REGULATING THE FINANCIAL ANALYSIS INDUSTRY: IS THE EUROPEAN DIRECTIVE EFFECTIVE?

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ABSTRACT

This study examines the economic consequences of the Market Abuse Directive which is notably aimed at curbing conflicts of interest in the EU. It focuses on the impact of this new regulation on stock price changes associated with recommendations issued by analysts potentially affected by conflicts of interest because they work for a financial institution having strong business ties with the firms they recommend. The empirical evidence indicates that only 2% of the recommendations under study were potentially biased by conflicts, versus 60% in the US. Furthermore, following MAD adoption, the proportion of "Buy" recommendations dropped only by 4.5% (versus 14% in the US) and the proportion of "Sell" recommendations increased by 2% (versus 7.6% in the US). Regarding stock price effects, we find that MAD had a positive and significant impact on stock returns resulting from recommendation upgrades. This finding suggests that investors perceive these recommendations as more reliable since the adoption of the new regulation. This effect is not at the cost of less credible downgrades, the introduction MAD having no impact on market reactions to recommendation downgrades. However, the introduction of MAD had no impact on financial institutions with investment banking business, the most exposed to conflicts of interest, mainly because these conflicts did not materialize, even before the new regulation was passed. Finally, we examine whether the US regulation devoted to investment research, which is very similar to the European one, spilled over into the European Union, making MAD useless. Our results show that the Market Abuse Directive has its own legitimacy since the US regulation did not affect returns of European stock resulting from recommendations potentially biased by conflicts of interest.

Key words: financial analysts, conflicts of interest, recommendations, Market Abuse Directive, European Union.

1. Introduction

It is common belief to assume that sell-side analysts, whose employers provide brokerage services to investors and investment banking services to companies, face conflicts of interest likely to lead them to issue over-optimistic reports in order to attract investment banking business and trading volume. These potential conflicts of interest are intensified by the fact that analysts often earn large bonuses for winning such businesses. After the burst of the Internet Bubble and the Enron collapse, the fairness of their recommendations became a political issue, and several regulations were put in place to mitigate these conflicts. However, by showing that these conflicts were not systematically detrimental to investors, several empirical analyses question the relevance of such regulations. In their survey, Mehran and Stulz (2007, p. 37) conclude that "…the majority of the papers do not suggest that analyst conflict of interest arising from investment banking activities had a systematic and persistent impact on the customers of analyst services". Furthermore, under laws prevailing before the new regulations, wrong doing related to harmful effects of conflicts of interest were already punished. The lawsuit between LVMH and Morgan Stanley displays an example[2] but the Global Analyst Research Settlement, under which ten major banks had to pay fines and penalties totalling USD 1.4 billion, is certainly the most striking one.

Contrary to both factual and empirical evidence of no urgent need to reinforce regulation, recent years have witnessed a global trend toward the adoption of new laws regulating the financial analyst profession. Regarding the US, two major regulatory changes are worth

[2] On January 2004, the Paris Commercial Court condemned Morgan Stanley to pay EUR 30 million in damages to LVMH. The company accused the bank to paint a black portrait of the firm in order to favour Gucci, a subsidiary of its client, PPR (Pinault-Printemps-La Redoute). Morgan Stanley paid the damages and appealed. On July 1st, 2006, the Court of Appeal overturned the judgement and assigned an expert to re-estimate the damages. On February 15, 2007, LVMH and Morgan Stanley agreed to close the case.

mentioning. The Regulation Fair Disclosure (RegFD, October 2000) prohibits US firms from making selective disclosures and the Sarbanes-Oxley Act, Section 501 (SOX501, July 2002), reinforces investor's protection against analyst conflicts of interest. On January 28, 2003, the European Parliament adopted the Directive 2003/6/EC, known as the Market Abuse Directive (MAD), which is the European counterpart of the US regulations. MAD was complemented by the implementing directives 2003/124/EC and 2003/125/EC on December 23rd, 2003. In the EU like in the US, the means to curb conflicts of interest can be summarized as follows. First, financial institutions have to erect a "Chinese Wall" between research and investment banking departments. Second, they have to disclose the interests, i.e. brokerage and investment banking ties, with the firms they recommend.

This study intends to examine the economic consequences of MAD by comparing stock price reactions inferred by investment recommendations before and after MAD adoption. In a preliminary analysis, we focus first on the impact of MAD on the number of favorable (unfavorable) recommendations. Conflicts of interest are expected to lead analysts to issue favorable (unfavorable) recommendations too often (seldom), especially if they are affiliated to a financial institution that underwrites security issues of the firm they recommend. MAD, which is committed to "a fair presentation of investment recommendations and the disclosure of conflicts of interest", should therefore curb the incentive of affiliated analysts for unjustified optimistic recommendations. Consequently, if MAD works as intended, it should shift the distribution of recommendations issued by affiliated analysts toward less favorable ones. Then, we examine how MAD has affected the market reaction to financial analysts' recommendation releases. If affiliated analysts issue systematic over-optimistic recommendations, these loose credibility. Since MAD is expected to restore trust in favorable recommendations, these should be associated with higher returns in the aftermath of the regulation. In contrast, because they become more frequent, unfavorable recommendations

should be associated with less negative returns. However, as analyst's reputation is a strong deterrent of conflicts of interest, MAD should not impact returns associated with recommendations of analysts having a good reputation; see Fang and Yasuda (2006) and Ljunqvist, Marston ands Wilhelm (2006). Lastly, since numerous recommendations on European stocks are issued by US analysts, and major European banks are active players in the US capital markets, conflicts of interest in the EU may have been resolved, at least partially, by the US regulation that became effective at least two years before the adoption of MAD. Consequently, we check whether recommendations on European firms issued by analysts working for an institution with a parent company or a subsidiary in the US were affected by SOX501 whose provisions are similar to those of MAD devoted to analysts' recommendations.

Our main findings can be summarized as follows. Despite the small number of recommendations affected by conflicts of interest related to investment banking relationships, MAD had a positive impact on recommendation upgrades and no impact on recommendation downgrades. The regulation had no impact on financial institutions with a high reputation at stake and on those having investment banking activities ties with firms they recommend. Finally, we provide evidence showing that the US regulation did not spill over into the European Union, validating the legitimacy of the European directive.

Our paper is organized as follows. Section 2 briefly reviews previous literature. Section 3 presents the Market Abuse Directive. Section 4 analyzes whether the regulation is effective in curbing analysts' conflicts of interest. Section 5 reports evidence on a potential spill-over effect of the US regulation on European financial markets. Section 6 concludes the paper.

2. Conflicts of interest, and analysts' forecasts and recommendations

Two recent surveys examine the extensive empirical literature devoted to conflicts of interest in the financial analysis industry; see Dubois and Dumontier (2006) and Mehran and Stulz[3] (2007). Both underline the unequivocal evidence showing that earnings forecasts are not affected by conflicts of interest, at least for stocks listed in the US. This is the case of forecasts issued by analysts working for financial institutions (affiliated), who have business ties with the firms they follow. They do not issue more positively biased earnings forecasts around equity offerings than those who have no business at stake (unaffiliated). More generally, this is also the case of forecasts issued by analysts employed by financial institutions, that do not have specific business relationships with the firm they follow, but who could be motivated to issue biased forecasts to attract business; see Agrawal and Chen (2008), Clarke, Khorana, Patell and Rau (2007), Cowen, Groysberg and Healy (2006) and Jacob, Rock and Weber (2007). A straightforward justification for these results, empirically confirmed by Ljunqvist et al. (2006), is that favorable forecasts do not attract investment banking business, probably because analysts build their reputation on the accuracy of their earnings forecasts, which is easily assessable ex-post.

In contrast, errors in long-term earnings growth forecasts and erroneous investment recommendations are much more difficult to detect, so that it is where analysts' propensity to issue biased research may come into play. In accordance with this intuition, empirical studies find that affiliated analysts and, more generally, analysts working for investment banks issue significantly upward biased recommendations and growth forecasts; see Michaely and Womack (1999) and O'Brien, McNichols and Lin (2005), James and Karceski (2006). These

[3] Interestingly, Mehran and Stulz quoted 397 papers on www.ssrn.com with "conflict of interest" in the title or in the abstract before July 2006; on December 31, 2007, this number was 524. This number shows that research is still important in this area.

findings are however highly disputed; see Cowen, Groysberg and Healy (2006), Jacob, Rock and Weber (2007), Lin and McNichols (1998) and McNichols, O'Brien and Pamukcu (2006).

While the European regulation is mainly oriented to curb conflicts of interest related to investment banking activities, prior research shows that brokerage activities distort analysts' judgment as well. Jackson (2005) finds that favorable recommendations, not emanating from affiliated analysts, increase stock trades in the short run. Mikhail, Walther and Willis (2007) show that small investors tend to trade more after upgraded and "Buy" recommendations than they do after downgraded and "Sell" recommendations. In the same line, Malmendier and Shanthikumar (2007) show that small investors take all recommendations for granted while sophisticated investors trade only on extreme recommendations ("Strong Buy" or "Strong Sell" recommendations). This finding suggests that small investors might be the main victims of analysts' conflicts of interest, sophisticated ones being immune from the biases that contaminate investment recommendations.

Results presented above suggest that regulating analysts' activities could be, to a large extent, unnecessary for two major reasons. Firstly, financial institutions with a strong stake in investment banking services must preserve their credibility. This prevents them from issuing misleading forecasts or recommendations. Secondly, sophisticated investors do not suffer from conflicts both because they mainly focus on earnings forecasts, which have been shown not to be biased, and because they are aware of the magnitude of recommendation biases. Consequently, the real aim of regulating financial analysts should be the protection of small investors from the opportunistic behavior of analysts working for low reputation investment banks or for brokerage institutions involved in securities trading. In such a setting, a regulation applicable to the financial analysis industry as a whole could generate costs exceeding by far the expected benefits. Small investors' protection could be carried out at the expense of sophisticated investors, listed firms, and the banking community.

Regarding Europe, two additional characteristics of the financial analysis industry could mitigate analysts' conflicts of interest, so that the European regulation might be, to a large extent, useless. First, conflicts due to investment banking ties are less acute in the EU than in the US because the number of European financial institutions active both in financial analysis and in investment banking activities is fairly small. In addition, these financial institutions are mainly universal banks, which are more diversified in terms of revenue than their US counterparts. They are therefore expected to put less pressure on sell-side analysts to make them issue overoptimistic recommendations. Second, European analysts differ in many respects from their US counterparts. Jegadeesh and Kim (2006) find that optimism in recommendations is lower in Europe than in the US or Canada, probably because, as shown by Clement, Rees and Swanson (2003) and Bolliger (2004), forecast accuracy is not a major concern for their career.

3. Regulation of investment research and financial analysts in the EU

Aimed at harmonizing standards for the "fair, clear and accurate presentation of information and disclosure of interests and conflicts of interest"[4], MAD focuses both on the production of recommendations (Articles 2 to Article 4) and on the disclosure of interests and conflicts of interests (Article 5 and 6). This section describes the provisions of MAD devoted to the presentation of investment research.

[4] Official Journal of the European Union, December 24, 2003, L339/73.

3.1. Production of recommendations

The identity of the person, i.e. her name and job title, who prepared the recommendation and the name of the legal person responsible for the recommendation, must be disclosed (Article 2). In order to shed light on analysts' reputation, recommendations by teams of analysts (with no individual name) are not allowed[5]. Article 3 explains how recommendations must be presented. Facts must be clearly distinguished from non-factual information. More specifically, interpretations, estimates and opinions, which include forecasts and price targets, must be clearly indicated as such. Article 4 deals with the construction of the recommendations. In addition to the time horizon and risk, the date at which the recommendation was released must be explicitly mentioned. Interestingly, any change in a recommendation over a 12-month period preceding the current release must be reported.

3.2. Disclosure of interests and conflicts of interest

Interests and conflicts of interest materialize at the level of the person(s) who prepared or had access to the recommendation before dissemination to market participants. Several procedures are designed to help investors understand the conditions under which recommendations are elaborated (Article 6). Financial institutions are required to disclose the "effective organisational and administrative arrangements set up […] for the prevention and avoidance of conflicts of interest" (Article 6 al.2). They must report on how the remuneration of the person preparing the recommendation is tied to investment banking transactions (Article 6, al.3).

Acknowledging the impossibility to completely eliminate conflicts of interest, the legislator has adopted a pragmatic strategy in order to mitigate their impact. It consists in

[5] Before the adoption of MAD, the proportion of recommendations issued by teams accounted for 20% of the recommendation issued by European analysts, see Bolliger (2004).

making investors aware of the conflicts by disclosing any relevant information that might potentially affect the nature of the recommendation. Any person or institution involved in the production of the recommendation must release her links with the firm she recommends. These links can take several forms. It can be a stake of 5% or more in the capital of the firm for which the recommendation is released or, conversely, it can be a stake of 5% or more in the capital of the financial institution held by the recommended firm. Acting as a market maker or liquidity provider for the firm has also to be released. Finally, having acted as a lead manager or a co-lead manager in any security offerings of the recommended firm over the last 12 months must be clearly disclosed.

Financial institutions providing recommendations are required to disclose every quarter, the proportion of “Buy”, “Hold” and “Sell” recommendations issued for all stocks they follow. These figures have also to be disclosed for firms to which they have supplied investment banking services over the previous 12 month. The information must be directly and easily accessible to the public.

Similar to the EU legislation in many fields, investment research is regulated by directives that commit the EU member states to incorporate its provisions into national law within a certain period. MAD provisions had to be incorporated into national laws no later than October 12th, 2004. Germany did it as early as October 30th, 2004, but most state members transposed MAD into their national law during the second semester of 2005 (Finland, France, Ireland, Italy, Netherlands, Great Britain and Spain) or even later (Belgium).

Every State is solely responsible for the enforcement of the directive. This decentralization, called “Home Country Control Principle” is paradoxical. It implies that financial institutions have to comply with their own country rules wherever they conduct business within the EC; see Enriques (2005). As a consequence, financial institutions of

distinct nationalities violating the law can incur various penalties, even when they are in competition on the same market.

MAD closely follows RegFD and SOX501 regulations. Nevertheless, two important discrepancies between the US and European regulations are noticeable. First, contrary to SOX501, MAD does not make any explicit reference to the individual protection of financial analysts from persons involved in investment banking activities working for the same financial institution. Second, the US regulation does not mention holdings (a stake of 5%) as a source of conflicts.

4. Effectiveness of the Market Abuse Directive

4.1. Recommendations, abnormal returns and changes in regulation

4.1.1 Hypotheses

To gauge the effectiveness of MAD in curbing conflicts of interest, and in providing small investors with more reliable information, we examine the impact of MAD on market reactions to recommendation releases. In an efficient market, everything else being equal, the release of reliable information should translate into stock price changes. Regarding analysts' recommendations, an "Upward" ("Downward") revision should therefore imply an increase (decrease) in stock prices of the recommended firm[6]. If MAD works at intended, we should observe upgrades (downgrades) to have a bigger (smaller) stock price impact after the adoption of the regulation because favourable (unfavourable) advices became less (more) frequent. In contrast, reiterations of previous opinions, which are assumed to be less informative, should not affect prices. Thus, they are excluded form our study; see Womack

[6] We consider initiating (stopping) coverage as an upgrade (downgrade).

(1996) and Clement and Tse (2005) among other. Therefore, we state the two following hypotheses.

H1a: Returns associated to post-MAD recommendations differ from returns associated to pre-MAD recommendations.

H1b: The magnitude of changes in post-MAD returns depends on whether the recommendation emanates from an analyst facing conflicts of interest.

There are two main methods to measure wealth effects. First, they can be estimated directly by mimicking feasible trading rules and measuring their performance; see Barber et al. (2001), Jegadeesh, Kim, Krische and Lee (2004), Fang and Yasuda (2005), Loh and Mian (2006) and Barber et al. (2007). This method requires specific assumptions on rebalancing frequency, weighting recommendations and transaction costs, these assumptions being to a large extent arbitrary. In order to analyze the impact of MAD, we follow the second method, which consists in performing an event study around the release of upgrades and downgrades; see Stickel (1995), Womack (1996), Salva and Sonney (2006) and Kadan, Madureira, Wang and Zack (2007) among others. This permits to control for exogenous variables which have been shown to affect market reactions. Consequently, to gauge the economic consequences of MAD adoption, we estimate the following regression:

$$CAR_{a,j,t} = a_0 + a_1 PostEC_t + a_2 Stake_{a,j,t} + a_3 PostEC_t \times Stake_{a,j,t} + Control\ Variables_{a,j,t} + \varepsilon_{a,j,t}$$

where *PostEC* and *Stake* are two dummies. *PostEC* equals 1 if the revision is released after the adoption of MAD. *Stake* equals 1 if the revision is issued by an analyst facing conflicts of interest.

4.1.2 Defining conflicts of interest and CARs

- Conflicts of interest

Our definition of conflicts of interest is dictated by the provisions of MAD. Accordingly, a financial institution leading or co-leading an IPO or a SEO is classified as having a "Stake" with that firm over the forthcoming year. Firms which have no investment banking relations with the financial institution are classified as "No Stake" institutions.

- Computing CARs

Abnormal returns are estimated directly using the following approach:

$$R_{a,j,t} = \alpha_j + \beta_j R_{m,t} + CAR_{a,j} D0_{j,t} + CAR_{a,j} DB10_{j,t} + CARA_{a,j} DA10_{j,t} + \varepsilon_{j,t} \text{ and } \varepsilon_{j,t} \sim N\left(0, \sigma_j\right)$$

$$D0_{i,t} = \begin{cases} 1/3 \text{ if } t \in [-1, +1] \\ 0 \text{ otherwise} \end{cases} \quad DB10_{i,t} = \begin{cases} 1/9 \text{ if } t \in [-10, -2] \\ 0 \text{ otherwise} \end{cases} \quad DA10_{i,t} = \begin{cases} 1/9 \text{ if } t \in [+2, +10] \\ 0 \text{ otherwise} \end{cases}$$

where

0 is the date at which the recommendation of analyst *a* was released (event time);

$R_{a,j,t}$, the compounded return of stock *j* on day *t* adjusted for capital changes and dividends;

$R_{m,t}$, the compounded market return on day *t*;

CAR is the cumulative abnormal returns over $[-1, +1]$, *CARB* is the cumulative abnormal returns over $[-10, -2]$ and *CARA* is the cumulative abnormal returns over $[+2, +10]$.

Some of the stocks in our sample are traded infrequently so that returns are not available on a daily basis (missing data)[7]. In order to consistently estimate the parameters, we use a WLS regression[8] over the period beginning 251 trading days before the announcement and ending 10 days after; i.e. [-251;+10].

[7] When no closing price is available on day *t*, Datastream repeats the last closing price. In that case, the computed return is nil even if there was no transaction. Following Lesmond, Ogden and Trzcinka (1999), we define a missing data as a closing price is nil and the transaction volume is zero; a day for which the stock return and the index return are nil is considered to be a non working day (and thus skipped); a day for which the stock return is nil but the trading volume for that stock is positive is considered to be a non missing data (return equal zero). Recommendations with missing prices at the beginning or the end of the [-1, +1] period are excluded. For the [+2, +10] window, we require a non-missing price on the last trading day.

[8] See Heinkel and Kraus (1988) and Maynes and Rumsey (1993).

4.1.3. Control variables

In addition to the variables of interest, based on prior research on the determinants of stock price reaction to analyst recommendations, we take the following control variables into consideration..

- Coverage

We measure the intensity of the coverage with a transformation of the number of analysts having released recommendations for firm *j* over the six-month period preceding *t*. As in previous studies, we define coverage as the natural logarithm of the number of analysts following the firm: $LnNbAn_{j,t} = Ln\left(NbAn_{j,t}\right)$

- Timeliness

Stock price reactions depend on how the information conveyed to the market comes as a "surprise". This embeds both the date and the magnitude of the recommendation. The timeliness of the recommendation is intended to capture how the recommendation is "isolated" from previous and future recommendations. Following Cooper, Day and Lewis (2001), we define the leader-follower ratio $LFR_{a,j,t}$ as:

$$LFR_{a,j,t} = TL_{a,j,t} \big/ TN_{a,j,t}$$

where

$TL_{a,j,t}$ is number of days separating *t* from the last two recommendations on j,
$TN_{a,j,t}$ is number of days separating *t* from the next two recommendations on j.

Ertimur, Sunder and Sunder (2007) find this variable to be highly significant, in particular for "Buy" and "Strong Buy" recommendations.

- Magnitude of the innovation

Revisions strongly departing from other analysts' sentiment (consensus) are expected to bring more information to market participants. We do not expect strong market reactions from revisions issued by analysts herding around the consensus; see Clement and Tse (2005) and

Jegadeesh and Kim (2007). A recommendation is coded using a number between 1 and 5 ("Strong Buy" = 1 to "Strong Sell" = 5). We define the spread from the consensus as the difference between the level of recommendation under study and the average level of the last recommendations issued over the past six months: $Dcons_{a,j,t} = \mathrm{Re}c_{a,j,t} - \mathrm{Re}c_{.,j,t}$

where $\mathrm{Re}c_{.,j,t}$ = mean of recommendations for j, from $[t-6\ \text{month}; t]$

$\mathrm{Re}c_{a,j,t}$ = recommendation on firm j issued on time t by analyst a

- Past performance

Analyst's skill[9] contributes positively to the relative accuracy of her forecasts; see, e.g., O'Brien (1990), Stickel (1992), Mikhail, Walther and Willis (1999), Clement (1999) and Jacob et al. (1999). Interestingly, Sonney (2007) confirms that analyst's past performance (ranking) in forecasting earnings for a specific firm is strongly persistent. We hypothesize that investors know the relative quality of analysts, their forecasting ability translating into better recommendations. Past ranking is expected to subsume skills for both analysts and teams. We use the definition proposed by Hong and Kubrik (2003) where every analyst a is ranked according to her forecast accuracy (annual forecasts) relative to other analysts having issued forecasts on the same firm j[10]. Percentile ranks are constructed in order to account for

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[9] Large financial institutions have more resources to support research which, in turn, contribute to more accurate forecasts that should translate into more valuable recommendation; see Stickel (1995) and Clement (1999) for the US market. However, this variable is not available for teams and seems to be of minor importance in European market; see Clement, Rees and Swanson (2003) and Bolliger (2004). We decided not to use it as control variables.

[10] For $y-1 \le \tau \le y$, we compute forecast accuracy as follows:

$$EFA_{a,j,\tau} = \left| BiasEF_{a,j,\tau} \right|$$

Where $EFA_{a,j,\tau}$ is the earnings forecast accuracy of analyst a, for firm j, at time τ

$BiasEF_{a,j,\tau} = \dfrac{EPS_{j,y} - FE_{a,j,\tau}}{PS_{j,y-1}}$,

$EPS_{j,y}$ is the realized annual earnings per share of firm j at the fiscal year end y,

$FE_{a,j,\tau}$ is the last earnings forecast per share made by analyst a for firm j at before time τ,

and $PS_{j,y-1}$ is the stock price of firm j at the fiscal year end (y – 1).

differences in coverage across firms and years. The ranking is computed on an annual basis and is available after the earnings announcement release.

The measure is given by:

$$PercRank_{a,j,\tau} = 100 - \left(\frac{Rank_{a,j,\tau} - 1}{FirmCoverage_{j,\tau} - 1} \right) \times 100$$

$Rank_{a,j,\tau}$ is the analyst *a* forecast accuracy rank for firm *j* at τ,

$FirmCoverage_{j,\tau}$ is the number of analysts having issued forecasts on firm *j* over the past fiscal year

$PercRank_{a,j,\tau}$ is the score of performance accuracy. The best analyst has a score of 100 while the worst one has a score of 0.

- Controlling for contemporaneous information

Confounding information released contemporaneously during the event window, notably earnings announcements, can have an impact on stock prices not directly related to the recommendation. We control for earnings announcements which are close to recommendation dates; see the literature on earning surprises and more specifically Ivkovic and Jegadeesh (2004) and Boni and Womack (2004) for the impact of earnings announcements on stock price effects of recommendations. Following Ivkovic and Jegadeesh (2004), we define 3 dummy variables:

$PER_{j,t} = 1$ if the recommendation "P"recedes "E"arnings "R"elease by less than 10 days [-10; -2]

$CER_{j,t} = 1$ if the recommendation is "C"ontemporaneous to earnings release [-1; +1]

$FER_{j,t} = 1$ if the recommendation "F"ollows earnings release [+2; 10]

4.2. Data

Our sample consists of recommendations issued on firms of the European Union belonging to the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Portugal, Spain and Sweden. We also retain a non-member of the European Union, namely Switzerland[11], in our sample because Swiss banks produce a significant part of the recommendations in Europe. They employed 12% of the financial analysts and released 15% of the recommendations on European firms from 1994 to 2003; see Sonney and Salva (2006).

The period under study goes from 1997 to 2006. Due to lagged variables, the information is collected from 1996 onwards. We use mainly three sources of data. First, daily stock prices in local currency are collected from Datastream from January 1996 to December 2006[13]. Second, recommendations and analysts' forecasts are collected from the I/B/E/S International Historical Detail File database. Consistent with previous research, we exclude recommendations for which the following information is missing: firm code, broker code, currency code. We also exclude recommendations for which we cannot compute analysts' ranking, in particular when realized earnings are missing. Financial institutions issuing exclusively forecasts or recommendations are eliminated. Analysts issuing these recommendations can work either for European or for non-European financial institutions.

From the Security Data Company's database, we collected firms involved in IPOs and SEOs during the period 1996-2006. For each IPO/SEO, we collected the date, the leader(s) and the co-leader(s) names and the name of the firm involved. While merging I/B/E/S and

[11] In collaboration with the Federal Banking Commission, the regulatory authority, Swiss banks adopted a code of conduct on January 23rd, 2003. The existing regulations in the EC and the US encapsulate this code which allows big banks to avoid the burden of a third regulation.

[13] Datastream translated prices of the Euro zone stocks in EUR before 01/01/1999. The exchange rate depends on the country but is constant for every stock so that it has no impact of stock returns. IBES did not follow the same rule which means an adjustment had to be made from 1996 to 1999 for earnings.

Datastream data using tickers and dates can be done easily, merging I/B/E/S and SDC data is by far more challenging. To do so, we used the broker name associated with the broker masked code and matched manually with the names of the (co-) leader in SDC. Over the sample period, 291 distinct institutions issued recommendations. We classified the remaining financial institutions as “non-affiliated”.

4.3. Measuring the impact of MAD on conflicts of interest

4.3.1. Descriptive results

Table 1 reports summary statistics of recommendations released from 1997 to 2006. Panel A (B) reports the information sorted by country (year). Column 1 and column 2 indicate the number of firms that appeared in the sample. Overall, the sample contains 3578 firms and 291 brokers. The maximum number of firms followed within a year is 2026 in 2001 and the maximum number of brokers is 165 in 2006. The number of firms and brokers is directly related to the number of listed firms and to the market capitalization. Three countries, namely Great Britain, Germany and France account for 60% of the firms and recommendations. Columns 3 to 8 show the number of recommendations split by recommendation types (Strong Buy, Buy, Neutral, Sell, and Strong Sell).

Insert <Table 1>

As underlined by Jegadeesh and Kim (2004, p. 282), the structure of recommendations is different from that observed in the US. Even if the proportion of “Strong Buy” and “Buy” recommendations was lower in Europe (46% vs 60%) compared to the US before the adoption of MAD, it has still decreased once MAD was adopted (41.5%). This proportion is very close to the one (43.30%) we extrapolated from US data in Ertimur et al. (2007, p. 592, Table 3). Concerning “Sell” and “Strong Sell” recommendations, the proportion of “Sell” and “Strong Sell” recommendations was 4.50% before the adoption of RegFD. It increased

dramatically to 12.10% after SOX501 was passed. This is remarkable given the reluctance of analysts to issue negative recommendations. In contrast, these proportions changed slightly from 18% to 20.20% in Europe. However, there are substantial differences across countries. More mature markets (e.g. Great Britain (48%), Germany (32%) and France (31%)) exhibit by far more “Sell” and “Strong Sell” recommendation than younger ones (Austria, Portugal and Ireland) where this proportion falls below 5%.

Columns 9 and 10 (11 and 12) show the total number of upgrades (downgrades) and the number of upgrades (downgrades) issued by affiliated analysts. The number of recommendations issued by analysts whose employer was involved in an IPO/SEO deal as defined by MAD is surprisingly low since it accounts for only 2% of the revisions (1116 upgrades and 724 downgrades compared to a total of 148108 revisions). This proportion was below 1% for Finland, Ireland, Switzerland and Great Britain. Much emphasis was put on the supposedly biased recommendations released by analysts whose employer had investment banking business but, at least in our sample, these recommendations account for only a small proportion of recommendations. Financial institutions that were never involved in managing any IPO/SEO over the sample period account for 92% of the revisions. Given the fact that IPO/SEO leaders are also active in bond issuance and mergers and acquisitions, taking these deals into consideration should not have changed these figures significantly. Strikingly, the number of recommendations decreased sharply from more than 24,000 in 2002 and 2003 to less than 19,000 in 2004 after the law was passed. This drop is difficult to reconcile with a bear market (2001 to 2003) followed by a bull market (2004 to 2006). The proportion of “Strong Buy” recommendations decreased from 16.72% (1997 to 2003) to 14.39% (2004 to 2006) and “Buy” recommendations decreased from 29.24% to 27.17%. “Neutral” and “Sell” recommendations increased respectively from 36.09% to 38.22% and 12.65% to 15.29% for the former living “Strong Sell” recommendations almost unchanged (5.30% to 4.93%). These

global figures indicate that recommendations became less dispersed and less favorable since the adoption of MAD.

4.3.2. The Model

We estimate the following regression:

$$\begin{aligned} CAR_{a,j,t} = {} & a_0 + a_1 PostEC_t + a_2 Stake_{a,j,t} + a_3 PostEC_t \times Stake_{a,j,t} \\ & + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} \\ & + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t} \end{aligned} \quad (1)$$

<Insert Table 2>

The results are reported in Table 2 Panel A (Panel B) for upgrade (downgrade) revisions. First, we analyze the market reaction to upgrades. *PostEC* is significantly positive (at the 1% level) around the announcement (with and without control variables) indicating that abnormal returns are higher after the introduction of MAD. *PostEC* is also economically significant. It is associated with a 0.26% return over a 3-day period, control variables being taken into consideration. This suggests that investors interpret the signal as being less noisy after the MAD adoption than before. As expected, *Stake* is negative but only marginally significant (p-value = 6.58%). The control variables have the expected sign and are significant at the 1% level, excepted *PER* and *FER*, (both insignificant at the 5% level). Recommendations strongly departing from the consensus, those issued by high ranked analysts, and those issued when information flow is scarce (isolated recommendations for a firm followed by a small number of analysts) are highly valuable. It is also worth noting that the release of contemporaneous earnings is both economically (1.6%) and statistically significant. Concerning the post-announcement period, *PostEC* is positive (and significant) showing that, even after the adoption of MAD, the market under-reacts to “good news”.

Globally, downgrade revisions exhibit a symmetric pattern. *PostEC* is significantly negative around the announcement date and positive after. This pattern is consistent with the

market over-reacting to “bad news”, often documented for earnings surprises. The control variables have the expected sign except *FER* which is positive (and significant). Interestingly, *PercRank* is no longer significant showing that who is releasing a “bad news” does not matter. Before the announcement, *Stake* is negative (-0.88% and significant at the 1% level). We interpret this result as evidence of negative information being released to “informed investors”. The cross-product of *Stake* and *PostEC* shows that this is no longer the case after the law was passed. More formally, Model (1) allows us to test our Hypotheses 1a and 1b, which are stated as follows:

$H_0 1a : a_1 + a_3 = 0 \; vs \; a_1 + a_3 \neq 0$ and $H_0 1b : a_2 + a_3 = 0 \; vs \; a_2 + a_3 \neq 0$

The last row of Table 2, Panel A (B) reports the F-stats. Concerning H1a, we reject the null hypothesis for upgrades (F-stat = 5.31, p-value = 0.05 with control variables). Interestingly, we do not reject the null hypothesis for downgrades (F-stat = 2.40, p-value = 0.05 with control variables). Consistent with H1a, MAD makes upgraded recommendations more credible when the advice is released but it has no impact on downgrades.

We also estimate the regression using the cumulated abnormal returns before (after) the release of recommendations as the dependent variable (respectively *CARB* and *CARA* as defined in Section 4.1.2), the independent variables remaining unchanged. Our goal is to check whether the regulation has made recommendations more informative (no reaction before the release) and whether it has increased the speed at which the event is incorporate into stock prices (no reaction after the release). Concerning the first issue, we notice that abnormal returns before the recommendation (*CARB*) are statistically significant for downgrades ($a_1 + a_3 = 0.0101$, F-stat = 5.08, p-value = 0.05 with control variables). The number of downgrades having increased after the MAD adoption, in particular those emanating from affiliated analysts, they have become less informative. Interestingly, cumulated abnormal returns before revisions (*CARB*) became insignificant once the

regulation was adopted. The sum of the three coefficients [$a_0 + a_1 + a_3$] is equal to 0.0036. It is not statistically significant at the 5% level (F-stat = 0.61, p-value = 0.44 with control variables).

Hypothesis 1b is never rejected at the usual level of confidence for both upgrades and downgrades, suggesting that conflicts of interest related to investment banking ties do not affect the market reaction to recommendation releases, at least under the definition given MAD to conflicts of interest. From an economic standpoint, the small proportion of recommendations classified as potentially biased ensures that they were not hurting investors holding a diversified portfolio, even before the law was passed.

4.4. Robustness checks

All the estimations were also computed with market adjusted CARs as the dependent variable. Results, not reported here, are qualitatively the same. They are available upon request.

- Excluding Italy

As we mentioned in Section 3, in 1999 Italy adopted a regulation under which, recommendations have to become public between ten to fifteen days after being available to financial institution's costumers. Using the I/B/E/S database, Jegadeesh and Kim (2006) analyze the reaction of stock prices to recommendation changes for OECD countries. They document no abnormal returns for both upgrades and downgrades in Italy. Using the CONSOB database, Cervellati, Della Bina and Pattitoni (2007) reach the opposite conclusion. They argue that insignificant market reactions to recommendation releases are due to databases reporting the public release date instead of the "true date".

Using I/B/E/S, we find that CARs are highly significant for Italy, albeit smaller in magnitude compared to those reported by Cervellati et al. (2007). This result is in

contradiction with Jegadeesh and Kim (2006) who cover a broader period (1993-2002). We also randomly checked the dates reported in I/B/E/S. For that purpose, we sorted randomly a month (March 2006) and matched the dates form CONSOB and I/B/E/S. The CONSOB sample contains 98 observations, 60 of them do not match with I/B/E/S. For the remaining observations only 3 are reported with a delay higher than 5 trading days. Since we find no reaction around the recommendation released between 1996 and 1998, we attribute the main cause of this discrepancy to the introduction of the Italian law in 1999.

We re-estimate Model (1) with Italy and report the results in Table 2, Panel C (D) for upgrades (downgrades). We find the results to be consistent with those obtained in Table 2, Panel A (B).

- Reputation and regulation

Fang and Yasuda (2006) argue that financial analysts' reputation is a strong deterrent of conflicts of interest because financial analysts are inclined to preserve their human capital. Similarly, Ljunqvist at al. (2006) show that investment banks with a high reputation at stake are less prone to issue optimistic recommendations. On this ground, Meharn and Stulz (2007) conclude that greater reputation capital help control conflicts of interest. So far, we have used the ranking of the analyst as a proxy for financial analyst's reputation but we did not consider the reputation of the investment bank itself. The information flow that must be released under MAD sheds a crude light on investment bank ties between the recommended firm and the financial institution. Assuming that reputation is a moderating factor of conflicts of interests is equivalent to say that financial institutions with a high reputation capital at stake are less prone to destroy it by issuing biased recommendations. Thus, we hypothesize that MAD had no specific impact on abnormal returns around recommendations released by highly reputed investment banks. In addition, we test whether these banks issued biased recommendations

for firms with which they had an investment banking relationship before the adoption of MAD. More formally, our hypotheses are:

H2a: The adoption of MAD did not change market reaction to recommendations released by highly reputed banks.

H2b: Before the introduction of MAD, investment banking relationships (Stake) had no impact on market reactions for highly reputed banks.

Several methods have been proposed to measure reputation. MAD embracing investment banking activities as a whole, this suggests considering IPO/SEO, bond issues and mergers and acquisitions all together. We construct the proxy for reputation as follows. At the beginning of the year, we cumulate the nominal proceeds of the deals (IPO, SEO, Debt or M&A) for which each investment bank under study was a leader or a co-leader over the previous year. In case of multiple co-leaders, we split the proceeds in equal parts. Every year, we rank investment banks based on the proceeds for each investment banking activity so that every bank has three rankings. To be classified as having a "high reputation", the investment bank has to appear in the first decile of at least one of these three groups. Ljunqvist et al. (2006) use a similar method for the US market. We define the variable $Rep_{a,t}$ (for reputation) as a dummy variable that takes the value of 1 is the analyst works for an investment bank with a high reputation and 0 otherwise. We estimate an extension of Model (1) including reputation:

$$\begin{aligned} CAR_{a,j,t} = {} & a_0 + a_1 Rep_{a,t} + a_2 PostEC_t + a_3 Stake_{a,j,t} \\ & + a_4 Rep_{a,t} \times PostEC_t + a_5 PostEC_t \times Stake_{a,j,t} \\ & + a_6 Rep_{a,t} \times Stake_{a,j,t} + a_7 Rep_{a,t} \times PostEC_t \times Stake_{a,j,t} \\ & + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} \\ & + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t} \end{aligned} \qquad (2)$$

The variables in the equation above are defined in Section 4.1. Formally, we state our hypotheses H2a and H2b as follows:

$H_0 2a : a_2 + a_4 + a_5 + a_7 = 0 \; vs \; a_2 + a_4 + a_5 + a_7 \neq 0$

$H_0 2b : a_3 + a_5 + a_6 + a_7 = 0 \; vs \; a_3 + a_5 + a_6 + a_7 \neq 0$

Table 3 reports the results for upgrade (Panel A) and downgrade revisions (Panel B). We do not comment in detail the results concerning the control variables since they are similar in economic and statistical significance to those reported in Table 2.

Insert <Table 3>

Rep is significant for both upgrade and downgrade revisions which supports the hypothesis that reputation brings more credibility to advices. The global effect of the regulation is marginally significant at the 10% level (F-stat = 2.65). We conclude that the introduction of MAD had no effect on financial institutions with a high reputation. This finding highlights the limits of the regulation, which applies to the whole industry, but that was not necessary for the most active financial institutions. While financial institutions with a high reputation represent 10% of the sample every year, they issue more than 14.4% of the recommendations before and 18.5% after MAD adoption. Hypothesis H2b is not rejected too. We cannot prove that lead managers issuing forecast around IPO/SEOs are more biased than their peers who have no investment banking ties with the firm they follow.

5. Regulation spill-over in global financial markets

Until now, we assumed that financial institutions comply with the rules of the country in which the firm they recommend is located. Implicitly, this is equivalent to assuming that recommendations are oriented toward local markets (inside the EU). However, European banks and, in particular Swiss banks which have important stakes in the US[14], have no reason to restrict voluntarily the diffusion of their advices to specific countries. Conversely, US banks following European firms do not restrict their recommendations to European investors

either. US and European financial institutions with a branch, or making business, in the US should comply with the US regulation as soon as they release reports directed toward US investors, even if the stocks they recommend are listed in Europe[15]; see Becker, Yim and Greenawalt (1999).

In order to test whether the adoption of the US regulation had an impact on the recommendations of European stocks, we introduce a dummy variable, *PostUS*, which is equal to 1 during the interval of time beginning the day after SOX501 was adopted and ending the day before MAD was adopted. We also check whether our results are driven by banks which had to comply with the US regulation. For that purpose, we define two dummy variables. *GBank* is equal to 1 if the financial institution had a subsidiary or a branch in the US at the time the recommendation was issued. Thus, our last hypothesis is:

H3a: SOX501 had no impact on abnormal returns around changes in recommendations.

H3b: SOX501 had no impact on abnormal returns around changes in recommendations issued by banks with a branch in the US.

We modify slightly Model (1) and estimate the following regression model:

$$\begin{aligned} CAR_{a,j,t} = {} & a_0 + a_1 PostUS_t + a_2 GBank_{a,j,t} + a_{3,j} PostEC_t + a_4 Stake_{a,j,t} \\ & + a_5 PostUS_t \times GBank_{a,j,t} + a_6 PostEC_t \times Stake_{a,j,t} + a_7 PostUS_t \times Stake_{a,j,t} \\ & + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} \\ & + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t} \end{aligned} \qquad (3)$$

t_{US} = July 9, 2002 and t_{EC} = December 23, 2003
$PostEC_\tau = 1$ if $t_{EC} < \tau$ and 0 otherwise
$PostUS_\tau = 1$ if $t_{US} < \tau < t_{EC}$ and 0 otherwise

The remaining variables are defined in Section 4.1. Hypothesis H3a can be written as follows:

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[14] Three of them, namely Credit Suisse, UBS and Deutsche Bank, were part of the Global Research Settlement.

[15] Anecdotal evidence show that recommendations sent to costumers on a regular basis included information on conflicts of interest well before the CD2003/125 was passed. Recommendations of foreign stocks released by UBS for US costumers mentioned investment banking business as soon as the second semester of 2002. Société Générale, a French bank with more limited business in the US, released these conflicts as early as the beginning of 2003.

$H_0 3a: a_1 + a_5 + a_7 = 0$ *vs* $a_1 + a_5 + a_7 \neq 0$. Hypothesis 3b is equivalent to H3a, restricted to the sub-sample of global banks. Thus, the model is re-estimated with the variable *GBank* being omitted (the model is estimated with $a_2 = 0$ and $a_5 = 0$) for both the sub-samples of banks with business in the US and those who had not. With our notations, the hypothesis is:

$H_0 3a: a_1 + a_7 = 0$ *vs* $a_1 + a_7 \neq 0$

Insert <Table 4>

Table 4 reports the results for upgrade (Panel A) and downgrade revisions (Panel B). As before, we do not comment in detail the results concerning the control variables because they are similar to those reported in Table 2.

Testing whether the US regulation spilled over on the European Union, hypothesis H3a is not confirmed at usual levels of significance for both upgrades and downgrades (F-stat = 0.340 and 1.694 respectively). We re-run the tests for both sub-samples (hypothesis H3b). Our previous results are robust to this check (F-stat = 0.123 and 0.018 for upgrades and F-stat = 0.407 and 1.306 respectively). This result suggests that MAD had its own legitimacy since regulation spill over did not materialize[16].

6. Conclusion

Over the recent period, new regulations aimed at curbing conflicts of interests in the financial analysts' profession were adopted in the US. Progressively, these laws were also adopted in other countries. The European Union passed into law a regulation known as the Market Abusive Directive, which mimics its US equivalents (RegFD and Sarbanes-Oxley Act, Section 501). Both laws emphasize conflicts of interest originated by releasing recommendations on stocks with which the financial institution has investment banking business. The empirical evidence from the EU, reported in the paper, is in sharp contrast with

[16] SOX501 and CD2003/125 are separated by year and a half.

evidence from the US. While more than 60% of the US recommendations could be biased by investment banking relationships, we report a proportion of 2% for recommendations issued on EU firms. While the structure of US recommendations changed dramatically over time, we document a smaller drift in Europe. These figures raise the following question: Was the EC regulation totally ineffective?

To answer this question, we examined the market reaction around recommendations releases. More specifically, we focused on changes in recommendations since these are expected to convey more information than mere confirmations. We find that MAD had a significant impact on positive upgrades, which suggests that the adoption of MAD increased their reliability for investors Interestingly, this effect is not at the cost of less credible downgrades since the introduction of the law had no impact on the market reaction to downgrades. Then, we explore how investors react to recommendations released by financial institutions with investment banking business which are therefore more exposed to potential conflicts of interest. We show that MAD had no impact on financial institutions with a high reputation and that investment banking activities were not an important source of conflicts affecting recommendations in Europe, even before the law was passed. Finally, to examine whether the US regulation spilled over into the European Union, making the Directive inadequate, we analyze the impact of the US regulation of the recommendations issued on European. Our results show that the Market Abuse Directive has its own legitimacy since regulation spill-over did not materialize for the Sarbanes-Oxley Act.

There are at least three directions for future research. Firstly, the abnormal trading volume around recommendation changes should be a strong indicator of how investors can be manipulated by analysts. Secondly, the legitimacy and the scope MAD should be examined in greater depth. In particular, there is no empirical evidence suggesting that earnings forecast are unaffected by conflicts of interest. Thirdly, we have not addressed the costs, and more

specifically the indirect costs, of the regulation related to the fact that some firms may have been left uncovered after the adoption of the regulation. How becoming “neglected” affects the cost of equity of “neglected” firms deserves a thorough examination.

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Table 1: Descriptive statistics of Recommendations

This table reports summary statistics of recommendations issued by affiliated and unaffiliated brokers over the 1997-2006 period. Panel A (B) reports the information sorted by country (year). Column 1 and column 2 indicate, the total number of firms by country (year), respectively brokers, that appeared in the sample. Columns 3 to 8 show the number of recommendations split by types (Strong Buy, Buy, Neutral, Sell, Strong Sell) and brokers (affiliated vs unaffiliated). Columns 9 and 12 show the number of upgrades and downgrades issued by affiliated and unaffiliated brokers. A broker is considered to be affiliate if it was the leader or a co-manager of at least a SEO/IPO during the sample period.

	Panel A: by country											
	Firms	Brokers	Total	Strong Buy	Buy	Neutral	Sell	Strong Sell	Total Up	Up Aff.	Total Down	Down Aff.
	(1)		(3)	(4)	(5)	(6)	(7)	(8)		(10)		(12)
AUT	77	47	1869	337	526	764	184	58	736	29	583	13
BEL	109	68	5341	921	1454	2074	689	203	2159	27	1880	18
DNK	118	60	5376	804	1674	1563	977	358	2235	15	2037	24
FIN	123	86	7742	916	2690	2138	1624	374	3392	23	3005	30
FRA	469	102	31757	5906	9404	9956	5172	1319	12799	268	10921	163
DEU	492	101	29413	4216	7174	12128	4099	1796	10782	172	9627	100
GBR	1177	130	55213	8693	16633	21389	5591	2907	21627	193	18063	108
IRL	57	64	1711	427	596	560	96	32	738	6	476	3
ITA	220	92	10557	1502	3006	4369	1317	363	4218	46	3424	31
NLD	184	122	17880	3220	4412	7011	2054	1183	7078	130	6178	87
PRT	52	47	2730	516	759	926	358	171	1171	36	977	18
ESP	125	80	11441	2033	3213	3743	1735	717	4499	77	3911	52
SWE	194	85	11274	1564	3544	3360	2128	678	4669	40	4182	41
CHE	181	95	10242	1401	2886	4407	1196	352	3740	54	3001	36

Total	3578	291	202546	32456	57971	74388	27220	10511	79843	1116	68265	724
	Panel B: by year											
	Firms	Brokers	Total	Strong Buy	Buy	Neutral	Sell	Strong Sell	Total Up	Up Aff.	Total Down	Down Aff.
1997	1779	156	15140	3369	3430	5898	1264	1179	6973	53	5084	31
1998	2001	161	21069	3974	5359	7996	2345	1395	8679	89	7555	42
1999	2020	156	19222	3664	5992	6723	1933	910	8603	121	5580	48
2000	2021	151	18590	3663	6233	6415	1622	657	7384	116	5397	62
2001	2026	132	19124	2949	5753	6962	2510	950	7146	138	6823	99
2002	1882	135	24426	3324	7814	8220	3999	1069	8923	133	7827	105
2003	1753	130	24290	2780	6900	8982	4271	1357	8552	114	8566	83
2004	1653	143	19040	2668	5657	6791	2940	984	7651	127	6810	84
2005	1653	155	20166	2439	5081	8420	3281	945	6984	114	6630	83
2006	1803	165	21479	3626	5752	7981	3055	1065	8948	111	7993	87
Total			202546	32456	57971	74388	27220	10511	79843	1116	68265	724

Table 2: Market reaction and the EU regulation

Table 2, Panel A (B) reports the coefficients and the standard errors estimations of Model (1) for Upgrade (Downgrade) revisions. In Panel C and D, the same coefficients are estimated on the sub-sample of firms excluding Italy. The model is estimated without control variables (coefficients "b" are set equal to 0) and with the control variables:

$$CAR_{a,j,t} = a_0 + a_1 PostEC_t + a_2 Stake_{a,j,t} + a_3 PostEC_t \times Stake_{a,j,t} + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t}$$

CAR is the cumulative abnormal return defined in Section 4.1. It measures the market reaction of analyst *a*'s recommendation on firm *j* released at date *t*. *PostEC* is a dummy variable that equals 1after the adoption of CD2003/125 and 0 before. *Stake* is a dummy variable that equals 1 if analyst "*a*" works for a broker which was the leader or a co-manager of an IPO/SEO for firm *j* during the last 12 previous months and 0 otherwise. *LnNbAn* is the logarithm of the numbers of analysts having issued recommendations over the last six months on firm *j*. The leader-follower ratio *LFR*, aims at measuring whether the current recommendation leads (or lags) previous recommendations. *Dcons* is the spread of the current recommendation from the "consensus" defined as the average of the ratings of the recommendations issued over the last six months on firm *j*. *PercRank* measures analyst *a*'s past accuracy computed over the previous fiscal year $(\tau - 1)$. The corresponding coefficient is multiplied by 100. *PER* is a dummy variable that takes the value 1 if the recommendation 'P'recedes an earnings announcement's date. *FER* is a dummy variable that takes the value 1 if the recommendation 'F'ollows an earnings announcement's date. *CER* is a dummy variable that takes the value 1 if the recommendation is issued contemporaneous to an earnings announcement. These variables are defined in Section 4.1. Coefficients significant at the 1%, and 5% levels are marked *** and * respectively. They are based on heteroscedastic consistent White t-statistics. The adjusted-R^2, the Fisher statistics and the number of observations are indicated below. The last two rows report the test of the null hypothesis. The critical value for rejecting the nul at 5% is 3.85. In Panel B, we report the estimates for downgrades revisions.

Panel A: Upgrades						
	CAR [-10, -2]		CAR [-1, +1]		CAR [+2, +10]	
Cte	0.0042***	0.0041***	0.0047***	0.0048***	0.0019***	0.0048***
	15.3634	4.0437	23.4879	6.4071	6.5581	4.5531
PostEC	-0.0001	-0.0003	0.0028***	0.0026***	0.0017***	0.0016***
	-0.2292	-0.6231	9.1680	8.6021	4.0984	3.8488
Stake	-0.0039	-0.0043	-0.0037	-0.0037	0.0030	0.0023
	-1.6618	-1.7904	-1.8464	-1.8409	1.0767	0.8358
PostEC× Stake	0.0036	0.0039	0.0041	0.0046	-0.0056	-0.0047
	0.5832	0.6194	1.3243	1.4531	-1.5050	-1.2709
LnNbAn		-0.0003		-0.0013***		-0.0024***
		-0.8037		-4.5609		-6.0527
LFR		0.0001*		0.0003***		0.0001*
		2.5081		5.5543		2.0053
Dcons		-0.0004		0.0013***		0.0009***
		-1.2084		5.7709		2.6840
PercRank		-0.0002		0.0013*		0.0023***
		-0.3359		2.5094		3.1590
PER		0.0037***		0.0015		0.0068***
		2.9226		1.4257		4.5360
CER		0.0038***		0.0162***		0.0041***
		3.4990		13.1922		3.4826
FER		0.0077***		0.0007		0.0020***
		9.3842		1.3475		2.7149
$adj.\ R^2$	0.0000	0.0017***	0.0010***	0.0075***	0.0002***	0.0014***
F	1.08	13.28	25.53	59.78	4.39	11.36
N	79843	78672	79843	78672	79843	78672
a1 + a3 = 0	0.32	0.34	5.01*	5.31*	1.12	0.72
a2 + a3 = 0	0.00	0.00	0.04	0.13	1.11	0.94

	Panel B: Downgrades					
	CARB [-10, -2]		CAR [-1, +1]		CARA [+2, +10]	
Cte	-0.0053***	-0.0065***	-0.0058***	-0.0061***	-0.0031***	-0.0092***
	-15.36	-5.1509	-21.7182	-6.4150	-8.6960	-7.5053
PostEC	-0.0002	-0.0002	-0.0022***	-0.0019***	0.0012***	0.0013***
	-0.4182	-0.3053	-5.7200	-5.0444	2.6127	2.7565
Stake	-0.0083*	-0.0088***	0.0021	0.0023	-0.0007	-0.0009
	-2.4764	-2.5670	0.9701	1.0419	-0.2522	-0.2981
PostEC× Stake	0.0088	0.0103	-0.0039	-0.0028	0.0038	0.0027
	1.9202	2.2746*	-1.2397	-0.9241	0.9898	0.7059
LnNbAn		0.0002		0.0011***		0.0031***
		0.3813		3.2096		6.7575
LFR		-0.0002***		-0.0008***		-0.0002***
		-3.5375		-10.0213		-2.6763
Dcons		-0.0006		0.0005*		0.0000
		-1.8714		1.9855		0.0105
PercRank		0.0009		0.0007		0.0014
		1.0144		-0.9839		-1.6268
PER		0.0048***		0.0010		0.0049***
		3.1222		0.7920		2.6742
CER		0.0028*		-0.0055***		0.0025*
		2.0175		-3.7905		1.9961
FER		0.0018		0.0039***		0.0025***
		1.8768		6.2422		2.7078
$adj.\ R^2$	0.0001*	0.0007***	0.0004***	0.0076***	0.0001	0.0013***
F	2.94	4.53	9.16	50.94	1.87	9.01
N	68265	66937	68265	66937	68265	66937
a1 + a3 = 0	3.56	5.08*	3.79	2.40	1.75	1.11
a2 + a3 = 0	0.02	0.26	0.63	0.07	1.49	0.56

Panel C: Upgrades without Italy						
	CAR [-10, -2]		CAR [-1, +1]		CAR [+2, +10]	
Cte	0.0041***	0.0039***	0.0048***	0.0051***	0.0019***	0.0047***
	14.7896	3.7848	23.3262	6.5448	6.3714	4.2560
PostEC	-0.0001	-0.0002	0.0029***	0.0027***	0.0018***	0.0017***
	-0.1493	-0.5729	9.0329	8.4355	4.2483	3.9818
Stake	-0.0036	-0.0040	-0.0036	-0.0037	0.0035	0.0028
	-1.4594	-1.5999	-1.7457	-1.7569	1.2257	0.9787
PostEC× Stake	0.0036	0.0039	0.0037	0.0042	-0.0064	-0.0054
	0.5455	0.5938	1.1200	1.2636	-1.6498	-1.4080
LnNbAn		-0.0003		-0.0014***		-0.0023***
		-0.8581		-4.7696		-5.7167
LFR		0.0001***		0.0003***		0.0001*
		2.6918		5.3316		2.0731
Dcons		-0.0005		0.0014***		0.0008*
		-1.4647		5.7801		2.5119
PercRank		0.0000		0.0013*		0.0024***
		0.0170		2.4913		3.1690
PER		0.0037***		0.0019		0.0066***
		2.8026		1.7230		4.2336
CER		0.0038***		0.0167***		0.0041***
		3.3806		13.1552		3.3707
FER		0.0085***		0.0008		0.0020***
		9.9617		1.4584		2.6595
$adj.\ R^2$	0.0000	0.0020***	0.0010***	0.0078***	0.0002***	0.0014***
F	1.075	14.57	25.53	58.46	4.39	10.65
N	79843	74506	79843	74506	79843	74506
a1 + a3 = 0	0.29	0.31	4.09*	4.41*	1.41	0.95
a2 + a3 = 0	0.00	0.00	0.00	0.04	1.22	1.03

	Panel D: Downgrades without Italy					
	CARB [-10, -2]		CAR [-1, +1]		CARA [+2, +10]	
Cte	-0.0055***	-0.0067***	-0.0059***	-0.0061***	-0.0032***	-0.0097***
	-15.3816	-5.1436	-21.3982	-6.2004	-8.7064	-7.6060
PostEC	-0.0001	0.0000	-0.0023***	-0.0020***	0.0013***	0.0014***
	-0.2470	-0.0936	-5.9080	-5.1339	2.6103	2.8088
Stake	-0.0094***	-0.0095***	0.0018	0.0019	-0.0012	-0.0013
	-2.6867	-2.6649	0.7941	0.8497	-0.3952	-0.4333
PostEC× Stake	0.0104*	0.0116*	-0.0046	-0.0034	0.0039	0.0027
	2.1723	2.4585	-1.4028	-1.0709	0.9693	0.6680
LnNbAn		0.0002		0.0012***		0.0033***
		0.3698		3.2243		6.8356
LFR		-0.0003***		-0.0009***		-0.0002*
		-3.9607		-10.1102		-2.4394
Dcons		-0.0007*		0.0005		0.0000
		-1.9724		1.9067		-0.0978
PercRank		0.0000		0.0000		0.0000
		1.1474		-1.2049		-1.4798
PER		0.0046***		0.0009		0.0049***
		2.9150		0.6408		2.5666
CER		0.0025		-0.0059***		0.0022
		1.7985		-3.9442		1.7466
FER		0.0021*		0.0040***		0.0022*
		2.1625		6.2271		2.2926
$adj.\ R^2$	0.0002***	0.0008***	0.0005***	0.0082***	0.0001	0.0014***
F	3.4352	5.1151	9.7688	52.5238	1.8628	8.6947
N	64841	63572	64841	63572	64841	63572
a1 + a3 = 0	4.66*	6.07*	4.56*	2.92	1.68	1.04
a2 + a3 = 0	0.10	0.47	1.38	0.44	1.03	0.27

Table 3: Market reaction, reputation and the EC regulation

Table 3 reports the coefficients and the standard errors estimations of the regression model:

$$CAR_{a,j,t} = a_0 + a_1 Rep_{a,t} + a_2 PostEC_t + a_3 Stake_{a,j,t} + a_4 Rep_{a,t} \times PostEC_t + a_5 PostEC_t \times Stake_{a,j,t} + a_6 Rep_{a,t} \times Stake_{a,j,t} + a_7 Rep_{a,t} \times PostEC_t \times Stake_{a,j,t} + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t}$$

CAR is the cumulative abnormal return defined in Section 4.1. It measures the market reaction of analyst *a*'s recommendation on firm *j* released at date *t*. *Rep* is a dummy variable that equals 1 if analyst "*a*" works for a broker which is ranked in the Top 10 decile of European investment banks. The remaining variables are defined in Section 4.1. and Table 2. Coefficients significant at the 1% and 5% levels are marked *** and * respectively. They are based on heteroscedastic consistent White t-statistics. The adjusted-R^2 and the number of observations are indicated in the last two rows.

	Upgrades		Downgrades	
	Coef.	t-stat	Coef.	t-stat
C	0.0045***	5.9887	-0.0058***	-6.1102
Rep	0.0026***	4.6873	-0.0024***	-3.0385
PostEC	0.0032***	9.2950	-0.0026***	-6.4503
Stake	-0.0031	-1.4078	0.0013	0.5347
Rep ×PostEC	-0.0034***	-4.4309	0.0046***	4.3821
PostEC×Stake	0.0037	0.9903	-0.0011	-0.3251
Rep × Stake	-0.0037	-0.7498	0.0074	1.2766
Rep×PostEC	0.0051	0.7799	-0.0113	-1.4033
LnNbAn	-0.0013***	-4.6583	0.0012***	3.3008
LFR	0.0003***	5.5282	-0.0008***	-10.0177
Dcons	0.0013***	5.6939	0.0005*	2.0153
PercRank	0.0013***	2.4976	-0.0007	-0.9877
Per	0.0015	1.4421	0.0010	0.7465
Cer	0.0162***	13.1519	-0.0055***	-3.7520
Fer	0.0007	1.3334	0.0039***	6.2497
$adj.\ R^2$	0.0077***		0.0076***	
F	44.52		37.71	
N	78672		66937	
a2 + a4 + a5 + a7 = 0	2.65		2.07	
a3 + a5 + a6 + a7 = 0	0.46		0.55	

Table 4: Market reaction, global banks and the US regulation

Table 4 reports the coefficients and the standard errors estimations of the following regression model:

$$CAR_{a,j,t} = a_0 + a_1 PostUS_t + a_2 GBank_{a,j,t} + a_{3,j} PostEC_t + a_4 Stake_{a,j,t} + a_5 PostUS_t \times GBank_{a,j,t} + a_6 PostEC_t \times Stake_{a,j,t} + a_7 PostUS_t \times Stake_{a,j,t} + b_1 LnNbAn_{j,t} + b_2 LFR_{a,j,t} + b_3 Dcons_{a,j,t} + b_4 PercRank_{a,j,t} + b_5 PER_{j,t} + b_6 CER_{j,t} + b_7 FER_{j,t} + \varepsilon_{a,j,t}$$

CAR is the cumulative abnormal return defined in Section 4.1. It measures the market reaction of analyst *a*'s recommendation on firm *j* released at date *t*. *PostUS* and *GBank* are two dummies. $PostUS_t = 1$ if $20/07/2002 < t < 23/12/2003$ and otherwise. $GBank_{a,t} = 1$ if analyst a works for a bank which as a US branch or subsidiary. The remaining variables are defined in Section 4.1. and Table 2. Coefficients significant at the 1%, and 5% levels are marked *** and * respectively. They are based on heteroscedastic consistent White t-statistics.

	Upgrades		Downgrades	
	Coef.	t-stat.	Coef.	t-stat
C	0.0035***	4.3839	-0.0046***	-4.6255
PostUS	-0.0002	-0.2838	0.0019*	2.4468
GBank	0.0029***	6.2116	-0.0035***	-5.6206
PostEC	0.0022***	4.2968	-0.0030***	-5.0404
Stake	-0.0038	-1.6103	0.0011	0.4322
PostUS× *GBank*	0.0021***	3.2041	-0.0014	-1.7400
PostEC× *GBank*	0.0042	0.9980	-0.0072	-1.6629
PostEC× *Stake*	0.0005	0.1282	0.0054	1.1752
LnNbAn	-0.0017***	-5.8728	0.0014***	3.8355
LFR	0.0003***	5.4443	-0.0008***	-9.8984
Dcons	0.0013***	5.9632	0.0006*	2.2478
PercRank	0.0013***	2.4878	-0.0006	-0.9483
PER	0.0014	1.3281	0.0011	0.8804
CER	0.0162***	13.2024	-0.0052***	-3.5710
FER	0.0007	1.3770	0.0038***	6.1855
$adj.R^2$	0.0095***		0.0089***	
F	54.00		44.14	
N	78672		66937	
a1 + a5 + a7 = 0	0.34		1.69	
a4 + a6 + a7 = 0	0.15		0.11	