

# **The Post-Issue Price Performance of Initial Public Offerings in Belgium**

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## **Abstract**

This paper investigates the long-run price performance of firms that went public in Belgium between 1984 and 1993. Although Belgium does not know an active IPO-market, the evidence is of interest. In particular, over the period under investigation only 33 firms went public; in the 15 years preceding 1984 not a single IPO occurred. If 'windows of opportunity' have been important drivers of IPO's world wide, the low number of going public transactions implies that few Belgian companies must have spotted the existence of such a window. In fact one might ask the question whether the limited IPO-activity is indicative of limited over optimism and "fads" at IPO-time. Furthermore, the fact that some IPOs reoccurred after 15 years of complete absence may be linked to a change in the tax laws in 1984 that favours IPO-activity. In sum, even if 'windows of opportunity' have played an important role elsewhere, one could hypothesise that this need not have been the case in the Belgian market. Our sample IPOs perform neutrally vis-à-vis the Belgian

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spot market return index. However, relative to a portfolio of matching firms they significantly under perform with an average yearly shortfall of 13 % in the three years after going public. As IPO-firms are on average considerably smaller than the typical quoted firm, this difference in measured performance according to the benchmark used, indicates the presence of a marked size effect in the Belgian stock market. Contrary to the evidence in the US, under performance is not concentrated in the subset of smallest IPOs nor is it related to initial return. Overall the evidence indicates that bad long-run performance is a phenomenon that occurs generally in the Belgian IPO-market.

## I. Introduction

This paper investigates the long-run after market stock price performance of firms that went public in Belgium during the period 1984-1993. Over the years, numerous studies have documented two anomalies in the pricing of initial public offerings (IPOs) of equity: (1) the high initial returns investors earn between subscription and the first trading day in the after market – known as «under pricing», and (2) the temporal variations in the magnitude of initial returns and IPO volume – known as hot and cold issue markets. More recently a third anomaly – poor after market stock price performance of US IPOs has been documented by Ritter (1991) and further explored by Loughran and Ritter (1995), among others. Similar long-run under performance of IPOs has been detected in other countries as well [Levis (1993) for the U.K., Keloharju (1993) for Finland, Aggarwal et al. (1993) for Brazil, Ljungqvist (1993) for Germany, Leleux (1993) for France]. Apart from the obvious implications for the functioning of the capital markets, the evidence of long-run under performance has reopened the debate about the nature of the initial returns, i.e. whether or not the high initial returns are a consequence of rational and deliberate under pricing or a consequence of over optimism by investors and hence initial over pricing in the after market.

This paper attempts to shed some further light on the generality of the long-run performance phenomenon across countries and on the question of the relation between long-run under performance and first day returns. These questions could be especially interesting since Belgium does not have a very active IPO-market. In particular, over the period of investigation 1984-1993 only 33 going public transactions took place and during the 15 years prior to 1984 not even a single IPO occurred. Hence, if the “window of opportunity” has been an impor-

tant driver of IPOs world wide, the low number of going public transactions implies that few Belgian companies must have spotted the existence of such a window. In fact one might ask the question whether the limited IPO-activity is indicative of limited over optimism and “fads” at IPO-time. In addition, as of 1984, the year in which some IPO-activity restarted, a change in the tax code reduced the capital gains tax for the major shareholders of family-owned businesses from 16.5% to 0% only if shares were sold to another Belgian company or to the public through an IPO.<sup>2</sup> Hence tax reasons, other than a ‘window of opportunity’ may have driven decisions to go public. Consequently the objectives of the paper are: (i) to measure the after market price performance of Belgian IPOs in the 36 months after the offering date and (ii) to check for the presence of systematic patterns in the after market performance of these issues.

Our sample IPOs perform neutrally vis-à-vis the Belgian spot market return index. However being capitalisation weighted, this index does not allow to control for a possible small firm effect. This may be important as relative to the average seasoned firm, Belgian IPOs usually are smaller family-owned companies. When alternatively a portfolio of matching firms is used as the benchmark, the IPOs significantly under perform. Where matching firms on average yield a yearly return of 26 %, IPO-companies on average only yield 13 % over the first three years of seasoning. This marked difference in measured performance depending upon the type of benchmark implies the presence of a pronounced size effect in the Belgian stock market. In addition initial returns show no systematic relationship with long-run performance, indicating the absence of long-term reversals. However we find that companies in the lowest initial returns quartile fare worst in the after market. This result is inconsistent with Shiller’s “fads hypothesis” which states that companies with the highest initial returns should subsequently have the lowest returns. Finally, contrary to the findings of Ritter (1991) and Loughran and Ritter (1995), in Belgium, under performance is not concentrated in the subset of smaller IPOs but occurs generally. However, in view of the fact that Belgian offering sizes are more homogeneous, this more uniform performance is not so surprising.

The paper is organised as follows. Section II describes the sample data and performance measures. Section III presents evidence on time series and cross

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<sup>2</sup> Later, to adjust to EC-recommendations, the rule was changed to encompass, next to Belgian bidders, all bidders from EC-countries.

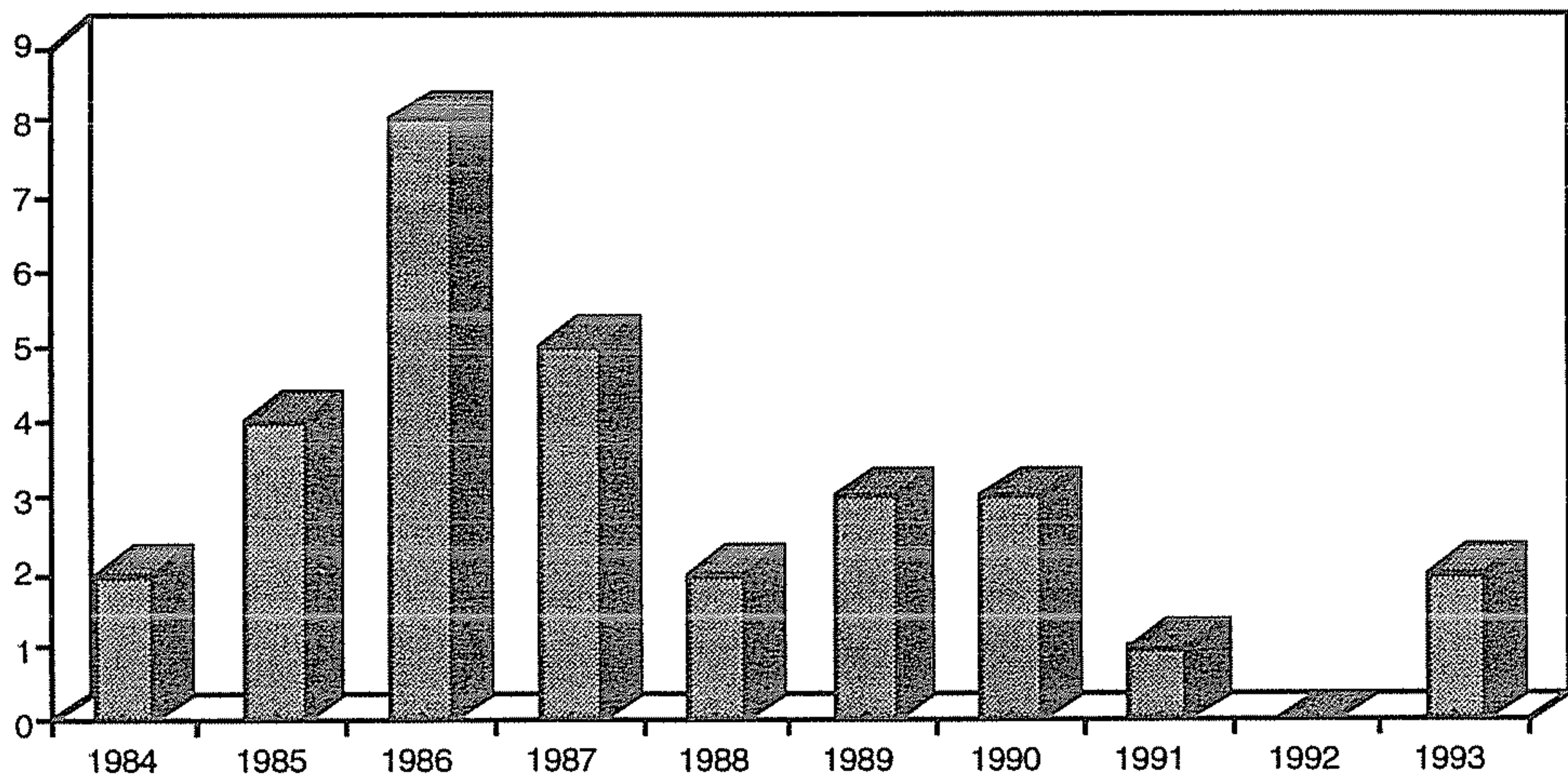
sectional patterns in long-run performance. Finally, Section IV contains some conclusions.

## II. Sample Data and Performance Measures

Belgium does not have an active IPO-market. Over the period 1984-1993 only 33 firms (or on average somewhat more than 3 firms per year) went public while, during the 15 years prior to 1984, not a single IPO occurred. As can be seen in figure 1, in our sample most IPOs took place in the period 1984 – 1987, with a peak of 8 operations in 1986.

FIGURE 1

The annual volume of initial public offerings (IPOs), 1984-1993.



In the remainder of the analysis, three IPO-firms have been excluded from the sample, one because it did not issue ordinary shares and two others because of post-issue thin trading (i.e. AG 1990, Solinvest and ITB<sup>3</sup>). Table 1 offers

<sup>3</sup> The unit offer that AG 1990 placed in the market consists of preference shares with warrant; Solinvest and ITB belong to the least traded shares of the Brussels Stock Exchange. For example in a sample of 22 trading days, one every two weeks starting six months after the IPO, Solinvest showed volume on only two days (20 and 16 shares traded); for ITB trading took place on three days (120, 50 and 11 shares traded).

some descriptive statistics of the sample of 30 firms. As can be seen, on average, firms issue publicly only 24% of equity capital. The average size of IPO-companies amounts to about BEF 3 billion, which is one third of the average size of seasoned firms over the sample period. Hence IPO-firms belong to the smaller segment of companies quoted on the Brussels' exchange. Finally IPO-firms are relatively old as compared to companies that go public in the US and the U.K.. In particular, Ritter (1991) reports an average age of 13 years in the U.S. and Goergen (1996) finds that U.K.-IPOs are on average 12 years old at the time of going public. However relative to Continental European standards Belgian IPO-firms are not old. For example, Leleux (1993) finds an average age of 29 years in France, and for Germany Goergen (1996) reports an average of 50 years<sup>4</sup>

TABLE 1

Descriptive Statistics for the Sample of 30 IPO Issues  
during the Period 1984-1993 <sup>a</sup>

Sample Characteristics	Mean	Standard Deviation	Median (50%)	Q1 (25%)	Q3 (75%)
Gross Proceeds <sup>b</sup> (in million BEF)	714	814	446	301	600
Firm Value at the Offer (in million BEF) <sup>c</sup>	3303	3594	1810	1146	3246
Equity Offered (as % of total equity)	24.3	9.8	23.2	18.8	29
Age (in years) <sup>d</sup>	32.6	28.3	19	13	58.3

Notes:

- a) Three IPOs have been deleted, one because only preference shares with warrants were issued (AG 1990) and two because of thin trading (Solinvest and ITB).
- b) Gross Proceeds or Offer Size is defined as the number of shares offered to the market multiplied by the final offer price; these are in constant 1985 BEF prices.
- c) The Firm Value at the offer is the total number of shares outstanding valued at the final offer price in constant 1985 BEF prices.
- d) Age refers to the number of years of existence since the date of incorporation as reported in the issue prospectus.

Offer prices, price series, dividend payments, and changes in equity of IPO-firms have been collected from the *Brussels Stock Exchange*. The monthly spot market

<sup>4</sup> In view of the earlier mentioned change in tax code it is interesting to note that all offerings are largely secondary; in 75% of the cases the offering was even purely secondary.

return index, monthly prices, dividends and changes in equity of matching firms have been obtained from *Datastream*. Monthly closing prices of delisted IPO-firms have also been collected from the "*De Financieel-Economische Tijd*" newspaper.

Average cumulative abnormal returns ( $CAR_{s,t}$ ) are employed as a measure of the long-run performance of initial public offerings. These CARs are calculated relative to two benchmarks: (1) the market return index and (2) a portfolio of seasoned firms matching the IPOs.

For the CAR-calculations the raw returns are adjusted for the benchmark return as follows:<sup>5</sup>

$$ar_{it} = r_{it} - r_{Bt},$$

where  $ar_{it}$  is the abnormal return for stock  $i$  in month  $t$ ,  $r_{it}$  is the raw return on stock  $i$  in month  $t$ , and  $r_{Bt}$  is the corresponding return on either the Belgian spot market index over the same time period or the equally weighted return on the portfolio of matching firms. Each issuing firm is followed from its first day of trading until the earlier of its delisting date, the end of 36 post-IPO months, or June 30, 1995.<sup>6</sup> The return during the first month of seasoning is the return measured from the first trading day to the last calendar day of the first trading month less the equivalent benchmark return. Hence the time interval of the first month may vary from 1 to 30 calendar days. The cross-sectional average abnormal return for month  $t$  following the IPO is:

$$AR_t = \frac{1}{n_t} \sum_{i=1}^{n_t} ar_{it},$$

where  $n_t$  is the number of issues present in the post-IPO month  $t$ . Correspondingly the cross-sectional average cumulative abnormal return [cf. Dimson and Marsh (1986)] from month  $s$  to month  $T$  is:<sup>7</sup>

<sup>5</sup> With the market return as a benchmark there is the problem that systematic differences in performance may be due to beta-bias (i.e. there is a systematic difference between the beta of the sample of IPOs and the market as a whole. Calculations not reported here show that beta-bias is unlikely to drive reported results.

<sup>6</sup> All price series are adjusted for dividends, splits, right offerings and other capital changes.

<sup>7</sup> Alternatively, the Cumulative Abnormal Returns ( $CAR_t$ ) can be cumulated by summing the  $AR_t$  over time. However this is biased as it does not compound the  $AR_t$  and, as pointed out by Conrad and Kaul (1993), monthly sums also cumulate the estimation errors in single period returns.

$$CAR_{s,T} = \frac{1}{n} \sum_{i=1}^n \left[ \prod_{t=s}^T (1 + ar_{it}) - 1 \right]$$

The benchmark portfolio of matching firms consists of seasoned companies matched by size as well as industry (see for example Ritter (1991)). To be eligible as matching firm, a company needs at least 3 years of seasoning. In the appropriate 2 digit SIC industry, the seasoned firm with market capitalisation closest to but higher than that of the IPO is chosen as matching firm. If a matching firm in the same 2 digit industry is not available, a seasoned firm within a 1 digit SIC industry is chosen. In case of delisting of the matching firm, the next highest market capitalisation seasoned firm is spliced in after the delisting date of the first matching firm. This procedure yields 30 matching firms, of which 16 (53.3%) are within the same 2 digit industry as the IPO-company.<sup>8</sup>

Next to CARs also buy-and-hold returns are calculated for each IPO and each of the two benchmarks. In particular for firm  $i$  the buy-and-hold return is defined as:

$$R_{iT} = \sum_{t=1}^{\min[T, delist]} (1 + r_{it}) - 1$$

where  $\min[T, delist]$  is the earlier of delisting or the end of the three-year window. For firms that went public at the end of our sample period, the delisting date is June 30, 1995 (this truncation occurs in 2 cases).

Table 2A reports the after market (i.e. excluding the initial return) performance of the IPOs. Separate results for the market index and the portfolio of matching firms are shown. The tables indicate that, on average, Belgian IPOs perform slightly worse than the market but significantly worse than the portfolio of matching firms. In particular, with respect to the market index cumulated under performance is less than 3%. However relative to the portfolio of matching firms the cumulated shortfall amounts to 31%. As is well known, contrary to the matching firm benchmark, the correction by the market index does not account for possible size-bias. Hence this marked difference between findings due to the use of these alternative benchmarks indicates that over the sample period

<sup>8</sup> Sensitivity tests (not reported here) with other sets of matched firms show qualitatively similar results. The table in the appendix shows each IPO with its matching firm.

a pronounced size effect has been present in the Belgian stock market.<sup>9</sup> Table 2B shows the results for the buy-and-hold returns. Results are clearly similar to those of table 2A.

## TABLE 2A

### Abnormal Returns for Belgian IPOs

The long term performance of Belgian IPOs over the first three years of trading is measured as average abnormal monthly returns and average cumulative abnormal returns ( $CAR_{s,T}$ ), in percent, excluding the initial return. Two benchmarks are used: (i) the value weighted Belgian spot market return index (= market-adjusted returns) and (ii) a size and industry matched seasoned firm return index (= matching firm-adjusted returns). The  $t$ -statistics for the average cumulative benchmark adjusted returns in month  $T$ ,  $CAR_{s,T} = 1/n \sum_{i=1}^n \left[ \prod_{t=s}^T (1 + AR_{it}) - 1 \right]$  are computed as  $CAR_{s,T} / (\sqrt{\text{var}(CAR_{s,T})})$  (cf. Dimson and Marsh (1986), pp. 124-125), where  $\text{var}(CAR_{s,T})$  is equal to  $(T * \text{var}(CAR_{t,t}) + 2 * (T-1) * \text{cov}(CAR_{t,t}))$ . Thereby  $\text{var}(CAR_{t,t})$  is estimated from the single period abnormal performance,  $CAR_{t,t} = CAR_{s,t} - CAR_{s,t-1}$ ,  $\text{cov}(CAR_{t,t})$  is the first order auto covariance of the  $CAR_{t,t}$  series, and  $T = t-s+1$  is the length of the holding period over which performance is measured. The  $t$ -statistics have  $(t-s)$  degrees of freedom. The  $\text{var}(CAR_{t,t})$  values are 0.00016 (1.26 percent squared) and 0.00025 (1.58 percent squared) for the market and matching firm benchmark respectively, and the equivalent  $\text{cov}(CAR_{t,t})$  values are -0.000027 and -0.000026 implying auto correlation coefficients of -0.170 and -0.102 respectively.

<sup>9</sup> We have also computed the fraction of the IPO-firms that under performed the market and their matched counterparts. A non parametric 'sign test' (which still assumes independence of the observations, but not normality) has been used to determine statistical significance. For the three-year holding period, 60% and 76.7% of the IPO-firms under performed the benchmark of the market index and their matched firm respectively. For the market index, this fraction is not significantly different from 50% at the 0.10 level; however with respect to the matching firm, the fraction is significantly different from 50% at the 0.01 level. Next to parametric tests on performance, this paper also reports non parametric tests to check on statistical significance, this to avoid problems with parametric tests in measuring long run performance as documented by Kothari and Warner (1997) or Barber and Lyon (1997). Finally when the sample is divided in two groups, according to IPOs coming to the market in the pre- or post-87 crash period, the pattern of under performance seems to persist in both sub samples.



Month of Seasoning	Number of firms trading	<u>Market-adjusted returns</u>				<u>Matching firm-adjusted returns</u>			
		AR <sub>t</sub> %	t-stat	CAR <sub>s,t</sub> %	t-stat	Ar <sub>t</sub> %	t-stat	CAR <sub>s,t</sub> %	t-stat
1	30	-1.02	-1.51	-1.02	-0.81	-1.54	-1.62	-1.54	-0.97
2	30	0.56	0.63	-0.49	-0.30	-5.28	-1.47	-6.87	-3.23 <sup>a</sup>
3	30	0.95	0.79	0.44	0.23	0.85	0.47	-6.35	-2.49 <sup>a</sup>
4	30	-0.02	-0.02	0.52	0.24	-2.09	-1.05	-9.16	-3.14 <sup>a</sup>
5	30	0.19	0.16	0.85	0.35	-1.76	-1.00	-10.27	-3.17 <sup>a</sup>
6	30	0.31	0.26	1.32	0.50	-1.14	-0.62	-11.58	-3.27 <sup>a</sup>
7	30	-1.55	-1.22	-0.37	-0.13	-2.89	-1.33	-13.04	-3.42 <sup>a</sup>
8	30	1.11	0.62	1.12	0.37	2.73	1.28	-11.09	-2.73 <sup>a</sup>
9	30	-2.76	-2.59	-1.23	-0.39	-0.93	-0.60	-12.65	-2.94 <sup>a</sup>
10	30	-0.37	-0.25	-2.01	-0.60	-1.88	-1.31	-14.08	-3.11 <sup>a</sup>
11	30	2.33	1.69	-0.28	-0.08	-5.00	-1.42	-17.62	-3.71 <sup>a</sup>
12	30	1.47	0.88	1.00	0.28	0.22	0.12	-17.55	-3.54 <sup>a</sup>
13	30	-1.18	-1.07	-0.44	-0.12	-4.59	-1.94	-20.82	-4.04 <sup>a</sup>
14	30	-1.11	-1.04	-1.36	-0.35	-1.51	-0.85	-21.69	-4.06 <sup>a</sup>
15	30	-0.54	-0.33	-1.10	-0.27	-0.64	-0.33	-21.16	-3.83 <sup>a</sup>
16	30	-2.75	-1.93	-4.28	-1.02	-5.94	-2.69	-25.12	-4.40 <sup>a</sup>
17	30	0.04	0.03	-4.71	-1.09	-1.73	-0.87	-25.82	-4.39 <sup>a</sup>
18	30	-0.12	-0.10	-4.71	-1.06	-0.27	-0.14	-25.68	-4.24 <sup>a</sup>
19	30	0.51	0.43	-4.82	-1.06	-1.11	-0.96	-26.77	-4.31 <sup>a</sup>
20	30	-1.09	-0.68	-5.40	-1.16	0.75	0.56	-26.11	-4.10 <sup>a</sup>
21	30	0.41	0.34	-4.68	-0.98	2.28	1.43	-26.16	-4.01 <sup>a</sup>
22	30	-0.31	-0.26	-4.72	-0.97	0.07	0.05	-26.61	-3.98 <sup>a</sup>
23	30	-0.82	-0.56	-4.88	-0.98	-1.74	-1.18	-27.70	-4.06 <sup>a</sup>
24	30	-1.15	-1.31	-6.37	-1.25	-1.24	-0.76	-29.44	-4.22 <sup>a</sup>
25	29	-0.29	-0.41	-7.29	-1.40	-2.62	-1.44	-32.12	-4.51 <sup>a</sup>
26	29	0.59	0.53	-5.95	-1.12	-0.45	-0.28	-32.13	-4.43 <sup>a</sup>
27	29	1.92	1.14	-3.45	-0.64	1.51	0.72	-31.01	-4.20 <sup>a</sup>
28	29	-1.39	-1.15	-4.91	-0.89	0.09	0.06	-30.66	-4.07 <sup>a</sup>
29	29	0.48	0.32	-3.90	-0.70	-1.00	-0.45	-30.84	-4.03 <sup>a</sup>
30	29	-0.44	-0.46	-3.41	-0.60	-2.08	-1.25	-31.15	-4.00 <sup>a</sup>
31	28	-0.15	-0.09	-4.46	-0.77	1.80	1.10	-30.33	-3.83 <sup>a</sup>
32	27	0.19	0.17	-5.43	-0.93	1.33	0.99	-30.83	-3.83 <sup>a</sup>
33	27	2.24	1.19	-4.23	-0.71	0.90	0.59	-29.76	-3.64 <sup>a</sup>
34	27	-0.06	-0.04	-3.67	-0.61	-0.70	-0.33	-29.99	-3.62 <sup>a</sup>
35	27	-1.89	-1.81	-5.01	-0.82	-2.56	-1.54	-31.82	-3.78 <sup>a</sup>
36	27	1.42	1.03	-3.08	-0.49	1.45	0.74	-30.70	-3.60 <sup>a</sup>

a = significant at 5% level; the 36 months difference is also significant at the 5% level with the Mann-Whitney U test.

## Table 2B

### The Long-run Performance of Belgian IPOs

The performance of Belgian IPOs over the first 36 months of seasoning is measured as average holding period abnormal return ( $HP_{st}$ ).  $HP_{st}$  = total return from buy-and-hold (where a stock is purchased at the first closing market price after the IPO and held until the end of period T) – total return of buy-and-hold on the benchmark. Two benchmarks are used: (i) the value weighted Belgian spot market return index (= market-adjusted returns) and (ii) a size and industry matched seasoned firm return index (= matching firm-adjusted returns). As the holding period abnormal returns will not be normally distributed, especially when measured over long periods, the statistical significance of  $HP_{st}$  is evaluated using the measure suggested by Dimson and Marsh (1986):  $V_{st} = R_{st} - B_{st}$ , where  $R_{st} = \ln(1 + \bar{R}_{iT})$ ,  $B_{st} = \ln(1 + \bar{R}_{mT})$  and the bar indicates the equally weighted mean holding period return over all N securities. The *t*-statistics for the  $V_{st}$  are computed as  $V_{st}/(\sqrt{\text{var}(V_{st})})$  where  $\text{var}(V_{st})$  is equal to  $(T * \text{var}(V_{it}) + 2 * (T-1) * \text{cov}(V_{it}))$ . Thereby  $\text{var}(V_{it})$  is estimated from the single period abnormal performance,  $V_{it} = V_{st} - V_{st-1}$ ,  $\text{cov}(V_{it})$  is the first order auto covariance of the  $V_{it}$  series, and  $T = t-s+1$  is the length of the holding period. The *t*-statistics have (t-s) degrees of freedom. The  $\text{var}(V_{it})$  values are 0.00020 and 0.00055 for the market and matching firms respectively, and the equivalent  $\text{cov}(V_{it})$  values are -0.00001 and 0.000078 implying auto correlation coefficients of -0.048 and 0.143 respectively.

Month of Seasoning	Number of firms trading	<u>Market-adjusted returns</u>			<u>Matching firm-adjusted returns</u>		
		HP <sub>st</sub> %	V <sub>st</sub> %	Sig. t-stat	HP <sub>st</sub> %	V <sub>st</sub> %	Sig. t-stat
1	30	-1.19	-1.19	-0.84	-1.54	-1.53	-0.65
2	30	-0.63	-0.61	-0.31	-6.99	-6.62	-1.87
3	30	0.25	0.24	0.10	-5.91	-5.53	-1.25
4	30	0.38	-0.37	0.13	-7.39	-6.84	-1.33
5	30	1.09	1.03	0.32	-9.78	-8.80	-1.52
6	30	1.67	1.58	0.45	-10.62	-9.51	-1.49
7	30	0.01	0.01	-0.00	-16.07	-14.28	-2.07
8	30	1.29	1.21	0.30	-12.35	-10.90	-1.47
9	30	-0.65	-0.58	-0.14	-14.29	-12.03	-1.53
10	30	-1.27	-1.10	-0.25	-17.05	-13.88	-1.67
11	30	1.24	1.08	0.23	-23.32	-18.50	-2.13
12	30	2.83	2.47	0.50	-24.01	-18.84	-2.07
13	30	0.99	0.88	0.17	-31.45	-24.48	-2.58 <sup>a</sup>
14	30	-0.47	-0.41	-0.08	-32.97	-25.58	-2.60 <sup>a</sup>
15	30	-0.38	-0.33	-0.06	-35.58	-26.69	-2.62 <sup>a</sup>
16	30	-3.89	-3.31	-0.58	-45.83	-33.42	-3.17 <sup>a</sup>
17	30	-4.20	-3.56	-0.61	-52.18	-37.20	-3.43 <sup>a</sup>
18	30	-3.97	-3.36	-0.56	-52.62	-37.33	-3.34 <sup>a</sup>
19	30	-3.64	-3.05	-0.49	-54.76	-38.30	-3.34 <sup>a</sup>
20	30	-5.12	-4.23	-0.67	-53.34	-37.17	-3.15 <sup>a</sup>
21	30	-5.20	-4.24	-0.65	-45.23	-31.96	-2.65 <sup>a</sup>
22	30	-5.46	-4.32	-0.65	-43.80	-30.30	-2.45 <sup>a</sup>
23	30	-5.34	-4.15	-0.61	-45.92	-31.06	-2.46 <sup>a</sup>
24	30	-7.99	-6.17	-0.89	-47.86	-32.31	-2.50 <sup>a</sup>
25	29	-9.35	-7.13	-1.01	-52.39	-34.63	-2.62 <sup>a</sup>
26	29	-7.60	-5.62	-0.78	-53.62	-34.19	-2.54 <sup>a</sup>
27	29	-2.23	-1.59	-0.22	-47.40	-29.28	-2.13 <sup>a</sup>
28	29	-4.40	-3.13	-0.42	-46.14	-28.76	-2.06 <sup>a</sup>
29	29	-4.70	-3.47	-0.45	-50.71	-32.23	-2.27 <sup>a</sup>
30	29	-4.35	-3.17	-0.41	-55.77	-34.57	-2.39 <sup>a</sup>
31	28	-6.45	-4.68	-0.59	-56.79	-35.21	-2.39 <sup>a</sup>
32	27	-7.56	-5.37	-0.67	-57.18	-34.89	-2.34 <sup>a</sup>
33	27	-5.33	-3.65	-0.45	-58.74	-34.33	-2.26 <sup>a</sup>
34	27	-3.84	-2.61	-0.32	-53.32	-31.28	-2.03 <sup>a</sup>
35	27	-5.23	-3.57	-0.43	-56.28	-33.01	-2.11 <sup>a</sup>
36	27	-2.13	-1.43	-0.17	-54.89	-31.65	-2.00 <sup>a</sup>

<sup>a</sup> = significant at 5% level; the 24 and 36 months difference is also significant at the 5% level with the Mann-Whitney U test.

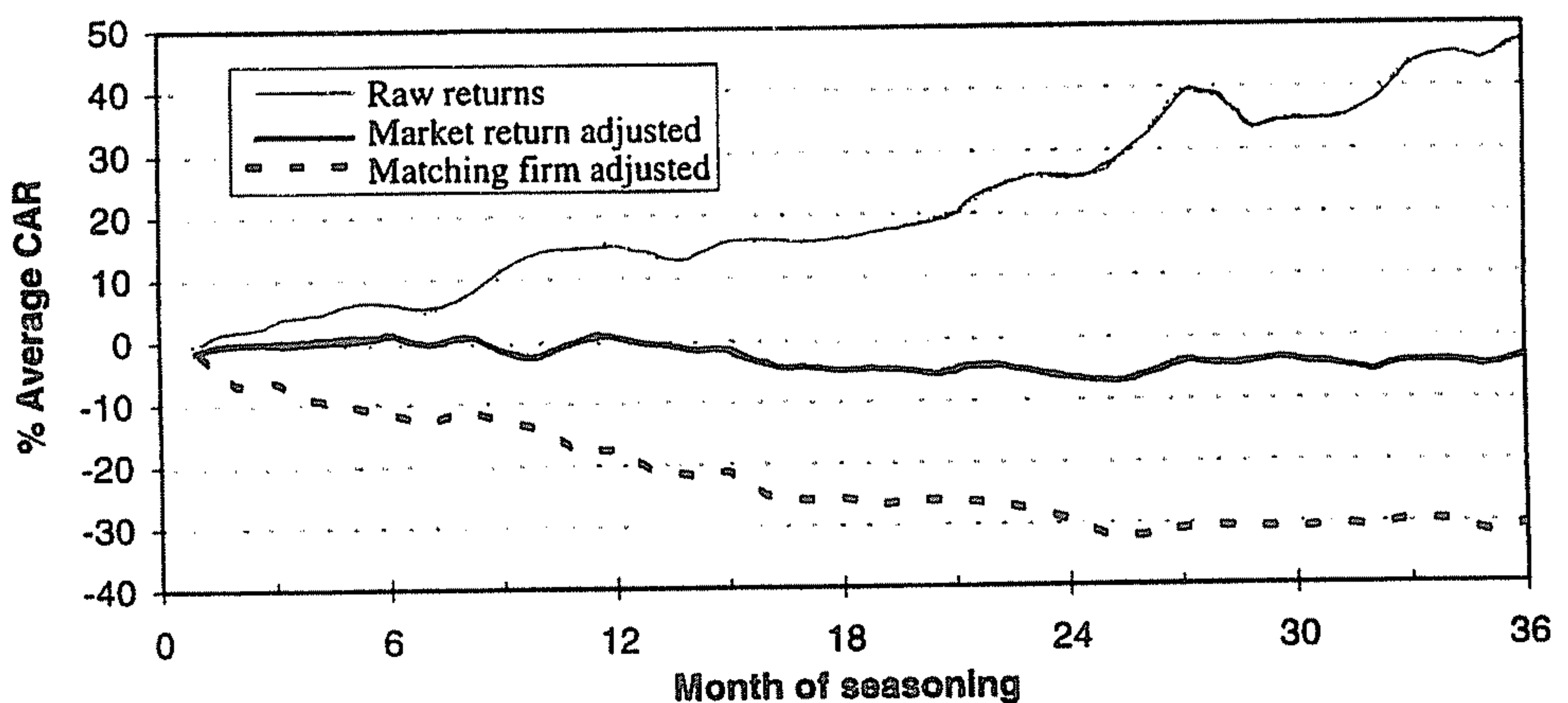
### III. Time-Series and Cross-Sectional Patterns in Long-run Performance

#### A. Time-Series of under performance

Figure 2 plots cumulative raw returns, cumulative spot market-adjusted returns, and cumulative matching firm-adjusted returns for the 36 month period subsequent to the IPO (again excluding initial returns). The figure shows a steady increase in the cumulative raw returns, which climb to approximately 46 percent by the end of month 36. However when returns are adjusted using the benchmarks, performance is bleaker. Market index-adjusted returns turn slightly negative after month 16 and remain more or less at the same level till the end of month 36. Cumulative matching firm-adjusted returns show a downward tendency during the first two years of seasoning; after that period CAR continues to fluctuate around -30%.

FIGURE 2

Average Cumulative Abnormal Returns,  
during the first three years of trading, for the 30 IPOs in 1984-1993.



There are three CAR series: one for raw returns, one adjusted for the Belgian Spot Market Return Index, and one adjusted for the matched seasoned firm return index. Returns are compounded and cumulated event-monthly, and the initial abnormal return is excluded.

*B. Cross-Sectional Patterns in Long-run Performance*

In Table 3A, the sample is split according to issue- and firm size into 3 groups so that each class contains an equal number of IPO-firms. IPOs fare badly in all size classes. In contrast to the findings in the U.S. [Ritter (1991)] and in Finland [Keloharju (1993)], in Belgium, the negative after market performance does not seem to be concentrated in the smallest companies as the differences between the performance of the different groups is not significant. However it should be remarked that in Belgium the size difference between large and small offerings is considerably less as compared to the U.S.. Hence a more uniform result is not surprising.<sup>10</sup> In table 3B IPOs are classified according to initial returns into 4 groups. The pattern in performance over groups suggests that initial returns bear no systematic relationship with long-run performance. This evidence is inconsistent with the Shiller's 'fads hypothesis' which states that companies with the highest initial returns should subsequently have the lowest long-run returns. Overall tables 3A and 3B support the fact that long-run under performance is a general phenomenon in the Belgian IPO-market.

**TABLE 3A**

**Long-run Performance Categorised by Size**

The three-year buy-and-hold return for firms going public is calculated excluding the initial return. Issue size (gross proceeds) and firm size (the number of shares outstanding at the time of the IPO times subscription price) are deflated with the Belgian consumer price index and are expressed in purchasing power of francs of 1985. The three-year buy-and-hold returns for IPO-firms are calculated excluding the initial return. Matching firm-adjusted initial returns are computed as the percentage change of the share price from the offer to the closing price on the first after market trading day minus the corresponding return on the matching firm (i.e.  $r_{ipo} - r_{matching\ firm}$  over the initial return interval). Return is truncated at June 30, 1995.

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<sup>10</sup> In Ritter (1991) the offering size varied between \$ 1 million and \$ 354 million; in Belgium the smallest offering amounted to BEF 150 million and the largest to BEF 4380 million.

Size	Number of IPOs	Average matching firm-adjusted initial return %	Average 3-year buy-and-hold returns	
			IPOs %	Matching Firms %
Panel A : Issue Size				
Small	10	6.53	75.68	132.53
Medium	10	6.58	13.47	89.19
Large	10	11.24	48.32	64.85
Panel B : Firm Size				
Small	10	5.09	65.73	126.56
Medium	10	8.88	18.99	88.32
Large	10	10.38	52.75	71.69
All firms	30	8.11	45.82	95.53

TABLE 3B

**Long-run Performance Categorised by Initial Return Quartiles  
for 30 IPOs in 1984-1993**

The three-year buy-and-hold return for firms going public is calculated excluding the initial return. Matching firm-adjusted initial returns (IR) are computed as the percentage change of the share price from the offer to the closing price on the first after market trading day minus the corresponding return on the matching firm (i.e.  $r_{ipo} - r_{matching\ firm}$  over the initial return interval). Return is truncated at June 30, 1995.

Matching firm-adjusted initial return (IR) quartiles %	Number of IPOs	Average 3-year buy-and-hold returns	
		IPOs %	Matching Firms %
$-1.4041 \leq IR < 3.5940$	8	10.24	88.20
$3.5940 \leq IR < 5.4898$	7	55.52	121.20
$5.4898 \leq IR < 11.1071$	7	70.25	61.27
$11.1071 \leq IR < 38.2538$	8	51.54	110.36

#### IV. Summary and Conclusions

This paper analyses the long-run performance of firms that went public in Belgium in the period 1984-1993. Although small, an analysis of the Belgian IPO-market is especially interesting. First, if 'windows of opportunity' have been important drivers of IPOs world wide, the low number of going public transactions implies that few Belgian companies must have spotted the existence of such a window. In fact one might ask the question whether the limited IPO-activity is indicative of limited over optimism and "fads" at IPO-time. Second, next to possibly "windows of opportunity", a change in the tax laws in favour of IPO-activity may have played a role. Hence it is interesting to check whether or not also Belgian IPOs have been prone to long-run under performance. We find that our sample performs neutrally vis-à-vis the value-weighted Belgian spot market return index. However, as this index is capitalisation weighted it does not control for possible small firm and industry effects and hence may lead to an erroneous assessment of long-run abnormal performance. In fact when alternatively a portfolio of matching firms is used as the benchmark, IPO-firms significantly under perform in the three years after going public. In particular, the average yearly shortfall in return vis-à-vis the matching firms amounts to 13 %. This shortfall builds up during the first two years of seasoning. As IPO-firms are considerably smaller than the average quoted firm, the difference in measured performance according to the benchmark used, indicates a marked small firm effect in the Belgian stock market. Long-run under performance relative to the matching firms sample seems to be occurring generally and is not related to either initial return or size. Consequently there is no evidence of post issue return reversals so that initial under pricing seems to be deliberate. Overall, notwithstanding the less active market, the performance of Belgian IPOs is quite similar to observed performance in countries with important IPO-markets.

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**Appendix: List of IPOs and their matching firms**

IPO Firm	Two Digit SIC Code	Date	Matching Firm
Cote d'Or	20: Food & Kindred Products Manufacturers	13/06/84	Spadel
Ackermans & Van Haaren	67: Holding & Other Investment Offices	20/06/84	Ibel
Sun International	79: Miscellaneous Services	7/01/85	D'Ieteren
Deceuninck Plastics	30: Miscellaneous Industries	11/06/85	Obourg
De Witte-Lietaer	22: Textile Mill Products	18/06/85	UCO
Telindus	36: Metal-Electrical-Electronics	24/06/85	Sabca
Bank Nagelmackers	60: Banking	13/05/86	SNCI
Econocom Belgium	73: Miscellaneous Services	9/06/86	Ford Motor Belgium
Barco Industries	36: Metal-Electrical-Electronics	23/06/86	Bekaert
Drouot Belgium	63: Insurance	16/10/86	Royale Belge
Indosuez Bank Belgium	60: Banking	30/10/86	Crédit Général
Ter Beke	20: Food & Kindred Products Manufacturers	4/11/86	Charleroi Glaces
Engrais Rosier	28: Miscellaneous Industries	15/12/86	Sapac
Urbaine UAP	63: Insurance	17/12/86	Fortis AG
Glaverbel	32: Miscellaneous Industries	9/04/87	Tabacofina and CBR
Tiense Suiker	20: Food & Kindred Products Manufacturers	26/05/87	Mecaniver
Etudes et Investissements Immobiliers «EII»	65: Real Estate & Property	5/06/87	Immobel
Prominvest	67: Holding & Other Investment Offices	12/06/87	Ibel
Barco Electronics	36: Metal-Electrical-Electronics	15/06/87	Picanol
Walibi	79: Miscellaneous Services	24/06/88	D'Ieteren
Corona-Lotus	20: Food & Kindred Products Manufacturers	20/12/88	Spadel
Société Foncière Internationale	65: Real Estate & Property	10/05/89	Bernheim-Comofi
Definance	67: Holding & Other Investment Offices	2/11/89	Surongo
Delen	67: Holding & Other Investment Offices	10/11/89	Cofibel
Desimpel Kortemark	32: Miscellaneous Industries	1/06/90	C.F.E.
Creyf's Interim	73: Miscellaneous Services	14/06/90	Beherman
Polypal Europe	35: Metal-Electrical-Electronics	22/06/90	Sait
City Hotels	70: Miscellaneous Services	10/10/91	Sun International
Imperial Invest	67: Holding & Other Investment Offices	6/01/93	Prominvest and Henex
Quick Restaurants	70: Miscellaneous Services	12/07/93	D'Ieteren

