

On the State guarantee in the joint-stock Company supporting the capitalization and restructuring of Italian firms

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Abstract

The paper describes and discusses the financial structure and the valuation of the State guarantee provided by the Italian Government to investors participating in the joint-stock Company supporting the capitalization and restructuring of Italian firms, for which the Italian Government has issued a call for an expression of interest on May 29, 2015.

Keywords: government guarantee, joint-stock company, capitalization and restructuring of Italian firms, payoff analysis.

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1 Introduction

On May 29, 2015, the Italian Government published, both on financial newspapers (e.g. “Il Sole 24 Ore”, page 11) and on the website <http://www.governo.it/Notizie/Presidenza/dettaglio.asp?d=78612>, a “call for guaranteed investors” (hereafter the Call) for an expression of interest (EOI) in the participation to a (would-be) joint-stock Company supporting the capitalization and restructuring of Italian firms. The deadline for the EOI was set to June 16, 2015.

In the preamble, the Call introduces the legal framework in which the Company will operate: “Pursuant to Article 7 of Law Decree No. 3 of 24 January 2015, converted into law by Law No. 33 of 24 March 2015, (hereinafter “Law Decree”), the Italian Government is mandated to “sponsor capital subscriptions by institutional and professional investors, for the purpose of establishing a joint-stock company (hereinafter the “Company”) supporting the capitalization and restructuring of Italian companies”. In order to provide the Company with adequate resources through contributions from institutional and professional investors with different profiles and investment policies, the Law Decree provides that certain categories of investors (the “Guaranteed Investors”) will benefit from a guarantee (granted by the State) securing their participation in the Company’s capital (hereinafter the “Guarantee”), provided that they accept to pay “a market-oriented consideration for the guarantee, in accordance with applicable EU rules, covering also the share of any profits distributed to them” (hereinafter “Consideration for the Guarantee”). The full text of the Law Decree, a summary of the project relating to the Company in Italian and English and the full text of the Decree of the President of the Council of Ministers of 4 May 2015 (hereinafter “DPCM”) are available at the following website www.governo.it.”.

Similarly, it is made clear that “The Company will operate on economic terms acceptable to a private investor under normal market economy conditions. Investors will be both institutional and professional, with a medium-long term investment horizon. Certain categories of investors (“Guaranteed Investors”) will benefit from a (fee based) guarantee granted by the Italian Ministry of Economy and Finance (the “State Guarantee”). The State Guarantee’s mechanisms, conditions and awarding criteria will be governed by a decree issued by the “Presidenza del Consiglio dei Ministri” (“DPCM”).”.

As far as “Amount and Term of the Guarantee” are concerned, “The Guarantee is granted within the limits of the financial resources available in special-purpose accounts, as set forth by the Law Decree, which, for fiscal year 2015, amount to Euro 300 million. Under the prudential provision rules set out in Article 8, paragraph 4 of the DPCM, a provision equal to 25% of the secured portion of the investment subscription price shall be set aside, with respect to each guarantee. As a result, considering that the guarantee covers 80% of the investment, the maximum amount of capital that may be subscribed by Guaranteed Investors is Euro 1,500 million (with a maximum pro-rata secured amount of Euro 1,200 million). The Guarantee shall have the same term as the investment in the Company” (10 years). Hence, given the prudential provision (25%) and the guarantee protection (80%), it results a leverage ratio of 5: five euros of guaranteed investment for one euro of Government guarantee¹.

¹For a comparison in the case of Italian SME see: Mottura, C. D., *Nuovi strumenti per il finanziamento delle PMI italiane: mini bond e garanzie statali*, Atti del terzo seminario

Within the Call the Italian Government has detailed the financial structure of the Guarantee and the conditions to be fulfilled by Guaranteed Investors in order to obtain it. In the following we will describe the structure and discuss the financial valuation of the Guarantee.

2 The structure of the Guarantee

As stated within the Call:

The Guarantee guarantees investments in the Company's share capital and ensures recovery of 80 per cent of the difference between (i) capital injected to the Company for any reason plus investment costs and (ii) the amount received by the relevant investor, for any reason, during each fiscal year, including in case of liquidation of the Company. The purpose of the Guarantee is set forth in Article 1 of the DPCM.

The Guarantee may only be enforced in case of liquidation of the Company, including in the context of insolvency proceedings, on the basis of the timing and procedures set forth in Article 9 of the DPCM.

The Guarantee thus covers 80% of the losses incurred by the Guaranteed Investors at liquidation time, either due to the insolvency of the Company or to a "simple" loss of market value.

As made clear in the Call, the Guarantee has a cost which is composed by three type of fees, respectively:

1. a fixed fee: "equal to the average yield rate of Italian government bonds during the 20 business days prior to the date of publication of the DPCM in the Italian Official Journal (the "BTP Yield"), increased or decreased by a margin (the "Margin") resulting from a competitive procedure to be carried out by the Ministry of Economy and Finance pursuant to Article 10 of the DPCM;"
2. a first variable fee: "calculated as 60% of the dividends and other sums distributed by the Company (excluding reimbursements of paid-up capital) exceeding an amount equal to the product of: i) 80% of the paid-up capital pro rata temporis and ii) the BTP Yield adjusted on the basis of the Margin, provided that, should such amount exceed the amount of the dividends and other sums received in the relevant year, the variable fees relating to the following years will be reduced by an amount equal to such difference."
3. a second variable fee: "Furthermore, solely in case of liquidation of the Company, the beneficiary shall pay a variable fee in the amount of 60% of any excess of the liquidation value of the secured portion of the investment over 80% of the paid-up capital."

The fixed and first variable fees should be paid on annual basis, while the second variable fee should be paid at liquidation time.

In financial terms the Italian Government is essentially selling protection to the Guaranteed Investors and buying from the Guaranteed Investors a portfolio of non-standard call derivatives on the value of the joint-stock Company.

celebrativo per i 40 anni dall'istituzione della Commissione Nazionale per le società e la borsa (to be published).

Due to the Guarantee the Government will carry part of the losses (if any) generated by the joint-stock Company, while, thanks to the variable fee cost components, the Government will participate in the benefits (if any) deriving by an increase of value of the joint-stock Company. On the other side, the Guaranteed Investors will recover part of the losses (if any) and reverse part of the profits (if any) generated by the investment.

2.1 Guarantee payoff analysis

In order to describe the financial setting of the Guarantee, let t_0 be the issue time, T the maturity of the joint-stock Company, $\tau \in (t_0, T]$ the liquidation time, and $S(t)$ ($t \in [t_0, T]$) the value at time t of the joint-stock Company owned by a Guaranteed Investor, so that $S(t_0)$ is the capital invested at time t_0 and $N = 80\%S(t_0)$ is the nominal capital of the Guarantee. Moreover, let \mathbf{s} be the set of payment dates for the fixed and the first variable fee, and $D(t_{k-1}, t_k)$, with $t_k = t_1, t_2, \dots, \min(\tau, T)$, $t_k \in \mathbf{s}$, the dividends payed by $S(t)$ between times t_{k-1} and t_k . Finally, defining

1. $\tilde{G}_\tau(t)$: the value at time t of the Guarantee protection due at time τ ;
2. $Qf_k(t)$: the value at time t of the fixed fee due at time $t_k \in \mathbf{s}$;
3. $\tilde{Q}v'_k(t)$: the value at time t of the first variable fee due at time $t_k \in \mathbf{s}$;
4. $\tilde{Q}v''_\tau(t)$: the value at time t of the second variable fee due at time τ ,

we have the following set of pay-off equations:

$$\begin{aligned} \tilde{G}_\tau(\tau) &= 80\% \max\{S(t_0) - S^*(\tau); 0\} = N \max\left\{1 - \frac{S^*(\tau)}{S(t_0)}; 0\right\} \\ Qf_k(t_k) &= N(i_{BTP} + \sigma) \\ \tilde{Q}v'_k(t_k) &= 60\% \max\left\{\max\{\tilde{D}(t_{k-1}, t_k) - \tilde{Q}f_k(t_k); 0\} - \sum_{j=1}^{k-1} \tilde{Q}v'_k(t_j); 0\right\} \\ \tilde{Q}v''_\tau(\tau) &= 60\% \max\{S(\tau) - 80\%S(t_0); 0\} = N 60\% \max\left\{1.25 \frac{S(\tau)}{S(t_0)} - 1; 0\right\} \end{aligned} \quad (1)$$

where i_{BTP} is the ‘‘BTP Yield’’, $\sigma \in \mathbb{R}$ is the ‘‘Margin’’ and $S^*(\tau)$ is the value in $t = \tau$ of the joint-stock Company increased by the dividends received by the Guaranteed Investor during each elapsed year:

$$S^*(\tau) = S(\tau) + \sum_{j:t_j < \tau} \tilde{D}'(t_{j-1}, t_j), \quad (2)$$

$\tilde{D}'(t_{j-1}, t_j)$ being equal to:

$$\tilde{D}'(t_{j-1}, t_j) = \tilde{D}(t_{j-1}, t_j) - \tilde{Q}v'_k(t_j). \quad (3)$$

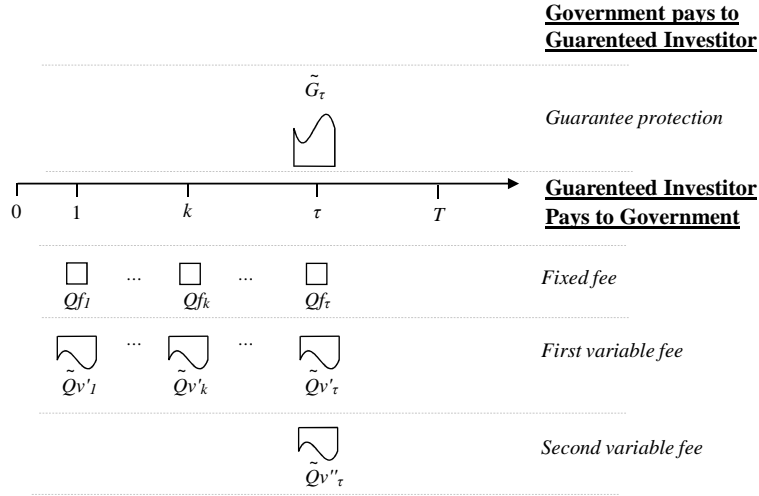


Figure 1: Structure of the Government guarantee contract.

Finally, we also define $\tilde{L}_\tau(t)$ as the value at time t of the loss incurred by the Guaranteed Investor at time τ , so that:

$$\tilde{L}_\tau(\tau) = 20\%S(t_0) \max\left\{1 - \frac{S^*(\tau)}{S(t_0)}; 0\right\}, \quad (4)$$

where – following the definition for the Guarantee protection – it has been assumed that the dividends received by the Guaranteed Investor during each elapsed year contribute to cover the loss.

The structure of the Government guarantee contract is illustrated in figure 1.

As illustrated in figure 1, the Government Guarantee can be financially described as a contract where: the Government sells to the Guaranteed Investor a partial protection on the possible investment losses (financially speaking, a put option), and the Guaranteed Investor sells to the Government (a) an annual cash flow of deterministic amounts (fixed fee leg), (b) a portfolio of non-standard call options, written on the dividend cash flow generated by the investment, with stochastic strikes and exercise times equal to the set of times in which dividends are paid, (c) a non-standard call option written on the investment value, with deterministic strike and exercise time equal to the liquidation time.

3 The valuation of the Guarantee

The Guarantee valuation framework should ensure that at issue time:

$$\tilde{G}_\tau(t_0) = \left[\sum_k Qf_k(t_0) + \tilde{Q}v'_k(t_0) \right] + Qv''_\tau(t_0). \quad (5)$$

In a perfect, complete and no-arbitrage market valuation framework, there exist a unique price for each component and a unique so-called equivalent martingale

measure (for a given *numéraire*) under which prices in units of numéraire are martingales. The knowledge of the joint dynamics of the risk factors and of the martingale measure allows pricing by computing cash flow expectations ².

In an incomplete and no-arbitrage market valuation framework the law of one price is no longer valid, and a range of allowed prices exists for each contract. It would be difficult to apply any of these frameworks to the valuation of the four components of eq. (5), since the dynamics of the “underlying” of the non-standard derivatives (the value of the investment and dividends) is completely unknown.

Furthermore, not only the dynamics of the “underlying” is unknown, but the risk itself is unknown at issue time since the investments have not been defined yet, so that it is impossible to price the Guarantee consistently. A possible way out is to index the level of protection and its price to the level of risk that will become known afterwards, leaving the opportunity to exercise suited “management actions” to (at least) one counterparty so that profit and losses are “maintained” in line with the pricing principles³. In this respect, the Guarantee could be treated, in financial terms, in a way similar to other forms of protection like, *e.g.*, credit insurance contracts where the price of protection is indexed to the total turnover of the insured party and the level of protection is dynamically adjusted during the life of the contract by the protection seller, in order to compensate the initial lack of information on the number and magnitude of the risks. Similarly, the Guaranteed Investors on one side are asked to price the Guarantee (as the credit insurer prices a credit policy) and on the other are allowed to exercise a “management action” in the definition of *e.g.* the dividend and exit policies. This setting is more sophisticated with respect to other similar frameworks, *e.g.* proportional reinsurance, where profit and losses are shared *pro quota*.

3.1 A “Profit&Loss” scenario analysis

As already evidenced, the Call requires the Guaranteed Investors to declare a bid price for one of the four components of eq. (5) by fixing the desired “Margin” σ in a “competitive procedure to be carried out by the Ministry of Economy and Finance”. Therefore, we propose in the following a value analysis motivated by (a) the intrinsic nature (*raison d’être*) of the Guarantee and (b) the numerical results of a set of *educated* deterministic scenarios.

We consider the decomposing of the Guarantee agreement in two components: the first is made by the Guarantee protection and the fixed fee, the other by the non-standard derivatives on the joint-stock Company. The first component looks like an *Equity Default Swap* (EDS), with a spread equal to the BTP Yield plus Margin. However, differently from standard EDS, the value of the underlying of the derivative is partially governed by the joint-stock Company

²For an analysis of Government guarantees in this neoclassical finance valuation framework see: Mottura, C. D., Passalacqua L., *Default dependence structure effects on the valuation of Government guarantees*, Università degli Studi Roma Tre, Collana del Dipartimento di Economia, WP n. 177, 2013; Mottura, C. D., Passalacqua L., *Implicitly default correlation in European Government guarantees covering bank debt*, Sapienza Università di Roma, Dipartimento di Scienze Statistiche, Rapporto tecnico, N. 5, 2014.

³See, *e.g.* Passalacqua L., *A pricing model for credit insurance*, Giornale dell’Istituto Italiano degli Attuari, LXIX, pp. 87-123, 2006.

management actions (*e.g.* dividend and exit policies). If the Margin is fixed in order to match a “market rate” for the EDS spread, the value of the first component in t_0 would be null⁴. In that case, the value of the non standard derivative should also be null, which is clearly impossible. This means that the Margin should be smaller than a cap value, and possibly could be negative.

A *benchmark case* is that in which the Margin is indeed negative and equal in size to the BTP Yield. As a consequence, the value of the fixed fee is null and the value of the Guarantee alone is equal to the value of the non standard derivatives. In this setting the Government will pay only if there is a loss in the value of the investment, while the Guaranteed Investors will pay only if there is a gain in the value of the investment. In other words, the Government and the Guaranteed Investors will share profits and losses generated by the investment. To investigate the soundness of the *benchmark case*, we have performed an undiscounted “Profit&Loss” (*P&L*) scenario analysis, having defined with

$$P\&L_{\tau}^G(\tau) = \left[\sum_k Qf_k(t_k) + \tilde{Q}v'_k(t_k) \right] + Qv''_{\tau}(\tau) - \tilde{G}_{\tau}(\tau); \quad (6)$$

the *P&L* payoff from the Government point of view, and with

$$P\&L_{\tau}^{GI}(\tau) = \tilde{G}_{\tau}(\tau) - \left[\sum_k Qf_k(t_k) + \tilde{Q}v'_k(t_k) \right] - Qv''_{\tau}(\tau) - \tilde{L}_{\tau}(\tau) + \sum_{j:t_j < \tau} \tilde{D}'(t_{j-1}, t_j) + S(\tau) - S(t_0) \quad (7)$$

the *P&L* for the Guaranteed Investors. We have hence analysed several deterministic scenarios for the relevant variables.

A first scenario is illustrated in table 1. The Guaranteed Investor has invested at time $t_0 = 0$ a capital of 100 million euros, that is supposed to produce a (rounded) 1.5% annual dividend, interely paid to the stock holders (computed as percentage of the value of the investment at the beginning of the year). In $t = 10$ years the investement is liquidated at par. The table shows the nominal value of the fours components of eq. (5) and the P&L for the Government and the Guaranteed Investor. In this scenario the dividend yield is set to produce a net sum of the (undiscounted) P&L for the Investor equal to zero. Notice that – for simplicity’s sake – we have made the (strong) assumption of a uniform dividend policy.

We have then computed the P&L for the two parties for a set of (annual) dividend yields, ranging from 0 to 3%, and for three different exit values of the investment, namely 75, 100 and 125 millions euros (always assuming a negative Margin equal in size to the BTP Yield). Results are depicted in figure 2. In the first and third scenario, the value of the investment is supposed to jump at maturity. Again, this strong assumption is made only for the sake of simplicity (a more realistic description should have used a stochastic model for the evolution of the investment value).

⁴See, *e.g.* Albanese C., Chen O., *Pricing equity default swaps*, RISK, Vol. 18, No. 6, (June 2005), pp. 83-87.

time	Div. yield (%)	\tilde{G}_τ	Qf_k	$\tilde{Q}v'_k$	$\tilde{Q}v''_\tau$	Profit&Loss	
						State (G)	Investor (GI)
1	1.5	0	0	900	0	900	-300
2	1.5	0	0	360	0	360	780
3	1.5	0	0	144	0	144	1,212
4	1.5	0	0	58	0	58	1,385
5	1.5	0	0	23	0	23	1,454
6	1.5	0	0	9	0	9	1,482
7	1.5	0	0	4	0	4	1,493
8	1.5	0	0	1	0	1	1,497
9	1.5	0	0	1	0	1	1,499
10	1.5	0	0	0	12,000	12,000	-10,501
						13,500	0

Table 1: A benchmark scenario with a “par” dividend yield for the Guaranteed Investor. The initial and exit investments are 100 millions euros; the Margin is negative and equal in size to the BTP Yield. Amounts are reported in thousands euros.

Finally, figure 3 shows the dependence on the P&L (as percentage of initial investment) for two parties as function of the exit value of the investment in two scenarios for the (annual) dividend yield, respectively 0 and 3%.

Results from figures 2 and 3 give evidence on how the Guarantee sharing mechanism between the two parties, of profits and losses generated by the guaranteed investment, works.

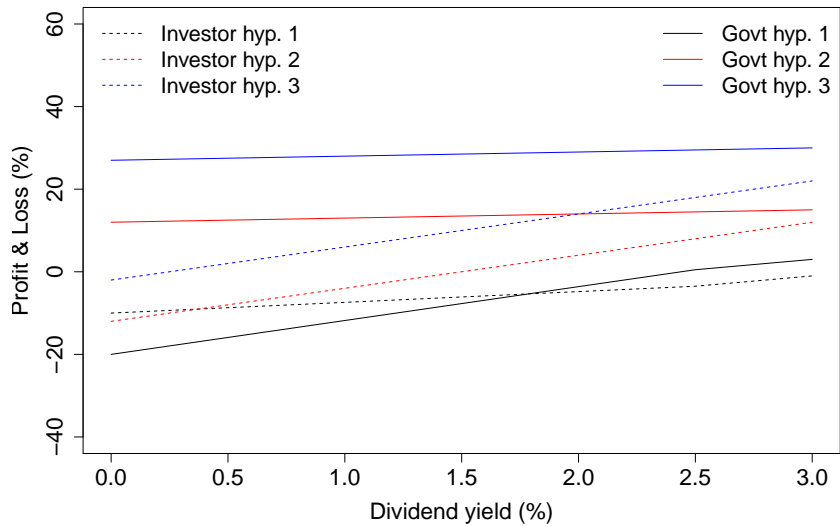


Figure 2: P&L (as percentage of initial investment) for the Government (solid line) and the Guaranteed Investor (dashed line), as function of (annual) dividend yields in three scenarios for the exit value of the investment, respectively 0.75, 1 and 1.25 times the initial value.

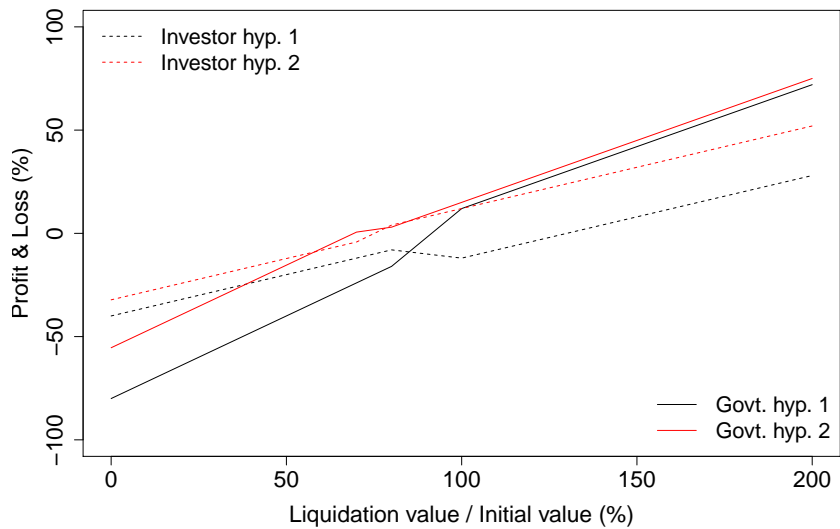


Figure 3: P&L (as percentage of initial investment) for the Government (solid line) and the Guaranteed Investor (dashed line), as function of the exit value of the investment in two scenarios for the (annual) dividend yield, respectively 0 (hyp. 1) and 3% (hyp. 2).