From partner to rival: Changes in media frames of China in German print coverage between 2000 and 2019

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Abstract

Western countries' relations with China are characterised by a dichotomy of partnership and conflict, of rapprochement and demarcation. To date, research lacks longitudinal studies that examine how these economic and political tendencies become manifest in the image of China conveyed by Western media. Taking Germany as an example, this study aims to shed light on the development of China coverage in print media between 2000 and 2019. Following a triangulating mixed-method approach, the results of computational *topic*[1] modelling (N = 55,893) are complemented by semi-standardised interviews with China correspondents. A framing analysis shows that China was depicted as a valuable economic partner until a rivalry frame started to become dominant in 2016/17. This shift was accompanied by a significant increase in media interest.

Keywords

China, Germany, LDA, media, framing, economy

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Introduction

The People's Republic of China's (henceforth: China) accession to the World Trade Organisation (WTO) in 2001 is considered an economic and political prerequisite to the country's rise in global trade (Huotari et al., 2016). Both government officials and business representatives from Western countries were convinced that China's developing market economy would not be able to coexist with its authoritarian one-party state. Instead, so they hoped, China would undergo a process of political and institutional reforms eventually resulting in democratisation (Heilmann and Stepan, 2016). This idea of "change through trade" (Heilmann, 2007: p. 586) has shaped Sino-German relations significantly over the past years. But at the same time, international media were – and still are – framing China as an economic or geopolitical threat. Media interest for China has continued to grow along with its increasingly important position in the international system. Given Germany's prominent role in the European Union and the fact that China is among the top three of Germany's most important non-European trading partners (BMWi, 2019), it is our goal to investigate the evolution of German China coverage and framing more closely.

Similar to other researchers such as Thimm (2017), we find that literature on German media coverage of China is surprisingly scarce. Moreover, the existing studies examine only short periods of time and do not analyse current datasets. The latter is a particularly sensitive point considering that media attention for China has recently increased in light of the US-China trade war or China's massive investment activities in Germany and other countries. The acquisition of German robot manufacturer Kuka by a Chinese investor in 2016 is just one example here. Therefore, a longitudinal analysis of the evolution of German China coverage is yet to be conducted and will be the focal point of our research. This study aims to add to existing research by triangulating a computational analysis, manual coding of media frames and semi-standardised interviews.

The paper is structured as follows: First, the notion of domestication and how it is linked to national framing is reviewed. The subsequent section summarises the state of the art on common images and frames of China in German news media. As mentioned before, previous research does not provide a comprehensive analysis of how German China coverage has changed from the early 2000s until the present day. The close economic ties between China and Germany and the consequences of recent developments in particular are expected to become visible in the data. As the next section elaborates, the results of the computational analysis and the frame analysis are complemented by semi-standardised interviews with China correspondents. Here, we observe a backflip in framing after 2016/17, when German media started replacing the partnership frame by a rivalry frame.

Theoretical background and literature review

The domestication of foreign news

News producers across countries have different strategies for selecting and creating international news stories. The basic assumption here is that "different societies tell […]

different stories, coherent narratives that serve particular purposes, and that particular cultural settings would account for this diversity" (Gurevitch and Levy, 1990: p. 30). In other words, the heterogeneity of cultural backgrounds in international news production leads to narrative variation, because stories about the same event are told in different ways in order to make them more comprehensible for different national audiences. This phenomenon is called "domestication" and was first introduced by Gurevitch and Levy (1990). According to the authors, events in – or, more generally, news from – foreign countries are presented in contexts that are more familiar and thus more appealing for domestic media consumers.

On the one hand, the process of news domestication has consequences for traditional conceptualisations of newsworthiness. According to previous research, variables like relatedness, event factors or traits of nations influence the salience of countries in international coverage (Schulz, 1976; Galtung and Ruge, 1965; Chang et al., 1987; Scherer et al., 2006; Segev, 2019). However, as Gurevitch and Levy (1990) note, newsworthiness can also be anchored in narrative frameworks corresponding to a particular cultural context. This means that an audience of domestic media consumers will perceive an event in a foreign country as more important or relevant, if the story about it is presented in a way that resonates, culturally or else, with the audience or if it invokes recognisable national themes.

On the other hand, domestication is closely related to the concept of framing, as frames can be associated with culturally familiar symbols or stories. Frames are interpretational patterns designed to process and classify information more efficiently. They highlight certain aspects of reality and thus contribute to the construction of social reality by the media (Entman, 1993). To be precise, media frames contribute to shaping public opinion, because recipients are more likely to remember aspects accentuated by an underlying frame (Scheufele, 1999). Also, people with the same cultural background – such as a shared language or religion – usually interpret frames in a similar way, because they hold similar beliefs concerning norms and moral values (Potthoff, 2012).

As indicated by Clausen (2004), the media present international news within frames of interpretation that are already familiar to local audiences, making "global news particular to each country" (Clausen, 2004: p. 27). The author also finds evidence that events and news stories are framed differently across cultures and identifies framing as part of national media strategies for the processing of global news. Building on this rationale, we operationalise the process of domestication via framing, investigating the particular way in which the German media interpret news from China and how they present it to their local audience.[2]

A study by Alasuutari et al. (2013) shows that foreign news items and the framing thereof can play a role for domestic politics, too. The authors state that "when something newsworthy enough happens, politicians or other actors often utilise the situation by linking the foreign news item to domestic politics" (Alasuutari et al., 2013: p. 693). In this regard, the domestication of foreign news is not only linked to national framing strategies, but it can also have valuable implications for domestic political decision-making processes and is thus connected to the agenda-setting function of the media (McCombs, 2007).

The image and framing of China in German print media

Existing studies on media coverage and framing of China in the international press (e.g. Lams, 2016; Zhang, 2016; Golan and Lukito, 2015; Zhang, 2010) indicate that news articles focus on China's economic rise and its role in the international system.

Germany is the fourth largest economy in terms of GDP at market exchange rates after the US, China and Japan (IMF, 2021). Also, China has been Germany's most important trading partner for five consecutive years (Destatis, 2021). Surprisingly, there are only a few studies investigating German media coverage of China (e.g. Zinser, 2018; Thimm, 2017; Bieber, 2011; Richter and Gebauer, 2010). The most comprehensive publication in this context is the Chinese-German image report, which comprises a variety of studies that examine the image of China and corresponding stereotypes in German media between 2000 and 2013 (Vogel and Jia, 2017). For instance, a content analysis of German newspaper articles published in 2012 finds that leading German media seem to draw a multifaceted image of China, while overall coverage is mainly focused on current economic and political events (Thimm, 2017).

Contrastingly, Richter and Gebauer (2010) conclude that German China coverage seems rather imbalanced as it concentrates on a small variety of issues. Focusing on the year 2008, the authors conduct an extensive empirical analysis of China coverage in German print media. They identify the economy as an essential element of coverage, but also discern that the media are apparently following a certain agenda focusing on conflict, violence and damage. According to the authors, the analysed media reproduce negative images or stereotypes without scrutinising their validity. Deficits were also found regarding the coverage of social affairs and science. As a result, news reports lack important information that is crucial for developing a profound understanding of China (Richter and Gebauer, 2010). Similarly, Bieber (2011) finds that China coverage in the German press is rather biased. Based on her analysis of articles published in 2008, the author reveals an imbalanced news coverage of China, which neglects background information and, according to the author's verdict, fails to convey a sufficiently elaborate representation of the country.

In terms of news frames of China in the German press, the literature is scarce as well. One exception is the work published by Wilke and Achatzi (2011). The authors conduct a longitudinal content analysis of newspaper articles about China published in German print media between 1986 and 2006. They identify five frames: (1) political cooperation, (2) scepticism with regard to politics and political actors, (3) positive economic normality, (4) strangeness/incomprehensibility and (5) economic cooperation (Wilke and Achatzi, 2011: p. 360ff.). In a more recent study, Zinser (2018) compares the framing of China in German newspaper articles published between February 20 and March 31, 2003 with those of the corresponding 40 days in 2013. The author observes that coverage has changed from strongly negative in 2003 to ambiguous in 2013. She identifies four frames: (1) China's gridlock, (2) two sides of a coin, (3) conflicting goals and (4) China's change (Zinser, 2018: p. 178ff.). Finally, a study by Müller and Boczek (2020), though mainly focused on WTO coverage instead of media representations of China, finds an optimistic frame about the opening up of China in the coverage of

globalisation and the WTO in the early 2000s, petering out soon after China's accession to the WTO in 2001.

As shown, previous studies on China coverage in German print media focus on rather short episodes reaching from a couple of weeks to one year. One exception is the longitudinal study by Wilke and Achatzi (2011). The most recent data included in an analysis is from 2013 (Zinser, 2018). A longitudinal analysis looking at a more contemporary dataset and comprising a sample period of more than just one year needs yet to be conducted. It is thus the goal of this paper to fill this gap in existing research.

Research questions and hypotheses

China has become an important player in global trade and international politics, especially since its accession to the WTO in 2001 (Huotari et al., 2016). At the same time, media interest for China has increased and Western media tend to frame China as an economic and ideological competitor (Zinser, 2018; Thimm, 2017; Wilke and Achatzi, 2011). We strive to contribute to this body of research by examining whether German media interest in China has changed over time and which frames have been dominant in German China coverage.

First of all, it is our goal to analyse how news coverage of China has evolved over the past 20 years. China is the second largest country in terms of GDP after the US (IMF, 2021) and its importance in the international system has increased continuously over the past decades. For instance, China has the largest export volume in million US dollars of all countries worldwide and it is also the second largest importer of goods after the United States (WITS, 2021). Events like the US-China trade war have drawn particular attention to the country recently. Previous studies observe an increase in media interest for China (e.g. Vogel and Jia, 2017; Zhang, 2016; Zhang, 2010). Accordingly, we expect the overall volume of coverage to increase throughout the observation period.

Hypothesis 1: China's increasingly important role in the world economy is characterised by a growing number of articles about China in German media coverage.

Further, our analysis invokes the notion of domestication coined by Gurevitch and Levy (1990). As elaborated in our literature review, the authors contest traditional understandings of newsworthiness by emphasising that an event in a foreign country will be perceived as relevant if it is cast into narrative frameworks that resonate with the audience. In the case of German China coverage, the idea of "change through trade" is such a framework. As Heilmann (2007) notes, trade and business interests have been the compelling force in Sino-German relations since the late 1970s. Since bilateral trade relations are still important today (Destatis, 2021), it seems natural to assume that the German domestication of news from China becomes manifest in a focus on economic topics. Therefore, we aim to investigate if an economic focus of media coverage, which was highlighted in earlier studies as well (e.g. Richter and Gebauer, 2010) can be observed in our data or not.

Research Question 1: Will the German domestication of news from China become manifest in a media focus on economic subjects?

Given that the media tend to present news from foreign countries within national frames of interpretation (Clausen, 2004), we use the concept of framing to operationalise the domestication process. A second goal of this study thus is to identify the most common frames in German newspaper articles about China. In reference to the results of previous studies (e.g. Zinser, 2018; Zhang, 2016; Golan and Lukito, 2015) we expect that the media tend to frame China in terms of the potential benefits of economic cooperation or in terms of systemic competition, while it remains to be determined which one of these two framing foci will prevail.

Research Question 2: Will the German domestication of news from China be rather focused on mutual economic benefits or competition?

Considering the domestication of news (Gurevitch and Levy, 1990), which is the point of reference for our analysis, either direction of framing would make sense, because both frames and domesticated news stories can invoke culturally familiar symbols or stories in order to make news more comprehensible for a national audience. While the notion of "change through trade" is likely to have influenced the framing of China in the first half of the observation period, we suppose that other narrative frameworks may have become more important over time. To be precise, we assume that framing was at least partially influenced by the US-China trade war, China's massive investment activities as well as a policy paper published by the Federal Association of the German Industry (BDI) emphasising that China could be a serious economic threat for the German industry (BDI, 2019).

Research Question 3: How have media frames of China changed over time and what trends can be observed with respect to underlying narrative frameworks?

Method

Large datasets tend to exceed the capacities of human coders and therefore pose a challenge for traditional approaches to content analysis. Previous research has shown that the robustness and validity of findings can be increased by combining computational methods with external forms of validation such as expert evaluations or manual coding (Maier et al., 2018). It is argued that hybrid approaches are most suitable in certain cases, as they retain the methodological advantages of both traditional and computational approaches (Hase et al., 2020; Choi, 2020; Lewis et al., 2013).

Considering the benefits of methodological triangulation, this study follows a sequential mixed method research design (Kuckartz, 2014). The goal is to use semi-standardised interviews to complement the results of the computational analysis and the frame
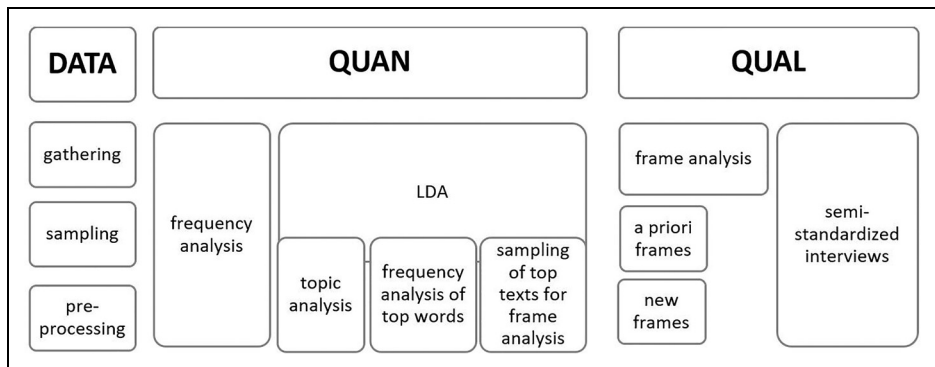
Figure 1. Visualisation of analytical steps realised within the sequential mixed method research design of this study.

analysis.[3] The following sections provide detailed descriptions on the individual analytical steps visualised in Figure 1.

Data

This paper examines the media coverage of China in four well-established German quality newspapers between January 3, 2000 and June 29, 2019. The time frame is chosen because China became a member of the WTO in 2001, which advanced the country's economic performance and accelerated its integration into global value chains (Huotari et al., 2016). Since our goal is a long-term analysis, the data should comprise as many years as possible, unveiling the dynamics of news coverage over time. At the time of writing, the latest data available was from the first half of 2019. Moreover, we strive to analyse a representative sample of German print media. Therefore, we compile our dataset such that it includes newspapers covering a variety of political opinions and focus areas (Eurotopics.net, 2020): Handelsblatt (economic-liberal, n = 16,031), Süddeutsche Zeitung (liberal, slightly left-of-center, n = 18,008), Die Tageszeitung (taz, n = 6,180) (left) and Die Welt (conservative, n = 15,674). The articles were derived from LexisNexis database (taz, Die Welt) or directly from the publishers (SZ, Handelsblatt). The final corpus was chosen such that it comprised only articles with two or more occurrences of the search term "chin*".[4] A total of 55,893 articles was analysed with LDA. For the purpose of the *topic* analysis as well as for conducting the frame analysis, a representative sample of 600 articles was drawn from the corpus (for methodological details see following sections).

Quantitative study: *Topic* modelling with LDA

Aside from a frequency analysis, which serves as the basis for answering hypothesis H1, the quantitative part of the study entails a computational analysis in the form of *topic*

modelling with Latent Dirichlet Allocation (see Figure 1). LDA is used to automatically organise large text collections and identify underlying main themes derived from latent patterns of word co-occurrences (Jacobi et al., 2016; Blei et al., 2003). In other words, LDA generates interpretable word clusters, called *topics*, according to the probability distributions of words. A subsequent *topic* analysis sheds light on the underlying subjects within the corpus. For the purpose of this study, LDA is applied to the data using the R package tosca (Koppers et al., 2020).

Before starting the analysis, it is necessary to define the model's granularity, which refers to the level of detail and is specified by the parameter k – the number of *topics* that LDA should generate. In this study, the results of different values for k were compared.[5] The parameter is eventually set to $k = 14$, because this value yields the best balance of granularity and conflation of *topics* in terms the research objective. To be precise, some *topics* would split into two or more separate *topics* for $k > 14$, and other *topics* would merge together for $k < 14$. Unfortunately, this decreases the interpretability of *topics* – referring to the detection of semantic nuance by human coders (Jacobi et al., 2016) – and is thus not optimal in terms of our research question.

In general, a human coder can interpret the *topics* generated by LDA with the aid of word lists displaying the most frequent words in each *topic*, the so-called topwords. These words are thematically associated so that the researcher can find headlines (labels) reflecting the underlying subject in each word cluster. As Puschmann and Scheffler (2016) point out, the meaning of *topics* is not always intuitive. If the inherent meaning of a *topic* can neither be derived from the topwords, nor in reference to other *topics*, it is necessary to take a look at the so-called toptexts. This is a collection of the most representative articles in each *topic*.

When working with LDA *topic* models, validity and reliability are two of the greatest concerns. Maier et al. (2018) provide an elaborate overview of approaches addressing
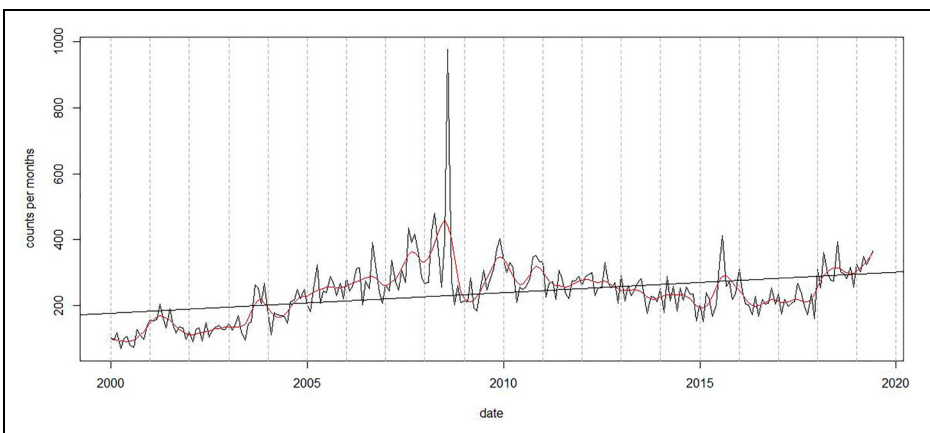

Figure 2. Number of articles per month between 2000 and 2019 (black line), moving average (red line) and fitted regression line.
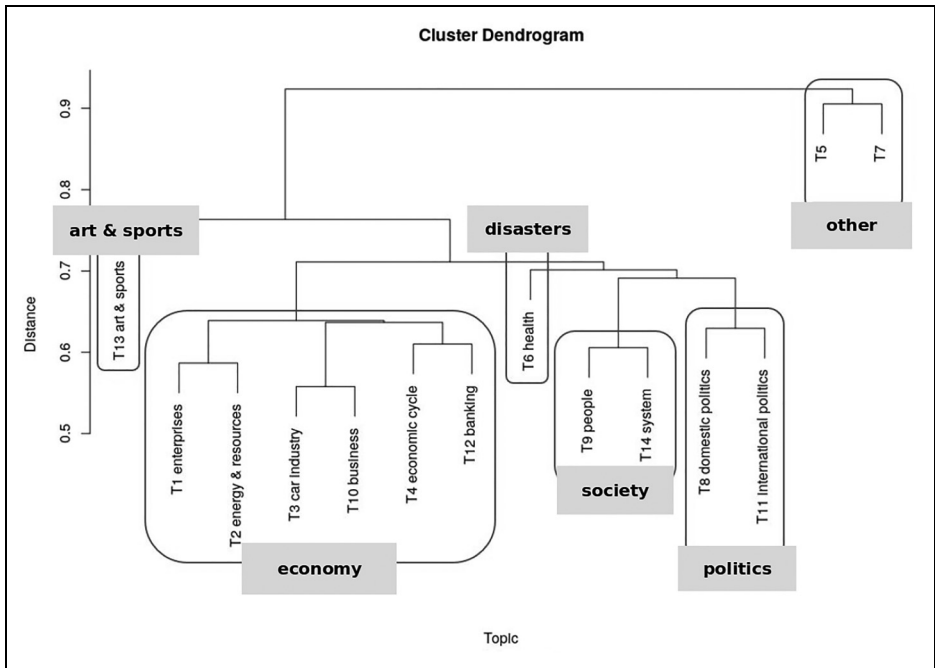
Figure 3. Cluster dendrogram for $k = 14$ showing the relative distance (Hellinger distance) between the *topics*. *Topics* that appear relatively close together are clustered in overarching news categories (art & sports, economy, disasters, society, politics, other)

these challenges, including statistical methods for *topic* selection or strategies to test the semantic validity of *topics*. In the present study, we have combined a heuristic analysis of topwords and toptexts with intruder tests. Word intrusion is tested by scanning a list of words and identify the one term that is not associated with a given *topic*. For instance, among the words investor, growth, year, percent, siemens, economy, demand, us, dollar and stocks, "siemens" would be marked as the intruder (for more examples see online appendix). *Topic* intrusion is tested analogously (see Chang et al. (2009) for specifications).[6] In addition, intertopic validity was tested via the statistical proximity of *topics* by means of clustering (see Figure 3).

Frames and LDA

According to Entman, "to frame is to *select some aspects of a perceived reality and make them more salient in a communicating text*" (Entman, 1993: p. 52, emphasis in original). There is an important conceptual overlap between framing theory and computational approaches to content analysis, because algorithms can be suitable for identifying word clusters that could represent frames (Matthes and Kohring, 2008). LDA-generated *topics*

can be viewed as frames if they comprise words with discursive connotations or words associated with a certain controversy (DiMaggio et al., 2013). It is important to note, however, that this approach to the identification of frames is contested in the literature, not least because one frame may appear across *topics* as well. For instance, Walter and Ophir (2019) point out several reasons why *topics* per se should not be conceptualised as frames and therefore argue in favour of an inductive approach to frame analysis. We acknowledge this criticism by using a sample of toptexts for our frame analysis rather than trying to match frame elements to the LDA *topics* as a whole.

As Figure 1 shows, the frame analysis is twofold and entails both a quantitative and a qualitative component. In order to reduce the corpus to a manageable and yet representative number of articles, the authors sampled 50 toptexts for each *topic*.[7] Based on the findings of previous studies (Zinser, 2018, Lams, 2016; Golan and Lukito, 2015; Zhang, 2016; Wilke and Achatzi, 2011), common frames in international China coverage were formulated (see codebook in online appendix). An example for one of these a priori frames is "China as economic threat" (Golan and Lukito, 2015, Lams, 2016). It applies to all articles that associate China's economic success with potential disadvantages. Wage dumping, (hostile) takeovers of foreign firms by Chinese investors or trade-related disputes are among the indicators for this frame.

Following a quantitative approach, all 600 toptexts (= 12 *topics* with 50 toptexts each) within the sample are coded. An article may contain more than one frame and frames may occur across multiple *topics*. A frame is considered relevant, if counted at least five times within a sub-sample of 50 articles. The coding process itself leans on the methodological recommendations of Matthes and Kohring (2008) and Entman (1993), respectively. A frame comprises four elements: a problem definition, a causal interpretation, a moral evaluation and a treatment recommendation (Entman, 1993). Matthes and Kohring (2008) understand these elements as variables consisting of categories that are codable by means of content analysis. For the purpose of this study, we stipulate that an article must contain at least three out of these four elements in order to be coded as matching a particular frame. In practice, this means that the sentence "Among other things, German manufacturers hold wage dumping of Chinese competitors accountable for the misery of the industry" (taz, die Tageszeitung, 2012, own translation) would be coded as matching the frame "China as economic threat", because it contains (1) a problem definition (the [solar panel] industry is not doing well), (2) a causal interpretation (Chinese competitors employ dumping wages) and (3) a moral evaluation (by use of the word "misery", the situation in the industry is described in a judgmental way).

As becomes clear from the abovementioned example, the frame analysis conducted in this study is not purely quantitative in nature. In fact, the evaluation of whether or not an article is framing an issue in a certain way is always based on a thorough qualitative assessment of toptexts. In addition, the frame analysis comprises another component that is explorative and therefore rather qualitative: It might be possible that the coding process unveils frames, which previous studies did not account for. A plainly deductive approach would not capture these additional frames, depriving the analysis of valuable insights. A second round of coding ensured that both previously and subsequently defined frames are being accounted for.[8]

For the identification of these a posteriori frames, we conducted a discourse analysis aimed at an in-depth qualitative examination of toptexts, taking into consideration linguistic elements compiled by Lams (2016): Lexical choices, syntactical patterns, semantic roles of actors or the use of figurative language are among the elements that could help to identify frames. To give an example, a frame may be present, if an article refers to China as "the yellow peril", "growth engine of the world" or "export champion". Also, the use of words with negative (or positive) connotations could be an indicator for framing, because they create a certain image or sentiment among the readers. A common example here is the use of war language in economic or political contexts. Moreover, semantic choices like nominalisation or passive structure of sentences can be used in order to deliberately conceal the actor and thus carry a certain message. Similarly, the placement of words in a sentence can draw attention to one particular element, action or person, while others are curbed.

Taken together, these elements can be understood as mutually reinforcing linguistic mechanisms that sustain certain ideological messages and, if a majority of elements occur together in a text, may indicate the presence of a frame. In order to detect such frames, all 600 toptexts within the sample are read closely, coding for absence or presence of the abovementioned linguistic elements (see codebook for specifications). First of all, if a majority of linguistic elements is detected in an article, the text is examined more thoroughly. Following the principles of discourse analysis, we analysed how the single elements interact with one another and assessed whether or not an article carries a particular ideological message. If yes, this message is conceptualised as a frame. Secondly, an article or paragraph must meet our condition formulated earlier that at least three out of four elements defined by Entman (1993) are present.

In the context of the frame analysis, we also conducted a frequency analysis of keywords within the *topics* using a built-in function of the tosca package (Koppers et al., 2020; see online appendix for specifications on code). The goal here was to identify potential turning points in framing. One example for this are the keywords "wettbewerber" (competitor), which is characteristic for the rivalry frame "China as economic threat", and the keyword "partner", representing the partnership frame "China as partner". The frequency analysis was repeated for several keywords and for all *topics* in which the respective frames were most likely to appear. Thanks to this strategy, the changing proportions of keywords within the respective *topics* over time could be compared and interpreted accordingly.

Semi-standardised interviews

Although computational methods have advantages for the content analysis of large datasets, they are still prone to error, especially when it comes to the understanding and interpretation of latent meanings of language. For instance, Conway (2006) establishes that computational methods might lead to trade-offs in terms of the complexity of results, because human coders are more effective in detecting linguistic nuances. In a more recent study, Nicholls and Culpepper (2020) state that despite the applicability of computational approaches in the context of big data, the reliability of results hinges on the

narrowness of a dataset. To increase the robustness and validity of results, hybrid approaches integrating manual and computational methods are suggested (e.g. Hase et al., 2020; Choi, 2020).

The selection of the triangulating method depends on the theoretical framework and the respective research question. We have chosen qualitative interviews here, because the actor perspective illuminated thereby is elementary to understand the framing of German media as part of the domestication process and its journalistic and cultural conditions. Foreign correspondents are directly involved in the process of news production and they are subject to editorial decision-making. Therefore, they might possess valuable inside knowledge that could be helpful in answering the research questions. In addition, they can explain or comment on the observed trends in news coverage from their own perspective. Since the research interest is focused on gathering personal evaluations and opinions, semi-standardised interviews are the most appropriate method. Gläser and Laudel (2010) recommend this kind of interview, if the talking points are determined by the research focus and not by the answers of the interview partners.

The interview questions are based on the findings of the content and frame analysis (see online appendix). The interviews aim to provide insight into the production of news about China and potentially answer the question of why certain news items are more common than others. They should also help to answer research question RQ3. The transcripts are examined following the methodological suggestions of Schmidt (2012).

For the semi-standardised interviews, three former and three current China correspondents of German quality newspapers were selected as interview partners. The former correspondents have worked in China for five to over 20 years, while the current correspondents have spent five months to six years in China. All correspondents are native German speakers, three correspondents have studied Sinology, two are native Chinese speakers as well and only one did not have any knowledge about the Chinese language at all. We consider language proficiency to be an important skill of foreign correspondents, since a foreign correspondent acts as mediator between cultures (Hafez, 2002) and because officials seem to prefer to deal with language-proficient journalists (Willnat and Weaver, 2003). For the purpose of this study, the identity of all six correspondents will remain anonymous. When quoted, the denominations C1 to C6 are used to distinguish between each one of them.

Findings

Frequency analysis (H1)

Before examining the overall composition and characteristics of China coverage, we start with some general observations about the 19-year sample period.

Figure 2 indicates that media attention of China has grown between 2000 and 2019 thus providing evidence for a confirmation of hypothesis H1. According to an Augmented Dickey-Fuller test the time series has a unit root and is non-stationary (Dickey-Fuller= -3.04, p= 0.14). In other words, it has some time-dependent structure

and does not have constant variance over time. Moreover, a regression analysis confirms the increase of articles over time (see also Table 3 and Figure 6 in online appendix).

The number of articles per year has more than doubled throughout the observation period. In the year 2000, 1,222 articles were published and in 2018, 3,624 articles were published. While overall media interest for China has increased during the past 20 years, a more differentiated look at Figure 2 reveals that the number of articles was at its peak in 2008[9] (4,411 articles) and then dropped significantly in 2009. After a short increase, media coverage steadily declined between 2010 and 2015. The data also shows that the number of articles has started to rise again in 2015/16.[10]

Topic analysis (RQ1)

A total of 14 *topics* was generated using LDA. T5 and T7 (comprising generic filler words) are not labelled at all. All other *topics* can be labelled according to the respective list of topwords (see online appendix). The dendrogram in Figure 3 makes clear that the relative distance (Y-axis as Hellinger distance) of T3 and T10, T1 and T2 as well as T4 and T12 ranges between 0.5 and 0.6, which means that these *topics* are closely related in terms of their content and can be summarised in the news category "economics" (see Table 1). Likewise, T9 and T14 share a branch in the dendrogram and they are subsumed under the main theme "society", while T8 and T11 both belong to the category "politics". T6 is viewed in a separate news category, namely "disasters".

The findings of this research indicate that news subjects are not equally distributed among all articles (see Table 1). A Chi-squared test for given probabilities showed that the five news categories are not equally distributed and that this result is statistically significant ($\chi^2(df = 5, N = 6) = 10, 490, 501, p < 2.2e^{-16}$).

With a share of over 40 percent, economic issues contribute almost twice as much as social or political news items, providing evidence for an affirmative answer to question RQ1. It is important to mention that the share of 22.25 percent for articles dealing with society is in fact composed of only 12.82 percent of articles that are directly related to Chinese people and their life or culture. The other 9.43 percent belong to T14, which deals with Chinese society from a different angle: China is mentioned in

Table 1. Attribution of T1 to T14 to news categories and their distribution within the corpus (shares in percent)

News category	Share in corpus*	Topics in news category
Economy	40.12	T1, T2, T3, T4, T10 and T12
Society	22.25	T9 and T14
Politics	17.2	T8 and T11
Disasters	5.36	T6
Art & Sports	3.73	T13
Other	11.34	T5 and T7

*Note: $\chi^2(df = 5, N = 6) = 10, 490, 501, p < 2.2e^{-16}$.

the context of global political and economic models. Reports on Chinese society are even scarcer than articles on politics (17.2 percent).

Frame analysis (RQ2 and RQ3)

A second goal of this study is to find out whether German media tend to frame China in particular ways. For this purpose, the 50 most representative articles for each *topic* were coded. Table 2 shows the shares of all a priori and a posteriori frames within the sample of 600 toptexts as well as their respective proportion among those *topics*, in which one or more frames were identified. Again, we ran a Chi-squared test to investigate the statistical validity of the results. Given that $\chi^2(N = 13, df = 11) = 2331.6$ and $p < 2.2e^{-16}$, we can say that the 13 frames are not distributed equally among the coded sample and that this result is statistically significant.

As Table 2 illustrates, "China as valuable partner" (9.8 percent) is the most common frame followed by "China as a rising power" (8 percent). China's economic boom and the attractiveness of its market are among the keywords for both frames. Generally, the respective articles depict China as a driver of the global economy, but at the same time, the intensification of trade and business relations is encouraged. Contrastingly, the rivalry frame "China as economic threat" emphasises the potential economic disadvantages that could result from close Sino-German relations and points out that China should be seen as a serious opponent to the German industry. However, this frame appears in only 6.17 percent of sampled articles and is thus less distinctive than the partnership frame. As a result, research question RQ2 can be answered affirmatively.

In contrast to the findings of previous studies (Zinser, 2018; Zhang, 2016; Golan and Lukito, 2015), the other a priori frames seem to be less common in German China coverage. Here, the frame "China as geopolitical threat" is clearly the least frequent one with a share of only one percent of the coded sample. Other than that, Table 2 reveals that articles emphasising the otherness of the Chinese political system, the decline of the Chinese economy or the country's domestic policy struggles each amount to around one fifth of the sample. In addition to these a priori frames, the coding process also unveiled several frames that had not become apparent in previous studies.[11]

Among the a posteriori frames, "China in need of resources" and "China as a polluter of the environment" both appear in around five percent of the coded articles and can thus be seen as equally representative of German China coverage as the frames "China as the other", "China's economic decline" and "China as filled with internal strife". In contrast, with shares of three percent and lower, the frames "China seeks leadership in digital technologies", "China as a diplomat" and "China is opening up" all apply to a fairly small proportion of the sample. We thus infer that, along with "China as geopolitical threat", the contribution of these frames to the overall image of China conveyed by the German media is probably rather small.

Taking a closer look at Tables 1 and 2, it is necessary to formulate explanations for the circumstance that the German media seem to have a tendency to frame China in a particular manner. Apparently, there is a systematic correspondence between frames and news categories, and *topics* within these news categories respectively. For instance, a total of

Table 2. Distribution (in percent) of a priori and a posteriori frames among the coded sample of 600 articles and respective shares in all *topics*, in which the respective frames were detected.

Frames (a priori)	Share in sample*	Share of frame(s) in *topics**										
		T1	T2	T3	T4	T6	T8	T9	T10	T11	T12	T14
China as valuable partner	9.8	26		92	10				30		18	
China as a rising power	8	18	48	28	30				18			
China as economic threat	6.17	46							22	10		
China as the other	5.5	10						20				42
China's economic decline	5				58							
China as filled with internal strife	4.5							48				
China as geopolitical threat	1									10		
Frames (a posteriori)		T1	T2	T3	T4	T6	T8	T9	T10	T11	T12	T14
China as violator of human rights	6.17						68					
China in need of resources	5.5		56		12							
China as a polluter of the environment	5.17		44			12						
China seeks leadership in digital technologies	3	36										
China as a diplomat	2.83									34		
China is opening up	1.83										16	

Note: The sum of shares is not 100 percent because frames were not found in every article in the corpus and because frames can occur across multiple *topics*.
$\chi^2(N = 13, df = 11) = 2331.6, p < 2.2e^{-16}$

92 percent of toptexts in T3 frame China in terms of its economic attractiveness. This is reasonable, because this *topic* deals with trends in the car industry, which is one of the most important industries for Germany (BMWi, 2019). Moreover, the frame "China as valuable partner" exclusively emerges in *topics* that were subsumed under the main news category "economy". These observations support the proposition of conceptual overlap between *topic* modelling and framing stating that *topics* as a whole may be conceptualised as frames under particular circumstances (DiMaggio et al., 2013). However, we also find evidence that frames can occur across multiple *topics* (see Table 2), which supports the work by Walter and Ophir (2019). This observation reinforces the validity of our approach to frame analysis, because a conceptualisation of *topics* as frames would not have accounted for such nuance.

In context of the frame analysis, another interesting observation was made. In order to visualise potential changes in framing, we conducted a frequency analysis of keywords.

For instance, the word "partner" was taken as a proxy for the presence of the frame "China as valuable partner", which appeared in almost all T3 toptexts (see Table 2). The shape of the curve in Figure 4 shows that the use of the word "partner" in T3 has increased after 2001. Even though the context of individual words remains unclear in LDA *topic* models, the use of this and other keywords resembling the partnership frame are probably a reflection of the confidence, which both the German industry as well as the media had in terms of doing business with China after its accession to the WTO. Starting around 2005 and especially after 2010, the word was less frequently used in articles belonging to T3. While the context is still unaccounted for, the development of word frequencies could be interpreted in such a way that initially, the German media framed China in terms of its economic attractiveness and as a valuable business partner, but over time, this frame became less salient.

The toptexts show that the German media did not start describing China as a threat until around 2016/17. We assume, that a rivalry frame may have replaced the partnership frame over time. To visualise this potential turning point, we conducted a frequency analysis for words like "wettbewerber" (engl.: competitor) in T1, since the frame "China as economic threat" was most likely to appear in this *topic*. The curve in Figure 5 shows that the frequency of the word "wettbewerber" has increased from 2000 to 2019. In particular, the word has been used more often since 2010 and the diagram indicates another sharp increase after 2017. RQ3 asks, whether media frames of China have changed over time. Considering the above results, we assume that a change in framing has taken place after 2016/17, even though a frequency analysis of keywords ignores the context of words and is therefore inherently vague. However, the incremental use of keywords
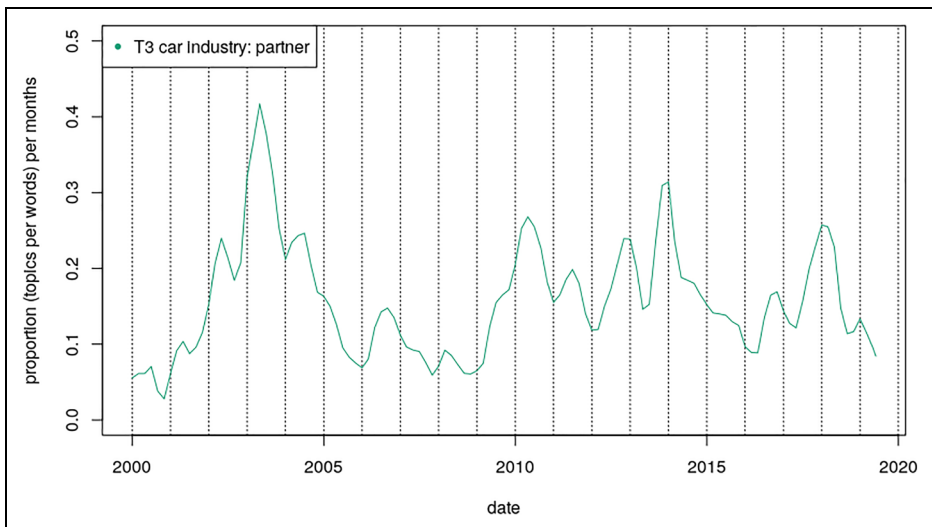

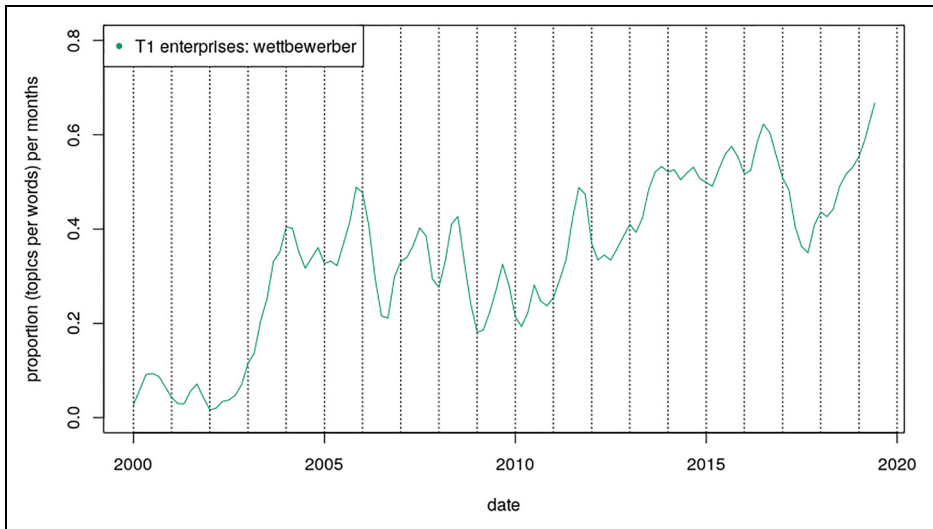**Figure 4.** Monthly proportion of the word "partner" in *topic* T3.

Figure 5. Monthly proportion of the word "wettbewerber" (engl.: competitor) in *topic* T1.

that serve as a proxy for the rivalry frame coincides with developments that emphasise China's growing economic assertiveness. The US-China trade war, the publication of the BDI policy paper, China's investment initiative in Germany and other countries as well as the acquisition of the German robot manufacturer Kuka are only some examples here (see Figures 7, 8 and 9 in online appendix). Therefore, it seems plausible to assume that a change in framing did not only take place, but that the aforementioned events have played an essential role in this context.

In order to find more evidence for this assumption, we triangulated the results of our content and frame analysis with qualitative interviews (see methodology section for details). Among other questions, the interview partners were asked whether or not they would say that a change in framing has taken place and if yes, at what time that change had begun and what events they would consider conducive to this development. The full interview guide with all questions is provided in the online appendix.

Semi-standardised interviews (RQ3)

The interview questions focused on two main subjects: First, the China correspondents were asked whether or not they would have expected coverage to focus on one particular subject and why. Second, the interviewees should give their opinions on framing and potential turning points.

Overall characteristics of China coverage. When confronted with the results of the content analysis, not one correspondent was surprised by the media's emphasis on

economy-related aspects. They argued that China's importance as a trade and business partner was the reason why it seems natural for German media to focus on the economic aspects of the Sino-German relationship (C1). Five out of six correspondents would even say that German media coverage of China is primarily following economic and political interests (e.g. C5). In consequence, other news subjects do not receive as much attention. Media coverage of human rights is a particularly tender spot for Western nations; governments' humanitarian principles are often contradicted by the desire not to alienate a valuable trading partner (C6). The correspondent who said this, takes the Xinjiang leaks as an example: Journalists have unofficially known about the massive human rights violations in China's autonomous region of Xinjiang, but proof was rare and the issue could easily be considered hearsay. Until recently, news coverage reflected the unrealistic and pretentious image of China being solely an economic actor, offering potential economic benefits to Germany (C5).

In the past few years, however, media coverage has become increasingly critical (C1). The new scepticism has been accompanied by "an enormous change in public opinion on China in terms of economic issues" (C4, par. 16), while China's overall image has been deteriorating (C6).

Turning points in coverage and media perceptions. All interviewees agreed that recent economic and political developments led to an essential re-framing of China in the German media. While an exact turning point is difficult to determine, the interviews show that the past three to five years, 2016 and 2017 in particular, deserve special attention. First, as part of the reform agenda adopted in 2013, the government initiated the project "Made in China 2025" in 2015. This strategy is considered a masterplan for achieving economic and industrial modernisation and self-reliance (Wübbeke et al., 2016).

Second, the formulation of this concept was accompanied by vast Chinese investment activities in Germany and other countries. In 2016, a study on China's industrial strategy published by MERICS, a Berlin-based thinktank, and the take-over of the German robot specialist Kuka by the Chinese company Midea contributed to a "phase of awakening and the end of naiveté" (C5, par. 14) among German political and economic actors. They realised that "change through trade" would not occur as hitherto expected (C1; C6) and that China in fact is a powerful economic competitor that must be taken seriously.

Third, the 19th National Party Congress was held in China in October 2017 and entailed a variety of ideological, constitutional and organisational innovations. One of these changes was the abolishment of the presidency's term limit, paving the way for Xi Jinping to stay in office indefinitely. Since then, China has become increasingly inaccessible for foreign journalists, surveillance was intensified, and political debate is now controlled even more heavily (e.g. C3, C5). In addition to the events of 2016 and 2017, three interview partners emphasise the role of the policy paper published by the BDI in January 2019. According to the interviewees, the paper did not only "deliver the language for our adjusted relationship and our newly framed view of China" (C2, par. 54), but it also contributed to a modified media perception of China, which is henceforth characterised by economic and systemic rivalry (C4).

Conclusion

The goal of this study was to conduct a long-term analysis of China coverage and framing using a current dataset of articles (N = 55,893) published between 2000 and 2019. The results can be summarised as follows: First, as hypothesised, China's increasingly important role in international economic and political relations is mirrored by a growing number of articles. This finding adds to existing research, because it does not only support earlier observations of an increasing media interest for the country (e.g. Vogel and Jia, 2017; Zhang, 2010), but – derived from an up-to-date dataset – it also shows that this increase seems to be a long-term trend lasting until today.

Second, in support of previous studies (e.g. Richter and Gebauer, 2010), economic issues are the most prominent throughout the 19-year sample period, while other aspects are largely neglected. As expected, the media reflect the predominantly economic nature of Sino-German relations. Six out of 14 *topics* in our LDA model deal with economic issues and account for almost 40 percent of overall coverage. This can surely be attributed to the fact that China is among the top three of Germany's most important trading partners (Destatis, 2021; BMWi, 2019). But it is also no surprise considering the phenomenon of news domestication (Gurevitch and Levy, 1990). The media "domesticate" events in foreign countries by casting them into frameworks that are familiar to the national audience. In our case, the idea of "change through trade" has shaped Sino-German relations during the early 2000s and moulded public opinion in so far as people became more receptive to news on economic cooperation between Germany and China.

This observation holds for framing, too, because for the most part of the sample period, the German media present China as a valuable economic partner. It should be noted here that the explorative nature of our analysis revealed that framing seems to at least partially correspond with the *topics* generated by LDA and therefore supports earlier studies suggesting the conceptualisation of *topics* as frames DiMaggio et al., 2013; Matthes and Kohring, 2008). However, we also found evidence for the occurrence of frames across *topics*, which takes up the work by Walter and Ophir (2019) and others, while emphasising the methodological strength of our approach.

Last but not least, our findings show that the partnership frame was gradually replaced by a rivalry frame after 2016/17, while publicly well-known narrative frameworks were changing as well. Again, this supports the domestication hypothesis proposed by Gurevitch and Levy (1990), since framing strategies appear to have adapted to changes in specific culturally or nationally recognisable themes. The reason for the back-flip in framing can be attributed to a variety of events including the Chinese takeover of the German robot manufacturer Kuka in 2016. Moreover, the BDI policy paper, Beijing's industrial strategy and massive foreign investment activities can be considered key events that altered public and media perceptions of China profoundly.

In sum, the triangulating research design of this study has proven successful in so far as it enriches the results of the computational examination with valuable insights from expert interviews. This adds to the overall findings and allows a more sophisticated evaluation of the data. In that sense, this study also builds on previous research arguing in

favour of the applicability of *topic* modelling for communication research in general (e.g. Hase et al. (2020); Maier et al. (2018)) and the identification of media frames in particular (e.g. Nicholls and Culpepper (2020); Walter and Ophir (2019)).

Our analysis also points towards some problematic implications. Since Sino-German relations are driven by close economic ties between the two countries, the focus on economic aspects is hardly surprising. While the former has increased substantially between 2000 and 2019, the latter, naturally, has remained largely unchanged. Business-related China coverage thus predictably follows an increasing trend. As framing theory holds, media convictions tend to be sticky, potentially overlooking important recent developments, until significant events lead to a re-framing. The shift in China coverage we detected after 2016/17 can serve as an example. Although Chinese influence had been increasing economically and geopolitically for years – with the Belt and Road Initiative and growing Chinese military presence in the South China Sea being arguably the most significant developments – it was with the acquisition of German robotics manufacturer Kuka by a Chinese investor, when a re-framing began to develop. At that time, the take-over alarmed the Federal Government and the broader public and consequentially inspired the publication of China-critical think-tank reports. These reports have subsequently served as points of reference for the coverage of China, which is now portrayed as a systemic competitor.

As mentioned before, this study suffers from several limitations. First, the frequency analysis of keywords conducted to identify potential turning points of framing is inherently vague and we chose to triangulate with qualitative interviews in order to find further evidence. Second, it was the goal of this paper to provide an analysis of China coverage across German newspapers. Therefore, no distinctions between individual newspapers were made, although it should be quite interesting to explore inter-media variations in coverage patterns and framing techniques. Third, China is taken as a monolithic bloc, which was a consciously made decision on our account aimed at providing an examination of media representations of China as a whole. But at the same time, this kind of generalisation deprives the analysis of important insights and detail. While we were not able to cover these points in our analysis, we encourage future studies to account for these defaults and perpetuate our research endeavours.

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Supplemental material

Supplementary material for this article is available online.

Notes

1. When referring to *topics* in the context of computational content analysis with LDA, Italics are used in order to emphasise the semantic difference between LDA *topics* and the word "topic" meaning "subject" or "theme".
2. It should be noted here that domestication is not the only reason for the emergence of certain media frames. Other factors such as ideological factors, prejudice, unconscious mechanisms, cultural imprint etc. may all have an influence on journalistic practices and thus the framing of news.
3. A frame analysis can certainly be understood as a quantitative method. In this study, however, it is considered a qualitative method, because aside from coding for a priori frames, the analysis includes an explorative component as well. In the sense of methodological triangulation, it should also be noted that transitions between quantitative and qualitative approaches are often smooth so that a clear distinction is not always possible (e.g. Kelle and Erzberger, 2012).
4. To test the validity of the search term, two randomised samples of 500 articles each were coded for relevance. The criterion for relevance was that an article mainly deals with the subject of China. Based on this sample, values for *recall* and *precision* were calculated (Stryker et al., 2006). Articles with at least one appearance of the search term lead to the following estimators: *precision* = 0.59 and *recall* = 0.92. For articles with at least two appearances of *chin** the values were 0.77 and 0.77 respectively.
5. $k = 5, 10, 13, 14, 15, 18, 20, 25$.
6. To ensure intratopic validity, four coders have run word and *topic* intrusion tests on a randomised sample of 14 sets of ten topwords and 14 toptexts using the respective built-in functions of the R-package tosca (Koppers et al., 2020) (the samples used for the intruder tests are provided in the online appendix). Between 78.57 and 92.86 percent of intruder words were identified correctly, Krippendorff's alpha was 0.84 for coder 1, 0.91 for coder 2 and 0.76 for coders 3 and 4 (where each of the four alpha values was calculated in reference to the correct solution). As for *topic* intrusion, between 50 and 85.71 percent of intruders *topics* were identified correctly, Krippendorff's alpha was 0.70 for coder 1, 0.35 for coder 2, 0.8 for coder 3 and 0.42 for coder 4.
7. Generic *topics* T5 and T7 were not included in the frame analysis.
8. To ensure intercoder-reliability, two additional coders were asked to each code a randomised sample of 120 texts for both a priori and a posteriori frames. Krippendorff's alpha was 0.89 for coder 2 and 0.92 for coder 3 (where the solution of coder 1 was taken as a reference point to calculate the alpha values for the two additional coders).
9. This peak can be explained considering the fact that three events of international reach happened in 2008: The Olympic Games in Beijing, the Tibet unrest and the devastating earthquake in the province of Sichuan.
10. The slight spike in media coverage in 2015 is partly attributable to a crash of the Chinese stock market and associated fears of an economic downturn.
11. Differences in the investigated time periods may be the reason why previous studies have not accounted for some frames discussed in the present study. One example for this is the frame "China seeks leadership in digital technologies", which was exclusively found in articles published from 2018 onwards.

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