Journal of Banking and Finance 12 (1988) 353–378. North-Holland

STOCK OFFERINGS IN A DIFFERENT INSTITUTIONAL SETTING

The Swiss Case, 1973–1983*

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Received November 1986, final version received July 1987

This paper analyzes the stock price effect of equity issues in Switzerland. There, insiders are not legally prevented from using their information for personal trades, and security offerings are with almost no exception rights issues. Unlike what we find for a comprehensive sample of U.S. rights issues and a sample of U.S. general cash offerings, a significant majority of firms experiences a positive monthly announcement effect. The average abnormal return itself, however, is not significant. Also, we find evidence inconsistent with infinitely price-elastic demand functions for common stock, as well as some evidence that offer prices convey new information.

1. Introduction

This paper analyzes the reaction of stock prices to financing decisions in an institutional setting different from the U.S., namely Switzerland. Many U.S. studies find that, when corporations announce their intention to raise new capital, the price of common stock outstanding falls, independently of whether firms issue common stock [Hess and Bhagat (1986), Asquith and Mullins (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Kalay and Shimrat (1986)], convertible preferred stock [Linn and Pinegar (1985)], or convertible bonds [Dann and Mikkelson (1984), Eckbo (1986),

*The paper was completed while C. Loderer held a visiting appointment at the University of Chicago, and H. Zimmermann was a visiting scholar at M.I.T. The paper draws on Zimmermann's (1986) doctoral thesis, which was supervised and financially supported by Karl Brunner; financial support was also provided by the Swiss National Science Foundation under grants number 1.901.84 and 81.273.0.85. End-of-month transaction prices of Swiss stocks were kindly provided by Dr. Huszthy of the Union Bank of Switzerland. We benefited from the detailed comments of two anonymous referees for this Journal. We are also grateful to Natalie Dierkens, Espen Eckbo, Martin Gruber, John McConnell, Shehzad Mian, Stewart Myers, John Parsons, Andrei Schleifer, Clifford Smith, Charlie Tritschler, and the participants in seminars at Purdue University, the 1985 European Finance Association Meetings, the EIASM in Brussels, and the Wissenschaftszentrum in Berlin for helpful comments and suggestions. Research assistance by H. Klagstad and K. Martin is gratefully acknowledged.

Mikkelson and Partch (1986)].[1] A possible explanation for this regularity relies on asymmetric information between firm management and capital markets [Myers and Majluf (1984), Miller and Rock (1985)]. Other explanations are finite price elasticities of demand for financial assets, taxes [DeAngelo and Masulis (1980)], wealth redistribution among current securityholders [Fama and Miller (1972), Jensen and Meckling (1976), Myers (1977)], underpricing, and control aspects. One way to disentangle some of these effects is to look at the case of capital markets with a different institutional framework than the U.S. For various reasons, Switzerland seems to be an appropriate country.

First, there is no law preventing managers from using inside information for private transactions.[2] This implies that, unlike in a Myers–Majluf world, the average life of information asymmetries between management and capital markets is probably shorter than the two-month period which, in Switzerland, separates announcement from issue date. Since the offer price is specified on the announcement date, there is no reason for shareholder-wealth-maximizing managers to be concerned about underpricing new issues. Using rights issues, any mispricing will be reflected in the preemptive rights' value before the ex-rights date.[3] Thus, information asymmetries will not influence financing decisions, and, as a consequence, stock issues will not reveal management's belief that the firm's securities are overpriced. Consistent with that, public issues in Switzerland are with almost no exception rights issues.[4]

Secondly, occasional legal restrictions on foreign investment[5] limit the market of domestic securities, which are therefore less liquid than if they were traded in a larger market. As a consequence, the absolute price elasticity of demand for financial assets should be smaller in Switzerland than in the U.S. Furthermore, that price elasticity should be smaller for those

[1]A review of the literature is provided by Smith (1986).

[2]Not surprisingly, there are no official statistics to quantify the extent of insider trading, which makes it difficult to compare its significance to what is observed in the U.S.

[3]General cash offers would not solve the underpricing problem because, once the offer price is set, any (pre-issue) revision in market prices will represent a wealth transfer from current shareholders to the buyers of the new issue. Rights issues alone cannot prevent the problem either, unless all current shareholders exercise their preemptive rights. A sufficient condition to prevent the Myers–Majluf problem is that: (1) the life of the information asymmetry be shorter than the period of time between announcement and issue date, and (2), if the offer price is set on the announcement date, that the capital increase be a rights issue.

[4]In the U.S., the opposite is true. For the years 1980–1982, for example, the *Corporate Financing Directory* lists only 47 rights offerings, and more than 3,000 general cash offers. See also Smith (1977).

[5]For instance, there are strict limits on real estate investment by foreign nationals, including indirect investments in shares of corporations with real estate holdings. As a consequence, to avoid breaking the law, corporations with such holdings often limit the proportion of own shares held by foreign nationals to a minority stake.

stock categories from which undesired investors, as a result of Switzerland's particular laws, can effectively be excluded.

The study analyzes the stock market's reaction to 122 primary rights issues of seasoned stock between 1973 and 1983. A database of monthly stock returns had to be created for that purpose, which makes the paper one of the very first empirical studies on Swiss capital markets. According to our findings, a significant majority of firms experiences positive abnormal stock returns in the month the rights issue is announced. Analysis of a comprehensive sample of rights issues by NYSE-traded firms suggests that this is not the case in the U.S. The average monthly announcement effect itself, however, is not positive in either country. We also find evidence that the demand schedules for the securities of individual firms are not infinitely price-elastic, and some evidence that the market uses the ratio of offer price to market price as an index of the value of future cash flows.

The paper is organized as follows: in the first part, we briefly discuss the database and its statistical properties. In the second part, we perform an event test to measure the announcement effect of rights issues on stock prices. In the third part, we use cross-sectional regressions to estimate the importance of finite price elasticities and signalling effects. Conclusions are drawn in the last part.

2. Sample characteristics

2.1. Distribution characteristics of stock returns

Swiss corporations issue three types of stock (although typically not all at the same time): registered stock (RS), with characteristics similar to common stock in the U.S., voting bearer stock (VBS), i.e., stock for which the certificate fully qualifies its owner as a shareholder, and non-voting bearer stock (NVBS). End-of-month transaction prices for these securities issued by all Swiss corporations listed on the Swiss stock exchanges between 1973 and 1983 were collected and adjusted for splits, stock dividends and rights issues.[6] The statistical properties of the associated continuously compounded returns, especially those relevant to this paper, are similar to the ones observed in the U.S. [see, e.g., Fama (1976)].[7] Continuously compounded monthly returns are leptokurtic, not systematically skewed in any direction, serially uncorrelated, and characterized by a number of runs around the mean not significantly different (although generally smaller) from what a binomial process with 0.5 success probability would generate.

Abnormal returns around the dates of rights issues are computed by using

[6]The data, based on exchange reports, were kindly provided by Dr. Huszthy of the Union Bank of Switzerland.

[7]For a detailed analysis, see Vock and Zimmermann (1984).

the market model. The return on the market portfolio is proxied with the value-weighted index of the Swiss Bank Corporation, which includes firms representing in value about 90% of all domestic securities traded on Swiss stock exchanges. Market model residuals are uncorrelated at all lags.

2.2. *The sample of rights issues considered*

Our sample includes all public primary offerings of the above mentioned types of seasoned stock by Swiss corporations traded on Swiss exchanges between 1973 and 1983, with the following exceptions (about 20 in number):

- offerings made in connection with mergers or dividend increases exceeding 50% of previous dividend payments;[8]
- combination offerings with other firm securities and secondary offerings; and
- offerings for which we had contradicting details. We consulted the monthly bulletin of the Swiss National Bank, and various publications by the Union Bank of Switzerland and the Swiss Bank Corporation.

All offerings in the period considered, including the ones in the sample analyzed, are rights offerings. The sample consists of 122 primary rights offerings by 56 unregulated, industrial corporations. Generally, the offerings involve more than one stock category. The average value of these offerings is 62.7 million Swiss Francs (SFr), with a minimum of SFr 0.7 million and a maximum of SFr 372.2 million. In percentage of the value of the outstanding stock, they have an average of 17%, with a minimum of 0.2% and a maximum of 20% – the average for U.S. general cash offers reported in Mikkelson and Partch (1986) is 15.1%. The average offer price as a percentage of the market price two months before announcement of the stock offering is 39.8%, with a minimum of 2.5% and a maximum of 85.8% – the corresponding average for a sample of U.S. rights offerings to be considered later is 92%.

3. Event study

The announcement of a primary stock offering in the U.S. leads to a relative share price *decline*. According to Myers and Majluf (1984), the reason is that shareholder-wealth-maximizing managers are less likely to issue stock when they think that assets in place are undervalued. An implicit assumption is that this information asymmetry cannot be resolved cheaply before issue date. If that is not the case, however, and if management uses

[8]In the context of the Miller–Rock hypothesis (1985), this exclusion biases the sample towards a negative announcement effect, because it reduces the frequency of positive unexpected net dividends.

rights issues to prevent the wealth transfer from current to new shareholders that would occur in a general cash offer if the offer price was set below market, the decision to raise additional equity will not depend on whether the firm's stock is over- or underpriced. In Switzerland, these two conditions are met. Information asymmetries should be short-lived, because management has both a direct incentive to take advantage of any significant mispricing of the firm's stock and an incentive to disclose the mispricing to effectively benefit from the attending price readjustment. In addition, capital increases are typically all rights issues, and the offer price is announced on average two months before the issue date. Consequently, the announcement effect of a stock offering will not necessarily be negative, because it will not necessarily reveal an overpricing of the outstanding shares. In particular, if the purpose of the capital increase is to finance unanticipated positive net present value investment projects, the announcement effect will be positive.

The announcement date considered here is the month of the first report by the press of a primary rights offering. All major newspapers were considered. The report is typically a press release by the board of directors stating the intention to raise additional capital and the offer price; the decision has to be approved by stockholders, which always happened in 1973–1983. We were able to identify 76 such dates involving 99 securities.

Panel A in table 1 presents average cumulative abnormal stock returns around the offering announcement month. Since we have data only for 1973–1983, estimation of the market model with pre-announcement data would have drastically reduced the number of offerings analyzed. We therefore estimated the market model over the full 1973–1983 period with continuously compounded returns, and computed abnormal returns as within-sample prediction errors (alternative estimation procedures will be discussed in a later paragraph). As we mentioned, the market index used is the value-weighted index of the Swiss Bank Corporation. Abnormal returns ($AR_{i,t}$) for event i and month t (zero is the announcement month) are defined as the difference between the actual, continuously compounded return and the return predicted by the market model for that particular month. Abnormal returns are cumulated in event time (CAR_{i,t_2-t_1}, where (t_2-t_1+1) is the number of months analyzed) and sample averages ($ACAR_{t_2-t_1}$) are computed by summing the CAR_{i,t_2-t_1}'s across i's and by dividing them by the number of stock offerings M. The significance of $ACAR_{t_2-t_1}$ from zero can be tested by noticing that, since the stock returns in our sample are approximately normally distributed and serially uncorrelated, and stock offerings do not appear to be clustered in time, the variable,

$$(MT)^{-1/2} \sum_{t=t_1}^{t_2} \sum_{i=1}^{M} \frac{AR_{i,t}}{S_i},$$

is approximately normally distributed (T is equal to (t_2-t_1+1), and S_i is the estimated standard deviation of the market model regression residuals for the offering i). Also reported in table 1, is a sign test, where we compute the proportion p of firms with positive CAR_{i,t_2-t_1}'s for the event period (t_2-t_1), and test whether that proportion is different from 0.5. If N is the number of stock offerings in the sample, the null hypothesis is that the variable $(p-0.5)/\sqrt{(0.5\times 0.5)/N}$ is approximately standard normally distributed.

The stocks in our sample earn a positive average abnormal return of 4.1% from month -10 to month -1, a positive average abnormal return of 2.0% on announcement (month 0), and a negative average abnormal return of -4.2% from month $+1$ to month $+10$. None of these abnormal returns is significantly different from zero. This might occur because monthly return variances are large relative to the announcement effect. Consistent with that, the non-parametric test suggests that the number of stocks with positive cumulative abnormal returns in the pre-announcement period and *on announcement* is significant with confidence 93.4% and 99.9%, respectively. The post-announcement cumulative abnormal stock performance, instead, is not significantly different from zero, as 48 stocks experience negative, and 51 positive cumulative abnormal returns from month $+1$ to month $+10$.

Splitting the sample according to stock category raised shows that the results are driven by the subsample of voting bearer shares (*VBS*). As shown in the table, the abnormal returns of registered shares (*RS*) and non-voting bearer shares (*NVBS*) are never statistically significant. We also analyzed the reaction of stock categories which the corporations involved chose not to increase.[9] The results (reported at the bottom of panel A of the table) are similar to the ones above, in that the abnormal return on announcement is $+1.6\%$ (not significant), and that the number of stocks with a positive abnormal return (16) is significantly larger than the number of stocks with a negative abnormal return (4). We then tested the sensitivity of our results with respect to the estimation procedure. The analysis was therefore replicated for a random sample of rights issues by estimating the market model with pre-announcement data only, and thereby computing abnormal returns as out-of-sample prediction errors. The results are essentially the same.

These findings suggest that the market does not interpret the announcement of a stock offering as bad news. For a comparison with U.S. data, we compiled a sample of all rights offerings of common stock by U.S. firms as reported in the *Directory of Corporate Financings* for the years 1973–1983, which meet the following criteria: (i) the offerings are reported as rights issues in the *Wall Street Journal Index*; (ii) they are not in combination with secondary distributions; and (iii) the firms are reported on the monthly

[9]Obviously, to protect shareholders against stock price dilution, holders of stock categories not increased in the offering are also given preemptive rights to the new issue.

Table 1

Monthly cumulative abnormal returns around the announcement date of a primary stock offering. Switzerland: 76 rights issues (1973–1983); U.S.: 37 rights issues and 97 general cash offerings (1973–1983).[a]

	N	Months (−10; −1)	Months (−1;0)	Month (0;0)	Months (+1; +10)	Months (−10; +10)
		(1)	(2)	(3)	(4)	(5)
Panel A: Rights issues in Switzerland						
Increased stock categories						
Total sample	99	0.041	0.030	0.020	−0.042	0.019
		(0.18)	(0.33)	(0.37)	(−0.28)	(0.01)
		42/57	35/64	39/60	48/51	48/51
		(1.508)	(2.91)	(2.111)	(0.302)	(0.302)
Voting bearer stock	44	0.053	0.036	0.026	−0.030	0.048
		(0.22)	(0.38)	(0.46)	(−0.19)	(0.11)
		18/26	12/32	13/31	20/24	19/25
		(1.206)	(3.015)	(2.714)	(0.603)	(0.905)
Registered stock	38	0.020	0.026	0.012	−0.018	0.013
		(0.11)	(0.25)	(0.17)	(−0.20)	(0.00)
		18/20	16/22	18/20	19/19	21/17
		(0.026)	(0.973)	(0.026)	(0.0)	(0.649)
Non-voting bearer stock	17	0.057	0.026	0.022	−0.123	−0.042
		(0.23)	(0.36)	(0.60)	(−0.69)	(−0.18)
		6/11	7/10	8/9	9/8	8/9
		(1.213)	(0.728)	(0.243)	(−0.243)	(0.243)
Stock categories not increased by the rights issue						
Total sample	20	0.021	0.028	0.016	−0.047	−0.011
		(0.20)	(0.72)	(0.56)	(−0.26)	(0.00)
		8/12	7/13	4/16	9/11	5/15
		(1.894)	(1.342)	(2.683)	(0.447)	(0.236)
Panel B: Primary stock offerings in the U.S.						
Rights issues						
Total sample	37	0.081	0.011	0.003	0.043	0.127
		(2.863)	(0.838)	(0.311)	(1.735)	(3.241)
		10/27	17/20	21/16	14/23	16/21
		(2.802)	(0.494)	(−0.824)	(1.483)	(0.824)
Excluding multiple offerings	30	0.079	0.004	0.0	0.038	0.117
		(2.392)	(0.241)	(−0.041)	(1.466)	(2.653)
		7/23	15/15	16/14	11/19	14/16
		(2.930)	(0.0)	(−0.366)	(1.465)	(0.366)
General cash offerings						
Total sample	97	0.144	0.007	−0.012	0.023	0.155
		(6.148)	(0.672)	(−1.177)	(1.222)	(4.829)
		20/77	49/48	58/39	50/47	31/66
		(5.761)	(−0.101)	(−1.920)	(−0.303)	(3.537)
Excluding public utilities	47	0.233	0.005	−0.036	0.008	0.205
		(6.093)	(0.092)	(−3.000)	(0.084)	(3.607)
		4/43	24/23	31/16	28/19	15/32
		(5.683)	(−0.146)	(−2.186)	(−1.311)	(2.477)

[a]Months are defined relative to the announcement month (month 0). The first line, for every subsample, shows the cumulated average monthly excess return for every period considered. The second line (in parentheses) gives the corresponding z-statistic. The third line shows the number of negative and positive cumulative abnormal returns in the sample, while the following line (in parenthesis) gives the standard normal z-value corresponding to that binomial frequency under the assumption of random drawings with 0.5-probability of success.

CRSP tapes with data beginning 60 months before announcement. Thirty-seven rights issues meet these criteria and, with the exception of two, they all involve utilities. Since the Swiss sample includes only unregulated industrial firms, the U.S. sample of rights offerings may provide a biased comparison. General cash offers may be more appropriate for a test of the notion that Switzerland's different institutional framework (legality of insider trading) can cause the announcement effect of a stock offering to differ from the one observed in the U.S. We therefore collected a random sample of 97 general cash offers of common stock during the period of 1973–1983 (50 by utilities, and 47 by industrial firms). The selection criteria are the same, except that we also excluded combination offerings with other firm securities (multiple offerings).

The results of an event test based on the identical market model estimation procedure used to generate the results for the Swiss sample of stock offerings around the announcement month are shown in panel B of table 1.[10] Consider rights offerings first. Pre-announcement cumulative abnormal returns (*CAR*) over the ten months before announcement seem to be larger than what we find for Switzerland. They are significant and equal to 8.1% for the full sample, and 7.9% if multiple offerings are excluded. Seventy-three percent of the firms experience positive *CAR*'s during those months. For the announcement month, the abnormal return is 0.3% and insignificantly different from zero. More importantly, there are more firms with *negative* than positive abnormal returns (only 43% have positive *AR*'s). There is no indication that the announcement of a rights offering conveys good news to the market. In Switzerland, by contrast, as we saw, a significant majority of firms (61%) has *positive* abnormal returns. A mean-comparison, one-tailed test suggests that 61% in a sample of 99 is significantly larger than 43% in a sample of 37 with confidence 0.97 – the test uses the normal approximation to the binomial probability distribution. The post-offering abnormal returns for U.S. rights offerings are not significantly different from zero according to both the parametric and the non-parametric test.

The results for the sample of general cash offers are similar. The offering announcement month is preceded by positive and significant abnormal returns and followed by insignificant abnormal returns. The average announcement effect is not significantly different from zero, but a significant majority of firms experiences negative abnormal returns (only 40% experience a

[10]We also replicated the whole analysis of U.S. offerings by estimating the market model during the 50 months preceding month −10 before the announcement month, and by using that model to compute abnormal returns for the months in the interval (−10, +10). Significance tests were performed following standard procedures [see, for instance, Linn and McConnell (1983) or Mikkelson and Partch (1986)]. The results are essentially the same as the ones shown in panel B of table 1.

positive *AR*). For a better comparison, since the Swiss equity offerings considered are all by industrials, we excluded utilities from the general cash offerings sample. The pattern of cumulative abnormal returns does not change, although it is typically more significant. The average ten-month pre-announcement *CAR* is 23.3% (91% of the firms have positive *CAR*'s), while the average ten-month post-announcement *CAR* is 0.8% and insignificant. The announcement effect is −3.6% and significant, and only 34% of the firms in the sample earn positive abnormal returns – a mean-comparison one-tailed test of the proportion of firms with positive abnormal returns in the Swiss versus the U.S. sample is significant with confidence 0.98. These figures are similar to what other studies find using daily data [see, e.g., Asquith and Mullins (1986), Masulis and Korwar (1986), or Mikkelson and Partch (1986)].

According to the above results, there is some evidence that the announcement of a primary stock offering reduces the stock price of U.S. firms and raises the one of Swiss firms. The weak positive announcement effect measured for Switzerland is consistent with the notion that the legality of insider trading, and the use of rights issues, prevent information asymmetries between management and capital market from affecting financing decisions.

Of course, there could be other institutional differences between the two countries responsible for the observed differential effect, but it is not obvious which ones would qualify. Routine financial disclosure requirements imposed on Swiss corporations, for instance, are less restrictive than in the U.S. One could therefore argue that the filing of a public issue of securities provides the market with the information that American corporations disclose in their annual filings with the SEC. Yet, it is not clear why information releases should necessarily be good news. Nonetheless, we tested that notion by analyzing the announcement effect on stock prices of 113 straight bond issues during the same 1973–1983 period. Disclosure requirements for a public issue of bonds are similar to the ones applied in the case of stock offerings, and should therefore provide the market with the same information. However, the announcement of a bond issue is not significant according to both the parametric and the non-parametric test.

4. Cross-sectional analysis

The following sections analyze the stock market's cross-sectional reaction to rights offerings. We test for the existence of two main effects: finite price elasticities of demand and signalling effects.

4.1. Signalling effects

Heinkel and Schwartz (1986) derive a signalling equilibrium in which the

discount of the subscription price from the pre-announcement market price in an uninsured rights offer conveys a signal about firm quality. An important aspect of that equilibrium is the dissipative signalling costs of a failed rights issue. In Switzerland, these costs cannot be important, as the median offer price is only about 40% (compared to 90% in our U.S. sample of rights issues) of the market price two months before the announcement date, and we could not find instances of unsuccessful offers. Nevertheless, there does not seem to be any net benefit to the board of directors from false signalling. Senior executives can benefit from their inside information by appropriate transactions in the stock market without necessarily having to issue false signals. Moreover, it would be difficult for management to conceal its financial transactions. To go undetected from shareholders, a false signal cannot be too obviously wrong; to be profitable, however, it will therefore necessitate sizable and hence more visible financial operations (the Swiss domestic capital market is relatively small). Finally, reputation costs in a small market could be significant, because evidence, or even the mere suspicion, of wrong signals would quickly become public domain and impose costs on managers in future transactions in the capital market.

Assume there is no false signalling,[11] and, for simplicity, that the rights issue occurs instantaneously. Under these conditions, the offer price is a source of valuable information, as it is a linear function of the difference between management's valuation of a share of stock and the stock's market price. There are a few basic equations that describe our scenario. First, the amount of capital (I) that management wants to raise to finance its investment program (financial slack included) has to be such that

$$I = mP_0, \tag{1}$$

where m is the number of new shares issued (we abstract here from the existence of different stock categories), and P_0 is the offer price. Secondly, *management's* valuation of one share of stock (P^*) is

$$P^* = P + NPV, \tag{2}$$

where P is the rights-on *market* price of one share of stock, and NPV is the difference between P^* and P (it measures the divergence between management and market in the per-share valuation of current activities and of future investment projects, including the ones to be financed with I). If the valuation asymmetry is removed by the announcement of the rights issue,

[11] As we pointed out already, insider trading does not imply that management's decisions have no information value. On the contrary, managers who trade on the basis of private information have an added incentive to actively signal the existence of any market mispricing in order to complete their transactions more quickly.

there will be a unique ex-rights price (P_e), and the following unique preemptive right value (K),

$$K = P^* - P_e, \tag{3}$$

(this assumes that the market believes management's own valuation). The ex-rights price P_e is defined by

$$P_e = \frac{MP^* + mP_0}{M+m}, \tag{4}$$

where M is the number of shares outstanding. Eqs. (2), (3) and (4) can be combined to yield:

$$K = (P + NPV - P_0)\frac{m}{M+m}. \tag{5}$$

The relevant equations are (1) and (5). Given NPV, M, and I, if management chooses K, those two equations will determine the value of m and P_0.

Financial press reports frequently suggest the existence of specific target values for K. For instance, if the stock price has appreciated significantly in the past, shareholders may want K to be large enough to provide them with an opportunity to diversify their portfolio without losing any voting rights (as would happen if they sold their shares outright).[12] Assume management sets K based on a rule known by the market. Solving eq. (1) for m and substituting into eq. (5), we get

$$K = (P + NPV - P_0)\frac{I}{MP_0 + I}, \tag{6}$$

which can be rearranged to find the value of P_0 necessary to yield the desired value of K,

$$P_0 = (P + NPV - K)\frac{I}{KM + I}. \tag{7}$$

Since P, K, M, and I are known by the market, P_0 and NPV will be linearly related – whether or not managers are conscious of this signalling is immaterial. Consequently, if the market knows the rule followed by

[12] Shifts in control can be prevented by issuing registered or non-voting bearer shares. In the case of most registered shares, management can refuse registration of new, undesirable shareholders.

managers to set K, the announcement of the offer terms I and P_0 will allow it to infer the value of NPV. In an efficient market, this information will be used to revise the price P.

Of course, rights offerings are not instantaneous. Preemptive rights should be valued as options before expiration. Eq. (6) only represents an end-of-period payoff K to the holder of a preemptive right. Fortunately, since these options are well in the money (the average offer price is about 40% of the market price), the value of the option is close to the discounted value of K. Moreover, since the period during which preemptive rights can be exercised is less than one month, the discounted value of K does not differ much from K itself. Interestingly, we find that the value of K (standardized by the share price two months before announcement) is 0.073, which is statistically indistinguishable from 0.077, the actual (standardized) value of a preemptive right at the end of its first trading day.

4.2. Finite price elasticities of demand

Whether or not demand schedules for individual financial securities have finite price elasticities is a controversial issue. The consensus among financial economists seems to be that demand curves are essentially horizontal, although the evidence is not clear-cut: among others, Scholes (1972), Marsh (1979), Hess and Frost (1982) and Bhagat, Marr and Thompson (1986) argue that demand curves are horizontal; Kraus and Stoll (1972), Mikkelson and Partch (1985), Asquith and Mullins (1986) and Shleifer (1986) seem to find inconsistent evidence.

The typical cross-sectional test of finite price elasticities estimates the relation between the stock market's reaction to a capital increase, and the offering's volume. If demand curves are downward sloping, so goes the argument, this relation should be negative. Non-negative volume effects are interpreted as evidence of an infinite price elasticity of demand. If the demand functions for different stocks are identical, and firms face the same initial price–quantity combination, that conclusion is obviously correct. However, if those conditions are not met, downward sloping demand curves can generate almost any cross-sectional price–volume relation. For instance, if firms face the same linear demand function as in fig. 1, but different initial price–quantity combinations, there could be a *positive* cross-sectional relation between relative changes in the stock price and in the number of shares outstanding. Assuming an equal number of shares issued, firm A in fig. 1 will experience a large relative increase in the number of shares outstanding $((S_1^A - S_0^A)/S_0^A)$ and a small relative price decline $((P_1^A - P_0^A)/P_0^A)$. The opposite relation will be observed for firms, such as firm B, which are on the inelastic portion of the demand function. Firm B will experience a small relative increase in the number of shares outstanding $((S_1^B - S_0^B)/S_0^B)$ and a large

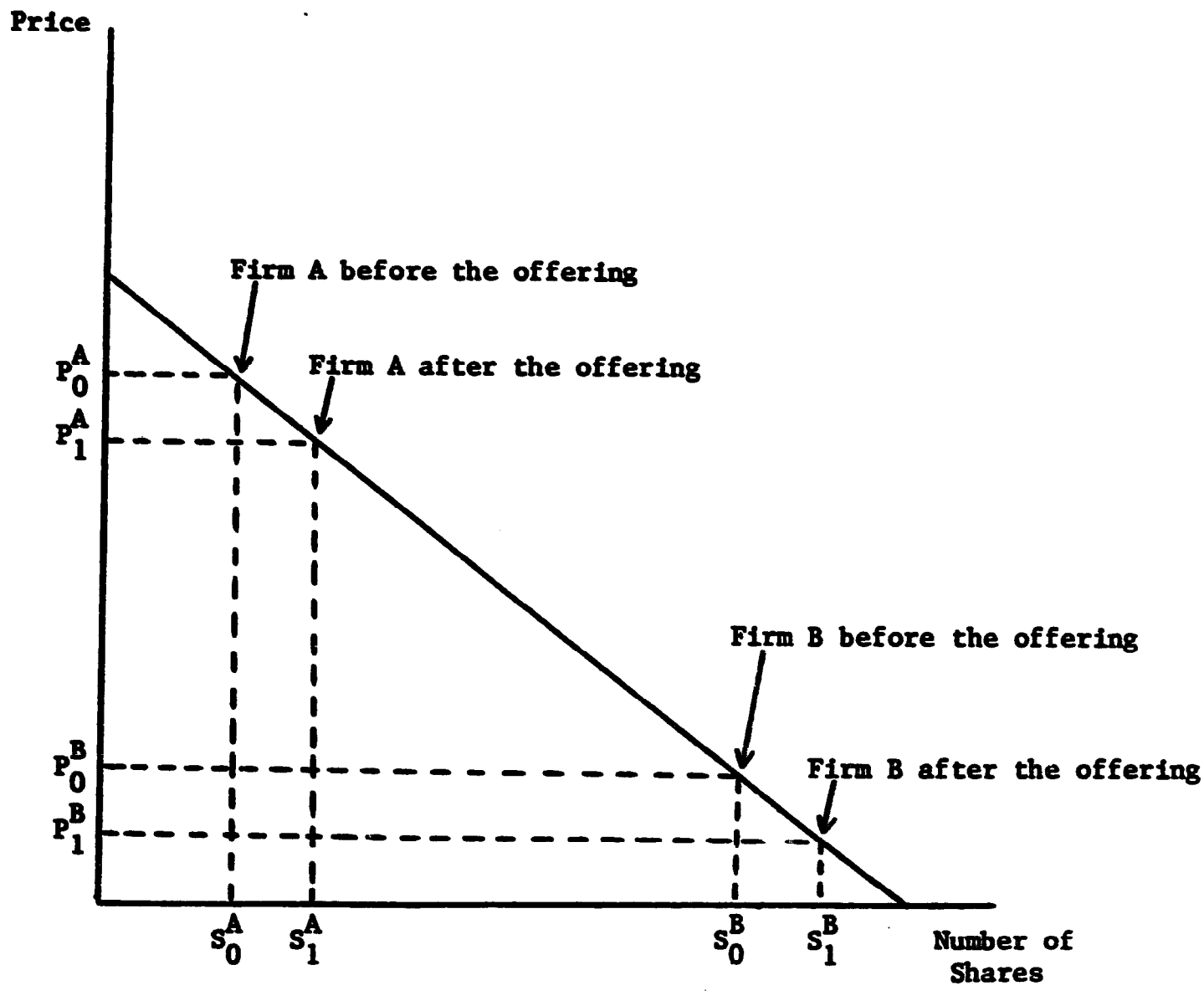

Fig. 1. Differential relative price declines for two firms facing the same linear demand function but different price elasticities, and issuing the same number of new shares.

relative price decline $((P_1^B - P_0^B)/P_0^B)$. The cross-sectional relation between *relative* price and quantity changes will therefore be positive. In general, one can show that, if demand curves differ across firms, finite price elasticities do not necessarily imply a negative cross-sectional relation between price and quantity changes, no matter whether these changes are measured in relative or in dollar terms.[13] The implication of the above argument is that, while the absence of cross-sectional volume effects does not discriminate between finite and infinite price elasticities of demand, the presence of significant volume effects (if one controls for other effects) is only consistent with the former. Infinite price elasticities of demand cannot possibly cause non-zero volume effects.

Related to this question is a claim by managers that stock offerings command a higher price in a growing market. If such a market is synonymous with a larger number of active traders, if could be that the resulting transaction demand for securities has a larger absolute price elasticity. Hence, we should observe a positive relation between the rate of growth of a stock market index and the abnormal stock return on the announcement of a rights issue.

[13] This issue is analyzed for the U.S. stock market in Loderer and Van Drunen (1987).

4.3. Additional considerations

According to the Swiss financial press, rights issues are substitute dividend payments with a preferential tax treatment, as the proceeds from the sale of preemptive rights are treated as a capital gain[14] rather than ordinary income. Rights issues with a large preemptive rights value are perceived to be shareholder-friendly. Of course, stockholders do not need a rights issue to receive such a 'dividend', as they can always sell their shares directly.[15] Nevertheless, we will test for the existence of this preference for large preemptive rights values.

4.4. Test methodology

The cross-sectional analysis is performed by estimating the regression:

$$AR_i = b_0 + b_1 RIGHT_i + b_2 VOLUME_i + b_3 OFFER_i + b_4 MARKET_i + e_i, \tag{8}$$

where

AR_i = a measure of the stock market's reaction to the announcement of a rights issue by firm i;
$RIGHT_i$ = the value of a preemptive right as a fraction of firm i's stock price;
$VOLUME_i$ = the volume of the new issue by firm i;
$OFFER_i$ = the offer price as a fraction of firm i's stock price;
$MARKET_i$ = a measure of the stock market's performance; and
e_i = an error term with the usual OLS properties.

The above signalling argument implies $b_3 > 0$, and the dividend preference argument $b_1 > 0$. From our discussion, finite price elasticities of demand are consistent with any coefficient b_2, but a non-zero coefficient is inconsistent with perfectly elastic demand curves. Finally, if demand functions are more elastic in a growing market, b_4 should be positive. Various proxies are used for the variables in eq. (8):

(*i*) *Proxies for AR.* When there is an announcement date distinct from

[14]Capital gains realized by natural persons are tax exempt at the federal and (with few exceptions) at the state level. Capital gains realized by juridical persons are treated as ordinary income at both levels (except for mutual and pension funds, for which they are tax free).

[15]Consistent with this logic, dividend payments and preemptive rights do not seem to be substitutes: the correlation coefficient between dividends and preemptive rights values (both standardized by the corresponding stock price) is positive rather than negative, as predicted by the tax argument.

the issue date, we measure *AR* with the annualized two-month abnormal return ending with the announcement month (*ARA*). The month before announcement is included because the event could have been anticipated – the board of directors' meeting that decides the capital increase is typically preceded by extensive contacts with an underwriting bank. Alternatively, we measure *AR* with the annualized abnormal return during the four-month period preceding the ex-rights month (*ARI*). This measure allows consideration of rights issues for which we do not have a specific announcement date. In addition, since the median period between announcement and the ex-rights date is two months, *ARI* captures issue-related information that reaches the market after the first announcement (for instance, information about the purpose of the capital increase;[16]

(*ii*) *Proxies for RIGHT.* Two measures for the value of a preemptive right are employed. First, an ex-ante or theoretical value (*TRIGHT*) computed as $TRIGHT=[(P'-P_0)/P'][m/(M+m)]$, where P is the end-of-month closing stock price one month before the announcement month (or four months before the month of the ex-rights date, when an appropriate announcement date cannot be found), P_0 is the offer price, M is the number of shares outstanding before the issue, and m is the number of new shares issued. Alternatively, we use an ex-post or actual measure (*ARIGHT*), computed as the ratio of the market value of a preemptive right at the end of the first trading day, divided by the end-of-month closing share price one month before the announcement month (or four months before the month of the ex-rights date, if no announcement date can be found). As we mentioned at the end of section 4.1, the mean values of *TRIGHT* and *ARIGHT* are virtually identical: 0.073 for *TRIGHT*, and 0.077 for *ARIGHT*. Their cross-sectional correlation coefficient is correspondingly high (0.872);

(*iii*) *Proxies for VOLUME.* The size of the capital increase is measured either in absolute terms (natural logarithm of the product of the number of shares issued times the offer price, denoted by *VOLUMEM*) or in relative terms (number of shares issued divided by the number of shares outstanding, denoted by *VOLUMER*). Since firms often increase more than one stock category at the same time, and the average correlation coefficients between the returns on these stock categories are between 0.60 and 0.70, they could be treated as an aggregate. Whenever different stock categories are treated as an aggregate, the volume proxy will be denoted by *VOLUMEMA* (for simplicity, we only consider the absolute measure);

[16] Announcement is typically a press release by the board of directors on the planned capital increase. Generally, no specifics on the purpose of the increase are given, other than to say that it is intended to finance usual business activities. This often occurs to avoid legal provisions on capital outlays which are intended to protect minority stockholders and would require the approval of a qualified majority of stockholder votes.

(*iv*) *Proxy for OFFER.* This variable is measured by dividing the offer price by the end-of-month closing market price one month before the announcement month (or four months before the ex-rights month, if no announcement date can be identified). It should be pointed out that the offer price is disclosed together with the size of the new issue on the announcement date (in the U.S., only the number of new shares is announced on that date; the offer price is set shortly before the ex-rights date); and

(*v*) *Proxy for MARKET.* This variable is measured with the market index's annualized, continuously compounded rate of growth during the event months of interest, i.e., two months preceding and including the announcement month, or four months before the ex-rights month.

4.5. Test results

4.5.1. The immediate announcement period

Panel A in table 2 presents the coefficient estimates, when the dependent variable is the average abnormal return during the two months preceding and including the month of the first published report of the rights offering (*ARA*). The regressions with the highest explanatory power are those with the actual standardized right value *ARIGHT* rather than *TRIGHT* [regressions (2), (4) and (6) in the table]. In that case, independently of how offering size is measured, the regression explains at least 45% of the variation in the dependent variable. As predicted, signalling effects are always positive and significant with confidence 0.99 (the t-values of the *ARIGHT* coefficient are always larger than 8.09); moreover, volume effects are significant with confidence 0.90 (two-sided tests). In the case of the variable *MARKET*, the coefficient is positive, but not significant. As for the magnitude of the estimated coefficients, consider regression (6) in the table. An increase in the relative value of the offer price by 1% adds 0.6% to the abnormal return. A similar increase in the relative volume of the issue leads to a 0.2% decrease in the abnormal return, which implies a price elasticity of demand of -5. Given the estimated parameter's standard deviation of 0.124 (0.210/1.698), however, we cannot reject the hypothesis of a much larger absolute price elasticity with confidence 0.95.

A perplexing result is the positive and significant coefficient of *ARIGHT*. Since investors are rational economic agents, and since they can always sell their shares for cash, this effect can hardly be the result of the differential taxation of dividends and capital gains. One interpretation is that favorable information will lead to both a higher stock price and a higher preemptive right value. The adjusted R^2 of the regressions involving *ARIGHT* could therefore be an upward biased measure of the explanatory power of eq. (8). The problem with this interpretation, however, is that it does not explain

why managers do not take advantage of a higher stock price by setting a higher offer price. That action would tend to *reduce* the value of a preemptive right. An alternative interpretation is as follows. Suppose investors value their voting rights and follow a buy-and-hold strategy. They will tend to hold positions in the firm's stock with sizeable unrealized capital gains (expected returns are positive). Risk diversification may then require rearrangements of portfolio weights, which can either be achieved by selling shares or preemptive rights (assuming the firm is making a rights issue). Investors will prefer selling rights rather than shares, because it does not imply the sacrifice of any voting rights.[17] To accommodate stockholders' desires, shareholder-wealth maximizing managers will therefore set the offering terms in such a way that preemptive rights[18] have a higher value when the firm's stock has appreciated more.[19] Preemptive rights values and attending shareholder benefits will therefore be positively correlated. Thus, if rights issues are not anticipated, we should observe a positive relation between the value of one right and the abnormal return on the announcement of a rights issue.

To test whether the methodology used to measure abnormal returns affects our results, we reestimated regressions (1)–(6) in table 2 using raw returns, and added a measure of the average monthly return on the market index during the two months in question, so as to control for market-wide effects (this procedure implicitly assumes an identical cross-sectional beta). The results are virtually identical to the ones in panel A. Replication of regressions (2), (4) and (6), for instance, yields positive signalling effects (the *t*-values of *OFFER* are 2.56, 2.60, and 2.57, respectively), and negative volume effects (the *t*-values of various measures of issue size are −2.49, −1.62, and −1.65). We also tested for heteroscedasticity, but found no supporting evidence.

To check whether the size of the offering proxies for information disclosure [as implied, if the size of the issue were unanticipated, by Miller and Rock (1985)] rather than for demand elasticity effects, we estimated the first two regressions in the table for the stock categories that were *not raised* in the capital increase.[20] We found no significant volume effects, which is inconsistent with the claim that the offering size conveys information about the firm. That finding is also inconsistent with the notion that the volume effects

[17] We assume that the market value of a voting right would not compensate the inframarginal investor for the loss of a voting right.

[18] Alternatively, managers could use stock splits to achieve the same result. Stock splits, however, are very uncommon in Switzerland.

[19] Of course, to do so, they may have to issue more securities at a lower offer price. Shifts in control can be prevented by issuing registered or non-voting bearer shares.

[20] Obviously, we cannot define the variables *VOLUMEM* and *VOLUMER* for these stock categories. Hence, regressions (3)–(6) in the table cannot be estimated.

Table 2
Cross sectional analysis of the monthly abnormal stock returns on announcement: 1973–1983.[a]

Regression	Coefficient estimates: Intercept	*TRIGHT*	*ARIGHT*	*VOLUMEMA*	*VOLUMEM*	*VOLUMER*	*OFFER*	*MARKET*	$\bar{R}^2$	*F*-stat.
Panel A: Dependent variable = *ARA*; number of observations = 99										
(1)	0.296	1.216		−0.952D−01			0.168	0.416	0.102	3.78
	(1.605)	(1.428)		(−2.383)			(0.674)	(2.437)		
(2)	−0.152		3.175	−0.758D−01			0.568	0.212	0.475	23.15
	(−1.169)		(8.380)	(−2.488)			(3.016)	(1.594)		
(3)	0.143	1.615			−0.114		0.348	0.322	0.119	4.30
	(0.909)	(1.926)			(−2.751)		(1.337)	(1.858)		
(4)	−0.254		3.143		−0.604D−01		0.611	0.167	0.460	21.84
	(−2.166)		(8.085)		(−1.837)		(3.099)	(1.222)		
(5)	0.307	−1.700				−0.525	0.225	0.424	0.087	3.33
	(1.537)	(−0.840)				(2.005)	(−0.752)	(2.464)		
(6)	−0.356		3.700			−0.210	0.592	0.190	0.457	21.61
	(−3.218)		(8.087)			(−1.698)	(3.022)	(1.399)		

Panel B: Dependent variable = *ARI*; number of observations = 209

(1)	−0.133	0.990		−0.296D−01			0.506	−0.153	0.099	6.74
	(−1.646)	(2.276)		(−2.105)			(4.314)	(−2.328)		
(2)	−0.265		1.863	−0.226D−01			0.596	−0.222	0.209	14.72
	(−3.770)		(5.839)	(−1.716)			(5.570)	(−3.525)		
(3)	−0.175	1.079			−0.297D−01		0.532	−0.161	0.100	6.75
	(2.396)	(2.509)			(−2.110)		(4.434)	(2.448)		
(4)	−0.289		1.903		−0.260D−01		0.621	0.230	0.212	15.02
	(−4.608)		(6.036)		(−1.973)		(5.692)	(−3.659)		
(5)	−0.254	1.594				−0.845D−01	0.512	−0.155	0.098	6.67
	(−3.562)	(3.293)				(−2.039)	(4.338)	(−2.346)		
(6)	−0.353		2.390			−0.123	0.609	−0.237	0.240	17.38
	(−6.032)		(7.125)			(−3.365)	(5.850)	(−3.837)		

[a]Variable definitions: *ARA* = Annualized abnormal return during the two months preceding and including the announcement month; *ARI* = Annualized abnormal return during the four-month period preceding and excluding the issue month; *TRIGHT* = Theoretical value of a preemptive right, divided by the market price of one share of stock two months before announcement (or four months before issue, if no announcement date could be found); *ARIGHT* = Actual value of a preemptive right at the end of the first trading day, divided by the market price of one share of stock two months before announcement (or four months before the issue, if no announcement date could be found); *VOLUMEMA* = The natural logarithm of the total amount of capital raised by the firm (gross of issuing costs); *VOLUMEM* = The natural logarithm of the amount of capital raised by the firm with a particular stock category (gross of issuing costs); *VOLUMER* = The relative increase in the number of shares outstanding in a particular stock category; *OFFER* = The offer price divided by the market price of one share two months before announcement (or four months before issue, if no announcement date could be found); and *MARKET* = The annualized continuously compounded rate of return on the market portfolio during the two-month period preceding and including the announcement month (in the case of panel A), or during the four-month period preceding and excluding the issue month (in the case of panel B). Numbers in parentheses are *t*-statistics.

measure a decline in the value of the corporate tax shield that could occur if the new funds were used to retire debt.[21]

4.5.2. The expanded announcement period

The analysis was then replicated by measuring the announcement effect over the four-month period preceding the ex-rights month. This alternative measure (*ARI*) captures more issue-related information, and increases the sample of stocks analyzed from 99 to 209. The estimated regressions are the same as the ones just discussed. As laid out in panel B of table 2, the main results are uniformly stronger, independently of how we measure the value of a preemptive right or the volume of the rights issue. The evidence supports the notion of finite price-elasticities of demand (the *t*-values of the issue-size coefficients are between −3.365 and −1.716) and a signalling effect (the *t*-values of the coefficients associated with preemptive rights values are between 4.314 and 5.850) with confidence generally larger than 0.975.

The coefficient of *MARKET* however, is negative and significant (its absolute *t*-value is always larger than 2.328). Clearly, this finding does not support the contention that a rising market is associated with a more elastic demand function. To test whether this result is caused by a methodology which, by assuming a stationary beta, may not properly account for the influence of changes in the return to the market portfolio, we reestimated panel B using raw returns. The results are essentially identical. For instance, if we replicate regression (5) in the table, the relevant coefficients have the following *t*-values: 3.441 (*TRIGHT*), −1.924 (*VOLUMER*), and 3.859 (*OFFER*).

The issue of finite price elasticities of demand can be analyzed in more detail. The less elastic demand functions should be the ones for non-voting bearer shares and registered shares. These two stock categories have a relatively thin market: non-voting bearer shares are not included in the portfolios of institutional investors (they represent less than 10% of total equity), and in the case of registered shares, the board of directors can typically refuse to register undesired investors as new shareholders. Table 3 shows the estimated coefficients of our regression equation when a separate

[21] For comparison, we also estimated the regression equation for our sample of 37 U.S. rights offerings. The variables used are measured as defined for the analysis of the Swiss sample. The available data allowed us to replicate only the regressions (3) and (5) of table 2, i.e., those where preemptive rights are measured with their theoretical value (*TRIGHT*), and the size of the offering is alternatively measured with the log of the offering's dollar value (*VOLUMEM*) or with the relative increase in the number of shares outstanding (*VOLUMER*). None of the estimated coefficients is statistically significantly different from zero. In the case of the offer price (*OFFER*), however, this result is not too surprising because that price is set right before the ex-rights date, i.e., an average 2 months *after* the announcement date (by contrast, in Switzerland, the offer price is set during the board of directors' meeting that precedes the announcement date, and is disclosed at that later date). Hence, the market cannot possibly react to a piece of information that has not been disclosed yet.

volume effect is estimated for each different stock category. According to these estimates, voting bearer shares seem to be indeed the more liquid security, since the absolute value of their volume coefficient and its *t*-statistic are smaller, although not significantly smaller, than the ones of the other two stock categories. The results using *TRIGHT* instead of *ARIGHT* in the regression (not reported here) are very similar, except for the coefficient of *TRIGHT* itself, which is not significantly different from zero in the third regression of the table.

The sample can also be split into rights offerings by firms that raise capital frequently, i.e., at least every two years, and rights offerings by firms that do not. Frequent issuers represent the largest firms in our sample. Large banks, for instance, issue stock every year, as the law prescribes a minimal ratio between par-value of outstanding stock and total liabilities. There is probably less disagreement among market participants about the activities and the value of frequent issuers than there is about infrequent issuers (disclosure requirements in Switzerland are minimal). If heterogeneous information among investors implies different reservation prices for a certain stock, price elasticities of aggregate demand will be larger (in absolute value) when that heterogeneity is more extensive – we assume that risk aversion and limited wealth restrict the amount of shares a particular investor is willing to buy at any given price below his reservation price. Frequent issuers should therefore face more elastic demand functions for their stock than infrequent issuers do. Hence, if volume effects are related to the price elasticity of demand, they should be less pronounced for the sample of frequent issuers. Similarly, signalling effects should be less important as well, because the offerings by frequent issuers are less unexpected. Consistent with this reasoning, when the regression is estimated for stocks in the two groups, the regression coefficients are more significant for the group of infrequent rights offerings (table 4). Specifically, while the *t*-values of the volume effects for infrequent issuers are between −3.681 (*VOLUMER*) and −2.692 (*VOLUMEMA*), for frequent issuers they are between −1.789 (*VOLUMER*) and 0.212 (*VOLUMEMA*). Similarly, signalling effects have *t*-values comprised between 4.667 and 5.601 for infrequent issuers, but only between 1.598 and 2.542 for frequent issuers. The results obtained using *TRIGHT* instead of *ARIGHT* are very similar, except for the coefficient of *TRIGHT* itself, which is not significantly different from zero in the first regression of both panels in the table.

We again replicated the analysis for the stock categories unaffected by the capital increase, but found no evidence of significant volume effects, which indicates that our measures of issue size do not proxy for information releases or reduced tax shields, but rather for finite price elasticity effects.

One final question we should address is the possibility that the coefficient of *OFFER* be the result of a phenomenon of reverse causation rather than of

Table 3
Cross-sectional analysis of the monthly abnormal stock returns on announcement: 1973–1983.[a]

The dependent variable is the annualized abnormal return during the four-month period preceding and excluding the issue month (*ARI*).

	Regressions		
Coefficient estimates	(1)	(2)	(3)
Intercept	−0.254 (−3.608)	−0.280 (−4.480)	−0.405 (−6.319)
ARIGHT	1.832 (5.737)	1.883 (5.992)	2.958 (6.454)
$VOLUMEMA_1$	−0.145D−01 (−0.993)		
$VOLUMEMA_2$	−0.219D−01 (−1.426)		
$VOLUMEMA_3$	−0.388D−01 (−2.308)		
$VOLUMEM_1$		−0.179D−01 (−1.247)	
$VOLUMEM_2$		−0.257D−01 (−1.523)	
$VOLUMEM_3$		−0.588D−01 (−2.744)	
$VOLUMER_1$			0.631D−01 (−0.363)
$VOLUMER_2$			−0.324 (−3.336)
$VOLUMER_3$			0.995D−01 (−2.646)
OFFER	0.575 (5.326)	0.611 (5.609)	0.650 (5.827)
MARKET	−0.218 (−3.466)	−0.225 (−3.587)	−0.257 (−4.124)
$\bar{R}^2$	0.211	0.220	0.257
F-statistic	10.29	10.75	12.99

[a]Sample size = 209 observations. Numbers in parentheses are *t*-statistics. Variable definitions are as in table 2; subscripts 1–3 of volume measures correspond, respectively, to: voting bearer shares; registered shares; and non-voting bearer shares.

Table 4

Cross-sectional analysis of the monthly abnormal stock returns on announcement: 1973–1983.[a]

The dependent variable is the annualized abnormal return during the four-month period preceding and excluding the issue month (*ARI*).

Regression	Coefficient estimates: Intercept	*ARIGHT*	*VOLUMEMA*	*VOLUMEM*	*VOLUMER*	*OFFER*	*MARKET*	$\bar{R}^2$	*F*-statistic
Panel A: Stock of firms with infrequent capital increases (134 observations)									
(1)	−0.148	1.571	−0.503D−01			0.562	−0.163	0.219	10.31
	(−1.641)	(4.395)	(−2.692)			(4.667)	(2.387)		
(2)	−0.209	1.661		−0.519D−01		0.608	−0.179	0.223	10.55
	(−2.655)	(4.718)		(−2.826)		(4.966)	(−2.639)		
(3)	−0.404	3.122			−0.332	0.709	−0.226	0.253	12.29
	(−5.173)	(6.134)			(−3.681)	(5.601)	(−3.342)		
Panel B: Stock of firms with frequent capital increases (75 observations)									
(1)	−0.442	3.097	0.588D−02			0.537	−0.561	0.915	5.47
	(−3.565)	(3.612)	(0.212)			(1.598)	(−3.163)		
(2)	−0.421	3.137		−0.112D−02		0.597	−0.568	0.194	5.45
	(−3.540)	(3.661)		(−0.464D−01)		(1.929)	(−3.206)		
(3)	−0.411	3.201			−0.704D−01	0.589	−0.541	0.229	6.50
	(−3.553)	(3.874)			(1.789)	(2.542)	(−3.152)		

[a]Numbers in parentheses are *t*-statistics. Variables are defined as in table 2.

a signalling effect. In other words, since *OFFER* is defined as the ratio of the offer price to the stock price four months before the ex-rights date, the positive relation observed between *ARI* and *OFFER* could simply reflect the fact that a higher market price induces management to set a higher offer price. Although this scenario cannot be dismissed completely, we do not think that reverse causation can properly account for the positive coefficient of *OFFER*. First of all, reverse causation cannot explain why the coefficient of *OFFER* is less significant for the subsample of frequent issuers. Second, notice that in panel A of table 2, there is little evidence of a significant relation between *OFFER* and the two-month abnormal return *ARA*, when the value of a preemptive right is measured by *TRIGHT*. This questions the notion that the offer price is set on the basis of the stock price's recent movement. Moreover, when those same regressions are estimated by using the abnormal return defined over the four-month period preceding the issue month (*ARI*), the coefficient of *OFFER* becomes significant. Yet, since *ARI* essentially includes the two pre-announcement months and the first two post-announcement months, and since the offer price is already known in those two latter months (in contrast to what happens in the U.S., the offer price is set on the announcement date), this increase in statistical significance cannot easily be the result of reverse causation. Rather, it could be the result of some post-announcement information disclosure which is consistent with the message implicit in the offer price.[22]

5. Conclusions

The purpose of the study was to analyze the stock market's reaction to a capital increase in a different environment than the U.S., in order to better isolate any potential information and finite price elasticity effects. Switzerland looked like an interesting case, because it differs appreciably from the U.S.: its domestic capital market is relatively small, insider trading is not legally restricted, and security offerings are almost without exception rights issues. To perform the analysis, a database of monthly stock returns had to be

[22] Reverse causation, however, can explain the results we get if we replicate the regressions (3) and (5) in panel B of table 2 for our U.S. sample of rights offerings. Unlike what we found when measuring the announcement effect with *ARA*, these regressions have highly significant coefficients and large adjusted R^2's. The only coefficient that is not significantly different from zero is the one associated with the theoretical value of a preemptive right. For instance, for the specification (3), the coefficient of *TRIGHT* is 2.19 ($t=0.11$), the coefficient of *VOLUMEM* 0.06 ($t=2.03$), the coefficient of *OFFER* 2.79 ($t=5.02$), and the coefficient of *MARKET* −0.20 ($t=-2.03$); the adjusted R^2 is 0.85. Since the dependent variable (*ARI*) is defined over the four-month period *preceding* the ex-rights month, i.e., before the time when the offer price is set in a U.S. stock offering, it cannot possibly reflect a market reaction to the offer price itself. Hence, the positive relation observed between *ARI* and *OFFER* probably only reflects the fact that a higher market price for the stock induces management to set a higher offer price.

compiled for the 1973–1983 period, which makes the paper one of the very first empirical studies on Swiss capital markets.

Our findings are, first, that Swiss managers have good reasons to worry about downward sloping demand curves for financial securities: a 1% increase in the number of shares outstanding leads to a 0.1% decrease in stock prices [eq. (6) in panel B of table 2]. Unlike an information effect, this price decline can be avoided by not issuing securities. It therefore represents a cost managers should consider when making externally financed investment decisions. However, there is no evidence that a growing market increases the (absolute) price elasticity of demand for a particular stock. Hence, attempting to time the rights issue in periods of generally increasing stock prices does not appear to be a very valuable strategy. Second, we find some evidence that if managers think their firm's stock is priced below what it is really worth, they set a higher offer price, and the market is aware of that regularity. Third, we observe that, perhaps because of shorter-lived information asymmetries between management and market, the announcement of a capital increase leads to a weak positive market reaction, when measured with a non-parametric test. Analysis of an American sample of rights and general cash offers suggests instead a non-positive reaction.

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