Analysts' Advice on IPOs and Regulations: An Analysis of United States and European Markets

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Using recommendations and target prices on initial public offerings (IPOs), we examine the impact of regulations in the United States (US) and European Union (EU) markets that were aimed at curbing conflicts of interest in sell-side research. Conflicted analysts, proxied by whether their brokerage houses (henceforth brokers) acted as lead or co-managers in the IPO process, issued more optimistic recommendations in the US and EU markets in the pre-regulatory period. However, this extra optimism is absent after the adoption of regulations. A similar pattern emerges when examining the returns implied from US IPO target prices. Investors seem to capture the pattern, as they discount optimistic recommendations from conflicted analysts before, but not after, the new regulations. Using the staggered implementation of the new regulations—whereby US regulations take place strictly before any changes in the EU markets—we show that US brokers take the new modus operandi to Europe. In the time between the passage of US and EU regulations, US brokers in the lead role acted similarly in Europe to how they acted in the US. The EU brokers continued with their optimistic projections until the implementation of the local regulations.

Keywords: analysts, recommendations, target prices, conflicts of interest, regulations

INTRODUCTION

The impact of regulations, salutary or otherwise, on the behavior of affected agents is particularly interesting to financial economists. In this paper, we examine changes in the regulatory environment based on sell-side research that has occurred in the United States (US) and European Union (EU) markets since the turn of the century. These changes are due to considerable evidence that sell-side analysts faced significant conflicts of interest; analysts affiliated with institutions that offered investment banking (IB) services issued biased forecasts. The forecasts and recommendations from affiliated analysts for their investment banks' clients were overly optimistic with the intent to generate IB business. The primary

purpose of the new regulations was to sever ties between IB and the sell-side research departments of these institutions.

In the US, changes in the regulatory environment began in July 2002, when the Self-Regulatory Organizations (SROs), namely the National Association of Securities Dealers (NASD) and the New York Stock Exchange (NYSE) issued NASD Rule 2711 and amended NYSE Rule 472. The Global Settlement, reached between the regulatory agencies and several major financial institutions, followed soon after. The Global Settlement's provisions mirrored the SROs' new regulation and imposed penalties exceeding $1.4 billion on the affected institutions. Although small relative to heftier fines paid by errant institutions in recent years, this was the most significant known penalty at the time. In a similar change in the regulatory environment in the EU, the 2003 International Organization of Securities Commissions (IOSCO) report aimed at managing conflicts of interest in financial institutions. The first Directive of the IOSCO Report dealt with insider dealing and market manipulation—the Market Abuse Directive (MAD) of 2003. The second Markets in Financial Instruments Directive (MiFID) of 2004 aimed at preventing issuers from influencing the research produced by investment firms. They also banned analysts from disclosing information likely to influence prices selectively, before disclosing such information to all market participants.

The advent of these new regulations is a watershed event that has influenced how the sell-side research industry operates in both US and EU markets. This study aims to examine the collective impact of these new regulations on the prevalent practices of analysts exposed to conflicts of interest. We do so by examining analysts' advice for firms in the first year after their initial public offering (IPO). We measure whether the analyst's employer was part of the IPO syndicate as a proxy for conflicts of interest. We focus on the change in behavior of analysts working for the IPOs' lead underwriters or co-managers versus those not exposed to such conflicts of interest. The sample includes IPOs in the US market and in three EU markets—Germany, the United Kingdom, and France—which represent 70% of the EU IPO market.

An interesting aspect of US versus EU regulations is that they do not happen simultaneously. The US regulations take place strictly before any changes in the EU markets, allowing us to compare the behavior of US brokerage houses (henceforth brokers) operating in EU IPOs. We focus on the period following the new regulations in the US before the staggered implementation of MAD across various EU countries. This period offers an interesting window to examine the behavior of US brokers and their analysts in a foreign market with relatively relaxed restrictions compared to the stricter rules that were already established in the US.

We analyze the analysts' behavior through two of their main outputs: stock recommendations and target prices. While analysts produce other types of outputs, most notably earnings forecasts, concerns about conflicts of interest distorting stock recommendations were the focus of complaints that led to the enactment of the new regulations.[1] Like a recommendation, a target price is a clear and direct prediction about the path of the firm's stock price and provides essential input in formulating a stock recommendation (Bradshaw, 2002). It is thus possible that if conflicts of interest shape the advice in a stock recommendation, they would also shape the information that is the input for the advice related to target prices.

More is required to examine the output from the analysts. Several papers have suggested that investors can recognize the conflicted behavior of analysts and adequately account for it when interpreting the analysts' outputs. Accordingly, we examine the price impact of each output. Thus, we examine the behavior of conflicted analysts before and after the new regulations are in place. We then examine the market's response to such behavior in each period, and in each instance, the comparison is made to similar output from unaffiliated analysts.

We start our analysis by examining each market (US and EU) in isolation. We show that the regulations are instrumental in altering the behavior of conflicted analysts. Moreover, the behavior change pattern is similar between the US and EU markets. In the period before the new regulations were adopted, affiliated analysts—the ones whose brokers acted as lead underwriters or co-managers in the IPO process—issued more optimistic recommendations than unaffiliated analysts. We find that after the regulations are in place, the lead and co-managers are not more optimistic than their unaffiliated counterparts. We also find that investors discount optimistic recommendations less in the post-regulatory period. These findings suggest

that the credibility of recommendations has improved, and the market is less skeptical of the analysts' outputs in the presence of conflicts of interest.

Another valuable dimension of our study is that we find similar results for target prices. For each target price, we compute the expected return implied by the target price (ERTP). We show that ERTPs from conflicted analysts are no longer more optimistic than those of unaffiliated analysts in the period after the new regulations are in place. These findings are generally accurate regardless of whether we examine stand-alone target prices or those issued simultaneously with recommendations. These findings are also generally accurate for analysts in the lead or co-manager role.

Examining the behavior of investment banks in the unique interval following the new regulations in the US and before the staggered implementation of MAD across various EU countries, we found that analysts affiliated with US brokers towed the stricter US-based regulations and restrained themselves from being overly optimistic, even though the contemporaneous regulations in Europe did not compel them to do so. Not surprisingly, the EU brokers continued with their optimistic projections until the implementation of the local regulations.[2]

Our study makes several important contributions to the literature. To our knowledge, this is the first study to explore the association between the US and EU markets and show that brokers can change their practices based on the regulatory environment of their domicile rather than the market where they operate. Innovatively, we examine regulations' impact on target price production in the presence of conflicts of interest. Relative to extant studies, we examine a more comprehensive sample spanning the US and the EU markets across a much longer sample period. Our study extends evidence in Kadan, Madureira, Wang, and Zach (2009), Clarke, Khorana, Patel, and Rau (2011), Corwin, Larocque and Stegemoller (2017), examine recommendations in US data after the new US regulations are adopted and report evidence consistent with a reduction of differential optimism between affiliated and unaffiliated analysts. Likewise, Cliff (2007) reports that recommendations from analysts in the lead role are considered more credible following the adoption of regulations in the US. Analysis of EU markets is relatively sparse. Using data on IPOs in the German market, Bessler and Stanzel (2009) show that recommendations from analysts in the IPO lead role are biased. Conflicted analyst behavior is also reported for the UK markets by Carapeto and Gietzman (2011). Both examinations focus on data obtained before the adoption of new regulations. Dubois, Fresard and Dumontier (2014) compares pre- versus post-regulatory periods using recommendations in EU data and report a reduction in recommendation optimism from affiliated analysts. We extend the analysis by examining reactions to recommendations in different regulatory periods and target prices.

The next section provides institutional details on the new regulatory environments in the US and Europe. Section 3 describes the sample selection and the data. Section 4 presents the results. Section 5 concludes.

INSTITUTIONAL DETAILS AND RESEARCH QUESTIONS

One primary goal for both the US and EU regulatory reforms discussed in this paper was to reduce the influence of investment banks on the research outputs of analysts. The stock market crisis that began in the US in the fall of 2000 highlighted dysfunctions in the management of investment banks and financial conglomerates and, by extension, problems with recommendations made by their financial analysts. The issues were related to the level and management of conflicts of interest inside the financial institutions. Regulators put financial analysts under tight surveillance and launched several reforms. Requirements and guidelines were developed in the US and Europe to eliminate, manage, or disclose analysts' conflicts of interest.

. The primary purpose of the new regulations in the US was to sever the ties between investment banking and research departments. For example, the new rules restricted communications between investment banks and research departments, prohibited research compensation linked to investment banking deals, and restricted communications with the subject company to review research reports. An extensive discussion of these regulations appears in Kadan et al. (2009).

In a similar change in the regulatory environment in the EU, the first Directive dealt with insider dealing and market manipulation (Market Abuse Directive - MAD 2003) with the intent to guarantee the integrity of the European financial markets and increase investor confidence. The second was the Directive on Markets in Financial Instruments (MiFID) 2004. These directives aimed to prevent issuers from influencing the research produced by investment firms. They also banned analysts from disclosing information likely to influence prices to selective clients before disclosing such information to all market participants. The 2003 IOSCO report also aimed at managing conflicts of interest in financial institutions.

The EU Directives were the consequence of several measures undertaken in the EU (e.g., the Loi de Sécurité Financière in France, the Combined Code on Corporate Governance in the UK, and the *WpHG* Securities Trading Act in Germany). The prevention of conflicts of interest has been undertaken in the European member states since 2003, but national parliaments of EU member states transposed the rationale of the directive into national law differently and thus, adopted sanctions in the case of violation of the law diversely (Mayhew, 2006). In the context of MAD, Germany amended it in its national law on October 30th, 2004, UK on July 1st, 2005 and France on July 21st, 2005. The Markets in Financial Instruments Directive *(*MiFID*)* came into force on November 1st, *2*007, in all EU member states. An extensive discussion of these directives and their adoptions in the European markets appears in Dubois et al. (2014).

This study investigates the impact of these regulatory changes on analysts' advice, as expressed by their stock recommendations and target prices. We focus our analyses on IPO firms in their first year. While conflicts of interest may drive analysts' output for every kind of firm, recent IPOs provide a more uniform sample of firms to address our research questions. We proxy for conflicts of interest based on past underwriting relationships between the analyst's broker and the covered firm. This follows an extensive literature review showing that analysts working for brokers who have business relations with the covered firm are more biased (e.g., Lin and McNichols 1998; Michaely and Womack 1999; Krigman, Shaw, and Womack, 2001; Ljungqvist, Marston and Wilhelm, 2006; Kadan et al., 2009). Conflicts of interest linked to IPO underwriting provided many examples and anecdotal evidence of potential wrongdoing in sell-side research that ultimately led to the new regulations.[3] Given that we focus on IPOs as proxies for such conflicts, we identify whether the broker has acted as a lead underwriter or a co-manager during the IPO process.[4]

The essential argument leading to the new regulations is that conflicts of interest were distorting these outputs. We thus pursue two sets of research questions. First, we examine the claim—implicit in the production of the new regulatory framework—that conflicts of interest were shaping these outputs and how investors reacted to the distortion in the period before the new regulations. While many studies confirm this claim (e.g., Kadan et al., 2009; Dubois et al., 2014), we re-examine it to validate our research strategy, specific sample, and data. Second, and more importantly, we analyze how the regulations achieved their objective. For that, we question how conflicts of interest shape analysts' outputs and how investors consider the new regime after the new regulations were in place.

In particular, we question how analysts operated in each regulatory environment before the regulations were adopted (the pre-regulatory period) and after their enactment (the post-regulatory period). Following Kadan et al. (2009), we define the cutoff date to separate pre- and post-regulatory periods in the US as July 9th, 2002, the date the NASD Rule 2711 and the amended NYSE Rule 472 were adopted. For the EU markets, we consider the cutoff date as the date the MAD regulation became law in each country—that is, October 30th, 2004 for Germany, July 1st, 2005 for the United Kingdom, and July 21st, 2005 for France (Dubois et al., 2014).

DATA

We first identify IPOs during the 1994-2014 period from the Thomson Financial Securities Data Company (SDC) Common Stock Initial Public Offerings database. We use IPOs issued in the US market (companies trading in NYSE, Nasdaq, or Amex), United Kingdom, Germany, and France. We focus on these three EU markets to have a small number of countries that are representative of the IPO market in Europe. Over the sample period of this study, UK, German, and French markets compose an average of

70% of IPO activity in Europe (both in terms of capital raised and volume of IPOs). Consistent with prior studies, we eliminate IPOs classified as ADRs, REITs, closed-end funds, and offerings with a file range midpoint of less than $8. We also eliminate financial firms. For each sample IPO, we collect recommendations and target prices issued during the first year after the IPO date. We consider only target prices with a 12-month horizon. We obtain recommendations and target prices data from the Institutional Brokers' Estimate System (IBES) historical database.

For each IPO, we collect the names of the underwriters and their specific role—lead and co-managers—from SDC. We hand-match the identities of these underwriters to the broker names in IBES. In this matching, we consider mergers involving financial institutions during our sample period (see, for example, Cooney et al., 2015). We use the match to construct proxies for equity underwriting relationships between an analyst and the IPO firm. More specifically, for each IPO, we identify the recommendations by analysts employed by either its lead underwriter(s) or the co-manager(s). We collect stock price data from the Center for Research in Security Prices (CRSP) for US IPOs and Datastream for EU IPOs. Finally, we obtain yearly data for all-star analysts from *Institutional Investor* magazine.

Table 1 reports descriptive statistics for the sample of IPOs and analysts' outputs. Panel A shows statistics for US IPOs. The sample covers 3,732 IPOs having at least one recommendation issued in the first year following the IPO date. Such IPOs have an average (median) number of 7.34 (6) recommendations issued by an average (median) number of 5.06 (4) brokers. The average (median) number of lead and co-managers is 1.4 (1) and 2.06 (2), respectively. About two-thirds of the IPOs occur in the pre-regulatory period, and IPOs in the post-regulatory period have a higher number of recommendations, brokers, leads, and co-managers. Given that data on target prices for US firms is only available after 1999, the sample contains only 1,918 IPOs with at least one target price issued in the first year following the IPO date. For these IPOs, the average (median) number of target prices is 12.02 (9). The later availability of data also implies that most of the IPOs with target prices occur in the post-regulatory period.

Summary statistics on EU IPOs appear in Panel B. There are 1,278 IPOs with at least one recommendation issued in the first year, and about two-thirds of them happen in the pre-regulatory period. EU IPOs tend to be similar to US IPOs in terms of number of lead managers, but have a slightly lower number of co-managers and receive fewer recommendations. Data on target prices for EU firms only start in 2002, which explains the relatively low number (only 86) of IPOs with target prices in the pre-regulatory period, compared to 401 for the post-regulatory period. EU IPOs receive fewer target prices compared to US offerings.

TABLE 1
SAMPLE

Panel A: US IPOs

	All					Pre-Regulatory					Post-Regulatory				
	N	Mean	Median	10th	90th	N	Mean	Median	10th	90th	N	Mean	Median	10th	90th
IPOs with at least one recommendation in the first year	3,732					2,631					1,101				
# brokers issuing recommendations per IPO		5.06	4	2	9		4.25	3	1	8		6.98	6	3	12
# recommendations per IPO		7.34	6	2	14		6.20	5	2	12		10.05	8	3	18
# lead managers per IPO		1.40	1	1	2		1.07	1	1	1		2.19	2	1	4
# comanagers per IPO		2.06	2	1	4		1.76	2	1	3		2.80	2	0	5
IPOs with at least one target price in the first year	1,918					833					1,085				
# brokers issuing target prices per IPO		4.88	4	1	9		3.87	3	1	7		5.67	5	2	10
# target prices per IPO		12.02	9	2	25		7.21	5	1	15		15.72	11	3	31
# lead managers per IPO		1.76	1	1	3		1.18	1	1	2		2.21	2	1	4
# comanagers per IPO		2.68	2	1	4		2.48	2	1	4		2.83	2	1	5

Panel B: European IPOs

	All					Pre-Regulatory					Post-Regulatory				
	N	Mean	Median	10th	90th	N	Mean	Median	10th	90th	N	Mean	Median	10th	90th
IPOs with at least one recommendation in the first year															
# brokers issuing recommendations for the IPO	1,278	3.85	2	1	9	818	3.85	2	1	9	460	3.85	2	1	11
# recommendations per IPO		5.91	3	1	16		5.86	3	1	14		5.99	3	1	16
# lead managers		1.27	1	1	2		1.12	1	1	2		1.54	1	1	3
# comanagers		1.32	0	0	3		1.60	1	0	4		0.82	0	0	2
IPOs with at least one target price in the first year	490					86					401				
# brokers issuing target prices per IPO		3.30	2	1	8		2.38	1	1	5		3.49	2	1	9
# target prices per IPO		8.71	4	1	24		5.47	2	1	14		9.39	4	1	26
# lead managers per IPO		1.54	1	1	3		1.27	1	1	2		1.60	1	1	3
# comanagers per IPO		0.92	0	0	3		0.86	0	0	3		0.93	0	0	3

This table presents summary statistics on the sample of recommendations and target prices used in the paper. These refer to recommendations and target prices issued for IPO firms in the first 365 days after the IPO date. The initial sample of US IPOs consists of IPOs issued from 1994–2014 that are listed on CRSP/Compustat/AMEX after excluding units, REITs, and closed-end funds and after removing financial firms. Of those, 3,374 (1,278) have received at least one recommendation (target price) in the first year following the IPO date. For European IPOs, 1,278 (490) have received at least one recommendation (target price) in the first year following the IPO date. The sample is further broken between the pre- and post-regulatory period. Pre- (post-)regulatory period refers to observations prior to (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France.

RESULTS

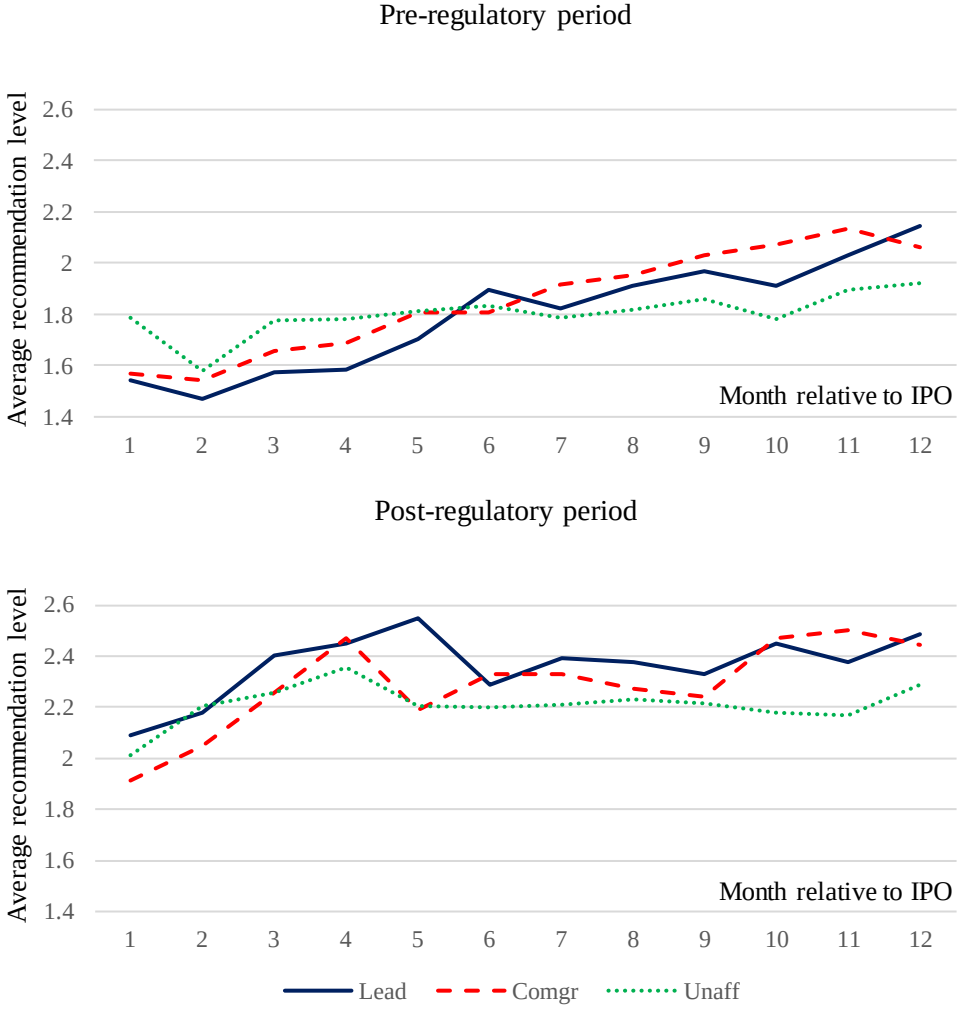
We analyze the behavior of analysts through two outputs: stock recommendations and target prices. We start with analyzing stock recommendations and then turn to target prices. We then examine the relative effectiveness of the Global Settlement compared to the other regulations.

Stock Recommendations

Figure 1 provides a first glance at how recommendations relate to affiliation. The figure reports the average level of recommendations categorized by the timing of the recommendation (number of months since the IPO date) and whether the recommendation was issued by an analyst working for a broker who had served as lead, co-manager, or neither (unaffiliated) for the IPO. The recommendation level is based on the mapping (1=strong buy, 2=buy, 3=hold, 4=sell, and 5=strong sell). Figures are generated separately for the US and EU IPOs, and for each group, we split the sample between the pre- and post-regulatory periods.

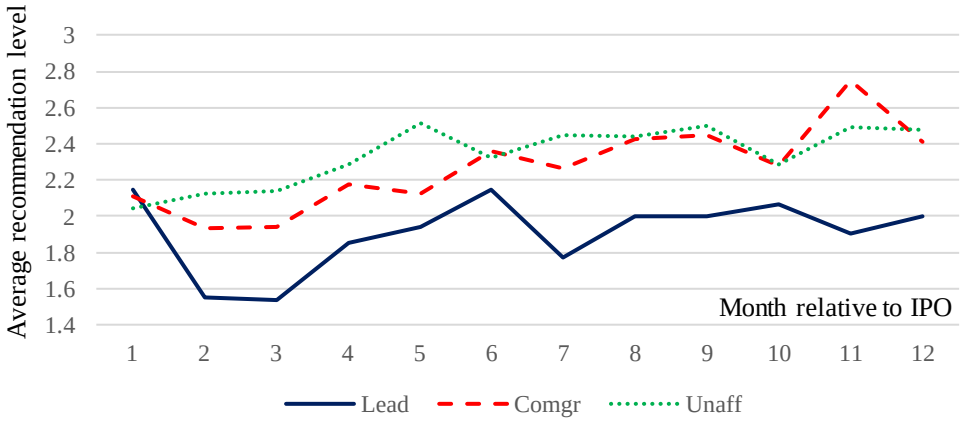
FIGURE 1
AVERAGE NEW RECOMMENDATION PER MONTH RELATIVE TO IPO

Panel A: US IPOs

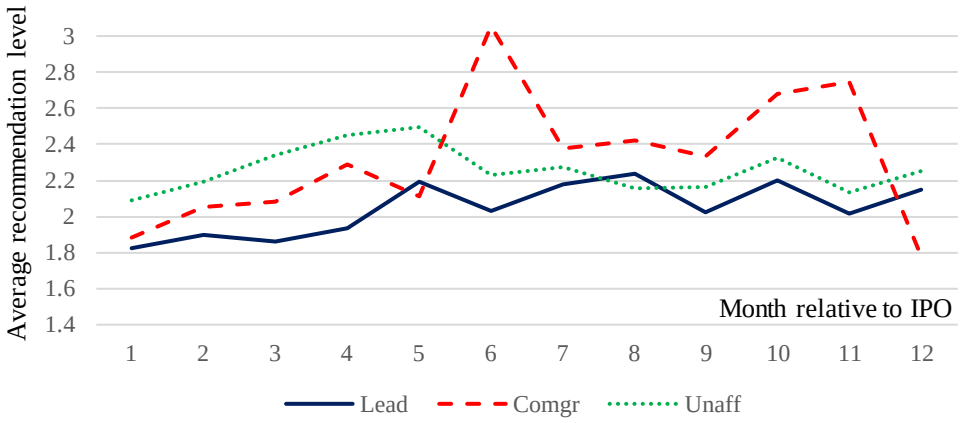


Panel B: EU IPOs

Pre-regulatory period



Post-regulatory period



This figure presents the average level of recommendations categorized by the timing (difference in months) of the recommendation date relative to the IPO date and by whether the recommendation was issued by a brokerage that had served as lead, co-manager, or neither (unaffiliated) for that IPO. Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. The pre-regulatory (post-regulatory) period refers to recommendations issued before (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France.

Panel A, based on US data, shows that in the pre-regulatory period, recommendations from lead analysts were more optimistic (lower recommendation levels) than those from co-managers and unaffiliated brokers. This pattern persists for the first few months after the IPO but reverts in the later months, where recommendations from unaffiliated brokers become more optimistic compared to those from lead and co-managers. A distinct pattern emerges in the post-regulatory period: lead analysts are more pessimistic than the other two groups, and co-managers are more pessimistic than unaffiliated analysts.

Panel B of Figure 1 repeats the analysis for EU IPOs. A pattern similar to US data appears in the pre-regulatory period, with lead analysts more optimistic than co-managers and co-managers more optimistic than unaffiliated analysts for the majority of the sample. Also noticeable is the more significant gap in

average recommendation levels between lead and co-managers for the EU IPOs compared to the US data. In the post-regulatory period, it is evident that lead analysts are more optimistic than the other types of brokers.

However, because these patterns are univariate and lack formal hypotheses tests, we examined how the conflict of interest level relates to the optimism reflected by new recommendations in a regression context. We build a regression model having *Rec* equal to the recommendation level (based on the mapping 1=strong buy, 2=buy, 3=hold, 4= sell, and 5=strong sell) as the dependent variable. The main explanatory variables are dummies for whether the recommendation issuer was a lead manager (*Lead*) or a co-manager (*Comgr*). We adopt an IPO fixed effects model. The fixed effects specification dramatically simplifies the model, as any IPO characteristic (deemed fixed throughout the first year following the IPO), for example, IPO underpricing, does not need to be incorporated in the model given that its influence on the dependent variable will be absorbed by the fixed effects.

We expand the model to include some broker and analysts' characteristics that have been shown to affect optimism (e.g., Corwin, Larocque, and Stegemoller 2017). Broker size is the number of firms followed by the broker in the 365 days preceding the recommendation issuance. Seniority measures the number of years since the first reference of the analyst in the IBES database. We also measure the analyst coverage as the number of firms that received reports from that analyst in the previous quarter. The regression model employs log-transformed versions of these three variables. Finally, we include a dummy equal to one if the analyst was voted an "all-star" analyst by *Institutional Investors* magazine in the previous years. The complete model becomes:

$$Rec_{i,f,t}=\beta_0+\beta_1.Lead_{i,f,t}+\beta_2.Comgr_{i,f,t}+\gamma.Controls+\alpha_f+\varepsilon_{i,f,t} \quad (1)$$

A data point in this regression is a tuple (analyst *i*, firm *f*, and date *t*) where *i* identifies the analyst issuing the recommendation, *f* identifies an IPO firm, and *t* lists the recommendation's announcement date. We run regressions for subsamples based on pre- and post-regulatory periods. We also break down the sample depending on whether new recommendations were issued in the first 90 days following the IPO date or after.

TABLE 2
REGRESSION RESULTS ON OPTIMISM IN RECOMMENDATIONS

Panel A: US IPOs

	All		First 90 days		Beyond 90 days	
	(1)	(2)	(3)	(4)	(5)	(6)
	Pre	Post	Pre	Post	Pre	Post
Lead	-0.2381***	0.0524**	-0.1883***	0.0609	-0.1633***	0.1065***
	[-12.405]	[2.062]	[-7.044]	[1.585]	[-5.204]	[2.663]
Comgr	-0.1621***	-0.0372	-0.1473***	-0.0716**	-0.0813***	0.0853**
	[-10.106]	[-1.567]	[-6.353]	[-2.028]	[-3.212]	[2.146]
Lbrokersize	0.0603***	0.0438***	0.0501***	0.0472***	0.0701***	0.0389***
	[7.982]	[4.172]	[4.157]	[2.977]	[6.909]	[2.598]
Lseniority	0.0015	-0.0926***	0.0043	-0.1290***	-0.0198	-0.0369*
	[0.112]	[-7.477]	[0.200]	[-7.362]	[-1.071]	[-1.917]
Lnfollow	0.0117	0.0648***	0.0142	0.1058***	0.0118	0.0572***
	[1.251]	[4.766]	[0.955]	[5.085]	[0.936]	[2.792]
Allstar	0.0418*	0.0793**	0.0258	0.0875*	0.0715**	0.0547
	[1.948]	[2.060]	[0.937]	[1.779]	[2.144]	[0.859]
Constant	1.4731***	1.9365***	1.3656***	1.7857***	1.5017***	1.9686***
	[34.055]	[33.280]	[19.121]	[19.433]	[26.184]	[23.370]

IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.0769	0.144	0.0911	0.184	0.140	0.140
Observations	16,312	11,065	6,510	5,464	9,802	5,601

Panel B: EU IPOs

	All		First 90 days		Beyond 90 days	
	(1) Pre	(2) Post	(3) Pre	(4) Post	(5) Pre	(6) Post
Lead	-0.4749***	-0.0352	-0.6886***	0.0219	-0.4144***	0.0356
	[-8.093]	[-0.644]	[-4.955]	[0.261]	[-6.141]	[0.437]
Comgr	-0.1875***	-0.0166	-0.3622***	-0.0697	-0.1412**	0.0999
	[-3.170]	[-0.232]	[-2.883]	[-0.652]	[-2.034]	[1.001]
Lbrokersize	0.0100	0.0353*	0.0360	0.0335	0.0002	0.0536**
	[0.627]	[1.802]	[0.894]	[1.086]	[0.009]	[1.989]
Lseniority	-0.0720**	-0.0523*	-0.0361	-0.0955*	-0.0825**	-0.0184
	[-1.982]	[-1.778]	[-0.438]	[-1.880]	[-1.981]	[-0.473]
Lnfollow	0.0108	0.0647**	-0.0111	0.0474	0.0057	0.0323
	[0.569]	[1.961]	[-0.250]	[0.783]	[0.261]	[0.757]
Constant	2.3479***	1.9297***	2.0474***	1.8843***	2.4645***	1.8913***
	[22.806]	[15.258]	[7.882]	[8.661]	[21.136]	[11.321]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.130	0.141	0.0913	0.161	0.145	0.133
Observations	4,564	2,984	918	1,007	3,646	1,977

This table presents the results of fixed-effects regressions explaining the recommendation level. The observations are recommendations issued for IPOs 365 days following the IPO date. The sample of IPOs is defined in Table 1. The dependent variable is the recommendation level, where the level is 1 for strong buy, 2 for buy, 3 for hold, 4 for sell, and 5 for strong sell. *Lead* (*Comgr*) is a dummy variable equal to 1 if the broker issuing the recommendation was a lead manager (co-manager) in the IPO process. *Lbrokersize* is the natural logarithm of brokerage size, where brokerage size denotes the number of recommendations issued by the broker for all public firms in the 365 days preceding the recommendation announcement date. *Lseniority* is the natural logarithm of the number of years since the first reference to the analyst in the IBES database. *Lnfollow* is the natural logarithm of the number of firms receiving reports from that analyst in the previous quarter. *Allstar* is a dummy equal to one if the analyst has been voted an all-star analyst by Institutional Investors magazine in the previous years. Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. There are six regression models per panel: models (1) and (2) use all available recommendations; models (3) and (4) use recommendations issued in the first 90 days following the IPO date, and models (5) and (6) use recommendations issued at least 90 days apart from the IPO date. The sample is further broken between the pre-and post-regulatory periods. Regressions using the pre- (post-)regulatory period —identified by the term *Pre* (*Post*)—refer to recommendations issued prior to (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from United Kingdom, and July 20th, 2005 for IPOs from France. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Panel A of Table 2 shows regressions based on US IPO data. Since *Lead* and *Comgr* identify lead and co-managers, the baseline level is to have both dummies equal to zero—thus identifying a recommendation

from an unaffiliated broker. The results suggest that before the new regulatory environment is in place, lead managers and co-managers are significantly more optimistic than unaffiliated brokers for the recommendations issued within the first year following the IPOs. The coefficients for *Lead* (-0.24) and *Comgr* (-0.16) are negative and statistically significant at the 1% level. The magnitude of the coefficients implies an increase of one recommendation level (e.g., from buy to strong buy) by one in four recommendations from lead brokers and by one in six from co-managers. In the post-regulatory period, a different pattern emerges. Lead managers are significantly more pessimistic than unaffiliated brokers: the coefficient of 0.05 is statistically significant at the 5% level. Co-managers, on the other hand, do not behave differently from unaffiliated brokers.

As discussed in Bradley, Jordan, and Ritter (2006), recommendations are different depending on the timing of the recommendations. Models (3) to (6) separate the recommendations based on the timing of the recommendation issuance—either in the first 90 days following the IPO (models 3 and 4) or after the first 90 days (models 5 and 6). From models 3 and 4, we find that lead managers shift their behavior with respect to recommendations issued in the first 90 days following the IPO date. They are more optimistic than unaffiliated brokers in the pre-regulatory period, but they act similarly to those in the post-regulatory period. Co-managers do not change their behavior for these recommendations. They are more optimistic than unaffiliated brokers in the pre- and post-regulatory periods (coefficients of –0.15 and –0.07 in each respective period, statistically significant at conventional levels). As for the recommendations issued after the first 90 days following the IPO date, the results from models (5) and (6) suggest that lead and co-managers behave similarly. Both types of affiliation are associated with more optimistic recommendations in the pre-regulatory period and less optimistic recommendations in the post-regulatory period.

Control variables reveal that the bigger the broker, the less optimistic it is. We also observe how analysts' characteristics affect optimism between pre- and post-regulatory periods. We find that the greater the analyst's experience (as measured by the number of years since the analyst first appeared in IBES), the more optimistic their recommendations in the post-regulatory period are. This also applies to the breadth of analyst coverage: the more firms an analyst follows, the less optimistic their recommendations are, but only in the post-regulatory period. Finally, all-star analysts are less optimistic, though results are not robust to all specifications.

Panel B of Table 2 shows the regressions on the determinants of recommendation levels for EU IPOs. Results are qualitatively similar to the patterns observed in the US data. We find that EU regulations were effective at curbing conflicts of interest in sell-side research. Both lead and co-managers were more optimistic than unaffiliated brokers in the pre-regulatory period which disappears with the implementation of the EU regulations. Results are similar whether one examines early (up to 90 days following the IPO date) or late (after the first 90 days following the IPO date) recommendations. As for the magnitude of the effect, the coefficient of – 0.47 on the lead dummy in model (1) is equivalent to an increase of one recommendation level (e.g., from buy to strong buy) by one in two recommendations from lead brokers during the pre-regulatory period. The effect is more negligible for co-managers, with the estimated coefficient of –0.19 implying an average increase of one recommendation level for every five recommendations from co-managers.

Collectively, Panel A and Panel B reveal a gap in excess optimism by lead brokers when comparing their recommendations issued for US IPOs compared to EU IPOs. In the pre-regulatory period, lead brokers were more optimistic compared to unaffiliated brokers when they covered EU IPOs (coefficient of –0.48) compared to US IPOs (coefficient of –0.24).[5] This differential excess optimism is present irrespective of the timing of the recommendation issuance. We do not see a similar gap for the co-manager role. The coefficient for a co-manager in the pre-regulatory period is not significantly different between US and EU models. Finally, no differences in optimism for lead brokers or comanagers towards US IPOs vs EU IPOs appear when examining the post-regulatory period.[6]

An interesting aspect of the US and EU regulations is that they are not implemented simultaneously, with US regulations occurring strictly before any changes in the EU markets. Thus, when looking at the recommendations for EU IPOs, rather than a pre- vs post-regulatory period, there are three distinct periods. The first, to which we refer as "pre-US," identifies recommendations issued before the new US regulatory

framework was in place. The second period, "post-US-pre-EU," identifies recommendations issued after implementing new US regulations but before the relevant EU regulations were adopted. Finally, the third period, "post-EU," identifies recommendations issued after the relevant EU's new regulatory environment was in place.

We examine how US brokers behave in EU IPOs during these three periods. The most interesting period is the "post-US-pre-EU." If US brokers are incentivized by the regulatory framework of the markets where they operate, their behavior in this period should be similar to the behavior in the "pre-US" period as no EU regulation had been altered by then. Alternatively, US brokers may replicate their newly adopted practices in the US market to the EU market.[7] Whether US brokers operate in this interim period according to the new US practices or the old EU practices is an empirical question to which we turn next.

Table 3 repeats the analysis of determinants of recommendation levels for EU IPOs in each of these three subsamples. The model interacts the affiliation variables with identifiers of the domicile of the broker (either US or EU). Results from model (1), using data for the "pre-US" period, indicate that prior to any regulation being altered, both US and EU brokers in a lead role are relatively more optimistic than unaffiliated brokers. Model (3) analyzes the other extreme, when all regulations are in place and excess optimism is no longer present (at a significance level of 10%) for either broker. In the interim period, when the US but not the EU regulations are in place, US brokers in the lead role are no more optimistic than unaffiliated brokers. The coefficient on the interaction term between *Lead* and US domicile is no longer significant, suggesting that US brokers started abiding by their home-based regulations and restrained themselves from being overly optimistic concerning EU IPOs, even though the contemporaneous existing regulations in the EU did not compel them to do so. On the other hand, the interaction between *Lead* and EU domicile is still negative and significant, indicating that EU brokers continued with their over-optimism until the adoption of the new EU regulatory environment.

TABLE 3
US BROKERS AND RECOMMENDATIONS ON EUROPEAN IPOS

	(1) Pre-US	(2) Post-US, Pre-EU	(3) Post-EU
US_Lead	-0.7260***	-0.2452	-0.0391
	[-5.421]	[-1.198]	[-0.422]
EU_Lead	-0.4855***	-0.5962***	-0.1152*
	[-6.651]	[-3.391]	[-1.739]
US_Comgr	-0.1658	-0.1734	-0.1214
	[-0.881]	[-0.344]	[-0.546]
EU_Comgr	-0.2131***	-0.3608**	-0.0388
	[-3.188]	[-2.020]	[-0.511]
US_Unaff	-0.3385***	-0.0409	-0.1576**
	[-4.571]	[-0.329]	[-2.447]
Lbrokersize	0.0066	0.1298**	0.0532**
	[0.386]	[2.418]	[2.495]
Lseniority	-0.0559	-0.1193*	-0.0501*
	[-1.316]	[-1.717]	[-1.693]
Lnfollow	0.0023	0.0878	0.0682**
	[0.109]	[1.457]	[2.027]

Constant	2.3911*** [21.900]	1.6554*** [4.932]	1.8603*** [14.015]
IPO Fixed Effects?	Yes	Yes	Yes
Adj-R^2	0.136	0.128	0.141
Observations	4,014	536	2,961

This table presents the results of fixed-effects regressions explaining the recommendation level. The observations are recommendations issued for European IPOs 365 days following the IPO date. The sample of European IPOs is defined in Table 1. The dependent variable is the recommendation level, where the level is 1 for strong buy, 2 for buy, 3 for hold, 4 for sell, and 5 for strong sell. *US_Lead* (*EU_Lead*) is a dummy variable equal to 1 if the broker issuing the recommendation was a lead manager in the IPO process *and* the broker is domiciled in US (European) territory. *US_Comgr* (*EU_Comgr*) is a dummy variable equal to 1 if the broker issuing the recommendation was a co-manager in the IPO process *and* the broker is domiciled in US (European) territory. *US_Unaff* is a dummy variable equal to 1 if the broker issuing the recommendation was neither a lead manager nor a co-manager in the IPO process *and* the broker is domiciled in US territory. *Lbrokersize* is the natural logarithm of brokerage size, where brokerage size denotes the number of recommendations issued by the broker for all public firms in the 365 days preceding the recommendation announcement date. *Lseniority* is the natural logarithm of the number of years since the first reference to the analyst in the IBES database. *Lnfollow* is the natural logarithm of the number of firms receiving reports from that analyst in the previous quarter. Model (1) uses recommendations from the US pre-regulatory period, that is, those issued prior to July 9th, 2002. Model (2) uses recommendations from the period after regulations were enacted in the US but not in European territories: that is, those issued between July 9th, 2002 and October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France. Model (3) uses recommendations from the period after regulations were enacted in European territories: that is, recommendations issued after October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from United Kingdom, and July 20th, 2005 for IPOs from France. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Market Reactions to Recommendations

We find significant differences in the optimism in recommendations between affiliated and unaffiliated analysts in the pre-regulatory period and no such variance in the post-regulatory period. We examine how investors respond to that pattern. For example, if an analyst behaves differently depending on which role they are in and investors see through this pattern, then investors could discount the overoptimistic advice from this analyst. An extensive literature review has explored this possibility, particularly for observations in the pre-regulatory period in the US market.[8] Analysis of market reactions to recommendations in post-regulatory periods is more limited, with Kadan et al. (2009) examining a short period (up to December 2004) following the adoption of US regulations. In this section, we expand the analysis of US data across the time dimension and include an analysis of the post-regulatory environment in EU markets.

Like Bradley et al. (2006), we examine the market reaction to a recommendation measured by cumulative market-adjusted returns. As a proxy for market return, we rely on the most general index return in each country included in the analysis. Specifically, we define market reaction, *Car_0_2*, as the cumulative market-adjusted return over days 0 to +2, where day 0 is the recommendation announcement date. Data on market reactions are winsorized at the 0.5% and 99.5% percentiles of the measure.

Table 4 presents summary statistics on market reactions to recommendations. For the analysis of US data in Panel A, we observe a decrease in the number of optimistic recommendations and an increase in pessimistic recommendations from the pre- to post-regulatory period. Also noticeable is the low number of sells and strong sells. In the pre-regulatory period, hold recommendations are perceived pessimistically by the market, suggested by the significantly negative market reactions following such recommendations. Indeed, reactions are negative whatever the role of the broker (–6% for leads, –4% for co-managers, and –2% for unaffiliated). We also observe the discounting of optimistic recommendations in the pre-regulatory

period with negative reactions toward buys from lead and co-managers of -1.3% and -1.2%, respectively (both statistically significant at the 1% level), and no reaction toward strong buys from lead brokers. Similar patterns emerge for EU data, as shown in Panel B. There is evidence showing recommendations in the pre-regulatory period are discounted, with negative reactions toward buys from brokers in the lead and co-manager roles. In the post-regulatory period, reactions toward buys and strong buys from brokers in the lead role are significantly positive. As in the US market, hold recommendations are pessimistic in the pre-regulatory period, and strictly pessimistic recommendations are rare.

TABLE 4
SUMMARY STATISTICS ON REACTIONS TO RECOMMENDATIONS

Panel A: US IPOs

		Lead		Comanager		Unaffiliated	
		Pre	Post	Pre	Post	Pre	Post
n		1,496	610	2,069	792	3,015	1,428
Mean	Strong	0.0040	0.0216	0.0079	0.0187	0.0156	0.0205
Median	buy	-0.0003	0.0150	0.0041	0.0138	0.0098	0.0142
t		1.65	7.76	3.52	7.38	9.20	11.44
n		1,389	1,507	2,183	1,095	3,391	1,400
Mean	Buy	-0.0134	0.0156	-0.0122	0.0129	-0.0022	0.0167
Median		-0.0092	0.0090	-0.0094	0.0067	-0.0023	0.0128
t		-4.75	8.59	-5.57	6.32	-1.25	9.22
n		338	1,170	610	891	1,207	1,573
Mean	Hold	-0.0640	-0.0250	-0.0590	-0.0322	-0.0301	-0.0166
Median		-0.0564	-0.0167	-0.0394	-0.0197	-0.0192	-0.0090
t		-9.52	-10.11	-11.70	-10.43	-9.75	-8.24
n		7	54	17	39	52	153
Mean	Sell	-0.0281	-0.0613	-0.0514	-0.0500	-0.0699	-0.0500
Median		-0.0174	-0.0532	-0.0179	-0.0319	-0.0451	-0.0480
t		-0.76	-4.82	-1.61	-3.17	-4.87	-7.35
n		17	9	14	52	127	.
Mean	Strong	-0.0666	-0.0625	-0.0698	-0.0349	-0.0390	.
Median	Sell	-0.0608	-0.0567	-0.0485	-0.0182	-0.0365	.
t		-2.26	-1.34	-2.73	-2.14	-4.77	.

Panel B: EU IPOs

		Lead		Comanager		Unaffiliated	
		Pre	Post	Pre	Post	Pre	Post
n		193	238	108	81	645	575
Mean	Strong	-0.0026	0.0088	0.0091	-0.0083	-0.0323	-0.0045
Median	buy	-0.0007	0.0029	0.0023	0.0033	0.0021	0.0059
t		-0.49	2.65	1.58	-1.08	-1.66	-0.35
n		188	337	109	81	940	472
Mean	Buy	-0.1331	0.0055	-0.0149	0.0030	-0.0243	0.0072
Median		-0.0048	0.0044	-0.0113	0.0019	-0.0011	0.0044
t		-2.02	2.11	-2.40	0.49	-1.78	2.37
n		121	196	144	91	796	474
Mean	Hold	-0.0157	-0.0569	-0.0078	-0.0044	-0.0316	-0.0266
Median		-0.0074	-0.0091	-0.0079	-0.0003	-0.0068	-0.0056
t		-2.52	-1.57	-1.70	-0.62	-2.50	-1.77
n		9	19	14	16	280	150
Mean	Sell	-0.0071	-0.0706	-0.0159	-0.0113	-0.0222	-0.0168
Median		-0.0086	-0.0303	-0.0060	-0.0047	-0.0107	-0.0140
t		-0.37	-2.59	-0.89	-1.39	-4.42	-3.36
n		3	5	16	7	136	66
Mean	Strong	-0.0268	-0.1650	-0.0508	-0.0621	-0.0655	-0.0215
Median	Sell	-0.0254	-0.0936	-0.0377	0.0085	-0.0062	-0.0062
t		-1.34	-2.39	-2.67	-0.86	-1.19	-2.54

This table presents summary statistics on market reactions to recommendations. The observations are recommendations issued for IPOs 365 days following the IPO date. The sample of IPOs is defined in Table 1. The variable of analysis is the [0,+2]-day cumulative market-adjusted return, where day 0 is the recommendation date. Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. Statistics are generated separately by breaking down the sample according to: (1) the recommendation type (strong buy, buy, hold, sell, or strong sell); (2) the type of broker issuing the recommendation (lead, co-manager, or unaffiliated); and (3) whether the recommendation is issued in the pre- or post-regulatory periods. *Lead* (*Comgr*) identifies that the broker issuing the recommendation was a lead manager (co-manager) in the IPO process. *Unaffiliated* identifies that the broker was neither lead nor co-manager in the IPO process. *Pre* (*Post*) refers to recommendations issued before (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France.

We re-examine the univariate inferences in a multivariate regression. Given the different meanings of each recommendation, we run regressions separately for strong buys (*Rec*=1), buys (*Rec*=2), holds (*Rec*=3), sells and strong sells (*Rec* > 3), and separately for pre- and post-regulatory data. For example, for the sample of strong buys in the pre-regulatory period, we estimate the model to be:

$$Car\_0\_2_{i,f,t}=\beta_0+\beta_1.Lead_{i,f,t}+\beta_2.Comgr_{i,f,t}+\gamma.Controls+\alpha_f+\varepsilon_{i,f,t} \quad (2)$$

where α_f represents the IPO fixed effects. The control variables include those used in model (1) plus a few more determinants of market reactions. It is possible that reactions attributed to recommendations might in fact, come from information in simultaneously released earnings (Corwin et al., 2017). We account for this possibility by adding an *Earnings* variable, measuring whether a recommendation appears with the firm's regular earnings announcement. Market reactions can also be influenced by the IPO's recent performance and by the timing of the recommendation relative to the end of the quiet period (Bradley et al., 2006). To

address that possibility, we add two additional control variables. *PastPerf* measures the cumulative market-adjusted return measured over the (–7, –3)-day period relative to the recommendation date, and *QP* is a dummy variable equal to one if the recommendation is issued within the 5-days period immediately following the end of the quiet period. Regression results are listed in Table 5.

Model (1) of Panel A shows results explaining reactions to strong buys issued to the US IPOs in the pre-regulatory period. There is evidence of discounting by lead and co-managers. Controlling for firm and analyst characteristics, reactions to strong buys are 1.41% and 0.82% lower for recommendations from analysts in a lead and co-manager role, respectively compared to recommendations from unaffiliated brokers. Model (2), based on post-regulatory data, reveals no evidence of discounting of affiliated recommendations. Models (3) and (4) repeat the analysis for buy recommendations. Again, we find discounting of recommendations from analysts in the lead (significant at 10%) and co-manager (significant at 5%) roles in the pre-regulatory period. However, the effect disappears in the post-regulatory period. For hold recommendations, models (5) and (6) imply discounting in the post- but not in the pre-regulatory period. This is consistent with investors interpreting hold recommendations from affiliated analysts in the post-regulatory period as more pessimistic than unaffiliated analysts, perhaps still indicating a reluctance to sells and strong sells in that period.

Panel B replicates the analysis based on EU IPOs. Evidence of discounting is less pronounced compared to US IPOs. The only noticeable patterns are that reactions to strong buys from analysts in the lead role become more relevant post-regulations, and the discounting of buys from analysts in the lead role (and to some extent in the co-manager role) before the regulations disappear in the post-regulatory period.

In sum, market reactions are consistent, with investors at least partially perceiving the changes in affiliated analysts' tendency to be overly optimistic. In the pre-regulatory period, when excess optimism from affiliated analysts was typical, discounting their recommendations was common. In the post-regulatory period, when evidence of excess optimism subsides, so does the evidence of discounting recommendations.

TABLE 5
REGRESSION RESULTS ON REACTIONS TO RECOMMENDATIONS

Panel A: US IPOs

	(1) Rec=1, Pre	(2) Rec=1, Post	(3) Rec=2, Pre	(4) Rec=2,Post	(5) Rec=3, Pre	(6) Rec=3, Post	(7) Rec>3, Pre	(8) Rec>3, Post
Lead	-0.0141***	0.0040	-0.0095*	0.0010	-0.0131	-0.0119**	-0.1206	-0.0005
	[-3.018]	[0.855]	[-1.913]	[0.236]	[-0.948]	[-2.455]	[-1.138]	[-0.020]
Comgr	-0.0082**	0.0017	-0.0088**	-0.0042	-0.0099	-0.0149***	-0.1230	0.0308
	[-2.058]	[0.432]	[-2.132]	[-1.120]	[-0.942]	[-3.210]	[-1.342]	[1.023]
Lbrokersize	0.0025	0.0007	0.0004	0.0027	-0.0173***	0.0004	-0.0894	-0.0138**
	[1.397]	[0.389]	[0.227]	[1.612]	[-3.345]	[0.202]	[-1.623]	[-2.293]
Lseniority	0.0020	-0.0009	0.0029	0.0031*	0.0018	-0.0032	0.1016	0.0049
	[0.608]	[-0.407]	[0.843]	[1.721]	[0.218]	[-1.420]	[1.411]	[0.419]
Lnfollow	-0.0046**	-0.0021	-0.0006	-0.0031	0.0045	0.0019	0.0005	0.0125
	[-2.117]	[-0.848]	[-0.243]	[-1.578]	[0.790]	[0.794]	[0.013]	[1.119]
Allstar	0.0146***	-0.0161*	-0.0036	0.0068	-0.0238*	0.0040	0.1359	0.0628*
	[2.742]	[-1.797]	[-0.706]	[1.230]	[-1.763]	[0.633]	[0.989]	[1.963]
Earnings	-0.0083	0.0253***	-0.0154**	-0.0047	-0.0629***	-0.0771***	-0.0319	-0.0450**
	[-1.373]	[3.801]	[-2.564]	[-0.855]	[-4.926]	[-13.143]	[-0.475]	[-2.298]
Pastperf	-0.2006***	-0.4471***	-0.2421***	-0.2022***	-0.3965***	-0.1796**	-0.7905	-0.0681
	[-3.522]	[-4.557]	[-4.421]	[-2.844]	[-3.019]	[-1.963]	[-1.001]	[-0.227]
QP	-0.0082*	-0.0092**	0.0024	-0.0066**	0.0353	0.0155***		-0.0126
	[-1.739]	[-2.514]	[0.539]	[-2.267]	[1.535]	[4.028]		[-0.607]
Constant	0.0138	0.0250***	-0.0042	0.0052	0.0484	-0.0182	0.3139	-0.0169
	[1.370]	[2.597]	[-0.389]	[0.582]	[1.618]	[-1.600]	[1.347]	[-0.435]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.0823	0.208	0.0819	0.213	0.179	0.317	0.372	0.182
Observations	6,618	2,826	7,032	3,997	2,221	3,660	142	400

Panel B: European IPOs

	(1) Rec=1, Pre	(2) Rec=1, Post	(3) Rec=2, Pre	(4) Rec=2,Post	(5) Rec=3, Pre	(6) Rec=3, Post	(7) Rec>3, Pre	(8) Rec>3, Post
Lead	-0.0086	0.1170***	-0.0273***	-0.0011	-0.0072	-0.0068	0.0017	0.0063
	[-0.143]	[2.708]	[-3.267]	[-0.214]	[-0.145]	[-0.158]	[0.045]	[0.271]
Comgr	0.0051	-0.0098	-0.0164*	-0.0012	0.0118	0.0083	-0.0352	0.0082
	[0.077]	[-0.201]	[-1.772]	[-0.174]	[0.289]	[0.166]	[-1.348]	[0.454]
Lbrokersize	-0.0001	-0.0074	-0.0039	0.0034*	0.0028	0.0064	-0.0024	-0.0067
	[-0.007]	[-0.531]	[-1.433]	[1.687]	[0.224]	[0.420]	[-0.455]	[-1.441]
Lseniority	0.0253	0.0135	-0.0005	0.0009	0.0095	0.0650***	-0.0113	-0.0098
	[0.578]	[0.663]	[-0.096]	[0.326]	[0.355]	[2.680]	[-0.990]	[-1.586]
Lnfollow	0.0027	-0.0149	-0.0019	0.0008	-0.0079	-0.0420	0.0106*	0.0042
	[0.118]	[-0.643]	[-0.594]	[0.258]	[-0.541]	[-1.623]	[1.688]	[0.539]
Earnings	-0.0015	-0.0210	0.0044	-0.0053	0.1132*	0.0251	0.0028	-0.0055
	[-0.024]	[-0.407]	[0.398]	[-0.793]	[1.919]	[0.437]	[0.128]	[-0.228]
Pastperf	-0.0248	-0.0043	0.0195	-0.0040	0.0221	-0.4408***	0.0015	0.0148
	[-0.145]	[-0.046]	[0.704]	[-0.311]	[0.199]	[-4.585]	[0.058]	[0.052]
QP	-0.0215	0.0045	0.0004	0.0433**	-0.0207	0.1098	0.0150	0.0232
	[-0.149]	[0.057]	[0.018]	[2.564]	[-0.154]	[0.739]	[0.351]	[0.625]
Constant	-0.0371	0.0156	0.0085	-0.0175	-0.0465	-0.0956	-0.0157	0.0176
	[-0.344]	[0.184]	[0.479]	[-1.311]	[-0.569]	[-0.895]	[-0.456]	[0.601]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	-0.282	-0.259	0.967	0.484	0.0711	0.206	0.334	0.621
Observations	856	843	1,120	831	961	712	410	239

This table presents the results of fixed-effects regressions on market reactions to recommendations. The observations are recommendations issued for IPOs 365 days following the IPO date. The sample of IPOs is defined in Table 1. The dependent variable is [0,+2]-day cumulative market-adjusted return, where day 0 is the recommendation date. *Lead* (*Comgr*) is a dummy variable equal to one if the broker issuing the recommendation was a lead manager (co-manager) in the IPO process. *Lbrokersize* is the natural logarithm of brokerage size, where brokerage size denotes the number of recommendations issued by the broker for all public firms in the 365 days preceding the recommendation announcement date. *Lseniority* is the natural logarithm of the number of years since the first reference to the analyst in the IBES database. *Lnfollow* is the natural logarithm of the number of firms receiving reports from that analyst in the previous quarter. *Allstar* is a dummy equal to one if the analyst has been voted an all-star analyst by Institutional Investors magazine in the previous years. *Earnings* is a dummy equal to one if the recommendation is issued within the (–1, +1) period surrounding an earnings announcement for the firm receiving the recommendation. *Pastperf* measures the cumulative market-adjusted return measured over the (–7, –3)-day period relative to the recommendation date. *QP* is a dummy variable equal to one if the recommendation is issued within the 5-days immediately following the end of the quiet period. Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. Regressions are run separately for strong buys (*Rec*=1), buys (*Rec*=2), holds (*Rec*=3), and sells and strong sells (*Rec*>3), further broker into pre- and post-regulatory periods. Regressions using the pre-(post-)regulatory period —identified by the term *Pre* (*Post*)—refer to recommendations issued before (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Target Prices

For each target price, we compute the expected return implied from the target price (*ERTP*) as

$$ERTP = (TP_0 - P_{-1})/ P_{-1}$$

where TP_0 represents the target price, and P_{-1} is the stock price on the day before the target price is issued. In the computation of *ERTP*, we ignore observations for which P_{-1} is below $1. In every analysis of *ERTP*, we winsorize the sample based on the 0.5% and 99.5% percentiles of the *ERTP* measure.

By measuring the analyst's expectation of the future performance of the IPO stock, the *ERTP* is an indicator of the analyst's optimism toward the IPO stock. Another indicator of such optimism is a recommendation issued by the same analyst regarding the IPO stock. The target price, through its *ERTP*, can be seen as a primary input in determining the recommendation level—the higher the *ERTP*, the more optimistic a simultaneously issued recommendation should be. We verify this conjecture in our sample of US and EU IPOs. For each recommendation issued for these IPOs, we collect, if available, the target price issued at the recommendation date by the same analyst and broker. Given that data on target prices became available only in 1999 (2002) for US (EU) data, we only consider recommendations starting in 1999 (2002) for the respective markets in this analysis. Table 6 lists statistics on these matched recommendations, broken down by the type of recommendation.

The first two columns show the frequency with which recommendations appear with target prices. The fraction of recommendations that come with target prices is low in the pre-regulatory period, around 25% for US IPOs and 15% for EU IPOs. For the post-regulatory period, however, the frequency of matched recommendations is around 45% (35%) for the US (EU) IPOs, with some variation, though not monotonic, across recommendation levels.[9]

The next columns show the average *ERTP* across different recommendation levels, across different exposures to potential conflicts of interest, and for the pre- vs. post-regulatory periods. A few patterns are apparent in the data. First, we observe that *ERTP*s increase monotonically with recommendation optimism for every subsample of the data. For example, take the subsample of recommendations for US IPOs in the pre-regulatory period. Strong buys appear with an average *ERTP* of 75%, buys with an average *ERTP* of 56%, and so on, up to strong sells being supported by target prices implying an average *ERTP* of –23%. This inference is also valid for the sample of recommendations and target prices issued for EU IPOs.

Second, when examining the sample of target prices issued for US IPOs, we observe a pronounced decrease in *ERTP* in the post-regulatory period compared to *ERTP*s for the same recommendation level in the pre-regulatory period. This is particularly true for target prices issued together with non-pessimistic recommendations. The average *ERTP* decreases from 75% to 41% for strong buys, 56% to 35% for buys, and 31% to 7% for holds.

The summary statistics in Table 6 separate the sample of target prices and its derived *ERTP* based on whether the target price comes from a lead, a co-manager, or an unaffiliated broker. The results for US IPOs in Panel A show that in the pre-regulatory period, conditional on the level of recommendation, *ERTP*s from lead and co-managers are consistently higher than *ERTP*s from unaffiliated brokers. For example, strong buys from lead and co-managers appear with an average *ERTP* of 88% and 87%, respectively, while the average *ERTP*s from unaffiliated brokers is 70%. (The analysis conditional on pessimistic recommendations is not possible due to a limited number of observations—we only report averages when there are more than five observations in that category.) However, in the post-regulatory period, there is no discernible difference in *ERTP*s regarding the analyst's role in the IPO process. We repeat the analysis for the EU data in Panel B, but the low number of target prices for the EU IPOs in the pre-regulatory period preclude us from drawing solid inferences.

TABLE 6
TARGET PRICES AND RECOMMENDATIONS

Panel A: US IPOs

	% rec matched to TP		Mean ERTP							
			Pre				Post			
Recommendation	Pre	Post	All	Lead	Comgr	Unaff	All	Lead	Comgr	Unaff
Strong Buy	26.9%	53.1%	0.75	0.88	0.87	0.70	0.41	0.36	0.42	0.42
Buy	25.1%	63.6%	0.56	0.67	0.61	0.52	0.35	0.35	0.33	0.36
Hold	18.4%	44.6%	0.31	0.39	0.32	0.29	0.07	0.09	0.08	0.06
Sell	26.1%	58.1%	0.12	.	.	.	-0.13	-0.12	-0.04	-0.17
Strong sell	13.3%	46.4%	-0.23	.	.	.	-0.19	-0.16	-0.11	-0.20

Panel B: EU IPOs

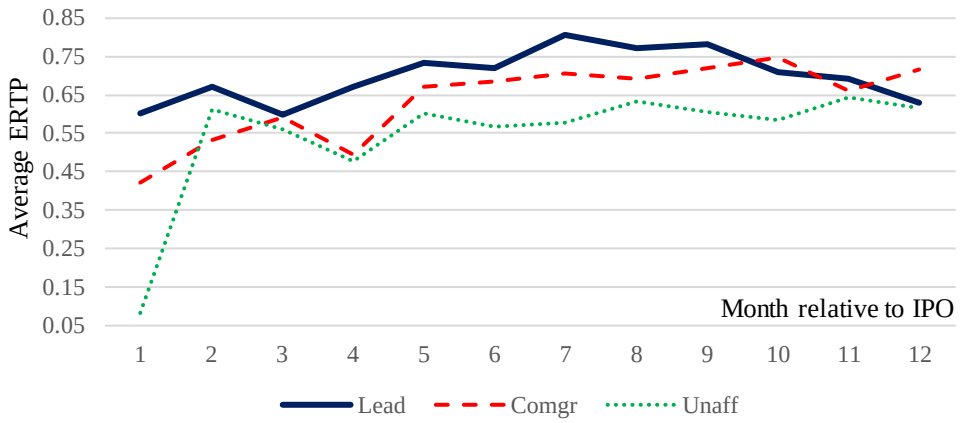
	% rec matched to TP		Mean ERTP							
			Pre				Post			
Recommendation	Pre	Post	All	Lead	Comgr	Unaff	All	Lead	Comgr	Unaff
Strong Buy	25.0%	45.0%	0.26	0.31	.	0.25	0.33	0.35	0.27	0.33
Buy	12.4%	33.3%	0.13	0.22	.	0.14	0.24	0.27	0.17	0.25
Hold	11.7%	31.2%	0.05	0.07	0.10	0.03	0.04	0.03	0.06	0.06
Sell	7.8%	34.7%	-0.03	.	.	.	-0.10	-0.14	-0.15	-0.10
Strong sell	0.0%	44.6%	NA	.	.	.	-0.17	-0.15	-0.08	-0.19

This table presents summary statistics on matching recommendations and target prices. A match occurs when a broker issues a recommendation and a target price for the same firm on the same day. A target price is thus included in the sample only if the broker issuing the target price also issued a recommendation for the same firm on the same date. The analysis is partitioned according to the recommendation type. For each such type, the table shows the percentage of recommendations that are matched target prices and, for the matched target prices, the average and median expected return implied from the target price (ERTP). ERTP is defined as $(TP_0 – P_{-1})/ P_{-1}$, where TP_0 is the target price, and P_{-1} is the closing stock price the day before the target price issuance. Panel A uses data for IPOs from the US, and Panel B uses data for IPOs from the European markets of Germany, the United Kingdom, and France. The sample only includes recommendations issued starting in 1999 (2002) for the US (EU) market. The sample is further divided between the pre- and post-regulatory periods. Data for the pre- (post-)regulatory period —identified by the term *Pre* (*Post*)—refer to target prices issued before (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France. The sample of ERTPs is winsorized at 1%, and we also ignore target prices for which the closing stock price the day before the target price issuance date is below $1.

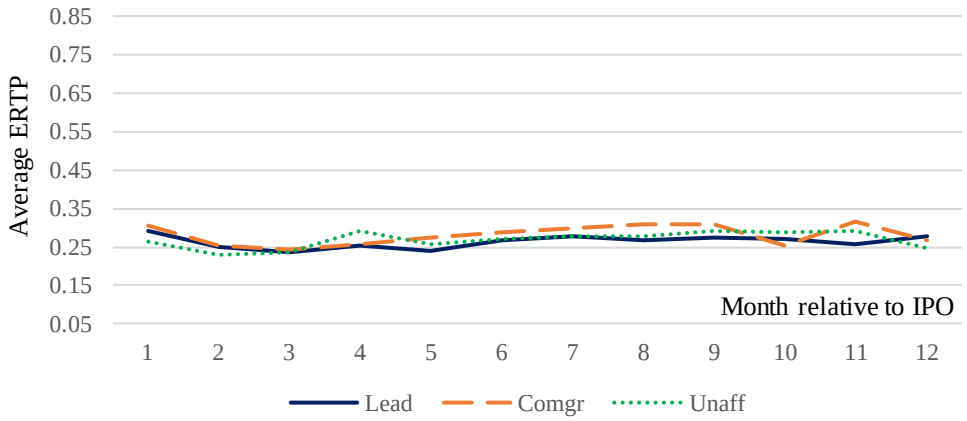
FIGURE 2
AVERAGE EXPECTED RETURN FROM NEW TARGET PRICES PER MONTH RELATIVE TO IPO

Panel A: US IPOs

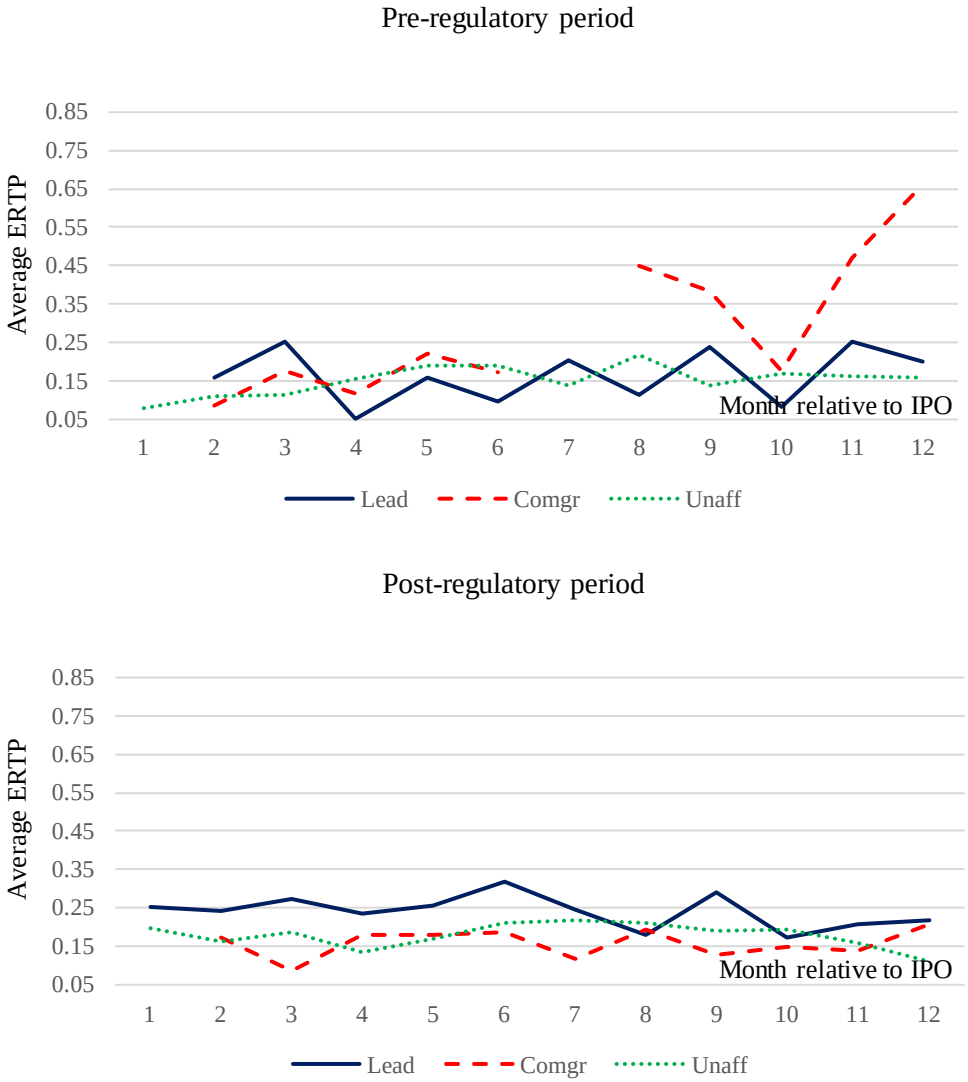
Pre-regulatory period



Post-regulatory period



Panel B: EU IPOs



This figure presents the average expected return implied from the target price (ERTP), categorized by the timing (difference in months) of the target price issuance date relative to the IPO date and whether the target price was issued by a brokerage that had served as lead, co-manager, or neither (unaffiliated) for that IPO. ERTP is defined as $(TP_0 - P_{-1})/ P_{-1}$, where TP_0 is the target price, and P_{-1} is the closing stock price the day before the target price issuance. Panel A uses target prices issued for IPOs from the US, and Panel B uses target prices issued for IPOs from the European markets of Germany, the United Kingdom, and France. The pre-regulatory (post-regulatory) period refers to target prices issued before (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France.

Figure 2 provides another view of the relationship between exposure to potential conflicts of interest and optimism in target prices. The figure reports average *ERTP*s across brokers in the lead, co-manager, and unaffiliated roles, depending on the timing (number of months) of target price issuance relative to the IPO date. In this case, we use the entire sample of target prices, not only those issued with recommendations. Based on US data, Panel A shows that in the pre-regulatory period *ERTP*s from lead analysts are almost always higher than *ERTP*s from co-managers, and *ERTP*s from co-managers are higher than *ERTP*s from unaffiliated analysts. In the post-regulatory period, there is no discernible difference in *ERTP*s based on the role of the analyst in the IPO process. For the analysis of EU data in Panel B, we are limited on what we

can infer from the data given the limited sample size, particularly concerning the pre-regulatory period. For the post-regulatory period, for which target prices are more abundant, we see some evidence of higher *ERTP*s from lead analysts.

In summary, the expected return implied from target prices appears to be consistent with the advice on recommendations—when they are issued together. Within each type of recommendation, there is a marked decrease in *ERTP*s when comparing the pre- to the post-regulatory period for US IPOs. Finally, we observe that the excess *ERTP* from analysts in the lead and co-manager roles versus unaffiliated analysts in US IPOs in the pre-regulatory period is not present in the post-regulatory period.

Next, we examine how the level of conflicts of interest relates to the optimism reflected by target prices in a regression context. We build a regression model with the *ERTP* as the dependent variable. As with the analysis of the determinants of recommendation level, we rely on an IPO fixed effects specification, as in

$$ERTP_{i,f,t}=\beta_0+\beta_1.Lead_{i,f,t}+\beta_2.Comgr_{i,f,t}+\gamma.Controls+\alpha_f+\varepsilon_{i,f,t} \quad (3)$$

where the control variables are the ones used in model (1) to explain the determinants of recommendation levels. We run different regressions for subsamples based on pre- and post-regulatory periods, and also depending on whether target prices were stand-alone or whether they were issued together with recommendations.

Table 7 shows the results. Focusing on US IPOs, for which the sample of target prices is more robust, the first two columns of Panel A show regression for the overall sample of target prices. The results show that in the pre-regulatory period, *ERTP*s were significantly higher for both lead and co-managers; keeping other variables the same, *ERTP*s from lead and co-managers were 11.21% and 7.62% higher, respectively, than *ERTP*s from unaffiliated analysts. The difference completely vanishes in the post-regulatory period.

A more nuanced view of optimism in target prices emerges from breaking down the sample based on whether target prices are issued alone or with recommendations. The next two columns in Panel A apply the regression model to the subsample of stand-alone target prices. For these target prices, there is evidence of excess optimism from lead and co-managers in the pre-regulatory period, and this excess optimism persists in the post-regulatory period for co-managers. However, the post-regulatory period effects are economically small—*ERTP*s from co-managers in the post-regulatory period are 1.47% higher than those from unaffiliated analysts.

TABLE 7
REGRESSION RESULTS ON EXPECTED RETURN FROM TARGET PRICES

Panel A: US IPOs

	All TPs		Standalone TPs		TPs w/ recommendations		TPs w/ optimistic recommendations	
	(1) Pre	(2) Post	(3) Pre	(4) Post	(5) Pre	(6) Post	(7) Pre	(8) Post
Lead	0.1121***	0.0015	0.0762**	0.0122	0.1634***	-0.0165*	0.1416**	-0.0239**
	[4.344]	[0.247]	[2.360]	[1.535]	[2.947]	[-1.723]	[2.515]	[-2.270]
Comgr	0.0762***	0.0060	0.0578**	0.0147**	0.0752*	-0.0118	0.0770*	-0.0231**
	[3.647]	[1.061]	[2.161]	[1.992]	[1.777]	[-1.312]	[1.816]	[-2.486]
Lbrokersize	-0.0461***	-0.0131***	-0.0329**	-0.0185***	-0.0660***	-0.0043	-0.0439***	-0.0014
	[-4.319]	[-4.951]	[-2.300]	[-5.239]	[-3.816]	[-1.080]	[-2.614]	[-0.325]
Lseniority	0.2745***	0.0160***	0.3468***	0.0206***	0.0539	0.0131**	0.0879	0.0004
	[7.921]	[4.388]	[7.803]	[4.325]	[0.902]	[2.305]	[1.447]	[0.067]
Lnfollow	-0.0296**	-0.0010	-0.0352**	0.0041	0.0068	-0.0142**	0.0285	0.0033
	[-2.309]	[-0.244]	[-2.070]	[0.769]	[0.312]	[-2.386]	[1.350]	[0.514]
Allstar	-0.0418*	-0.0061	-0.0489*	-0.0068	-0.0720	0.0058	-0.0859*	0.0162
	[-1.747]	[-0.667]	[-1.726]	[-0.552]	[-1.462]	[0.426]	[-1.720]	[1.044]
Rec							-0.2115***	-0.0455***
							[-7.368]	[-6.394]
Constant	0.8039***	0.3154***	0.7289***	0.3177***	0.9202***	0.3133***	1.0887***	0.4542***
	[13.304]	[19.868]	[8.879]	[14.722]	[9.569]	[13.413]	[10.861]	[16.915]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.384	0.387	0.455	0.401	0.303	0.437	0.385	0.554
Observations	5,847	16,876	4,050	10,897	1,797	5,979	1,603	4,097

Panel B: EU IPOs

	All TPs		Standalone TPs		TPs w/ recommendations		TPs w/ optimistic recommendations	
	(1) Pre	(2) Post	(3) Pre	(4) Post	(5) Pre	(6) Post	(7) Pre	(8) Post
Lead	-0.0156	0.0279***	-0.0215	0.0323***	-0.0252	0.0074	-0.0464	-0.0056
	[-0.551]	[2.684]	[-0.660]	[2.787]	[-0.322]	[0.288]	[-0.375]	[-0.224]
Comgr	0.0486	-0.0009	0.0595*	-0.0058	0.0586	0.0044	0.0094	-0.0573**
	[1.621]	[-0.072]	[1.741]	[-0.401]	[0.822]	[0.175]	[0.071]	[-2.366]
Lbrokersize	-0.0044	0.0169***	0.0009	0.0156***	-0.0415**	0.0185**	-0.0287	0.0107
	[-0.485]	[4.631]	[0.080]	[3.583]	[-2.291]	[2.361]	[-1.115]	[1.378]
Lseniority	0.0330*	0.0098	0.0134	0.0054	0.1195***	0.0217	0.0868	-0.0021
	[1.709]	[1.301]	[0.599]	[0.615]	[2.712]	[1.388]	[1.508]	[-0.132]
Lnfollow	-0.0212	-0.0200***	-0.0165	-0.0143*	-0.0640*	-0.0309**	-0.0996*	-0.0163
	[-1.267]	[-2.970]	[-0.848]	[-1.837]	[-1.719]	[-2.106]	[-1.787]	[-1.130]
Rec							-0.0862*	-0.0373**
							[-1.972]	[-2.208]
Constant	0.2119***	0.1133***	0.1866**	0.1061***	0.4417***	0.1326***	0.6441***	0.3351***
	[3.223]	[4.441]	[2.354]	[3.349]	[3.560]	[2.666]	[3.350]	[6.492]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.587	0.513	0.567	0.593	0.748	0.352	0.809	0.540
Observations	425	3,271	322	2,255	103	1,016	74	695

This table presents the results of fixed-effects regressions explaining the expected return implied from the target price (ERTP). The observations are target prices issued for IPOs 365 days following the IPO date. The sample of IPOs is defined in Table 1. The dependent variable is the ERTP, defined as $(TP_0 - P_{-1})/ P_{-1}$, where TP_0 is the target price, and P_{-1} is the closing stock price the day before the target price issuance. *Lead* (*Comgr*) is a dummy variable equal to one if the broker issuing the recommendation was a lead manager (co-manager) in the IPO process. *Lbrokersize* is the natural logarithm of brokerage size, where brokerage size denotes the number of recommendations issued by the broker for all public firms 365 days preceding the recommendation announcement date. *Lseniority* is the natural logarithm of the number of years since the first reference to the analyst in the IBES database. *Lnfollow* is the natural logarithm of the number of firms receiving reports from that analyst in the previous quarter. *Allstar* is a dummy equal to one if the analyst has been voted an all-star analyst by Institutional Investors magazine in the previous years. *Rec* is the recommendation level, based on the mapping (1=strong buy; 2=buy; 3=hold; 4=sell; and 5=strong sell). Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. There are six regression models per panel: models (1) and (2) use all available target prices; models (3) and (4) use target prices that were not issued together with recommendations, and models (5) and (6) use target prices issued together with recommendations. The sample is further broken between the pre- and post-regulatory periods. Regressions using the pre- (post-)regulatory period —identified by the term *Pre* (*Post*)—refer to recommendations issued prior to (after) July 9th, 2002 for IPOs from the US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Focusing on the sample of target prices issued together with recommendations, columns (5) and (6) show evidence of higher *ERTP*s from analysts in the lead (significant at 1%) and co-manager (significant at 10%) roles in the pre-regulatory period but not in the post-regulatory period. A concern with this interpretation is the possibility that analysts in these roles may be more inclined to issue optimistic recommendations. Given the evidence in Table 6 that more optimistic recommendations come with higher *ERTP*s, the lead and co-manager dummies could be simple proxies for a more optimistic recommendation.

To address this possibility, we expand the regression model to directly control for the level of the recommendation issued together with the target price. Models (7) and (8) thus also include a variable *Rec* denoting the level of the recommendation issued together with the target price. The results confirm that *ERTP* is significantly related to the recommendation level. The coefficient of *Rec* indicates that, other things equal, a strong buy—compared to a buy—commands an increase of 21% and 5% in the *ERTP* in the pre- and post-regulatory period, respectively. As per the relationship of optimism and exposure to conflicts of interest, the expanded model shows that in the pre-regulatory period, after controlling for the level of recommendation, *ERTP*s from analysts in the lead (co-manager) role are 14% (8%) higher than those from unaffiliated analysts, significantly so at the 1% (10%) level. Moreover, in the post-regulatory period, *ERTP*s from lead and co-managers are significantly smaller than those from unaffiliated analysts.

Panel B of Table 7 shows the results of the same regression models when applied to EU data. Not much surfaces from the analysis of the pre-regulatory period, except some limited (at the 10% significance level) evidence of higher *ERTP*s from co-managers in their stand-alone issued target prices—but that may be a matter of power given the very small sample size of target prices in the pre-regulatory period. For the post-regulatory period, results are mixed. There is evidence of higher *ERTP*s from lead analysts for their stand-alone target prices and smaller *ERTP*s from co-managers in the target prices issued together with recommendations. [10]

Market Reactions to Target Prices

Let us now examine market reactions to target prices. The idea is to regress market reactions to the information contained in target prices. As with recommendations, we measure market reactions as *CAR_0_2*: the cumulative market-adjusted return over days [0,+2]. As with the examination of target prices, the information in target prices is measured by its *ERTP*. Therefore, a basic regression model relating market reactions to the information in target prices is:

$$Car\_0\_2_{i,f,t} = \beta_0 + \beta_1.ERTP_{i,f,t} + \gamma.Controls + \alpha_f + \varepsilon_{i,f,t} \quad (4)$$

Our goal is to examine whether the relation between market reactions and *ERTP* depends on the target price from a conflicted analyst whose broker has acted as a lead underwriter in the IPO process. In this case, including a dummy in the model for whether the target price comes from a lead analyst does not suffice. If we did that, the coefficient on that dummy would measure the extra market reaction to the issuance of a target price from an analyst with a lead role, disregarding whether the target price was optimistic. Instead, proper consideration of how the target price's effect on market reactions depends on whether the target price comes from an analyst in the lead role calls for an interaction term between *Lead* and *ERTP* measures. The model thus becomes[11]

$$CAR_{i,f,t} = \beta_0 + \beta_1.ERTP_{i,f,t} + \beta_2.Lead_{i,f,t} + \beta_2.Lead*ERTP_{i,f,t} + \ldots + \gamma.Controls + + \delta.Controls*ERTP_{i,f,t} + \alpha_f + \varepsilon_{i,f,t} \quad (5)$$

We run models (4) and (5) above for the samples of target prices with and without recommendations. Notice that in model (5), each control variable interacts with *ERTP*, the main variable of interest.

TABLE 8
REGRESSION RESULTS ON MARKET REACTIONS TO TARGET PRICES

Panel A: US IPOs

	Standalone TPs				TPs w/ recommendations			
	(1) Pre	(2) Pre	(3) Post	(4) Post	(5) Pre	(6) Pre	(7) Post	(8) Post
ERTP	0.0283***	-0.0053	0.0794***	0.0599***	0.0308***	0.0588	0.1185***	0.0431*
	[6.716]	[-0.191]	[20.810]	[2.653]	[4.012]	[1.220]	[24.620]	[1.696]
Lead	0.0062	0.0173	0.0028	0.0052	-0.0125	0.0210	0.0015	-0.0004
	[0.813]	[1.624]	[0.939]	[1.349]	[-0.888]	[1.071]	[0.463]	[-0.093]
Lead*ERTP		-0.0172		-0.0089		-0.0556**		0.0065
		[-1.503]		[-0.961]		[-2.495]		[0.592]
Comgr	0.0064	0.0131	0.0004	0.0086**	-0.0191*	-0.0066	-0.0006	-0.0007
	[1.001]	[1.524]	[0.136]	[2.352]	[-1.769]	[-0.441]	[-0.199]	[-0.175]
Comgr*ERTP		-0.0151*		-0.0294***		-0.0241		0.0028
		[-1.663]		[-3.379]		[-1.313]		[0.261]
Lbrokersize	-0.0054	-0.0111**	0.0013	-0.0018	0.0061	0.0043	0.0012	-0.0027
	[-1.596]	[-2.359]	[0.967]	[-1.097]	[1.443]	[0.658]	[0.903]	[-1.542]
Lbrokersize*ERTP		0.0087*		0.0105***		0.0037		0.0154***
		[1.792]		[2.881]		[0.433]		[3.639]
Lseniority		-0.0433***		-0.0061***		-0.0046		-0.0007
		[-3.262]		[-2.594]		[-0.243]		[-0.281]
Lseniority*ERTP		0.0310**		0.0096*		-0.0322		0.0019
		[2.468]		[1.685]		[-1.460]		[0.292]
Lnfollow		0.0189***		0.0072***		0.0113		0.0006
		[3.307]		[2.799]		[1.384]		[0.243]
Lnfollow*ERTP		-0.0118*		-0.0157***		-0.0069		-0.0048
		[-1.941]		[-2.644]		[-0.670]		[-0.758]
Allstar		-0.0103		0.0081		-0.0237		0.0055
		[-1.117]		[1.358]		[-1.341]		[0.871]
Allstar*ERTP		0.0017		-0.0272*		0.0501*		-0.0050
		[0.170]		[-1.687]		[1.841]		[-0.258]
Constant	0.0032	0.0172	-0.0336***	-0.0280***	-0.0464*	-0.0660*	-0.0338***	-0.0129
	[0.167]	[0.627]	[-4.800]	[-2.741]	[-1.878]	[-1.748]	[-4.831]	[-1.251]

IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.0902	0.0935	0.265	0.267	0.0956	0.100	0.244	0.246
Observations	3,988	3,988	10,803	10,803	1,760	1,760	5,937	5,937

Panel B: EU IPOs

	Standalone TPs				TPs w/ recommendations			
	(1) Pre	(2) Pre	(3) Post	(4) Post	(5) Pre	(6) Pre	(7) Post	(8) Post
ERTP	0.1027***	0.1225	0.0250	0.1412	0.1015***	0.0789	0.0891***	0.0772
	[4.550]	[1.158]	[1.305]	[1.258]	[3.053]	[0.287]	[8.422]	[1.493]
Lead	0.0004	-0.0321**	0.0067	0.0177	0.0005	-0.0086	-0.0075	-0.0194**
	[0.034]	[-2.498]	[0.678]	[1.506]	[0.028]	[-0.443]	[-1.073]	[-2.300]
Lead*ERTP		0.3570***		-0.0603*		0.2521**		0.0687***
		[5.700]		[-1.725]		[2.646]		[2.666]
Comgr	0.0058	0.0109	-0.0004	0.0028	-0.0048	-0.0034	-0.0057	-0.0006
	[0.472]	[0.711]	[-0.035]	[0.180]	[-0.267]	[-0.197]	[-0.846]	[-0.071]
Comgr*ERTP		-0.0139		-0.0222		0.0151		-0.0290
		[-0.395]		[-0.362]		[0.164]		[-0.847]
Lbrokersize	0.0009	-0.0013	0.0021	0.0039	0.0004	0.0010	0.0001	-0.0017
	[0.230]	[-0.284]	[0.556]	[0.887]	[0.106]	[0.155]	[0.051]	[-0.621]
Lbrokersize*ERTP		0.0053		-0.0127		-0.0061		0.0107
		[0.402]		[-0.866]		[-0.160]		[1.219]
Lseniority		-0.0036		-0.0116		-0.0188		0.0081
		[-0.386]		[-1.337]		[-1.150]		[1.603]
Lseniority*ERTP		0.0270		0.0402		0.0961		-0.0401***
		[1.117]		[1.425]		[1.112]		[-2.616]
Lnfollow		0.0072		0.0013		0.0028		0.0018
		[0.907]		[0.163]		[0.227]		[0.360]
Lnfollow*ERTP		-0.0574*		-0.0272		-0.0229		-0.0013
		[-1.845]		[-0.977]		[-0.236]		[-0.084]

Allstar	-0.0301	-0.0259	-0.0153	-0.0176	-0.0100	-0.0138	-0.0164	-0.0204
	[-1.264]	[-0.806]	[-0.658]	[-0.529]	[-0.409]	[-0.340]	[-1.380]	[-1.199]
Allstar*ERTP		0.0017		-0.0272*		0.0501*		-0.0050
		[0.170]		[-1.687]		[1.841]		[-0.258]
Constant	0.0032	0.0172	-0.0336***	-0.0280***	-0.0464*	-0.0660*	-0.0338***	-0.0129
	[0.167]	[0.627]	[-4.800]	[-2.741]	[-1.878]	[-1.748]	[-4.831]	[-1.251]
IPO Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.112	0.222	0.00258	0.00271	0.848	0.862	0.207	0.222
Observations	318	318	2,198	2,198	101	101	967	967

This table presents the results of fixed-effects regressions on market reactions to target prices. The observations are target prices issued for the US IPOs 365 days following the IPO date. The sample of US IPOs is defined in Table 1. The dependent variable is [0,+2]-day cumulative market-adjusted return, where day 0 is the target price announcement date. *ERTP* is defined as $(TP_0 - P_{-1})/ P_{-1}$, where TP_0 is the target price, and P_{-1} is the closing stock price the day before the target price issuance. *Lead* (*Comgr*) is a dummy variable equal to one if the broker issuing the recommendation was a lead manager (co-manager) in the IPO process. *Lbrokersize* is the natural logarithm of brokerage size, where brokerage size denotes the number of recommendations issued by the broker for all public firms in the 365 days preceding the recommendation announcement date. *Lseniority* is the natural logarithm of the number of years since the first reference to the analyst in the IBES database. *Lnfollow* is the natural logarithm of the number of firms receiving reports from that analyst in the previous quarter. *Allstar* is a dummy equal to one if the analyst has been voted an all-star analyst by Institutional Investors magazine in the previous years. Panel A uses recommendations issued for IPOs from the US, and Panel B uses recommendations issued for IPOs from the European markets of Germany, the United Kingdom, and France. Models (1) through (4) use target prices that were not issued together with recommendations and models (5) through (8) use target prices issued together with recommendations. The sample is further broken between the pre- and post-regulatory periods. Regressions using the pre- (post-)regulatory period —identified by the term *Pre* (*Post*)— refer to recommendations issued before (after) July 9th, 2002 for IPOs from US, October 30th, 2004 for IPOs from Germany, July 1st, 2005 for IPOs from the United Kingdom, and July 20th, 2005 for IPOs from France. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Panel A of Table 8 shows the results for the US IPOs. We first analyze the baseline models that do not contain the interaction terms—the odd-numbered models in Table 8. Their results corroborate that market reactions strongly depend on the *ERTP* measure. The coefficient on *ERTP* is significantly positive in all specifications. Moreover, such a coefficient is significantly larger in the regressions for the post-regulatory period.[12] Based on the sample of stand-alone target prices, the coefficient on *ERTP* of 0.0283 in the pre-regulatory period suggests that, other things equal, a 10% increase in *ERTP* is associated with an increase of 28 basis points in market reactions to target prices; this effect increases to 79 basis points in the post-regulatory period. The results also seem to suggest that target prices become more informative, as evidenced by the much higher adjusted-R^2 for the models in the post-regulatory period.

We now focus on the models with interaction terms between the explanatory variables and the *ERTP* measure: the even-numbered models in Table 8. Models (2) and (4) show results for the sample of stand-alone target prices. There is no evidence of different reactions to target prices issued by analysts in the lead role in either period. The interaction between *Lead* and *ERTP* is not different from zero in models (2) and (4). For co-managers, the same models indicate evidence of discounting of their target prices, particularly in the post-regulatory period. The coefficient on the interaction term between *Comgr* and *ERTP* in model (4) is –0.0294, suggesting that, other things equal, for an increase of 10% in *ERTP*, the effect on market reaction is 29 basis points lower for target prices issued by analysts in the co-manager role. The fact that investors discount target prices from co-managers is consistent with the evidence from Table 7 of higher *ERTP*s from analysts in the co-manager role in the post-regulatory period.

Models (6) and (8) of Table 8 repeat the analysis for the sample of target prices issued together with recommendations. The results of the regression (model 6) for the pre-regulatory period indicates significant evidence of discounting target prices from analysts in the lead role. The interaction term of *Lead* and *ERTP*, significant at the 1% level, suggests that the effect of a 10% increase in *ERTP* on market reaction is 56 basis points lower when the target price is issued by an analyst in the lead role. This is consistent with the evidence of higher *ERTP*s from the lead analysts in the pre-regulatory period (Table 7). This discounting of target prices from analysts in the lead role disappears in the post-regulatory period (model 8)—again, consistent with no excess optimism from target prices of such analysts in that period. Finally, there is no discounting of target prices from analysts in the co-manager role in either period—consistent with a lack of evidence of excess optimism from them.

Panel B of Table 8 repeats the analysis for the EU IPOs. Inferences from the pre-regulatory period are not feasible due to the small sample size. For the post-regulatory period, we observe some limited evidence (significant at 10%) of discounting of stand-alone target prices from analysts in the lead role, consistent with these analysts still being overoptimistic regarding these target prices. There is also evidence of extra reaction to target prices issued with recommendations when these come from analysts in the lead role.

Severity of Sanctions

It is possible that the impact of a regulation on the analysts' behavior and how investors interpret analysts' advice in the new regulatory framework depends on the threat of and severity of legal sanctions in the new regulation. Interpreting the Global Settlement as a more severe regulation compared to the SROs' rules in the US market, Corwin et al. (2017) find a substantial reduction in analyst affiliation bias following the settlement for brokers sanctioned by the Global Settlement, whereas bias persists for their non-sanctioned counterparts. In the EU market, Dubois et al. (2014) find that the reduction in optimism after the implementation of MAD is higher in EU countries with more severe legal sanctions.

In this section, we re-examine the role played by the severity of sanctions on the relative effectiveness of regulatory changes. As a proxy for severity, we follow the approach of Corwin et al. (2017) to hypothesize the Global Settlement as a more effective regulation than the SROs' new rules in the US market. We extend the analysis to the EU market as well, hypothesizing that the Global Settlement may also entice a strong reaction from analysts compared to the sanctions imposed by the MAD regulation in the EU market. We classify each broker in our sample as sanctioned by the Global Settlement or not. We then repeat the analyses of determinants of analysts' outputs (recommendations and target prices) and of market reactions by breaking down each affiliation dummy—*Lead* and *Comgr*—between sanctioned and

non-sanctioned brokers. Results are listed in Table 9. For ease of exposition, each panel shows only the coefficients of affiliation.

TABLE 9
SANCTIONED VS. NON-SANCTIONED BROKERS

Panel A: Determinants of Recommendation Levels, US IPOs (Affiliation Coefficients)

	All		First 90 days		Beyond 90 days	
	(1)	(2)	(3)	(4)	(5)	(6)
	Pre	Post	Pre	Post	Pre	Post
Lead_Sanctioned	-0.2324***	0.1269***	-0.2059***	0.1776***	-0.1553***	0.1217***
	[-10.622]	[4.686]	[-6.986]	[4.393]	[-4.322]	[2.889]
Lead_NonSanctioned	-0.2415***	-0.1123***	-0.1367***	-0.1243**	-0.1745***	0.0954
	[-7.402]	[-2.622]	[-3.239]	[-2.361]	[-3.033]	[1.083]
Comgr_Sanctioned	-0.1356***	0.2461***	-0.1480***	0.2818***	-0.0434	0.2399***
	[-6.693]	[6.617]	[-5.296]	[5.561]	[-1.354]	[3.901]
Comgr_NonSanctioned	-0.1900***	-0.1367***	-0.1481***	-0.1649***	-0.1268***	0.0059
	[-9.200]	[-5.291]	[-5.449]	[-4.522]	[-3.664]	[0.128]

Panel B: Determinants of Recommendation Levels, EU IPOs (Affiliation Coefficients)

	All		First 90 days		Beyond 90 days	
	(1)	(2)	(3)	(4)	(5)	(6)
	Pre	Post	Pre	Post	Pre	Post
Lead_Sanctioned	-0.3698***	0.0716	-0.5563***	0.1716*	-0.3127***	0.0809
	[-4.457]	[0.979]	[-3.346]	[1.717]	[-3.167]	[0.720]
Lead_NonSanctioned	-0.5651***	-0.1424*	-0.9181***	-0.2318*	-0.4918***	-0.0017
	[-7.135]	[-1.911]	[-4.195]	[-1.853]	[-5.525]	[-0.016]
Comgr_Sanctioned	0.0434	0.3600*	-0.0206	0.1077	0.0761	0.5204**
	[0.401]	[1.839]	[-0.093]	[0.366]	[0.606]	[2.011]
Comgr_NonSanctioned	-0.2621***	-0.0663	-0.4599***	-0.0956	-0.2179***	0.0328
	[-3.899]	[-0.874]	[-3.298]	[-0.849]	[-2.737]	[0.306]

Panel C: Determinants of ERTPs, US IPOs (Affiliation Coefficients)

	All TPs		Standalone TPs		TPs w/ recommendations		TPs w/ optimistic recommendations	
	(1) Pre	(2) Post	(3) Pre	(4) Post	(5) Pre	(6) Post	(7) Pre	(8) Post
Lead_Sanctioned	0.1217***	-0.0051	0.0799**	0.0044	0.1862***	-0.0201**	0.1583***	-0.0220*
	[4.492]	[-0.794]	[2.350]	[0.525]	[3.240]	[-1.982]	[2.700]	[-1.958]
Lead_NonSanctioned	0.0321	0.0200**	0.0232	0.0352***	-0.0782	-0.0147	0.0204	-0.0268
	[0.517]	[2.020]	[0.327]	[2.853]	[-0.435]	[-0.823]	[0.116]	[-1.481]
Comgr_Sanctioned	0.0678***	-0.0112	0.0403	-0.0005	0.1174**	-0.0393***	0.1400***	-0.0146
	[2.765]	[-1.305]	[1.296]	[-0.044]	[2.414]	[-2.940]	[2.832]	[-0.946]
Comgr_NonSanctioned	0.0878***	0.0124**	0.0804**	0.0200**	-0.0128	0.0007	-0.0446	-0.0255**
	[3.161]	[1.994]	[2.383]	[2.487]	[-0.193]	[0.065]	[-0.683]	[-2.565]

Panel D: Determinants of ERTPs, EU IPOs (Affiliation Coefficients)

	All TPs		Standalone TPs		TPs w/ recommendations		TPs w/ optimistic recommendations	
	(1) Pre	(2) Post	(3) Pre	(4) Post	(5) Pre	(6) Post	(7) Pre	(8) Post
Lead_Sanctioned	-0.0222	0.0216	-0.0112	0.0228	-0.0676	0.0175	-0.0438	-0.0103
	[-0.602]	[1.543]	[-0.266]	[1.546]	[-0.698]	[0.410]	[-0.345]	[-0.251]
Lead_NonSanctioned	-0.0121	0.0350**	-0.0381	0.0453***	0.0473	0.0032		-0.0028
	[-0.300]	[2.518]	[-0.810]	[2.738]	[0.350]	[0.108]		[-0.098]
Comgr_Sanctioned	0.0143	0.0114	0.0215	-0.0007	0.0235	0.0488	0.0242	-0.0294
	[0.315]	[0.474]	[0.408]	[-0.026]	[0.251]	[0.805]	[0.160]	[-0.480]
Comgr_NonSanctioned	0.0658*	-0.0046	0.0811**	-0.0076	0.0654	-0.0015	-0.0007	-0.0606**
	[1.878]	[-0.331]	[2.024]	[-0.456]	[0.756]	[-0.059]	[-0.005]	[-2.419]

This table presents the partial regression results extending the models from Tables 2 and 7. Panels A and B extend the Panels A and B from Table 2. Panels C and D extend panels A and B, respectively, from Table 7. All sample construction and control variables are as defined in the original tables. The extension refers to replacing *Lead* and *Comgr* variables with the interaction variables *Lead_Sanctioned*, *Lead_NonSanctioned*, *Comgr_Sanctioned* and *Comgr_NonSanctioned*. *Lead* and *Comgr* are defined in Tables 2 and 7. *Sanctioned* (*NonSanctioned*) is a dummy equal to one if the broker has (not) been part of the Global Settlement. All regressions use firm (IPO) fixed effects. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

From Table 2, panels A and B report the regression model results on the determinants of recommendation levels. We first discuss the results for the US sample, shown in Panel A. We find that sanctioned brokers in both lead and co-manager roles, which were more optimistic than unaffiliated brokers in the pre-regulatory period, became relatively more pessimistic in the post-regulatory period for the recommendations issued within the first year following the IPOs: The coefficients on *Lead_Sanctioned* and *Comgr_Sanctioned* are positive and statistically significant at the 1% level.[13] A different pattern emerges for non-sanctioned brokers in the lead and co-manager roles. They keep issuing more optimistic recommendations than those of unaffiliated brokers in the post-regulatory period. Results are qualitatively similar when distinguishing the timing of the recommendation issuance—either in the first 90 days following the IPO or after the first 90 days.

Panel B repeats the regressions on the determinants of recommendation levels for the EU IPOs. Results in the post-regulatory period point in the same direction, but results are less consistent regarding significance. For example, sanctioned lead brokers, who were more optimistic in the pre-regulatory period, shifted their behavior in the post-regulatory period to act like unaffiliated brokers. Non-sanctioned brokers in the lead role are still more optimistic (at the 10% significance level) in the post-regulatory period for their early recommendations (models 2 and 4), and sanctioned co-managers are less optimistic in their later recommendations.[14]

Panels C and D replicate the regression models from Table 7, examining the determinants of the expected return implied by target prices (*ERTP*). Panel A shows the results for US IPOs. The first two columns show regression for the overall sample of target prices. In the pre-regulatory period, sanctioned brokers in the lead role are more optimistic than unaffiliated ones, whereas non-sanctioned brokers in the lead role are as optimistic as the unaffiliated brokers. Results reverse in the post-regulatory period, with sanctioned lead brokers no longer overly optimistic and non-sanctioned brokers more optimistic than unaffiliated brokers. We find similar results for sanctioned and non-sanctioned brokers in the co-manager role: both are more optimistic than unaffiliated brokers in the pre-regulatory period, but only co-managers at non-sanctioned brokers remain more optimistic than their unaffiliated counterparts in the post-regulatory period. We find similar results for the subsample of stand-alone target prices (except for sanctioned banks in the co-manager role who behave similarly to the unaffiliated brokers in the pre-regulatory period).

Results are less precise for the sample of target prices issued together with recommendations. For the complete sample of such target prices, columns (5) and (6) show evidence of higher (lower) ERTPs emanating from sanctioned brokers in both lead and co-manager roles in the pre-regulatory (post-regulatory) period. We do not find any evidence of over-optimism among non-sanctioned affiliated brokers in either pre- or post-regulatory periods. Qualitatively, the results remain similar after controlling for the level of recommendation.

Finally, Panel D examines the determinants of target prices for EU IPOs. Due to the small sample size of the pre-regulatory period and the low statistical power that derives from it, we focus the analysis on the post-regulatory period. We find that non-sanctioned brokers in the lead role issue more optimistic target prices than their unaffiliated counterparts. This result remains statistically significant when examining stand-alone target prices in model (4).

In sum, we observe a differential pattern of change in optimism emanating from regulations depending on whether a broker has been part of the Global Settlement. This confirms the inference in Corwin et al. (2017) for US data but also extends the analysis to reaffirm the same pattern in different sell-side research output (target prices) and in a different market (EU data).

We then examine whether market reactions to the new regulatory regime depend on whether a broker has been sanctioned in the Global Settlement. For that, we repeat the analysis of determinants of market reactions to recommendations (Table 4) and to target prices (Table 8) after replacing the affiliation dummies with their interaction counterparts. Results (available upon request) find little to no evidence of recommendation discounting from affiliated brokers in the post-regulatory period, either for sanctioned or non-sanctioned brokers. Non-sanctioned affiliated brokers, sometimes, still reveal more optimism than unaffiliated brokers, a pattern not found when comparing sanctioned brokers. However, we find no evidence that investors consider the difference when responding to the value of the analysts' advice.

CONCLUSION

The advent of the new millennium brought a radical shift in the regulatory landscape of sell-side research, both in the US and for the member states of the EU. These new regulations addressed the conflicts of interest between investment banking and research departments and how they distort analysts' advice on firms. We examine how these regulations affected analysts' outputs of recommendations and target prices in US and EU markets.

Relative to extant studies, we examine a more comprehensive sample across a more extended sample period spanning the US and the EU. We confirm that regulations successfully reduced—and at times

eliminated—the excess optimism in recommendations to IPO firms by analysts exposed to conflicts of interest due to underwriting relationships. We also examine target prices issued to IPO firms. In these target prices, we show a similar pattern of biased optimism resulting from conflicts of interest. However, we find scant evidence consistent with conflicts of interest shaping analysts' outputs in the post-regulatory change period, both in the US and in Europe.

We find that investors tend to discount optimistic recommendations less in the post-regulatory change period. These findings suggest that the credibility of recommendations has improved, and the market is less skeptical of the analysts' recommendations in the period following the regulatory changes. We find similar results for target prices. These findings are generally accurate regardless of whether we examine target prices paired with recommendations or stand-alone target prices.

The impact of new regulations on analysts' behavior and how investors interpret analysts' advice in the new regulatory framework could depend on the threat and severity of legal sanctions in the new regulation. We observe a differential pattern of change in optimism emanating from regulations depending on whether a broker has been part of the Global Settlement or not. This finding confirms the inference of Corwin et al. (2017) and extends the analysis to reaffirm the same pattern in different sell-side research output (target prices) and in a different market (EU data).

There exists an interesting window in time where stricter regulations were in place in the US relative to the unaltered regulatory landscape in the EU. Not surprisingly, the EU bankers continued with their optimistic projections until MAD was implemented. Interestingly, we find that the US brokers operating in the EU adhered to the stricter US regulations and restrained themselves from being overly optimistic towards EU IPOs, even though the contemporaneous existing regulations in Europe did not compel them to do so. The impact of regulatory shifts on the behavior of attendant agents has been of particular interest. Our findings contribute to the growing literature on conflicts of interest and the usefulness of regulatory attempts to curb them.

ENDNOTES

1. Earnings forecast by conflict analysts can still be biased, but there are competing stories on how conflicts of interest shape the analysts' output for such forecasts. On the one hand, analysts may show over-optimism to shore up the stock price; on the other hand, analysts may be pessimistic to drive down the consensus forecast and allow the actual earnings to beat the consensus. For recommendations, the direction of the bias of a conflicted analyst is more clear-cut—to issue more optimistic recommendations to shore up the stock price.
2. Unfortunately, the data on analyst-issued target prices is very thin to almost nonexistent in the pre-regulatory period in Europe. Accordingly, it is not feasible to conduct target price-based analyses of US-based brokers' behavior in the post-US and pre-EU new regulatory periods.
3. Perhaps the most famous cases were of analysts Mary Meeker and Henry Blodget, famously considered "rainmakers" in bringing lucrative deals on Internet stocks but later found to being overly optimistic in their projections. See "The Investigation: How Elliot Spitzer Humbled Wall Street," by John Cassidy, The New Yorker, https://www.newyorker.com/magazine/2003/04/07/the-investigation.
4. Other types of business relationships can also bias an analyst's behavior. These relationships include M&A advisory, debt underwriting, and syndicate lending etc. (see, for example, Corwin et al. 2017, and Ergungor et al., 2015). While these relationships exist for a firm in the pre-IPO stage, they are far less frequent for mature firms. We thus focus on equity underwriting as a proxy for conflicts of interest.
5. One concern is that the pre-regulatory period for the EU data includes a period where the US regulations were already in place. Thus, part of the EU pre-regulatory period includes US data already under the new "regime" of a stricter regulatory environment and thus less optimistic recommendations. Suppose EU brokers did not respond to US regulations. In that case, it is perhaps expected that for this post-US, pre-EU regulatory period the recommendations by lead brokers are more optimistic for EU IPOs. We re-examine the regression models by equating EU data's pre-regulatory period to the US's data pre-regulatory period. The gap in the coefficient on the lead dummy between the US and EU models remains similar and still significantly positive.
6. Such coefficients appear in different regression models and cannot be directly compared. In unreported results (available upon request), we estimate pooled regression models and confirm that these coefficients differ significantly.

7. Are US brokers obliged to act in other markets like they operate in the US market? It is a question of jurisdiction. Dubois et al. (2014) have an extensive discussion on this, arguing that when a broker in country A operates in a firm in country B, lawsuits may originate in either country (so a US bank may be liable in the US jurisdiction). However, in practice, procedures are initiated in the regulatory environment where the firm is listed. Therefore, US brokers may have less incentive to change their practices in Europe due to changes that occur strictly in the US regulatory environment.
8. See, for example, Lin and McNichols (1998), Michaely and Womack (1999), and Bradley, Jordan, and Ritter (2003), and Agrawal and Chen (2008).
9. The literature shows some evidence that target prices are more likely to appear with more optimistic recommendations (e.g., Bradshaw, 2002; Brav & Lehavy, 2003), but this pattern is not present for the sample of target prices issued for IPOs in their first year.
10. The tests in the analysis of European IPOs have limited power due to the relatively small sample sizes, particularly given that these are fixed effects regressions. For example, when trying to uncover the relationship between the lead dummy and the left-hand size variable in the fixed effect regression, IPOs for which there is no within-IPO variation in the lead dummy are not very relevant. Take model (1), for example: Of all the IPOs, only 16 IPOs reveal within-IPO variation in the lead dummy. Other samples can become even less informative. In model (5), for example, there are only three IPOs with within-IPO variation in either the lead or the co-manager dummies.
11. Notice that this specification is quite different from the analysis of market reactions to recommendations. When analyzing market reactions to recommendations, we had separate regressions for each type of recommendation—which is easy to do since there are only five levels of recommendations. This approach is not feasible for target prices, given that ERTP is a continuous variable—hence the need for an interaction term.
12. Table 8 shows separate regressions. We also run pooled regressions, which allow for statistical tests of whether the coefficients on ERTP differ between the pre- and post-regulatory period. Unreported results (available upon request) confirm that these coefficients are significantly different.
13. The magnitude of the coefficients (0.13 for Lead_Sanctioned and 0.25 for Comgr_Sanctioned) reveal that sanctioned co-managers respond more strongly to the US regulations than the sanctioned lead managers. Given their need to compete for future IPO mandates, the reputational cost for sanctioned brokers in the co-managers roles is higher than that of sanctioned brokers in the lead role.
14. We also re-examine how US brokers behave in relation to EU IPOs in the periods before US regulations were in place ("Pre-US"), between US regulations being in place and EU regulations being adopted ("Post-US, Pre-EU"), and after EU regulations are adopted ("Post-EU"). Unreported results (available upon request) confirm that US brokers reduced optimism in their European IPOs right after the US regulations were put in place. In particular, sanctioned brokers in the lead role, who were more optimistic in the pre-regulatory period, stop showing any extra optimism than unaffiliated brokers towards EU IPOs when US regulations were implemented. For the non-sanctioned brokers in the lead role, not enough data exists to analyze their extra optimism before EU regulations were implemented (only one such data point for the "Pre-US" and five data points for the "Post-US, Pre-EU" period were available). We also observe that non-sanctioned brokers in the lead role are more optimistic after EU regulations were implemented. The analysis of effects on co-managers is not feasible due to the small sample sizes.

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