# The Basilicata Wealth Fund: resource policy and long-run economic development in Southern Italy

Iacono, Roberto

Sør-Trøndelag University College (HiST)

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Roberto Iacono[*]

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## Abstract

This paper contributes to the growing political economy literature of within-country natural resources management, by proposing a new resource policy for the oil-rich southern Italian region of Basilicata. The policy proposal is to establish a (regional) wealth fund in which all the royalty revenues from non-renewable natural resource exploitation in Basilicata would be stored and fully converted into low-risk financial assets. The scope is to give priority to long-run investments as to better exploit revenues from large-scale extraction of natural capital. Establishing a wealth fund at the regional sub-national level is a novel approach that can be applied to other resource-rich regions in the world. I label the fund as the Basilicata Wealth Fund (BWF). The BWF would be a regionally owned investment fund, however independently administered from national authorities (for instance, as an independent legal entity under the jurisdiction of the Bank of Italy). In addition, the paper posits a transparent and clear-cut spending fiscal rule in order to let regional authorities use the resource revenues to finance economic policy. The clear advantage from the BWF would be the stronger focus on long-run economic development and the higher accountability, hence avoiding misuse of resource revenues for myopic fiscal spending.

[*]Sør-Trøndelag University College (HiST), Department of Applied Social Science, Postboks 2320, NO-7004, Trondheim, Norway. E-mail: roberto.iacono@hist.no

# 1 Introduction

The aim of this paper is to put forward a new economic policy approach for the resource-rich southern Italian region of Basilicata, which can also be adopted from other resource-rich regions or federal states in the world. In other words, this paper aims at contributing to the growing literature of within-country political economy of natural resources, recently surveyed by Cust and Poelhekke (2015).

The recent empirical studies of Percoco (2012), Rocchi et al. (2015), Iacono (2015) and Biasi (2015), all point in the direction of missing or negligible positive effects from oil extraction activity in Basilicata. Percoco (2012) exploits a geographical Regression Discontinuity Design (RDD) in order to obtain the causal effects of almost two decades $(1991-2008)$ of large-scale oil extraction on per capita extra enterprise creation. The results show a positive effect of $0,01$ per capita extra firms, connected to a rather modest increase in employment of 2500 labour units. Complementary to the study of Percoco (2012), the quantitative comparative case study by Iacono (2015) estimates the general equilibrium effects of oil extraction activity and royalty revenues $(1980-2009)$ on the Basilicata regional economy. Iacono (2015) implements the Synthetic Control Method (SCM) in order to construct a data-driven comparison unit to the treated region of Basilicata, and confirms that the causal effects on a set of regional macroeconomic variables (real GDP per capita, employment rates and gross fixed investments) are negligible. Rocchi et al. (2015) construct a multi-sector model of the Basilicata region built on a Social Accounting Matrix (SAM), in order to analyze the potential impact on regional development (on both economic growth and distributive aspects) of the allocation of royalty revenues $(1997-2010)$. Rocchi et al. (2015) conclude that a more productive use of resource revenues at the level of regional government might have resulted in stronger regional growth and higher employment rates. Another recent study by Biasi (2015) provides an estimation of the genuine savings dynamics for the region of Basilicata as compared to other regions of Italy, showing clearly that extraction of nat-

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ural capital combined with unproductive revenue spending diminishes the overall sustainability of the process of regional economic development. To sum up, all these empirical studies converge on the conclusion that the past allocation of royalty revenues, mostly allocated to short-run social spending in these first couple of decades of resource exploitation, has been detrimental to the economic development of the region.

Hence, the consensus which emerges from these empirical studies calls for a brand new economic policy approach in order to give priority to long-run investments and to better exploit revenues from extraction of natural capital. The first and main contribution of this paper is to put forward and analyze such an approach. The policy proposal is to establish a (regional) sovereign wealth fund in which all the royalty revenues from non-renewable natural resource exploitation in Basilicata would be stored and fully converted into low-risk financial assets. For the sake of simplicity and in order to be consistent with the title of this paper, I will label the fund as the Basilicata Wealth Fund (BWF, hereafter). The BWF would be a regionally owned investment fund, however independently administered from national authorities (for instance, as an independent legal entity under the jurisdiction of the Bank of Italy)[1]. This institutional framework does not substantially deviate from the current institutional framework, in which the region of Basilicata receives the 100% of the royalty revenues paid from extracting companies to the Italian State (Iacono, 2015).

In addition, a transparent and clear-cut spending fiscal rule should be designed in order to let regional authorities use the resource revenues to finance economic development objectives. The simplest benchmark fiscal rule could be such that, for each given year, the regional government is allowed to use the annuity value of the financial wealth accumulated in the BWF. Deviations from this straightforward rule might also be conceived, for instance allowing larger spending in difficult times, as for example the Chilean fiscal rule does (Marcel et al., 2001). The clear advantage from the BWF and from a transparent fiscal spending rule would be the stronger focus on long-run economic development and the higher accountability (hence avoiding misuse of resource revenues for myopic fiscal spending). An additional novelty aspect of the economic policy approach proposed in this paper, is that establishing

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[1]To the best of my knowledge, the only research conducted on the creation of regionally owned funds has been conducted by Braunn-Munzinger (2009), who analyzed how these funds can help to implement the EU and European member states' Aid for Trade (AfT) commitments.

a wealth fund at the regional level has not been tried before and could be considered as a new policy option for other resource-rich regions in the world.

That being said, let me state once again that the main scope of this paper is to put forward and analytically present the core theoretical features of this new approach for the exploitation of resource revenues. In other words, this work is neither aimed at econometrically forecasting the economic effects of this approach, nor it is aimed at pinning down the precise institutional framework in which this policy proposal should land[2]. Both of these analyses would be destined to future research.

The paper proceeds as follows: section 2 introduces the theory and practice of sovereign wealth funds, section 3 applies the analytical framework to the case of the Basilicata region, whilst section 4 concludes.

# 2 Sovereign Wealth Funds: theory and practices

The aim of this section is to analyze more in detail the policy of establishing a Basilicata Wealth Fund. At first, the benchmark analytical model will be presented, by pinning down the fiscal spending rule formulation and the resulting fund dynamics. In addition, the following subsection presents a relevant example of a sovereign wealth fund established in resource-rich countries.

## 2.1 The analytical framework

The main scope behind a wealth fund is to boost the long-run impact of current resource revenues. In other words, the wealth fund postpones the use of the resource revenues by smoothing their spending path. Let us describe the features of the analytical framework behind the wealth fund, similarly to the model developed in Iacono (2012).

The BWF would for instance prescribe that the entire income from royalty revenues for a given year $R_t$ (with $R_T = 0$ due to resource depletion at $t = T$) be stored and converted into low-risk financial assets ($r$ is the constant net interest rate). Defining as $A_t^{bwf}$ the amount of resource wealth allocated in

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[2]For a detailed operational "roadmap" in order to analyze when and how setting up a sovereign wealth fund, see Ang (2010) and Das et al. (2009).

the BWF, it gives the following fund dynamics in discrete time:

$$A_{t+1}^{bwf} = (1+r)\left[A_t^{bwf} + R_t - g_t^{bwf}\right], \tag{1}$$

in which $g_t^{bwf}$ is the regional government fiscal spending rule. The simplest stylized formulation of the fiscal spending rule is the following:

$$g_t^{bwf} = \left(\frac{r}{1+r}\right)A_t^{bwf}, \tag{2}$$

in which $\left(\frac{r}{1+r}\right)A_t^{bwf}$ represents the annuity value of the financial wealth accumulated in the BWF; i.e., the regional government would be allowed to consume only the return on financial wealth which has been previously invested. The fiscal spending rule in (2) draws heavily on the actual Norwegian spending rule linked to the Norwegian sovereign wealth fund (Harding and van der Ploeg, 2013). It is relevant to remind that deviations from the rather conservative benchmark fiscal spending rule $g_t^{bwf}$ can be agreed, in order to allow higher spending at times.

As opposed to that, the current fiscal spending rule of the regional government of Basilicata is basically given by:

$$g_t = R_t. \tag{3}$$

A first clear advantage of the fiscal spending rule given in (2) with respect to the actual spending rule in (3), is that once exhaustible resources are depleted at $t = T$ (and hence, $R_T = 0$), regional government expenditure will still be positive due to previously accumulated financial wealth:

$$g_T^{bwf} > g_T = R_T = 0. \tag{4}$$

The clear-cut formulation of the fiscal spending rule $g_t^{bwf}$ in (2) was chosen as well in order to enhance analytical tractability: $g_t^{bwf}$ can be now inserted back into (1) in order to get:

$$A_{t+1}^{bwf} = (1+r)\left[A_t^{bwf} + R_t - \left(\frac{r}{1+r}\right)A_t^{bwf}\right], \tag{5}$$

$$A_{t+1}^{bwf} = A_t^{bwf} + (1+r)R_t. \tag{6}$$

For the sake of completeness, I will now solve the difference equation given in (6), which gives:

$$A_t^{bwf} = A_0^{bwf} + (1+r) \sum_{s=0}^{t-1} R_s. \tag{7}$$

As it can be seen from (7), in the post-depletion period we have $A_{T+s}^{bwf} = A_T^{bwf}$, with $(s = 1,..,n)$, due to $R_T = 0$. By substituting the last result from (7) back into the BWF spending rule (2), we obtain a formulation of the fiscal spending rule $g_t^{bwf}$ which is a function of exclusively exogenous terms, precisely the entire stream of royalty revenues $\sum_{s=0}^{t-1} R_s$ and the initial condition for the wealth fund given by $A_0^{bwf}$:

$$g_t^{bwf} = \frac{r}{1+r} \left[ (1+r) \sum_{s=0}^{t-1} R_s + A_0^{bwf} \right]. \tag{8}$$

In conclusion, the main feature of the BWF spending rules exemplified in (2, 8) is that fiscal spending at time $t$ is no longer strictly depending on the uncertain stream of resource revenues deriving from royalty payments. In other words, current fiscal spending will be now a fraction of the size of the financial wealth $A_t^{bwf}$ previously accumulated in the BWF.

## 2.2 Wealth funds' practices: the Norwegian experience

Due to the fact that there are no examples of sovereign wealth fund at the sub-national level, this subsection focuses on a relevant country case study. The relevancy of a national sovereign wealth fund case study for the resource policy proposal of this paper relies on the possibility that such a national framework be translated to a within-country institutional setting. In addition, a high degree of transparency would be desirable. Hence, the Norwegian experience will be given a prominent role in this subsection, as a benchmark framework in order to highlight the practices of establishing and running a sovereign wealth fund. The Norwegian experience with management of petroleum resources and more precisely the history of the Government Pension Fund Global (GPFG) has been analyzed by Caner and Gresses (2010), Harding and van der Ploeg (2013) and Holden (2013). The proposal of establishing a wealth fund in order to store resource revenues for future generations of citizens dates back as far as 1983, when the "Tempo Utvalg" (which stands for

"Speed Committee" in Norwegian, referred to the velocity of the extraction process). However, it took more a decade of parliamentary debate before the fund was actually established, in 1996. The establishment of a regional wealth fund at the sub-national level in Italy might partially borrow from the Norwegian experience, however it is important to point out that a new institutional framework should be designed, tailored to the new within-country context. As the Norwegian wealth fund is a state owned fund independently administered by the Norwegian central bank, the BWF could be established as a regionally owned fund independently administered by the central bank of Italy, under a specific and transparent regulatory framework. This institutional framework does not differ substantially from the current institutional framework, in which the region of Basilicata receives from the Italian state the 100% of the royalty revenues paid from extracting companies on the value of the oil extracted (Iacono, 2015).

At the beginning, the Norwegian wealth fund did not comprise an ad hoc spending rule, hence the national government was spending ahead of both current and future oil revenues (this consumption pattern can be theoretically justified by the Permanent Income Hypothesis, as developed in Iacono, 2012). In 2001, the ad hoc fiscal spending rule based on the annuity value of the financial wealth allocated in the fund was introduced, and since then Norwegian government authorities have been roughly spending each year a 4% of the fund's accumulated wealth. The size of the fund was approximately 290% of the Norwegian GDP at the end of 2014 (NBIM, 2014). The previous section has proposed for the BWF a fiscal spending rule based on the Norwegian experience, although the interest rate determining the annuity value should be tailored to the size of the BWF and to the necessity of the Basilicata region.

In conclusion, some political economy considerations. The economics literature on the management of natural resources (surveyed in Deacon, 2012) has clearly indicated that the efficacy of the use of resource windfalls depends crucially on the quality of institutions. For instance, lack of strong institutions can lead to higher corruption, as in Brollo et al. (2013), and determine a sub-optimal exploitation of the resource windfalls. To a certain extent, the establishment of the BWF responds precisely to the need of avoiding that the quality of the local institutions and the regional authorities in power will influence the spending path of the royalty revenues. On the other hand, the quality of institutions at the national level still plays a key role when it comes to designing the BWF, pinning down the rules of the game and ultimately

administrating the BWF.

# 3    The Basilicata Wealth Fund

This section aims at showing how the BWF would function in practice, by calibrating the analytical framework described above in (1-8) to the actual series of royalty revenues received from the Basilicata region, from 1997 to 2014. Once the series for the fund dynamics from (6) has been simulated inserting the actual series of royalty revenues $R_t$ $(1997 - 2014)$, it will be possible to numerically compare the consumption series for both the actual spending rule (3) and the BWF spending rule (2).

Let us start the reduced form simulation exercise by doing some parameterization. The constant net interest rate is assumed to be $r = 0.02$, which is a realistic value taking into account the BWF's administration costs and inflation. The actual royalty revenue series transferred from the Italian state to the Basilicata region for the period $1997 - 2014$ has been retrieved from UNMIG[3]. In order to show the different dynamics for the two fiscal spending rules in the post-depletion era, it is assumed for simplicity that resource depletion happens at $T = 2015$. The full time range of the simulation exercise is $1997 - 2050$, hence including both a pre- and post-depletion period.

At first, let us plot the time series for the actual fiscal spending rule $g_t = R_t$, which closely reflects the actual royalty revenues $R_t$ (Euros, current prices):

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[3]Royalties transfers in Euros were provided by UNMIG (Italian Ministry of Economic Development, General Direction for Energy and Mineral resources) and are available online at *http://unmig.sviluppoeconomico.gov.it/*. These data were downloaded on the 25/8/2015.
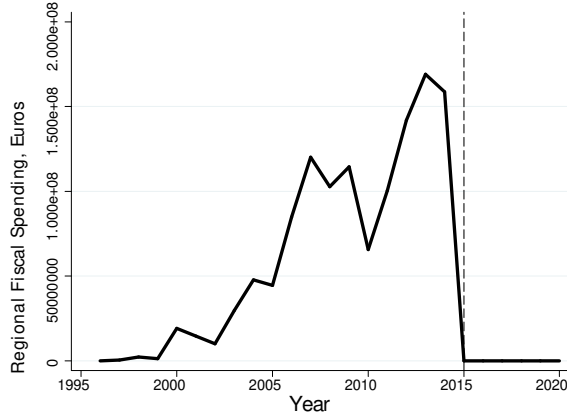
Figure 1 - Regional fiscal spending based on actual royalty revenues,
$1997 - 2020$.

As it can be seen from Figure 1, the highly volatile series of the actual royalty revenues increase substantially from the end of the $1990s$, up until the assumed depletion year 2015. From $T = 2015$ onwards, fiscal consumption for the regional government falls to zero as a consequence of depleted resources and null royalty revenues.

The next step is simulating the series $A_t^{bwf}$ for the BWF as given in the reduced form shown in (6), which is a function of actual royalty revenues $R_t$ and which incorporates the fiscal spending rule $g_t^{bwf}$ given in (2)[4]. The time series for the BWF can be plotted as follows:
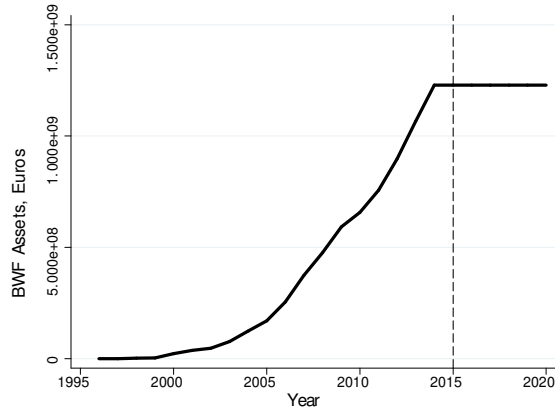


Figure 2 - Financial wealth accumulated in the BWF, $1997 - 2020$

[4]Data from simulation are available from the author on request.

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As it is shown in Figure 2, allocation of royalty revenues to the BWF drives the exponential growth of financial wealth accumulated in $A_t^{bwf}$ up until the depletion year, from which the amount of wealth accumulated stays constant (as predicted in section 2.1). This is due to the fact that the rather conservative fiscal spending rule $g_t^{bwf}$ does not imply higher consumption than the annuity value of the fund's financial wealth. In other words, it is crucial to point out that a deviation from such a rule in the sense of higher consumption would imply a flatter accumulation of financial wealth in the BWF.

The last step of this simulation exercise is to jointly plot the two fiscal spending series given by the actual spending rule (3) from Figure 1 and the BWF spending rule (2), in order to visualize the gap in consumption between them. The resulting figure is:
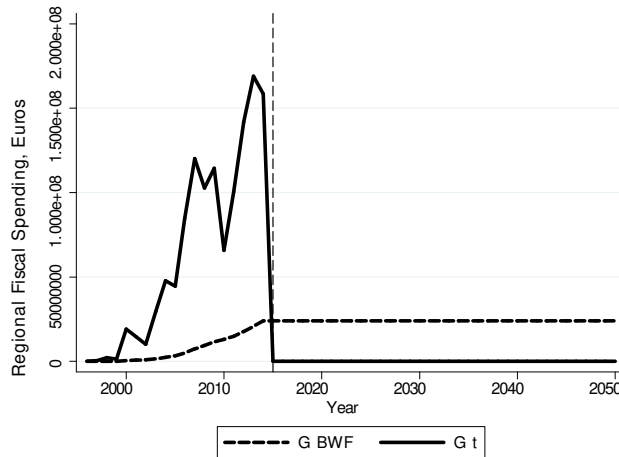


Figure 3 - Fiscal spending rules in comparison, $1997 - 2050$.

The joint plot of Figure 3 presents the main result of this simulation exercise, which intends to show the gap between the different consumption dynamics emerging from the actual spending rule and the one based on the BWF. As mentioned above, it has to be pointed out that the simulation results highly depend on the parameterization of the model, for instance on the level of the constant net interest rate $r$.

In conclusion, the intention of this simulation exercise was to present an analytical approximation of how the BWF would allow the regional government of Basilicata to smooth consumption of the royalty revenues towards long-run economic development objectives.

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# 4  Concluding remarks

The aim of this paper was to propose a new resource policy for the oil-rich southern Italian region of Basilicata. The policy proposal developed is to establish a regional wealth fund in order to store all the royalty revenues from exploitation of non-renewable natural resources in Basilicata. In addition, the paper posited a transparent and clear-cut spending fiscal rule, which aims at fostering the long-run impact of resource revenues. Deviations from the straightforward rule put forward in the analysis of this work might also be conceived, for instance allowing larger spending in recession times.

The greatest advantage from the BWF and from an attached transparent fiscal spending rule would be the stronger focus on long-run economic development and the higher political accountability, hence avoiding misuse of resource revenues for myopic fiscal spending. An additional novelty aspect of the resource policy proposed in this paper, is that establishing a regionally owned wealth fund administered by national authorities could be considered as an additional policy option for other resource-rich regions (and federal states) in the world.

Further research on this issue could be done by conducting a welfare-based evaluation of the consumption gap between the two fiscal rules, and calibrating the simulation exercise even closer to the actual profile of the Basilicata economy, in order to forecast the impact of the BWF on the economic development of the region.

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