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EXPLORING DIGITAL COMMUNICATION IN FRANCHISING IN SPAIN: A WEBSITE REVIEW

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Abstract

Communication is a key success factor in the franchise network; therefore, franchisors should be aware of incorporating new technological tools that facilitate communication in this business model. Faced with this new challenge, corporate websites are a strategic tool in the communication of franchisors with their stakeholders, becoming a source of information to consumers and as a means of attracting potential franchisees. Given the interest of this issue in this business model, this paper aims to analyze the online presence of franchise systems in Spain in order to study the effectiveness of digital communication with stakeholders by analyzing their websites. From the total of 121 franchises established in Spain, based on the

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information provided by the Spanish Franchise Association, 112 active franchises were analyzed. This study examined the websites according to three dimensions previously identified in the literature: informational, relational (comprising three categories: users, social networks and Web 2.0 applications) and usability. A content analysis was performed to evaluate the presence of the items included in those dimensions on the websites. The findings indicate that, in general, the franchise systems make use of the websites to manage their relationships with their stakeholders (e.g., franchisees, consumers). Specifically, the results show that, although the websites of the franchises operating in Spain comply with basic information and access aspects, those related to communication with users, as well as the use of Web 2.0 applications should still be developed as strategic tools for successful franchise management. Given that nowadays companies and their stakeholders dialogue mainly on the web, it is necessary to continue exploring how to develop this new virtual context of relationships. In this regard, this paper contributes by identifying different categories of the relational dimension in the communication of the franchisor with its stakeholders. This allows to detect those key aspects that the franchisor should promote in order to enhance its relationship strategy.

Keywords: *Digital communication, franchising, website.*

1. INTRODUCTION

Over the last decade, people have changed the way they consume information, communicate and even relate to their environment. This is due to the revolution in information and communication technologies (ICT), which has affected practically all social areas. Organizations have had to adapt in order to understand the new codes of the digital era, which are made up of social behavior in the use of technology and the collective participation that is typical of the democratization of conversation by users. Thus, digital communication management in companies becomes more important, since it poses a series of challenges and opportunities for managing customer relations in order to enhance brand value (Dua, 2017). According to this author, the company must properly manage the digital channels for information exchange adapted to current and potential customers using the Internet and reflecting their interest and behavior.

As a result, the Internet community is increasingly critical of business decisions and requires organizations to seek transparency in their actions (Vaccaro and Madsen, 2009). Companies and stakeholders dialogue on the Internet, making the one-way business communication system obsolete, and promoting a more dynamic information exchange that encourages a more collaborative environment. Stakeholders no longer relate to companies in a passive way, where communication was based on listening and individuals were passive subjects of the communicative process. Moreover, users require interactive communication mechanisms (Cho and Cheon, 2005), such as, for example, on-line orders, on-line problem diagnosis, interactive newsletters, instant messaging with sales representatives and chatting with other customers. However, in the context of franchising, there is a complex communication system because of the different participants in the network (e.g., franchisor, current and potential franchisees, customers). The success of franchise systems lies, among other reasons, in cooperation and participative communication, since information exchange between channel members enhances mutual trust, commitment and satisfaction (Bordonaba-Juste and Polo-Redondo, 2004; Fernández-Monroy et al., 2018). Hence, the franchise system demands an effective communication management, in which the use of new technologies helps to communicate consistently. Thus, more and more franchisors rely on various communication resources, both offline and online, to contact potential franchisees, managers and employees (Kacker and Perrigot, 2016). Hence, some franchise research has focused in the analysis of website functionality (Pénard and Perrigot, 2017; López-Fernández and

Perrigot, 2018). However, sometimes the franchise has used the Internet as a mere information channel (Monserrat-Gauchi et al., 2014).

Based on the above, this study focuses on examining the effectiveness of digital communication of the franchises operating in Spain through a content analysis of their websites. Hence, it aims to identify the degree of information disclosure and interaction of the franchises with their stakeholders. To this end, the work is structured as follows: first, a review of the literature is developed; next, the methodology applied to carry out the research is described; then, the analyses applied and results obtained are presented; and finally, the main conclusions and implications of the work are shown.

2. DIGITAL COMMUNICATION

The arrival of new technologies has meant a great advance for organizational communication. With the rise of the Internet, digital communication becomes an important tool that companies welcome to improve their processes, achieving a broad scenario of action, which allows them to create value for stakeholders and increase their interest (Paniagua Gallart, 2010). Therefore, internal and external communication activities are also developed in a digital context. In this line, some research highlights that social media are used as a new means of communicating and information sharing within organizations (Huang et al., 2015) and with stakeholders (Perrigot et al., 2012), enabling a more open and fluid communication context. Moreover, social networks improve the decision-making process in the organization, promoting knowledge creation and innovation (Garrigos-Simon et al., 2012; Papa et al., 2018).

One of the main advantages of digital communication is the increase in speed and efficiency when communicating and transmitting relevant information both inside and outside the company. Due to this advance the web has also evolved and has given way to the so-called Web 2.0, considered as a medium for human communication (Fuchs et al., 2010), comprising technologies, services and social networks based on a Web platform. However, the advance of technology is very fast: Web 2.0 has continued to evolve to Web 3.0, which is considered as "a system of online collaboration that enables the formation of virtual communities, co-operative knowledge, and co-operative labour" (Fuchs et al., 2010, p. 57). Hence, Web 3.0 aims to create a semantic and qualitative knowledge, based on computer engines, information processors and advanced software (Küster and Hernández, 2013). As these authors point out, the purpose of this would be to store users' preferences which, combined with the existing

data in social networks and Internet, would allow to meet more precisely the information demands and facilitate the accessibility to digital contents. All this would lead to companies having access to an essential tool for the acceptance, adoption and functionality of the information they issue with the aim of building user loyalty. In this line, research highlights the importance of web-based interactions, emphasizing the use of the participatory web as a key enabler of stakeholder engagement, because it allows to identify, understand and response to stakeholders' needs (Sivarajah et al., 2020).

In the context of Web 3.0, organizations could include artificial intelligence, such as virtual assistants, to improve the search experience for users. Thus, "intelligent machines read, understand, interrelate, and can manipulate data from cyberspace, allowing this process to be adapted by different users or firms according to their own needs" (Garrigos-Simon et al., 2012, p. 1883). Another component of Web 3.0 could be the application of 3D technology to create virtual sites where users can explore stores or interact with others. However, Web 3.0 technologies present an immature and still evolving development (Sivarajah et al., 2020). Actually, in a first review of franchise websites, it was found that these websites mostly used Web 2.0 tools. This means that Web 3.0 is in an emerging stage of development in the field of franchises operating in Spain. For this reason, this work focuses on Web 2.0 technology in the franchise websites, since this would be the basis on which the digital communication of companies is currently based.

The Web 2.0 phenomenon include the increased ubiquity of social networks, the intense interaction between firm and customer, the personalization and customization of technologies, and the relevance of user-added value –such as content development, creativity and innovation (Wirtz et al., 2010). Technologies and social software applications promote collaboration and knowledge sharing. Therefore, companies should realize that Web 2.0 affects business management, being the user learning process a key element for sustainability (Shang et al., 2011). Thus, Web 2.0 alludes to the power of the online user to create, disseminate and share content with other users. For companies, Web 2.0 services offer new channels to listen to inquiries from current and potential customers about their product and, if appropriate, create open dialogue with them. These communication technologies offer companies a great deal of content and information through comments and articles published by consumers, allowing firms to identify market trends or consumer preferences through their comments, recommendations, complaints, etc.

In the framework of digital communication, the corporate website becomes a communication tool that facilitates interaction between the company and its stakeholders. For this reason, it should not be simply a means of gaining credibility that provides nothing more than explicit general information about the company. The corporate website must also include specific information for the target public and must be a medium that allows feedback from these stakeholders, through opinions and suggestions, while providing information of interest to them, through newsletters, forums and news. In addition, Web 2.0 technologies such as RSS (Really Simple Syndication), Folksonomies, and Mashups can be used to combine knowledge and generate new knowledge for the community (Shang et al., 2011).

In addition, usability plays an essential role when evaluating human-computer relationship (Martínez-Sala et al., 2020). This concept describes the degree to which the website can be used easily and effectively, comprising the ease of understanding the system structure, the ease of use, the speed of finding what users are looking for, the perceived ease of site navigation, and the ability of users to control what they are doing and where they are (Flavián et al., 2006). Moreover, companies should take into account usability when designing their websites considering its influence on user satisfaction and future intentions to use the website (Flavián et al., 2006; Belanche et al., 2012).

In the context of franchise systems, virtual social network communities, such as Facebook or Instagram, are very interesting not only to attract customers, but also to recruit new franchisees, managers and employees for the company-owned establishments (Perrigot et al., 2012). Also, franchise websites are used as a communication tool, as well as a new distribution channel; therefore, some research has focused on analyzing their functionality (Pénard and Perrigot, 2017).

3. RESEARCH METHOD

The object of this study was the franchise system, and specifically, the information contained in the franchise websites. To identify an official registration of active franchises, the register of the Spanish Franchise Association[1] was used, recognizing a total of 121 franchises registered in Spain, although they could operate internationally. Following this

[1] The Spanish Franchise Association brings together franchisors operating in Spain who are committed to the ethical principles of the franchise system and who, therefore, undertake to comply with the standards of the European Code of Ethics for Franchising (www.franquiciadores.com).

procedure, it was possible to locate a total of 112 active franchises with a website, of which the contents would be analyzed.

Based on a review of the literature on website design and corporate communication in the franchise system, the relevant items in the study of digital communication were identified. These items were used to carry out a content analysis of the franchise websites, evaluating whether or not these items were present on the websites. This process consisted in reviewing a large amount of information to analyze the content of the franchise communication through their websites, following the procedure of Domínguez-Falcón et al. (2018).

From the literature review, the contents to be identified in the websites were defined, following a systematic process based on a coding scheme (García-Borbolla et al., 2005; Cedrola and Memmo, 2009; Perrigot et al., 2012; Díaz and Koutra, 2013; Escobar-Rodríguez and Carvajal-Trujillo, 2013; Domínguez-Falcón et al., 2018). As suggested by previous research (e.g., García-Borbolla et al., 2005), three types of information content are established in the websites in accordance with the company's business strategy: ornamental, informative and relational. Thus, these authors mention "ornamental presence on the web", which refers to corporate information (history, geographic location, email, etc.); "informational presence on the web", which refers to information directed at specific groups of users, such as current and potential clients (information on products, prices, etc.), and, finally, "relational presence on the web", which refers to content of interest to users, and which, at the same time, would allow the company to interact with them (opinions, suggestions, news, newsletters, forums, etc.). Moreover, Domínguez-Falcón et al. (2018) propose a different classification: informative dimension, comprising ornamental and informational presence on the web, and relational dimension, which includes three sub-categories linked to customers, social networks and Web 2.0 applications. In addition, as mentioned earlier, it is important to evaluate the website usability; thus, this study focused on the items suggested by Domínguez-Falcón et al. (2018).

Based on the above, this study analyzes the content of the franchise websites according to four categories: informative, relational, usability and Web 2.0 applications. All this information would be collected in a document designed for this purpose.

3. ANALYSIS

Once the form was designed to collect the information related to the different categories described, we proceeded to analyze the website content of each franchise. To do this, a value of "1" was assigned to each variable that was present and a value of "0" if the variable was not present on the website. As a summary, the aggregate results of this analysis are shown in Appendix 1.

Firstly, for every item in each dimension, an analysis is made of the number of franchises that include it on their website, in order to identify the most important items for these companies. Next, from the data collected in the form, tables were constructed reflecting the rate to which the franchises include items belonging to each dimension: informational, relational-user, relational-social network, relational-Web 2.0 and usability. Four levels were considered to qualify the rate to which each dimension is observed in the franchise websites: null, low, medium and high. To do this, the following criterion has been followed: (1) it is qualified as null when the franchise does not present any item from the corresponding category; (2) as low when the presence of items from a category is less than 33%; (3) as medium when the presence of items is between 33% and 66%, and (4) as high when it is greater than 66%.

The presence of each of the items in the informational dimension on the franchise websites was then analyzed (see Table 1). In this regard, it should be noted that all the franchises present information on the products/services offered and, except in one case, their company logo on their website. Likewise, most of the franchises include links to other pages of interest (96.4%), indicate the address of the physical store (94.64%) and incorporate information on the privacy policies (91.96%) and the terms of use (91.07%). Other items with great presence that provide corporate information are the geographical location of the physical stores (88.39%) and the data and conditions to open a franchise (86%).

Table 1. Informational Dimension

ITEMS	FRANCHISES	
	n	%
The page presents information about the products/services available	112	100
The page includes the logo of the franchise	111	99.11

The page includes links to other pages of interest	108	96.43
The page presents the address of the physical store	106	94.64
The page includes the privacy policy	103	91.96
The page includes the terms of use	102	91.07
The page presents the geographic location of the physical store	99	88.39
Information on franchise methods is available on this page	86	86.00
The page describes the history of the franchise	82	73.21
The page has e-mail	75	66.96
News about the franchise sector is offered on the page (press room)	73	65.18
The page has an area for recruitment of employees	65	58.04
The page presents information about the prices of the products/services	52	46.43
The page includes the mission of the franchise	41	36.61
The page has information about the different payment methods	30	26.79
The page presents a description of the organization of the franchise	18	16.07
There is a virtual visit to the franchise	9	8.04

As can be seen in Table 2, 50% of the companies present a high level in this category and 49% present a medium level. That is, most of the franchises communicate general information about the organization, such as the logo, history, address of the physical stores, terms of use and privacy policy. It should be noted that only one franchise does not include enough corporate information, so the website does not communicate content for customers to know about the company.

Table 2. Informational Dimension Rating

RATING	FRANCHISES	
	n	%
Null	0	0
Low	1	0.89
Medium	55	49.11
High	56	50.00

Secondly, the relational-users dimension of the franchise websites was analyzed. As shown in Table 3, the vast majority of websites (91.07%) have a contact form, which allows users to send suggestions and opinions, and in 86.61% there is an area for franchisees to communicate with the company directly. More than half of the franchises include blogs (67.86%) and provide promotions or offers (69.64%) on their websites. On the other hand, less than half of the pages (43.75%) have an area where customers can register. About one third of the franchises allow online purchase (35.71%) and home delivery (34.82%). However, only 17.86% of pages offer collection at the store or collection point. The low presence of areas to manage loyalty cards (16.96%) stands out.

Table 3. Relational-Users Dimension

ITEMS	FRANCHISES	
	n	%
Comments, opinions or suggestions can be sent through the Web (form)	102	91.07
The franchisees have an area to communicate with the company	97	86.61
Promotions are offered through the web page	78	69.64
The website contains a blog	76	67.86
The customer can sign up on the page.	49	43.75
It is possible to purchase/shop online	40	35.71
Home delivery is offered.	39	34.82
The website has a newsletter subscription	35	31.25
It is possible to place orders online (to be picked up at the franchise)	20	17.86
Customer loyalty cards can be managed through web	19	16.96

In Table 4 the classification of the rating for the relational-users dimension is highlighted. Almost half of the franchises have a medium level (47.32%), while 26.79% present a high level and 25.89% show a low level. In general, it should be noted that all the companies include some item that allows them to interact with users, so that none has a classification of “null”.

Table 4. Relational-Users Dimension Rating

RATING	FRANCHISES	
	n	%
Null	0	0
Low	29	25.89
Medium	53	47.32
High	30	26.79

Regarding the presence of the items of the relational-social networks dimension (see Table 5), Facebook (93.75%) and Twitter (83.93%) stand out as the social networks with the greatest presence in the websites. Next are Instagram (66.07%) and YouTube (59, 82%), which are present in about two thirds of companies. LinkedIn is present in less than half of the franchises (40.18%). Finally, only in 18.75% of the franchises are present other social networks, such as Google+, and in only 15.18% is Pinterest.

Table 5. Relational-Social Networks Dimension

ITEMS	FRANCHISES	
	n	%
There is a link to the franchise's Facebook page	105	93.75
There is a link to the franchise's Twitter page	94	83.93
There is a link to the Instagram page of the franchise	74	66.07
There is a link to the franchise's YouTube channel	67	59.82
There is a link to the franchise's LinkedIn page	45	40.18
There is a link to other social networks	21	18.75
There is a link to the Pinterest page of the franchise	17	15.18

Based on the classification of the relational-social network dimension (Table 6), it can be seen that more than half of the franchises (55.36%) have a medium level of presence in social networks, almost one third (30.36%) have a high level and only 14.29% have a low level. That is, all the companies have a presence in some social network.

Table 6. Relational-Social Networks Dimension Rating

RATING	FRANCHISES	
	n	%
Null	0	0
Low	16	14.29
Medium	62	55.36
High	34	30.36

Table 7 shows the presence of the items of the relational-web 2.0 applications dimension. The analysis identified that “mashups” are the most used applications (86.61%), the most recognized being Google Maps, to show the location of points of sale. The videocasting (53.57%) and the RSS application (55.36%) are present in a little more than half of the websites. One of the applications that has less presence is the "folksonomy" or word cloud (2.68%), which allows users to create tags to highlight content that they consider important and thus creates the word cloud. No franchise includes podcasting on its website.

Table 7. Relational-Web 2.0 applications Dimension

ITEMS	FRANCHISES	
	n	%
The page includes mashups (Google Maps, blog, YouTube, etc.).	97	86.61
The page has RSS / ATOM	62	55.36
The page includes video-casting.	60	53.57
The page includes folksonomies or classifications (social labels or word clouds)	3	2.68
The page includes *podcasting*	0	0

Then, the relational-web 2.0 applications dimension is analyzed. As shown in Table 8, nearly 75% of the franchises (74.11%) have a medium level, and less than a quarter (16.96%) have a low level. It is worth noting that 8.04% of the franchises have a null level, that is, they do not incorporate any web 2.0 application in their pages, and only one company has a high level (0.89%).

Table 8. Relational-Web 2.0 applications Dimension Rating

RATING	FRANCHISES	
	n	%
Null	9	8.04
Low	19	16.96
Medium	83	74.11
High	1	0.89

Next, the presence of items from the usability dimension was analyzed. Table 9 shows that all the franchises include a home button, as well as photographs and images to complement the text; the great majority (91.07%) have a clearly identifiable postal address, along with a contact telephone number (86.61%), and two thirds also have easily accessible e-mail (66.07%). Three quarters of the websites are frequently updated (75.89%) and 58.93% include an internal search engine. On the other hand, less than half of the websites can be viewed in other languages (42.86%), and a quarter of them have a section of frequently asked questions. 17.86% of the pages have a site map and only 8.93% have a virtual assistant.

Table 9. Usability Dimension

ITEMS	FRANCHISES	
	n	%
The page has a “home” button	112	100
There are photographs and other images that support the text	112	100
The postal address is clearly identified	102	91.07
The contact phone number is easily located/identifiable	97	86.61
The information is frequently updated	85	75.89
The email address is clearly identified	74	66.07
There is a search option to locate information within the web page	66	58.93
The page is available in more than one language	48	42.86
There is a section of frequently asked questions (F.A.Q.)	29	25.89
There is a map of the website	20	17.86
The page has a virtual assistant	10	8.93

Finally, we proceeded to analyze the usability dimension (see Table 10). In this analysis, it stands out that 71.43% of the franchises have a medium level of usability and the rest

(28.57%) have a high level. That is, all the companies incorporate some item to improve the usability of their websites.

Table 10. Usability Dimension Rating

RATING	FRANCHISES	
	n	%
Null	0	0
Low	0	0
Medium	80	71.43
High	32	28.57

5. DISCUSSION AND CONCLUSION

The results indicate that, in general, the franchise systems make use of the websites to manage their relationships with their stakeholders (e.g., franchisees, customers). After analyzing the results of each dimension, the paper concludes that the informational dimension obtained the higher rate. It is important to stablish that the greatest number of franchises include information about the prices of products/services. In order to contribute to the digital communication, some franchises include in their websites a press room where they publish corporate news about the franchise, which may not be very useful for the customers, but it is useful when communicating to other stakeholders, such as future franchisees. On the other hand, the existence of a specific area for the recruitment of employees is important to effectively communicate the availability of vacancies for potential candidates and facilitate access to positions.

This paper contributes by identifying different subcategories of the relational dimension in the communication of the franchisor with its stakeholders, useful to enhance its relationship strategy. Regarding the relational dimension, the franchises value the interaction with the users by providing spaces through which to contact the company, for example, a blog in which the franchise can communicate useful information for all stakeholders. In addition, the contact forms provide information and means to relate to customers and receive feedback from them to improve the quality of the products/services they offer, thus developing a closer relationship. Although the websites are usually intended for customers and contain information of interest to them, the franchises take into account other stakeholders, such as franchisees, and include an area to communicate with them, something of great importance to

manage almost immediately any problem that may arise. Another way in which the franchises relate to users is through their social networks, which can be accessed through the link. In addition, the websites are adapted to some extent to Web 2.0 and include tools that improve the user experience when using them. For instance, the use of videocasting allows the transmission of written information in a visual way with greater impact on users. However, it would be advisable to adapt them more to new technologies which would lead to a better digital communication. RSS are Web-based news aggregators, which are designed to enable users to read news from many sources (Shang et al., 2011). This application allows for continuous communication and for users who are interested to be informed. It also facilitates the search for information on blogs and lets users become part of the website by increasing their interaction with the company. For this reason, it would be convenient for organizations to include it in their websites and develop a digital communication adapted to the current web and in which users can participate.

The franchises design their websites considering the usability to facilitate access to information and reduce the time users spend to meet their objectives when using the website. Measures such as including a home button or photographs to illustrate the texts help this and all the franchises studied incorporate them, as it is something simple and very useful. Other aspects such as updating the information frequently, less than a year, allows for effective communication and attracts customers since it shows interest on the part of the company. In addition, by making contact information (such as a phone number or email) visible and easily located, which requires less than three clicks, it would improve communication for users to contact the company. Also, the inclusion of frequently asked questions could speed up the user's search process and avoid having to personally respond to queries that may be very common. Finally, franchises do not incorporate a virtual assistant to help users make a real-time request and thus get them to make a purchase or find the necessary information, which could reduce the time it takes users to find what they are looking for.

Actually, this study has helped to advance the knowledge of digital communication of the franchises. In this sense, it has been possible to highlight that the franchises must improve their digital communication through the Web 2.0 applications. This utility has not been widely exploited as a strategic tool by the franchises. Therefore, this study provides some practical contributions for the franchisors, since they could improve their relationships with the franchisees through digital and interactive communication on their websites. Nowadays, due

to the international health COVID-19 crisis, the digital communication becomes crucial for the strategic management, because it could be the main tool to maintain contact with franchisees and to expand the brand.

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Appendix 1

Results of the website content analysis

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
Fr1	10	58.82	6	60.00	4	57.14	2	40.00	6	54.55
Fr2	11	64.71	3	30.00	2	28.57	2	40.00	5	45.45
Fr3	15	88.24	8	80.00	4	57.14	2	40.00	4	36.36
Fr4	15	88.24	8	80.00	4	57.14	1	20.00	8	72.73
Fr5	14	82.35	7	70.00	5	71.43	1	20.00	7	63.64
Fr6	12	70.59	6	60.00	7	100.00	3	60.00	5	45.45
Fr7	11	64.71	4	40.00	3	42.86	3	60.00	7	63.64
Fr8	10	58.82	1	10.00	0	0.00	0	0.00	6	54.55
Fr9	12	70.59	3	30.00	5	71.43	3	60.00	5	45.45
Fr10	9	52.94	3	30.00	3	42.86	3	60.00	5	45.45
Fr11	13	76.47	7	70.00	5	71.43	2	40.00	8	72.73
Fr12	10	58.82	4	40.00	4	57.14	2	40.00	5	45.45
Fr13	12	70.59	7	70.00	4	57.14	1	20.00	7	63.64
Fr14	13	76.47	9	90.00	5	71.43	3	60.00	10	90.91

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
Fr15	13	76.47	8	80.00	4	57.14	1	20.00	8	72.73
Fr16	12	70.59	4	40.00	5	71.43	3	60.00	8	72.73
Fr17	11	64.71	3	30.00	3	42.86	2	40.00	8	72.73
Fr18	12	70.59	5	50.00	5	71.43	1	20.00	5	45.45
Fr19	14	82.35	9	90.00	5	71.43	2	40.00	8	72.73
Fr20	11	64.71	1	10.00	5	71.43	3	60.00	7	63.64
Fr21	12	70.59	5	50.00	4	57.14	2	40.00	7	63.64
Fr22	14	82.35	6	60.00	3	42.86	3	60.00	6	54.55
Fr23	14	82.35	7	70.00	4	57.14	1	20.00	8	72.73
Fr24	10	58.82	4	40.00	0	0.00	3	60.00	6	54.55
Fr25	12	70.59	3	30.00	3	42.86	2	40.00	7	63.64
Fr26	9	52.94	4	40.00	3	42.86	2	40.00	7	63.64
Fr27	14	82.35	4	40.00	4	57.14	3	60.00	7	63.64
Fr28	8	47.06	3	30.00	2	28.57	2	40.00	7	63.64
Fr29	8	47.06	7	70.00	3	42.86	1	20.00	9	81.82
Fr30	11	64.7	8	80.00	5	71.43	0	0.00	5	45.45

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
		1								
Fr31	12	70.59	8	80.00	6	85.71	3	60.00	6	54.55
Fr32	8	47.06	3	30.00	2	28.57	3	60.00	6	54.55
Fr33	13	76.47	5	50.00	5	71.43	2	40.00	8	72.73
Fr34	12	70.59	7	70.00	4	57.14	1	20.00	8	72.73
Fr35	8	47.06	3	30.00	2	28.57	2	40.00	6	54.55
Fr36	11	64.71	3	30.00	4	57.14	2	40.00	8	72.73
Fr37	12	70.59	5	50.00	4	57.14	2	40.00	7	63.64
Fr38	10	58.82	9	90.00	7	100.00	2	40.00	6	54.55
Fr39	10	58.82	5	50.00	4	57.14	2	40.00	5	45.45
Fr40	15	88.24	9	90.00	4	57.14	2	40.00	7	63.64
Fr41	9	52.94	1	10.00	3	42.86	2	40.00	6	54.55
Fr42	11	64.71	8	80.00	3	42.86	0	0.00	7	63.64
Fr43	9	52.94	2	20.00	3	42.86	2	40.00	8	72.73
Fr44	9	52.94	4	40.00	3	42.86	2	40.00	5	45.45
Fr45	11	64.71	4	40.00	3	42.86	1	20.00	5	45.45

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
Fr46	11	64.71	7	70.00	4	57.14	2	40.00	7	63.64
Fr47	6	35.29	5	50.00	0	0.00	0	0.00	5	45.45
Fr48	11	64.71	6	60.00	4	57.14	1	20.00	8	72.73
Fr49	12	70.59	4	40.00	5	71.43	3	60.00	8	72.73
Fr50	9	52.94	3	30.00	3	42.86	1	20.00	4	36.36
Fr51	11	64.71	6	60.00	5	71.43	1	20.00	6	54.55
Fr52	9	52.94	4	40.00	3	42.86	0	0.00	8	72.73
Fr53	3	17.65	1	10.00	3	42.86	0	0.00	4	36.36
Fr54	9	52.94	3	30.00	2	28.57	1	20.00	7	63.64
Fr55	12	70.59	4	40.00	4	57.14	2	40.00	8	72.73
Fr56	12	70.59	4	40.00	3	42.86	0	0.00	6	54.55
Fr57	13	76.47	7	70.00	6	85.71	2	40.00	10	90.91
Fr58	12	70.59	4	40.00	4	57.14	3	60.00	6	54.55
Fr59	15	88.24	9	90.00	6	85.71	3	60.00	9	81.82
Fr60	10	58.82	2	20.00	3	42.86	2	40.00	6	54.55
Fr61	13	76.4	3	30.00	0	0.00	1	20.00	6	54.55

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
		7								
Fr62	12	70.59	6	60.00	5	71.43	2	40.00	5	45.45
Fr63	10	58.82	8	80.00	4	57.14	3	60.00	7	63.64
Fr64	12	70.59	4	40.00	7	100.00	3	60.00	6	54.55
Fr65	8	47.06	3	30.00	4	57.14	3	60.00	5	45.45
Fr66	10	58.82	6	60.00	3	42.86	3	60.00	7	63.64
Fr67	11	64.71	6	60.00	5	71.43	3	60.00	7	63.64
Fr68	13	76.47	4	40.00	4	57.14	2	40.00	7	63.64
Fr69	13	76.47	6	60.00	4	57.14	2	40.00	10	90.91
Fr70	14	82.35	10	100.00	6	85.71	2	40.00	8	72.73
Fr71	10	58.82	5	50.00	4	57.14	3	60.00	4	36.36
Fr72	9	52.94	2	20.00	5	71.43	3	60.00	5	45.45
Fr73	13	76.47	4	40.00	2	28.57	3	60.00	7	63.64
Fr74	13	76.47	4	40.00	5	71.43	2	40.00	8	72.73
Fr75	12	70.59	4	40.00	3	42.86	1	20.00	6	54.55
Fr76	14	82.35	8	80.00	3	42.86	2	40.00	9	81.82

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
Fr77	11	64.71	5	50.00	3	42.86	4	80.00	7	63.64
Fr78	10	58.82	3	30.00	4	57.14	2	40.00	6	54.55
Fr79	10	58.82	1	10.00	2	28.57	2	40.00	7	63.64
Fr80	14	82.35	8	80.00	6	85.71	2	40.00	6	54.55
Fr81	13	76.47	8	80.00	4	57.14	1	20.00	9	81.82
Fr82	11	64.71	4	40.00	4	57.14	3	60.00	8	72.73
Fr83	11	64.71	2	20.00	3	42.86	2	40.00	6	54.55
Fr84	13	76.47	4	40.00	3	42.86	2	40.00	7	63.64
Fr85	8	47.06	3	30.00	3	42.86	2	40.00	5	45.45
Fr86	13	76.47	4	40.00	4	57.14	3	60.00	7	63.64
Fr87	10	58.82	7	70.00	2	28.57	2	40.00	7	63.64
Fr88	11	64.71	9	90.00	4	57.14	2	40.00	7	63.64
Fr89	12	70.59	7	70.00	5	71.43	3	60.00	5	45.45
Fr90	14	82.35	3	30.00	4	57.14	0	0.00	8	72.73
Fr91	12	70.59	5	50.00	5	71.43	0	0.00	8	72.73
Fr92	12	70.5	3	30.00	6	85.71	3	60.00	5	45.45

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
		9								
Fr93	11	64.71	4	40.00	5	71.43	1	20.00	6	54.55
Fr94	13	76.47	4	40.00	3	42.86	2	40.00	7	63.64
Fr95	13	76.47	4	40.00	3	42.86	2	40.00	7	63.64
Fr96	10	58.82	2	20.00	0	0.00	2	40.00	6	54.55
Fr97	14	82.35	4	40.00	3	42.86	3	60.00	7	63.64
Fr98	12	70.59	5	50.00	7	100.00	3	60.00	7	63.64
Fr99	11	64.71	3	30.00	1	14.29	2	40.00	5	45.45
Fr100	13	76.47	9	90.00	5	71.43	3	60.00	9	81.82
Fr101	10	58.82	4	40.00	3	42.86	2	40.00	6	54.55
Fr102	11	64.71	8	80.00	4	57.14	2	40.00	8	72.73
Fr103	11	64.71	4	40.00	4	57.14	1	20.00	7	63.64
Fr104	11	64.71	4	40.00	5	71.43	2	40.00	7	63.64
Fr105	13	76.47	5	50.00	3	42.86	2	40.00	7	63.64
Fr106	12	70.59	4	40.00	5	71.43	3	60.00	8	72.73
Fr107	13	76.47	3	30.00	4	57.14	3	60.00	9	81.82

FR	Informational		Relational-Users		Relational-Social networks		Relational-Web 2.0 Apps		Usability	
	n	%	n	%	n	%	n	%	n	%
Fr108	10	58.82	5	50.00	2	28.57	3	60.00	5	45.45
Fr109	10	58.82	4	40.00	5	71.43	2	40.00	7	63.64
Fr110	12	70.59	4	40.00	5	71.43	2	40.00	7	63.64
Fr111	12	70.59	4	40.00	3	42.86	2	40.00	6	54.55
Fr112	11	64.71	10	100.00	2	28.57	1	20.00	8	72.73

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ASYMMETRIC INFORMATION AND FIRM VALUE DURING PANDEMIC COVID-19

Arif Budi SATRIO[1]

Abstract

The purpose of this study is to investigate the relationship between fundamental factors, asymmetric information, and firm value during the 2020 pandemic by taking samples of 457 non-financial companies listed on the Indonesian Stock Exchange. Two-stage least square testing by controlling the firm's and industrial characteristics proves that asymmetric information does not have a dominant role in explaining firm value changes during the COVID-19 pandemic. This study also confirms that (1) the disclosure of information through corporate financial reports and foreign investors' presence still has a dominant role in mitigating information gaps among traders; (2) foreign investors' trading behavior indirectly provides information through their shares' trading flow, which causes a decrease in asymmetric information. This comprehensive empirical testing provides additional evidence regarding asymmetric information and firm value in developing markets during the pandemic.

Keywords: *Asymmetric information, firm value, firm characteristics, pandemic, COVID-19, emerging markets.*

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1. INTRODUCTION

Economic and financial uncertainty during the pandemic period has become an important issue, especially regarding firm shares valuation. Investors who should be rational in designing trading strategies based on expectations of the firm's future cash flows can act irrationally in stock trading because of uncertainty, especially news related to disease (Donadelli et al., 2017). Stock trading is triggered by sentiment, which is the dominant determinant of variation in the firm value (Ahmed, 2020). Recent empirical evidence (Al-Awadhi et al., 2020) suggests that the COVID-19 pandemic harms corporate stock returns.

Under normal conditions, firms' valuation uncertainty can be caused by information asymmetry (Jindra and Moeller, 2020). This problem arises because there are informed traders who can benefit from this private information. Several previous studies document the impact of asymmetric information on changes in firm value. Information asymmetry was found to harm firm value in the UK (Fosu et al., 2016) and in Vietnam (Huynh et al., 2020). However, there is no consensus regarding the impact of asymmetric information on firm value, especially during the pandemic. Information gaps between traders can also cause stocks to be considered too expensive (Miller, 1987).

This study discusses the relationship of asymmetric information on firm value changes in developing countries by considering several firm’s characteristics. This study takes the object of companies in Indonesia, considering that this country tends to have a higher vulnerability than other Asian stock markets. Indonesia is a country that is considered to have economic instability and exposure, especially during the Asian and global financial crises (Thampanya et al., 2020). Shares in developing companies also tend to be disproportionately sensitive to broad investor sentiment (Baker and Wurgler, 2007).

There are at least three significant contributions of this study to literature. *First*, this study adds to the literature by expanding the research area in the emerging markets during a pandemic. *Second*, this study documents empirical evidence of the association between firm characteristics, asymmetric information, and firm value. *Third*, this study provides an additional illustration indirectly related to the rational and irrational behavior of investors in shaping the price of equity in companies.

The rest of this article is divided into several parts. The second part reviews the literature and theoretical concepts that underlie the examination of asymmetric information and firm value changes. The third part describes the data and the estimation model. The fourth section

contains the analysis of test results. The fifth section presents a discussion of the results. Finally, the sixth section concludes the results of this study.

2. LITERATURE REVIEW

The presence of information related to economics and finance on the capital market as a whole will be an indicator for traders in determining a fair price for firm equity. At least two types of information can affect stock prices, namely public information and private information (French and Roll, 1986). Public information can be known simultaneously by all traders, who can then influence stock prices. In contrast, private information is only owned by informed traders.

Private information has become an important issue in determining share prices among traders in the capital market, and this problem has been documented for half a century ago (Bagehot, 1971). The presence of this problem causes some parties to benefit from private information and not for other parties. In this case, there is an adverse selection of informed and uninformed traders because more informed traders in the capital market can affect price formation (Bagehot, 1971). This argument becomes logical because market participants closely related to the firm will have better information about the firm and then trade it.

Information gaps between traders indicate a problem with asymmetric information. This problem then becomes the cause of errors in the formation of equity prices in each firm. Empirical evidence at the initial public offering shows that companies' uncertainty of valuation is due to information asymmetry (Jindra and Moeller, 2020). In this case, price volatility can be due to price errors during trading (French and Roll, 1986). In experimental laboratory testing, it has also been shown that informed players will make adjustments to their strategy when historical information is obtained so that an informed trader will buy or sell shares at the time of releasing private information (Wen, 2018). Information asymmetry was found to have a negative impact on firm value (Fosu et al., 2016; Huynh et al., 2020), but it can also be the cause of stock prices being overvalued (Miller, 1987). The overall description regarding asymmetric information shows that the existence of information gaps among traders can be a cause of mistake in determining a fair price for firm equity. Asymmetric information, on the one hand, can cause the firm to be less valuable. Still, on the other hand, it can also be the cause of an overvaluation of the firm's stock price. Considering pandemic conditions with high uncertainty, this study draws the following first hypothesis: Asymmetric information cannot predict changes in value at the firm during a pandemic.

To mitigate the problem of asymmetric information, companies can make voluntary disclosures that contain firm-specific information. This voluntary disclosure has a positive effect on the quality of information because it reduces asymmetric information, and investors can respond to this disclosure (Nugroho et al., 2015). Market traders perceive good quality as a result of increased positive perceptions of the firm. This disclosure can then positively affect firm value (Uyar and Kiliç, 2012). If asymmetric information is reflected in the bid-ask spread, which shows differences in information between informed and uninformed traders (Bagehot, 1971), empirical evidence also indicates that the disclosure of information has a close association with the bid-ask spread (Healy and Palepu, 2001).

The question that then arises is, what information can reduce information inequality? In normal economic and financial conditions, fundamental information plays an important role in the quality of information. Fundamental factors play an essential role in influencing stock market volatility in Malaysia, Thailand, and Singapore (Thampanya et al., 2020). In some of the literature, this fundamental indicator is viewed in terms of leverage (Chong and Kim, 2018; Huang et al., 2018; Huynh et al., 2020) and profitability (Harris, 2016). Although it has limited capabilities, leverage is still considered important in reducing asymmetric information in developing countries in Vietnam (Huynh et al., 2020). The volatility of the capital structure, in this case, represents a price puzzle in the stock market (Chong and Kim, 2018). The short-term debt component can substitute for corporate governance because of a disciplinary role in management (Huang et al., 2018). Information related to earnings also has an important role related to asymmetric information. Earning announcements can reduce asymmetric information between informed traders and market markers (Harris, 2016).

Apart from public disclosure of information, there is still private information that market players cannot fully capture. Traders who are not informed in this regard can capture information through changing foreign investment flows. Previous empirical evidence (Wang, 2014) shows that foreign parties' investment has a strong impact because these parties have an advantage in terms of information. Foreign institutional investors are also more sophisticated investors because they are the first to understand news announcements' information content, and these investors act quickly on negative events (Booth et al., 2011). Foreign investors have a higher impact on stock volatility (Al-Awadhi et al., 2020).

Foreign investors have an essential role in changing the quality of information on the emerging markets, especially during the pandemic period, with some logic. *First,* investor

sentiment can influence investment decisions and stock price valuations (Ichev and Marinč, 2018). *Second*, the consideration that foreign parties control companies in Indonesia shows an increase (Setiawan et al., 2016). *Third*, the consideration of returns is negatively affected by the deteriorating financial market conditions (Chong and Kim, 2018). Shares trading triggered by sentiment is an essential determinant of stock price variations (Ahmed, 2020). Shares in developing companies will be disproportionately sensitive to broad investor sentiment (Baker and Wurgler, 2007).

Based on the overall logic, the hypothesis related to the delivery of fundamental information related to the firm and information extracted from foreign investors' trading patterns in relation to asymmetric information is: Fundamental firm information and foreign investor trading can mitigate asymmetric information.

3. RESEARCH METHOD

3.1. Data

Testing on all non-financial companies on the Indonesia Stock Exchange (IDX). Financial firms are not used because companies with these industries have different financial and regulatory characteristics. Non-financial companies are used as samples with data availability considerations. The final sample used was 457 non-financial companies. The data used in this study are the financial statements of the end of 2019, published in 2020, to investigate asymmetric information and investor reactions during the COVID-19 pandemic. Data on stock prices, bid-ask spread, and market size are determined precisely based on the release of financial reports of each firm in the IDX in 2020.

3.2. Firm Value

The dependent variable in this study is firm value as measured by Tobin's Q. The use of this indicator takes into account the wide use of this ratio in previous studies (for example (Fosu et al., 2016; Huynh et al., 2020; Wang and Zhao, 2020)). To ensure robust test results, firm value is also proxied by different indicators, namely the market to book value (MBV) (Miller, 1994; Siagian et al., 2013). The determination of stock prices in this study is carried out carefully and thoroughly by considering the day and time of submission of financial information on the IDX website. Suppose the issuance of financial statements occurs during or after the end of trading hours for shares at IDX. In that case, the share price determination is determined based on the following trading day. This determination ensures that traders have known financial information and reflect it on each firm's bid-ask spread and stock price.

3.3. Asymmetric Information

Asymmetric information is an endogenous variable in this study. Referring to the microstructure theory, asymmetric information is reflected in the bid-ask spread (Bagehot, 1971; Copeland and Galai, 1983; Glosten, 1987; Glosten and Milgrom, 1985). The use of the bid-ask spread with the consideration that some parties have private information and not others. The presence of a superiorly informed trader leads to a positive bid-ask spread (Glosten and Milgrom, 1985).

3.4. Instrumental Variables

Fundamental factors in the financial reports and trading patterns of foreign investors are instrumental variables in this study. Fundamental information with consideration of leverage (Chong and Kim, 2018; Huang et al., 2018; Huynh et al., 2020) and firm business sustainability with profitability indicators (Ng and Rezaee, 2020). Given private information, this study uses the foreign investor trading indicator, which is proxied by selling trading volume. The consideration of using this indicator in the investigation of this study is by considering this investor's sophistication in understanding the information content (Booth et al., 2011).

3.5. Control Variables

Asymmetric information investigations on changes in firm value are carried out by involving control variables. A study that considers the firm's size and age reflects its characteristics, which in some literature is deemed an essential role in firm value. Firm size is positively related to firm value (Siagian et al., 2013) because it has a higher reputation and a lower risk of bankruptcy (Chen and Chen, 2011). Potential investors consider firm size as an indicator of reputation (Yasser and Mamun, 2015). Apart from size, the firm's age also has a bearing on the value of the firm. Young companies will have a larger beta than usual due to a lack of familiarity (Chincarini et al., 2020). Companies with lower market capitalization and younger age will have an extreme sensitivity to investor sentiment (Baker and Wurgler, 2007).

Testing is also carried out by considering the effect of the industry on each firm (Dhochak and Sharma, 2015). This consideration is relevant, considering that testing was carried out during a pandemic. This argument is confirmed in previous literature on SARS (Chen et al., 2007) and the Ebola outbreak (Ichev and Marinč, 2018). Certain sectors have performed well during the pandemic but not other sectors (Al-Awadhi et al., 2020).

3.6. Research Model

Testing with two-stages least squares to consider the issue of endogeneity in the regression model. The test is carried out with the following models:

$$SPREAD_{i,t} = \beta_0 + \beta_1 SPREAD_{i,t-1} + \beta_2 PROFIT_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 FOREIGN_{i,t-1} + \varepsilon_{i,t}$$

$$FV_{i,t} = \beta_0 + \beta_1 FV_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 AGE_{i,t-1} + \beta_4 SPREAD_{i,t} + \varepsilon_{i,t}$$

where FV refers to the value of the firm as measured by Tobin's Q and MBV, with the control variables market size (SIZE) and firm age (AGE). Tobin's Q is measured based on the sum of the market value of equity and book value of debt, then compared with the book value of total assets. MBV is obtained by comparing the share price with the book value per share. SIZE is determined based on the price and number of shares outstanding. AGE is determined based on the length of time since the firm is registered to IDX. This firm age measurement is based on its testing on the value of public companies in Indonesia.

The endogenous variable is asymmetric information (SPREAD), which is proxied by the bid-ask spread measured by the difference between the ask and the bid price, which is then divided by the average ask and bid price (Glosten, 1987; Harris, 2016). Instrumental variables, namely the firm's fundamental factors (profitability and leverage) and foreign sell. Profitability (PROFIT) is determined based on comparing net profit after tax with the firm's total assets. Leverage (LEV) is measured by comparing total debt to total assets (Fosu et al., 2016). Foreign sell (FOREIGN) is based on the natural logarithm of sales trading volume by foreign parties.

4. ANALYSIS

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Q1	Q2	Q3
MBV_t	0.6721	105.0953	-1769.9640	1372.0360	0.3922	0.7773	1.5969
Q_t	6.4026	72.9426	0.1170	1114.4000	0.7195	0.9176	1.4455
$Spread_t$	0.6149	0.9606	-2.0000	2.0000	0.0080	0.0375	2.0000
Size	27.6816	1.8805	22.9205	34.3464	26.3021	27.6236	28.8622
Age	15.4273	10.8289	1.0568	69.9959	6.0342	13.6181	25.2430
Profit	-0.0015	0.3042	-4.7987	0.6070	-0.0067	0.0196	0.0586
Lev	2.8376	45.7497	0.0018	973.4065	0.2780	0.4614	0.6321
Foreign	4.0568	6.1243	0.0000	18.4555	0.0000	0.0000	10.5160

Tables 1 and 2 provide descriptive information on all variables in this study. Table 2 shows correlation analysis in the variable which is used in the estimation model in research. Pearson Correlation Testing results are a significant level of 5%. The results show that firm value measured by MBV and Tobins' Q has a significant associations of 0.4346. These results indicate that these two proxies have the same meaning in reflecting firm value. There is a strong correlation founded in instrumental and control variables. To ensure that multicollinearity problems do not occur, all test models are tested using the variance inflation factor (VIF). The test results show that all models in this research produce a VIF value of less than 5, which means it is no multicollinearity problems.

Table 2. Correlation Matrix

	MBV_t	Q_t	$Spread_t$	Size	Age	Profit	Lev	Foreign
MBV_t	1							
Q_t	0.4346*	1						
$Spread_t$	0.0650	0.0652	1					
Size	0.0394	0.1292*	-0.2032*	1				
Age	0.0102	-0.0511	-0.0398	0.0431	1			
Profit	0.0061	0.0082	-0.0966*	0.2221*	0.0279	1		
Lev	-0.0007	0.6999*	-0.0177	0.0072	-0.0088	0.0019	1	
Foreign	-0.0410	-0.0463	-0.2888*	0.5363*	0.0523	0.1221*	-0.0343	1

Table 3 presents the test results for all non-financial companies in Indonesia that have published financial reports since January 2020. This test is carried out as an initial step to detect changes in information quality and firm value due to disclosure of information through financial reports. The argument for conducting testing in this period is considering that COVID-19 has started at the end of 2019.The test was carried out with two models, namely OLS, by controlling the standard error and 2SLS. The whole test was carried out by considering the industry effect with the logic that the COVID-19 pandemic will have a different impact on each industry. The whole test was carried out with a lag on each dependent variable with the consideration of heterogeneity.

Table 3. Full Model Results

Variables	$Spread_t$	MBV_t	Q_t
$Spread_{t-1}$	0.6522***		
	(0.0445)		
MBV_{t-1}		0.9577***	
		(0.0056)	
Q_{t-1}			0.9945***
			(0.0032)
$Spread_t$		1.1043	0.2889
		(0.9884)	(0.2670)
Profit	-0.3536*		
	(0.2115)		
Lev	-0.0229**		
	(0.0113)		
Foreign	-0.0216***		
	(0.0061)		
Size		0.7832**	0.1652*
		(0.3528)	(0.0974)
Age		-0.0431	-0.0099
		(0.0596)	(0.0161)
Constant	0.3457***	-23.7369**	-5.1531*
	(0.0827)	(10.0084)	(2.7592)
Kleibergen-Paaprk LM Statistics (p-value)		0.0000	0.0000
Cragg-Donald Wald F Statistics		86.1630	86.9010
Hansen J Statistics (p-value)		0.9833	0.9285
Endogeneity test(p-value)		0.0272	0.0083
Hettest (p-value)		0.5503	0.9192
Industry Effect	Yes	Yes	Yes
R-squared	0.4914	0.9860	0.9959

Note: The values in parentheses after presenting the coefficients are robust standard errors. The significance level uses the eccentric symbols ***, **, and *, which are equal to the significance levels of 0.01, 0.05, and 0.1, respectively.

Post-test estimation for 2SLS is done with the under-identification test (Kleibergen-Paaprk LM Statistics), weak identification test (Cragg-Donald Wald F Statistics), overidentification test (Hansen J Statistics), and endogeneity test. The under-identification test results show that the overall p-value is 0.000, while the overidentification test is 0.9833 and 0.9285. Weak identification test results were shown with the values of 86.1630 and 86.9010. The tests showed that there were no under-identification, overidentification, and weak identification problems. The endogeneity test shows the p-value of 0.0272 and 0.0083, which

shows that asymmetric information is an endogenous variable. All test results show that the homoscedastic assumption has been fulfilled, indicated by the p-value in the heteroscedasticity test 0.5503 and 0.9192.

The testing on the first equation of this research shows that the firm's asymmetric information on the previous day has a significant role in explaining asymmetric information on the next trading day, which is indicated by a significant coefficient of 0.6522 at the 0.01 level. The presentation of the firm's financial performance in this research is represented by profitability and leverage. The test results for the association of profitability and bid-ask spread are -0.3536, significant at the 0.1 level. Furthermore, the directional coefficient on leverage is -0.0229, significant at the 0.05 levels. These results indicate that the release of public information in submitting financial reports will reduce asymmetric information. Private information that appears on the release of information by foreign parties also has a role in lowering asymmetric information on non-financial firms in Indonesia during the pandemic period (β= -0.0216; SE= 0.0061).

The second equation test shows that the firm's value with the MBV_{t-1} and Q_{t-1} indicators has a coefficient of 0.9577 and 0.9945, all significant at the 0.01 level. These results indicate that the firm's value on the previous trading day can explain its value changes the following day. Furthermore, the firms' characteristics with the market size indicator have a coefficient of 0.7832 on the MBV, while its association with the Tobins Q indicator is shown by a direction coefficient of 0.1652. The market size association with the MBV and Tobin's Q indicator values is significant at the 0.05 and 0.1 levels, which means the larger the firm's market size, the more likely it is to have a higher firm value. Furthermore, age and asymmetric information on firms did not significantly impact the firm's value during the COVID-19 pandemic. All test results support the hypothesis in this study.

To ensure consistency of test results, Table 4 restates the test results in this study in a sub-sample of companies with published financial reports on the Indonesia Stock Exchange as of March 2, 2020. The use of this data is based on the announcement of the first COVID-19 case in Indonesia. Tests with OLS regression modeling, the results still show consistency, as shown in Table 3 that disclosure of financial information that appears on profitability and leverage has a role in minimizing information inequality. Trading by foreign parties at the time of releasing financial information also has a role in reducing asymmetric information.

Table 4. Robustness Checks

Variables	$Spread_t$	MBV_t	Q_t
$Spread_{t-1}$	0.6522***		
	(0.0445)		
MBV_{t-1}		0.9577***	
		(0.0056)	
Q_{t-1}			0.9945***
			(0.0032)
$Spread_t$		1.1027	0.2884
		(0.9894)	(0.2672)
Profit	-0.3572*		
	(0.2151)		
Lev	-0.0231**		
	(0.0115)		
Foreign	-0.0217***		
	(0.0061)		
Size		0.7851**	0.1656*
		(0.3542)	(0.0978)
Age		-0.0427	-0.0098
		(0.0599)	(0.0162)
Constant	0.3462***	-23.7946**	-5.1672*
	(0.0828)	(10.0527)	(2.7715)
Kleibergen-Paaprk LM Statistics (p-value)		0.0000	0.0000
Cragg-Donald Wald F Statistics		85.9810	86.7220
Hansen J Statistics (p-value)		0.9830	0.9271
Endogeneity test(p-value)		0.0275	0.0084
Hettest (p-value)		0.5523	0.9197
Industry Effect	Yes	Yes	Yes
R-squared	0.4910	0.9860	0.9959

Note: The values in parentheses after presenting the coefficients are robust standard errors. The significance level uses the eccentric symbols ***, **, and *, which are equal to the significance levels of 0.01, 0.05, and 0.1, respectively.

The post-estimation on the 2SLS test on the firm value with the MBV indicator shows the under-identification test and the overidentification test, respectively, showing a p-value of 0.0000 and 0.9830. Furthermore, testing the firm value with the Tobins Q indicator shows the p-value of 0.0000 and 0.9271, respectively. The overall test results indicate that there are no under-identification and overidentification problems in this sub-sample test. The overall results also showed no heteroscedasticity and weak identification problems in this test.

The 2SLS test also shows the consistency of the results shown in the previous Table 3, namely that firm characteristics with firm size indicators are the best predictors of explaining changes in firm value in Indonesia during the pandemic period. The irrational behavior of traders during the COVID-19 pandemic is indicated by the absence of the impact of information gaps among traders on changes in the value of companies in Indonesia.

5. DISCUSSION

The initial test in this research investigates the role of public information and the flow of foreign information on the bid-ask spread. The test results on the entire sample and categorization into the sub-sample by considering when the first case of COVID-19 was detected in Indonesia shows that the delivery of public information through the publication of financial reports to the public can narrow the bid-ask spread, which means suppressing asymmetric information. Information related to the firm's ability to generate profits can reduce the information gap among traders in obtaining an overview of management performance in managing firm finances.

Information regarding firm leverage also narrows the bid-ask spread. The use of debt greater than other firms in similar industries can cause higher financial risk. However, the debt component can serve as a substitute for corporate governance because of a disciplinary role in management (Huang et al., 2018). The results of this test support a number of previous studies (Chong and Kim, 2018; Harris, 2016; Huynh et al., 2020), which state the vital role of debt in mitigating asymmetric information.

The trading behavior of foreign investors, which in some literature is considered a sophisticated type of trader (Booth et al., 2011), is also proven in this research. The test results confirm a negative association of share sales transactions by foreign investors on asymmetric information. This evidence is an early indication that uninformed parties can extract private information from sales flows by foreign parties.

Subsequent empirical evidence in this research shows that although there is a positive coefficient on asymmetric information testing on firm value, this association is not significant. Asymmetric information cannot be a predictor that explains changes in Indonesia's firm value during the COVID-19 pandemic. The characteristics of the firm's shares, with market size indicator, become investors' consideration in determining firm value. These results confirm previous findings (Baker and Wurgler, 2007; Chen and Chen, 2011; Siagian et al., 2013).

6. CONCLUSION

This study sheds light related to asymmetric information associations in firm value changes during the COVID-19 pandemic. The analysis is done by considering the firm's fundamental information and foreign's trading patterns in developing countries by taking samples from Indonesia. This research can be used as a reference for future research during pandemics and financial crises in developing countries.

This research indicates that public information conveyed through financial reports will reduce the information gap between traders. Private information that appears on foreign investors' trading flows also has a negative association with asymmetric information. However, asymmetric information during a pandemic has no role in explaining changes in firm value. Big firms are considered to have the ability to withstand pandemic and high uncertainty conditions, so firms with large market capitalizations have higher ratings by traders compared to smaller firms. This research confirms the trader's familiarity with big firms in developing countries.

An important implication of this study from a practical perspective is the emphasis on disclosing information to the public. Even though there was no role for financial information in shaping firm value during the pandemic, firms still need to ensure the quality of financial information to minimize information gaps among traders. Firms have difficulty gaining the trust of stakeholders and investors if there is imperfect information regarding the firm's performance and financial structure.

Even though this research has used all registered non-financial companies in Indonesia, the test, which is confirmed to be free from endogeneity issue, has controlled the industrial effect, controlling firm characteristics, and divide the tests into sub-sample testing, this research has its limitations. The analysis in future research could use objects expansion in other developing countries. Expansion in subsequent research can also be done on asymmetric information indicators.

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USE OF CALIBRATION METHODS IN ESTIMATING YIELD FIXED INCOME FINANCIAL INSTRUMENTS

George-Eduard GRIGORE[1]

Abstract

Given that the temporal structure of interest rates is a highly debated and studied, the paper focuses on demonstrating how the evolution of the yield curve of government bonds in a given state can highlight a relationship of dependence or show a degree of influence over the trend observed at the level of another state. The estimation of the various parameters involved in the calculation and construction of this curve, by using the optimization models in this direction, Nelson-Siegel (NS) and Nelson-Siegel-Svensson (NSS), highlights the necessary specific information on the degree of curvature, or turning points, based on the theoretical-applicative basis of the parametric function between the time to maturity of the instrument and its yield. Finally, the degree of understanding of the mechanism given by the temporal structure is explained by the use of a series of correlational relations, which show various interdependencies between daily yields, estimated parameters or between spreads. The results of the research demonstrate the various dependencies at the level of European countries (i.e. Germany, Switzerland, Czechia, Norway, Poland, Hungary), as well as outside the European family (i.e. Malaysia and Vietnam). It is noteworthy that Germany and the Czechia have a high degree of correlation over most of the countries analyzed. As the result, the relevance of fixed income instruments and the theoretical intensification of the temporal structure of interest rates are given by the quantitative procedures of the models used.

Keywords: *Yield Curve, Parametric Models, Nelson-Siegel, Nelson-Siegel-Svensson, Correlational Relations, Predictability.*

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1. INTRODUCTION

This paper aims to demonstrate how the specific yields of fixed income financial instruments tend to ensure that the most accurate picture possible in financial markets, with the aim of informing about the investment decision-making act, and the way in which they are able to guide players in decision-making or investment processes. Starting from the way in which the term structure of interest rates is understood as the relationship between interest rates or bond yields and their different maturities (Vayonas and Vila, 2009), and the fact that it can reflect market participants' expectations about future changes in interest rates. Interest rates and the assessment of monetary policy conditions, it can be noted, based on a wide range of debates and important developments in the field under study, that a good indicator in this direction is given by the yield curve.

The motivation to study and analyze a series of specific features of these fixed income instruments is becoming increasingly important by notifying, identifying and providing a wide range of information on how to form their prices and the way in which the regulatory field plays a key role in the financial-banking world. Thus, with the help of the Svensson (1994) model, which is widely used for modeling the yield curve, being a parametric method for estimating the yields of these fixed income instruments, the basic research hypothesis is highlighted by the concentration and identification of plausible answers to how the government bond yield curve helps to predict events, as well as the existence of links between the obtained parameters. The importance of this useful financial indicator (Ananchotikul and Zhang, 2014) in the decision-making and investment process, seen as that lever with the role of information, but also of prediction or understanding of the fluctuating framework of financial markets, is justified by selecting the analyzed states, especially those in Central and Western Europe. Therefore, the fast – paced development of bond markets is an important condition in the development of research, as financial market players have to form a holistic picture of each impediment or more atypical situation in their pursuit of profit, the methods used highlighting the implications which the temporal structure of interest rates has, respectively the role of the yield curves of these fixed income financial instruments. At the same time, the aim is to capture the way in which these calibration methods and models are only the tools that can lead and help to understand the various interactions and relevant ways of guidance and they can be used to adapt and adopt those mechanisms designed to manage, monitor and prevent any changes or more difficult situations.

On the other hand, referring to the structure of the paper, it can be noted that *the first part* of the paper focuses on the thematic and systematic presentation of the main properties, characteristics and defining elements in the analysis of these financial securities. Most of the second part of the paper is focused on conducting a quantitative and empirical-conclusive analysis, by collecting between 2009-2019 data on government bond yields in different world countries grouped by region and economic potential. A first argument would be that less attention is paid to the possible applications of interest rate models to the financial markets specific to these European countries, the calibration models used being applied mainly to US bond markets, with different time intervals analyzed. A second aspect is the size of bond markets, which is generally smaller compared to Western markets, and the analysis of these European countries (i.e. Czechia, Poland, Norway, Denmark, Belgium, Switzerland and Germany) depended heavily on much of the availability of data. The research focus is on observing recent events, by capturing and signaling the links and relationships that can be established between this important predictor in the financial market, given the yield curve of fixed income instruments, but also on how to understand the series of interdependencies and connections identified.

2. LITERATURE REVIEW

2.1. The Models Used in Calibrating The Yield Curve

In the wide typological, diverse and dynamic palette of financial instruments with which economic agents operate, a main place is held by the particularities and multitude of fixed income financial instruments, from the different forms they take, being often integrated in econometric models established in financial practice (i.e.CAPM model, duration model, refinancing model etc.) as those instruments associated with the least risk, or even risk-free. A starting point in the scientific approach is given by the understanding and treatment in the research field of the link between government bond yields and their maturities, known as the temporal structure of the interest rate. The yield curve, also called the temporal structure of the interest rate, means the ordering of the yield given by these instruments fixed according to the time remaining until maturity or, in other words, until its maturity in a set time interval. The explanatory power of these government bonds is predominantly highlighted by both the temporal structure of interest rates and their yields to maturity, the literature confirming the premise that government bond yields are a relevant indicator of economic performance, which can be used to predict real economic activity, while having significant predictive power in international financial markets (Blomvall, 2017; Canto, 2008; Carruthers, 2013; Sambit,

2013).

The term structure demonstrates market expectations for future events. By understanding the structure of the term, it is possible to predict how changes in the underlying asset will affect the yield curve (Cox et al.,1985). Thus, it is found that managers, investors and other decision-making bodies would be extremely interested in obtaining that precise indicator of future interest rate levels, an idea formulated by the study conducted by Annaert et al. (2013). A first point of analysis regarding the shaping of the specifics of the bonds is mainly destined to their maturity, deriving from several points of view, such as:

i. specifies exactly the number of years of the loan and the characteristics of this category of financial instruments,

ii. shows a significant link with the bond yield (hence, the well-known yield curve of fixed income instruments is built in close dependence on their maturity),

iii. highlights the practical-applicative character that captures various forms of the yield curve, thus building a well-established theoretical basis about this dependence (i.e. term structures of interes rates),

iv. also suggests that influence on the price of the instrument, drawing attention also to the implicit relationship between price volatility and its maturity (one reason would be that a change in interest rates can generate a series of higher fluctuations over a longer period time compared to the closer term on the market price of the instrument),

v. allows investors or other relevant market players to guide their own path and the main decision-making acts related to the provisions of that instrument (eg. there are often provisions that allow for the change of time until the title expires or those privileged rights of withdrawal),

vi. implies a clear delimitation of the obligations according to the theoretical conventions in the financial field, in the short-term ones with maturities from 1 to 5 years; those on medium term up to 12 years, and those with a maturity of more than 1 year, already fall into the category of long-term instruments.

The graphical representation of this relationship between the interest rate and the maturity of the instrument (Fisher et al., 1994; Saunders and Cornett, 2018, pp. 200-230), suggests a number of changes in the investment sphere, so the main theories formulated in this direction are:

a) Theory of Expectations, a theory that states that long-term rates are a weighted average of expected short-term future rates. Based on the justification that forward interest rates are unbiased estimates of future sight rates, it can be said that only investors' expectations about future interest rates needs can create the shape of the yield curve, implying that the expected value of the returns obtained from holding securities over identical time periods are the same. Both this theory assumes the risks of inflation and the risks associated with the interest rate. According to the theory, based on this weighted average of interest rates that can lead to the elimination of high volatilities, the theory also supports the idea that short-term rates are more volatile than long-term rates. On the other hand, a weak point of expectation theory is that it cannot explain why long-term returns are normally higher than short-term returns. The theory attaches increasing importance to the expected values of future spot rates and states that bonds have a price, so that the default forward rates are equal to the estimated spot rate (spot rate).

b) Theory of Liquidity Preference, states that long-term bonds are a risky investment, making a first argument that risk aversion will cause forward rates to be systematically higher than anticipated sight rates, usually with an amount that increases with maturity. Investors also have a high aversion to risk, as a result, preferring short-term maturities, and if they engage in short-term securities, they will request one and receive it (Gibson, et al., 2001). Another valence of the theory presented draws attention to how longer-term interest rates not only reflect investors' future assumptions for interest rates, but also include that premium for holding these longer-term bonds, assert as long-term premium or liquidity premium, designating, in the latter case, the degree of risk-taking. At the same time, the theory acknowledges the importance of expected future sight rates, but attaches more importance to the effects of risk preferences of market participants. This assumption states that risk aversion will result in higher forward rates than expected rates at sight with an amount that increases with maturity, the value of the premium being given to investors to hold longer-term securities because they involve higher risk (Cox, et al., 1985). The theory also shows the main considerations regarding the way in which investors prefer cash, these being in accordance with the transactions in which we are involved (cash is used in the sale-purchase operations of goods and services), precautions (we want to have a buffer fund to get our hands on when needed), speculative reasons (cash is one of the assets held in its own asset portfolio).

c) Market Segmentation Theory, assumes that the markets for bonds with different maturities are completely segmented, the interest rate for each bond with a different maturity

being determined by the supply and demand of these fixed instruments. The theory, like the preferred habitat theory, supports the way in which the investment preferences of creditors and debtors depend on the maturity of the financial instrument, as there is no high risk premium level to induce investors in their preferred maturity range.

d) Partial Theory of Expectations (Favorite Theory A Habitat), represents that combination between the theory of market segmentation and the theory of expectations, because investors care about both the expected returns and the maturity of the securities held. In addition, because investors have different investment horizons and buy bonds with maturities outside their habitat, they need a significant premium. The theory allows market participants to trade outside their preferred maturity, if it is adequately compensated for the additional risk. However, the theory justifies that investors prefer short-term bonds to long-term bonds and never prefer a long-term bond, only if it offers the same expected return under short-term bonds. The theory explains why short-term investors are more widespread in the fixed income market, having as argument this temporal structure of the interest rate. The pure theory of interest expectations says that when investors buy a bond they look strictly at the return it offers, while the partial theory considers that investors look at maturity and yield simultaneously and compare different maturities with different yields. by bond classes (Gibson, et al., 2001). The way of understanding and observing the yield curve of these fixed instruments is an increasingly intense concern in the literature, most of the studies conducted addressing its various forms, which can be perceived with certain atypical situations or macroeconomic anomalies or even different stages that a state is going through on its way towards economic development (Cwik, 2004).

In this direction, the most visible forms are: (i) an inverted form of the yield curve, which can be interpreted as a situation of worsening economy or an economic slowdown, being observed the following situations of this kind, (ii) a form considered normal, which is inclined upwards and which validates the theory of the temporal structure of the interest rate, (iii) the hull-shaped curve, also known as the bell-shaped curve, and according to Vayonas and Vila (2009), such a shape may occur in response to a decrease in aggregate demand, signaling, as a result, a worsening or a downward slope of a state's economy. The thorough extension of the theoretical framework of the analyzed issues has allowed the establishment of certain schools and theoretical guidelines, in which different perceptions, statements and premises about the relevance of the temporal structure of interest rates are analyzed, according to the table below:

Table I. The main schools concerned with terms structure

TYPE OF SCHOOL	DESCRIPTION
BALANCE	It involves modeling the short-term interest rate through stochastic processes such as non-arbitrage and the equilibrium condition. Thus, the dynamics of the term structure are also provided, which is useful for studying the implications of interest rates for bond prices, but especially for option prices, where there are often closed-ended solutions.
INTERPOLATION AND BOOTSTRAPTING	Interpolation methods are characteristic of this type of school, helping build specific bond yield curve, as well as on swaps on interest rate.
PARAMATERIC	Describe this temporal structure by appealing to parametric functions. Using methods to minimize errors in estimating parameters, their modeling can lead to a lower interest rate risk, according to the concept presented by Blomvall (2017) and Vojtek (2004).

Source: Adapted from Hull (2018)

In other words, according to the study carried out by Gibson, et al. (2001), in the most detailed understanding of this raising interest in the specialist literature for the analyzed issues, and through the analytical-quantitative framework given by the elaboration of several models, one can identify a taxonomy of them, highlighting a series of characteristics and particularities:

[1] Continuous models, used in most cases, being extremely appropriate in terms of establishing a precise theoretical framework, valuable and with empirical explanatory power,

[2] Discrete models, specific to modeling as accurately as possible the dynamic processes and trends in current financial life, testing the effectiveness of interventionist decisions proposed by central banks in different countries of the world,

[3] Models based on the determination of the bond price, meant to determine the fluctuating rate and price dynamics of these fixed financial instruments,

[4] Models related to interest rates, having as main feature the modeling and highlighting the evolution of those short-term rates, being stochastic processes of Markov type (the future value of the interest rate depends on the current, historical value),

[5] Models that incorporate the entire time structure (yield curve) - a category that is intensifying lately, because it is based strictly on the dynamics of fixed instrument yields or on those forward interest rates.

[6] Single-factor models, which explain the temporal structure of the interest rate by using a series of factors or variables, their purpose being to show the different mutations in the yield curve, their analysis being done through complex statistical models,

[7] Multifactorial models, involve an extension of unifactorial models, the analysis of the structure being performed by adding several factors or independent variables, for example, often, the inflation rate,

[8] Calibration models of the yield curve (**fitted models**), based on empirical data, leading to a better understanding of these tools particularly relevant in the financial sphere. The models used in this paper are noteworthy, being extremely popular and used in this sphere of activity (applied by central banks), especially the model extended by Svensson (1994), which has a power to estimate a series of parameters that describe and explain the importance of this often debated financial indicator, namely, the yield curve of fixed income financial instruments,

[9] Non-arbitrage models, start from this essential condition and aim to model interest rates in a homogeneous and impartial process,

[10] Interest rate equilibrium models are in opposition to nonarbitrage ones, starting from the description and inclusion of the concave utility function of a representative investor, assuming this market equilibrium condition flows into the decision-making process, the price of assets, respectively on interest rates, being in the same theoretical direction announced by the theory of expectations or risk premiums.

2.2. Nelson Siegel and Nelson Siegel Svensson Models

The researchers have recently developed a series of application-theoretical models in estimating and calculating parameters arising from government bond yields. There is a clear delimitation between *dynamic models and static models* used in this direction, and according to Fabozzi et. al., (2006), static models having a raising use, because historical data represent that starting point in estimating the yield curve, and compared to dynamic models, they do not allow the volatility of interest rates to be incorporated into the model.

Thus, the model developed by Nelson and Siegel (1987) is a model of parametric analysis that highlights the estimation of the yields of these categories of financial instruments,

being often widely used and preferred by the central banks of various states of the world. Main extraction-modeling of the yield curve in an exponential threedimensional framework. Estimating the three factors and the exponential decomposition rate of the model proposed by Nelson and Siegel (1987) shows that not only the three factors can be interpreted as three latent values, but also the exponential decomposition rate is also a crucial factor which represents the fluctuating movement of the shape of the yield curves, also drawing attention to the essential feature of this indicator in the financial sphere, the explanatory power of forecasting.

At the same time, the flexible character of the optimization of the yield curve is highlighted, the most frequent resulting forms being in the form of "h" or "S", an aspect suggested from the detailed study made by Diebold and Li (2006), which brought new valences to the original model,by applying and establishing various econometric processes, from linear regression to the application of the autoregressive vector (VAR), showing both the dynamic side of the model and how the estimated parameters lead to the contouring of the yield curve as a function of time.

Also from the analysis elaborated by the American researchers, Diebold and Li (2006), reference is also made to the significance resulting from the estimation of the parameters of the model with three factors (β_0 , β_1 , β_3, τ_1), thus, β_0 represents the independent factor and specific to the long term, β_1 is interpreted as the short-term factor that leads to the contouring of the level of the respective curve, β_2, signifying its slope and degree of curvature, and through the exponential decomposition rate (τ_1), the finalization results coherently of the yield curve, the influence exerted by this last factor being extremely important in the optimization process, showing its use to build accurate long-term structural forecasts.

This prediction capacity was also exposed by Fabozzi et al. (2005) who show in the study how the Nelson - Siegel model can produce credible forecasts, being statistically validated, having an economic explanatory power, because they can be considered those levers that generate substantial profits in the investment and financial field.

A considerable revitalization of the three-factor model has been put forward by the Swedish researcher Svensson (1994), a model in the category of calibration of yields to maturity of the instrument being widely used by governments, central banks and financial institutions around the world. The model brings out new certain parameters (β_3 and τ_2), which by going through the same optimization function, explains and determines the various shapes

that the curve can have in different periods, highlighting the magnitude and direction of the curvature fence at its level. Svensson's in-depth model is able to capture many of the typically observed shapes that the yield curve can have over time, with substantial research efforts being dedicated to modeling and the ability to predict the temporal structure of yields in the future (Hladikova and Radova, 2012; Ibanez, 2016).

Considering the advantages and disadvantages of the models applied in the research, the literature refers to these aspects. Their main advantages are: (i) extremely popular in practice, (ii) extremely useful in shaping the yield curve, flexibility being one of the characteristics highlighted by the models, being suitable for evaluating yields for several bonds, for series of time yields, for a large number of countries, different time periods and for various bond classes, (iii) have a good ability to predict and make clear the resulting parameters (Marciniak, 2006), (v) used substantially to assess the structure of single-coupon bonds and forward interest rates (forward rates). However, the models have a number of disadvantages, such as: (i) a limited ability to adapt irregular shapes of the yield curve, (ii) the tendency to take extreme values at the bottom of the curve, (iii) relatively strong dependence on estimates from different or even non-adjacent segments of the yield curve (Marciniak, 2006).

2.3. Yield Curve and Monetary Field

The specialist literature shows the manner in which the yield curve represents that essential indicator from the point of view of the role played in the formulation of actions, measures related to the policy and the monetary sphere of the financial sector. Thus, in the wide range of the vast and complex field of finance, more precisely this concern and proactive attitude on the part of researchers and authorities to lead to the stability of the financial system, there is also a debate on how the monetary authority should focus on reducing imbalances (Adam, 2012; Andre et al., 2018; Gambacorta and Signoretti, 2014), by establishing a policy often analyzed and reflected in the last decade, known as "leaning against the wind".

This policy took off with the onset of the Great Financial Crisis of 2007, when central banks had to deal with and focus on these recurring imbalances and the fragility of the financial system, perceived as that form of systemic risk that contributes to various market imperfections, in the form of main causes from the information intensity, to the inter-temporal nature of financial transactions, to the high degree of interconnection and the existence of those links between financial intermediaries and markets, perceived as puzzle pieces. The policy is based on modeling financial cycles through an appropriate calibration process, which will reflect the tradeoff between the costs of this policy in the short term and the long-term

benefits of restoring the financial cycle, also referring to the manner in which the yield curve of fixed-income financial instruments plays an important role in the adoption and exercise of these new actions and the adaptive capacity of traditional monetary policy.

First, the policy analyzed is characterized by a new valence in the manner of application and understanding, so that if, before the onset of the crisis, central banks promoted a monetary policy based on that well-intentioned neglect, which may have a more beneficial effect than taking responsibility (benign neglect) on price stability (Caraiani and Călin, 2019; Svensson, 2016).

The new perspective highlighted by "leaning against the wind" (LAW) is suggested by a prudent attitude and considered to be, in general, an approach that allows awareness of the financial sector stability. Seen as those predictors of financial crises, modeling macroeconomic variables (i.e. production, exports, imports, private consumption, government consumption, trade balance, etc.) and highlighting the role of financial intermediaries in econometric models lead to highlight a variety of financial frictions that amplify economic shocks and exacerbation of business cycles, according to many researchers, such as: Sambit (2013), Borio and Lowe (2002) or Jorda et al., (2015). Moreover, the monetary policy transmission channel highlighted in this paper plays a prominent role in numerous theoretical and practical research, it can encourage banks to make higher gains since they take more risks in terms of policy and requirements of lending according to the asserption made by Borio and Lowe (2002).

Other considerations which have in view the manner of adopting such a loose policy reffers to the problem of bubbles (Asriyan et al., 2020; Filardo, 2004) that can be corrected suddenly, leading to investors' losses, rapid asset sales (intensification of the economic recession) or accelerating the activity of the unregulated banking system (shadow banking system) and increasing the fragility and instability of the financial sector, but also possible benefits from a lower probability or magnitude of an unpredictable situation that can lead to the outbreak of a future financial crisis, according to the beliefs of economists Adrian and Shin (2008) and Zacek (2018).

Many researchers thought that monetary policy should occupy a less important place, practically losing its size, thus increasing confidence in various macroprudential instruments, designed to increase the engineering behind the financial system. However, together with LAW, macro-prudential measures have the advantage of aiming at financial stability and

ensuring complementarity and efficiency at first sight in monetary policy (Asriyan et al., 2020; Zampolli, 2006). The way of resorting to LAW also involves noticing costs and benefits often highlighted in the literature, for example, the degree of measurement of financial imbalances, the cost of implementing this prevention policy on short-term variables or how much does credit change affect, the probability of a future financial crisis, aspects studied by Svensson (2016), Svensson (2017), and as the main advantage in favor of the policy. By evoking a proactive attitude which would respond to the recurring consequences and turbulence of financial instability, this policy shows the transition from the original area of the objective of the monetary policy (that of price stability by targeting inflation) involving an increasing concentration of the decision makers in this field of activity, somewhat the interest in the financial system being no longer considered and perceived as marginal action (Hagenbjork, 2019; Meyer et.al., 2017).

Stability in the financial sector remains an objective often analyzed and highlighted by those who deal with monetary policy decisions, the central banks being those promoters of price stability, but in most cases the orientation towards speculative bubbles remains a marginal activity. Also, the view that they become concerned and oriented towards the need for knowledge on movements in asset prices (more attention is paid to fixed income instruments, usually satt securities) or when the money market has negative effects on shocks, and through the multitude of models, processes and procedures, it becomes desirable, suggesting a more relevant and comprehensive representation of speculative bubbles (Ho and Lee, 1986; Hull and White, 1990).

Challenges to changes in conventional overall monetary policy actions, which were previously intended to stimulate economic activity, have led central banks to adopt certain sets of concrete actions and measures of measurement and protection in asset markets, constituting various instruments, econometric models that can encompasses a series of macroeconomic variables, noticing and creating different;forecasts and simulations on the issue in question (Toraman and Tuncay, 2017; Zampolli, 2006: Zacek, 2018). For these reasons, inflation targeting remains a complementary measure in this period increasingly characterized by the fragility of the financial system, the primary objective of the monetary authorities being to respond if and when a collapse in asset prices threatens the system and lead to situations of instability, together with the ability to manage the financial cycle, suggesting an increased concern towards the adoption of those macroprudential policies.

An important lesson derives from the fact that the modalities of monetary policy

transmission differ from state to state, from sector to sector (Gerdrup et al., 2017), although they do not provide any direct effect on speculative bubbles, policy revival allowing the management of unpredictable situations can have major significant effects for the entire economic sector, because instability and financial risks do not only come from these bubbles, the decision-making process being also extremely efficient and to be taken into account.

3. THE RESEARCH METHODS

A relevant part of this paper is highlighted by the methodology undertaken for the purpose of scientific demonstration of the research question previously formulated. The section represents the link between the theoretical framework given by the relevant literature in this direction and the scientific approach aimed at providing answers, solutions, suggestions, but also recommendations of the research question that leads the narrative thread of the paper. We used to collect in the period 2009-2019 data on government bond yields in various countries of the world grouped by region and economic potential, as follows:

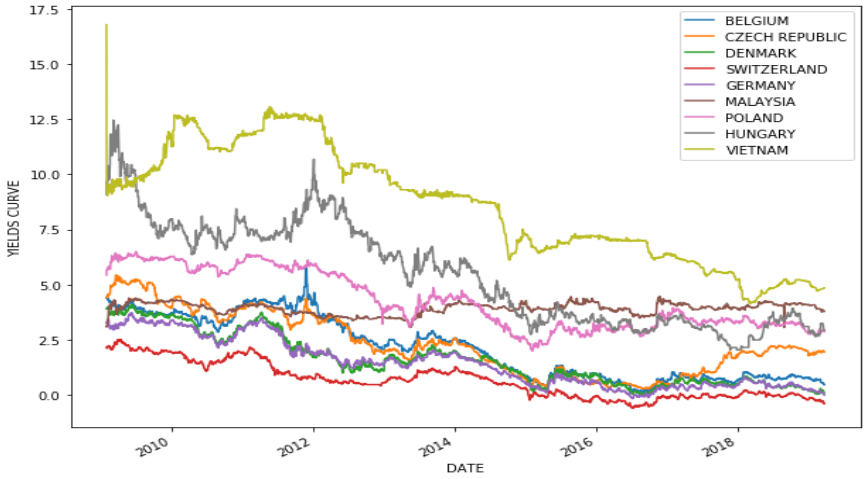
i. Developed countries in Central, Northern and Western Europe: Belgium, Czechia, Denmark, Switzerland, Germany, Norway.

ii. Developing / transition countries in the European area: Poland and Hungary.

iii. Countries in South-east Asia: Malaysia, Vietnam.

Thus, data on yields on mature government bonds starting up from 3 months to 10 years, were downloaded using the Bloomberg platform strategy used in their processing consisted in standardizing the data for each part and start from the same time interval: so that the analysis can lead to the conclusion of the scientific approach.

Chart 1: Evolution of government bond yields during 29.01.2009- 25.03.2019



Source: Author's Contribution

After this vital stage, the research methodology was structured in several parts, as follows:

[1] The first part of the methodology, based on the establishment of a code in Python (Christoffersen, 2011), it was highlighted how to form the yields of these fixed income tools, by resorting to a function that takes into account maturity and efficiency, which led to the highlighting of some key variables in the formation of these yields. We were able to use the estimation of each parameter in the daily yield of these instruments for each model, in the analyzed time interval, specific and characteristic for each country in the research. Running for each day of the proposed interval and for each state, this stage aimed at optimizing and obtaining the resulting parameters, providing information on the shape of the curve, its curvature, implicitly having meanings and implications in the financial field. The mathematical relations and the relevance of the parameters that are part of the model are:

a) The model formulated by Nelson and Siegel (1987) involves estimating the parameters that form the time curve of yields, according to the calculation formula and the following conditions to be taken into account:

$$y(t) = \beta 0 + \beta 1 \left[\frac{1-e^{-\frac{t}{\tau 1}}}{\frac{t}{\tau 1}}\right] + \beta 2 \left[\frac{1-e^{-\frac{t}{\tau 1}}}{\frac{t}{\tau 1}} - e^{-\frac{t}{\tau 1}}\right] \textbf{(1)}$$

b) The model deepened by Svensson (1994), which implies an extension of the basic mathematical relation, as well as the same conditions to be fulfilled, as follows:

$$y(t) = \beta 0 + \beta 1 \left[\frac{1-e^{-\frac{t}{\tau 1}}}{\frac{t}{\tau 1}}\right] + \beta 2 \left[\frac{1-e^{-\frac{t}{\tau 1}}}{\frac{t}{\tau 1}} - e^{-\frac{t}{\tau 1}}\right] + \beta 3 \left[\frac{1-e^{-\frac{t}{\tau 2}}}{\frac{t}{\tau 2}} - e^{-\frac{t}{\tau 2}}\right] \textbf{(2),}$$ where**:**

y (t) = daily market yield of government securities for the period under review,

t = maturity of the fixed income instrument,

β_0 = measures the level of yield according to each maturity (the term independent of the time to maturity, considered to be the long-term term),

β_1 = measures the slope of the yield of the fixed income instrument according to each maturity, considered the short-term term,

β_2 = measures the degree of curvature and the hump of the yield curve of the fixed income instrument according to each maturity,

β_3= measures the degree of curvature and a second hump of the yield curve of the fixed income instrument according to each maturity,

τ_1 = decay factor, a factor that contribute to the best possible estimation of the parameters, based on the daily yield of these fixed income instruments,

τ_2 = decay factor, an additional factor that contributes to the best possible estimation of the parameters, based on the daily yield of these fixed income instruments.

[2] The last part of the methodolgy, consists in making several types of correlations which were based on previously estimated parameters. We used the way in which government bond yields, (implicitly their curve for each country and in the analyzed period) represents a certain degree of predictability and the way in which the temporal structure influences to a certain extent its evolution in another country, in other words, if there are connected and interdependent relations at terms of terms structure, drawing attention to the implications described by this mechanism.

The section of the research paper aims to draw attention to the various ways in which data processing, by using the multitude of deductible tools, quantifiable in clear and objective results, helps to underlyne the link between question formulation and hypotheses.

4. ANALYSIS AND DISCUSSION

Starting from the research hypothesis, described by the characteristics and particularities of fixed income instruments regarding their way of representing those points of support in guiding the various players in the financial markets, this section of the paper captures and provides interpretations of the results obtained, according to the theoretical - demonstrative framework used. We resorted to a division into several sub-points, regarding the review of the results according to their importance.

a) Establishing the diagram regarding the series of yields according to maturity, in order to show the evolution, trend and dynamic mode of the curve achieved in the analyzed interval 2009-2019, having the significance to explain the movements and various forms of the yield curve for each state separately.

This first stage, according to the followed methodology allowed the understanding and highlighting of the main trends and fluctuating movements noticed from the drawing of the yield curves in the targeted period and for the analyzed states. The predominant form explains and invalidates that purely theoretical and normative condition, according to which short-term yields are usually lower than long-term ones, which derive from the temporal structure of interest rates.

Chart 2. Yield curve in **Germany**

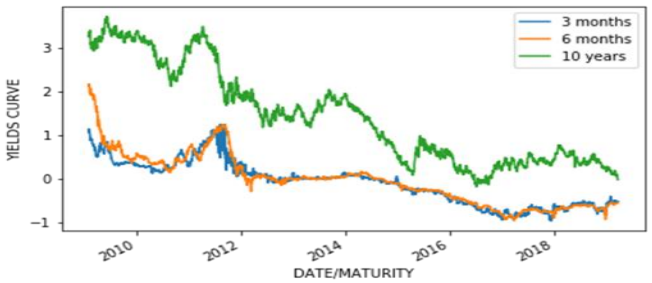


Chart 3. Yield curve in **Czechia**

Source: Author's Contribution

As a result, the form considered normal does not apply to existing and dynamic conditions in financial markets. The inverted curve has been growing since the beginning of the Great Financial Crisis and continues to persist for most of the analyzed states, interpreted as signaling possible atypical situations that affect the mechanism of financial markets. An extreme importance is highlighted by the fluctuations of the developed countries in Central Europe :Germany and the Czechia, in individual performance taking momentum from the years 2010, pointing out a continuous attempt to revive the mechanism of functioning of the markets of these countries, the strategies used being in balancing the undertaken policies, but also in controlling the imperfections of the financial markets being similar to the other states analyzed (i.e. Norway, Poland, Hungary, Denmark).

b) Estimation of the parameters resulting from the applied models, it is found how the use of optimization models by obtaining the parameters that are part of the yields of fixed income financial instruments was appropriate and representative for the time series analyzed. The development of the models aimed to draw attention to the methodological features that had the role of explaining the complex way of calculating the daily yield and the establishment of this dual relationship between maturity and yield to maturity.

Chart 4. The estimated parameters in **Czechia**

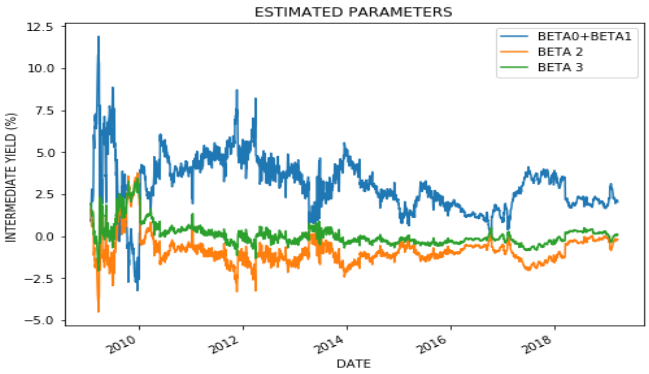
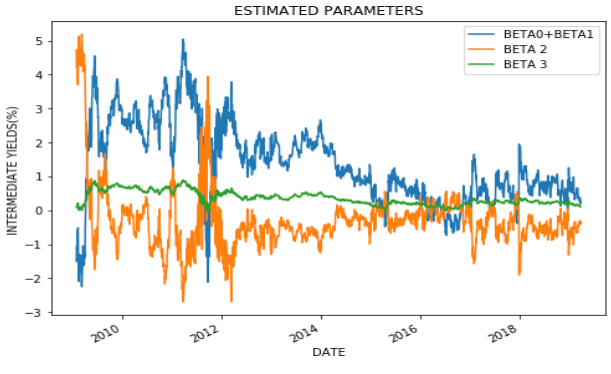


Chart 5. The estimated parameters in **Germany**



Source: Author's Contribution

The resulting parameters were intended to calibrate the various forms that the yield curve had in the period 2009-2019, showing both the level, the degree of curvature and the dependence on exponential decomposition rates (τ_1, τ_2). Also, the important role in estimating these rates was highlighted, as they led to a better accuracy of calculation of yields, as well as the highlighting of various turning points in the visualization given by the shape of the curve.

The two models had the ability to calibrate any yield according to its maturity (between 3 months and 10 years), particularly for each country, highlighting a number of advantages and disadvantages. Knowing these specific aspects and features of the models, we can rightly mention that the four-factor model (NSS) is indeed more efficient in terms of the broad degree of fit on any type of maturity. However, we can also emphasize the practical degree of the original model (NS), having the ability to provide extremely plausible results with a level of confidence of 99% in the calibration process. According to the graphs, it highlights the role that these parameters have in defining in a more accurate way the yield curve, for the states considered standard in the analysis: Germany and the Czechia.

c) Capturing those interdependencies and the way in which they have the capacity to lead to a better explanation of the situations that may have effects on the financial sector in these states. (Heat, et al., 1992). This could be achieved by carrying out several types of correlations:

i. Correlations at the level of each state between the maturities and the parameters obtained by applying government bond yield calibration models,

ii. Correlations that draw attention to the interdependence relations and the way in which the parameters in one country influence those in another country.

The first category is represented by the correlational analysis between yields, depending on maturity and the parameters that are part of them, performed for each state. By using the conditional formatting function, each correlation was highlighted by different colors, meant to show the various relationships, as follows:

Between 0.0-0.2, positive correlation of a low level (in red),
Between 0.2-0.5, positive correlation of a moderate level (in orange),
Between 0.5-1.0, positive correlation of a high level (in purple),
Between 0.0- (-0.2), negative correlation of a low level (in blue),
Between (-0.2) - (-0.5), negative correlation of a moderate level (in green),
Between (-0,5) - (-1.0), high negative correlation (in yellow).

Table II. Correlations between maturities and parameters estimated according to the NSS model in the case of the Czechia

MATURITY	3 years	5 years	10 years	beta0	beta1	beta2	beta3
3 years	1						
5 years	0,9825	1					
10 years	0,9517	0,97008	1				
beta0	0,5163	0,4658	0,65007	1			
beta1	-0,6073	-0,7423	-0,7574	-0,2487	1		
beta2	0,3024	0,3933	0,1907	-0,6212	-0,4821	1	
beta3	0,5765	0,6874	0,5510	-0,2561	-0,7939	0,9065	1

Source: Author's Contribution

Table III. Correlations between maturities and parameters estimated according to the NSS model in the case of Germany

MATURITY	3 months	6 months	10 years	beta0	beta1	beta2	beta3
3 months	1						
6 months	0,9493	1					
10 years	0,8947	0,8741	1				
beta0	0,6082	0,3825	0,7132	1			
beta1	-0,3973	-0,1806	-0,6014	-0,9622	1		
beta2	0,1039	0,4045	0,08002	-0,6414	0,7044	1	
beta3	0,6879	0,5364	0,8605	0,9574	-0,9242	-0,4166	1

Source: Author's Contribution

There are predominantly significant correlations at the level of Germany and the Czechia, shown in Tables II and III. The predominant type of correlation was a positive one with a high intensity (between 0.6 and 0.8), suggesting a high dependence on the estimated parameters, contributing to the explanatory power that the evolution of the yields of these bonds is influenced in directly by the time to maturity. Also, in the other states analyzed, there were mainly medium and low intensity relationships, depending on the applied models, explained by a dependence on maturity to a less extent, highlighting the importance of the parameters that determine the level, the curvature of the curve in estimating short-term yields.

The second category of analysis is intended for the correlational links that may occur between various parameters between countries. Based on the conditional formatting function, the correlations that have been developed by interpreting the way in which the yield curve is specific to a state, presents a degree of connection with the evolution of the yields of another state. It suggests the role of government policies adopted by each state, emphasizing an important action in the dynamics, orientation and support of the financial sector through the issuance of fixed income financial instruments.

The correlations captured in the tables IV and V focus on an important aspect, the main purpose being their degree of orientation, stability and confidence of financial players in various decision-making and investment processes, as well as increasing the share of fixed income instruments in finalizing market portfolios. Thus, there was a strong link between the specific parameters of Germany and those of the Czechia, confirming the strength and manner in which financial markets in these countries are true models of economic development and stability in the financial sector to follow.

Table IV. Correlations between the estimated parameters in the Czechia (NSS) and the other countries

PARAMETERS	*BETA 0*	*BETA 1*	*BETA 2*	*BETA 3*
BELGIUM	***-0,0107***	***-0,0201***	***-0,0026***	***-0,0045***
DENMARK	***0,2351***	***-0,0763***	***0,2408***	***-0,0047***
GERMANY	***0,3968***	***0,6506***	***0,0302***	***0,5427***
HUNGARY	***-0,0184***	***0,0229***	***0,0257***	***-0,0088***
POLAND	***0,2886***	***-0,3915***	***-0,4213***	***0,3973***
NORWAY	***0,1859***	***0,3703***	***-0,0545***	***-0,2725***
MALAYSIA	***-0,0418***	***0,0047***	***0,0002***	***0,0059***
VIETNAM	***0,1704***	***-0,1555***	***0,1862***	***0,0221***
SWITZERLAND	***-0,0333***	***0,0023***	***0,0088***	***0,0118***

Source: Author's Contribution

Table V. Correlations between estimated parameters in Germany (NSS) and other countries

PARAMETERS	*BETA 0*	*BETA 1*	*BETA 2*	*BETA 3*
BELGIUM	*0,0418*	*-0,0263*	*0,0134*	*-0,0611*
CZECHIA	*0,3968*	*0,6506*	*0,0302*	*0,5427*
DENMARK	*0,2492*	*0,1576*	*0,2456*	*0,2433*
POLAND	*-0,1438*	*-0,3670*	*0,1153*	*0,3067*
HUNGARY	*-0,0021*	*0,0385*	*-0,0411*	*0,0397*
NORWAY	*0,3398*	*0,3336*	*0,0267*	*-0,3951*
MALAYSIA	*-0,0201*	*-0,0114*	*0,0177*	*-0,0072*
VIETNAM	*0,0466*	*-0,1969*	*0,0743*	*0,1815*
SWITZERLAND	*-0,0603*	*0,0437*	*-0,0589*	*0,0306*

Source: Author's Contribution

The governmental authorities in these states support the tendency to stabilize or reduce the state debt, making these states the least indebted among the EU countries. The efficient liquidity management and the involvement of its available resources in covering the financing needs definitely contribute to stable economic growth. The budgetary policy represents an important component of the complex and ample framework of the decision-making process (Heat, et al., 1992; Volodin et al., 2017). This is mainly reflected in the yield curve of long-term government bonds and their high level leads to a continued attractiveness for investors in this direction, depending to some extent on the effects of the decisions taken at the level of the monetary policy.

Following the presentation and interpretation of the results, this paper draws attention to the useful, significant and directive nature of fixed-income instruments, in this case government bonds. The implications of the elaborated study closely concern the information that can be extracted from the correlational and parametric analysis characteristic of government securities. The recommendations that can target this area in full expansion and increase in relevance of government bonds are designed at the level of policies for each state, including: reducing the risk of debt refinancing, increasing the value of reference bond issues, closing small issues and low liquidity of marketable and non-marketable bonds, and last but not least, interest rate risk management. The government securities market can get a new value or direction to follow, being a source of relevant information from the perspective of monetary

policy: interest rate expectations, inflation rate, market uncertainty (Shea, 1985).The usefulness of the models developed in this research, drawing attention to the increasing global integration of financial markets, the increased sensitivity to the developments of bond markets in the economies of developed countries and the increased role of monetary policies, embodied in increasing liquidity management, and the relevance of domestic macroeconomic fundamentals, especially in periods characterized by increased global volatility.

Another contribution also refers to the way in which the types of correlations undertaken interact and propagate in different ways and degrees of intensity. In other words, given the novelty of the study it is essential to understand the plurality of connections that the yield curve has shown. Using the two methods of optimization, the results have also analyzed states less studied states in scientific research, such as: Malaysia and Vietnam, as well as, states in the Central European area, thus differing from the line preferred by the researchers who studied the specifics of the yield curves (McCulloch, 1971; Shea, 1985; Svensson, 1994), especially in the US markets.

It is surprising how the dynamics of the curve of the analyzed states is closely related to some states considered promoters of the development and well-being of the financial system (i.e. Germany). The relevance of the German government securities market is widely considered to be liquid, direct and clearly structured. At the same time, government securities are generally placed as single issues by auction and as a result, new issues with large volumes appear, especially on the capital market within it, helping to ensure a high level of liquidity, where the policy undertaken by the federal government is therefore shaped by the high interest in issuing securities continuously, with maturities that are spread across the entire spectrum between less than 12 months and over 10 years.

The main purpose of the scientific approach has been to draw attention to the fact that the parametric models targeting this sphere allowed a new valence and feature of the yields of these free- risk instruments, which shows the degree of connection between the analyzed states and the influences of the monetary policy adopted by government authorities. In this sense, the present study underlines the influence that the developed countries have mostly over other states in shaping the yield curve and the correlation between the estimated parameters. The obtained factors, the long-term one showing the level of the curve (β_0), especially the short-term one (β_1) and the exponential decomposition factors ($\tau_{1,2}$) lead to the relevance of correlational relations, validating the existence of these connections and interdependencies, where the curve yields increasingly occupy a central place in research in the field. Considering

the specifics of this study, we recomend a direction to be followed in further research to expand the number of countries to be analyzed which can highlight the benefits in a holistic manner the raising use of the fixed income financial instruments.

5. CONCLUSIONS

The paper has demonstrated through a quantitative approach, the particularities, characteristics, but also the implications that the yield curve of fixed income financial instruments propagates in the financial markets, characterized by dynamism, continues to concern associated risk management (from interest rate, market, foreign exchange, operational or political risk) and the various specific connections and interdependencies. Fixed income financial instruments, in this case, taking the form of government bonds, are growing in use, proving to be essential, especially in establishing and finalizing market portfolios, which amplify the understanding and perception of players in the market within these markets on the complex decision-making process. It is found, through the empirical study of the temporal structure of interest rates, but also through complex modeling and calibration procedures an important role of instruments, materialized in the explanatory power and predictability of the mechanism of operation in financial markets.

The models launched by Nelson - Siegel and Svensson are valuable in this regard and have a special contribution in estimating in a more accurate way the yield curves for each maturity and each state analyzed. In other words, the issue addressed also consisted in highlighting the interdependence relationships that the estimated parameters, following the applied models, have on the yield curve. Finally, it can be concluded that the Nelson - Siegel - Svensson model is a good model to replicate the behavior of the yield curve of government bonds applied in each country analyzed, being aware that this is a really powerful method to do compared to the yield curve, which is really useful for both researchers and financial market participants, thus helping to make decisions with more information. In this sense, it highlighted the role that developing countries (i.e. Germany, Czechia, Norway, Denmark) they have mostly other countries (i.e. Poland, Malaysia, Vietnam) in shaping the yield curve and the correlation between the estimated parameters.

Finally, the paper aimed to capture these relationships, especially the understanding and importance of fixed income instruments, along with the regulatory area, leading to the optimization of investment decision-making by players involved in the complex financial arena. Consequently, risk remains the key element, being often more important than the pursuit of profit, the risk being viewed from several angles, often this being equivalent to the

probability of creating an advantaje, an opportunity, which perceived carefully and thoroughly can lead to capitalize on a credible economic potential.

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THE IMPACT OF TOTAL FACTOR PRODUCTIVITY ON ECONOMIC GROWTH BASED ON CHINESE ECONOMY

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Abstract

Total factor productivity (TFP) refers to the level of efficiency in using production factors which include labor and capital. These factors, which originate from TFP, have been presented in China for the past two decades. In this regard, the current study aimed to investigate the contribution of TFP to the Chinese economy. More precisely, it focused on accomplishing other recent studies on this area and demonstrating the misallocation of resources on TFP limitations influenced on Chinese economy. The designation of resources in the country has been noted to alter the TFP level. Similarly, a reduction in the government regulation of industries plays a role in increasing TFP in the Chinese economy. The findings of this study indicated that the growth of the Chinese economy in the past was highly driven by the capital with a limited emphasis on labor and technological investments.

Keywords: *Total factor productivity, China, economic growth, labor.*

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1. INTRODUCTION

Productivity is considered as an important element in economics and management and is determined by the amount of the generated input in comparison to the produced output (Börsch and Weiss, 2016). Consequently, an output of 1% is obtained from 2% of the input if it meets lack of productivity. This explains why productivity is important for every business activity since it can be viewed in the singular sense of labor (Preenen et al., 2015) while total factor productivity (TFP) views fecundity in a holistic sense. TFP is termed as the portion of output that is not explained by the amounts of the applied inputs in production. Mohnen and Hall (2013) considered this as the achievement of higher levels of the output using the same amount of resources. Productivity in economics is further cited in the study by (Hartwell, 2014) where components are found to contribute to cultivation, including technical skills and education (Mahy et al., 2015). In the economics literature, growth can be measured using either the neoclassical or endogenous growth theory (Pietak, 2014). The first theory assumes that economic growth is the result of an increase in capital and population. However, this theory is challenged by decreasing returns to scale, where a level of equilibrium is achieved over time, followed by slight growth (Kregel, 2017). The second theory holds that factors such as innovation, knowledge, and human capital are the determinants of economic growth (Audretsch et al., 2014) and often represent the level of technical development in an economy. Thus, economic growth, according to (Yalçınkaya et al., 2017), it can be determined by TFP as opposed to growth in capital and labor.

TFP is measured based on the Solow residual, which calculates the surplus of what remains in output growth after subtracting the volume of growth from the capital and labor (Kokotkina et al., 2017). In order to depict the TFP model, it is commenced with a production function where industry gross output is function of capital, labor, intermediate inputs and technology indexed by time. Each industry, indexed by *j*, purchase explicit standard outputs, capital and labor services, and are denoted as follows:

$$Y_j = f_j(K_j, L_j, X_j, T) \quad (1)$$

Where

Y = output, (2)

K = index of capital, (3)

L = index of labor, (4)

X= index of intermediate inputs (5)

In a competitive factor market, under the assumption that full input utilization and scale compensation remain unchanged, the growth of output can be expressed as cost-weighted growth and technological change in inputs, using the form of a lyncical function:

$$\Delta lnY_j = \overline{v}_j^K \Delta lnK_j + \overline{v}_{jt}^L \Delta lnL_j + \overline{v}_j^M \Delta lnM_j + v_j^T \quad (6)$$

Where $\overline{v}_j^K$, $\overline{v}_{jt}^L$ and $\overline{v}_j^M$ are two-period averages of nominal weights of inputs, and thus the growth of total labour input is defined as TÖrnqvist quantity index of particular labour types as follows:

$$\Delta lnL_j = \sum_h \overline{v}_{h.j} \Delta lnH_{h.j} \quad (7.1)$$

$$\Delta lnK_j = \sum_k \overline{v}_{k.j} \Delta lnZ_{k.j} \quad (7.2)$$

$$\Delta lnM_j = \sum_m \overline{v}_{m.j} \Delta lnM_{h.j} \quad (7.3)$$

Where the equation (7.1) indicates the growth of hours workedy by each labour as $\overline{v}_{h.j}$ and equations (7.2) and (7.3) represent user-cost approach in different types of assets and intermediate input in production as $\overline{v}_{k.j}$ and $\overline{v}_{m.j}$ respectively.

Since aggregation is a value-added concept, the equations can be written as:

$$\Delta lnY_j = v_j^{-V} \Delta lnV_j + v_j^{-M} \Delta lnM_j \quad (8)$$

Where V_j is the real value-added and v_j^{-V} is the nominal share of value-added in industry gross output.

Now by rearranging equations (6) and (8) we can express the source of value-added in industry as below:

$$\Delta lnV = \sum_j \overline{w}_j \Delta lnV_j = \sum_j \overline{w}_j \frac{\overline{v}_j^K}{\overline{v}_j^V} \Delta lnK_j + \overline{w}_j \frac{\overline{v}_j^L}{\overline{v}_j^V} \Delta lnL_j + \overline{w}_j \frac{1}{\overline{v}_j^V} v_j^T \quad (9)$$

Where $\overline{w}_j$ is the share industry in its gross output ($\overline{v}_j^V$) and yield a new expression of aggregate value-added growth with weighted contribution of industry capital growth, industry labour growth and TPF growth.

Since the aggregate obtained by the APPF approach can be presented as:

$$v^T = \sum_j \frac{\bar{w}_j}{v_j^{-V}} v_j^T + \rho^K + \rho^L \quad (10)$$

Where the equations have been substracted and it can be simplified by using a Greek letter ρ.

Equation 10 expresses the aggregate TFP growth in terms of three sources; Domar-

weighted industry TFP growth, reallocation of capital and reallocation of labor across industries. The Domar weighting scheme ($\overline{w}_j / v_j^{-V}$), developed by Domar (1961), plays a dominant role in the direct aggregation across industries under the Jorgensonian growth accounting framework. Regardless, the next two reallocation terms which is obtained by subtracting cost-weighted inputs, emulate the impact on TFP growth and are denoted as capital (ρ^K) and labor (ρ^L) respectively.

This measure indicates how economists determine whether an economy is growing or stagnating (Acs. ZJ. et al., 2014). For example, if a country had a gross domestic product (GDP) of $2 and $2.5 million in 2017 and 2018, respectively, it could be claimed that the economy grew by 0.5%. This growth is observed by comparing the outputs of the two years (GDP). In addition, a thorough grasp at this growth reveals where it is coming from one sector or the other. Taking a deeper look demonstrates what actions that sector has taken for increasing its production or outputs. The results which cannot be pegged down to labor and capital, are assumed to contribute to the Solow residual.

The advancement in agency and institutional structures is a relevant example in this regard. According to (Acs. ZJ. et al., 2018), innovation comes from both old and new knowledge, where new knowledge is built upon old knowledge. The whole philosophy has to be turned into something economically viable, and thus entrepreneurship is born out of it. Likewise, entrepreneurs can build institutions which support agencies so that to achieve growth. Accordingly, labor and capital are not the only factors that play a role in TFP, and hence economic growth.

Therefore, the question arises as to why scrutinizing TFP is highly important. In this regard, an argument is put forth that negligible to no growth occurs if a country would solely rely on capital and labor (Egbetokun and Memon, 2018). This is observed in the industrial revolution era, where much of a country's GDP came from its production of goods. More precisely, farmers needed labor, and industries needed workers, which led to the growth of the slave trade (Domar, 2017) and thus the presence of human labor. However, the growing competition between countries resulted in the need for something that would give this country an advantage over the other since not all countries could produce the same thing. This leads to the emergence of innovation as technology. Apparently, technology has led to extensive changes over the decades. Further, production has shifted to countries that pay lower rates for labor, with the developing countries adopting service as their industries.

Technology made it necessary for most countries to adopt this new change and include the digital methods of performing tasks in their industries. Accordingly, labor was lost in most industries by replacing repetitive manual work such as postal services (replaced by email), clerical work, and administrative work with technology. Although labor was lost in some areas, productivity represented a slight increase. Technology improved the rate at which machines did their work, and hence improved efficiency and productivity (Bampatsou et al., 2017). Thus, any country should adapt to new methods of increasing efficiency in order to support economic growth, especially in today's business environment that is influenced by technology.

China is one of the countries that has witnessed what is termed as *'unprecedented growth'* in its economy, which is largely fueled by two areas of technology and manufacturing (Nahm and Steinfeld, 2014). Economists peg down this growth to two areas of large-scale capital investments that are financed by foreign investment and domestic savings and rapid growth in productivity. Large-scale capital investment and productivity can be regarded as capital and labor, respectively. Before this growth, China had a stagnated economy mainly by its trade policies (Knight, 2014). However, according to Congressional Research Services (2019), an introduction to economic reforms encouraging foreign trades and investment has led to the rapid growth of the Chinese economy although this unprecedented growth has experienced a decline over the years (Anayanwu, 2014).

Given the above-mentioned discussions, the present study sought to answer the following questions by positioning that China's future economic growth lies in its adoption of factors outside the traditional capital and labor instead of TFP:

- Could this decline be due to solely investing in capital and labor?
- What contribution has TFP made to economic growth of China?

More precisely, it aimed to answer the above-mentioned questions by:

- Gathering research articles on TFP contributions to the Chinese economy;
- Analyzing the findings in the literature;
- Providing recommendations on how TFP can contribute to China's future economic growth.

The remaining sections of the study are organized as follows:

Section 2 focuses on the literature review of TFP and its contributions to the economy

in China. Additionally, Section 3 deals with the study method and evaluates the relevant literature that touches the contributions of TFP in China. Finally, the findings of the study are discussed in Section 4, followed by providing several recommendations for increasing productivity and efficiency in the Chinese economy, as well as the main findings of the study.

2. LITERATURE REVIEW

2.1. China Before Economic Growth

China's economic background can be traced back to circa 1200 although, in this study, it shall be viewed from 1978 when China was one of the poorest countries of the world. During this time, China's economy solely relied on agriculture (Zhang 2017). According to Li (2017), there were no remarkable growths in either the per capita supply of commercial agricultural products and the per capita share of agricultural products before 1978. This lack of growth was due to continued severe shortages in agricultural outputs. Table 1 presents data on the agricultural products supplied per registered person.

Table 1. Quantities of Agricultural Products Supplied per Registered Person (1957-1978)

Year	1957	1962	1965	1970	1975	1978
Product Type	(Million tons)					
Grain	85.1	57.9	64.9	66.1	67.4	62.6
Cotton	2.7	1.2	3.3	2.9	2.9	2.6
Edible oil	1.9	0.7	1.40	1.5	1.0	1.1
Live pigs	0.1	0.0	0.1	0.1	0.13	0.1
Fisheries	3.2	2.7	3.1	2.	3.3	3.3

Source: Forty Years of Rural China, (Zhongyuan nongmin chubanshe, 1989), 133

These severe shortages led to poverty among the rural peasants, whose per capita rural income was slightly over 70 yuan. Further, the per capita annual income from collective allocation was less than 50 yuan where production teams were present. Furthermore, the industrial sector in China heavily relied on the surplus from agriculture for financing during this period. Poor surplus implied that the industrial sector would largely suffer from poor finance availability as well (Rozelle, 2017). This was not different from the focus on the development industries. These industries operate in a closed environment with no competitive advantage in both the industry sector and product offerings. The heavy industry was also in a closed feedback loop where the international trade was mainly conducted using agricultural products while light industrial products were relatively lacking. Table 2 highlights per capita

incomes from various sectors in China during 1957-1978:

Table 2. Rural per Capita Incomes

Income Year	1957	1962	1965	1970	1975	1978
Per capita income (yuan)	87.57	111.5	117.3	129.3	133.5	133.6
Income from collective (%)	49.6	47.4	53.9	60.6	57.0	58.3
Income from sideline industries (%)	41.2	45.4	37.0	32.8	36.8	35.6
Income from other sources (%)	9.2	7.2	9.2	6.6	6.2	6.1

Source: Forty Years of Rural China, (Zhongyuan nongmin chubanshe, 1989), 130

Overall, China's economic growth was stunted during this period although the Chinese government introduced reforms that were geared toward economic growth, with the first reform focusing on the agricultural sector (Unger, 2016). Accordingly, farmers were required to give only a fixed amount of their product to the commune (Zweig, 2015), leading to an increase in farmers' production incentive since they underwent only a fixed amount of taxation (Wang and Shen, 2014). The reforms also touched on the other factors of farming such as land rights, marketing and distribution, pricing, and the development of financing institutions, along with an improved role of government in agriculture (Chow, 2015).

According to land rights, farmers could have land ownership that secured their farming activity for years, which was more than the 30-year plan given by the government in the 1990s (Ye, 2015). The government opened trade between China and other countries, enabling farmers to export their products (Awan, 2018). This increased their earnings, and the total trade grew by about 6.0% per annum during 1980-2000. Moreover, the forces of demand and supply were used to determine market prices for farm products, increasing the price of grain relative to the fertilizer, which has risen more than 60% since the reformation. The government-supported research and development provided the chance for farmers to use technology in order to obtain higher yields (Yang et al., 2014).

This new economic growth was noted to have positively affected the country between during1981-2012 (Esmail and Shili, 2017). The Chinese government introduced policies and reforms, apart from those in agriculture that supported changes in its economic structure, which shifted from the oriental to the market-based economy, leading to a shift from an agrarian economy to a manufacturing and service-based economy (Lee, 2017). According to the literature, reforms in restructuring the economy have been the major contributors to economic growth in China.

2.2. China After Economic Growth

The following sectors were credited for contributing to the growth of the economy in China.

2.2.1. Agriculture

The agricultural sector in China was revived by the reform change, which witnessed the production of 18, 50, and 29% of the cereal grain, vegetables, and meat worldwide, respectively (Esmail and Shili, 2017). This issue changed China into the world's largest agricultural economy and the largest producer of pork, tea, cotton, wheat, rice, and fish (Alston and Pardey, 2014). China did this while utilizing only 9% of its arable land, feeding 22% of the world's population (Yu and Wu, 2018). It should be noted that agricultural production in China heavily relied on soil fertility, pollination, water availability, among others. These increases in agricultural inputs, along with total factor productivity (TFP), contributed to the growth of about 40.6 and 55.2% in inputs and outputs during 1991-2009, respectively (Yu and Wu, 2018).

2.2.2. Industries

China's industrial sector has grown from imitating mature technology to actual innovation, a phenomenon which is known as 'leapfrogging' (Painter, 2014). This industrialization led to the need for importing production equipment, aircraft, machinery, raw materials, and telecommunications technology. The industrial growth has also been supported by higher growth in productivity and per capita incomes. China further ascended in the international trade scene in 2001, which highlighted its manufacturing capabilities, leading to its production of massive exports to countries such as the United States, Europe, and other countries worldwide (Yang and Martinez-Zarzoso, 2014). Manufacturing in China contributed to the added gross value country by 35.1% in 2013 (Esmail and Shili, 2017). Additionally, China clustered its industries by industry type and regions during 1990-2004. In addition, Shanghai was the region for steel, automobile, and oil, and Zhejiang was famous for its clothing, home appliances, and clothing. On the other hand, Guangdong was changed to a region for computers, clothing, and related electronic items (Klafke et al., 2018). This clustering centrally places industries where they can have better access to markets, share technological know-how, have an easy flow of ideas, and get financial assistance through loans.

2.2.3. Trade

China joined the World Trade Organization in 2011 (Baldwin, 2016), mainly trading with economic powers such as the United States and Europe. Coupled with its profound change in its structural organization and economic growth, the country has continued to experience exponential expansion in its trade partners. The top five trade partners that have worked with China since 2019 are provided in Table 3.

Table 3. Top Five Trade Partners with China in Million USD

Market	Trade US$ (Million)	Partner Share (%)
United States	430,328	19.01
Hong Kong, China	279, 211	12.34
Japan	137,259	6.06
Republic of Korea	102,704	4.54
Vietnam	71,617	3.16

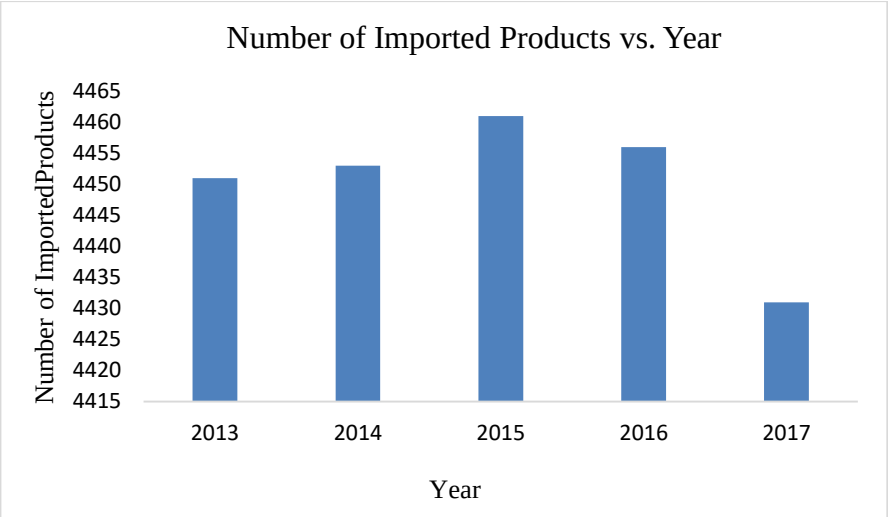
Source: The World Bank Group, 2019

According to Esmail and Shili (2017), China's trade in merchandise exports increased from $14 billion in 1979 to $23 trillion in 2014, followed by an annual growth rate of 18.0% from 1990 to 2014. During the same period, the importation of merchandise represented an increase from $18 billion to $2.0 trillion, with an annual growth rate of 16.6%. Based on the obtained data, the number of exported products by China to other countries worldwide increased from 2013 to 2015, which then decreased in the subsequent years (Figure 1).

Source: The World Bank Group, 2019

Figure 1. Number of Exported Products by China during 2013-2017

On the other hand, the number of imported products by China between the same periods also increased between 2013 and 2015 and decreased in the following years (Figure 2).



Source: The World Bank Group, 2019

Figure 2. Number of Imported Products by China during 2013-2017

Based on these two records, the number of imported products was higher compared to exported ones. However, the value of the exported products was higher in comparison to imported ones which it will be shown below:

Table 4. China's Exports and Imports of Product Groups

Product category	Exports		Imports	
	Value in $US Mil	Product % Share	Value in $US Mil	Product % Share
Raw materials	41,292	1.82	443,963	24.08
Intermediate goods	369,082	16.31	396,326	21.50
Consumer goods	824,788	36.44	239,091	12.97
Capital goods	1,022,921	45.19	749,095	40.63

Source: The World Bank Group, 2019

As shown, China's industrial sector is the major contributor to trade in terms of exports.

2.2.4. Employment

Employment in China was divided into formal and informal sectors (Xue, Gao and Guo, 2014). In total, both sectors employed about 744 million people in 2013, including 256.39 and 487,930,000 million cases in urban and rural areas, respectively. The findings revealed that China created 96.83 million jobs duing 1990-2003, which represented an annual increase of 7.45 million jobs (Esmail and Shili, 2017). However, the country still grapples with some levels of unemployment (Li, Whalley and Xing, 2014). This is a challenge that threatens to slow down the economic growth of this country. Further, the GDP of China decreased to 7.4% in 2014. Although the ratio of job seekers to vacancies has improved, it is still less than one,

implying that there are some graduates who may be unable to find employment (Ding and Tay, 2016).

2.3. Sources of Labour Growth in China

In the study by Wu (2015), labor significantly contributed to output growth during 1980-2016. The aggregate growth of TFP at 0.76 percent each year was due to 40 percent contribution within industries and 60% reallocation of labor and capital across industries. According to Zhang (2017), reductions in transaction costs, along with migrations within China have led to enhance labor productivity. As indicated in Appendix 2, TFP significantly differs in China, representing that some industries are lagging in total factor production compared to others.

Accordingly, reforms opened the doors to growth for the Chinese economy although other factors also played a role in this regard. Without the availability of resources such as land (agriculture) and the applied raw materials in industries, the economy would not have witnessed much growth. Furthermore, there would be no manipulation of the applied resources for making products without labor (human capital). Both the human capital and resources contributed to economic growth. However, these can be viewed in terms of the applied inputs for obtaining the outputs. Nonetheless, a question arises regarding the role of other factors (e.g., effectiveness and innovation which are not so obvious) in economic growth. The Method section of this study scrutinizes how various sectors have used TFP to improve their outputs.

3. METHODOLOGY

3.1. Research Design

This study was based on a systematic review of previous studies on total factor productivity (TFP) in China in the past five years. There are many advantages associated with this approach to the current study. For instance, data are collected from studies in peer-reviewed journals, as well as the reputable sources of information by reputable organizations and governments, making the findings of the study highly credible. Similarly, identifying gaps in the study process is possible by comparing the views of different studies. Moreover, the conclusions of the review are more encompassing and reliable by presenting the contributions of multiple scholars together as compared to those of a single study. Additionally, the comparison of the findings from multiple studies creates an opportunity for eliminating the bias since outliers in findings are removed so that commonly shared views are held to be the

accurate view. The method section acts as a source of guidance on how the data is collected in the research.

3.2. Data

Based on the aim of the study, data were collected from scholarly articles on various TFP contributions in China and different sectors of the economy, including manufacturing and industries, along with technology. In addition, the qualitative method was used for data collection (Taylor et al., 2015). This type of research method takes into consideration on-numeric data and aims to obtain meaning and inferences from the data when compared to counts and measures. The qualitative method was found to be best suited for the present study given the lack of taking into account measures or counts.

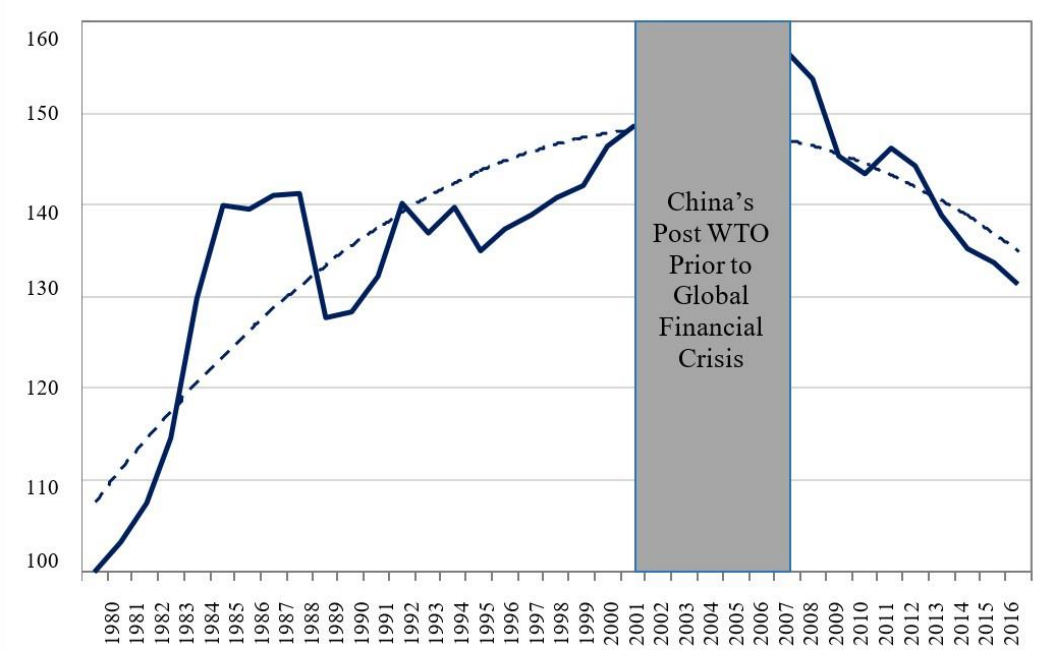
The data has been gathered from both online and library sources in past research work conducted on TFP in China (Hewson and Stewart, 2016) although they were limited to the period of the past five years. The contributions of TFP were the main determinants of the kind of data collection, which helped in filtering the data for the purpose, and Google Scholar was the online source for data collection. Further, two keywords were applied to obtain the relevant data, including "Total factor productivity" and "China". Finally, data were analyzed based on the secondary data analysis method because of using secondary data collected online. This method is flexible and can be utilized in the selected systematic method for reviewing the literature (Johnston, 2014).

4. RESULTS AND ANALYSIS

4.1. Results

The present study is based on multiple findings from past studies and ample techniques in total factor productivity (TFP) assessment, including the aggregate production possibility frontier (APPF) and review-wise of a newly constructed economy-wide industry-level data set of the on-going China Industrial Productivity (CIP) Database Project that follows the KLEMS principles in data construction[1]. The results indicated that TFP growth amounted to 0.76% per annum during 1980-2016. This implies that opposed to the industry weighted value addition growth of 8.53% per annum, however The TFP accounted for only 8.9% in China's growth in gross domestic product per annum during this period.

[1] KLEMS is used as an acronym for **K** Capital, **L**abor, **E**nergy, **M**aterials and **S**ervices that are used to produce any products. As it illustrates, the gross output of an industry equals the overall costs of "KLEMS" and the gross output of an economy equals the sum of the costs of KLEMS of all industries.



Source: Constructed based on results shown in Appendix 2

Figure 3. Index of Aggregate Total Factor Productivity in China (1980=100)

The Contribution of factors in Figure 3 will be comprehended that why China lost its TFP strength. Of the 8.53 – percent annual output growth rate for the whole period under investigation, the contribution of capital input was 6.74 percentage points (ppts), labor input 1.03 ppts and TFP 0.76 ppts. This depicts that 79 percent of the real value-added growth relied on capital input growth, 12.1 percent on labor input growth, and 8.9 percent on the total factor productivity growth. The assistance of capital input growth rocketed from 55 percent in the 1980s to 84.7 percent post WTO, but to more than 100 percent in the wake of the global financial crisis, that is, 113.7 percent to the period 2007-2012 and 136 percent for the period 2012-2016. The reason for the downtrend appears to be the overinvestment. Obviously, the contribution of labor input declined from 16 percent in the 1980s to 6.5 percent post WTO. Nevertheless, this shortly went opposite to 7.2 percent in 2007-2012 and 8.4 percent in 2012-2016.

4.2. Analysis

According to Wu (2018), industries that were less prone to government interventions had higher TFP compared to those that often experienced government interventions. The above-mentioned study equally indicated that the reallocation of resources across industries had a significant impact on the overall TFP, confirming the role of merits of factor reallocation in the economy in promoting productivity within such economy. According to (Lida et al.,

2018), TFP growth in China in recent years has been driven by innovations, shifting the focus from mere capital allocation to investment in research and development. Many companies in China have invested in technologies meant for gathering artificial intelligence as well as the area of artificial reality applications. Based on the systematic review of Chinese TFP, China's economy has significantly increased during 1980-2008 and assumed a downward trend after such investment.

TFP is used for measuring the efficient application of the inputs. Furthermore, efficiency has the potential for growing production in a country while simultaneously enhancing the level of competitiveness in organizations. For organizations in China, focusing on the traditional factors of production such as labor and capital and investment in technology is of great importance. A change in technology results in alterations in the level of labor and capital required for the production process. It also increases efficiency, indicating that low costs of production lead to increased outputs. According to (Lida et al., 2018), TFP enhancement in China will be driven by increasing deregulation and privatization. State-owned enterprises have a very low level of TFP (Feng et al., 2015). Equally, it is to be driven by highly innovative emerging firms in the country. The continuous influx of highly efficient foreign firms will also contribute towards development.

5. RECOMMENDATION

As explained by (Lida et al., 2018), low total factor productivity (TFP) firms mainly tend to catch up with those on domestic frontiers. On the other hand, high TFP firms are inclined to replace low TFP firms. Research and development are also noted to be a key source of growth in TFP in countries. According to (Lida et al., 2018), China needs to open up the regulated industries. These industries belong to the energy, finance, and natural resource sectors (Feng et al., 2015). Moreover, discriminatory policies should be eliminated for attaining the desired growth. Glass door problems should be avoided as well. This refers to scenarios where policies are developed but hardly implemented in this regard. Additionally, TFP in the country enhances through the engagement of the high population in China in training and development. The lack of skills reduces the ability of labor to positively contribute to the TFP. As elucidated by Du, Shao and Hu (2019), labor may be substituted for capital in cases where the capital is limited but labor is in excess, resulting in enhanced total productivity in the context of low capital. For example, the government should invest more in cultivation technologies in order to reduce the cost of production while increasing production in the agricultural sector (Zhan, 2017). As indicated in Appendix 1, although some firms have

high TFP levels, the other ones are making limited contributions in this respect. Thus, there is a need for the trans-industry reallocation of resources including technology regarding enhancing TFP levels and productivity.

6. CONCLUSION

As a whole, total factor productivity (TFP) touches evolutions in the gross domestic and vastly determines by resources in China. This shows the requirements for firms and the government to coordinate more assets in innovation improvements particularly in the agricultural sector. Furthermore, the preparation of the enormous labour constrain accessible in China increments the capacity of the nation to boost proficiency within the fabrication route. TFP in China has been diminishing due to destitute asset assignments in spite of the fact that intra industry reallocations have activated an upward slant in country. It is worth noticing that most insightful scholars share a common aspect of view demonstrating that advancement and productivity in asset utilization play a key part in improving TFP in China. All things considered, the success of TFP in making strides depends on whether the government will proceed or backtrack when it comes to market de-regularization.

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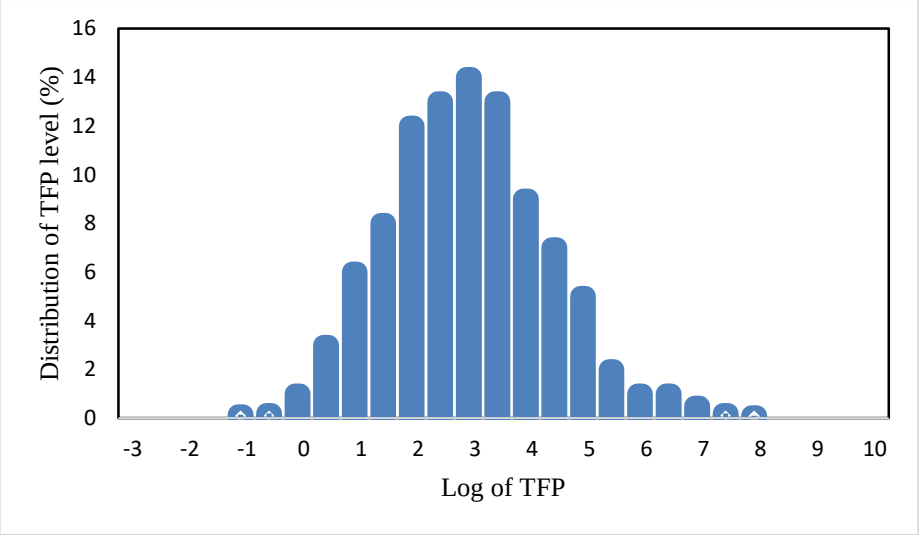
Appendix

Appendix 1: China TFP by Firm Samples as Reported by Bank of Japan (2018)



The TFP level of 3,407 firms are available for 2016

Source: Lida, Shoji & Yoneyama (2018)

Figure 4. TFP level of listed firms in Appendix 2

Appendix 2: China TFP by Industries

Table 5. Industry and Factor Contributions to China's Value-Added Growth 1980-2016

	1980-91	**1991-01**	**2001-07**	**2007-12**	**2012-16**	**1980-2016**
Value Added Growth Year (APPF, %)	Industry contributions to value-added growth					
Value added-growth (APPF, %)	8.78	8.94	10.06	7.38	5.29	**8.53**
-Agriculture	1.73	1.31	0.37	0.20	0.19	**1.01**
-Construction	0.51	0.49	0.56	0.47	0.27	**0.48**
Income from other sources (%)	9.2	7.2	9.2	6.6	6.2	**6.1**
-Energy	0.03	0.08	0.52	0.20	0.51	**0.20**
-C&P	1.12	1.99	1.58	1.96	1.32	**1.58**
-SF&F	3.22	2.44	3.66	2.54	1.00	**3.01**
-Services I	0.94	0.43	1.22	1.48	1.52	**1.07**
-Services II	0.94	1.22	2.62	2.21	1.37	**1.52**
-Services III	0.30	-0.01	-0.96	-0.18	-0.87	**-0.33**
	Factor contributions to value-added growth					
Value added-growth (APPF, %)	8.78	8.94	10.06	7.88	5.29	**8.53**
-Capital input	4.84	6.47	8.53	896	7.20	**6.74**
-Stock	4.91	6.58	8.57	8.95	7.13	**6.79**
-Capital quality (composition)	-0.08	-0.10	-0.05	0.01	0.07	**-0.05**
-Labor input	1.41	1.31	0.65	0.56	0.45	**1.03**
-Hours	1.34	0.80	0.60	-0.52	0.18	**0.57**
-Labor quality (composition)	0.06	0.51	0.06	1.18	0.26	**0.36**
-Aggregate TFP	2.54	1.16	0.88	1.54	-2.35	**0.76**

Source: Based on CIP/KLEMS Estimations on Domar-Weighted TFP Growth

Note: See Table 6 (Appendix 3) for industry abbreviation.

Table 6. CIP/China KLEMS Industrial Classification and Code

CIP	EU-KLEMS	Grouping	Industry	
1	AtB	Agriculture	Agriculture, forestry, animal husbandry &	AGR
2	1	Energy	Coal mining	CLM
3	1	Energy	Oil & gas excavation	PTM
4	1	C&P	Metal mining	MEM
5	1	C&P	Non-metallic minerals mining	NMM
6	1	Finished	Food and kindred	F&B
7	1	Finished	Tobacco products	TBC
8	1	C&P	Textile mill products	TEX
9	1	Finished	Apparel and other textile products	WEA
10	1	Finished	Leather and leather products	LEA
11	2	SF&F	Saw mill products, furniture, fixtures	W&F
12	21t22	C&P	Paper products, printing & publishing	P&P
13	2	Energy	Petroleum and coal products	PET
14	2	C&P	Chemicals and allied products	CHE
15	2	SF&F	Rubber and plastics products	R&P
16	2	C&P	Stone, clay, and glass products	BUI
17	27t28	C&P	Primary & fabricated metal industries	MET
18	27t28	SF&F	Metal products (excluding rolling products)	MEP
19	2	Semi-finished	Industrial machinery and equipment	MCH
20	3	SF&F	Electric equipment	ELE
21	3	SF&F	Electronic and telecommunication equipment	ICT
22	30t33	SF&F	Instruments and office equipment	INS
23	34t35	Finished	Motor vehicles & other transportation	TRS
24	36t37	Finished	Miscellaneous manufacturing industries	OTH
25	E	Energy	Power, steam, gas and tap water supply	UTL
26	F	Construction	Construction	CON
27	G	Services II	Wholesale and retail trades	SAL
28	H	Services II	Hotels and restaurants	HOT
29	I	Services I	Transport, storage & post services	T&S
30	71t74	Services I	Telecommunication & post	P&T
31	J	Services I	Financial	FIN
32	K	Services II	Real estate services	REA
33	71t74	Services II	Leasing, technical, science & business	BUS
34	L	Services III	Public administration and defense	ADM
35	M	Services III	Education services	EDU
36	N	Services III	Health and social security services	HEA
37	O&P	Services II	Other services	SER

Source: Based on CIP/KLEMS Estimations on Domar-Weighted TFP Growth

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LIBYA: POLITICS, ECONOMICS, BANKING AND THEIR EFFECTS ON CORPORATE GOVERNANCE

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Abstract

This study narratively examines the concept of corporate governance in Libya from a political, economic, banking perspective. As such, the study explores how to develop corporate governance in Libya and it presents an overview of the development of Libya's accounting and auditing profession and the measures taken to improve the Libyan banking sector, concentrating on the major role of the Code of Corporate Governance (2010) issued by the Central Bank of Libya. The study concludes that the concept of governance in Libya is still in the early stages of development, and it is inhibited by the weaknesses in board governance, government intervention, and the weak legal and regulatory environment. corporate governance practice in Libya is thus operating within an environment that is very different from that in developed countries. It is crucial, therefore, for developing countries to have their own corporate governance frameworks that consider political, economic cultural and social factors found in each country.

Keywords: *Corporate governance, central bank of Libya, Libyan banking sector, developing countries, Libya.*

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1. INTRODUCTION

Ever since the financial scandals and crises of the 1980s and 1990s, corporate governance (CG) has been the subject of attention from researchers (Huse, 2007; Muniandy and Hillier, 2015). The report of Cadbury Committee (1992) regarding the financial aspects of CG was the first to raise awareness of the issues of CG, but this was followed by numerous other studies (e.g. Seward and Walsh, 1996; Sternberg, 1997; Williamson, 1988; Gillan and Starks, 2000; Goodwin and Seow, 2002). Following the corporate collapse in developed markets (2001-2002), many countries of the world have issued their own guidelines for good governance (Fichtner, 2010). Specifically, developed countries have responded with initiatives such as the Sarbanes Oxley Act (2002) and the UK Combined Code (FRC, 2003), which set out the mechanisms of CG to help boards of directors and shareholders improve the management of firms and prevent collapse, not only in the developed countries but also in the other countries given the major benefits good CG practice can bring. Accordingly, the merging market and developing countries also have established their own CG guidelines and codes (Mangena and Chamisa, 2008; Almomania et al., 2017) to protect the interests of shareholders and other stakeholders.

However, while these are the expectations that surround governance in developed countries, the lack of an institutional framework for their governance in developing countries (Boubakri et al., 2005) has led to that governance in these developing countries is working in a different environment. This is likely to have an impact on the effectiveness of CG mechanisms. The prior studies have mainly focused on developed countries (e.g. Cohen, et al., 2002; Brennan et al 2008; Turley and Zaman, 2014; Al-Okaily et al., 2020; Pemberton and Ng, 2021; Gurol and Lagasio, 2021), as well as, it is argued that CG practices may vary between developed and developing countries (Barghathi et al., 2017; Iswaissi and Falahati, 2017). This study, hence, aims to provide an overview of the development of CG in Libya, as a developing country, taking into account the political, economic, and banking backgrounds. Therefore, it used a narrative review of the literature, because it is the more comprehensive, critical and objective analysis of the current knowledge on a topic, and thus may motivate further studies in this aspect and help to develop CG in Libya.

This paper seeks to make an original contribution to knowledge by providing a deeper understanding of the development of CG in Libya, which may provide some helpful insights to board members, regulators, particularly the Central Bank of Libya (CBL), and policymakers to promote CG practices in Libya. Firstly, the study provides an overview that discusses the

general historical, geographical, and political context of Libya, as this has profoundly influenced both the economy and the development of CG. Furthermore, we explore the emergence and current status of the country's accounting and auditing profession before explaining the role played by the Libyan Stock Market in fostering economic growth and the implementation of CG. Finally, the key legislative and regulatory steps that led up to the CBL's (2010a) CG Code before discussing how some of the main CG mechanisms (i.e. the board of directors, sub-committees, and disclosure practices) are treated within this legislation.

2. METHODOLOGY

As this study aims to provide an overview of the corporate governance in Libya from a political, economic, banking standpoint, a narrative review approach is believed to be appropriate (Hammersley, 2001). Narrative reviews describe and discuss a certain topic from a theoretical point of view, where a broad perspective on a topic can be introduced (Rother, 2007). Rother (2007) argue that narrative reviews have a very important role in keeping the process of knowledge going, as they deliver up-to-date knowledge about a particular topic. As the current study examines the knowledge of corporate governance from specific perspectives and aims to provide a broad narratively perspective on Libyan corporate governance, the narrative review approach is deemed to be suitable.

3. COUNTRY BACKGROUND

This section provides an insight into the general political and economic context in the country, as this has profoundly influenced the development of CG. The section then describes the emergence and current status of the country's accounting and auditing profession before explaining the role played by the Libyan Stock Market and the country's banking sector in fostering economic growth and the implementation of CG.

3.1. Political Overview

Libya is an Arab Muslim country in northern Africa, with the longest Mediterranean coastline of any country (more than 1,900 kilometres). It is well known as a gateway between Africa and western Europe, but it also plays a major role in linking eastern Arab countries to the Arab Maghreb countries (Younes, 2013). Extending between latitudes 19.45 and 32.94 N, and longitudes 9.38 and 25.14 E (Abdalmaula, 2014), Libya covers 1,759,540 square kilometres (679,362 sq. mi), making it the sixteenth largest nation in the world by size, with an area equivalent to one-half the size of Europe (Pratten and Mashat, 2009).

In the course of its long history, Libya has been home to many civilisations (Senauth, 2013). The Tadrart Akakus, famous for its rock, arches, gorges, paintings, and carvings, bears signs of human habitation from 12,000 BCE (UNESCO, 2017), and as early as 8000 BCE, Ancient Libya was inhabited by Neolithic hunter-gatherers (Falola et al., 2012). However, it was not until the final centuries of the pre-Christian era that the ancient Libyans made contact with other cultures around the Mediterranean, with the Phoenicians being the first to develop commercial links and exploit Libya's raw materials (Falola et al., 2012). The Phoenicians settled in many cities on the Libyan coast including Leptis Magna, Oea (Tripoli), and Sabratha, which was founded in the seventh century BCE. Seeing the Phoenicians' success in western Libya, the Greeks followed suit in the east of the country, establishing five cities from which they were able to fish and trade with great success (Martin, 2011).

By 517 BCE, the Berber-Phoenician empire was gaining influence all around the Mediterranean, much to the consternation of Rome (Falola et al., 2012), which responded by conquering northern Africa and (in 146 BCE) taking Libya into Roman control (Rahim, 2016). The newly acquired territory expanded Rome's empire, relieving pressures created by population growth, and strengthened its economy (Martin, 2011), becoming the breadbasket of Rome (Falola et al., 2012). The name Libya at that time referred to the African continent as a whole (Rahim, 2016); it was not until 296 AD, when Emperor Diocletian divided Cyrenaica into the provinces of Upper Libya and Lower Libya, that the term was used to refer to a political state called Libya for the first time in history (Rahim, 2016).

In 644, Islamic conquest reached Libya, bringing profound social, cultural, and ideological change. Under the command of Amr Ibn El-Asi, the Islamic army moved from Cyrenaica in the east to Tripolitania in the west, taking Tripoli from the Byzantines, while Uqba Ibn Nafi took Fezzan in the south before capturing Germa in 663 (Falola et al., 2012). Over the following centuries, Libya was ruled by a series of Islamic dynasties with varying levels of autonomy from the Umayyad, Abbasid, and Fatimid caliphates (Falola et al., 2012). The country flourished during the first part of the Islamic era; these early emirs took their custodianship of Libya seriously, repairing Roman irrigation systems, restoring order, and bringing a measure of prosperity to the region (Senauth, 2013). Small, mosque-based schools were established to teach Arabic and to give instruction in the Islamic religion. Over time, many of these mosques became Islamic universities (Mohamed, 2013).

Tripoli's strategic importance made it a target for successive invaders in the sixteenth century; it survived occupation by Spanish pirates in 1510 and by the Knights of St John in

1530 only to be besieged and conquered by the Ottomans in 1551 (Senauth, 2013). Ahmed Bey Karamanli, the Ottoman governor of Tripoli, established the Karamanli dynasty in 1711 (Vandewalle, 2012). In 1801, the war between Libya and the USA began that known as the Tripolitanian War, when the USA refused to pay Tripolitanians protection money for protecting its shipping from piracy in the Mediterranean, his descendant, Yusuf Karamanli, himself began attacking American ships (Falola et al., 2012; Senauth, 2013). Three US ships promptly arrived off the coast of Tripoli and blockaded the port (Falola et al., 2012), but the Tripolitanians responded by seizing the American frigate Philadelphia and capturing its entire crew (Vandewalle, 2012). In 1805, a peace treaty was finally signed and prisoners were exchanged when the USA agreed to pay a ransom of $60,000 (Falola et al., 2012).

Ottoman rule in Libya lasted until the Italian conquest in 1911 (Falola et al., 2012). In the early 1900s, Italy viewed itself as a reborn Roman Empire, destined to dominate the Mediterranean and take back some of its lost territories. It declared war on the Ottoman Empire in Libya (Falola et al., 2012), sending 145 warships and more than 34,000 troops to attack the coastal cities (Raza, 2012) and driving the smaller Ottoman forces back into the desert (Falola et al., 2012). Like other invaders before them, the Italians saw Libya as a land rich in resources (in this case, gold) that were waiting to be exploited (Senauth, 2013).

It is estimated that at least half a million Libyans perished during the conquest, either in battle or from disease, starvation, or thirst. A further 250,000 Libyans were forced into exile in neighbouring countries (Ahmida, 1994). Other European nations expressed shock, denouncing Italy's conduct as barbarous and uncivilised even by imperialist standards, but the Italian armies nevertheless continued their aggression against Libya for more than 20 years (Raza, 2012). Libya's suffering continued throughout the Second World War when it was fought over by the Axis and Allied armies from 1940 to 1943. The conflict ended with the surrender of the Axis powers and the end of Italian colonisation, but it left substantial damage, with large numbers of Libyans affected by the fighting (Hart, 2015; Van Genugten, 2016).

In December 1951, the modern state of Libya was finally created through the union of Tripolitania in the west, Cyrenaica in the east, and Fezzan in the south (Xypolia, 2016). The newly independent country, which followed a federal political system, was known as the United Kingdom of Libya (Younes et al., 2013) and was headed by King Idris Al-Sansui (Vandewalle, 2012). This incarnation did not last long, however; in 1963, the federal system was abandoned in favour of a unitary state (Vandewalle, 2012) and in 1969, a military coup, led by Colonel Muammar Gaddafi, overthrew King Idris and abolished the constitution

(Vandewalle, 2012).

Extreme poverty went unchecked in a country of vast mineral resources (Younes, 2013), while state institutions were hollowed out completely in a series of confusing and often contradictory reforms (Wright, 2012). The regime at that time spent most of Libya's oil profits on arms, supported terrorist groups, and ruthlessly pursued dissidents (Amaral, 2014). The country's political and economic structures were riddled with corruption. Their domination over the country's resources led to a wide gap between the wealthy and ordinary people (Shariha et al., 2014), while the ideology of socialism produced a weakened civil society and an autocratic government that was politically and socially regressive (Misa and Nia, 2016). Weak state institutions and the abolition of the constitution and many existing laws left the ground open for the introduction of new laws, policies, and plans that were often confusing, contradictory, and ill-considered. This had significant adverse effects on the national economy, including the banking sector.

In February 2011, mass anti-government protests sprang up in cities across Libya. Similar uprisings were occurring in Tunisia and Egypt (Senauth, 2013), but while the military in these countries supported the protestors, the Libyan military, were fervent supporters of the regime. Even so, they were unable to quell the revolution (Senauth, 2013). The regime's influence continues to be felt even after his overthrow, however; his prioritisation of tribal loyalties and dismantling of state institutions had important consequences for the process and outcome of the revolution (Niakooee, 2013), including helping create the disorder and unrest (Wright, 2012), which the Libyans still suffer from it to this day. Therefore, these obstacles hinder the efforts to achieve an effective governance system in Libya. Zagoub (2019) argues that the losses and consequences of war and political conflict are the biggest challenges facing future governments, and political and security instability is the biggest obstacle to the implementation of governance in Libya. This confirms the influence of the political factor on corporate governance, which leads to hinder the development and implementation of governance in the country.

3.2. Economic System

When the modern state of Libya was established in 1951, the country's economy was based on the limited productivity of a traditional agricultural sector (Younes et al., 2013). This all changed with the discovery of oil in 1959, which transformed Libya from a poor to an extremely wealthy country (Falola et al., 2012). However, rather than exploiting this

opportunity for development and the chance to benefit from foreign investment (El. Hamoudi, 2017), the Gaddafi regime instead chose to conduct a series of political, economic, and ideological experiments that left Libya isolated (Vandewalle, 2012). Its relationship with western countries became increasingly strained, culminating in the imposition of economic sanctions by the US Government in the 1980s and by the UN Security Council in 1992. These strongly affected the Libyan economy (El. Hamoudi, 2017), but their impact was amplified even further by economic mismanagement and corruption (O'Sullivan, 2004). Driven by its socialist ideology (Buferna et al., 2005), the regime exercised tight control over the economy, holding back the development of the private sector and leaving Libya lagging behind its neighbours (Khan and Mezran, 2013). Economic policies were poorly developed and major decisions were taken without consideration of their long-term implications (Niblock, 2002). Despite the country's oil wealth, the regime did not build the infrastructure it needed to support the economy and domestic or foreign investment (Khan and Mezran, 2013). Not only did this exacerbate economic instability in Libya during that era, but it has also made it more difficult to rebuild the economy since the revolution.

Libya is one of the leading oil-producing countries in Africa and has the ninth-largest oil reserve in the world (around 46 billion barrels) (Etelawi et al., 2017). The economy depends mainly on the oil sector, which accounts for 91% of total government revenue (Ali and Harvie, 2013). Output dropped significantly during the 1980s to about one million barrels (from a peak of 3.3 million barrels in 1970) due to the international sanctions and the regime's failed economic policies (Ali and Harvie, 2013; Etelawi et al., 2017), but when international sanctions ended in 2004, international companies began investing in Libya, particularly in the oil sector (Etelawi et al., 2017), and the country was able to begin its reintegration into the international economy and to capitalise once again on its abundant oil and gas riches (Vandewalle, 2012). Libya's oil production continues to exert a significant influence on the global oil price because of its high quality and proximity to Europe (Ali and Harvie, 2013).

The international investment in the oil sector would not have been possible without the Libyan Government's decision to liberalise the country's economy (El. Hamoudi, 2017). This process began in the early 2000s with the first of a series of reforms designed to encourage privatisation and foreign investment not just in the oil sector but across the economy (Masoud, 2014). After the revolution of 2011, the economy began to recover and oil production came back faster than expected, but by 2013 it had slipped back to pre-revolution levels (Khan and Mezran, 2013). Khan and Mezren argue that this is mainly due to underlying structural

problems dating back to the Gaddafi years, including a continuing lack of interest in developing the private sector, chronically high unemployment (13.5% in 2010), an underdeveloped banking sector, and a large and highly inefficient subsidy system for many basic food products and fuel that means the Government spends more on wages and subsidies than on development. Accordingly, all these obstacles have a significant effect on Libyan firms to implement good corporate governance practices.

3.3. The Accounting and Auditing Profession

In the years following independence, western oil companies, especially those from the UK and the USA, introduced their accounting practices – and their attitudes to accounting – into the Libyan environment. These companies positively affected the development of accounting first in Libyan oil companies and then in other companies (Masoud, 2016). The early practice was also shaped by Libyan students who had studied abroad, particularly in the USA and the UK. This period saw the enactment of the Libyan Commercial Law (1953) requiring companies to prepare an annual report including an income statement and balance sheet (Masoud, 2016). The law served as an acknowledgement of the importance of the accounting and auditing function; accordingly, as oil exports increased during the 1960s, the Government took steps to improve the accounting education being offered by Libyan universities (El-Firjani et al., 2014).

The next major step in the development of the accounting profession came in 1973, when the Government issued Law No. 116. This was the first legislation to focus specifically on the accounting and auditing profession (Laga, 2013). It sought to raise standards by setting out the responsibilities of and a code of behaviour for accountants and auditors, and by requiring accountants to be registered. Finally, it laid the groundwork for the creation of the Libyan Accountants and Auditors Association (LAAA) (El-Firjani et al., 2014).

Despite this and other attempts at regulation, however, and notwithstanding the existence of the LAAA (Masoud, 2016), the accounting profession in Libya has not yet achieved its central objective of developing accounting practice (El-Firjani et al., 2014). For example, auditing practice remains undeveloped, making it difficult to report corporate misconduct (Zakari and Menacere, 2012). The Government has sought to address this weakness, for example by issuing the Banking Law in 2005 and requiring all firms with a capital of over one million Libyan Dinars to be listed on the Libyan Stock Market, where they are expected to follow IASs (El-Firjani et al., 2014). However, such progress as has been made

is largely down to the Libyan Stock Market and CBL, which have sought to foster good accounting practice through their issuance of CG rules and guidelines (Larbsh, 2010). At the moment, the accounting and auditing profession itself does not enjoy high status, mostly due to the perceived weakness of the LAAA (Masoud, 2017). This state of affairs is unlikely to change without a thorough overhaul of the profession's regulatory systems to bring them into line with those in developed countries.

3.4. The Libyan Stock Market (LSM)

Oyelami and Ale (2013) defined financial markets as the places in which individuals and companies trade financial securities and require resources to fund their activities. In other words, financial markets gather resources from those who have them and direct them back to those who can benefit from them (Ansari, 2012). In an effort by the Libyan government to boost the economy, encourage investment and fight poverty, the Libyan Stock Market was established in 2001 with the issuance of Act No. 21/2001 (Masoud, 2014). Nonetheless, it was not officially open until 2006 (Aljbiri, 2013). By Act No. 21/2001, all companies were required to register in the stock market (El-Firjani et al., 2014).

In a collaboration with the London Stock Exchange, the Libyan Stock Market had made training contract, by which trainees from the Libyan Stock Market can be trained in the London Stock Exchange (Saidane, 2010). Joining the International Organisation for the Protection of the Investor the Executive Committee of the deposit of Africa and the Middle East, the Libyan Stock Market has become internationally active (Edweib et al., 2013). Edweib et al., (2013) argue that this international activity had an important valuable reflection on encouraging investment, improving finance availability, and ensuring the disclosure and transparency.

The Libyan Stock Market issued CG code in 2007, which covers the board of directors' responsibilities, the establishment of the remuneration committee, the establishment of the audit committee, establishment of the nomination committee, establishment of the watchdog committee, and disclosure and transparency activities. The code requires that all listed companies publish their annual reports. Information about investment income proposed and paid dividends, loans, compensation, remuneration and turnover should be included in the annual reports (Masoud, 2014). Moreover, the responsibilities of the sub-committees and members 'committees need to be encompassed in an annual financial statement (Libyan Stock Market, 2007). Such procedures were found to satisfy shareholders (Ishmela, 2010), and to

enhance economic growth (Edweib et al. 2013).

3.5. The Libyan Banking Sector

The banking sector is one of the most important sectors of the Libyan economy (Alrshah, 2015), which is one of the major financiers for most projects and institutions, because of the adoption of public sector enterprises in the implementation of development plans (Shernanna, 2012). As a result, it was necessary to take a range of appropriate measures to improve and repair the banking sector to bring it in line with the new policies in order to shift the burden on the state, and also so that the sector can contribute effectively to being able to provide a better environment for its development (CBL, 2010b).

Based on the above, the Central Bank of Libya (CBL) carried out a set of actions during the period 2002-2010, such as the issuance of a CG code, restructuring commercial banks, and transferring some of the ownership of public sector banks to the private sector. In addition, new private banks were established and foreign investors and foreign banks were allowed to participate in the Libyan banking sector, which should help to improve the effectiveness of this sector (CBL, 2010b).

3.5.1. Central Bank of Libya (CBL)

In 1956, the CBL was established as a supreme monetary institution in Libya. The major objectives of the CBL are to preserve monetary stability in Libya and to ensure the continual growth of the economic system based on the state's general economic policy (CBL, 2008). The law provides for the CBL's independence and confers upon it the authority to oversee the Libyan banking sector to ensure the integrity of all banks financial position and protect the rights of depositors and clients (CBL, 2008). Furthermore, its job is to closely monitor all banks in this sector (El-Firjani et al., 2014). In the past two decades, the CBL has taken significant steps toward a to attract greater foreign investment by opening branches or agencies for foreign banks in Libya (Hawashe, 2016).

3.5.2. Commercial Banks

Based on the role, size, the range of services provided to customers and geographical spread, commercial banks are among the most important financial institutions in Libya (Hawashe, 2016). Realizing that the importance of privatization privatisation programme was crucial to encourage investment and broaden the property base in Libya, the CBL has undertaken a series of reforms that included the establishment of private commercial banks,

as well as the opening of branches of some foreign banks (Hawashe, 2016). The sector thus now includes twenty banks, which are are either owned by the state, the private sector, or joint-owned by some combination of the state, domestic and foreign investors.

3.5.3. The Islamic Banking System in Libya

Islamic Law (Sharia) is derived from Quran and Sunnah (Javaid and ul Hassan, 2013), and thus the primary objective of Sharia is to provide safety and justice to people for their belief, life, wealth and prosperity equally (El-Halaby and Hussainey, 2015). Although Islamic finance system focuses its products on the prohibitions of interest and trading under uncertainty (Abdo and Wakkas, 2011), it has become important in the international economy due to a number of reasons, including the need of Muslims to obtain financial products and services which are in line with their religious beliefs (Grais and Pellegrini, 2006). Currently, more than 600 Islamic bank institutions exist, and more than 700 Islamic investment funds with over 2 trillion dollars in assets, and many non-Muslims use products provided by Islamic financial institutions and Islamic windows in conventional banks (Masiukiewicz, 2014).

Islamic banking in Libya began when the Libyan Banking Law No. (1) (2005) allowed for the creation of some of the Islamic banking services and products as a category of licensed activities (CBL, 2005). Prior to 2011, however, there was little attention and support from the Libyan government towards Islamic banking. Following the 2011 revolution, the National Transitional Council issued Law No. 46 of 2012, that the 2005 Banking Law was amended, which included a detailed chapter on Islamic banking and allowed the establishment of Islamic banks (Baej and Worthington 2014).

In 2013, General National Congress in Libya issued a law (No, 1), which has prohibited all dealings in interest (Riba) (Stela and Abdulsalam, 2016) with strong support from most segments of society for an Islamic banking system in the country (Abdulsaleh, 2017). This led to the start of the process of transforming conventional banking system into Islamic banking and steps have been taken in this direction by opening branches and windows to provide Islamic banking and Sharia Committees have been established (Elkrghli and Yahya, 2018). Despite that, this law has not been yet completely implemented, but has been only partially applied (Zway, 2017). Elkrghli and Yahya (2018) add that it was noted that the Libyan banks are still at the early stages and have not been able to make a full transition to Islamic Banking in its true sense yet. The reasons for this are due to several obstacles, that banks have not been able to overcome in five years and have not been resolved or found solutions to them, such as

poor experience and inefficiency in the field of Islamic banking, the absence of Islamic Financial Market, and a lack of staff training, as well as the impact of the current political and economic situation on the progress of the transformation program (Abdulsaleh, 2017; Zway, 2017; Elkrghli and Yahya, 2018).

On the other hand, Baej and Worthington (2014) argue that even though the presences of these obstacles and challenges, some factors help the new Islamic banking system, such as that this system is already attracting the attention of the CBL, regulators, banks, academic and practitioners and society as a whole, which has led the attention of the Libyan authorities in implementing Islamic banking. The fact the banking sector in Libya has taken many actions to transform into an Islamic system (Elkrghli and Yahya, 2018), and have provided Islamic banking services by Islamic branches and windows all over the country, where the majority of financing products are limited to Murabaha and Musharaka (Abdulsaleh, 2017). Although it is too early to assess the Islamic finance system in the Libyan banks, so far no information was given from the CBL on the extent of Sharia application in these banks and how this system will be implemented in the future. Nevertheless, Masoud (2014) expects that Islamic finance will play a prominent role in the long-term economic growth of Libya by increasing the gross domestic product (GDP). Supporters of Islamic banking argue that an effective Islamic banking system will attract both the domestic and foreign investment that is crucial to Libya's economy (Eldlimi et al., 2013). As a result, it may present the opportunity to obtain the necessary finance from investors by offering potential investors new investment opportunities and thereby restore the desired levels of liquidity.

According to this section, it should be argued that the Libyan banking sector faces many obstacles and challenges to adopt good corporate governance practices. Khan and Mezren (2013) argue that although banking system reforms were introduced to upgrade banks, the sector was remarkably underdeveloped given the country's level of wealth and GDP, and access to financial services remained limited.

4. DEVELOPMENT OF CORPORATE GOVERNANCE IN LIBYA

Preliminary from the Libyan independence in 1951, the CG development in Libya has gone through several stages. The starting point was the issuance of the Libyan Commercial Law in 1953, which had covered a number of the fundamental principles of CG, including board structure and responsibilities and shareholders' rights. Addressing several shortcomings in the Libyan Commercial 1953, the Libyan government had revised the law in 2010; issuing

a new revised Commercial Code (No. 23/2010). Because of not issuing the executive regulations, the revised law was not made mandatory.

1973 has witnessed the second stage of the development of CG, in which Law No. 116 was issued. Law No. 116 was concerned with the accounting organisations profession in Libya (Laga, 2013). According to Ritchie and Khorwatt, (2007) Law No. 116 has brought the accounting profession into the light spot, as it has set new standards, setting out the accountants and auditors' responsibilities, a code of behaviour, and demanding accountants to be officially registered. More importantly, it has led to the laid of the Libyan Association of Accountants and Auditors (El-Firjani et al., 2014).

The third stage of CG development was the implementation of corrective measures. During the first decade of the 21st century, CBL implemented several procedures that intended to take the banking sector a step further to be in a line with the international system. These procedures embraced privatization of public banks, new restructuration on the commercial banks, and issuance of a (voluntary) CG code in 2005. Furthermore, foreign shareholders and foreign banks were permitted to contribute to the Libyan banking sector (CBL, 2010b). Even though the importance of the rules on CG for commercial banks working in Libya was provided in the 2005 CG code, these guidelines were neither lawfully nor obligatory (CBL, 2005).

In 2006, the Libyan Stock Market was officially introduced. Shortly thereafter, Libyan Stock Market issued the second CG Code which was absorbed at listed companies; explaining the board of directors' responsibilities, the sub-committees establishing guidelines, for example, the audit committee, remuneration committee, and disclosure and transparency. The code had again failed to be binding, with the exception of the regulations regarding disclosure. The year 2010 witnessed two important events regarding the development of CG in Libya. These are, CG Code issued by the CBL was made compulsory, and the Libyan Parliament issued the Libyan Stock Market Authority (LSMA) Law No. 11. The LSMA Law was mainly concerned with governing the regulation of the stock market; ensuring that all listed companies' transactions take place under conditions of disclosure and transparency. Presenting an important step forward, The LSMA Law, in Article 17, makes explicit the protection of investor rights. Furthermore, the LSMA Law specifies that a board of five members, who should be appointed by the Libyan Prime Minister, manage the Libyan Stock Market Authority.

The CG code issued by CB consists of six sections. The first and second sections are concerned with CG's key codes. As well as, they address the rights of the shareholders and ensure that their rights are protected, including how decisions are taken in the shareholders' general assembly. Appointing board members, appointing the senior management, their duties towards shareholders, depositors and other debtholders, sub-committees of the board of directors' duties and responsibilities were discussed in sections three and four of the code. These sections also define clearly the relationship between the board of directors and senior management. Finally, the fifth and sixth sections deal with disclosure practices of CG (CBL, 2010a).

The code specifies that between five and seven members need to be appointed as the boards of directors in commercial banks, two of whom at least should be independent directors (CBL, 2010a). Nonetheless, according to Article 530 of the Libyan Commercial Law (1953), the company's memorandum can set the upper and the lower number of board of directors. Therefore, the general assembly can decide how many directors within these limits. Furthermore, the Libyan Commercial Law (1953), allows the general assembly chooses not to appoint the chairman. In this case, Libyan Commercial Law (1953) gives the right to the board members to choose the board chairman by themselves by selecting a candidate from among the board (Libyan Commercial Law, 1953).

The CG 2010 code explains that the board is the authorized body that can set strategies, supervise the management, and ensure that the CG code is properly implemented. It also claims that the board of directors has the final say in the bank's financial activities, where it is accountable to the CBL and the shareholders (CBL, 2010a). An audit committee; risk management committee, appointment, and remuneration committee, and a corporate governance committee are recommended by the 2010 code (CBL, 2010a).

5. DISCUSSION

With this narrative review, the results of the study show that the political factor has an impact on corporate governance, which leads to hinder the development and implementation of governance in the country. As political and security instability constitutes a major obstacle to the implementation of governance in Libya, which is consistent with a number of studies (e.g. Ma and Yu, 2007; Mwangangi, 2015; Jamil, 2017; Afolabi, 2106; Zagoub, 2019; Mijena, 2020). They also indicate that the economic factor has an impact on effective corporate governance practice in Libyan firms, which is in agreement with the studies of Afolabi (2016)

and Zagoub (2019). As a result, Afolabi (2016) asserts that corporate governance guideline should be tailor towards the political and economic environment in the countries targeted for the study. Regarding the Libyan banking sector, a number of the studies found that the sector faces several critical issues that hinder the success of the implementation of CG in this sector such as, lack of human resources, the difficulty of applying Islamic law compliant products in the traditional banking system, weak of regulations and legislation, and the technology used in banking services does not meet the demand of customers (see e.g. Kribat et al., 2013; Hossen, 2014, Khan and Mezren, 2013; McLaughlin et al., 2017; Abdelrahim, 2020). Elsakit (2017) argues that the dominance of the public sector for decades in all economic sectors in Libya has led to its subsequent negative impact on the banking sector in terms of inefficiency in banking performance.

With regard to CG practices in Libya, as CG practices vary from country to country as a result of social, economic, legal, and political factors (Iswaissi and Falahati, 2017), and the need to develop CG systems for developing countries that countries, taking into account their cultural, political, and technological conditions (Mulili and Wong, 2011), an in-depth study of these factors was essential to examine their effect on CG in the Libyan context. Libya is still at an early stage of applying CG mechanisms in the Libyan banking sector, while the development of CG in these companies is hindered by unprofessional boards of directors and underperforming directors. As a result, regulation is still not sufficient and practice is generally weak. Masli (2018) found that the legal, regulatory and institutional environment underpinning Libya's CG framework is not adequate. Also, there a lack of training for managers in CG models, and the lack of accounting standards and legal requirements lead to low levels of disclosure (Larbsh, 2010; Iswaissi and Falahati, 2017). Moreover, most Libyan companies are state-owned and have a high ownership concentration (Abdou, 2015), and therefore, there are concerns about the level of government intervention, especially from the CBL (Masli, 2018), which extends to the appointment of board members and even board chairmen. Shalba (2016) found that board members in most firms in Libya are often selected because of personal contacts and favouritism rather than their abilities or expertise. This indicates that CG practice in Libya is working in a different environment from that in other countries.

Despite all these legal and regulatory efforts, however, the legal and institutional environment underpinning Libya's CG framework is not adequate (Masli, 2018), and there is still a widespread lack of knowledge about CG (Magrus, 2012), with the existence of

weaknesses in board governance (Masli, 2018). Quite many researchers have pointed out that CG regulation is still not fully adequate in most firms in Libya (e.g. Me.g. Larbsh, 2010; Magrus, 2012; Faraj and El-Firjani, 2014; Abdou, 2015; Elshahoubi, 2019), and awareness of CG issues within the Libyan environment is currently inadequate (Elshahoubi, 2019). This has had adverse consequences for the country, weakening the banking system, reducing the attractiveness of Libya to foreign investors, and exacerbating the fragility of the Libyan economy (Larbsh, 2010; Magrus, 2012; Alrshah and Fadzil, 2013). As a result, Masli et al., (2019) suggest that greater attention needs to be paid to CG within the legal and regulatory environment in Libya, which may especially help regulators and board members trying to enhance the effectiveness of CG in the Libyan context.

6. CONCLUSIONS

The aim of this study is to provide a narrative review of the literature on CG in Libya, and some factors that influence it. Therefore, this study, despite its exploratory nature, offers some insight into the Libyan politics, economy and their effect on the CG. The paper begins with a brief overview of Libya's geographical, political, and economic context, showing how the country's natural riches and strategic location have made it a tempting target for a succession of foreign occupiers over the centuries. Also, it presents an overview of the development of the accounting and auditing profession in Libya, indicating that it does not currently seem to have the professional standing to push for development. In the last half-century, however, it is the vicissitudes of Libya's internal politics that have had a major negative impact on the economy, both in general and in the banking and accounting environment in particular.

The CBL has responded to these challenges by implementing a series of reforms over the last two decades to develop the Libyan banking sector and increase its competitiveness in the global marketplace. Its efforts have focused on this issue to encourage good governance within this sector. The paper discusses the progress of these efforts, shedding light, in particular, on the major role of the CG Code (CBL, 2010a) issued by the CBL, which develops guidelines for the formation of boards of directors and board committees and disclosure practice in Libya's banking sector. It also discusses the central role of the Libyan stock market in regulating listed companies and in implementing and improving their governance practices.

Generally, the study shows that CG in Libya is still in the early stages of development. The concept of governance in Libya is still in the early stages of development, and it is

inhibited by the weaknesses in board governance, government intervention, and the weak legal and regulatory environment. The consensus was almost as strong that awareness of CG among stakeholders in the sector is low. Moreover, there are concerns from government intervention in CG due to the political structure and the controlling shareholder status of the government in many state-owned firms. Therefore, CG practice in Libya is working within an environment that is very different from that in developed countries.

In broad terms, the findings of this study suggest that greater attention needs to be paid to CG within the legal and regulatory environment in Libya; most importantly, the Libyan CG code (CBL, 2010a) should be revised to place greater emphasis on the role of the board and its committees in the Libyan banks, with taking the political, economic and cultural factors into consideration and paying attention to the Libyan banking sector, which constitute important steps to achieve an effective governance system in this banking sector. These findings contribute to the literature by offering a different perspective and new evidence from a country with its own unique business environment, culture, religion and regulatory framework. They also add to our understanding the role of boards of directors and how CG codes operate outside developed countries, but more narrowly, they have specific implications for the board and regulators (particularly the CBL) in the Libyan banking sector, who are attempting to enhance the effectiveness of these committees.

7. LIMITATIONS AND FUTURE STUDIES

The present study has several limitations that can be addressed in future studies. Firstly, this study has been exploratory in nature; being one of the first attempts to explore Libyan geography, history, politics, and their effect on both the economy and CG. Future research may take a further step using interviews, for example, to enhance our understanding of the impact of the environment on CG. Moreover, this study was concerned with the hard institutional factors (i.e. shape the economy, laws), and did not take into account the soft institutional factors related to CG. It is, hence, future studies can reflect factors such as values, social norms, traditions, and the networks of interpersonal relations. Finally, future studies may consider comparing Libyan CG with another CG from a different context.

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THE IMPORTANCE OF NATURAL RESOURCES FOR THE AZERBAIJANI ECONOMY

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Abstract

Azerbaijan's natural resources attract the transnational corporations from the developed world and increase investment projects in oil industry. The development of the petroleum industry has significantly increased the GDP of the country since 1994. The paper will focus on natural resource contracts. Their impact on GDP growth, oil industry, and regional economic integration will be described through two important contracts. While all assistance is welcome from oil corporations, the paper claims that the Azerbaijani Government must consider disadvantages of oil and gas exploration projects, because the negative results can impede upon the country's economic development in a long run. Descriptive explanatory discussion method is used in this research paper by referring to the information from works of scientists and organizations. The goal of this paper is to show that Azerbaijan currently benefits from investments of oil corporations, but may suffer negative consequences in a long run as observed in other oil-rich, post-Soviet countries. There is a suggestion that it may be possible to predict those problems and make new efforts in order to prevent the state from facing economic stagnation in the future.

Keywords: *Azerbaijan, Oil industry, Contracts, Corporations, Investment.*

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1. INTRODUCTION

The investments and the projects of the transnational corporations in the oil industry have had both positive and negative consequences for the former Soviet Union countries. Although the oil-rich developing countries benefit a lot by attracting corporations from the developed world, there can be negative effects for countries depending on their institutions, geographical locations and so forth (Bannon & Collier, 2003).

Azerbaijan established its freedom in 1991, and attracted transnational corporations for the exploration and production of its natural resources. Due to the natural resources of Azerbaijan, transnational corporations did play important roles in the country's economy and the region's economic integration through huge investment projects. The unemployment and the poverty in Azerbaijan were reduced significantly because of the financial resources received through the oil projects. Two main contracts, such as "Contract of the Century" and "Contract of the 21st Century" induced significant changes in the economic system of Azerbaijan and, especially, in the petroleum industry. These contracts opened new opportunities for the country to export its natural resources to the global market. The trade of the oil and gas resources increased the GDP dramatically since 1997. The GDP has increased from around 3 billion USD (1995) to 75 billion USD (2014) (World Bank, 2021).

Azerbaijan will face serious economic problems in a long run if the government does not implement new reforms in order to reduce the GDP dependency on the petroleum industry. Despite the fact that poverty reduction (5% in 2018 (ADB, 2021)) and decreasing unemployment rate (6% in 2020 (World Bank, 2021)) are the significant accomplishments in the last decade; the government's regional socio-economic development program was insufficient for the economic diversification.

Azerbaijani economy heavily dependent on oil revenues, and commodity price volatility affected the economy negatively since 2014 due to plummeting oil prices. Oil wealth of Azerbaijan allowed the government to support and improve living standards of people mainly before 2014. However, the reliance of whole economy on oil sector threatened the economy's fiscal balance and stability. Economy's dependence on the export of natural resources may affect the country's economy negatively and induce slow growth: a phenomenon that's considered as the resource curse theory. The resource curse explains that countries which are rich with natural resources perform much worse than the countries without resources (Humphrey, et al., 2007; Barma, et al., 2011).

The research paper acknowledges the transnational oil corporations' contributory roles in the economic system of Azerbaijan because they were the primary financial sources for the country to advance its economy in a short run. The financial resources were used for the investment projects in various economic sectors such as petroleum industry, construction, and transportation. Furthermore, the paper's objective is to focus on Azerbaijan's economic performance in order to show that the symptoms of the resource curse might be noticeable in Azerbaijan, and the government should consider it seriously. The problems in the non-oil sector show that the government should focus on this sector for eliminating serious problems in a long-run. The macroeconomic instability and the dependence on the export of the crude natural resources are the problems and should be taken into account. The financial resources from the petroleum industry and the GDP growth are the useful tools for the government to achieve the progress in the non-oil sector.

The paper through explanatory discussion will refer to the information from previous studies as well as international organizations and illustrate the consequences of the oil projects which are implemented in Azerbaijan since 1994. In this section, the paper will analyze two major contracts, which played significant roles in developing the economic system. These accomplishments include the reduction of unemployment and poverty, international economic integration and the relations with the developed world. Descriptive method is used for the entire paper, and the legislative acts, works of the international and national scientists related to the topic, information from the World Bank and the Statistical Committee of the Republic of Azerbaijan are the important information sources in order to support the research through descriptive discussion. Ultimately, the author will demonstrate the urgency for achieving high economic growth in other non-oil sectors in order to overcome the stagnation of the economic system in a long run.

2. HISTORICAL BACKGROUND

Azerbaijan's oil resources were described in the works of the authors since the ancient times. The petroleum industry was not developed till the 19th century as oil was used for medical, military etc., purposes. The 19th century was the turning point in Azerbaijan's economy due to the development of the oil industry. Russian, Swedish, German, and other companies opened their branches in the capital city of Baku, for investing in the economy and extracting the natural resources. Famous companies like Anglo-Russian Oil Company, Trade House Benkendorf and Co, The Russian Oil General Corporation, Branobel, Royal Dutch Shell, De Rothschild Freres and so forth explored and traded Azerbaijani oil to the worldwide

marketplace in 19th-20th centuries (Hasanov & Bahramov, 2014). As the capital flew into the country since the 19th century, new techniques for oil exploration and extraction were developed and, afterwards, Baku became one of the famous industrialized cities in the world by producing almost 50% of the world's oil.

The following stage of the petroleum industry began after the occupation of the USSR at the outset of the 20th century. Azerbaijan supplied around 75% of its oil resources for the Soviet Union in World War II (Narimanov & Palaz, 1995). New oil wells were explored after constructing the city of "Neft Dashlari" on the Caspian Sea in 1949 because the city generated a significant amount of profits and created an advantageous environment for the scientists in order to explore, extract and produce the natural resources in the Caspian Basin.

The next stage of the oil industry covers the independence years of the Republic of Azerbaijan since 1991. The "Contract of the Century" in 1994, established a successful environment for the transnational corporations such as British Petroleum, Lukoil, Chevron, Ramco, Statoil, and etc. They invested huge financial resources in the petroleum industry, and extracted and traded the Azerbaijani oil and gas resources in the global market. Moreover, the "Contract of the 21st Century" which was signed in 2013 will help Azerbaijan to be the significant gas exporter as well. The government changes its strategies and policies related to oil industry due to the diminishing oil production and, additionally, the gas industry is believed to be the new stage in Azerbaijan's history.

3. LITERATURE AND DISCUSSION

There are many achievements were made during the country's independence years, in spite of the disadvantages of the ongoing oil and gas exploitation in Azerbaijan. The transnational corporations are in the center of those achievements because of the income growth, decreasing unemployment rate, poverty reduction and increasing investments in the non-oil sector of the economy. A number of national and foreign researchers state that the transnational corporations have significant positive impacts on the economic development of Azerbaijan. Azerbaijani scholar, Kazimov (1999) argues that transnational corporations allow Azerbaijan for better economic integration and relations with the developed world, which potentially helps to turn the attention of other countries to Azerbaijan. His positive claim is supported by the fact that "Contract of the Century" increased Azerbaijan's role in globalization because transnational corporations from more than 40 countries invested in the country, which moved the market-driven economy to the new stage by carrying out new

reforms. Inheritance of the planned economy and the communist ideology from the USSR are the main reasons which drag the economy from growing faster than it is designed for a short-term period. The war in the western part of the country created destructive consequences for the country's economy. So, the reasons which are mentioned above are the main arguments for the stagnation of the economy. Thus, unlike other oil-rich Central Asian countries, transnational corporations' presence in Azerbaijan brought stability to the region and created new opportunities for the developed world to tighten relations with the country.

Nevertheless, the non-oil sector of the economy has stagnated in the recent decade due to the slow diversification of the economic system. The reasons for the negative consequences are not connected to the corporations' investments but mostly tied to the problems within the government such as corruption, lack of transparency and so forth (Rosenberg & Saavalainen, 1998). Some authors (Auty, 1993; Van der Ploeg, 2011; Ross, 2012) argue that the corporations' rapid exploitation of the natural resources might show negative consequences related to long run economic stagnation, environmental pollution, and etc., which are observed in the former Soviet Union countries. Since many of those countries have different institutions, cultures, political systems and geopolitical locations, there are also different impacts of the foreign investments. The contracts and agreements with transnational corporations are the "key tools" of the economic development of Azerbaijan and international economic integration. To support these notions, the paper will turn its attention to several major contracts and projects after describing the characteristics of the transnational corporations.

The stagnation in the non-oil sector has increased because few policies were made for attracting foreign direct investments to agriculture, transportation and so forth. The oil and gas industry still dominates in the economic system because most of the foreign investments flow into this part of the economy (Rosenberg & Saavalainen, 1998). Azerbaijan will benefit from its natural resources within a short run, so the speed of economic diversification should be increased in order to evade the long run stagnation of the economy (Ibadoglu, 2008). The data and information from the Central Bank of Azerbaijan (2021) and Statistical Committee of the Republic of Azerbaijan (2021) show that Azerbaijan has made achievements in terms of GDP growth. The primary reason is considered to be the transnational corporations' oil projects in the Caspian Basin. New reforms are needed for solving the problems of the non-oil sector of the economy related to agriculture, transportation and so forth.

Some scholars emphasize that Azerbaijan will become one of the main gas suppliers for the European Union. In an article by Thomas de Waal (2013), it is indicated that natural

resources are still the most powerful facets of the country's economy. Although the oil production is going to decrease, gas exports will determine the country's future. TANAP[1] (Trans Anatolian Pipeline) and TAP[2] (Trans Adriatic Pipeline) projects are supposed to be the most powerful forces in the economic field, international relations with the EU and regional economic integration. Moreover, Nick Snow (2013) is also optimistic about projects and agreements between the Azerbaijani government and the transnational corporations. He states that the TAP and TANAP projects are important for increasing Europe's energy security and expanding global markets. The investment projects develop the countries in the Caucasus region such as Azerbaijan and Georgia. He argues that the gas projects are the significant elements for Azerbaijan for building and pushing the economic growth as well as developing relations with the European Union member states. For Azerbaijan, economic growth and development are essential for getting out of the heritage of the transition economy (Esanov, et al., 2001). Azerbaijan will be a key factor for maintaining Europe's energy security as a gas supplier in future.

The authors and reports which are mentioned above have claimed that transnational corporations' projects for the exploration of the oil and gas resources in the Caspian Basin are one of the most effective and positive methods for uplifting Azerbaijan's status in a global market as an oil and gas supplier, and this fact is undisputed by the author of this paper. However, there are also negative effects of the projects for the economy in a long-run due to the increasing gap between the oil and non-oil sectors of the economy. Azerbaijan can face similar serious consequences, which are observed in the post-Soviet Central Asian countries. So, new important reforms and steps should be taken in order to achieve macroeconomic stability in a long run.

3.1. Advantages and Disadvantages of Transnational Corporations' Projects in Azerbaijan

As the author mentioned before, transnational corporations were the important factors for the international economic integration and Azerbaijan's influential economic status in the global market. The investment projects created a successful business and economic environment for the domestic market as well. There might be negative impacts of the continuous oil projects in a long run as well due to the lack of the government reforms and

[1] TANAP (2021). Trans Anatolian Pipeline. Retrieved from http://www.tanap.com//, [Accessed: 20th May 2021].
[2] TAP (2021). Trans Adriatic Pipeline. Retrieved from https://www.tap-ag.com//, [Accessed: 20th May 2021].

regulations in the non-oil sector. A vital question that must be raised is whether the transnational corporations from the developed world have provided only positive effects on Azerbaijan's economy during its independence since 1991. More specifically, what have been the advantages of the corporations' investments on the development of economic sectors of Azerbaijan? Moreover, to what extent the government uses the financial resources to benefit the people in Azerbaijan?

One of the most effective evidence to support the research project lies in statistical data and information received from several organizations such as World Bank (2021) and the Statistical Committee of the Republic of Azerbaijan (2021).

3.1.1. "Contract of the Century" and "Contract of the 21st Century"

The history shows that petroleum industry has played an important role in the economic system of Azerbaijan during 19th-21st centuries. "Contract of the Century" in 1994 was the turning point in Azerbaijan's history and economy because the contract recovered the economy right after the costly war with Armenian and Russian allied troops, in which the country lost the lands and obtained around one million refugees and internally displaced people. The collapse of the USSR was another problem that Azerbaijan faced due to switching from planned to market economy by entering transition economy status.

The contract saved Azerbaijan from disastrous economic and political situation because almost all aspects of the economy have changed after the agreement with the corporations. By signing the contract, around 13 transnational corporations and nine countries started huge projects because there were a lot of unexplored lands with lots of oil and gas resources. Afterwards, the contract led to other agreements with more than 15 countries and 40 corporations.

"Contract of the 21st Century" opens new chances for Azerbaijan to export its gas resources from "Shah Deniz 2" field to Europe through TANAP (Trans Anatolian Gas Pipeline) and TAP (Trans Adriatic Pipeline) projects and, hence, the country faces new opportunities in terms of regional development, close relations with the European Union and etc. TANAP and TAP projects are the main factors for connecting Azerbaijan and Europe in terms of successful economic and political relations and energy security.

Unlike some Central Asian countries, such as Kazakhstan and Turkmenistan which share similar economic and political problems after the establishment of their independence (Olcott, 1998; Bohr, 2016), Azerbaijan did not face such serious problems during the last

decades. Savin and Ouyan (2013) stated the following:

> *Post-Soviet Central Asia suffers from the threat of a host of turbulences of diverse origins: localized conflicts, uneven economic distress, drugs and arms trafficking, environmental disasters. Ethnic tensions, in particular, simmer beneath many "fault lines", leaving the region susceptible to instability and encroachment of forces that have root in "separatism, radicalism, and extremism". Akin to the shadow of the classical tournament this region is now plagued by tensions arising from increasing power buildup, both within and beyond.*

So, continuous conflicts and political instability drag the development of the economy of the oil-rich post-Soviet countries in Central Asia (Jones & Weinthal, 1999). Those problems weaken their economic systems; hinder the Central Asian countries from achieving macroeconomic stability. Azerbaijani government was quite successful in addressing the problems related to the petroleum industry, and achieving progress in the economic system in a short period of time. The above-cited authors addressed the following related to Azerbaijan:

> *Azerbaijan, on the other hand, managed to involve more US interests in prospecting and drilling of hydrocarbon resources immediately after independence. Due to its unique geographical location, Baku has to a large extent been insulated from the frictions between Kremlin and its Central Asian junior brothers on the issue of routing of pipelines. There is also an added advantage; it has accumulated century old experiences in hosting foreign ventures, both on land and offshore, in commercial excavation of oil, thus contributing to rapid depletion of unexplored reserves (USEIA 2014).*

Pervasive corruption problems in some of the oil-rich Central Asian countries show that the lack of new reforms is the reason for the slow development of the economic systems. New reforms and institutional changes are always needed in order to diminish the problems related to corruption and economic stagnation. The situation related to the transparency and corruption in the energy sector is different in Azerbaijan. Jaffe (1998) stated the following about Azerbaijan after signing the oil contract in 1994:

> *In Azerbaijan, for example, the International Monetary Fund (IMF) ensured that oil exploration contract signing bonuses sent into a special account at the Central Bank be fed into the national budget on a predetermined, staggered schedule. Before energy exports begin to take off in large volumes, it would be useful for Caspian governments, local authorities, the energy industry, and international financial institutions to assess prospects for the establishment of social equity funds and business partnerships. Both instruments could be part of a broader strategy to strengthen the internal cohesion of states through internal wealth redistribution and conflict resolution, promote interstate cooperation and*

encourage long-term stability. (p. 23)

The corruption and transparency issues in the energy sector are thoroughly controlled by the international organizations in Azerbaijan, and this creates better business environment for the transnational corporations in the petroleum industry. Afterwards, the transnational corporations were quite successful in implementing the projects. The government is highly concerned about the corruption problems in the oil industry, as it is the main income source for the economic system. Despite the fact that the corruption in the oil industry is decreased significantly, the non-oil sector suffers from the corruption and the lack of transparency (Chene, 2013). Although Azerbaijan scores below the average in terms of corruption, the country has improved the score significantly compared to the last decade. New strict measures should be imposed in order to diminish the level of corruption and advance the non-oil sector.

The conflict in the Western part of Azerbaijan negatively affected all aspects of the economic system and decreased the GDP until around 3 billion USD (World Bank, 2021). Nevertheless, unlike other Central Asian countries, the investments of transnational corporations helped the government to attain the macroeconomic stability in a short run and achieve dramatic GDP growth (75 billion USD in 2014) (World Bank, 2021). The oil pipelines going through Georgia and Turkey are the key factors for exporting Azerbaijani oil and gas resources to the global market. These pipelines are also significant elements for advancing the economic integration with other countries.

The Azerbaijani Government achieved its short-run goals related to poverty reduction and socio-economic development of the regions by signing "Contract of the Century" in 1994. Despite the fact that the country still struggles for boosting the non-oil sector and decreasing the corruption level, the achievements which were made during the independence years attracted more corporations in recent years because unlike the Central Asian countries, Azerbaijan developed faster and created better business environment for the international companies.

The new contract which was signed in 2013, the "Contract of the 21st Century" will enable Azerbaijan to transfer its natural gas to Europe and enhance the relations with the European member states. The decreasing rate of the oil production (USEIA, 2014) induces the Azerbaijani government to take serious measures towards achieving its long-run macroeconomic goals, which depends on future gas exports. Gas exports will be primary elements for the money supply and economic diversification. The "Contract of the 21st

Century" is the significant factor for the implementation of the new gas projects.

Will the "Contract of the 21st Century" be successful in terms of achieving the macroeconomic stability and the economic diversification in a long run? What will Azerbaijan gain after the implementation of the TAP and TANAP projects?

Due to the achievements in the oil industry, the Azerbaijani government and the EU states are optimistic about the future of the projects and gas transfers to the European market. Azerbaijan becomes one the important factors for the energy security of Europe. Shahin Abbasov (2014) addressed the following:

> *Compared with Russia – in 2013, the world's second-largest gas producer (668 bcm) after the United States – Azerbaijan is not "a proper alternative for Russian energy sources," but already, it is "a major point in Europe's efforts to decrease its dependence on Russian gas, commented Elhan Shahinoglu, head of Baku's non-governmental Atlas Research Center.*

Russian presence in the Caucasian region was a huge obstacle for Azerbaijan during its independence years, and the Azerbaijani government was quite successful in signing the contracts and implementing reforms. The new contract is a significant factor for both Azerbaijan and the EU for the facilitation of the energy security in a region. Aliyev Ilham (2013) (The president of the Republic of Azerbaijan) stated the following, concerning the "Contract of the 21st Century":

> *Energy policy, close cooperation with international institutions and diversification and transparency are among the key elements of successful development. I believe that Azerbaijan has not caught the "oil disease", so-called "Dutch disease". We are an example of how oil and gas should serve the interests of the people. Of course, one of the main prerequisites for this is international cooperation. We appreciate this cooperation as the knowledge and experience of foreign companies are very important to us.*

What were the major disadvantages of the corporations' projects in the petroleum industry of Azerbaijan?

One of the problems was connected to the health problems of the people who lived in the villages close to the pipeline. The transnational corporations were not concerned about the health issues of the people. People who lived close to the pipelines did not have enough money for visiting the hospitals due to the extreme poverty during the construction of the BTC pipeline. The cause of the health problems was the environmental pollution close to the

pipeline construction, which worsened the living conditions of the people living in the area (Kochladze et al., 2005). The first problem was the removal of the huge amounts of trees alongside the construction. Apart from the environmental damage, the BTC Co. was dealing with sales of timbers removed from the construction area and, thus, the corruption in timber business was increased. Water contamination was another problem, which affected people's lives in the construction area. People's worsened health conditions and environmental damages were the major disadvantages after the construction of the BTC pipeline. The pipeline is the important factor for exporting Azerbaijani oil to the worldwide marketplace, but the environmental and health damages should also be taken into account. The construction of the pipeline did not only harm Azerbaijani people but also Georgian and Turkish people as well.

The unbalanced development of the economic system is creating a negative situation for Azerbaijan. Unregulated dependency on crude oil and gas exports poses great risks for the country due to the shortage in other economic sectors. The concentration of the economy on the petroleum industry has a significant effect on the macroeconomic stability (Rosenberg & Saavalainen, 1998). Thus, it can easily affect the macroeconomic stability in Azerbaijan due to the changes in the oil prices in the global marketplace. The slight changes in the petroleum industry worldwide will affect the whole economic system in Azerbaijan.

Azerbaijan's dependency on energy resources makes the country vulnerable to the external factors such as the changing oil prices and the production level. The government needs new institutional reforms in order to diminish the vulnerability of the economic system towards the external factors. The decreasing oil production drags the economic growth because the crude oil and gas resources are supposed to be the primary elements of the GDP growth.

In order to prevent the difficulties in a long run, the Azerbaijani Government should make some changes related to the monetary and the fiscal policies. The government should try to balance the sources of the money supply in the economic system by increasing the role of the non-oil sector.

4. CONCLUSION

The author realizes that transnational corporations and their projects have had positive impacts during the 20 years of Azerbaijan's independence. Even though the first contract had some negative results related to people's health, environmental pollution, and etc., the GDP

growth, the poverty reduction and successful relations with the developed countries improved Azerbaijan's image in the international arena. Azerbaijan has increased its efforts in improving the transparency in the energy sector in spite of the corruption problems.

Due to having received continuous financial resources from the projects, the Azerbaijani government is continuing to suffer from the increasing gap between the sectors of the economic system, which mainly depends on the petroleum industry. Macroeconomic stability can be affected easily because of the changes in the oil prices, as the economic system largely depends on the petroleum and gas industries.

Another problem discussed in the paper was corruption, which is rampant in post-Soviet Union countries. The corruption did not affect the energy sector that much due to the improved transparency. Yet, other sectors suffer from corruption, which hinders the foreign corporations from investing in other sectors of the economic system. The transnational corporations are not responsible for the increasing level of corruption in other sectors, and the government should make important steps for diminishing the corruption level in order to develop other sectors.

Azerbaijan is open to the investments from the developed countries. Most of the resources are invested into the petroleum industry and, hence, this hinders the diversification of the economy in a long run. To maintain the diversification of the economic system, and to block the negative impacts of the transnational corporations, it is important to the Azerbaijani government to carry out the alternative reforms for diminishing the dependency on the oil industry and achieving economic growth in the non-oil sector.

No development is possible in the oil-rich post-Soviet transition countries, without harming some other aspects tied to the environment and the non-oil sector. The assistance from the corporations in a short run is enough for Azerbaijan to facilitate the reduction of the corruption level and diversify the economy. It is well understood from the paper that, for a long run, the economic stagnation in Azerbaijan is not connected to the projects of the corporations. The government is responsible for the problems because there were not enough reforms for developing other sectors of the economic system. The socio-economic regional development programs were successful; still, the non–oil sector has a small share in the development of the economic system.

Finally, the transnational corporations' projects and agreements in Azerbaijan were quite beneficial for the country due to the accomplishments, which are connected to the poverty and the unemployment reduction. The corporations played important roles in

Azerbaijan's increasing role in the global market and increasing the transparency in the energy sector. Nonetheless, the government should be careful about the long run economic problems, which are prevalent in other oil-rich Central Asian countries. It is the hope of the author that this research paper is the simple step in order to bring attention to this reality in Azerbaijan, for overcoming the future stagnation of the economic system.

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