Conversation Shaping Questions: a Taxonomy Used for Mapping Argumentative Dialogues in Financial Discourse

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Abstract

Quarterly Earnings Conference Calls (ECC) are a type of dialogue where financial analysts craft their questions to managers of listed companies in order to elicit their opinions and evaluations on the firm's past results and future performance, but also to broaden the information base of their own assessment and forecasts of company performance. We use Inference Anchoring Theory (IAT) to capture how analysts' question design shapes managers' contributions, considering both their illocutions and their logical structure as parameters constraining managerial replies. We show that the existing IAT taxonomy of questions, well adapted to debate, is not sufficient to represent ECC dialogues and we provide a new data verified model of question representation in IAT, capturing how illocutions and logical structure of questions constrain the IAT structures the question can anchor as its propositional content and anticipate the IAT structures managers are expected to contribute with their answers. This model has an impact on the development of argument mining techniques for this key financial discourse genre.

Keywords

Financial discourse, inference anchoring theory, earning conference calls, argumentation, dialogue

1. Introduction

The goal of this paper we extend the typology of questions used for a data annotation according to the Inference Anchoring Theory (IAT) framework in order to capture the question designs found in Earning Conference Calls (ECC), a key dialogic interaction in financial communication [18]. The motivation for undertaking this challenge comes from the practical issue in application of IAT framework in the ECC analysis as a key component in a project aiming at the Argumentation Mining of activity relevant argumentative patterns in ECCs[2]. The final goal of the project is to enable the study of the effects of argumentation in ECCs on the financial markets. Analyst-manager dialogues in ECCs have been found to significantly impact the markets in [8] and [12], but the mining techniques applied to ECC have been limited to sentiment analysis and other shallow methods that cannot capture argumentative dynamics in dialogue. In order to develop an algorithm searching for the arguments within the conversation, we are collecting a training corpus in AIFdb[3] [13] via OVA+ annotation tool[4][11]. Similar corpus studies have been conducted on debate [3] where a suitable taxonomy of illocutionary forces was developed [2] and applied in corpus studies of radio debate in [22]. Yet, the standard taxonomy of question annotation in IAT, applicable in different genres of debate [10] is not applicable to ECC annotation.

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[2] This research is supported by the Swiss National Science Foundation in the context of the project "Mining argumentative patterns in context. A large-scale corpus study of Earnings Conference Calls of listed companies" https://p3.snf.ch/project-200857
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The problem of a suitable question typology for ECC arises from deep differences in dialogue structure and dynamics [21]. Debate is a symmetric activity type where debaters follow the same turn-taking rules and have access to the full range of assertive and questioning speech acts while competing for the persuasion of an audience. Like the journalistic press conference, the ECC, as observed in [18] is an asymmetric activity type where analysts are bound to a questioner role and have strict constraints on turn taking. Furthermore, ECCs combine features of information-oriented dialogue and argumentative discussion, with analysts playing the double role of information seekers and argumentative antagonists. Finally, while debaters have a symmetric incentive to *win*, in ECCs managers have a persuasive incentive, while analysts have a professional incentive to be *right* in their valuations. These differences between debate and the ECC are reflected in the types of questions which shape each activity type. Questions in debate reflect dialogical means of conveying opinion or implicit persuasion, while in ECC analysts use questions to finely constrain the kind of answer managers are expected to provide [18] in order to further their participant incentive.

We propose here a question typology capturing the dynamics of interaction between financial analysts and managers. The typology is data driven and data verified: moving from the practical problem of the proper annotation of an ECC dialogue corpus in IAT we developed the scheme and again verified it in the corpus. We designed the typology according to two dimensions: *illocutionary intention* and *logical structure*. Thanks to these two dimensions we can capture not only the intentions associated with each illocution, but also how each question type frames the content of the expected answer and relates to the previous and subsequent structure of broadly speaking "logical" relations between propositional contents, as captured by IAT.

2. Field of financial communication

ECC Earnings Conference Calls (ECC), described in in [6] and [18], are voluntary public disclosures between top management and financial analysts, on the occasion of the publication of a written Quarterly Earnings Report. While only accredited analysts can ask questions, anyone can log in and listen to these calls live. Recordings and transcripts of varying quality by third parties circulate widely. We based our analyses on our own transcripts based on the audio files. They are opened by a *presentation part* where the top management presents the highlights of the quarterly results, discusses any matters of major present concern, and provides an outlook for the future, which might include "guidance" on future earnings.

The presentation is followed by the Q&A. Procedurally, during the Q&A analysts are *bound to a questioner role*, just like journalists in a press conference. They are restricted to one question turn, and possibly a follow-up, while managers intervene along the whole Q&A self managing their own turn-taking. Interestingly, neither the presentation nor the Q&A are expected to add any "material information" to what is already in the written report. Yet, especially the Q&A is perceived as valuable for the *soft* information it can provide – the *color* as financial analysts like to call it [8]. Analysts look for context and story behind the numbers, try to elicit more detailed explanations of results as well as managerial evaluative opinions, future outlook and statements of intention, and the arguments supporting each of these, which may well be the real informational added value of the event [16]. While analysts aim to acquire relevant information to support their own *valuation* of the company, their *earnings forecasts*, and their assessment of *managerial performance*, they do not express these standpoints during the ECC. This will be done elsewhere, in research reports, recommendations and notes to investors.

We can model the ECC activity type as the conjunction between (a) an *information-offering* dialogue [15] where managers have a commitment to provide information and analysts to identify and receive the information offered, and (b) a discussion on the two issues of *firm valuation* and *managerial accountability*, where both parties can be seen as committed to the rules of a critical discussion [9], where managers take the role of protagonists of standpoints on the two issues, while analysts take the role of pure antagonists aiming at testing the managerial standpoints, but without standpoints of their own. The ECC activity is thus the conjunction of two asymmetric dialogue games (see: table 4 in the appendix). Individual incentive of the managers is to persuade analysts and investors defending the valuation of the company and their own stewardship. Thus they are expected to be selective information

offerers and rhetorically minded arguers. In contrast, analysts have a fundamental professional incentive to be right in their valuations and forecasts. *Ex hypothesi* they are expected to be eager information seekers and unbiased critical antagonists, crafting their questions both *to test managerial standpoints* and *to broaden the evidential basis* for their analysis.

Question design is the fundamental tool that analysts have at their disposal to further their incentives, enrich the information base and put managerial standpoints to the test. While questions in debate reflect dialogical means of conveying of opinion or implicit persuasion, in ECC analysts use questions to finely constrain the kind of answer managers are expected to provide [14] in order to further their twofold participant incentive. Previous studies, [17], [18] and [7] have observed that analysts' questions are syntactically complex and involve indirect requests of specific speech acts (*explaining, clarifying, confirming, commenting,* etc.) from the managers and/or specific kinds of information. A first typology of the requests posed by the analysts during the ECC is provided in [17] and verified in [6]. Detailed schematic description is presented in table 2 in Appendix.

3. IAT framework for the data annotation

We use the inference anchoring theory (IAT) [4] to represent the deeper interrelation between two processes which are taking place at the same time: dialogic interaction and reasoning construction. To represent the structure of an argumentative dialogue in IAT framework, we need to take into account three dimensions of the argumentative dialogue: (1) a dialogue itself, which is conducted according to particular rules (transitions), (2) elements of argumentation structure and (3) illocutionary dimension, which constitutes a glue for the first two. Let's use example 1 from our data set for the visualization of the annotation process.

Example 1 Irene Himona: [...]And I think you mentioned the $7 unit cost target. Why $7? Is that closer to the cost structure of the nine core areas?

Wael Sawan: [...] And when we look at the aspired portfolio that we want to try to get to and we look at the potential of that portfolio, we see it as being around $7 a barrel. […]
(source: *Royal Dutch Shell; Q1 2021*)

In figure 1, corresponding to the illocutionary force of challenging, manager's reply fulfills the request and justifies the challenged propositional content. Both, the analyst and the manager are building an argument, which is anchored in the transition, i.e. dialogical rule. If we want to fully reflect the dynamics of dialogical argument in IAT, we need to pay special attention to the text segmentation and specification of the propositional content of the locutions. According to IAT, an annotator should lead to the basic argumentative unit as a singular segment. For example, if a player would ask to justify two standpoints in a row, like e.g. "Why is Your target unit cost for product A is $7 and for product B is $9?" an annotator should divide the locution into two separate challenges. This gives a possibility for representation of the dynamics of dialogical arguing. Even though both segments are performed and quantified with the same illocutionary force a respondent, may react differently to each argumentative unit, e.g. justify only the first part of the question, and disagree with the second.

Such an analytical feature of IAT makes the framework very precise in capturing how elements of argumentation appear in the dialogue. At the same time, this precision results in the difficulty in defining a set of tags for illocutionary forces applicable to different communicative contexts. We have noticed such a problem when we are trying to apply the standard annotation scheme for IAT driven from the analysis of different types of debate to the analysis of financial communication.
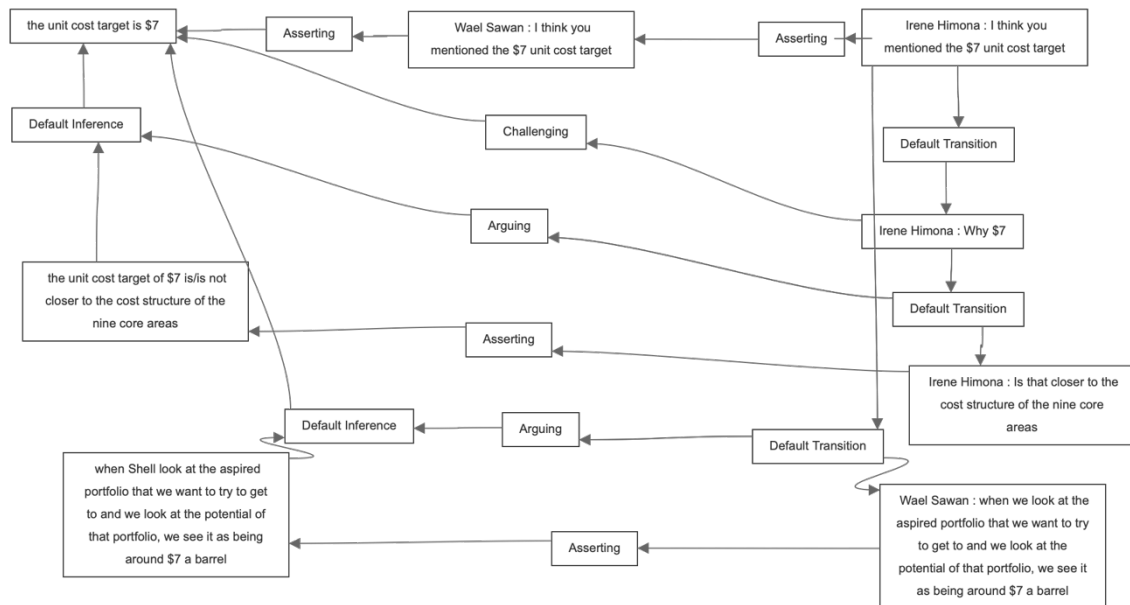
the unit cost target is $7 → Asserting → Wael Sawan : I think you mentioned the $7 unit cost target ← Asserting ← Irene Himona : I think you mentioned the $7 unit cost target

Default Inference

Challenging

Default Transition

Arguing

Irene Himona : Why $7

the unit cost target of $7 is/is not closer to the cost structure of the nine core areas

Asserting

Default Transition

Irene Himona : Is that closer to the cost structure of the nine core areas

Default Inference ← Arguing

when Shell look at the aspired portfolio that we want to try to get to and we look at the potential of that portfolio, we see it as being around $7 a barrel

Default Transition

Asserting

Wael Sawan : when we look at the aspired portfolio that we want to try to get to and we look at the potential of that portfolio, we see it as being around $7 a barrel

Figure 1: An IAT analysis of ECC dialogue using a standard annotation scheme (drawn from the transcripts of debate)

The standard IAT annotation scheme [13] includes 4 types of questions: *pure questioning*, *rhetorical questioning*, *assertive questions*, and *challenge* does not reflect ECC dialogues. Looking at previous corpus studies [17] and [18] of the actual distribution of analysts' question types, and on the basis of the modeling of the activity type in 2.1, it is easy to see that if these 4 types were used to annotate analysts' questions in ECCs, the great majority of them would turn out to be *pure questioning*. Only a tiny minority will be instances of *challenge* (corresponding to *R-of-justification* in Table 3 in Appendix). Treating most of the request types as pure questioning, as a result of adopting the standard IAT typology, would mean to lose the information on anticipated dialogue structures and inferential structures. In fact, in 4.1 by considering the two dimensions of illocutionary force and logical structure we will be able to suggest a more sophisticated way of looking at the *pure questioning* vs. *challenge* distinction.

Rhetorical questions would be completely absent as analysts do not waste their precious question time just to convey their opinions. *Assertive questions*, finally, are an interesting case. There are two types of analysts' questions in Table 1, namely ROCOI and ROCOR that somewhat seem to resemble assertive questions, but they are not. In both cases, the analyst points to the existence of some evidential basis for the questioned proposition. Yet, they never assume full commitment for this proposition. More decisively, the question's consequences on the development of the argumentation are completely unlike those described for assertive questions in [12], p. 63. In contrast with *assertive questions*, ROCOI/ ROCOR are not used to establish agreement (if answered positively) or making a *conflict* emerge between standpoints (if answered negatively). In fact, as it will be clear from 4.2, ROCOI/ ROCOR are more akin to *challenges* than to *assertive questions*.

The difference between argumentation in the debate and ECC is not only on the level of communicative intentions but also on the level of the propositional content. Questions of the latter often contain not only argumentative units as in debate, but also complex argumentative structures. In example 1, the analyst after her challenge builds an argument herself providing a proposed premise "Is that closer to the cost structure of the nine core areas?". This is a ROCOI move, the best standard analysis of which is represented in figure 1, which is also incorrect if we want to show actual dialogical reasoning in ECC. In order to be able to do so we should answer two questions: what is a propositional content of, e.g. the ROCOI structure and how the structure is anchored in the process of conversation.

4. Two dimensional question modeling in financial discourse

In this section we are presenting the model for the propositional content of each request type in Table 1. The model is data verified, i.e. every type of question has its exemplification in the data, which

represents participants' actual behavior. Material from the paper refers to the online available corpus: http://corpora.aifdb.org/requests, where we have collected IAT analyses for authentic examples for each type of question, demonstrating their modeling in IAT. Due to space limitations, here we limit ourselves to presenting select examples allowing us to describe our model. The reference Table 4 in the appendix of the paper provides, for each type of request, a reference number linking to a map in AIFdb corresponding to the IAT analysis of the example.

4.1 Two dimensions for conversation shaping

As anticipated above, analysts' questions conversation shaping power depends not only on their illocutionary force, detailed in 4.1, but on their logical structure. Three possible logical structures can be distinguished in ECC questions: *open*; *yes/no* or *closed-list* questions. Analysts ask functionally open questions when they simply point to the kind of answer managers should provide without proposing or suggesting possible answering propositions. While syntactically these are mostly indirect requests (e.g. *could you, please, explain…*), we model them as functionally open questions. For example, a request "explain some fact *p*" or "elaborate on some topic T" are open questions, which can be best understood in comparison with two other types of questions.

"Yes/no" questions are questions when an analyst provides an answering proposition and requires the addressee to establish its truth-value. Some Yes/no questions may just fashion the issue under discussion by giving presence to one of the possible standpoints, without signaling epistemic commitment to it, or its desirability. Others, however, point to underlying evidence gathered by the analysts and behave like requests to confirm or disconfirm this evidential basis. Closed-list questions appear when analysts provide a set of possible answers for the manager to refer to. Possible answers are presented as a disjoint alternative, as have been shown in qualitative studies in [19]. By displaying those alternative answers, analysts can evoke a real or imagined debate, which prompts managers to position themselves with respect to the evoked standpoints, and possibly express new standpoints of their own if none of the alternatives evoked is acceptable. In Table 1 we introduce propositional contents for each type of question encountered in ECCs, defined in terms of its illocutionary force and logical structure.

Type of requests	open	yes/no	closed-list
R-of-explanation	[p]	p [RA] q	pRAq [CA] pRAr
R-of-justification	[p]	-	-
R-of-confirmation-inf	-	p [RA] q	pRAq [CA] p [RA] r
R-of-confirmation-report	-	p [RA] q	-
R-of-clarification	[p]	p [MA] q	pMAq [CA] pMAr
R-of-opinion	[Px]	[p or ¬p]	p [CA] r
R-of-commitment	[Px]	[p or ¬p]	p [CA] r
R-of-elaboration	[Px]	-	-
R-of-data	[Px]	[p or ¬p]	P [CA] r

Table 1
Propositional content of the types of requests in ECC. Here we use p, q, r as sentence based argumentative units; Px, as an open proposition; IAT annotation conventions are used for RA (relation of inference), CA (relation of conflict) and MA (relation of rephrase); [] are focus brackets capturing the proposition content of question type.

The rows of Table 1 correspond to the illocutionary forces in Table 3 in Appendix, while columns correspond to the three logical structures: the cells represent the propositional contents anchored by the

questions with collinear illocution and logical structure. In relation to the illocutionary dimension, ECC questions can be divided into two groups. Illocutions of the first group, in the upper half of the table, when combined with the yes/no logical structure, can potentially anchor IAT relations between propositional contents. They include: r-of-explanation, r-of-justification, r-of-confirmation-inf, r-of-confirmation-report and r-of-clarification. In the open type, those questions do not directly anchor IAT relations, but can be perceived as directive requests describing an instruction of what a manager is supposed to do with a given propositional content, e.g. *justify* p or *clarify* p, etc. For the sake of story, let's call them *illocutions requesting relations*. The second group of illocutions does not anchor or anticipate IAT relational structure: r-of-elaboration, r-of-opinion, r-of-commitment, r-of-data. We can name them *premise or standpoint seeking requests*, as they request new bits of information explicitly, e.g. to provide data, an opinion or a commitment. We describe both types of illocutions in detail in the following subsections.

4.2 Requesting relations

In the ECC we model two types of relations which can be requested. Relation of *inference* (RA) or relation of *rephrase* (MA). The illocutionary force of requesting explanation, justification, confirmation of inference and confirmation of report will anchor and/or anticipate the relation of inference. For the purposes of this paper, we acknowledge differences and similarities between explanations and argumentations along the lines of [1]. Consequently, we say that in explanation, there is still a relation of inference between a premise and a conclusion, yet in that case, conclusion is already a known fact, not a discussible opinion. In the ECC requesting the explanation can be posed as an open (see: Example 2 and Figure 2), yes/no (see: Example 3 and Figure 3) or closed list (see: example 4 and Figure 4) question.

Example 2: Jaime Katz: […] While you guys have made all these steps in sourcing and availability of products for the holiday season, how have the retailers worked with you to accept that product? (Source: *Hasbro Inc., Q2 2021*)
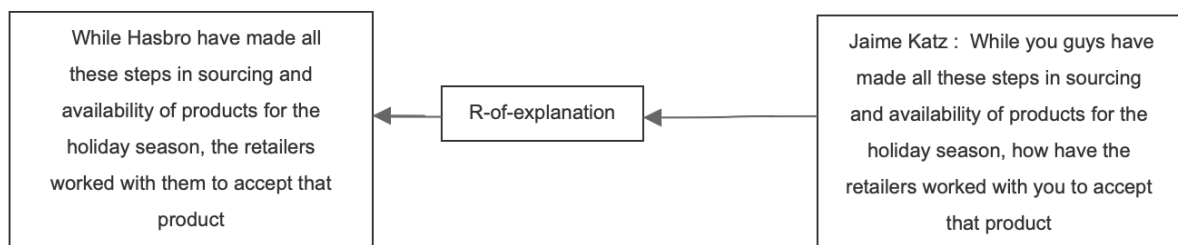

Figure 2: IAT representation of the open type of r-of-explanation (example 2).

In the open type of questions r-of-explanation illocution has a propositional content, a proposition describing a fact that an analyst wants to be explained. The question does not anchor an explanatory RA, but anticipates one from the managers.

Example 3: Devin Brisco: [...] Could you -- could that segment [of partner brands] grow more in line with your core business for the full year, just given, you know, increased Disney+ adoption and new series like The Falcon and the Winter Soldier? (Source: *Hasbro, Inc., Q1 2021*)
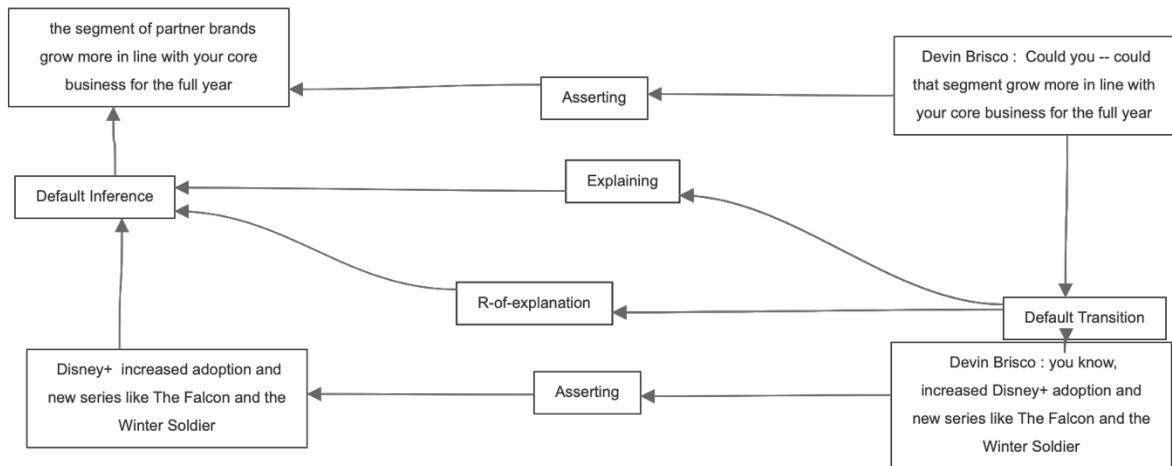
Figure 3: IAT representation of the yes/no type of r-of-explanation (example 3).

In contrast, in the yes/no type of requests of explanation, an analyst already proposed the disaggregate explanation of the predictive event. He poses a fact which is about to come and states that there is a causal RA relation between the fact and the explanation. When asking whether the provided elements are true or false an analyst is asking about all the structure, but primarily he is asking the causal relation between the explanans and explanandum. Therefore, the propositional content anchored by such a move is the RA relation as an element which overwhelms all elements of the structure. In such a way, the manager in his reply will also be able to relate to the proposed predictive event, proposed cause and relation between them.

Example 4: Oswald Clint: [...]And then on chemicals, could you really describe the margin strength you're seeing? Would you characterize it as demand-led across your products and businesses? Or is it a function of the Texas freeze and some of the deep cracker maintenance that you're seeing? (Source: *Shell plc, Q1 2021*)
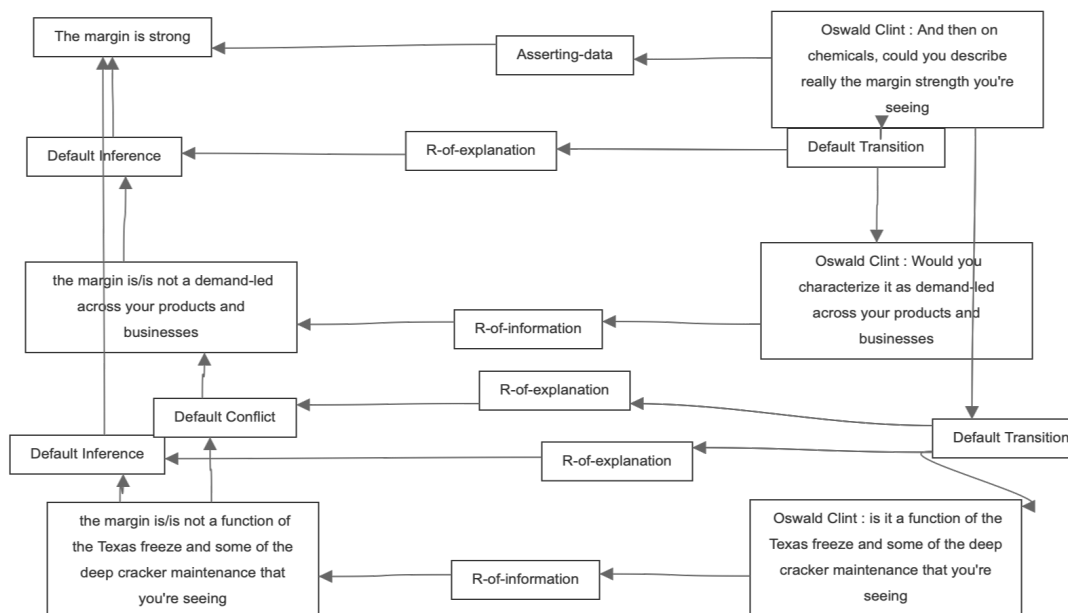

Figure 4: IAT representation of the closed-list type of r-of-explanation (example 4)

Closed list questions are about introducing two or more possible explanations, i.e. RA relations between a fact and its possible explanations. As has been shown in closer qualitative studies on the closed-list questions in [19], posing a closed list questions analysts have a strategy to propose

alternatives, which are in a relation of conflict [CA]. We model this relation of conflict as a propositional content of the closed-list question, as an analyst in such a way would have a possibility to accept the disjunctive alternative and confirm one possibility or (as it happens pretty frequently) reject the relation of conflict between options. This actually happened in the analyzed example 4, when Jessica Uhl said "*That is a function of demand and some strengthening in the economy, certainly in Asia, that's driving that*".

While explaining results is an important component of ECC Q&A, with obvious implications for managerial accountability, explanations do not exhaust the range of RAs anchored and anticipated by ECC questions. The antagonistic role of analysts involves also challenging managerial standpoints. Argumentation in ECC is more complex than explanations as it is dealing with argumentation proper where the truth of the inferred claims/standpoints is not yet established. We examine here two different challenge-like illocutions: the r-of-justification and the r-of-confirmation-inference (ROCOI). Combined they cover the three possible logical structures, which r-of-explanation covered on its own. When an analyst performs the open r-of-justification, which corresponds to a directive *Justify* p!, they attribute a standpoint to the managers and evoke their burden of proof. In the ECC context, this is a fairly face-threatening move and exceedingly rare, as observed in [21]. In the case of r-of-confirmation-inf (ROCOI), an analyst proposes not only possible premises and relation of inference, but the standpoint is also tentative and liable of confirmation or disconfirmation, i.e. the manager does not have a burden of justification for it. This more indirect strategy is analysts' preferred way to challenge managers.

The r-of-confirmation-report (ROCOR), illustrated in example 4 above, also has an argumentative value. Managers are called to confirm or disconfirm the evidential value of previous statements or third party reports. It does not have a corresponding open type. This would be a special case of r-of-justification, corresponding to the directive: "Give me a source for p!". We haven't encountered this illocution, and it might be very rare, for reasons inherent to the activity type itself: the fact that the managers are on record saying p in an ECC already constitutes a high quality official source, as they made themselves liable to legal claims with a public statement.

Example 5: Arpine Kocharyan: I was wondering on your gaming business, is your margin guidance of 39% for the year largely unchanged? (Source: *Hasbro, Inc., Q1 2021*)
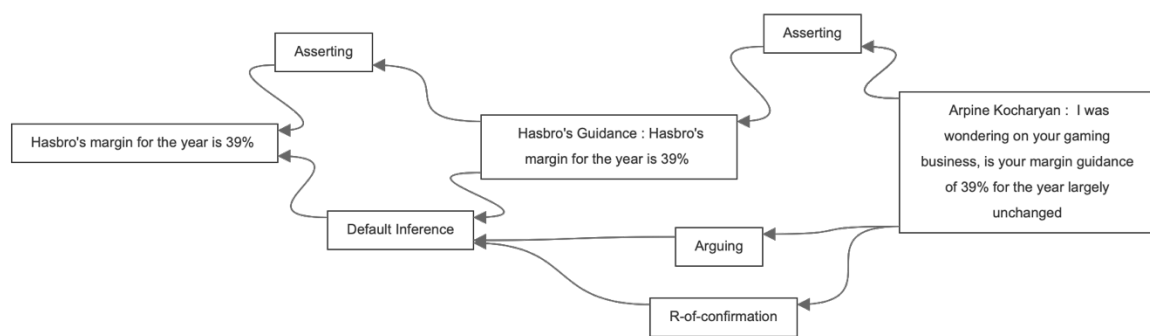

Figure 5: IAT representation of the yes/no type of the r-of-confirmation-report (example 5)

Finally, when annotating a proposition p which clarifies a proposition q, we indicate the relation of the rephrase between p and q. Triggering the relation of rephrase (MA) r-of-clarification, therefore will work the same as other requests triggering relation of inference.

4.3 Requesting premises and standpoints

As for the second group of illocutionary forces, it is in their open type where their orientation towards the acquisition of more information is more apparent, as opposed to the establishment of relations between existing pieces of information that characterizes the first group. Their propositional contents

are open propositions Px which contain variables x representing missing information. In some cases the missing information can be a whole proposition like in the case of requests of elaboration, opinion or commitment, or just a particular bit of information required to saturate a proposition, like in the case of requesting data. Consequently, we model the propositional contents of the open type of these questions as follows:

r-of-elaboration: "X elaborates about d", where d is a description of the topic T;
r-of-opinion: "X is an opinion on d", where d is a description of an open issue Q;
r-of-commitment: "X is a commitment on d", where d is a description of the practical issue Q;
r-of-data: unrestricted open description P of a state of affairs S containing a variable x.

In the open type of R-of-opinion, (example 6) an analyst verbalizes a topic on which they want a manager to give an opinion. This does not directly anticipate argumentation structure, however managers, having committed to a point of view on some topic, will be to some extent subject to a burden of proof. Thus, it can be an indirect way to elicit argumentation. In the yes/no variant of the R-of-opinion analysts fashion an opinion on the topic, giving it propositional form. This does not go as far as the R-of-confirmation-inf (ROCOI) where an RA supporting a standpoint is provided, yet the very fact that this opinion is given verbal substance makes it a conceivable opinion. This also pushes the boundaries of the information base available to analysts, by avoiding that managers express extremely vague opinions. The propositional content of such a move is an alternative between the opinion p and its negation, like in the example represented in figure 7. When providing a closed list of questions (example 8), an analyst provides two or more different opinions, sometimes suggesting the existence of a debate and – again – constraining the possibility for managers to resort to vagueness. As was shown in [19] closed list questions usually have relation of conflict between the options, which is, as in case of example 4 is the propositional content of the question, as shown in figure 8.

Example 6: Michele Della Vigna: How do you think about the split between dividends and buybacks in terms of how it trends over the coming years with a potential stronger macro backdrop?
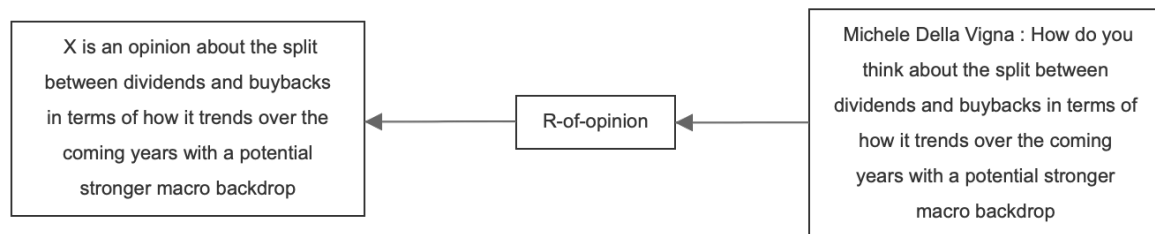(Source: *Shell plc., Q2 2021 Earnings Call*)

Figure 6: IAT representation of the open type of the r-of-opinion (example 6)

Example 7: David Beckel: I'm curious [...] whether or not you expect mobile to further expand the market base. That's my first question. (Source: *Hasbro inc., Q1 2021*)
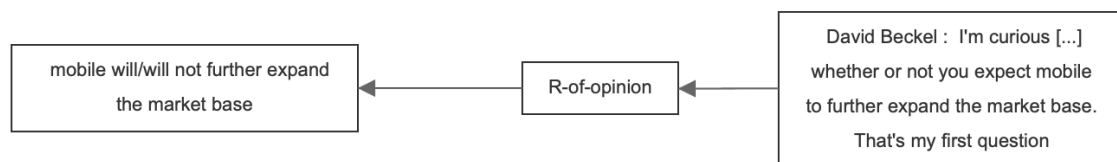

Figure 7: IAT representation of the yes/no type of the r-of-opinion (example 7)

Example 8: Fred Wightman: [...] Do you think that given the shipping environment today, we could see a similar type of timing shift from 3Q to 4Q or relatively steady to the past few years?
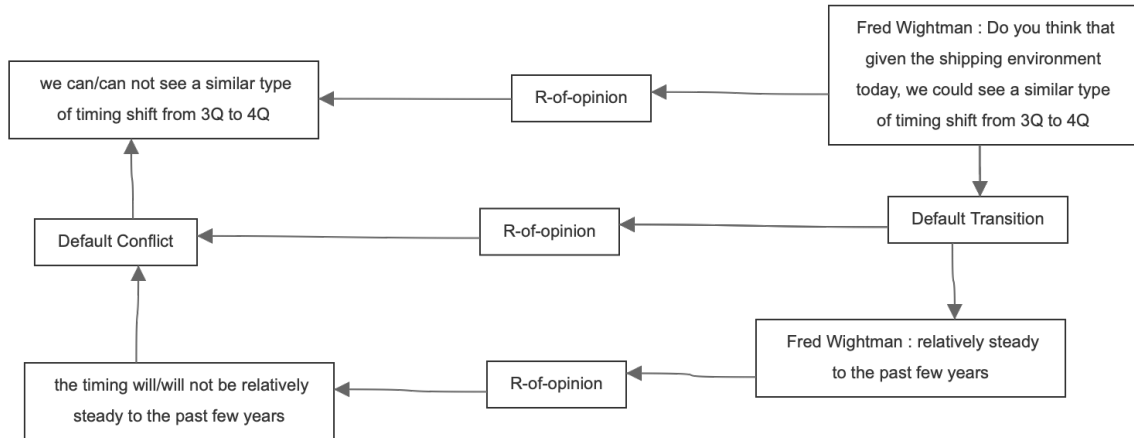(Source: *Hasbro, Inc., Q1 2021*)

Figure 8: IAT representation of the closed-list type of the r-of-opinion (example 8)

5. Conclusions and discussion

In this paper we presented a IAT-based model of analysts' questions in ECCs capturing how question design shapes managers' contributions, considering both their illocutions and their logical structure as parameters constraining managerial replies. For instance, by knowing the set of propositional contents listed in the closed list question, we know which options an analyst provides to the manager, and to what extent a manager exists the proposed set of options with their answers. Even the most open type of questions, such as requests for elaboration, would shape the conversation according to the regularities described in [9]. Examples which are listed in table 4 in the appendix show how the proposed model allows us to represent argumentative structures built during the questions so that we can further analyze how managers relate to them in their answers.

Illocutionary forces of analysts' questions were divided in two groups, based on the shape of the propositional content of their open version (requesting relations vs. requesting premises and standpoints) and on the possibility of anchoring RA or MA relations in the Yes/No and closed list versions, which occurs only for the first group. Prima facie, not only R-of-justification, ROCOI and ROCOR, but all the first group questions are can be analogized with *challenges* in the standard IAT typology, not in the strict sense of leveraging on the interlocutor's burden of proof, but because, like challenges, they aim at eliciting IAT relations (RA or MA).

The second group of ECC requests can perhaps be analogized to the pure questioning in IAT standard taxonomy. When posing this type of questions, analysts are seeking to broaden the evidential basis at their disposal, they are fishing for new information. However, many of the questions of the second group, r-of-opinion for instance, can be used in what amounts to an indirect argumentative challenge. The intertwining of question design and the argumentative dynamics of the dialogue, which we have opened up with the proposed model, needs to be further investigated.

The description of the model was made through the deeper analysis and discussion of question moves from the ECC transcripts corpus. Both the communicative intentions and the logical structures of the questions were defined according to a rational reconstruction of the ECC activity type consistent with domain knowledge about financial communication, the relevant literature (e.g. [6], [7] and [8]) and preliminary perusal annotation of the ECC transcripts.

More broadly, the introduction of the logical structures and corresponding propositional content types for questions in IAT is a structural innovation in the annotation framework, whose implications need to be better understood. This implies the need for further investigation targeting other domains.

The research presented here also has immediate implications for the annotation of argumentative dialogue, namely of ECC dialogues and, subsequently, for IAT-based argument mining techniques. In the following months we will work to greatly increase the size of the corpus, both through the annotation of entire ECC Q&As and through the creation of targeted *collections* exemplifying specific dialogic argumentative patterns, of which the question designs described here are the essential blocks.

6. Acknowledgements

7. References

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Appendix:

Dialogue game:	Managers' role:	Analysts' role:
Information offering dialogue	Information offerer	Information seeker
Discussion on valuation and accountability	Protagonist	Antagonist
Incentives:	Persuasion	Information acquisition and critical testing

Table 2
Schematic description of the ECC dialogue dynamics

Table 3 provides a refinement of the typology of Requests, that could be found in ECC, defining the illocution characterizing each request type in terms of preconditions and intentions. Preconditions show what kind of topics or issues have to appear in the discourse so that an analyst can pose a particular question felicitously; intentions describe the pragmatic goals, which analysts are trying to achieve via posing a particular type of request.

Type of requests	Precondition	Intention
R-of-explanation	p describes a state of affairs F	A wants M to explain the causal process bringing about F
R-of-justification	p a standpoint explicitly asserted by M	A wants M to support p with argumentation
R-of-confirmation-inf (ROCOI)	A draws conclusions on the basis of previously released information I	A wants M to confirm, that A's reasoning is correct
R-of-conformation-report(ROCOR)	A is less than fully certain about information I which was reported before, M is expected to know	A wants M to confirm or disconfirm that I is the case

		whether I is the case or at least to know more about I
R-of-clarification	p is a proposition asserted or implied in the firm's disclosures	A wants M to clarify the meaning and implications of p
R-of-opinion	Q is an open issue arising from the firm's disclosures, M are not expected to know the answer to Q, yet they are expected to possess some information relevant to it	A wants M to express their informed opinion on Q
R-of-commitment	M are confronted by the practical issue Q	A wants M to commit to a course of action regarding Q
R-of-elaboration	T is a topic discussed or at least mentioned in the firm's disclosures	A wants M to provide additional information on T
R-of-data	State of affairs S is either already in the public domain of expected to be known by firm's insiders	A wants M to fill a gap in the description of S

Table 3
Types of requests, which analysts are posing during the Earning Conference Calls

Table 4 represents a data verification of the model. Each type of question has an exemplification from the text data from Earning Conference Calls from different quarters of the year 2021 following companies: Hasbro Inc., Royal Dutch Shell Inc., Zillow plc.

Type of requests	open	yes/no	closed-list
R-of-explanation	25673	25703	25805
R-of-justification	25709	-	-
R-of-confirmation-inf	-	25718	25806
R-of-confirmation-report	-	25708	-
R-of-clarification	25713	25714	25807
R-of-opinion	25677	25681	25809
R-of-commitment	25715	25711	25810
R-of-elaboration	25706	-	-
R-of-data	25707	25688	25811

Table 4
Data verification of the request taxonomy