# Causes of the decline of economic growth in Italy and the responsibility of EURO. A balance-of-payments approach.

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**Abstract**

Some countries of the Euro-zone have experienced a declining economic growth more pronounced in the last recent years, like Italy. The aim of this paper is to investigate the causes of the poor growth performance in Italy and the responsibility of the Euro for this crisis. The theoretical approach applied is based on the balance-of-payments constraint hypothesis (known as Thirlwall's Law) adapted to include internal and external imbalances. Our empirical analysis shows that both the extended model and the original Thirlwall's Law over-predict the actual growth in Italy suggesting that there are supply constraints that encumber the economy from growing faster. Another conclusion is that part of the decline in economic growth is explained by the loss of competiveness during the Euro period. A scenarios analysis shows that a budget deficit and public debt discipline aiming at achieving the goals of the Stability Pact are not significant stimulus for faster growth. On the other hand, reducing the import dependence of the components of demand, or reducing the import and increasing the export shares in the economy are the most effective policies for fostering growth in Italy.

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## 1. Introduction

Thirlwall (1979) developed a simple model that determines the long-run rate of growth of an economy consistent with the balance-of-payments equilibrium. According to this rule, actual growth can be predicted by the ratio of export growth to the income elasticity of demand for imports and this simple relation became known as Thirlwall's Law. The Law advocates that no country can grow faster than its balance-of-payments equilibrium growth rate, unless it can continuously finance external deficits by capital inflows. Growth is constrained by external demand, and balance-of-payments disequilibrium on the current account can be a serious obstacle to faster growth when it cannot be financed by available foreign resources. A crucial implication of the model is that it is income and not relative prices that adjust to bring the economy back to equilibrium.

Thirlwall and Hussain (1982) revised the initial model relaxing the assumption that the balance-of-payments is initially in equilibrium. Since countries can run current account deficits, capital inflows can be included in the model to determine the long-term growth rate. This model has shown to be more suitable especially for developing countries where external imbalances can be sustained by capital inflows that alleviate the pressure on external payments. A large number of empirical studies emerged testing the validity of Thirlwall's Law or criticising the basic assumptions that it relies on. Among others, Moreno-Brid (1998-99), McCombie and Thirlwall (1994) and recently Blecker (2009) have made valuable contributions discussing and criticising the underlying implications of the Law.

The hypothesis of constant relative prices has been criticised widely in empirical literature (see for example, McGregor and Swales, 1985; 1991; Alonso and Garcimartín, 1998-99; López and Cruz, 2000). But in most studies in this field, relative prices have been shown to be statistically insignificant and even when they are significant the price elasticities with respect to imports and exports are very low in magnitude when compared to the income elasticities, showing that imports and exports are less sensitive to price changes than to income changes. Alonso and Garcimartín (1998-99) showed that the assumption that prices do not matter in determining the equilibrium income is neither a necessary nor a sufficient condition to affirm that growth is constrained by the balance-of-payments. The empirical evidence seems to

support that income is the variable that adjusts to bring into equilibrium the external imbalances, implying therefore that growth is indeed balance-of-payments constrained. Blecker (2009) also stressed that it is reasonable to conclude that the longer the time period considered, the more likely it is that relative prices remain constant. On the other hand, increasing capital inflows can at most be a temporary way of relaxing the balance-of-payments constraint, but they do not allow a country to grow at the export-led cumulative growth rate in the long-term. What matters in the long-term analysis of growth is the growth of exports.

On the sustainable debt debate, Barbosa-Filho (2002) argued that since the home country does not issue foreign currency, it can only have persistent trade deficits by receiving a continuous inflow of foreign capital. The counterpart of unbalanced trade is a change in the stock of foreign debt and, therefore, it has to be checked under which conditions the unbalanced trade constraint is consistent with a non-explosive accumulation of foreign debt.

Although Thirlwall's model has been modified to include capital flows and foreign debt, these studies have not considered the role of public imbalances as an additional constraint on growth. The external imbalance considered so far in the literature includes public disequilibrium, but the impact of the latter on overall growth has not been analysed separately. The recent experience of some peripheral European countries falling into public debt crisis is the motivation to deal with this issue. As Pelagidis and Desli (2004) argue, the implementation of an expansionary fiscal policy, aiming at strengthening growth rates and reducing unemployment, would not always achieve the desirable objectives. It could be the case that budget deficits, financed either by money printing or by public borrowing, will increase public debt and interest rates, crowd out private investments, fuel inflation, and damage medium-term growth. The answer to whether budget deficits are always desirable has many dimensions, including whether government borrowing is financing government consumption or investment in infrastructure, whether the deficit is sustainable, and how it is financed. On the other hand, the hesitation of many policy makers – especially in Europe – to rely more aggressively on fiscal policy measures in order to keep their public finances more or less balanced may lead to the possibility of a vicious cycle between slow growth and higher deficit formation as a result of the reduction of tax revenues.

Our paper aims at contributing to this debate by performing an alternative growth model, in line with Thirlwall's Law, that takes into account not only external, but also internal imbalances due to budget deficits and public debt. The reduced form of the growth of domestic income is determined, among others, by factors related to competitiveness and mismanagement of fiscal policy and public finances that could affect economic growth negatively. The theoretical model is tested for the Italian economy that recently faced serious problems in financing its public debt in international financial markets. The implemented restrictive measures, monitored by the IMF, are expected to have negative repercussions on growth in the upcoming years. Another issue to address is whether the adoption of Euro is responsible for the decline in economic performance in Italy. Taking all these considerations into account, the paper is organized as follows: in section 2 we present the theoretical growth model; section 3 tests the model for the Italian economy, for the whole period and the pre and post Euro sub-periods, trying to understand the causes of economic growth. The last section concludes.

## 2. The growth model with internal and external imbalances

We use a multi equation model developed by Soukiazis-Cerqueira-Antunes (2012) - hereafter the SCA model - to derive the reduced form of income growth which depends, among other things, on internal and external imbalances. The model follows the developments of Thirlwall's Law with two particular differences: (i) it considers not only external imbalances (current account deficits) but also internal imbalances emerging from public deficit and debt; (ii) it considers further the import contents of the components of aggregate demand, measuring their impact on growth.

The SCA model is constituted by the following main equations, where a lower-case letter with a dot denotes the instantaneous growth rate of a given variable:

   *(i)*     *Import equation*

Contrary to the conventional specification that considers real domestic income as the main aggregate determinant of the demand for imports, we use the components of domestic income to explain import flows. We assume that relative prices do not play a

significant role and that in the long-run they remain constant (the steady state condition)[1]. The import function is given by:

$$\dot{m} = \pi_c \dot{c} + \pi_g \dot{g} + \pi_x \dot{x} + \pi_k \dot{k}$$

(1)

where the growth in demand for imports ($\dot{m}$) depends on the growth rates of private consumption ($\dot{c}$), government expenditures ($\dot{g}$), exports ($\dot{x}$) and investment ($\dot{k}$), respectively. In this equation, $\pi$ stands for the elasticity of each of the components of demand in relation to imports. All elasticities are expected to be positive since all components of demand have import content.

*(ii) Government expenditure*

As it is shown in the SCA model (see *Appendix II* of the mentioned paper), the long-term relationship of the growth of real government expenditures is given by:

$$\dot{g} = t\frac{\dot{y}}{w_G} + \dot{d}\frac{w_D}{w_G} - (\dot{p} + i)\dot{b}\frac{w_B}{w_G} + i\dot{p}\frac{w_B}{w_G}$$

(2)

where $w_D = \dfrac{D/P}{Y}$ is the public deficit ratio, $\dot{d} = \dfrac{\Delta D}{D}$ the growth rate of public deficit, $w_G = \dfrac{G}{Y}$ denotes the public expenditure share and $w_B = \dfrac{B/P}{Y}$ the public debt share.

Equation **(2)** is derived from the government budget relation given by the following identity:

$$G_n + iB = t(YP) + D$$

where $G_n$ is nominal government expenditures, $B$ is public debt [2], $Y$ is domestic income, $P$ is the domestic price level, $D$ the public deficit, $i$ is nominal interest rate paid on public debt and $t$ is the tax rate on nominal income. According to this relation, public

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[1] This is a debatable assumption made for the sake of simplifying the model. As we explained before, there are studies showing that relative prices are important in international trade and explain a substantial part of growth in some countries. For instance, Garcimartín et al (2010-11) attribute the slowdown of economic growth in Portugal to the overvaluation of the domestic currency (loss of price competitiveness) when the country joined the Euro zone.

[2] Public debt is originated by the issue of government bonds to finance public deficit.

deficit exists when total current expenditures (including interest payments on public debt) exceed the receipts obtained through taxes on domestic money income, $G_n + iB > t(YP)$.

We have to note that the public debt ($B$) is a combination of both domestic ($B_H$) and foreign ($B_F$) debt, that is, government's bonds are held by residents and non-residents, respectively. Likewise, the public deficit ($D$) can be financed internally ($D_H$) or from abroad ($D_F$). Bearing this in mind, the following relations are established:

$$B = B_H + B_F \quad ; \quad \frac{B_H}{B} + \frac{B_F}{B} = 1 \quad ; \quad \xi_B = \frac{B_H}{B}; \quad 1 - \xi_B = \frac{B_F}{B}$$

$$D = D_H + D_F \quad ; \quad \frac{D_H}{D} + \frac{D_F}{D} = 1 \quad ; \quad \xi_D = \frac{D_H}{D}; \quad 1 - \xi_D = \frac{D_F}{D}$$

(3)

where $\xi_B$ (the percentage of public debt financed internally) and $\xi_D$ (the percentage of public deficit financed internally) are assumed to be constant in the long-run, for simplicity. The extreme case $\xi_B = 1$ shows that public debt is uniquely financed by national bond holders. Analogously, $\xi_D = 1$ implies that the budget deficit is entirely financed by domestic resources.

*(iii) Private final consumption and investment*

From the SCA model (see *Appendix III* of the mentioned paper) the growth of consumption ($\dot{c}$) is a function of the growth of domestic income ($\dot{y}$) with $\varepsilon_c$ the income elasticity with respect to consumption:

$$\dot{c} = \varepsilon_c \dot{y} \tag{4}$$

Analogously, the growth of investment is a function of the growth of domestic income ($\dot{y}$) with $\varepsilon_k$ the income elasticity in relation to change in capital stock:

$$\dot{k} = \varepsilon_k \dot{y} \tag{5}$$

*(iv) Export demand function*

In this equation it is assumed that foreign income $Y^*$ is the main determinant of export demand. It is explicitly assumed that exports competitiveness is based on non-price

competitiveness captured by the income elasticity of the demand for exports. Therefore, we assume that relative prices remain constant in the long-term analysis (the steady state assumption). Having this in mind, the growth of exports is defined as:

$$\dot{x} = \varepsilon_x \dot{y}* \tag{6}$$

where $\dot{x}$ is the growth of real exports, $\dot{y}*$ the growth of real foreign income and $\varepsilon_x$ is the income elasticity of demand for exports capturing the non-price characteristics of the exported goods associated with quality, design, reliability, varieties, etc[3].

*(v)  Balance-of-Payments condition*

The last relation of the model is an external equilibrium condition given by the following identity:

$$XP - iB_F + D_F = MP* \tag{7}$$

The left hand side of the identity shows the money resources available to finance imports (export revenues minus interest rate payments on foreign bond holders plus the amount of public deficit assets hold by foreigners). *P\** is the foreign price level. As it is shown in the SCA model (see *Appendix IV* of the mentioned paper) the external equilibrium relation can be expressed as:

$$\dot{x} + \dot{p} + (1 - \xi_B)\frac{w_D}{w_X}\left[\dot{y} + \dot{p} - i\right] = (\dot{m} + \dot{p})\frac{w_M}{w_X} \tag{8}$$

where $w_M$ and $w_X$ are the shares of imports and exports on income, respectively and the other variables as defined previously. Substituting the growth of exports and imports by the relations found in **(1)** and **(6)** we derive:

$$\varepsilon_x \dot{y}* + \dot{p} + (1 - \xi_B)\frac{w_D}{w_X}\left[\dot{y} + \dot{p} - i\right] = \left[\pi_c \dot{c} + \pi_g \dot{g} + \pi_k \dot{k} + \pi_x \dot{x} + \dot{p}\right]\frac{w_M}{w_X} \tag{9}$$

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[3] Although we assume that the income elasticity of demand for exports captures the quality characteristics of the produced goods we do not neglect the fact that changes in relative prices can be related to changes in relative quality as well.

Further substitution of the growth of government expenditure **(2)**, consumption **(4)**, investment **(5)** and exports **(6)** yields:

$$\varepsilon_x \dot{y}* + \dot{p} + (1-\xi_B)\frac{w_D}{w_X}\left[\dot{y}+\dot{p}-i\right] =$$

$$\left[\pi_c\varepsilon_c\dot{y} + \pi_k\varepsilon_k\dot{y} + \pi_x\varepsilon_x\dot{y}* + \pi_g\left(\frac{t\dot{y}}{w_G}+\dot{d}\frac{w_D}{w_G}-(\dot{p}+i)\dot{b}\frac{w_B}{w_G}+i\dot{p}\frac{w_B}{w_G}\right)+\dot{p}\right]\frac{w_M}{w_X} \tag{10}$$

The next step is to define domestic income growth and find its determinants.

*(vi) Domestic income growth*

Rearranging terms in equation **(10)** we derive the reduced form of the growth of domestic income as it is shown in the SCA model (see *Appendix V* of the mentioned paper):

$$\dot{y} = \frac{(\varepsilon_x\frac{w_X}{w_M}-\pi_x\varepsilon_x)\dot{y}* + \frac{w_X}{w_M}\dot{p} - (1-\xi_B)\frac{w_D r}{w_M} - \pi_g\left(\dot{p}\frac{w_D}{w_G}-\dot{p}^2\frac{w_B}{w_G}\right)-\dot{p}}{\pi_c\varepsilon_c+\pi_k\varepsilon_k+\pi_g(\frac{t}{w_G}+\frac{w_D}{w_G}-(\dot{p}+i)\frac{w_B}{w_G})-(1-\xi_B)\frac{w_D}{w_M}} \tag{11}$$

Equation **(11)** shows that among other factors the growth of domestic income is determined by internal and external imbalances. Furthermore if we assume internal and external equilibrium (*B=0, D=0* and *X=M*), Equation **(11)** reduces to[4]:

$$\dot{y} = \frac{(\varepsilon_x-\pi_x\varepsilon_x)\dot{y}*}{\pi_c\varepsilon_c+\pi_k\varepsilon_k+\pi_g} \tag{12}$$

Equation **(12)** is similar to Thirlwall's original Law given by

$$\dot{y} = \frac{\varepsilon_x\dot{y}*}{\pi} \tag{13}$$

The only difference is that Equation **(12)** takes into account the import content of exports in the numerator and the import content of other components of domestic demand in the denominator. It would be interesting to test empirically these alternative

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[4] We are assuming that prices, real interest rates, the deficit and debt ratios are constant in the long-run. Also, $t/w_G=1$.

versions and check the difference in the prediction of domestic growth both in the presence and in the absence of internal and external imbalances.

## 3. Testing the model for the Italian economy

*Econometric Methodology*

The import Equation (**1**), consumption Equation (**4**), investment Equation (**5**) and export Equation (**6**) are all estimated simultaneously to obtain the elasticities which are needed to compute the reduced form of domestic income growth as it is expressed in Equation (**11**). The definition of the variables and the data sources are explained in *Appendix A* at the end of the paper. The method used for estimating the system equations is *3SLS (Three-Stage Least Squares)* as it is more efficient to capture the interrelation between equations and the causal and feedback effects between the variables.[5] **Table B.1** in the *Appendix B* provides the regression results where simultaneity is controlled by using instrumental variables. The growth of imports, consumption, investment and exports are assumed to be endogenous as well as the growth of government expenditures and domestic income. All other variables of the system are assumed exogenous including some lagged variables, as it is explained in **Table B.1**.

We also regressed each of the equations individually, by *2SLS (Two-Stage Least Squares)*, with the same instruments as before. The intention was to carry out some diagnostic tests to justify the robustness of our results. The first is the Sargan statistic, a test of over-identifying restrictions to check the validity of the instruments used in the regressions and that hypothesis is confirmed in all cases. The second is the Pagan-Hall heteroscedasticity test, showing that the hypothesis of homoscedasticity is never rejected. The third test is the Cumby-Huizinga test for autocorrelation. The null hypothesis, which is not rejected at 5% significant level in all cases, is that errors are not first-order autocorrelated. The last one is a normality test, conceptually similar to the Jarque-Bera skewness and kurtosis test. The null hypothesis is that residuals from a given regression are normally distributed, and this hypothesis is not rejected in all equations (except for investment). The results are displayed on **Table B.2.** in *Appendix B*.

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[5] For more details on the *3SLS* method, see for instance, AlDakhil (1998) and Wooldridge (2002).

*Empirical results and discussion*

**Table 1** below reports the values which are necessary for computing the growth of domestic income in Italy. Some are estimated values taken from **Table B.1** (*Appendix B*) others are annual averages over the periods considered (see *Appendix A* for variable definition and data sources).

Three different growth rates are computed and presented at the bottom of the table: $\dot{y}_a$ obtained from Equation **(11)** where internal and external imbalances are considered; $\dot{y}_b$ obtained from Equation **(12)** where internal and external equilibrium is assumed, and $\dot{y}_c$ obtained from Thirlwall's Law, given by $\dot{y} = \dfrac{\varepsilon_x \dot{y}^*}{\pi}$ (see Equation **(13)**). In the latter case, it was necessary to estimate the import demand function, $\dot{m} = a + \pi_m \dot{y}$, by OLS to obtain the aggregate income elasticity with respect to import growth[6]. Additionally, we provide values of the actual growth in the whole period (1984-2010), the pre-Euro period (1984-1998) and the post-Euro period (1999-2010). We assume that the estimated parameters of the model for the whole period are the same in the two sub-periods since the time span is too short to allow us to implement separate regressions of the system. The variables of the model assume their average values in the respective periods. The aim is to investigate whether there are differences in growth rates between the two sub-periods thus identifying different sources of economic growth.

Analysing the results of the computation of the growth rates for Italy shown in **Table 1**, we can make the following remarks:

(i)    The growth rates obtained from Thirlwall's Law ($\dot{y}_c$), given by $\dot{y} = \dfrac{\varepsilon_x \dot{y}^*}{\pi}$ overestimate the actual growth achieved in Italy in all periods, $\dot{y}_c > \dot{y}$, and this should be consistent with the existence of trade surpluses or at least with a balanced trade. If we check the figures of the share of exports ($w_X$) and imports

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[6] The import equation was also estimated with relative prices as additional explanatory variable, but its coefficient was not significant and there was no significant change of the income elasticity.

**Table 1. Computation of the growth rates of domestic income in Italy.**

| | $\varepsilon_x$ | $\pi_x$ | $\varepsilon_c$ | $\pi_c$ | $\varepsilon_k$ | $\pi_k$ | $\pi_g$ | $r$ | $t$ |
|---|---|---|---|---|---|---|---|---|---|
| 1984-2010 | 2.6 | 0.506 | 0.800 | 0.849 | 2.127 | 0.402 | 0.083 | 0.039 | 0.427 |
| *1*984-1998 | 2.6 | 0.506 | 0.800 | 0.849 | 2.127 | 0.402 | 0.083 | 0.054 | 0.418 |
| 1999-2010 | 2.6 | 0.506 | 0.800 | 0.849 | 2.127 | 0.402 | 0.083 | 0.022 | 0.448 |

| | $w_D$ | $w_G$ | $w_B$ | $\xi_D$ | $\xi_B$ | $w_M$ | $w_X$ | $\dot{p}$ | $\dot{y}^*$ | $w_X / w_M$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1984-2010 | 0.069 | 0.423 | 1.019 | 0.58 | 0.58 | 0.226 | 0.234 | 0.052 | 0.026 | 1.035 |
| 1984-1998 | 0.095 | 0.419 | 1.015 | 0.58 | 0.58 | 0.198 | 0.213 | 0.059 | 0.032 | 1.076 |
| 1999-2010 | 0.031 | 0.432 | 1.084 | 0.58 | 0.58 | 0.262 | 0.264 | 0.023 | 0.021 | 1.008 |

| | | | | |
|---|---|---|---|---|
| 1984-2010 | $\dot{y}_a =2.205\%$ | $\dot{y}_b =2.053\%$ | $\dot{y}_c =2.375\%$ | $\dot{y} =1.504\%$ |
| 1984-1998 | $\dot{y}_a =2.868\%$ | $\dot{y}_b =2.505\%$ | $\dot{y}_c =2.50\%$ | $\dot{y} =2.173\%$ |
| 1999-2010 | $\dot{y}_a =1.656\%$ | $\dot{y}_b =1.629\%$ | $\dot{y}_c =2.011\%$ | $\dot{y} =0.667\%$ |
| | Internal and external imbalances Equation (11) | Internal and external equilíbrium Equation(12) | Thirlwall's Law[a] Equation (13) | Actual growth |

**Notes:**

$\varepsilon_x, \pi_x, \varepsilon_c, \pi_c, \varepsilon_k, \pi_k$ and $\pi_g$ are taken from **Table B.1** (*Appendix B*).

*r, t,* $w_D$, $w_G$, $w_B$, $w_M$, $w_X$, $\xi_D$, $\xi_B$, $\dot{p}$ and $\dot{y}^*$ are annual averages over the periods 1984-2010, 1984-1998 and 1999-2010, respectively.

[a] The import equation ($\dot{m} = a + \pi_m \dot{y}$) was estimated by OLS to derive the aggregate income elasticity of demand for imports $\pi_m$ which is 2.846 for the whole period 1984-2010, 3.325 for the pre-euro period 1984-1998, and 2.715 for the post-euro period 1999-2010.

( $w_M$ ) they are similar, showing that Italy is close to a balanced economy with respect to external trade[7]. In particular, the ratio of the share ( $w_X / w_M$ ) is greater than one in all periods (see **Table 1**), although it has decreased moderately in the post-euro period. Two main conclusions can be derived from these results. The first is that Thirlwall's Law - through Equation (13) - overpredicts actual growth in Italy, showing that the country has the potentiality to grow faster than actually did. The second is that Italy slightly loses competitiveness in the post-euro period and this can be part of the explanation for the anemic economic growth observed in the last decade.

(ii)     The growth rates computed by the SCA model - Equation (12) - when internal and external equilibrium is assumed ( $\dot{y}_b$ ), also overestimate the actual growth in Italy in all periods and lead to the same conclusions as Equation (13). On the other hand, the predicted growth rates from the SCA model are closer to the actual rates in Italy than those obtained from Thirlwall's Law. Our estimates indicate that Italy has grown slower than the rate allowed by the balance-of-payments equilibrium ( $\dot{y} < \dot{y}_b < \dot{y}_c$ ) and this can be taken as evidence that this country faces supply constraints, restraining the economy from growing faster[8]. In other words Italy's potential growth[9] (without harming the balance-of-payments position) is higher than that actually achieved and the explanation for this slower growth rate can be found on the existence of supply constraints[10]. As it is known, once the economy becomes supply-constrained, demand growth has no effects on the rate of output growth. Two main remarks can be made from this analysis. The first is that the SCA model –Equation (12) – that takes into account the disaggregate demand elasticities of imports ( $\pi_c, \pi_k, \pi_x$ and $\pi_g$ ) is more accurate for predicting actual growth in Italy than the original Thirlwall's Law – through Equation (13) – that considers the aggregate income elasticity of the demand

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[7] The current account as a percentage of GDP in Italy was on average positive 0.249% in the period 1984-1998 but negative -1.04% in the euro period. The last result was greatly influenced by the recession years of 2008 and 2009. Anyway, these figures are not very far for assuming that the external trade is close to equilibrium.

[8] Some previous studies obtained the same result for Italy, for instance Thirlwall (1979; 1982) for the period 1953-1976, McCombie (1985) for 1973-1980, Pattichis (2001) for 1960-1997, and Bagnai (2008) for 1960-2006.

[9] The definition of potential growth is different than that implying full capacity utilization of factors of production. In this text we mean the growth achieved without creating balance-of-payments deficits.

[10] The supply restrictions can rely on the lack of production organization, low productivity, labour market rigidities, financial constraints, high bureaucracy, inefficient legislation, state interference, among others. For instance, total factor productivity growth in Italy is declining over time with the average value being 1.7% in 1986-1990, 1.2% in 1991-1995, 0.8% in 1996-2000, 0.3% in 2001-2005, and -0.5% in 2006-2010.

for imports $(\pi)$. The second is that there is evidence that Italy is subject to supply constraints that obstruct the country from growing faster.

(iii)     The growth rates computed by the SCA model – through Equation (11) that takes into account the internal and external imbalances - give the same insights as the previous case. In fact the predicted growth rates are higher than the actual rates achieved in Italy for all periods indicating again that the country is under supply constraints. These computed growth rates are also slightly higher than the rates obtained from Equation (12) where internal and external equilibrium is assumed. Therefore, the SCA model - with or without (internal and external) equilibrium – and Thirwall´s Law all agree that Italy has the potentiality to grow faster (without creating balance-of-payments problems), whenever the supply constraints are removed.

(iv)     When we divide the whole period in the pre-euro and the post-euro periods we observe that Italy grew much slower in the latter than in the former (0.667%[11] *versus* 2.173%). How can we justify this disappointing result for the country's economic performance? Is our model able to explain this radical decline in growth? The answer is yes. We have already mentioned above two causes for the decline in economic growth in Italy in the era of the euro: the first has to do with the loss of competiveness shown by the decline in the export/import share ratio, from 1.076 to 1.008 (see **Table 1**) and the deterioration of the current account equilibrium, from a 0.249% average surplus before the euro period to -1.04% deficit in the euro period (see footnote 7). The second is that Italy has the potentiality to grow faster without harming the balance-of-payments equilibrium, but this did not happen because of supply constraints which are more pronounced in the post-euro period. We can clarify this idea by checking the difference between actual growth and that predicted by the SCA model which is higher in the post-euro period (1.656-0.667=0.989) than in the pre-euro period (2.868-2.173=0.695).

Some other causes that could explain the lower growth rates in the euro period, as **Table 1** shows, can be found on the increasing rate of taxation (from 41.8% to 44.8% on average), the increase in the public debt (from 101.5% of GDP to

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[11] We have to take into account that the average slower growth rate in the euro period is heavily influenced by the negative decline of GDP by -1.2% in 2008 and -5.1% in 2009.

108.4% on average), the increase in public expenditure share[12] (from 41.9% to 43.2% on average) but also on exogenous factors as the decline of external growth (from 3.2% to 2.1% on average).

Summing up, we believe that there are three main directions that Italy should focus in order to recover economic growth: removing the supply constraints to growth (improvements in productivity); increasing external trade competitiveness; and adjusting public imbalances to more suitable levels.

*Scenarios to faster growth*

Some scenarios can be designed to try to detect some policies that could help Italy to grow faster, using the SCA model with internal and external imbalances – Equation (11) - for the global period.

(i)     First of all we can find the impact on growth by imposing a public deficit of $w_D$ =3% and a debt discipline of $w_B = 60\%$ (as percentages of GDP), which are the goals of the Stability and Growth Pact in Europe. Imposing these goals in the SCA model the predicted growth rate for Italy increases from $\dot{y}_a$ =2.205% (see **Table 1**) to 2.289% which is not a significant improvement. Although the fiscal policy discipline helps Italy to improve its growth performance in the long-term, this measure is not a great stimulus to growth.

(ii)    Reducing the import sensitivity of exports (elasticity) from $\pi_x$ =0.506 to 0.40 our model predicts a rise in the growth rate from $\dot{y}_a$ =2.205% to $\dot{y}_a$ = 2.69% and if $\pi_x$ = 0.30 the growth rate is even higher, $\dot{y}_a$ = 3.15%. Having a large import sensitivity of exports is an impediment to growth since the exports' multiplier effects on income are crowded out by higher imports. Reducing the import content of exports is the appropriate policy to achieve higher growth in Italy. We have to notice however, that living in a global economy where production is organized around international value chains, what is important is not importing too much in order to produce exports, but ensuring that the transformation of imported components into exports contains enough value-added. In international

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[12] If public spending removes resources from private investment, a large public sector is likely to act as a constraint on growth.

markets, most exports embody a substantial share of imported components, but in terms of gains it is important that the value (price) of exports embodying imported components is sufficiently higher than the value (price) of those imported components.

(iii)    Growth rates in Italy are also sensitive to import contents of other components of demand like consumption and investment. Reducing the import sensitivity of consumption from $\pi_c = 0.849$ to 0.70 and that of investment from $\pi_k = 0.402$ to 0.30 the predicted growth rate obtained from the SCA model increases from $\dot{y}_a = 2.205\%$ to $\dot{y}_a = 2.86\%$ which is a significant improvement. Assuming a more pronounced reduction $\pi_c = 0.65$ and $\pi_k = 0.25$ the growth rate increases to $\dot{y}_a = 3.28\%$ Therefore, policies regarding a drop in the import dependence of the elements of demand can be a good strategy for fostering economic growth in Italy.

(iv)    Increasing the share of exports by two percentage points (from 23% to 25%) the obtained growth is $\dot{y}_a = 2.77\%$, or alternatively reducing the share of imports by only two percentage points (from 22%% to 20%) the predicted growth is even faster, of about $\dot{y}_a = 3.28\%$. A combined policy with the aim at reducing the import share to 20% and increase the export share to 25% (with a surplus on trade) yields an even faster growth rate, around $\dot{y}_a = 3.91\%$. Therefore changing the structure of the shares of imports and exports is the appropriate way to achieve higher growth in Italy.

These hypothetical scenarios clearly show that the most effective policy to achieve faster growth in Italy is related to the external sector, either through an effort to obtain a positive net trade or to lower the import content of the components of demand. This is in line with the balance-of-payments equilibrium approach supported by Thirlwall's Law.

## 4. Concluding remarks

The aim of this study was to apply an alternative growth model in line with Thirlwall's Law that takes into account both internal and external imbalances. The important contribution of the model is that it discriminates the import content of aggregate

demand and introduces public deficit and debt measures as determinants of growth. The reduced form of the model shows that growth rates can be obtained in three alternative ways: (i) assuming internal and external imbalances (the so called SCA model); (ii) assuming that public finances and current account external payments are balanced; and lastly (iii) the growth rate predicted by Thirlwall's Law. The SCA growth model is tested for the Italian economy to check its accuracy.

The equations constituting the SCA model are estimated by *3SLS* to control the endogeneity of variables and to obtain consistent estimates. Growth rates are estimated for the whole period 1984-2010 and also for the pre and post euro periods. The empirical analysis shows that growth rates obtained by the SCA model and the Thirlwall's Law over-predict actual growth in Italy in all periods considered, providing evidence that Italy grew slower than the rate compatible with the balance-of-payments equilibrium hypothesis. According to the interpretation of this hypothesis, the causes for the slower economic performance can be found on supply constraints that obstruct the economy from growing faster. Another important finding is that Italy's economic growth is much slower in the euro period and the main explanation may lay in the loss of competitiveness in this period. Other factors that possibly contributed to the decline of growth are higher public deficits and debt, higher taxes and high public expenditure.

Some scenarios are implemented to detect policies that could foster economic growth in Italy. It is shown that imposing the Stability and Growth Pact measures related to fiscal discipline (3% budget deficit and 60% public debt as percentages of GDP) are not significant stimulus for higher growth. Policies aiming at reducing the import contents of the components of demand or reducing by only two percentage points the import share and increasing by the same amount the export share in the economy are the most effective policies to promote economic growth in Italy.

# Appendix A

## Description of the variables and data sources

- $\dot{m}_t$ – annual growth rate of real imports - Imports of goods and services at 2000 prices (national currency; annual percentage change).
- $\dot{c}_t$ – annual growth rate of final private consumption - Private final consumption expenditure at 2000 prices (national currency; annual percentage change).
- $\dot{x}_t$ – annual growth rate of real exports - Exports of goods and services at 2000 prices (national currency; annual percentage change).
- $\dot{k}_t$ – annual growth rate of investment - Gross fixed capital formation at 2000 prices (national currency; annual percentage change).
- $\dot{y}_t$ – annual growth rate of real GDP - GDP at 2000 market prices (national currency; annual percentage change).
- $\dot{p}_t$ – annual growth rate of price deflator GDP at market prices (national currency; annual percentage change).
- $w_G$ – share of government's expenditure on GDP - Total expenditure; general government (% of GDP at market prices; excessive deficit procedure).
- $w_D$ – share of government's deficit on GDP - Net lending (-) or net borrowing (+); general government (% of GDP at market prices; excessive deficit procedure).
- $w_B$ – share of government's debt on GDP - General government consolidated gross debt (% of GDP at market prices; excessive deficit procedure). It excludes interest rate payments on debt.
- $w_M$ - imports of goods and services at current prices (national accounts) - % of GDP at market prices
- $w_X$ -. exports of goods and services at current prices (national accounts) - % of GDP at market prices.
- $t$ – share of government's revenues on GDP - Total current revenue; general government (% of GDP at market prices; excessive deficit procedure).
- $i$ – nominal long-term interest rates (%)

Data on $\dot{m}_t$, $\dot{c}_t$, $\dot{x}_t$, $\dot{k}_t$, $\dot{y}_t$, $\dot{p}_t$, $w_G$, $w_D$, $w_B$, $w_M$, $w_X$, $t$ and $i$ were taken from European Commission (2011).

- $\dot{g}_t$ – annual growth rate of government's expenditure. Computed by the authors from data on general government expenditure (Millions of euro from 1.1.1999/ECU up to 31.12.1998), available on Eurostat - Government Accounts http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (extracted on 12th December, 2011) and information on $\dot{p}_t$.

- $\dot{y}^*$ - annual growth rate of real foreign income (OECD countries), excluding Italy. The rates were computed by the authors, using data obtained from OECD.StatExtracts http://stats.oecd.org/Index.aspx (extracted on 15th December, 2011).

**Table B.1. The 3SLS estimation of the structural model, Italy 1984-2010.**

| | Coefficient | Std Error | t-stat | p-value | $R^2$ | F-stat | p-value |
|---|---|---|---|---|---|---|---|
| **Imports growth** | | | | | | | |
| constant | 0.156 | 0.849 | 0.18 | 0.854 | | | |
| $\dot{c}_t$ | 0.849 | 0.485 | 1.75 | 0.083* | | | |
| $\dot{g}_t$ | 0.083 | 0.115 | 0.72 | 0.471 | 0.8048 | 26.04 | 0.000 |
| $\dot{x}_t$ | 0.506 | 0.112 | 4.50 | 0.000*** | | | |
| $\dot{k}_t$ | 0.402 | 0.188 | 2.14 | 0.035** | | | |
| **Consumption growth** | | | | | | | |
| constant | 0.405 | 0.281 | 1.44 | 0.154 | 0.5904 | 46.72 | 0.000 |
| $\dot{y}_t$ | 0.800 | 0.117 | 6.84 | 0.000*** | | | |
| **Investment growth** | | | | | | | |
| constant | -1.636 | 0.566 | -2.89 | 0.005*** | 0.7430 | 78.07 | 0.000 |
| $\dot{y}_t$ | 2.127 | 0.241 | 8.84 | 0.000*** | | | |
| **Exports growth** | | | | | | | |
| constant | -3.429 | 1.378 | -2.49 | 0.015** | 0.5870 | 35.89 | 0.000 |
| $\dot{y}_t{}^*$ | 2.600 | 0.434 | 5.99 | 0.000*** | | | |

**Notes:**

Endogenous variables: $\dot{m}_t, \dot{c}_t, \dot{k}_t, \dot{x}_t, \dot{g}_t, \dot{y}_t$

Exogenous variables: $\dot{y}_t^* \; \dot{y}_{t-1}^* W_{G,t} \;\; W_{G,t-2} \;\; W_{D,t} \;\; W_{D,t-2} \;\; W_{B,t} \;\; W_{B,t-2} \;\;\; t_t \;\; i_t \;\; \dot{p}_{1,t} \;\; \dot{p}_{1.t-1} \;\; \dot{p}_{1.t-2} \;\; \dot{k}_{t-2}$
$\dot{g}_{t-2} \;\; \dot{c}_{t-2} \;\; \dot{c}_{t-3}$

\* Coefficient significant at the 10% level; \** Coefficient significant at the 5% level; \*** Coefficient significant at the 1% level.

**Table B.2. The 2SLS estimation of each equation of the structural model, Italy 1984-2010.**

| | Coefficient | Std Error | t-stat | p-value | Sargan test | Heteroscedasticity test | AR(1) test | Normality test |
|---|---|---|---|---|---|---|---|---|
| **Growth of imports** | | | | | | | | |
| constant | 0.395 | 0.971 | 0.41 | 0.688 | $\chi^2_{13}=18.058$ | $\chi^2_{17}=11.599$ | $\chi^2_1=1.854$ | $\chi^2_2=0.43$ |
| $\dot{c}_t$ | 1.025 | 0.576 | 1.78 | 0.089* | p-value=0.1553 | p-value=0.8238 | p-value=0.1733 | p-value=0.8050 |
| $\dot{g}_t$ | 0.017 | 0.137 | 0.12 | 0.904 | | | | |
| $\dot{x}_t$ | 0.405 | 0.133 | 3.06 | 0.006*** | | | | |
| $\dot{k}_t$ | 0.518 | 0.224 | 2.32 | 0.030** | | | | |
| **Growth of consumption** | | | | | | | | |
| constant | 0.522 | 0.298 | 1.75 | 0.093* | $\chi^2_{16}=22.742$ | $\chi^2_{17}=19.266$ | $\chi^2_1=0.6657$ | $\chi^2_2=2.59$ |
| $\dot{y}_t$ | 0.722 | 0.128 | 5.64 | 0.000*** | p-value=0.1208 | p-value=0.3135 | p-value=0.4145 | p-value=0.2738 |
| **Growth of investment** | | | | | | | | |
| constant | -1.507 | 0.592 | -2.54 | 0.017** | $\chi^2_{16}=20.881$ | $\chi^2_{17}=16.481$ | $\chi^2_1=3.2496$ | $\chi^2_2=11.92$ |
| $\dot{y}_t$ | 2.042 | 0.254 | 8.04 | 0.000*** | p-value=0.1831 | p-value=0.4901 | p-value=0.0714 | p-value=0.0026 |
| **Growth of exports** | | | | | | | | |
| constant | -3.868 | 1.357 | -2.85 | 0.008*** | [1] | $\chi^2_1=0.195$ [2] | $\chi^2_1=1.4415$ | $\chi^2_2=3.61$ |
| $\dot{y}_t$* | 2.789 | 0.443 | 6.30 | 0.000*** | | p-value=0.6588 | p-value=0.2299 | p-value=0.1644 |

**Notes:**

Endogenous variables: $\dot{m}_t, \dot{c}_t, \dot{k}_t, \dot{x}_t, \dot{g}_t, \dot{y}_t$. Exogenous variables: $\dot{y}_t^*$ $\dot{y}_{t-1}^* W_{G,t}$ $W_{G,t-2}$ $W_{D,t}$ $W_{D,t-2}$ $W_{B,t}$ $W_{B,t-2}$ $t_t$ $i_t$ $\dot{p}_{1,t}$ $\dot{p}_{1.t-1}$ $\dot{p}_{1.t-2}$ $\dot{k}_{t-2}$ $\dot{g}_{t-2}$ $\dot{c}_{t-2}$ $\dot{c}_{t-3}$

* Coefficient significant at the 10% level; ** Coefficient significant at the 5% level; *** Coefficient significant at the 1% level.

(1) The last equation is an OLS regression; there is no Sargan test.

(2) The heteroscedasticity test on the last equation is a White/Koenker NR$^2$ test statistic. The Breusch-Pagan/Godfrey/Cook-Weisberg test points to the same conclusion: $\chi^2_1 = 0.189$; p-value = 0.6634.

**References**

AlDakhil, K. (1998) " A method for estimating simultaneous equations models with time-series and cross-section data". *Journal of King Saud University* - Administrative Sciences, 10 (1) 13-28.

Alonso, J., Garcimartín, C., (1998-99) "A new approach to balance-of-payments constraint: some empirical evidence". *Journal of Post Keynesian Economics*. Winter, 21(2), 259-282.

Bagnai, A. (2008) "Structural changes, cointegration and the empirics of Thirlwall´s Law". *Applied Economics*, vol. 37(8), 1-15.

Barbosa-Filho, N., (2002) "The balance-of-payments constraint: from balanced trade to sustainable debt". CEPA *Working Paper*, January.

Blecker, R., (2009) "Long-run growth in open economies: export-led cumulative causation or a balance-of-payments constraint"? Paper presented at the 2$^{nd}$ Summer School on Keynesian Macroeconomics and European Economic Policies. 2$^{nd}$ -9$^{th}$ August, Berlin, Germany.

European Commission (2011) "Statistical Annex of European Economy". Directorate General Economic and Financial Affairs, Spring.

Garcimartín, C., Rivas, L., Martínez, P. (2010-11) "On the role of relative prices and capital flows in balance-of-payments constrained growth: the experiences of Portugal and Spain in the Euro Area". *Journal of Post-Keynesian Economics*. Winter, 33 (2), 281-306.

López, J.; Cruz, A. (2000) "Thirlwall's Law and beyond: the Latin American experience". *Journal of Post Keynesian Economics*. Spring, 22(3), 477-495.

McCombie, J. (1985) "Economic growth, the Harrod foreign trade multiplier and the Hick's super-multiplier". *Applied Economics*, 17, 55-72.

McCombie, J., Thirlwall, A., (1994) "*Economic growth and the balance-of-payments constraint*". MacMillan Press, Basingstoke; St. Martin's Press, New York.

McGregor, P., Swales, J. (1985) "Professor Thirlwall and the balance-of-payments constrained growth". *Applied Economics*. 17, 17-32.

McGregor, P., Swales, J., (1991) "Thirlwall's Law and balance-of-payments constrained growth: further comment on the debate". *Applied Economics*. 23, 9-23.

Moreno-Brid, J., (1998-99) "On capital flows and the balance-of-payments-constrained growth model". *Journal of Post Keynesian Economics*. Winter, 21(2), 283-298.

Pattichis, C. (2001) "Trade, growth and monetary union". *Journal of Post Keynesian Economics*. Fall, 24(1), 125-148.

Pelagidis, T., Desli, E. (2004) "Deficits, growth and the current slowdown: what role for fiscal policy?" *Journal of Post Keynesian Economics*. Spring, 26 (3), 461-469.

Soukiazis, E., Cerqueira P., Antunes, M. (2012) "Modelling economic growth with internal and external imbalances: empirical evidence from Portugal". *Economic Modelling*. 29 (2), 478-486.

Thirlwall, A., (1979) "The balance-of-payments constraint as an explanation of international growth rate differences". *Banca Nazionale del Lavoro*. 128, 45-53.

Thirlwall, A., (1982) "The Harrod trade multiplier and the importance of export-led growth". *Pakistan Journal of Applied Economics*. 1(1), 1-21.

Thirlwall, A., Hussain, N., (1982) "The balance-of-payments constraint, capital flows and growth rate differences between developing countries". *Oxford Economic Papers*. 34, 498-510.

Wooldridge, J. (2002) "*Econometric analysis of cross-section and panel data*". Cambridge, Massachusetts, MIT Press.