



UNIVERSITÀ
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Department
of **ECONOMICS**

Working Paper Series
Department of Economics
University of Verona

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WP Number: 9

June 2021

ISSN: 2036-2919 (paper), 2036-4679 (online)

The Economic Consequences of Mr. Volpi: An Analysis of ‘Quota 90’*

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Abstract

The revaluation of the lira against the pound, the so-called ‘quota 90’, was a major economic policy decision taken by the fascist government in 1926. The economic history literature has seen this policy as the domestic implementation of the return to the Gold Exchange Standard, which characterized the interwar period, with relatively limited economic consequences. We analyze the effects of ‘quota 90’ through a Vector Error Correction Model and find that the economic cost in terms of output was limited. Granger-causality tests point toward wages reacting to changes in the terms of trade, which is consistent with the historical evidence of wage moderation as a result of labor market reforms that tilted the balance in favor of the firms.

Keywords: Quota 90, fascism, fascist economic policy, fixed exchange regime, Italy.

JEL codes: N14, E52, C32.

* We would like to thank Alessandro Buccioli and Andrea Xamo for comments and suggestions, and Andrea Sicca for research assistance. The usual disclaimer applies. The title is borrowed from a section of Toniolo (1980: 121).

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1. Introduction

In their classic analysis, Ciocca and Toniolo (1976) identify five sub-periods in the economic policy of fascism: fiscal consolidation (1922-1925), ‘quota 90’¹ (1926-1929), international crisis (1930-1932), autarchy (1933-1935), empire and preparation for war (1936-1939).

During the first period, excess demand due to investments took inflation to 19% in 1925 and 5% in 1926. The Italian lira depreciated against the sterling from 89.48 in June 1922 to 145 in July 1925 and 154 in July 1926. This contrasted with the appreciation to 90 (the so-called ‘quota 90’), set out by Mussolini in 1926, obtained through capital controls, the increase in interest rates and the compulsory exchange of short-term with long-term bonds.

Looking at the raw data, the revaluation of the lira seems to have caused a slowdown in real GDP in 1926 (+0.8%) and a recession in 1927 (-3% in real terms, -13% in nominal terms), but growth was soon back to 6.3% (1928) and 5% (1929).

As noted by Gabbuti (2020), the economic history of fascism, after intense research in the 1970s, lost momentum and economic historians turned their interest to liberal Italy. The interpretations given by Toniolo (1980) still represent the received wisdom, and the new wave of data released in 2011 has not been used to address the interwar period. ‘Quota 90’ has been analyzed by several authors. However, as de Cecco (1993) noted, on the one hand, it is difficult to assess Mussolini’s reasons for implementing ‘quota 90’, and on the other hand, it cannot be dismissed simply as a foolish policy choice. The literature, which we review in the next section, has been mostly interested in the causes of ‘quota 90’, the international relations behind this decision, and the change in policy represented by the substitution of Mr. de’ Stefani with Mr. Volpi at the helm of the Treasury. Relatively low interest has been devoted to the effects, either on output or the current account. The assessment is that the revaluation had a strong but short-lived effect because of the internal devaluation obtained by cutting nominal wages. Moreover, the literature lacks a quantitative approach, not unlike other economic issues related to fascism.²

This paper attempts to fill this gap in the literature by providing an econometric analysis of the effects of changes in the terms of trade on GDP. In doing so, we first analyze the time-series properties of the variables involved in the study and we find that a long-run relationship between them exists. Second, through an Error Correction Model, we investigate the short-term adjustment and find that the adjustment to a terms of trade shock is relatively

¹ Literally, mark 90, that is 90 lira per one British pound.

² See Ricciuti (2014) for a short review of the cliometrics of fascism and for the effects of the economic policies of fascism on capital accumulation.

fast. Taken together, these results maintain that the effects of ‘quota 90’ were mild. Third, Granger-causality tests show that changes in terms of trade anticipate changes in wages, supporting the idea that the weakening of the trade unions was a source for regaining competitiveness. Overall, our results reinforce the qualitative results of the literature.

The paper is organized as follows. Section 2 reviews the implementation of ‘quota 90’ and the literature investigating this policy. In section 3 the methodology and data are introduced, whereas section 4 illustrates the results. Section 5 concludes.

2. “Quota 90” and the economic policy of fascism

“I want to tell you that we are fully determined to carry out our economic fight in defense of the lira, and from this square, I confirm to the whole civilized world that I shall defend the lira to the end.”³ These few words, pronounced by Benito Mussolini in Pesaro on 18 August 1926, summarize the so-called ‘Battle for the lira’, which is known as ‘quota 90’,⁴ undertaken by the fascist regime between 1925 and 1927.

After the March on Rome, the fascist government aimed at improving state finances by stabilizing and then reducing the public debt. The trade balance, in deficit after World War I, slowly improved, thanks to international circumstances but also to the devaluation of the lira, which favored exports. Moreover, after two troubled years in 1919-20 with a class struggle both in the industrial and agricultural sectors, wage increases were absorbed. The wholesale price index was stable until the beginning of 1925, and a slight devaluation of the lira hardly affected the cost of living of the middle class and *rentiers*, while entrepreneurial groups benefitted significantly from the situation (Toniolo, 1980). After good harvests, the agrarian sector prospered between 1923 and 1925, although the conditions of agricultural workers hardly improved (Toniolo, 1980).

This situation changed dramatically between the end of 1924 and the beginning of 1925 when the lira started to devalue, imports began to outweigh exports and inflation rose. This new pressure on the balance of payments was caused by the vigor of the German exports that were crowding out those of other countries and the strength of internal demand (Toniolo, 1980). Moreover, intense national and foreign speculation hit the Lira hard, contributing to its

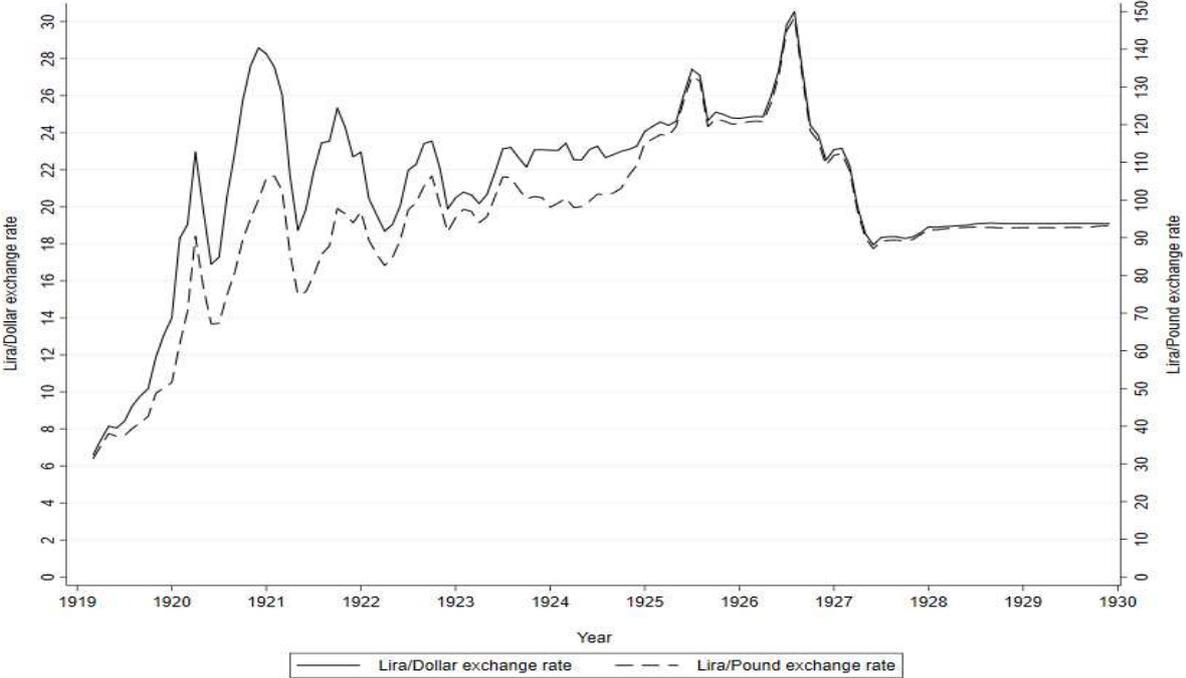
³ Translation by Fratianni and Spinelli (1997).

⁴ As noted by Sarti (1970), the term ‘quota 90’ was used for the first time by Mussolini on 26 May 1927 in the famous ‘Ascension Speech’. See De Felice (1966) for a political analysis of ‘quota 90’ in the documents of Mussolini and Volpi.

depreciation (Falco and Storaci, 1977). The exchange rate against the dollar and the pound, started to falter, reaching over 27 for the dollar, and over 132 for the pound in July 1925 (Figure 1).

Inflation, muted until 1925, shot up, impacting the cost of living, with dire consequences for the middle class, whose support was crucial for the regime. The price of imports, especially food and other raw materials, started to increase fast (Staraci and Tattara, 2001). Consequently, the industrial sectors (such as iron and steel) which depended on imports, were harmed. Vice versa, agriculture and textiles, leading exports, benefited from the shock. Faced with the crisis, the Minister of Finance, Alberto de' Stefani lost the support of both the Fascist Party and the financial world (de' Stefani, 1988; Toniolo and Salsano, 2011: 17-20). Mussolini replaced him with Giuseppe Volpi in July 1925. The choice of Volpi,⁵ an entrepreneur and financier with an extensive network of relations in the Anglo-Saxon world, can be read as an act of goodwill to manufacturers (Toniolo and Salsano, 2011: 20).

Figure 1: *The exchange rate between the lira and the dollar and pound (1919-1929)*



Source: Cotula and Spaventa (1993). Data in lira.

With the support of Mussolini, the new Minister acted differently. The control of monetary circulation became a major issue, and Volpi assumed the surveillance of the

⁵ For recent accounts on Volpi see Segreto (2019).

exchange market and was in charge of the open-market operations in the same market, which previously belonged to the Bank of Italy (Toniolo, 1980: 102-103). The State started to buy lira in the market to reduce liquidity but not much could be achieved without favorable circumstances internationally. Until April 1926, the lira remained stable, then a meltdown occurred. Toniolo (1980) cites some of the possible causes: the international situation, increasing inflation, the balance of payments deficit and the growth of currency supply from big investment banks to companies. Moreover, the American *Quota Act* limited immigration in the US after 1921 and began to bite, drastically decreasing the value of remittances. During the summer, Volpi started some structural interventions to stabilize the value of the currency. In August 1926 the Bank of Italy became the only institution with the right to print money, revoking the rights of the Bank of Sicily and the Bank of Naples. This measure was a message to the American financial world that wanted a modern central bank to deal with (Migone, 1973). Volpi also introduced capital controls in the exchange market to limit speculation and banks are strongly constrained in dealing with foreign currency (Baffi, 1973). In the London Accords in 1926, Italy had an 84% ‘haircut’ of its debt with the US and the UK (Astora and Fratianni, 2019), mostly related to World War I.⁶

During the summer of 1926, Mussolini pronounced the previously mentioned Pesaro Speech, which acted as the prelude to Volpi’s action. He completed the previous steps by trying to increase the reserves of hard currencies. A \$100 million loan in the US market was arranged by a bank syndicate led by Morgan Bank, and the proceeds were transferred from the Treasury to the Bank of Italy. The *Istituto di credito per le imprese di pubblica utilità*⁷ and other private companies placed bonds in the US and handed the dollars to the Bank of Italy, which in turn insured them against exchange rate volatility (Baffi, 1973). At the same time, the government tried to further reduce the currency in circulation by consolidating the public debt. Mussolini and Volpi launched the so-called *Prestito del Littorio* in November 1926: all public debt securities with a maturity lower than seven years were forcibly converted into long-term securities, and further money was raised. In May 1927, a pound was worth 90 lira and the exchange rate had stabilized.⁸ With Royal Decree 2325 dated 21 December 1927, the

⁶ After the Lausanne Conference of 1932 which failed to forgive war debt, in 1934 Italy defaulted on its debt (Astora and Fratianni, 2019).

⁷ The Institute was a government organization established in Rome in 1924 to grant public and private companies loans secured by mortgages for the execution of works of public interest.

⁸ According to Di Nino et al. (2013), the lira real exchange rate corrected for productivity differentials appreciated from 1921 to the mid-1930s, leading to overvaluation. Much of the appreciation was due to ‘quota 90’.

currency reform was completed by joining the Gold Exchange Standard: the pound exchange rate was fixed at 92,46 lira, and the Bank of Italy was obliged to keep a gold reserve or convertible currency equal to 40% of all notes in circulation (Fратиanni and Spinelli, 1997).

The causes and results of ‘quota 90’ have long been discussed by historians and economists. The devaluation of the lira in the previous period was non viewed as a problem by the government, especially by de’ Stefani, a free-market economist. This attitude could be called *benign neglect* (Toniolo and Salsano, 2011). However, the government probably had few tools to fight against devaluation and its international causes (Cotula and Spaventa, 1993; Cavalcanti, 2011). Moreover, until the end of 1924, a large portion of the industrial sector supported devaluation until it became costly, particularly for importers as heavy industries. A weak currency suited the textile and agricultural sectors and big exporters, but negatively impacted the middle class, the backbone of the fascist regime (Toniolo, 1980).

‘Quota 90’ can be understood within a trend characterizing the major economies after World War I: a tendency to return to the old monetary system.⁹ In the aftermath of World War I, all countries, because of the need to fund the war, abandoned the gold exchange standard. Once the war ended, there was a consensus for a rapid return to the pre-war gold standard. In two international conferences (Brussels 1920 and Genova 1922) European countries sought to re-establish gold as the monetary anchor (Bordo and MacDonald, 2003). The resulting monetary framework was called the gold exchange standard. According to the rules, each central bank limited fluctuations in the purchasing power of gold while ensuring continuous cooperation with one another. There were several benefits expected from the return to the gold standard: minimal exchange rate fluctuations, a balanced public budget, and no inflation to fund the public sector.¹⁰ Facing this international environment, ‘quota 90’ was essentially a political decision (Sarti, 1970). Mussolini sought international prestige, and 90 lira per pound was the exchange rate in December 1922, just two months after the March on Rome (De Felice, 1968). So, in Mussolini’s opinion, ‘quota 90’ was a symbol of success, preferable to

⁹ Indeed, Bonelli et al. (1976) strongly maintain that many of the policies implemented by Mussolini were indistinguishable from those of neighboring, democratic countries.

¹⁰ It is interesting to note that until the 2000s the consensus was that adhering to the gold standard was an effective way gain credibility in the financial markets (i.e., Bordo and Rockoff, 1996). However, a new generation of studies (i.e., Flandreau and Zumer, 2004) claimed that the working of the system was non co-operative and prone to shocks that causes several interventions also within the core countries. For a recent review, see Di Martino (2021).

‘quota 120’, the exchange rate requested by the industrial world via Confindustria and Assonime (Toniolo and Salsano, 2011).¹¹

Another possible cause of revaluation was Mussolini’s view of foreign exchange policy as laying the foundations for the Corporative State (Toniolo, 1980). The roots of the Fascist Party included some elements of anticapitalism, and ‘quota 90’ was seen as a way to punish private companies that were only formally supportive of the government. Moreover, it was also a hit on industrial development and urbanization and a decline in fertility, which fascism saw closely intertwined (Baffi, 1973).¹² Two economists located at very distant points in the political spectrum, Piero Sraffa and Gino Borgatta, saw ‘quota 90’ as a choice of the regime between different social groups. Sraffa claimed that only the middle class and some areas of the working class could benefit from the revaluation, therefore this policy was aimed at obtaining their support (Sraffa and Tasca, 1927). Borgatta (1936) maintained that, since the beginning, the regime acted in contrast with groups with variable incomes that were used to consider money, the exchange rate and the credit as variables dependent on their needs, and that used devaluation and inflation as a remedy for their mistakes. However, for Sraffa the cost for the entrepreneurial class was only in the short run (although in the range of “a few billion lira”), since it would benefit from a State that strengthen its social support.

Indeed, ‘quota 90’ represented a low point in the relationship between fascism and industrial interests. Melograni (1980) report a meeting in November 1926 at the Industrial Federation of Milan where export-oriented industries (textiles, food products, etc.) feared a policy of deflation, since it would make their products less competitive on the international market, while the metalworking and chemical industries were also concerned that a strong lira would make foreign industrial goods more competitive on the Italian market. Finally, electricity companies feared that the debts contracted during the years of high inflation would become more onerous.

Moreover, according to La Francesca (1972), ‘quota 90’ was a policy that brought together Italian economic forces and public opinion in a battle for national pride, which was in tune with the rhetoric of the regime that claimed to unify the different – and conflicting – social groups. Finally, in 1925/1926, although the regime was stable, Mussolini feared that a

¹¹ In a note to Volpi dated 26 april 1927, Mussolini claimed that the revaluation took place only with respect to the devaluation occurred after the fascist regime took power, therefore it was merely a reinstatement of the previous external value of the lira (De Felice, 1968).

¹² This point was also in the Ascension Speech, where Mussolini claimed that he envisioned a development based on “healthy industries” such as agriculture and phishing. This would have prevented the expansion of an industrial proletariat that could be an enemy of the regime (Baffi, 1973: 114-115).

failure in monetary policy would strengthen his opponents, both inside and outside the country and be used as a weapon to undermine the fascist regime (Cohen, 1972).

Assessing the results of 'quota 90' is more complicated. The currency reform was completed just two years before the onset of the Great Depression, so it is difficult to disentangle the impact of the policy from the crisis. The most evident consequence was the increase, after 1928, in the balance of payments deficit, as acknowledged by scholars at the time (Borgatta, 1937). Cohen (1972) maintains that if the revaluation of the lira had been 10% instead of the 19% sought by 'quota 90', the balance of trade in 1928 would have been negative for 188 million lira, instead of 2,513 million. Similarly, a revaluation of 120 lira to the pound, would have brought lower unemployment (Cohen, 1988). After the currency reform, unemployment indeed grew, returning to the 1923 level. Deflation and revaluation favored the larger industrial companies over the small and heavy industries over the light, negatively impacting particularly the textile and agricultural sectors (Cohen, 1988). Gualerni (1994) maintains that the revaluation allowed the completion of the country's industrial structure and enabled the industry to adapt to the new world of durable consumer goods. This view was opposed by De Cecco (1990), for which the level of income in Italy was too low and therefore imposed a premature phase of development.

The literature has discussed the intimate link between the revaluation of the lira and the internal devaluation that was implemented through wage compression (Sabbatucci Severini and Trento, 1975). 'Quota 90' was preceded by changes in the labor market. In October 1925 the Palazzo Vidoni Agreement made non-fascist trade unions illegal and restricted collective bargaining between *Confindustria* (the association of private industrial companies) and the *Confederazione nazionale delle corporazioni sindacali* (the fascist trade union). Subsequently, in April 1927 the *Carta del lavoro* (Charter of Labor) provided the ideological foundation for corporativism and wage cuts (Toniolo, 1980: 114). In the cotton industry, first, the ninth working hour was unpaid, then after protesting for the excessive revaluation of the lira (which was quoted at only 109.25) to cut wages in December 1926 (Toniolo, 1980). In May 1927 a 10% cut in agricultural wages in the area of Brescia, initiated similar cuts all over the country. This first round of cuts affected more than 2 million workers in manufacturing and 500.000 in agriculture. In October, the fascist party promoted a generalized wage cut of 10-20% (Toniolo, 1980).¹³ The deflationary policy was in full swing.

¹³ Sylos Labini (1965: 33) described the biased wage bargaining process under corporatism.

Table 1 shows the daily real wage for industrial workers (Zamagni, 1975). After two years of sizable increases following World War I, since 1922 real wages had been going down. After the decision to reevaluate the lira and the wage-cuts described above, the effect was felt in 1928, with a drop in real wages of about 7%. In 1930, there was a further 8% cut in nominal wages, but the effect on real wages did not materialize.

Table 1 – Industrial wages in Italy, 1920-1932

Year	Daily real wage (in 1938 lira)	Yearly change (%)
1920	16.69	+10.23
1921	17.34	+ 3.89
1922	16.45	- 5.14
1923	17.12	+ 4.07
1924	17.02	- 0.59
1925	16.25	- 4.53
1926	15.84	- 2.53
1927	16.08	+1.51
1928	14.93	-7.16
1929	14.72	-1.41
1930	14.62	- 0.68
1931	14.74	+0.82
1932	14.80	+ 0.40

Source: Zamagni (1975).

Del Vecchio (1932) observed that the government acted on rents, retail prices, public servant wages and some taxes to make the internal prices compatible with the increased value of the lira. De' Stefani noted that a 43% fall in wholesale prices forced a reduction in nominal wages led by the government, his trade unions and the judiciary (Baffi, 1973: 112). Mussolini himself had a clear understanding of the issue since on 26 April 1927 wrote “To hit prices and wages, we need that the revaluation to reach a dramatic level... The revaluation has already reduced price stickiness... The reduction of all the goods will accelerate the decline in retail prices.” A few days later (2 May), after a weakness of the lira in the exchange rate market, he wrote Volpi “It may be appropriate to buy a few lira, otherwise there will be a reason to increase the price of food and therefore it will be impossible to lower the wages of government workers” (Baffi, 1973: 112-113, our translation).

3. Methodology and data

This section addresses the empirical relationship between the lira exchange rate and GDP at market prices, to gain an understanding of the effects of lira revaluation in 1926 on

the Italian economy. Terms of trade (ToT) are used to measure the exchange rate. They are the relative price of exports in terms of imports and are defined as the ratio of export prices to import prices. An improvement in terms of trade benefits a country because it can buy more imports for any given level of exports. The terms of trade are influenced by the exchange rate because – the key policy variable here - a rise in the value of a country's currency lowers the domestic prices of its imports but may not directly affect the prices of the commodities it exports.

The first step in this time series analysis involves checking for the stationarity or non-stationarity of the variables; a stationary process is referred to as being integrated of order 0 or $I(0)$, meanwhile a nonstationary stochastic process that can be made stationary by taking the first difference is said to be integrated of order $I(1)$.

To test for the presence of unit root, we apply the Augmented Dickey-Fuller test (1979), which tests for the null hypothesis that a series does contain a unit root against the stationarity of the process and the KPPS test (Kwiatkowski et al., 1992), where stationarity is the null hypothesis and the unit root is the alternative.

Afterwards, a cointegration test is carried out to investigate the long-run relationship between the exchange rate and the economic variables (Johansen, 1988). According to Engle and Granger (1987), even where some economic series are not stationary, some linear combinations of the variables may be stationary. When variables have a common stochastic trend and possess a linear combination which is $I(0)$, they are cointegrated.

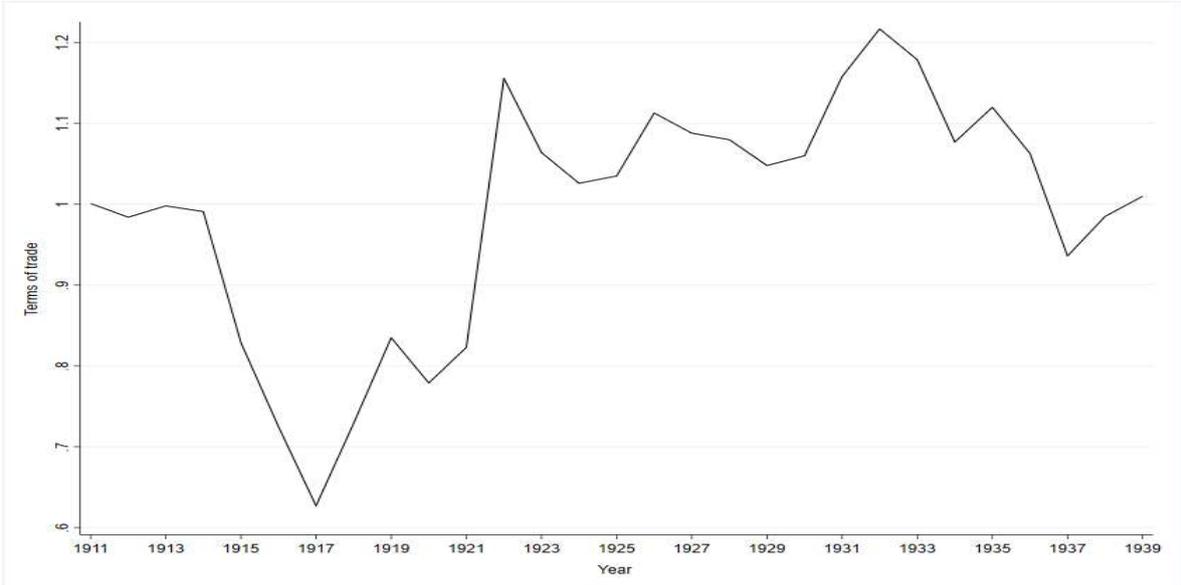
Where the variables prove to be cointegrated, the best candidate for modelling the data-generating process is the vector error correction model (VECM) that corrects for short-run disequilibrium. The VECM has in the Dickey-Fuller representation (Lütkepohl and Kratzig, 2004):

$$\Delta y_t = \Pi y_{t-1} + \Gamma_1 \Delta y_{t-1} + \dots + \Gamma_{p-1} \Delta y_{t-p+1} + u_t \quad (1)$$

The data for GDP at market prices for the period between 1911 and 1939 are taken from Baffigi (2013) and are expressed in real terms with base 1911. The data for the terms of trade (ToT) are taken from Federico et al. (2011, tab. 8, p. 230). Both variables are in logs. Figures 2 and 3 plot the two variables of interest. Given the small size of the sample, we estimated the most parsimonious model, and acknowledge that it would have been interesting

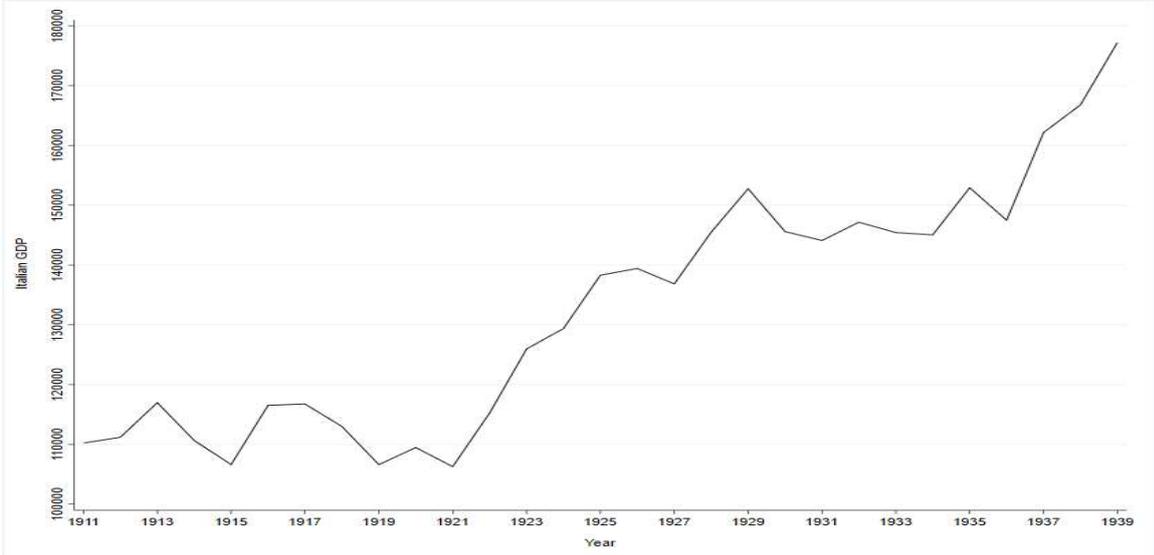
to include other variables that could act as channels in the relationship between terms of trade and GDP, but this would cause a serious cost in terms of degrees of freedom.¹⁴

Figure 2: Terms of trade, 1911-1939



Source: Federico et al. (2011)

Figure 3: Real Italian GDP, 1911-1939



Source: Baffigi (2013).

¹⁴ Nickelsburg (1985) provides a simulation study on a bivariate VAR with sample sizes of 25, 50, and 100 observations. In selecting the lag structure there is a tendency to underfit the model. The problem is bigger for the lowest number of observations, but only marginally. Underfitting leads to problems of misspecification error, which is troublesome when using a VAR to test for alternative economic theories. In this work, we limit ourselves to the description of the reaction to the economic shocks, without inferring anything beyond our problem at hand.

4. Results

We start by analyzing the stochastic properties of the series.¹⁵ Table 2 sets out the results of the unit root tests. For the terms of trade, the ADF cannot reject the null of a unit root in levels, but in first-differences at the 5% significance level, therefore the variable is I(1). This result is confirmed by the KPSS test, where stationarity is rejected in level at the 10% significance level. The same occurs for GDP, however, the case for unit roots is stronger, since it is obtained at the highest significance level.

Table 2 – Unit root tests

	ADF		KPSS	
	Level	First-differences	Level	First-differences
ln ToT	-1.3919	-3.0095	0.3649	0.3133
ln GDP	-0.1274	-5.0581	1.3973	0.1999

Critical values for the ADF test: -3.43 (1%), -2.86 (5%) and -2.57 (10%). Critical values for the KPSS test: 0.347 (10%), 0.463 (5%) and 0.739 (1%). For ToT the number of lags in level and first-differences in the ADF test is 4 and 2, respectively. For the KPSS the number of lags is 2 in both cases. For GDP, the number of lags in the ADF test is 8 and 3, respectively, and in the KPSS is 4 and 3. The number of lags was selected through the Akaike Information Criterion.

Having established the nature of the DGP of these variables, we look for the existence of a long-run relationship between them, i.e., cointegration. The trace test by Johansen (1988) was applied. We strongly reject the null hypothesis that $r = 0$, whereas we cannot reject the null of one cointegrating vector (Table 3). Therefore, terms of trade and GDP have common long-run behavior.

Table 3 – Cointegration test

r	Test statistics	90%	95%	99%
0	144.63	23.32	25.73	30.67
1	8.34	10.68	12.45	16.22

To analyze short-run behaviour, we estimate a VECM. The number of lags is determined by the Akaike Information Criterion (6).¹⁶ Two dummy variables are included: the first to account for World War I (taking the value of 1 from 1915 to 1918 and 0 otherwise),

¹⁵ The econometric analysis was carried out with JMulti and Gretl softwares.

¹⁶ The Hannan-Quinn and the Schwarz information criteriums return the same lag structure. The Bayes information criterion gives an optimal lag of 5. The results are quite similar to those presented here.

the second to take into consideration the effects of the Great Depression (equal to 1 from 1930 to 1939 and 0 otherwise).¹⁷ Both may be serious and somehow exogenous confounders that negatively affected both world demand and GDP (and its composition, since during a war there is a mobilization of resources towards specific industries) with consequences on the current account that are different from those derived from the revaluation of the lira.

We can rewrite eq. (1) as a VECM with factorization:

$$\Pi = (-0.240 \quad -0.262) * \begin{pmatrix} 1 \\ 0.986 \end{pmatrix}' \quad (2)$$

where the first factor (α) is the error-correction term, reporting the short-run effects of deviations from the long-run equilibrium, and the second factor (β) is the cointegrating term, reporting the long-run effects. The adjustment vectors are -0.240 for ToT and -0.262 for GDP. Both error correction terms are negative, but in the system VECM only the one for ToT is significant (s.e. 0.037, while for GDP is 0.352), showing the existence of a short-term adjustment running from terms of trade to GDP. In economic terms, about a quarter of the disequilibrium error is corrected in one year. The cointegration vector shows an almost one-to-one relationship between the two variables.

We perform two robustness checks. First, we use a shorter definition of the dummy variable for the Great Depression equal to 1 from 1930 to 1933 and 0 in the other years. The VECM factorization is:

$$\Pi = (-0.213 \quad -0.228) * \begin{pmatrix} 1 \\ 0.982 \end{pmatrix}' \quad (3)$$

Although the absorption of the shock seems to take longer in this specification, the results are qualitatively similar to the baseline.

¹⁷ The crisis started in October 1929, therefore that year was relatively unaffected. From a technical point of view, the crisis ended in 1933, but its effects in terms of disruption in international trade lasted until 1939. In that year Italian trade returned to its pre-crisis level (see the Baffigi data on national accounting www.bancaditalia.it/pubblicazioni/quaderni-storia/2011-0018/). Since our analysis is concerned with Italian foreign trade, we think this is an appropriate way to capture the effects of the Great Depression. We thank one reviewer for this point.

Second, to consider the turmoil related to the “biennio rosso” (red biennium),¹⁸ we also included a dummy variable equal to 1 in 1919 and 1920 and 0 in the remaining years to the first specification. In this case, the VECM with factorization becomes:

$$\Pi = (-0.246 \quad -0.253) * \begin{pmatrix} 1 \\ 0.981 \end{pmatrix}' \quad (4)$$

which is very close to the baseline. Provided that the results are quantitatively and qualitatively similar, we consider the baseline our favorite model since it is the most parsimonious specification.

Interpreting these results for the problem at hand, we can maintain that the revaluation of the lira had relatively mild consequences on output. The decision amounted mostly to an important political gesture by Mussolini, with low economic costs.

As discussed in section 2, the literature maintains that an important consequence of the revaluation was wage compression, which helped to reduce the adverse effects of ‘quota 90’ on the competitiveness of the firms and therefore reducing the worsening of the current account. To test the role of the wage policy, we perform a Granger-causality analysis (Granger, 1969) to check whether one variable precedes the change in the other.¹⁹ Preliminary, we need to analyze the stochastic properties of the wage variable. Since the data from Zamagni (1975), which run from 1911 through 1939, are real values with base 1938, to make it comparable in the econometric analysis with the series of the terms of trade, we have rebased it for 1911.

We take the log of this variable and find that the ADF test cannot reject the null hypothesis of a unit root, whereas the KPSS test rejects the null of stationarity at the 10% level (Table 4, panel A). Taking these tests together, we conclude that the series is likely I(1). Replicating both tests in first-differences, yields stationarity. To test for Granger causality, we take the first-differences of both $\ln\text{Wage}$ and $\ln\text{ToT}$ and estimate a VECM as before. Panel B

¹⁸ The “biennio rosso” is the period between 1919 and 1920, characterized by a series of workers’ and peasants’ struggles that reached their peak and conclusion with the occupation of factories in September 1920. These actions were located especially in central-northern Italy. In some instances, workers took control of the factories (Spriano, 1964). The economy was suffering from the effects of WWI, Candeloro (1996: 229) reports that between 1913 and 1918 there was a 35.4% decrease in real wages. These events created the fear of a Soviet-like revolution, the decline of the traditional liberal forces ruling the country that, coupled with the veterans of WWI that claimed a political role, led to the growth of Fasci di combattimento and the subsequent fascist coup in October 1922 (Salvadori, 2018).

¹⁹ As Leamer (1985) argued, Granger causality is better described as “precedence” since rather than testing whether X causes Y, the Granger causality tests whether X forecasts Y.

in Table 4 reports the results of the tests for Granger-causality. While we cannot reject the null hypothesis that wage does not Granger-cause ToT, we can reject the null that ToT does not Granger-cause wage. Therefore, changes in ToT anticipate variations in wages, as the economy adjusts to changes in prices.

Table 4 – Granger causality

Panel A - Unit root tests				
	ADF		KPSS	
	Level	First-differences	Level	First-differences
lnWage	-2.403	-4.314	0.381	0.131

Panel B – Granger causality

H_0 : wage does not Granger-cause ToT

Test statistic $l = 3.557$ pval-F(7, 4) = 0.1187

H_0 : ToT does not Granger-cause wage

Test statistic $l = 116.939$ pval-F(7, 4) = 0.0002

Critical values for the ADF test: -3.43 (1%), -2.86 (5%), and -2.57 (10%). Critical values for the KPSS test: 0.347 (10%), 0.463 (5%), and 0.739 (1%). For wage, the number of lags in level and first-differences in both the ADF test and the KPSS test is 2. The number of lags was selected through the Akaike Information Criterion.

5. Conclusions

This paper provides a time series characterisation of the relationship between the terms of trade and GDP for the Italian economy from 1911 to 1939. It identifies the average effect, which is used to interpret the economic consequences of the revaluation of the lira announced in 1926 and implemented in 1927. We find that the two variables have a common long-run relationship and that short-term adjustment was relatively fast.

The channel through which this adjustment was made was the labor market. In the terms of trade, the export prices depend both on the nominal exchange rate (the variable shocked by government policy) and domestic prices (also affected by government policy but in the opposite direction by reducing workers' rights and wages). The surrogate role of the fascist labour policy to reduce the negative effects of revaluation is highlighted in the Granger-causality analysis, which shows that changes in wages are anticipated by changes in the terms of trade. More specifically, a deterioration of the terms of trade caused by the revaluation was followed by a reduction in wages and therefore in prices. The policy

amounted to internal devaluation aimed at reducing domestic costs, diminishing the burden on industries that could accommodate the higher costs due to 'quota 90'. Control of the labor market was, indeed, not only a policy instrument but - more generally - a political philosophy under Mussolini's government.

This is not surprising: had the terms-of-trade remained unadjusted, a balance of payment crisis would have emerged, with the likely relinquishment of the newly regained membership to the Gold Exchange Standard. Political considerations outweighed economic concerns. 'Quota 90' was the way that the fascist government sought to gain some international standing in the wake of the return to the Gold Standard system, which took place at that time.

Given the sample size, some caution should be taken in interpreting the results. Further work, along the lines of counterfactual history, may assess whether a smaller revaluation – as discussed in the existing literature - would have been more beneficial for the Italian economy.

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