 1 and 2 provide the set of identities that the model is built upon. Model equations are presented in the next subsections, sector by sector.

3.2. Non-Financial Firms

The first equation of the model is the national income identity, which defines national GDP, i.e. Y, as follows:

$$Y = C + I + G + NX \tag{1}$$

Table 1. Model modified balance sheet, Italy, 2018, annual series (assets net of liabilities), current prices, million euros.

Eurostat code	Firms S11	Banks [S12]	Central Bank (CB) S121	Government S13	Households S14–S15	Foreign sector S2	Row total
Cash (and reserves)		12,233	−174,654		162,421		0
Deposits		−1,227,640			1,227,640		0
Securities		1,217,281	540,585	−2,051,539	293,673		0
Loans	−1,000,726	1,709,455			−708,729		0
Shares	−1,075,618				1,075,618		0
Other securities*				−329,255		329,255	0
Other net fin. assets	167,551	−1,160,836	−335,423	267,854	1,227,247	−166,393	0
Net financial wealth (column total)	−1,908,793	550,493	30,508	−2,112,940	3,277,870	162,862	0

Notes: * excess government debt stock over 'Securities' as calculated by the Bank of Italy; light grey shaded areas show new and/or reclassified series.

Table 2. Model modified transactions-flow matrix, Italy, 2018, annual series, current prices, million euros.

Eurostat code	Firms S11 Current	Firms S11 Capital	Banks and CB S12	Government S13	Households S14–S15	Foreign sector S2	Row total
Consumption	1,065,460				−1,065,460		0
Investment	323,625	−323,625					0
Gov. consumption*	334,836			−334,836			0
Export	555,491					−555,491	0
Import	−513,245					513,245	0
Memo: GDP	[1,766,168]						–
Taxes				492,078	−492,078		0
Transfers				−140,890	140,890		0
Wages	−664,722				664,722		0
Interest payments	−2205		47,324	−61,749	16,630		0
Dividends**	−666,262				666,262		0
Bank profit*			−55,474		55,474		0
Other payments	−29,068		22,455	94,896	−156,461	10,042	0
Change in net wealth	138,421		14,305	49,499	−170,021	−32,204	0

Notes: * new entries created by disaggregating series; ** including other firms' distributed profit; light grey shaded areas show new and/or reclassified series.

where C is consumption, I is investment (gross capital formation), G is government consumption and NX net export.

The investment by non-financial firms in fixed capital is based on the utilisation rate of plants, which is proxied by the effective capital to real output ratio. The target stock of capital K^T (in real terms) is:

$$K^T = \kappa \cdot \frac{Y}{p} \tag{2}$$

where κ is the target capital to real output ratio, which is likened to an AR(1) process, and p is the price level.

Gross investment depends on the gap between the target and the current stock of capital, K^T and K respectively, and the average risk premium on Italian government securities, μ_b:

$$\log(I) = \gamma_0 + \gamma_1 \cdot \frac{K^T \cdot p}{K} + \gamma_2 \cdot \mu_b \tag{3}$$

where γ_0, γ_1 and γ_2 are estimated coefficients, r_b is the average interest rate on Italian government debt and r^* is the risk-free interest rate, namely the ECB policy rate. According to equation (3), an increase in the cost of government debt r_b vis-à-vis the risk-free interest rate r^*, namely the ECB policy rate, raises the risk profile of the portfolio of banks. As a result, banks are ceteris paribus less willing to finance gross investment.

The nominal capital stock is:

$$K = (1 - \delta) \cdot L(K) + I \tag{4}$$

where $L(\cdot)$ is used for one-period lagged variables, and δ is the depreciation rate of capital.

Total profit of non-financial firms F_f is the residual distributive variable:

$$F_f = Y - INT_f - WB \tag{5}$$

where INT_f is the amount of interests paid by firms on bank loans, and WB is the total wage bill.

The interest payments on bank loans to firms INT_f are defined as follows:

$$INT_f = r_l \cdot L_f \tag{6}$$

where L_f is the stock of loans to firms, and r_l is the interest rate on bank loans to firms. The latter is estimated from data as a function of the risk-free interest rate or policy rate, r^*, and the average risk premium on Italian government securities, μ_b:

$$r_l = \rho_0 + \rho_1 \cdot r^* + \rho_2 \cdot \mu_b \tag{7}$$

where ρ_0, ρ_1 and ρ_2 are estimated coefficients.

Undistributed or retained profits of firms F_{fu} are a share of total profit:

$$F_{fu} = \theta \cdot F_f \tag{8}$$

where θ is the retention rate.

Dividends and other distributed profits of firms are:

$$F_{fd} = (1 - \theta) \cdot F_f \tag{9}$$

The change in bank loans at the end of each period equals the portion of non-internally-funded investment:

$$L_f = L(L_f) + I - F_{fu} - \Delta E_s \tag{10}$$

where E_s is the nominal stock of shares issued by the firms. It adjusts to the demand for shares, E_h:

$$E_s = E_h \tag{11}$$

3.3. Households

The disposable income of households is defined as:

$$YD = WB - T + TR + INT_h + F_{fd} + F_b + OP_h \tag{12}$$

where T is total taxes, TR is government transfers (including unemployment benefits), INT_h is interest payments received by the households, F_b are the profits of banks, and OP_h is a composite entry including other net payments to households.[3]

Consumption depends on disposable income YD (including both labour and non-labour incomes) of private agents, and the accumulated stock of net wealth of households V_h^n:

$$\log(C) = \alpha_1 \cdot \log(WB) + \alpha_2 \cdot \log(YD - WB) + \alpha_3 \cdot \log(V_h^n) \tag{13}$$

where propensities to consume are expected to be such that $0 < \alpha_3 < \alpha_2 < \alpha_1 < 1$.[4]

The net wealth of households increases as the latter save:

$$V_h^n = V_{h,-1}^n + YD - C \tag{14}$$

The gross wealth is defined as net wealth and loans to households:

$$V_h = V_h^n + L_h \tag{15}$$

Mortgages and other loans to households can be simply defined as a percentage of disposable income:

$$L_h = L(L_h) + \phi \cdot YD \tag{16}$$

where $\phi \geq 0$ is a non-negative coefficients.

Total interests paid by households to banks and financial intermediaries are:

$$INT_h = r_{lh} \cdot L_h \tag{17}$$

[3] OP_h is a bu. ffer stock variable, namely an exogenous variable that allows the model to match the data of the TFM with the BS figures.

[4] Since residuals are expected to be correlated with each other (autocorrelation), autoregressive errors of type AR(1) are assumed for both consumption and investment.

where r_{lh} is the interest rate on loans to households. It is estimated as a linear function of the risk-free interest rate or policy rate, r^*, and the risk premium on government securities, μ_b:

$$r_{lh} = \sigma_0 + \sigma_1 \cdot r^* + \sigma_2 \cdot \mu_b \tag{18}$$

Finally, the wage share to total national income Ω is as follows:

$$\Omega = \frac{WB}{Y} \tag{19}$$

3.4. Commercial Banks and Financial Intermediaries

Commercial banks provide loans on demand to both firms L_f and households L_h:

$$L_s = L_f + L_h \tag{20}$$

Similarly, deposit accounts are opened on demand:

$$M_s = M_h \tag{21}$$

For the sake of simplicity, all other production costs in additional to WB are assumed away. Interest payments on advances, deposits and reserves are also assumed to be negligible. Bank profits are:

$$F_b = INT_f + INT_h + INT_g \cdot \iota_b \tag{22}$$

where INT_g are total interest payments made by the government sector to both households and banks, and ι_b is the share of net interest payments received by banks. The latter is simply defined by the share of the effective government securities held by banks, B_b, to total government securities B_s:

$$\iota_b = \frac{B_b}{B_s} \tag{23}$$

The notional stock of government securities held by the banks B_b^N can be derived from their consolidated balance-sheet, as the excess of deposits over loans L_s and reserves, H_{bd}:

$$B_b^N = M_s - L_s - H_{bd} \tag{24}$$

However, the actual or effective stock of government securities in the balance sheets of banks depends on the purchases by households, B_h, and the central bank, B_{cb}:

$$B_b = B_s - B_{cb} - B_h \tag{25}$$

In other words, holdings by banks are regarded as the residual variable of the government security market.[5] The difference $B_b^N - B_b$ is held as a stock of extra reserves net of advances from the central bank. Since for simplicity the interest rate on both advances and reserves is set to zero, they can be both ignored hereafter.

[5]It is worthy to highlight that unlike other SFC models, the model of this paper assumes that the central bank does not act as a lender of last resort. Banks and other financial intermediaries hold the share of government securities that were not purchased by households and/or the central bank.

3.5. The Government Sector

The total tax revenue of the government is as follows:

$$T = \tau_1 \cdot WB + \tau_2 \cdot (YD - WB) + \tau_3 \cdot V_h \tag{26}$$

where τ_1 is the average tax rate on labour incomes, τ_2 is the average tax rate on non-labour incomes, and τ_3 is the tax rate on wealth.

The total amount of transfers and benefits is defined as a function of past transfers and the unemployment level, which is defined as $(N_s - N_d)$:

$$TR = \tau_4 \cdot L(TR) + \tau_5 \cdot (N_s - N_d) \tag{27}$$

where τ_0 and τ_5 are coefficients estimated from data.

Government spending for current consumption is defined as an AR(1) process:

$$G = \sigma \cdot L(G) + €_L + €_G \tag{28}$$

where additional government spending out of annual loans $€_L$ and grants $€_G$ obtained from supranational funds and mechanisms is also considered.

The simplest definition of government deficit, *DEF*, in each period is:

$$DEF_1 = G + TR + INT_g - T - F_{cb} - (€_G - €_P) \tag{29}$$

where F_{cb} is the seigniorage income that returns to the Italian government, through the BoI, and $€_P$ are annual contributions made by the Italian government to supranational funds. The last part of equation (29) implies that grant-funded spending exceeding annual payments is not included in the calculation of the government deficit.

Net interest payments on government debt are:

$$INT_g = r_b \cdot D \tag{30}$$

where D is the stock of debt (see equation 44).

The change in the stock of debt, meaning the annual deficit, is:

$$DEF_2 = DEF_1 + \delta_A \tag{31}$$

where δ_A accounts for other entries not included in DEF_1, and it is calculated in such a way to make the government deficit consistent with its *Eurostat* data counterpart.[6]

Total issues of government securities are:

$$B_s = B_{s,-1} + DEF_2 \tag{32}$$

which include bills, bonds, other government securities and loans obtained from supranational institutions.

[6]It is simply re-defined as an AR(1) process in out-of-sample predictions.

3.6. Portfolio Decisions

The financial holdings of households are defined using Tobin's portfolio equations. The total stock of shares issued by firms and demanded by households is:

$$E_h = \lambda_{10} \cdot V_h + \lambda_{11} \cdot V_h \cdot r_b + \lambda_{12} \cdot V_h \cdot r_m + \lambda_{13} \cdot YD + \lambda_{14} \cdot V_h \cdot r_e \tag{33}$$

where r_m and r_e are the interest rate on deposits and the return rate on equity or on shares issued by firms, respectively. λ_{1j} (with: $j = 0, 1, 2, 3, 4$) are estimated coefficients, such that: $\lambda_{11} + \lambda_{13} + \lambda_{14} = 1$.

The nominal stock of government securities demanded by households is also modelled using a portfolio equation:

$$B_h = \lambda_{20} \cdot V_h + \lambda_{21} \cdot V_h \cdot r_b + \lambda_{22} \cdot V_h \cdot r_m + \lambda_{23} \cdot YD + \lambda_{24} \cdot V_h \cdot r_e \tag{34}$$

where λ_{2j} (with: $j = 0, 1, 2, 3, 4$) are estimated coefficients, such that: $\lambda_{21} + \lambda_{23} + \lambda_{24} = 1$.

The demanded stock of banknotes, H_h, (cash) depends on household consumption plans:

$$H_h = \lambda_c \cdot C \tag{35}$$

Finally, deposits held by households are defined as the residual buffer stock:

$$M_h = V_h - H_h - B_h - E_h - OA_h \tag{36}$$

Equation (36) shows that the gross wealth of household is made up of cash, government securities, shares, deposits and other net financial assets, OA_h. The latter are simply defined as a share of total wealth:

$$OA_h = \lambda_o \cdot V_h \tag{37}$$

3.7. The Central Bank (ECB)

The central bank buys a percentage of government securities from banks and financial intermediaries on the secondary market:

$$B_{cb} = \lambda_b \cdot B_s \tag{38}$$

The supply of cash H_s is derived from the balance-sheet identity (assets ≡ liabilities):

$$H_s = B_{cb} + A_s + H_{bs} - OA_{cb} \tag{39}$$

where A_s is advances from central bank, and OA_{cb} are other net financial assets, which are defined as a percentage of holdings of securities:

$$OA_{cb} = \lambda_{cb} \cdot B_{cb}$$

This entry includes extra reserves net of advances.

If interest payments on advances and reserves are assumed away, the central bank's profit, F_{cb}, is:

$$F_{cb} = r_b \cdot B_{cb} \tag{40}$$

The reserve requirement for commercial banks is calculated on collected deposits:

$$H_{bd} = \rho \cdot M_{-1} \tag{41}$$

The related equilibrium condition is:

$$H_{bs} = H_{bd} \tag{42}$$

Notice that the total stock of government debt includes also other financial liabilities, OFS_s:

$$D = B_s + OFS_s \tag{43}$$

For the sake of simplicity, these are assumed to be held by the foreign sector (see Table 1).

3.8. The Foreign Sector

The foreign sector is made up of six equations. Gross import, IM, is defined as a (log-linear) function of domestic income, plus an autonomous component:

$$\log(IM) = \mu_0 + \mu_1 \cdot \log(Y) \tag{44}$$

where μ_0 and μ_1 are estimated coefficients.

Gross export, X, is a function of foreign income, labour productivity, pr, and the wage rate:

$$\log(X) = \varepsilon_0 + \varepsilon_1 \cdot \log(YF) + \varepsilon_1 \cdot \log(pr) - \varepsilon_1 \cdot \log(w) \tag{45}$$

where ε_0, ε_1 and ε_2 are estimated coefficients.

Foreign income, YF, grows according to an exogenous rate:

$$YF = L(YF) \cdot (1 + g_{yF}) \tag{46}$$

where g_{yF} is the marginal growth rate of the world economy.

Net export is:

$$NX = X - IM \tag{47}$$

3.9. Interest Rates

There are eight interest or return rates in the model. The return rate on equity and shares is fully endogenous. It is the ratio of distributed profits to the total stock of shares:

$$r_e = \frac{F_{fd}}{E_h} \tag{48}$$

The central bank purchases government securities on the secondary market, using a 'best bid' rule.[7] The average return rate on government securities depends positively on the policy rate and the debt to GDP ratio, and negatively on the share of debt held by the

[7]In other words, it is implicitly assumed that new government securities are all purchased by the private sector at the beginning of each period, and partly sold to the central bank within the same period.

central bank:

$$r_b = \rho_{b0} + \rho_{b1} \cdot r^* + \rho_{b2} \cdot \frac{D}{Y} + \rho_{b3} \cdot \frac{B_{cb}}{B_s} \tag{49}$$

where ρ_{b1} is the sensitivity of the average return rate to the policy rate, ρ_{b2} is the sensitivity to the government debt to GDP ratio, ρ_{b3} is the sensitivity to central bank purchases, and ρ_{b0} captures other influences.

The average risk premium on government securities is:

$$\mu_b = r_b - r^* \tag{50}$$

This variable contributes to define the interest rate paid by private firms and households on bank loans. An increase in the cost of government debt vis-à-vis the risk-free interest rate raises the risk profile of the portfolio of banks (e.g. due to the redenomination or convertibility risk, i.e. the risk of a country to leave the euro; Cesaratto 2013, 2015; Gros 2013, 2015, 2018). As a result, banks are ceteris paribus less willing to finance gross investment. Therefore, the average risk premium on government securities μ_b affects the interest on bank loans paid by firms and households.

3.10. The Labour Market

The wage bill paid by the firms is:

$$WB = w \cdot N_d \tag{51}$$

where w is the wage rate per employee and N_d is the employment level.

The value added per employee is defined as a positive function of the market size (Smith-Kaldor-Verdoorn effect):

$$pr = \eta_0 + \eta_1 \cdot L(Y) \tag{52}$$

where η_0 and η_1 are (positive) estimated coefficients.

Potential employment, N_d^*, is defined by the ratio of real GDP to the product per employee:

$$N_d^* = \frac{Y}{p/pr}$$

However, actual employment is less volatile, due to the flexibility in working hours. It depends on both the size of the economy and the wage rate:

$$N_d = \nu_0 + \nu_1 \cdot Y + \nu_2 \cdot w \tag{53}$$

The total available labour force, N_s tends to grow at an exogenous rate g_l, but it adjusts endogenously to the demand for labour:

$$N_s = L(N_s) \cdot (1 + g_l) + \nu_3 \cdot [N_d - L(N_s)] \tag{54}$$

where ν_3 is an estimated coefficient defining the adjustment of labour supply to labour demand.

The percentage change in the wage rate, g_w, is a function of the current and past unemployment rate, *un*, and inflation:

$$g_w = \omega_1 \cdot un + \omega_2 \cdot L(un) + \omega_3 \cdot \dot{p} \tag{55}$$

where $\dot{p} = \Delta p/p$ is the annual percentage change in the price level, whereas ω_1, ω_2 and ω_3 are estimated coefficients.

The average nominal wage rate is:

$$w = w_{-1} \cdot (1 + g_w) \tag{56}$$

Finally, the unemployment rate is:

$$un = 1 - \frac{N_d}{N_s} \tag{57}$$

3.11. The Price Level

The change in the price level (i.e. the GDP deflator) depends on the change in the wage rate and labour productivity:

$$p = L(p) + \pi_0 + \pi_1 \cdot \Delta w + \pi_2 \cdot \Delta pr \tag{58}$$

where π_0, π_1 and π_2 are estimated coefficients. Equation (58) is the last equation of the model.

3.12. Consistency Check

The redundant equation of the model is the equality between demand and supply of cash:

$$H_d = H_s$$

This equality condition is not included in the simulations. It is simply used to check the consistency of the model over time.

3.13. Model Estimation and Validation

The model has been coded and calibrated using *Bimets*, which is an *R* package developed by research staff at the BoI (Luciani and Stok 2020).[8] Model coefficients are all estimated from *Eurostat* data. Annual time series over the 1995–2019 period are used, both for the BS and TFM. Behavioural equations have been estimated in (log) levels.[9] The model fits reasonably well with past time series. Figure A1 in the Appendix displays (unadjusted) in-sample predictions for, respectively, nominal GDP, employment level, the average interest rate on government securities, and the GDP deflator. The model baseline was

[8]The *R* code and the dataset can be provided upon request.

[9]The rationale is three-fold. First, spurious correlations are not a major issue for this paper, since the structural relations defined by the behavioural equations are derived from theory, not mined from data. Reverse causality, though, and therefore biased parameter estimates cannot be excluded. Second, there is only a small number of available observations. Third, the use of the level specification allows preserving possible cointegrations across variables, and additional information incorporated in the data.

also validated through auto- and cross-correlation analyses for the GDP and its main components, notably consumption, investment and import.

4. Findings

The direct impact of the Covid-19 crisis on the Italian economy is uncertain. Similarly, many aspects of the EU policy responses, including the *NGEU*, are uncertain, and actually still under discussion. Table 3 below summarises the assumptions made in this paper about both aspects, namely the immediate, direct economic effects of the Covid-19 crisis on the Italian economy, as well as the gradual, indirect policy response to tackle those effects. The former are labelled economic factors, while the latter are labelled policy factors.

Table 3 shows that economic factors and policy factors are modelled as a set of exogenous shocks to the past observed dynamics of the main macroeconomics variables representing the Italian economy. Economic and policy factors create then the model baseline for the 2020–2025 period. The size of each shock is derived from the forecasts of the leading international institutions, and of the Italian government itself. The economic factors measure the direct effects of the Covid-19 crisis in terms of changes to the labour force, product per employee, and the GDP of trading partners. The policy factors indicate the gradual response to the Covid-19 crisis in terms of newly introduced fiscal measures by the Italian government and EU authorities, and the exceptional monetary measures adopted by the ECB. The model accounts for the reduction in tax revenue and the additional spending made by the Italian government in 2020. Table 3 shows the asset purchase programme by the ECB (PEPP), and its effects, namely a mark-down on the average interest rate on Italian government bonds. Finally, other policy factors are the flow of EU loans and grants (NGEU and SURE) to Italy, and the related additional contributions that Italy must pay to the EU budget in order to fund the creation of the NGEU grants recovery instrument. NGEU and SURE loans and NGEU grants are the EU funds available to Italy over the 2021–2025 period. They are distributed each year on the basis of the allocation criteria set by the Italian government (Italian Government 2020; see Table 3). While these EU loans and grants have the same positive effects in terms of available funds for government expenditure, there are important differences between them in terms of government debt. Loans cause a corresponding equal increase in Italian government debt, whereas grants only generates an increase of Italian government debt in proportion to the percentage of the Italian contribution to EU budget.[10] Putting things slightly different, NGEU loans are EU loans backed by a corresponding equal amount of Italian government bonds. Like SURE loans, they are expected to be fully repaid back. NGEU grants are EU monetary assistance to Italy. They are not backed by a corresponding equal amount of Italian government bonds, and they are not expected to be

[10]According to the Financial Reports published by the European Commission, during the 2014–2020 period, the Italian contribution to the EU annual budget was on average 12.1 percent. Applying the same share to the NGEU grants recovery fund, and excluding an immediate increase in the amount of resource ceiling, Italy will contribute by approximately 12.1 percent to the establishment of the 390 billion fund, receiving approximately 20 percent of the total grants. This means that Italy will make a contribution of 47.19 billion to the NGEU grants recovery fund, and it will receive from it circa 77.4 billion. Therefore, following the allocation criteria set by the Italian government in the NADEF (Italian Government 2020), the amount of grants that is annually financed by the Italian contributions to the EU budget is shown by the last row of Table 3.

Table 3. Additional factors for the baseline scenario (baseline scenario).

	2020	2021	2022	2023	2024	2025
Economic factors						
Labour force	−500[h]	0	0	0	0	0
Product per employee*	−5.9%	0	0	0	0	0
GDP of trading partners*	−9%	0	0	0	0	0
Policy factors						
Δ in extra holdings by ECB (PEPP)	+127,240[m]	+148,424[m]	+37,106 [m]	0	0	0
Adjust. of average interest rate on government debt**	−90 bps	−80 bps	−80 bps	−80 bps	−80 bps	−80 bps
Δ in received SURE loans***	16,500[m]	5,450[m]	5,450[m]	0	0	0
Δ in received NGEU loans****	0	+11,000[m]	+17,500[m]	+15,000[m]	+29,900[m]	+26,700[m]
Δ in received NGEU grants****	0	+14,400[m]	+20,400[m]	+28,400[m]	+9,900[m]	+4,300[m]
Due contributions for grants	0	−8,780[m]	−12,440[m]	−17,320[m]	−6,040[m]	−2,620[m]

Notes: [h]thousand units; [m]million euros; *percentage changes are calculated with respect to 2019 values; **adjustments based on AMECO predictions; ***source: our calculations on European Commission data, 2020; ****source: Italian government 2020; autonomous components of consumption, investment, export, and import, have been also re-calibrated such that the model generates the baseline scenario of Table A.4.

repaid back. However, Italy must contribute to the creation of the fund from which NGEU grants are drawn from. The contributions of Italy to the NGEU grants fund create a corresponding equal amount of Italian government debt, as shown by the last row 'Due contributions for grants' of Table 3.

Table 4 above shows the economic forecasts for the Italian economy in 2020 and 2021 made by the OECD (2020c), IMF (2020, 2021), the European Commission (2020), the ISTAT (2020, 2021) (Italian National Institute of Statistics), the BoI (2021), the Italian government (2020), and the SFC model of this paper. The predicted values are for the following macroeconomic variables: GDP, consumption, investment, import, export, GDP deflator, as well as the deficit to GDP ratio and the government debt to GDP ratio. The SFC model of the paper predicts that GDP will contract by 9.1 percent, and the government debt to GDP ratio will reach 155.5 percent by the end of 2020. This is in line with similar figures by the OECD (−9.1 percent for the GDP and 159.8 percent for the debt/GDP ratio), the IMF (−9.2 percent for the GDP and 161.8 percent for the debt/GDP ratio), and with the scenario described in the NADEF (−9.0 percent for the GDP and 158 percent for the debt/GDP ratio) approved by the Italian government in October 2020 (Italian Government 2020).

Figure 1(a–h) below shows the evolution over the 1995–2025 period of the main macroeconomic variables of the Italian economy, namely GDP, employment, government debt to GDP ratio, inflation, government deficit to GDP ratio, average interest rate on the government debt, economic growth rate, and the Italian government debt held by the ECB and the Bank of Italy. The black line represents the baseline of the model. It shows the observed pre-shock path of each of these variables (i.e. time series) for the period 1995–2019, together with the SFC model forecasts of the variables for the period 2020–2025. The forecasts include the economic and the policy factors described above, namely the expected immediate negative economic effects of the Covid-19 crisis on the Italian economy, and the gradual policy response by the Italian government (e.g. additional government spending and tax cuts) and the EU fiscal and monetary authorities (e.g. mainly the NGEU and PEPP measures) to tackle those effects. It is worth to highlight here that, in accordance with the hypotheses made in Bank of Italy (2020) and the NADEF (Italian Government 2020), the baseline for the period 2020–

Table 4. Predicted values for GDP components, inflation and government balance.

	OECD (December 2020)		IMF (October 2020)		European Commission (November 2020)		ISTAT (June 2020)		Bank of Italy (January 2020)		Italian Government (NADEF October 2020)		Our model*	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Annual growth rates (%)														
GDP	−9.1	4.3	**−9.2**[a]	3.0[a]	**−9.9**	4.1	**−8.9**[c]	2.3[c]	**−9.2**	3.5	**−9.0**[d]	6.0[d]	**−9.1**	2.9
Consumption	−9.2	4.9	**−11.8**	4.9	**−10.5**	3.8	**−8.7**	5.0	**−10.4**	3.2	**−6.4**	4.4	**−13.4**	4.9
Investment	**−14.6**	4.3	**−15.1**	12.6	**−13.6**	7.2	**−12.5**	6.3	**−7.8**	10.1	**−13**	10.6	**−11.5**	7.0
Import	**−13.6**	4.2	**–**	–	**−14.1**	9.9	**−14.4**	7.8	**−13.4**	9.0	**−13.8**	8.8	**−14.6**	7.8
Export	**−17.8**	5.4	**−0.1**[b]	0.2[b]	**−16.7**	10.3	**−13.9**	7.9	**−14.9**	9.8	**−17.4**	9.6	**−17.8**	7.3
GDP deflator	**1.2**	0.9	**–**	–	**1.3**	1.0	**0.5**	0.9	1.1	0.9	**1.1**	0.8	**1.1**	1.1
Government balance ratios (%)														
Deficit to GDP	**10.7**	6.9	**13.0**	6.2	**10.8**	7.8	**–**	–	**–**	–	**10.8**	7.0	**10.0**	5.9
Debt to GDP	**159.8**	158.3	**161.8**	158.3	**159.6**	159.5	**–**	–	**–**	–	**158**	155.6	**155.5**	154.6

Notes: *baseline scenario, GDP components are expressed at constant prices (2015 = 100)
[a]Estimate of GDP released on January 2021 (IMF 2021); [b]Foreign balance; [c]Preliminary estimate of GDP released on February 2021 (ISTAT 2021); [d]In the adverse scenario (October 2020), GDP is expected to contract by 10.5%, before growing at 1.8% in 2021.

2025 is derived under the assumption that only 70 percent of the NGEU and SURE loans and grants available to the Italian government will be converted into additional spending. The remaining 30 percent will be used by the Italian government to fund previously planned investment. Finally, the black dashed line in Figure 1(a–h) shows the predicted pre-shock path of each variable in the absence of the Covid-19 crisis.

Figure 1(a) shows the evolution of GDP using 2007 as the base year. GDP is expected to be well below the 2007 level in the near future. GDP is also not expected to return to the predicted pre-Covid-19 path. Figure 1(g) also reveals that, after the expected rebound in 2021, the growth rate rapidly declines toward a zero-growth rate by the end of 2025. Unsurprisingly, Figure 1(b) indicates that, after the sharp fall in 2020, the employment level only recovers to its pre-Covid19 value in 2025, but it does not return to the pre-Covid19 trend. Figure 1(d) represents the inflation rate, which remains always far below 2 percent. Taking together Figure 1(a, b, d, g), this confirms that despite domestic and EU measures, Covid-19 will cause a permanent scar to the already weak Italian economy.

Figure 1(c, e, f) provides a useful outlook for the government finances. Figure 1(c, e) show that both the government debt to GDP ratio and the government deficit to GDP ratio remain strongly above their pre-Covid-19 values. The evolution of the debt to GDP ratio is of particular interest. After a slight reduction associated with the 2021–2022 rebound, and notwithstanding the relevant increase in the share of government debt held by the Eurosystem, the debt to GDP ratio keeps increasing after 2023, triggering an unsustainable dynamics.[11] Figure 1(h, f) describes the amount of Italian government held by the ECB and the BoI, and the average interest rate on Italian government bonds, respectively. Figure 1(h, f) corroborates the previous finding. The Italian government struggles to meet the debt sustainability condition, because the net debt burden exceeds the primary balance in the medium term.[12]

In short, the main lesson to drawn from the forecasted dynamics of the main macroeconomic variables represented in Figure 1(a–h) is that domestic and EU policies are not effective in tackling the negative effects of the Covid-19 crisis on the Italian economy. The GDP does not return to its pre-Covid-19 value in the medium period, the growth rate rapidly declines toward a zero-growth rate, while the government debt to GDP ratio is on an unsustainable path.

Figure 2(a–f) below explores the impact of two alternative types of policy interventions on some of the main macroeconomic variables of the Italian economy, namely GDP, employment, government debt to GDP ratio, inflation, government deficit to

[11]Figure A2 in the Appendix provides a simple sensitivity test for the model baseline results vis-à-vis two alternative, and somewhat extreme, scenarios. The worst case scenario assumes persistent and strong Covid-19 effects beyond 2021, while the best case scenario is drawn under the assumption of weak effects after 2021. Figure A2 confirms that the predicted evolution of the main macroeconomic variables of the Italian economy over the 1995–2025 period are robust, as alternative assumptions about the size and persistency of the shocks do not affect the qualitative behaviour of these macroeconomic variables.

[12]The sustainability condition for the government debt holds that the primary balance must cover the net debt burden:

$$\frac{T-(G+TR)}{Y} \geq (r_b - g_y) \cdot \frac{B_s}{Y}$$

where T is total tax revenue, G is government consumption, TR is a composite entries including benefits and transfers to the private sector, Y is the GDP, r_b is the average return rate on Italian debt securities, g_y is the growth rate (that is, $\Delta Y/Y$ and B_s is total debt issues (Pasinetti 1998).

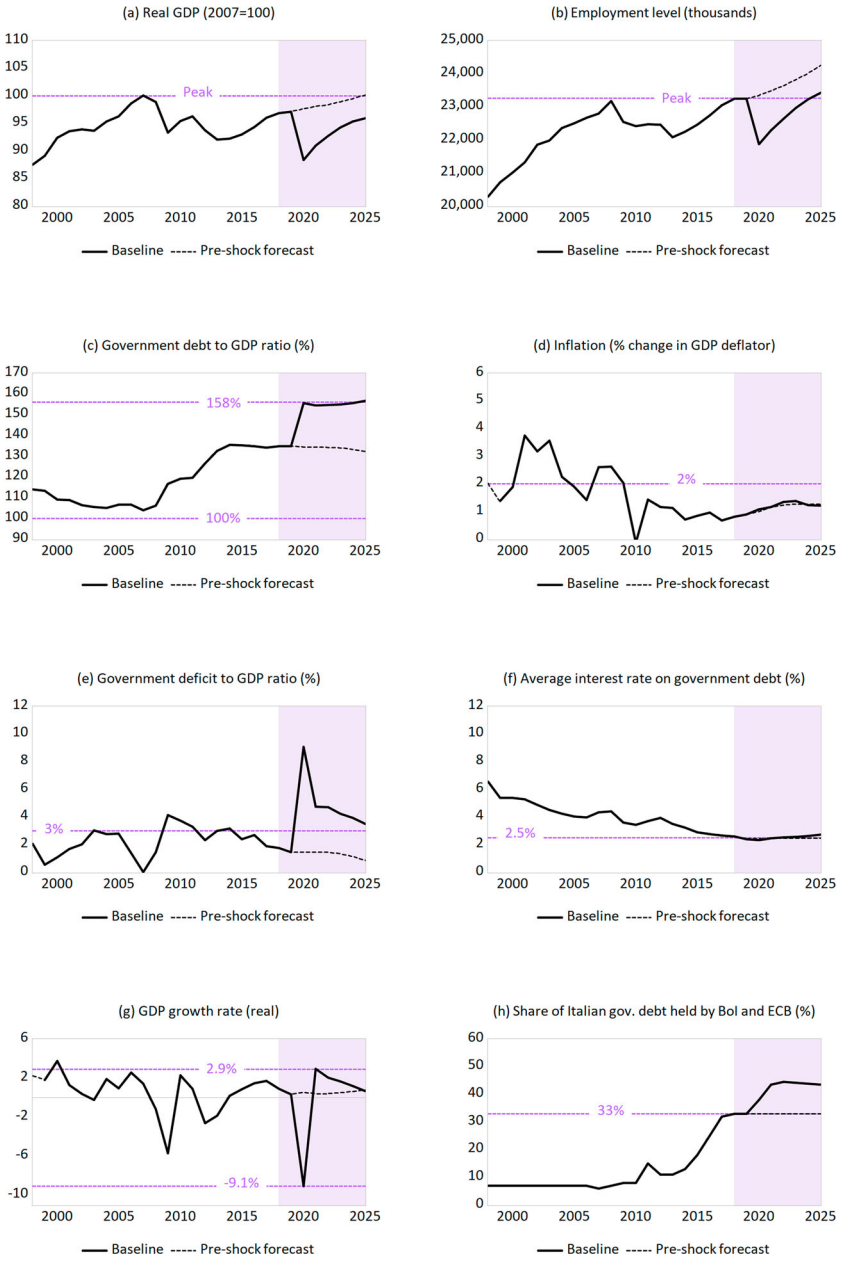

Figure 1. Observed series (1995–2019) and out-of-sample predictions (2020–2025): selected variables.
Notes: shaded areas show the forecasted series.

GDP ratio, average interest rate on the government debt. The first type of alternative policy is an austerity (i.e. fiscal consolidation) scenario, while the second type of policy includes four expansionary scenarios, including two money-financed fiscal stimulus strategies. In both types of alternative policy, the model baseline includes the economic and policy factors presented in Table 3.

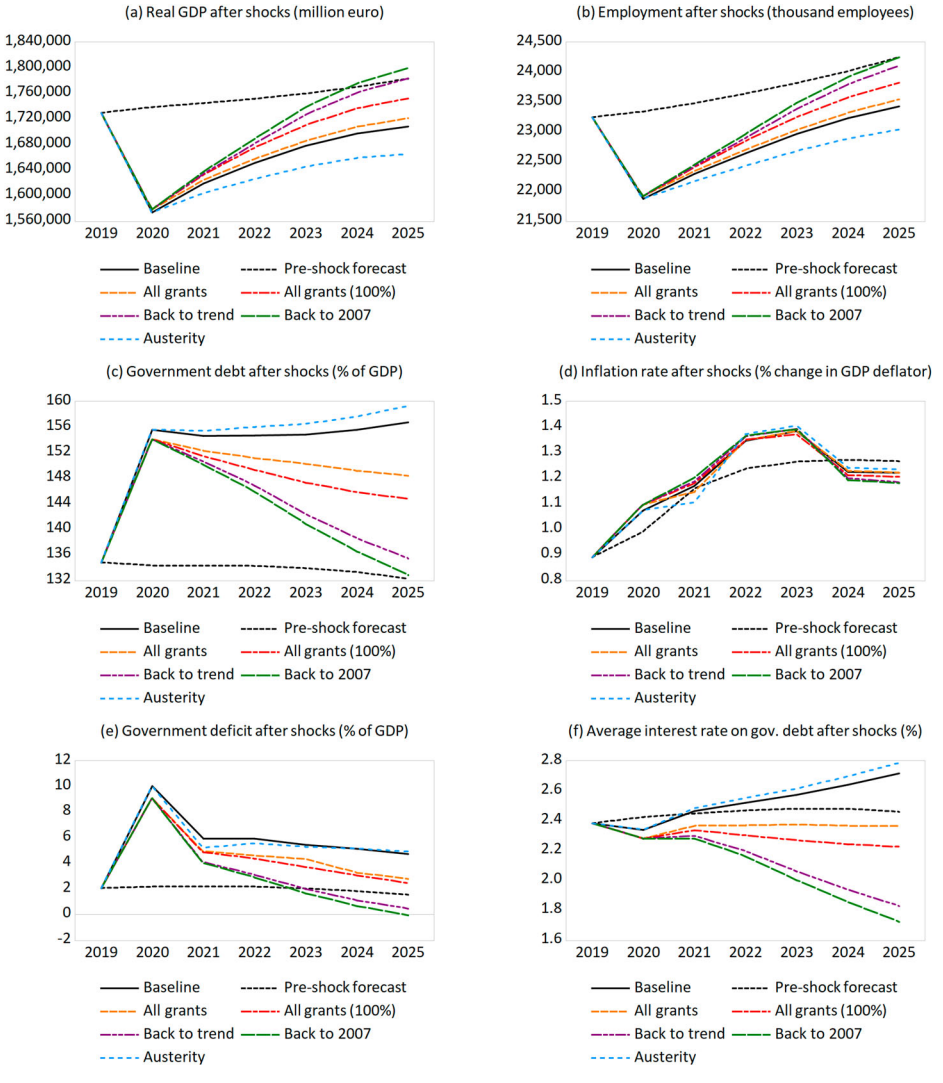

Figure 2. Expected effects from alternative policies (2020–2025).

Notes: 'back to trend' scenario = 125 percent of total funds under NGEU, all grants, no contributions for grants; 'back to 2007' scenario = 140 percent of total funds under NGEU, all grants, no contributions for grants.

In the austerity scenario, the model baseline includes a constant contraction of government spending equal to 1 percent of the GDP in 2019. This constant reduction of spending is applied each year over the 2021–2025 period. In the expansionary scenarios, the amount of government spending and the type of financing is specific to the expansionary scenario considered.

In the 'all grants' scenario, there are no additional domestic or EU resources. The main difference with the model baseline is that all planned NGEU funds to Italy are now grants, i.e. expected NGEU loans are converted into NGEU grants.[13] Therefore, they

[13]It is worthy to clarify that the previous assumption that only 70 percent of the NGEU funds are actually used to finance new spending, while the remaining 30 percent is used to finance previously planned investment is retained.

create a corresponding equal amount of Italian government debt only in proportion to the contributions of Italy to the NGEU grants fund.

In the 'all grants 100 percent' scenario, again there are no additional domestic or EU resources. Like in the previous scenario, it is assumed that all the NGEU funds will be turned into grants, with the difference though that in this case all grants would be entirely spent by the Italian government for new investments. This means that the standard, realistic assumption that only 70 percent of the NGEU and SURE funds are converted into new spending (see Italian Government 2020 and Bank of Italy 2020) is replaced by the optimistic hypothesis that the entire EU funds are used for new spending.

The 'back-to-trend' and 'back to the 2007' scenarios are thought experiments, which connect the creation of additional new EU resources to the achievement of a particular output value. In both scenarios, the entire NGEU fund is purposely increased to bring the Italian economy back to its trend output and to the 2007 level, respectively, within the 2021–2025 period. In both scenarios the EU resources are completely financed by EU authorities (and entirely converted into new spending), with no contribution by the Italian government. For simplicity, it is assumed that these resources and related government spending are financed by the ECB (e.g. Gali 2020). This means that these EU resources would not affect the government finances of Italy. The government debt to GDP ratio for the Italian economy would not be affected. In the 'back-to-trend' scenario, the additional resources are equal to 25 percent of all currently planned NGEU funds to Italy, while in the 'back to the 2007' scenario, they are equal to 40 percent of all currently planned NGEU funds to Italy.

Figure 2(a–f) above show the impact of the austerity scenario (turquoise line), 'all grants' scenario (yellow line), 'all grants 100 percent' scenario (red line), the 'back-to-trend' scenario (purple line), and the 'back to the 2007' scenario (green line) on GDP, employment, government debt to GDP ratio, inflation, government deficit to GDP ratio, and average interest rate on the government debt. The black continuous line is the model baseline, whereas the black dashed line shows the predicted pre-shock path of each variable in the absence of the Covid-19 crisis.

The austerity scenario (turquoise line) turns out to be the worst scenario for the Italian economy. Figure 2(a–f) shows that the fixed contraction of government spending (1 percent of the 2019 GDP) over the 2021–2025 period has deleterious effects on all variables considered. Figure 2(a) indicates that real GDP declines dramatically, and the gap vis-à-vis the model baseline increases over time. Figure 2(b) confirms that employment follows a similar negative pattern. Interestingly, Figure 2(c) reveals that despite the fixed contraction of government spending, the government debt to GDP ratio has an unsustainable trend. It is always above the model baseline. Furthermore, after an initial decline, the ratio keeps raising above the level recorded at the onset of the Covid-19 crisis. Figure 2(e) draws a similar picture for the government deficit to GDP ratio. After the initial strong decline in 2021, the government deficit to GDP ratio stays constant, and above the model baseline. This could be explained by the slowing down of GDP and related reduction in tax revenue. Finally, Figure 2(f) indicates that the average interest rate on government debt increases, and it is always above the model baseline.

The 'all grants' and the 'all grants 100 percent' scenarios (yellow and red lines, respectively) do not involve additional domestic or EU resources. However, the additional assumptions, namely that all planned NGEU funds are now grants (for both scenarios),

and that the entire NGEU (and SURE) funds are used for new spending (for the 'all grants 100 percent' scenario) do have some positive effects vis-à-vis the model baseline (black continuous line). Figure 2(a,b) show that for both scenarios GDP and employment are above the baseline. However, despite this positive impact, GDP and employment do not return to the pre-Covid-19 value. Figure 2(c) indicates that the government debt to GDP ratio declines, and then stabilises below an ever-increasing model baseline, though well-above the pre-Covid-19 trend. Figure 2(e) confirms this trend. The government deficit to GDP ratio declines more than the model baseline, but it never reaches the lower pre-Covid-19 value. Figure 2(f) indicates the average interest rate on government bonds stays constant, well below the ever-increasing value of the model baseline. In summary, the 'all grants' and the 'all grants 100 percent' scenarios confirm the main lessons of Figure 1(a–h), namely that, even under the most optimistic assumptions, domestic and EU policies are not sufficient in eliminating the negative effects caused by the Covid-19 crisis.

The 'back-to-trend' and the 'back to the 2007' scenarios (purple and green lines, respectively) do involve additional EU resources, namely 25 percent and 40 percent of all currently planned NGEU funds to Italy, respectively. They also involve significant policy changes, since both scenarios rely on a money-financed fiscal stimulus. Therefore, they have the nature of thought experiments. Having said that, Figure 2(a–f) show that the additional EU resources have a remarkable positive impact not only on GDP and employment, but also on the government finances in Italy.

Figure 2(a, b) indicate that GDP and employment rapidly move above the model baseline. This is not surprising. Both scenarios were purposely drawn with the aim of increasing NGEU funding in order to bring the Italian economy back to its trend output and 2007 level, respectively, within the 2021–2025 period. What is rather surprising is the outlook for the government finances. Figure 2(c) shows that in both scenarios the government debt to GDP ratio declines considerably, quickly moving towards the pre-Covid-19 level. Figure 2(e, f) indicate a similar trend for the government deficit to GDP ratio and the average interest rate on government bonds, respectively. The government deficit to GDP ratio and the average interest rate on government bonds actually move below the pre-Covid-19 level before 2025. Finally, like for all previous scenarios, Figure 2(f) suggests that inflation is anchored around a constant value, well below the explicit 2 percent target. This means that the additional EU resources, and the money-financing of these resources do not affect the inflation rate.

5. Conclusions

The Covid-19 pandemic has triggered an unprecedented shock to many countries around the world. Italy has been one of the worst hit countries, recording some of the highest infection rates and mortality rates. The Italian economy has also been hit hard. The GDP is expected to have contracted by over 9 percent in 2020, with the government debt to GDP ratio being above 155 percent.

In contrast to what has happened after the 2007–2008 GFC, the EU monetary and fiscal authorities have tried to limit the negative economic impact of the Covid-19 pandemic. The Stability and Growth Pact and other institutional budget constraints have been suspended. This has allowed the Italian government and other EU governments

to adopt expansionary fiscal measures to support businesses and households. The ECB has launched the Pandemic Emergency Purchase Programme (PEPP), and the European Council has approved, among other things, the Next Generation EU (NGEU). Would these and other EU policies be effective to tackle the negative economic impact of the Covid-19 crisis in Italy?

This paper has used a medium-scale, stock-flow consistent (SFC), structural macro econometric model to assess the effects of the EU policies on the Italian economy for the 2020–2025 period. The main conclusion of the analysis is that domestic and EU policies are at the best emergency measures that may slowly halt the dramatic decline in GDP and employment in Italy, and temporarily delay a further increase in its government debt to GDP ratio. But domestic and EU policies are not going to bring either the government finances, or GDP and employment to pre-Covid-19 levels, let alone to bring those indicators to more sustainable long-term levels.

The paper has also used the SFC model to assess the potential impact of two alternative set of scenarios, namely an austerity (i.e. fiscal consolidation) scenario, and four expansionary scenarios, including two money-financed fiscal stimulus scenarios. The austerity policy alternative has devastating effects on the Italian economy. The GDP would declines dramatically, and the government debt to GDP ratio would quickly increase to unsustainable levels. By contrast, the alternative expansionary money-financed fiscal policies would have a remarkable positive impact not only on GDP and employment, but also on the government finances in Italy. These policies would require additional EU resources, above the currently planned NGEU funds to Italy. They would also involve significant policy changes, since they rely on a money-financed fiscal stimulus. However, these expansionary money-financed fiscal policies show that the EU monetary and fiscal authorities have the power to move the Italian economy on a path of sustainable growth, with positive outcomes for both employment and government finances.

Acknowledgment

The authors would like to thank Louis-Philippe Rochon and two anonymous reviewers for their very helpful and constructive comments and suggestions. All remaining errors are of the authors.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

References

Angelini, E., A. D'Agostino, and P. McAdam. 2006. 'The Italian Block of the ESCB Multi-Country Model.' Working Paper Series 660. European Central Bank.

Arestis, P., and M. Sawyer. 2009. *Path Dependency and Macroeconomics*. Basingstoke: Palgrave Macmillan.

Baldwin, R., and B. Weder di Mauro. 2020. *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes*. VoxEU.org eBook. CEPR Press. https://voxeu.org/content/mitigating-covid-economic-crisis-act-fast-and-do-whatever-it-takes.

Bank of Italy. 2020. 'Audizione di Fabrizio Balassone sull'individuazione delle priorità nell'utilizzo del Recovery Fund.' Camera dei Deputati, Roma, September 7.

Bank of Italy. 2021. 'Proiezioni macroeconomiche per l'Italia - gennaio 2021.' *Bollettino economico* n. 1.
Bezemer, D. J. 2010. 'Understanding Financial Crisis Through Accounting Models.' *Accounting, Organizations and Society* 35 (7): 676–688.
Blanchard, O. 2018. 'On the Future of Macroeconomic Models.' *Oxford Review of Economic Policy* 34 (1-2): 43–54.
Blanchard, O., and J. Pisani-Ferry. 2020. 'Monetisation: Do Not Panic.' *VoxEU.org*, April 10; https://voxeu.org/article/monetisation-do-not-panic.
Brancaccio, E., R. Realfonzo, M. Gallegati, and A. Stirati. 2020. 'With or without Europe: Italian Economists for an Anti-Virus Plan.' *Financial Times*, March 13. https://www.ft.com/content/4309c9fc-63ca-11ea-b3f3-fe4680ea68b5.
Bulligan, G., F. Busetti, M. Caivano, P. Cova, D. Fantino, A. Locarno, and M. L. Rodano. 2017. 'The Bank of Italy Econometric Model: An Update of the Main Equations and Model Elasticities.' Temi Di Discussione No.1130, Banca d'Italia.
Burgess, S., O. Burrows, A. Godin, S. Kinsella, and S. Millard. 2016. 'A Dynamic Model of Financial Balances for the United Kingdom.' Bank of England Working Papers 614.
Caiani, A., A. Godin, E. Caverzasi, M. Gallegati, S. Kinsella, and J. E. Stiglitz. 2016. 'Agent Based-Stock Flow Consistent Macroeconomics: Towards a Benchmark Model.' *Journal of Economic Dynamics and Control* 69: 375–408.
Cassa Depositi e Prestiti. 2020. 'Next Generation EU. Cosa significa per l'economia italiana?' August 1. https://www.cdp.it/resources/cms/documents/Next%20Generation%20EU.pdf.
Caverzasi, E., and A. Godin. 2015. 'Post-Keynesian Stock-Flow-Consistent Modelling: a Survey.' *Cambridge Journal of Economics* 39 (1): 157–187.
Cesaratto, S. 2013. 'The Implications of TARGET2 in the European Balance of Payment Crisis and Beyond.' *European Journal of Economics and Economic Policies: Intervention* 10 (3): 359–382.
Cesaratto, S. 2015. 'Balance of Payments or Monetary Sovereignty? In Search of the EMU's Original Sin. Comments on Marc Lavoie's "The Eurozone: Similarities to and Differences from Keynes's Plan".'*International Journal of Political Economy* 44 (2): 142–156.
Chancellor, E. 2010. 'The Dreadful Potential of Frugality.' *Financial Times*, June 6. https://www.ft.com/content/a7df74f6-7002-11df-8698-00144feabdc0.
Cicinelli, C., A. Cossio, F. Nucci, O. Ricchi, and C. Tegami. 2008. 'The Italian Treasury Econometric Model (ITEM).' Ministry of Economy and Finance, Department of the Treasury Working Paper No. 1. Rome: Department of the Treasury.
Copeland, M. A. 1949. 'Social Accounting for Money Flows.' *Accounting Review* 24 (3): 254–264.
Cripps, F., and W. Godley. 1976. 'A Formal Analysis of the Cambridge Economic Policy Group Model.' *Economica* 43 (172): 335–348.
Cripps, F., and W. Godley. 1978. 'Control of Imports as a Means to Full Employment and the Expansion of World Trade: The UK's Case.' *Cambridge Journal of Economics* 2 (3): 327–334.
De Grauwe, P. 2020. 'The ECB Must Finance COVID-19 Deficits.' *Project Syndicate*, March 18.
Draghi, M. 2020. 'We Face a War against Coronavirus and Must Mobilise Accordingly.' *Financial Times*, March 25. https://www.ft.com/content/c6d2de3a-6ec5-11ea-89df-41bea055720b.
Escobar-Espinoza, A. 2016. 'Stock-Flow Consistent Models for developing countries: the case of Colombia.' Unpublished working paper https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=5102.
European Commission. 2020. 'Identifying Europe's Recovery Needs.' Commission Staff Working Document, Brussels, May 27.
Fontana, G. 2010. 'The Return of Keynesian Economics: A Contribution in the Spirit of John Cornwall's Work.' *Review of Political Economy* 22 (4): 517–533.
Fontana, G., and M. Veronese Passarella. 2018. 'The Role of Commercial Banks and Financial Intermediaries in the New Consensus Macroeconomics (NCM): a Preliminary and Critical Appraisal of old and new Models.' In *Alternative Approaches in Macroeconomics: Essays in Honour of John McCombie*, edited by P. Arestis, 77–103. Basingstoke: Palgrave Macmillan.

Fontana, G., and M. Veronese Passarella. 2020. 'Unconventional Monetary Policies from Conventional Theories: Modern Lessons for Central Bankers.' *Journal of Policy Modeling* 42 (3): 503–519.
Gali, J. 2020. 'The Effects of a Money-Financed Fiscal Stimulus.' *Journal of Monetary Economics* 115: 1–19.
Godin, A., G. Tiou-Tagba Aliti and S. Kinsella. 2012. 'Method to Simultaneously Determine Stock, Flow, and Parameter Values in Large Stock Flow Consistent Models.' http://dx.doi.org/10.2139/ssrn.2094996.
Godley, W. 1999. 'Seven Unsustainable Processes: Medium-Term Prospects and Policies for the United States and the World.' Strategic Analysis. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College, January.
Godley, W., and F. T. Cripps. 1974. 'Demand, Inflation and Economic Policy.' *London and Cambridge Economic Bulletin* 84 (1): 22–23.
Godley, W., and F. T. Cripps. 1983. *Macroeconomics*. Oxford: Oxford University Press.
Godley, W., and M. Lavoie. 2007. *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*. New York: Palgrave Macmillan.
Godley, W., D. B. Papadimitriou, G. Hannsgen, and G. Zezza. 2007. 'The U.S. Economy: Is There a Way out of the Woods?' Strategic Analysis, Annandale-on-Hudson, NY: Levy Economics Institute, November.
Godley, W., and G. Zezza. 1992. 'A Simple Stock Flow Model of the Danish Economy.' In *Themes in Modern Macroeconomics*, edited by H. Brink, 140–179. London: Palgrave Macmillan.
Gros, D. 2013. 'Foreign Debt versus Domestic Debt in the Euro Area.' *Oxford Review of Economic Policy* 29 (3): 502–517.
Gros, D. 2015. 'The Eurozone Crisis as a Sudden Stop: It Is the Foreign Debt Which Matters.' *VoxEU.org*, 7. https://voxeu.org/article/eurozone-crisis-and-foreign-debt.
Gros, D. 2018. 'Italian risk spread: Fiscal versus redenomination risk.' *VoxEU.org*, 29. https://voxeu.org/article/italian-risk-spreads-fiscal-versus-redenomination-risk.
Guaita, N., and G. Michelena. 2019. 'Implementando un modelo Stock-Flujo Consistente para la economía argentina. Documento de trabajo de la Secretaría para la Transformación Productiva del Ministerio de Producción.' Buenos Aires: Ministerio de Producción.
Hendry, D. F., and J. N. Muellbauer. 2018. 'The Future of Macroeconomics: Macro Theory and Models at the Bank of England.' *Oxford Review of Economic Policy* 34 (1-2): 287–328.
IMF. 2020. *World Economic Outlook: A Long and Difficult Ascent*. Washington, DC, October.
IMF. 2021. *World Economic Outlook Update*. January.
ISTAT. 2020. *Le prospettive per l'economia italiana nel 2020-2021*. June. https://www.istat.it/it/archivio/243906.
ISTAT. 2021. *Stima Preliminare Del Pil*. February. https://www.istat.it/it/files//2021/02/FLASH_2020q4.pdf.
Italian Government. 2020. 'Nota di Aggiornamento. Documento di Economia e Finanza (NADEF).' Ministero dell'Economia e delle Finanze, Roma, October 5th.
Italian Government. 2021. *Piano Nazionale di Ripresa e Resilienza*. January. Rome.
Kinsella, S., and G. Tiou-Tagba Aliti. 2012. 'Towards a Stock Flow Consistent Model for Ireland.' https://ssrn.com/abstract=2011462.
Le Heron, E., and N. Yol. 2019. 'The Macroeconomic Effects of Migrants' Remittances in Moldova: A Stock–Flow Consistent Model.' *European Journal of Economics and Economic Policies: Intervention* 16 (1): 31–54.
Lucas, R. E. 1976. 'Econometric Policy Evaluation: A Critique.' *Carnegie-Rochester Conference Series on Public Policy* 1 (1): 19–46.
Luciani, A., and R. Stok. 2020. 'bimets: Time Series and Econometric Modeling.' Accessed on August 31st 2020. https://CRAN.R-project.org/package=bimets.
Makrelov, K., C. Arndt, R. Davies and L. Harris. 2018. 'Stock-and-Flow-Consistent Macroeconomic Model for South Africa.' Working Paper No 7. World Institute for Development Economic Research (WIDER).

Michelena, G., S. Capobianco, L. Mastronardi, and J. Vila. 2017. 'Estimación de una matriz de contabilidad social para argentina 2015 con desagregación exhaustiva de los sectores energéticos.' Technical report, Ministerio de Producción. Buenos Aires.
Miess, M. G., and S. Schmelzer. 2016a. 'Stock–Flow Consistent Modelling of Real-Financial Cycles and Balance Sheet Dynamics.' Paper presented at the 13th EUROFRAME Conference, Utrecht, Netherlands, June, 10.
Miess, M., and S. Schmelzer. 2016b. 'Extension of the Empirical Stock-Flow Consistent (SFC) Model for Austria: implementation of several asset classes, a detailed tax system and exploratory scenarios.' Final Report, Study Commissioned by the Austrian Chamber of Labour, Vienna. https://irihs.ihs.ac.at/id/eprint/4135/1/Report_MiessSchmelzer_SFCfinal.pdf.
Münchau, W. 2020. 'Europe Cannot Fudge Its Way to a Federal Future.' *Financial Times*, May 31. https://www.ft.com/content/c931321c-a1bf-11ea-b65d-489c67b0d85d.
Nikiforos, M., and G. Zezza. 2017. 'Stock-Flow Consistent Macroeconomic Models: A Survey.' *Journal of Economic Surveys* 31 (5): 1204–1239.
OECD. 2020a. *Economic Outlook, Vol 2020/1*. Paris: OECD Publishing.
OECD. 2020b. *OECD Economic Outlook, Interim Report September 2020*. Paris: OECD Publishing.
OECD. 2020c. *OECD Economic Outlook*. Vol 2020, Issue 2. Paris: OECD Publishing.
Papadimitriou, D. B., M. Nikiforos, and G. Zezza. 2013a. 'The Greek Economic Crisis and the Experience of Austerity: A Strategic Analysis.' Strategic Analysis, Annandale-on-Hudson, NY: Levy Economics Institute, July.
Papadimitriou, D. B., M. Nikiforos, and G. Zezza. 2013b. 'A Levy Institute Model for Greece.' Levy Economics Institute Technical Report. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College, May.
Papadimitriou, D. B., F. Zezza, and G. Zezza. 2020a. 'When Will Italy Recover?' Strategic Analysis. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College, October.
Papadimitriou, D. B., M. Nikiforos, and G. Zezza. 2020b. 'Prospects and Challenges for the US Economy: 2020 and Beyond.' Strategic Analysis. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College, January.
Papadimitriou, D. B., C. Pierros, N. Rodousakis, and G. Zezza. 2020c. 'What's Ahead for the Greek Economy?' Strategic Analysis, Annandale-on-Hudson, NY: Levy Economics Institute, November.
Pasinetti, L. 1998. 'The Myth (or Folly) of the 3% Deficit/GDP Maastricht "Parameter".' *Cambridge Journal of Economics* 22 (1): 103–116.
Pierros, C. 2020. 'A Labor Market–Augmented Empirical Stock-Flow Consistent Model Applied to the Greek Economy.' Levy Economics Institute. Working Papers No 949, Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
Raza, H., B. R. Gudmundsson, G. Zoega, and M. R. Byrialsen. 2019. 'Crises and Capital Controls in Small Open Economies: A Stock–Flow Consistent Approach.' *European Journal of Economics and Economic Policies: Intervention* 16 (1): 94–133.
Schlefer, J. 2013. 'Embracing Wynne Godley, an Economist Who Modeled the Crisis.' *The New York Times*, September 10.
Tobin, J. 1969. 'A General Equilibrium Approach to Monetary Theory.' *Journal of Money, Credit and Banking* 1 (1): 15–29.
Tobin, J. 1982. 'Money and Finance in the Macroeconomic Process.' *Journal of Money, Credit and Banking* 14 (2): 171–204.
Ufficio parlamentare di bilancio. 2020. 'Rapporto sulla politica di bilancio 2021.' December. https://www.upbilancio.it/wp-content/uploads/2020/12/Rapporto_pol_2021-per-sito.pdf.
Valdecantos, S. 2020. Argentina's (Macroeconomic?) Trap. Some Insights from an Empirical Stock-Flow Consistent Model. Levy Institute Working Paper No. 975. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
Veronese Passarella, M. 2019. 'From Abstract to Concrete: Some Tips for Developing an Empirical Stock–Flow Consistent Model.' *European Journal of Economics and Economic Policies: Intervention* 16 (1): 55–93.

Visco, I., and G. Bodo. 1986. 'Modello Trimestrale Dell' Economia Italiana.' Temi Di Discussione No. 80, Banca d'Italia.
Wolf, M. 2012. 'The Balance Sheet Recession in the US.' *Financial Times*, July 19.
Zezza, F. 2018. *Stock–Flow Consistent Macroeconomic Models: Theory, Practice and Application*. PhD Thesis, University of Siena.
Zezza, F., and G. Zezza. 2020. 'A Stock-Flow Consistent Quarterly Model of the Italian Economy.' Levy Institute Working Paper No. 958. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
Zezza, G. 2009. 'Fiscal Policy and the Economics of Financial Balances.' *European Journal of Economics and Economic Policies: Intervention* 6 (2): 289–310.

Appendix. Model validation and robustness

Figure A1. In-sample predictions: selected variables.

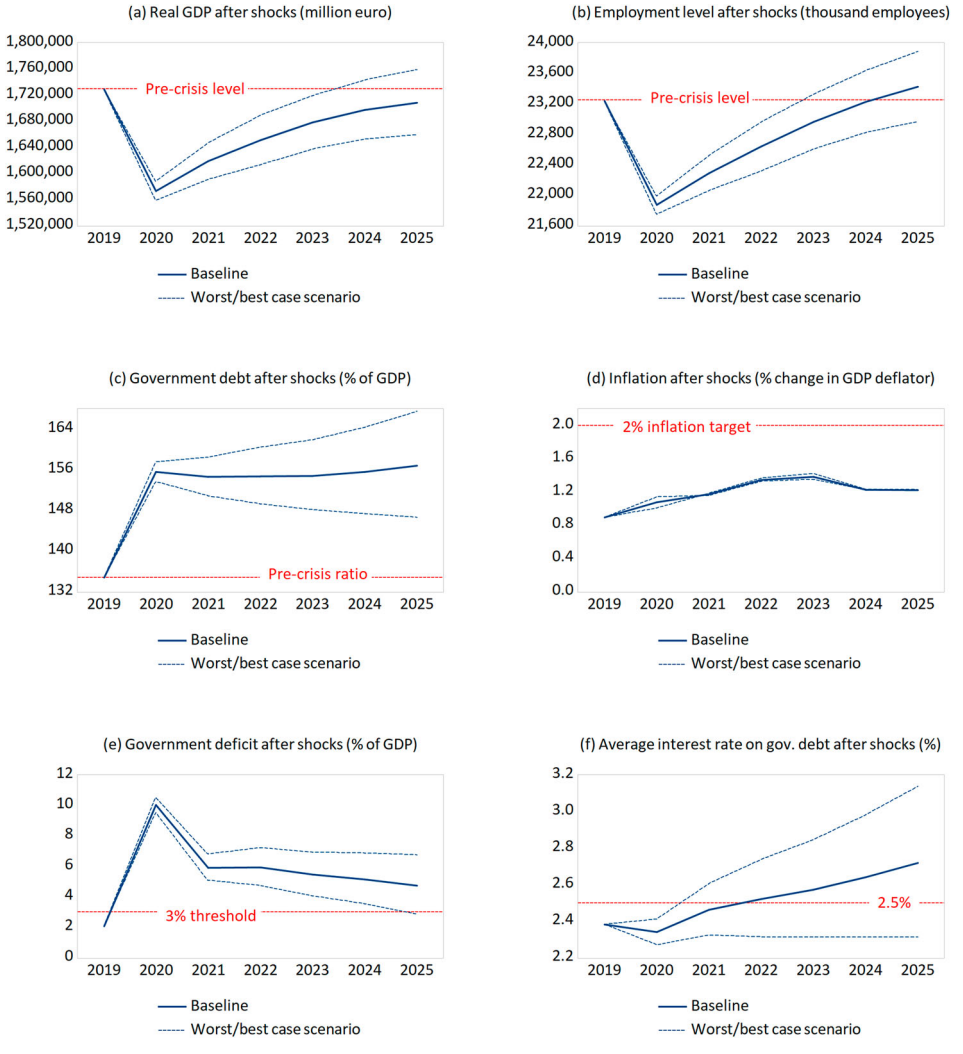

Figure A2. Expected impact of the Recovery Fund and PEPP on selected variables under different scenarios (sensitivity test).

Notes: worst-case scenario = stronger negative effects on the autonomous components of aggregate demand beyond 2021; best-case scenario = weaker effects on the autonomous components of aggregate demand after 2021.

Table A1. Balance sheet from financial accounts (FA), Italy, 2018, annual series (assets net of liabilities), current prices, million euros.

	Firms	Banks*	Central Bank (CB)	Government	Households**	Foreign sector	Row total
Eurostat code	S11	[S12]	S121	S13	S14–S15	S2	
Cash	28,071	12,233	−202,598	0	162,421	−127	0
Deposits	286,555	−1,588,178	−305,241	−157,514	1,227,640	536,738	0
Securities	−92,089	962,532	540,585	−2,051,539	293,673	346,838	0
Loans	−1,000,726	1,710,283	1705	−81,212	−708,729	78,678	−1
Shares	−1,075,618	292,633	3353	161,797	1,386,831	−768,995	1
Other:							
Insurance reserves	−85,289	−837,866	−7298	−8074	962,458	−23,932	−1
Derivatives and s.o.	5077	−13,707	3	−21,246	793	29,080	0
Other accounts	25,226	12,562		44,848	−47,217	−35,420	−1
Error	0	1	−1	0	0	1253	–
Net financial wealth (column total)	−1,908,793	550,493	30,508	−2,112,940	3,277,870	164,113 [162,862]	–

Notes: *including non-financial intermediaries and excluding central bank; **including non-profit institutions serving households.

Table A2. Transactions-flow matrix from non-financial accounts (NFA), Italy, 2018, annual series, current prices, million euros.

	Firms S11		Banks and CB	Government	Households	Foreign sector	Row
Eurostat code	Current	Capital	S12	S13	S14–S15	S2	total
Total GDP	1,766,168						
GDP redistribution	−947,015	= −Σ	69,716	411,071	464,161	2067	0
Consumption	1,400,296			−334,836	−1,065,460		0
Investment	323,625	−186,686	−6367	−38,055	−92,517		0
Export	555,491					−555,491	0
Import	−513,245					513,245	0
Taxes*	−51,815		−9816	492,078	−227,895	−202,552	0
Transfers*	8242		4119	−140,890	113,642	14,887	0
Wages	−455,224		−32,454	−172,501	664,722	−4543	0
Interests payments	−2205		37,492	−61,749	16,630	9833	1
Dividends	−125,621		−2700	6584	124,721	−2984	0
Other prop. Income	−4261		−7792	4069	27,012	−19,026	2
Other transfers*	6933		−4083	−204,615	507	201,260	2
Net lending	8515		48,115	−38,844	25,523	−43,304	5
FA – NFA gap**	129,906		−33,810	88,343	−195,544	11,100	–
Change in net wealth	138,421		14,305	49,499	−170,021	−32,204	0

Notes: *series created by merging existing entries; **gap between change in net wealth as resulting from financial accounts (FA) and net lending as resulting from non-financial accounts (NFA); light grey shaded areas show entries created by forcing a counterpart (where firms are assumed to produce the whole product).