UNIVERSITA' DEGLI STUDI DI BERGAMO
DIPARTIMENTO DI INGEGNERIA GESTIONALE
QUADERNI DEL DIPARTIMENTO[†]

Department of Economics and Technology Management

Working Paper

n. 11 – 2008

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by

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[†] Il Dipartimento ottempera agli obblighi previsti dall'art. 1 del D.L.L. 31.8.1945, n. 660 e successive modificazioni.

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Use and Abuse of Rights Issues. Do they really protect minorities?

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Abstract

This paper discusses the use of rights issues when interest conflicts between controlling shareholders and minorities arise due to the existence of private benefits that the former can extract from the value of a listed company. While the literature considers the issue of pre-emptive rights as an essential tool to protect minorities from expropriation, we propose a model where rights are used to enforce the subscription of seasoned equity issues, even at negative conditions for investor's value. We define an abuse condition allowing a controlling shareholder to choose discretionally an issuing price, granting a discount with respect to the market price, so that minorities either undertake the issue or sell the rights, minimizing an exit cost that greater than zero in all cases. As the rights issue never fails under these condition, we define this phenomenon as "enforced subscription". This model fits the Italian legal framework, and many other international contexts where rights issues are dominant. We report the case of Alitalia's rights issue in 2005 as a typical example of "enforcement at work". As rights issues at a high discount often involve an abuse of power by the controlling shareholder, we argue that their use should be carefully regulated.

JEL Classification: G32, G34.

Key words: Equity Issues, Rights Issues, Private Benefits, Minority Protection

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1. Introduction

This paper contributes to the discussion concerning the use of rights issues in seasoned equity offerings by considering their employment when private benefits are involved. In particular we study how this floatation method does not pursue a real minority protection but, on the contrary, allows a controlling shareholder to extract further private benefits. We therefore suggest the existence of cases of use and abuse of rights issues, developing some policy implications and recommendations.

It has to be mentioned that, while almost all US equity issues are arranged through public offers, in Italy and in most of other European countries new shares are mostly placed by means of rights issues. Rights offering is an alternative floatation method to public offers, that allows current shareholders to purchase shares pro rata, proportionate to their existing ownership position, at a specified issuing price, until a designate expiration date. The existence of a pre-emptive right is enshrined in most European laws, because it makes theoretically equivalent the price of new shares to the market price of those already traded. New shares are hardly ever issued at a price higher than the market. In fact, a discount is usually granted to new shareholders, and its presence does not affect existing shareholders value, in theory, as the dilution in price is to be compensated by the value of pre-emptive rights, traded on a separate market. If rights did not exist, an equity issue with a strong discount would favor new shareholder at the expenses of existing one, as price value for the latter would be diluted without any compensation. Moreover, a rights issue has to meet the favor of the market in order to be successful. If prices react negatively to the announcement of a rights issues, market price can fall below the issuing price: the level of unsubscribed shares is therefore high and the issue can fail. Finally, when discount is relatively small, dilution is negligible.

Former literature do not consider rights issues as a power for controlling shareholder, but rather as an instrument of minority protection. Therefore, former contributions mainly focus on the choice of floatation method (see Eckbo and Masulis, 1995, for a survey of empirical evidence) and particularly on the cost of different procedures. The treatment of different groups of shareholders is often neglected: some exceptions for the Italian context are for instance Bigelli (2004) and Bertoni and Paleari (2005), that consider wealth effects on different classes of shareholders. In general, therefore, there is a consensus on the fact that pre-emptive rights guarantee protection for small shareholders, as argued for instance in Bigelli (1996) and La Porta et al. (1999), and do not

affect market efficiency. According to the mainstream view, rights protect company owners from having their interest in the company and the value of their investment diluted involuntarily. Because of this strong belief, the right of existing shareholders to subscribe for new share issues represents a fundamental aspect of ownership in Italian and European law.

In this paper we contrast the idea that granting shareholder a preemptive right to buy new issues of stock can be considered in all cases a guarantee of protection for small shareholders. In fact, cases such that of Alitalia in 2005 (-15% in the three days following the announcement) show how strongly negative market reactions do not necessarily lead to a failure of the equity issue, and on the contrary the ratio of non-underwritten shares has been very low (0.59%). In our view this is an evidence of how existing minorities do not have the chance to reject operations that are very negatively valued by the market, and we link this idea to a particular (mis)use of rights issue. By means of a theoretical model, we investigate the recur to rights issues and display how, when the discount is big enough, shareholders are actually forced to subscribe the issue, either directly or selling rights on the market at a price that does not guarantee an exit without costs. This way, the market reaction to the announcement, even when strongly negative, does not lead to a failure as in the case of public offers, where the discount is low by definition. We define this process as "Enforced Subscription", that in our opinion represents a condition of abuse in the employment of rights issues.

In order to understand the reason why companies may be interested in carry out "abuse of rights issues", we present a theoretical model with asymmetric information about private benefits of control, assuming we are considering a concentrated ownership. In this framework, a controller shareholder has full power to decide about the employment of internal funds, and in our model no theoretical problem arises, or at least it is less relevant, as the controlling shareholder is fully motivated to use these funds in the best way. But the asymmetry with respect to minorities becomes a problem when external funds are required. Because of the existence of private benefits, controlling shareholders might be interested in draining money from the market also when new funds are to be invested in negative-NPV operations. As private benefits are assumed to be a fraction of the company value, the controlling shareholder has a further incentive in collecting money for the company, and tries to pursue this goal even against minorities' interests. The more a controlling shareholder expects the market reaction to be negative, the more (s)he will be

willing to "enforce" the market to participate, making use of higher levels of discount, i.e. the difference between the market price (on announcement) and the issuing price.

By understanding the pathological use of rights issues, both with a model and with empirical findings, we think we are adding some knowledge necessary to reduce minority expropriation and enhancing the efficiency of financial markets. We believe that the positive role of rights issues has to be acknowledged but, in an efficient market, we have to guarantee to minorities the right not to participate to an inconvenient project, and give them an exit with no costs. That is why we suggest adjustments to the common legal procedure to recur to rights issues in Italy and other European countries: either a limit on discount is fixed, or a qualified majority has to be requested to vote the issue.

This study unfolds as follows. Section 2 briefly reviews former literature on rights issues. In Section 3 we set our model, and define the conditions to discriminate abuses of rights issues. In the following Section 4 we present our model of enforced subscription, explaining why minorities partecipate in rights issue under conditions of abuse. In Section 5 we report the case of Alitalia (2005) as a real example of abuse. Section 6 concludes.

2. Recent literature

In his well known paper, Smith (1986) surveys the causes and effects of the choice of alternative methods for raising equity capital and proposes a list of unsolved questions. In the following decade most of those puzzles found an appropriate answer, often supported by empirical evidence (see the survey by Eckbo and Masulis, 1995). But the financial literature has not been able yet to fully interpret the reasons for why rights issues have virtually disappeared from some financial markets, and have been replaced by underwritten offers, and what are the consequences of this choice on different groups of shareholders. The floatation method choice for seasoned equity offerings has captured the attention since the seminal paper by Smith (1977). Here, Smith shows the seemingly paradoxical behavior of U.S. listed firms: Smith finds statistical evidence that underwritten public offerings issuing costs were significantly greater than rights offerings issuing costs, yet the use of the latter flotation method was disappearing, displaced by the use of the former. It is worth noticing that the type of costs collected in Smith's analysis was essentially monetary expenses, as reported to the Securities and Exchange Commission.

A complete survey of the literature aimed at solving Smith's puzzle can be found in Eckbo and Masulis (1995), and we summarize the results that are most relevant in our framework, by identifying three lines along which the equity financing paradox has been solved.

First, the cited evidence is indeed not paradoxical if we maintain that managers select the less expensive issuing method and that underwritten public offerings are the cheapest when issuing costs are higher (Hansen and Pinkerton, 1982). In fact, it is possible to show that direct issuing costs are positively correlated to the amount raised, ownership dispersion and stock price volatility. At the same time, the rights method seems to be more convenient in small size issues for closely held firms, where costs are lower in absolute terms.

Secondly, Smith himself and some following papers identified a set of indirect (mostly market-specific) costs, not included in the previously cited empirical evidence. These costs could even reverse the total cost comparison between different flotation methods, being 'method-specific'. Among them, the ones which are proved by the empirical literature to significantly affect shareholders' wealth are the following: transaction costs borne by those shareholders who want to sell their rights (Hansen, 1989); stock price declining during the offering period, due to arbitrage activity frequently carried out by the underwriter (if any), as reported by Singh (1997); permanent effects of bid-ask spread increase after a rights issue, due to ownership concentration (Kothare, 1997); possible wealth transfer from shareholders to convertible securities holders connected with non neutral anti-dilution clauses (Myhal, 1990); and possible agency costs caused by collusion between managers and underwriters (Smith, 1977, and Herman, 1981).

Finally, economics literature has definitely improved its insight into the problem by formally considering the effects of information asymmetries between insiders and the market when equity funds are demanded. The conceptual framework is the one depicted by Myers and Majluf (1984) and Miller and Rock (1985). Assuming that managers have incentives to issue new stock only when they believe it is overvalued, in order to favor current shareholders, Myers and Majluf predict that the issue announcement will be interpreted by the market as bad news, causing stock price to decrease. Miller and Rock, on the contrary, focus their analysis on the information asymmetry between managers and shareholders concerning the level of future expected cash-flows. Again, once the investment policy is fixed, the announcement of an issue which is greater than expected can be interpreted as bad news, signaling prospective internal funds lower than expected.

In a context of information asymmetry, it is argued that the flotation method choice represents a quality signal available to the firms, granting them superior issuing conditions and/or inferior failure probability. In paticular, Heinkel and Schwartz (1986) and Eckbo and Masulis (1992) propose different interesting models where underwritten public offerings, standby rights offerings and uninsured rights offerings are compared (see Section 3 for details on this classification in Italy). The basic idea behind these models is that both underwriters and insiders (through the subscription of new shares) can certify the quality of issues. The cost of efficient signaling makes different flotation methods more opportune in different situations. These adverse selection models tend to confirm the preference for rights issues when firms are small and closely held. As the offering announcement (and the related terms of the issue) has to be considered an information release, actual market reactions are expected to confirm the certification hypothesis. In particular, the previously cited theoretical studies (and those which followed) predict small negative (or even null) reactions to rights offering announcement and larger negative effects in the presence of underwriters.

Following Eckbo and Masulis (1992), many European authors have studied how ownership impacts on market reactions to rights issues announcement. Consistently with this asymmetric information model, Slovin (2000) finds that the share price effect is directly related to shareholder take-up, which is the proportion of the offering "taken up" or purchased by shareholder of the firm. Accordingly, Bigelli (1998) argues how the typical higher ownership concentration in most European countries leads to "active insiders" in underwriting their quota of newly issued shares, partly explaining the positive market reaction at the announcement of most European issues. On the contrary, in the French market, Gajewski and Ginglinger (2002) find that the share price effect is positively related to block-holders take-up renouncements for firms with prior concentrated ownership.

Nevertheless, though since the contribution by La Porta et al. (1999), ownership topic is closely linked to minority protection, only few contributions explicitly link the discussion on floatation method to the existence of private benefits, and consequences on minority protection. Buzzacchi (2000) examines the choice of issuing method considering the conflict of interests between controlling shareholders and minorities, arguing that large discounts signal over-investment policies carried out at minorities' expenses. According to Wu and Wang (2002), value-destroying rights issues are preferred to private placement because incumbent controllers do not want to

share private benefits, and therefore the choice of floatation method can significantly reveal the inside information about the issuers' private benefits. More recently, Meoli et al. (2005) mention rights issues as a method allowing a controlling shareholder to earn private benefits from pyramidal business groups.

3. Model setting

Several theoretical models interpreting rights issues have been proposed in the literature (see Bigelli, 1996 for a thorough review), explaining technical aspects and information asymmetry implications. Our aim is to contribute to this strand of literature discussing whether rights issues are actually an instrument to protect minorities. In order to do this, we consider a company that, at a certain point in time, wants to undertake a fractionable investment Δk with an expected return r_{inv} . At the same point in time, the best alternative investment at the same level of risk is featured by an expected return r_{alt}. We suppose that financial conditions force the company to choose an external source of capital. There are two classes of shareholders: the controlling shareholder, who holds a α share of the capital, corresponding to the necessary votes to take the decision whether to issue new equity or not; the minorities, holding a $(1-\alpha)$ share of the capital, that are simply allowed either to accept or reject the proposal. We suppose that both controlling shareholder and minorities are not cash constrained, and they take decisions according to their NPV with an unlimited time horizon, being the only source of asymmetry the existence of a source of private benefits at the advantage of the controlling shareholder, that (s)he earns as an annuity at the rate r_{pb} on the whole value of the company[1]. Minorities might be aware of the existence in this flow (we don't need them to know exactly the measure) and consider all their earning discounting the effect of private benefits. Thus, market value is the correct value of the firm for both class of shareholders, but we consider a further source of earnings for the controlling shareholder. There are no taxes, transaction costs or other capital market imperfections. We model a time framework where $t = 0$ refers to the time when the controlling shareholder needs to decide whether to carry out the issue, while minorities simply decide whether to take part or not in the issue. In $t = 1$

[1] This assumption is similar to that of seminal contributions in this literature such as Grossman and Hart (1980) and Shleifer and Vishny (1986). We are here referring to a broad definition of private benefits, that quantifies all effects of control that are not strictly observable. The theoretical literature (Dyck and Zingales, 2004) often identifies private benefits of control as the "psychic" value some shareholders attribute simply to being in control (e.g., Harris and Raviv, 1988, and Aghion and Bolton, 1992). Another traditional source of private benefits of control is the perquisites enjoyed by top executives (Jensen and Meckling, 1976). In our model we intend a broad definition of

effects take place, while the issuing time is just an instant between the two stages (we are not therefore considering technical implications for prices during the issuing period or information releases).

3.1. Controlling shareholders and minority shareholders

In order to understand the decision rules for the controlling shareholder and the existing minorities at the time of issue, we define their wealth functions as follows. At the time t = 0, the wealth of the controlling shareholder is defined as:

$$W_0^{CS} = V_0^{CS} + \Delta k^{CS} + \frac{r_{pb} V_0}{r_{alt}} \tag{1}$$

where $W_0^{CS} = \alpha V_0$ is the market value of the company owned by the controlling shareholder, $\Delta k^{CS} = \alpha \Delta k$ is an amount of cash equal to the equity-issue fraction preemptively offered to the controlling shareholder, r_{pb} is a further rate of return that the controlling shareholder can extract from the value of the company V_0, r_{alt} is the alternative rate at which all cash flows are discounted. Therefore, this function evaluates the wealth owned by a controlling shareholder as the sum of: a) the ownership share in the company, evaluated as a fraction of the market value; b) an amount of money, owned as cash, available to undertake her/his part of equity issue, in case the equity issue is performed; c) private benefits (s)he can enjoy on the whole value of the firm, as a discounted annuity.

Next we consider minorities as a singles subject, whose wealth function at t = 0 equals:

$$W_0^{MS} = V_0^{MS} + \Delta k^{MS} \tag{2}$$

where $W_0^{MS} = (1 - \alpha)V_0$ is the market value of the company owned by the minorities, $\Delta k^{MS} = (1-\alpha)\,\Delta k$ is the cash necessary to undertake the part of the equity issue preemptively offered to the minorities.

3.1. Condition for the abuse

In an NPV framework, the controlling shareholder adopts the following condition rule:

$$NPV_{CS} > 0 \tag{3}$$

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benefits, referring both to psychic and monetary advantages of control.

$$\frac{\Delta k^{CS} r_{inv}}{r_{alt}} + \frac{r_{pb}\Delta k}{r_{alt}} - \Delta k^{CS} > 0 \qquad (4)$$

where $\frac{\Delta k^{CS} r_{inv}}{r_{alt}}$ is a perpetuity of cash flows originated by the new investment and earned by the controlling shareholder; $\frac{r_{pb}\Delta k}{r_{alt}}$ is a perpetuity of private benefit earnings obtained on the whole amount of capital raised, and Δk^{CS} is the controlling shareholder's contribution to the equity issue. As far as the NPV is positive, the decision to carry out the equity issue is not under discussion, but obtaining the participation of minorities may not be so straightforward. In fact, minorities consider a different decision rule, similar to the one above, but not containing any private-benefit earning:

$$NPV_{MS} > 0 \qquad (5)$$

$$\frac{\Delta k^{MS} r_{inv}}{r_{alt}} - \Delta k^{MS} > 0 \qquad (6)$$

where $\frac{\Delta k^{MS} r_{inv}}{r_{alt}}$ is a perpetuity of cash flows originated by the new investment and earned by minorities, and Δk^{MS} is the minorities' contribution to the equity issue.

It is therefore clear that the existence of the private-benefit earnings can make the issue desiderable for a controlling shareholder also when it is not appealing for minorities. This situation occurs when the following conditions hold:

$$NPV_{MS} < 0 \quad and \quad NPV_{CS} > 0 \qquad (7)$$

$$[r_{inv} < r_{alt}] \quad and \quad [r_{pb} > \alpha(r_{alt} - r_{inv})] \qquad (8)$$

where $r_{inv} < r_{alt}$ set the new investment to be always detrimental for existing minorities' wealth, and $r_{pb} > \alpha(r_{alt} - r_{inv})$ makes the operation attractive for the controlling shareholder[2].

[2] Note that: 1) when $r_{inv} \geq r_{alt}$, we do not define a condition for abuse: new investments are so appealing that even if private benefits are extracted, minorities appreciate their earning; 2) if r_{inv} is smaller than r_{alt}, a controlling shareholder may still be attracted by the investment if it is possible to extract a compensating flow of private benefits.

This condition explains why controlling shareholders may invest in a negative-NPV project because of the existence of private benefits.

3.3. Rights Issue

So far we described how the existence of private benefits make some investment attractive for a controlling shareholder even at a negative NPV. In what follows, we introduce a simplified model to describe an equity issue of a company with an initial value V_0. Once decided the amount of capital needed, Δk, the controlling shareholder can grant a certain discount d on the pre-issue price, to determinate all other features of the issue. Supposing no further information release, general rules of value conservation link variables of interest at the moment of issue. Initial value is simply defined as:

$$V_0 = P_0 N_0 \tag{9}$$

where P_0 is the share market price at time of issue, and N_0 is the initial number of shares.

The controlling shareholder chooses a level of discount d such that (s)he automatically fixes the issuing price[3] P_{iss}, and the number of new shares ΔN .

$$P_{iss} = P_0 - d \tag{10}$$

$$\Delta N = \frac{\Delta k}{P_{iss}} \tag{11}$$

According to the fraction of underwritten shares, the theoretical price of shares after the issue P_{th} can be defined as follows:

$$P_{th}(\gamma) = \frac{V_{th}(\gamma)}{N_1(\gamma)} = \frac{V_0 + \gamma \Delta k}{N_0 + \gamma \Delta N} = \frac{P_0 N_0 + P_{iss} \gamma \Delta N}{N_0 + \Delta N} \tag{12}$$

where V_{th} is the theoretical value of the company after the issue, and γ is the fraction of shares underwritten at the end of the issue, with $0 \leq \gamma \leq 1$.

As new shares are issued at a discount, P_{th} is lower than P_0 because of the so-called dilution effect. In practice, old share price decreases (dilution), while new shares take a higher value,

[3] There is a limit to the level of d, due to the fact that Italian laws (and most European codes) do not allow to issue shares at a price lower than the nominal value. A partial elusion of this limit consists in issuing shares with an attached warrant, that gains a positive value when the strike price is lower than the expected one.

because they absorb the relative benefit. Dilution per share can be defined as follows, at individual and aggregate level:

$$dilution_{ind}(\gamma) = P_0 - P_{th}(\gamma) \tag{13}$$

$$dilution_{ind}(\gamma, d) = \frac{\gamma \Delta N(P_0 - P_{iss})}{N_0 + \gamma \Delta N} = \frac{\gamma \Delta N d}{N_0 + \gamma \Delta N} \tag{14}$$

$$Dilution_{agg} = N_0 \cdot dilution_{ind} \tag{15}$$

The increase of value for the new shares (new-share benefit), can be measured per new share as follows:

$$benefit_{new\_share}(\gamma, d) = \frac{N_0(P_0 - P_{iss})}{N_0 + \gamma \Delta N} = \frac{N_0 d}{N_0 + \gamma \Delta N} \tag{16}$$

As each rights allow to undertake $\Delta N/N_0$ shares per old share, the individual benefit, at individual and aggregate level, equals:

$$benefit_{ind}(\gamma, d) = \frac{\Delta N(P_0 - P_{iss})}{N_0 + \gamma \Delta N} = \frac{\Delta N d}{N_0 + \gamma \Delta N} \tag{17}$$

$$Benefit_{agg} = \Delta N \cdot benefit_{new\_share} = N_0 \cdot benefit_{ind} \tag{18}$$

It has to be noticed that when γ is less than 1, individual dilution and benefit do not compensate each other. Each shareholder undertaking therefore receives the following dilution-profit:

$$profit_{ind}(\gamma, d) = \frac{(1 - \gamma)\Delta N d}{N_0 + \gamma \Delta N} \tag{19}$$

In general, if a shareholder undertakes her/his fraction of equity issue, individual benefit compensate individual dilution[4]. By contrast, rights are introduced to guarantee no wealth effect for shareholders not willing to undertake the issue. Under condition of efficiency, their dilution is compensated by the value of a right. The original shareholder compensates her/his dilution by selling a right on the market, while the buyer compensates this cost with the benefit fancied by the new shares.

[4] 4This compensation yields no profit when in the case of full subscription, while it carries a positive outcomes when $\gamma < 1$.

Therefore we can define the theoretical value of the right assigned to each of the old share as the dilution on a single share:

$$R_{ind} = dilution_{ind} \tag{20}$$

The value of all rights equals the loss of value of old shares due to the dilution effect. We define the aggregate theoretical value of rights as follows:

$$R_{agg} = R_{ind} N_0 \tag{21}$$

By definition, this value compensate the whole dilution effect fancied by old shareholders:

$$R_{agg} = Dilution_{agg} \tag{22}$$

3.4. Return from the additional investment

It has to be noticed that even if we assume that V_0 and Δk are invested separately in project with different returns, post-issue shareholders will be earning from the same portfolio. To simplify the notation we introduce the following r_w that is equal to the expected return of a shareholder after the issue at abuse condition has been performed:

$$r_w = \frac{V_0 \cdot r_{alt} + \Delta k \cdot r_{inv}}{V_0 + \Delta k} \tag{23}$$

We do not need to introduce any expected return on V_0 as we suppose the market to price this investment efficiently. It is interesting to notice that if only a fraction γ of shareholders undertake the issue, r_w will depend on it, so that:

$$r_w(\gamma) = \frac{V_0 \cdot r_{alt} + \gamma \Delta k \cdot r_{inv}}{V_0 + \gamma \Delta k} \tag{24}$$

It is straightforward to prove that, standing the condition for abuse (8):

$$r_{inv} < r_w(\gamma) \leqslant r_{alt} \tag{25}$$

where $r_w(\gamma) = r_{alt}$ only for $\gamma = 0$.

This new weighted rate is defined so that the following equation stands:

$$V_0 + \gamma \Delta k \frac{r_{inv}}{r_{alt}} = V_1 \cdot \frac{r_w(\gamma)}{r_{alt}} \tag{26}$$

When evaluating returns on V_1, we can recur to both definitions when the fractions of V_0 and Δk are the same (i.e. when a shareholder has underwritten its rights), but only to the second when they are not (i.e. when the ownership share has diluted because a shareholder has sold or not exercised its own rights).

4. Modeling enforced subscription

In this section we show why rights issues force minorities to participate in the investment project against their interest, when the condition for abuse (8) holds. We do this by considering all options available to minorities, and comparing them with an optimal solution that an efficient market is supposed to guarantee. First, we consider what are the outcomes in a special, i.e. when all rights are exercised, either because minorities undertake the issue, or because they sell rights on the market (Section 4.1). Then we extend our analysis to the more general case when only a fraction γ of rights are used (4.2). Further, we introduce a simulation (4.3) and a real case (4.4) to describe the phenomenon. Policy implications of this model are discussed at the end of the section (4.5).

4.1. All rights are exercised

4.1.1. Undertaking the issue

We consider here minorities as a unique subject. Minorities' optimal choice consists in investing in the best alternative project, so that we can define an optimal/benchmark wealth as follows:

$$\widetilde{W}_1^{MS} = V_1^{MS} \cdot \frac{r_{alt}}{r_{alt}} = V_0^{MS} \cdot \frac{r_{alt}}{r_{alt}} + \Delta k^{MS} \cdot \frac{r_{alt}}{r_{alt}} = V_0^{MS} + \Delta k^{MS} \tag{27}$$

By contrast, if the minorities undertake the issue, their wealth equals:

$$W_{1,undertaking}^{MS} = V_1^{MS} \cdot \frac{r_w}{r_{alt}} = V_0^{MS} \cdot \frac{r_{alt}}{r_{alt}} + \Delta k^{MS} \cdot \frac{r_{inv}}{r_{alt}} < \widetilde{W}_1^{MS} \tag{28}$$

Thus, minorities' loss can be defined as the difference between (27) and (28):

$$LOSS^{MS}_{undertaking} = \widetilde{W}_1^{MS} - W_1^{MS} = V_1^{MS}\left(1 - \frac{r_w}{r_{alt}}\right) = \Delta k^{MS}\left(1 - \frac{r_{inv}}{r_{alt}}\right) \quad (29)$$

Note that this loss equals the perpetuity of the difference between rw and ralt if we refer to the whole capital invested by minorities; the difference between r_{inv} and r_{alt} if we consider the only fraction of new capital invested Δk^{MS}. Dividing (29) by $(1 - \alpha)\Delta N$, we obtain the loss per new share. Because the owner of a single old share owns rights to undertake a fraction $\Delta N/N0$ of new shares, an individual measure of loss can be defined as:

$$LOSS_{ind} = \frac{V_1}{N_0}\left(1 - \frac{r_w}{r_{alt}}\right) = \frac{\Delta k}{N_0}\left(1 - \frac{r_{inv}}{r_{alt}}\right) \quad (30)$$

4.1.2. Selling the rights

Now we consider an alternative decision available to minorities, consisting in selling pre-emptive rights on the rights market. We suppose here that minorities are split in two groups: existing minorities, who hold the shares, and new minorities, owning the amount of cash needed to undertake the issue. Therefore we split the wealth (2) accordingly to this definition:

$$W_0^{existingMS} = V_0^{MS} \quad (31)$$

$$W_0^{newMS} = \Delta k^{MS} \quad (32)$$

In order to find a benchmark wealth, we first suppose rinv and ralt are equal, so that selling right is a zero-NPV operation, both for existing and new minorities. We can therefore evaluate an optimal/benchmark wealth as:

$$\widetilde{W}_1^{existingMS} = V_0^{MS} - (1-\alpha)Dilution_{agg} + (1-\alpha)R_{agg} = V_0^{MS} \quad (33)$$

$$\widetilde{W}_1^{newMS} = \Delta k^{MS} + (1-\alpha)Benefit_{agg} - (1-\alpha)R_{agg} = \Delta k^{MS} \quad (34)$$

This summation of (33) and (34) equals the optimal/benchmark value as in (27)[5]:

[5] Please note that after the issue existing minorities are not owning anymore an α share of the company new value, as their share is diluted. New minorities, in fact, underwrites those shares corresponding to the α fraction of preemptive rights. After the issue, existing and new minorities will be helding, together, still a α share of capital V_1, that equals the sum of V_0 and Δk.

$$\widetilde{W}_1^{existingMS} + \widetilde{W}_1^{newMS} = \widetilde{W}_1^{MS} \tag{35}$$

The operation is zero-NPV because existing minorities recover on the rights market what they lose because of dilution. Contemporarely, new minorities gain value on the capital they have actually subscribed, but this is compensated by the cost of rights bought on the market.

When the condition for abuse (8) holds, the rational behaviour for minorities consists in not undertaking the issue, and some new minorities is to bear the negative effect of the investment. Existing minorities are left with a pre-emptive right they want to get rid of. In theory, if they can sell the rights on the market at their theoretical price, they transfer the loss on new minorities. Of course new minorities participate at the right market only at a price that sets their net present value to zero (or above). The existence of the rights market makes trading possible, so that new minorities will choose a level of $\hat{R}$ such that they can enter at a zero-NPV. Therefore we are likely to observe a level $\hat{R}$ such that:

$$NPV_{newMS} = \Delta k^{MS} \cdot \frac{r_w}{r_{alt}} + (1-\alpha) Dilution_{agg} - \Delta k^{MS} - (1-\alpha)\widehat{R}_{agg} = 0 \tag{36}$$

$$\widehat{R}_{agg} = (1-\alpha) Dilution_{agg} - \Delta k^{MS} \left(1 - \frac{r_w}{r_{alt}}\right) \tag{37}$$

This value differs from the theoretical one because the dilution[6] is lowered by a "discount" due to the loss on Δk[7].

This way new minorities' wealth equals the optimum (34), while existing minorities absorb all the loss from the bad investment:

$$W_{1,sale-at-\widehat{R}}^{existingMS} = V_0^{MS} \cdot \frac{r_w}{r_{alt}} - (1-\alpha) Dilution_{agg} + (1-\alpha)\widehat{R}_{agg} < \widetilde{W}_1^{existingMS} \tag{38}$$

$$W_{1,buy-at-\widehat{R}}^{newMS} = \Delta k^{MS} \cdot \frac{r_w}{r_{alt}} + (1-\alpha) Dilution_{agg} - (1-\alpha)\widehat{R}_{agg} = \widetilde{W}_1^{newMS} \tag{39}$$

[6] The Dilution does not need here to be discounted at a particular rate, as it is simply a part of the initial value, as priced by the market.

[7] Of course, this equilibrium price can be realised only if the aggregate dilution is high enough to cover the loss originated by the investment. We do not consider here the theoretical case of a negative value for the rights, and assume that at prices lower than zero, no deal can be carried out on the market.

We can therefore evaluate the loss for all existing minorities as:

$$LOSS_{sale-at-\widehat{R}}^{existingMS} = \widetilde{W}_1^{existingMS} - W_1^{existingMS} = V_1^{MS}\left(1 - \frac{r_w}{r_{alt}}\right) \quad (40)$$

while dividing by $(1 - \alpha)N_0$ we obtain the individual loss. At the aggregate level, the value of this loss is equal to that defined in (29).

4.2. A fraction γ of rights is exercised

So far we have assumed that all minorities make use of their rights, either undertaking their respective proportion of shares, or selling rights on the dedicated market. Now we consider that existing minorities experience the same loss in both cases, so that they simply decide not to cooperate in the rights market[8]. In this case we drop the assumption that all minorities take the same decision, and let $0 < \gamma < 1$, as the percentage of shareholders undertaking the issue (both directly or buying rights on the market)[9].

Individual choices become now more complex, as they are affected at the same time by the dilution and the investment return, both according to the proportion γ of undertaking shareholders. Non-undertaking shareholders suffer a dilution effect, because dilutionind(γ, d) is a function strictly positive for $\gamma > 0$, concave and monotonically increasing in γ, linear and increasing in d. At the same time their expected return will be affected by the new investment: their share of capital is now invested at a rate rw(γ). Therefore we can evaluate an individual loss function in γ and d as follows:

$$\begin{aligned} LOSS_{non\_undertaking}^{ind\_MS}(\gamma, d) &= dilution_{ind}(\gamma, d) + \frac{V_0}{N_0}\left(1 - \frac{r_w(\gamma)}{r_{alt}}\right) = \\ &= \frac{\gamma \Delta N d}{N_0 + \gamma \Delta N} + \frac{V_0}{N_0} \cdot \left(1 - \frac{r_w(\gamma)}{r_{alt}}\right) \end{aligned} \quad (41)$$

By contrast, undertaking shareholder accept to absorb the negative effect of the new investment, but the individual loss (30) becomes now a function of γ. This loss is ameliorated by the dilution profit (19), increasing in d and decreasing in γ. Their loss is therefore a function in γ and d, as

[8] Most European legislation consider, in this case, some alternatives to re-offer rights on the market according to different procedures. We do not consider these following aspects, and simply suppose there is no further possibility to underwrite the corresponding shares.

[9] In our model γ is defined between 0 and 1, but as long as the controlling shareholder has an interest in undertaking its part of issue (her/his decision rule (4) is always satisfied under the condition for abuse (8)), γ is always positive,

follows[10]:

$$LOSS^{ind\_MS}_{undertaking}(\gamma, d) = \frac{V_1}{N_0}\left(1 - \frac{r_w(\gamma)}{r_{alt}}\right) - profit_{ind}(\gamma, d) = \\ = \frac{V_1}{N_0} \cdot \left(1 - \frac{r_w(\gamma)}{r_{alt}}\right) - \frac{(1-\gamma)\Delta N d}{N_0 + \gamma \Delta N} \qquad (42)$$

The key question is whether $\frac{(1-\gamma)\Delta N d}{N_0 + \gamma \Delta N}$ can be smaller than $\frac{V_1}{N_0}(1 - \frac{r_w(\gamma)}{r_{alt}})$ because this would mean that minorities are forced to exercise their rights to minimize their expected loss, when the following disequality holds:

$$LOSS^{ind\_MS}_{non\_undertaking}(\gamma, d) < LOSS^{ind\_MS}_{undertaking}(\gamma, d) \qquad (43)$$

$$\frac{\Delta k}{N_0}\left(1 - \frac{r_w(\gamma)}{r_{alt}}\right) < \frac{\Delta N d}{N_0 + \gamma \Delta N} \qquad (44)$$

In this case the controlling shareholder can enforce the subscription of a rights issue all the time that the individual dilution benefit, as defined in (17), is greater than the perpetuity of loss of value on the new funds asked by the company. As far as the loss generated from undertaking is lower than that of dropping the rights, minorities are motivated to undertake directly or indirectly, selling the right on the market[11]. This result is interesting, as it shows how d can be used as a leverage to enhance the level of enforcement. In fact we can derive a minimum level of d, as a function of γ, meaning that each level of d can enforce a certain percentage of shareholders to undertake (until a complete enforcement when γ is set to 1):

$$d(\gamma) > \left[\frac{\Delta k}{N_0}\left(1 - \frac{r_w(\gamma)}{r_{alt}}\right)\right] \cdot \frac{N_0 + \gamma \Delta N}{\Delta N} \qquad (45)$$

This result shows that rights issues do not guarantee a condition for market efficiency, namely a chance for minorities to reject the equity issue, as it happens in public offers. In fact, because of the rights, minorities minimize their loss either undertaking or selling the rights on the market.

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and takes values equal or higher than the ownership share α.

[10] It can be easily shown that this position is equal to that of a shareholder that decides to sell her/his right on the market. As shown in the former section, this mechanism stands as far as the right keeps a positive value.

[11] This solution stands as far as the right keeps a positive value. When the rights price falls to zero, non-underwriting is the dominant strategy.

The use of d allows the controlling shareholder to apply this mechanism when a negative-NPV investment can give him access to private benefits.

4.3. An empirical simulation

This example is to clarify how the mechanism works. Suppose a company is traded with 100 shares at the market value of 1. Suppose all capital is invested in cash, and no information effect takes place because of the issue. The company wants to raise 50. If the controlling shareholder wants fo fix the discount at 0.5 (50%), the company issues 100 new shares at the issuing price of 0.5. The theoretical value of the company after the issue is 150, with a theoretical price of 0.75 for the 200 shares. We want to show the interaction of a condition for abuse and the role of d in the enforcement mechanism by contrasting two operations carried out at the following conditions:

a) no condition for abuse: $r_{inv} = 0.1$, $r_{alt} = 0.2$, and $_{rpb} = 0.1$;

b) condition for abuse: $r_{inv} = 0.1$, $r_{alt} = 0.1$, and $r_{pb} = 0.0$.

Figure 1 shows that when no condition of abuse is involved, the rights issue mechanism works properly. By contrast, Figure 2 shows enforcement at works under the condition for abuse. We notice that at d = 0.1 enforcement affects only a level of $\gamma = 0.6$: this means that a strategic game takes place among minorities, as only a fraction of them is incentivated in underwriting. At a lower level of γ there is still an incentive for minorities either to underwrite directly or selling the rights (earning the difference between the underwriting and non-underwriting losses). At higher level of γ, all underwriting shareholders suffer a higher level of loss, and selling the rights in not anymore a solution, as their value falls to zero. Moving up the discount level to d = 0.3 and higher, the enforcement is complete.

4.4. Implications

The following considerations can be drawn from the model presented above above:

1. Use and abuse of rights issues

We underline that the role of rights issues in protecting minorities is not denied in this model. In practice, even when the condition for abuse does not hold, rights avoid wealth and ownership dilution, meaning that if pre-emptive rights did not exist, the position of minorities would be even weaker.

2. Enforcement and Controlling Rights

Former theoretical literature discusses how a controlling shareholder might dispose of all retained

earnings stock, without any restriction imposed by minorities (Almeida and Wolfenzon, 2005). In fact, on could see the opportunity for a shareholder to invest all proceeds from an equity issue in a project (s)he believes as an exercise of her/his controlling rights. In other words, it is hard to substaing that, in general, investing into a negative-NPV project should be forbidden. Nevertheless, an efficient market has provide to investor the possibility to choose the best investment opportunities, and therefore an effective market regulation has to let minorities freely decide whether to partecipate or not in a rights issue. This is why we believe an issue carried out under condition of abuse is not simply an exercise of controlling rights, but a violation of the market allocation function.

3. Reasons for the abuse

In our framework, the main cause of interest conflicts between controlling shareholders and minorities is the existence of private benefits. The existence of benefits can be so important that controlling shareholder may be motivated to pursue negative-NPV investments. These operations can be addressed to enlarge the dimension of the company (i.e. by means of mergers and acquisitions) or simply to save the company (i.e. in case of financial distress), requiring external funds. Former research and factual evidence suggest that abuse cases are more likely to be carried out under specific circumstances:

- **Private benefits at risk.** A first condition that can move a controlling shareholder to carry out an abuse of rights issue may regards those cases when the company is in a situation of financial distress such that the very existence of private benefits is at risk. We expect then rights issues carried out by companies with a very high level of debt to be more likely subjected to condition of abuse.
- **Enlarging private benefits.** Another group of operations that might involve the recur to an abuse of rights issue is that of opportunities on the market to abnormally increase a company size (i.e. through mergers or acquisitions) just to obtain an increase in private benefits extraction.
- **Evidence of private benefits.** Though in the enforcement mechanism the role of the ownership share is not stressed, α is definitively relevant in discriminating cases of condition for abuse. Following recent leterature such as Meoli et al. (2008), we argue that pyramidal structure allow a controlling shareholder to extract private benefits more easily. That is why we think that the recour of pyramidal groups to rights issue may also be

linked to an higher probability of abuse of rights issues.

4. Consequences on share prices

If the theoretical discussion above presented holds, when an abuse of rights issue is performed, market price should absorbs the bad news. The timing of this price reaction depends on what are the assumptions on how the market absorb the information of abuse of rights issues. Specifically, we can identify the following three cases:

- **Information on abuse already incorporated in market prices:** this is the case when all shareholders and investors are aware that cases of abuse exist and may be carried out when the condition of abuse is verified. Therefore they assign to each company a certain probability to carry out abuse in the future. In this case, share prices already contain information on abuse possibility, and no effect should be noticed when a rights issue at condition of abuse is actually performed.
- **Information on abuse possibility incorporated at the time of the announcement:** this is the case when all shareholders and investors are aware of the case of abuse only when the rights issues is announced, together with the conditions determining the enforcement, namely the discount "d". If this case apply, we are to observe price reaction at the time of the announcement.
- **Information on abuse possibility incorporated during the rights market activity:** this is the case when the announcement of the rights issue is not interpreted as an abuse at the time of the announcement. Shareholder may either believe that they can avoid the negative-NPV return by selling their pre-emptive rights, or that the issue may fail. The enforcement is therefore evident only on the rights market, when they realize that the sale of rights do not avoid the negative-NPV return.

5. Encorcement mechanism

The keystone in the model is the role of the discount "d", that the controlling shareholder can set with a certain level of discretion. As we show in the model, the level is set to a level high enough to create an enforcement effect in the market. The enforcement is due to the fact that with no subscription minorities are expropriated of all dilution, so that they will either subscribe the issue or try to sell the rights at the best possible conditions. We have to point out that, as genuine rights issues exist, at the same time a genuine level of discount can be set. Hystorical volatility of an asset, as well as market condition and investment expectations, are all factors that are

considered when issuing rights, and involve the setting of a certain level of discount. In our model we argue that in addition, when a condition for abuse holds, the controlling shareholder may set the discount at a higher level, in order to enforce minorities to take part in a negative-NPV project and be able to eventually extract private benefits.

6. Policy recommendations

In terms of policy implications, we think that a revision of rules regarding the level of discount the issuing company can set is to be expected. As the (almost) unlimited use of this variable is the key to perform enforcement, fixing a maximum amount (in term of past volatility of assets) could be a first suggestion. But as the use of the discount is not negative per se, but only when a condition for abuse holds, a second solution could consist in providing an "exit option" for minorities (a guarantee on a certain percentage of theoretical value). An alternative policy strategy, that would still preserve the protection role of rights issues, would be a revision of majority requirements, at least when issues are preemptively offered at high discounts.

5. A case of abuse: Alitalia's rights issue in 2005

A motivation for this study on the abuse of rights issues comes from the observation of operations that we defined as under "condition of abuse". There is a set of features that make these operations very peculiar: first, they are carried out by companies in great financial distress; second, the issuing price is always set much lower than the market price (or alternatively, the discount is set at an "abnormal" level); third, these operations end up as "fully subscribed", even when the market price reacts in a strongly negative way to the announcement. In our view this is an evidence of how existing minorities do not have the chance to reject operations, even when these are detrimental for their wealth. We present here the case of Alitalia's rights issue in November 2005 as a perfect example supporting the model we are discussing in the following section.

On 7 November 2005, Alitalia's Board of Directors set the following conditions for a rights issue: 1,257,562,072 new shares were to be offered, at the 13:2 issue ration, at the issuing price of C=0.80, for a whole C=1,006,049,657.6 rights issue. At the time of the announcement, the market price for a share was of C=6.44.

The controller of Alitalia, at that time, was the Treasury, that announced its intention to subscribe a C=489.2 millions, in order to reduce its share from to original 62.3% to little less than 50%.

Italian government referred to this operation as a "privatization", fulfilling its commitment to the European Commission, that in 2004 authorized a temporary loan by Dresdner, a German bank. Another relevant shareholder, Air France, submitted its 2% share, by paying around C= 20 millions. Another German bank, Deutsche Bank AG, was the stand-by underwriter, i.e. committed to buy the part of unsold share, partly on its own behalf (C=200 millions) and partly on behalf of other institutions (C=100 millions for Intesa; C=25 million each for Lehman Brothers, Unicredit, Sanpaolo-IMI, Société Générale; smaller shares for Capitalia, Nomura, Morgan Stanley and others). This protection network showed to be unnecessary, as the offered shares were soon sold out on the market, and only a negligible 0.6% of rights was unexercised on the market. In fact, the success of this subscription was very impressive, particularly because it did not reflect at all the behavior of the share price on the market. As reported in Figure 3, in the three days following the announcement, the price dropped by 15% from C=6.44 to C=5.48 (cum-rights, unadjusted), and even more impressively, during the following ten days, when the rights could be traded on their specific market, share prices dropped by another 29%, from 1.38 to 0.98 (ex-rights). According to a public report published by the Deutsche Bank (2008), Alitalia stock share's value, nowadays, are worth approximately C=0.01.

6. Conclusions

In this paper we provided a theoretical interpretation of the use of rights issues in Italy. Rights issues are an important legal device to protect minorities both from ownership and value dilution following to seasoned equity issues at prices lower than the market. In this paper we present the case of Alitalia's rights issue in 2005 as a typical example of abuse of rights issue, and provide an interpretation framework. As a novelty in the literature, we discuss rights issues carried out at negativeNPV, and we investigate the role of pre-emptive rights in avoiding minorities to lead the issue to a failure. Due to the existence of private benefits, only available to the controlling shareholder, rights issues might be contemporaneously attractive for the controller and detrimental to minority's wealth. While we are not contesting a positive use of rights issues, we put under light the risk for minorities to be enforced to take part to equity issues against their own interest. This risk is particularly high when a controlling shareholder needs to defend or enlarge its flow of private benefits, such as when a company is in financial distress, or a big merger is planned.

In our opinion, this model should raise a debate about the role of rights issues, and in particular about the discretional power of the controlling shareholder in fixing the level of discount. In terms of policy implications, we would suggest either a limit to applicable discount on paid rights issues; or a qualified majority to carry out rights issues recurring to a high level of discount.

In future work we aim to empirically validate our conclusion with an original analysis of the rights market. We also leave an empirical investigation of market reaction to announcement to future work.

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Figure 1: Losses for underwriting and non-underwriting shareholders when condition for abuse does not hold, at different levels of discount.

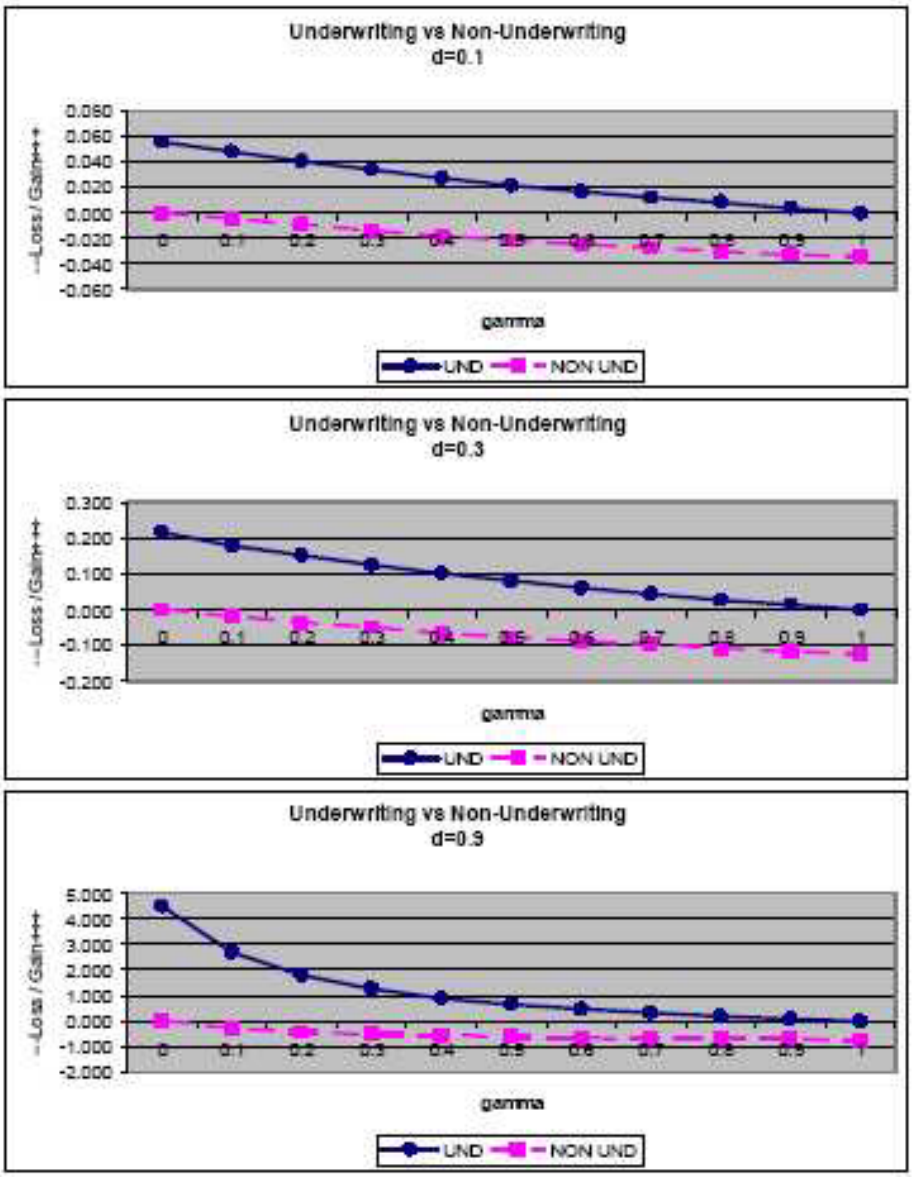

Figure 2: Losses for underwriting and non-underwriting shareholders under condition of abuse, at different levels of discount.

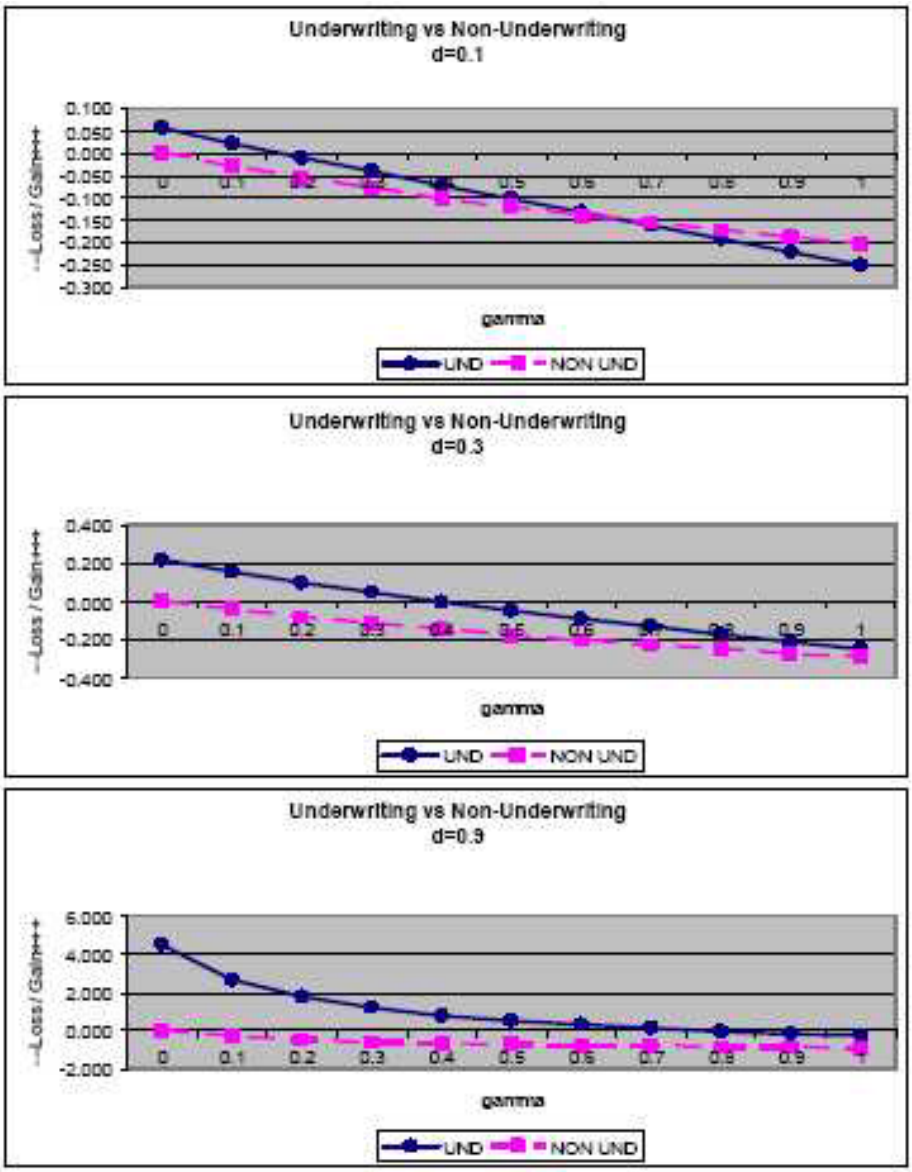

Figure 3: The behaviour of Alitalia (adjusted) share price during November 2005. The price dropped by 15% in the days following the announcement, and by another 29% during the rights market activity.