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The Proximity between Regional Support Organizations

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Abstract: In 2013, there were 27 Regional Support Organizations (RSOs) in the Chaudière-Appalaches region, in the province of Québec, in Canada. The role of the RSOs is to support business development and the innovation process of firms in their region. The analysis of these 27 RSOs revealed that many of them offered similar services, suggesting that there are few interactions between these organizations. The objective of this research is to identify the factors determining the frequency of exchanges between the RSOs. Consequently, the effects of the various forms of proximity (geographical proximity, technological proximity, and cognitive proximity) on the organizational proximity measured by the frequency of exchanges between the RSOs, will be estimated using a multilevel ordinal regression. The results of this study will help to better understand the conditions facilitating the bonds between RSOs so as to ensure greater consistency in terms of services offered to firms.

Key words: regional support organizations; organizational proximity; geographical proximity; technological proximity; cognitive proximity

JEL codes: O38, O32

1. Introduction

Governments provide many services to companies, aiming to develop competitive advantages. These services are offered through Regional Support Organizations (RSOs) and are designed to help them face up to international competition. According to the report of the *Plan E Cap vers un Québec plus entrepreneurial de l'Indice entrepreneurial québécois* (2012)[1], Québec entrepreneurs admit that they need more help from these organizations. With limited resources, small and medium-sized enterprises (SMEs) are increasingly adopting open innovation models to develop new ideas, to manufacture and to market new products (van de Vrande et al., 2009). The adoption of these open innovation models allows firms to work with external sources of information such as RSOs (Chesbrough, 2003). Although the literature highlights the importance of these regional support organizations, few companies use their services. Indeed, Landry and Amara (2005) demonstrated that 26.3% of innovative manufacturing firms in the Chaudière-Appalaches region draw on the regional support organizations to innovate.

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[1] *Plan E Cap vers un Québec plus entrepreneurial de l'Indice entrepreneurial québécois* (2012), accessed on 15 February 2015, available online at: https://www.reseaum.com/documents/20182/64353/IEQ_Rapport-Complet_INDICE_CDP_2012_VF-4_11x8-5.pdf /387de21d-a46d-4b1b-8fa2-43668fb29d8d.

For several years, the manufacturing industry has been experiencing difficulties in the majority of member countries of the Organization for Economic Co-operation and Development (OECD). Several of these countries have suffered many job losses in recent years. Between 1990 and 2003[2], 29% of manufacturing jobs were lost in the United Kingdom, 24% in Japan, and 20% in Belgium and Switzerland. In Canada, 14% of manufacturing jobs disappeared between 2004 and 2008. The Chaudière-Appalaches region is an administrative region in Québec (Canada) recognized for its spirit of innovation and entrepreneurship. This region has 1,186 manufacturing enterprises[3] for a population of 408,188[4], representing a ratio of 1 manufacturing firm per 344 inhabitants. On a comparative basis, this ratio was of 1 manufacturing enterprise per 553 inhabitants in 2007 in Canada[5] and of 1 per 680 in the United States[6]. Considering the large number of manufacturing firms in the Chaudière-Appalaches region, it is not surprising to have several RSOs in this region. Manufacturers in the Chaudière-Appalaches region had, in 2013, 27 RSOs to support business development and innovation, representing 1 organization per 43.9 manufacturing firms. The size of these RSOs varies between 4 and 20 employees, of whom 70% have a university education. The analysis of the website of each of the support organizations in this region reveals that their missions are similar. Most of their missions are to support business development and stimulate firms' innovation. These similarities in their missions suggest that there is a duplication in the services offered to companies that raises questions about the frequency of exchanges between RSOs. Since several RSOs offer similar services, it is important to really understand the dynamics between them. It is pertinent to wonder if these organizations interact with each other, which would allow them to be acquainted with the services offered by the other RSOs in their region. Moreover, most of these organizations offer many services to firms, although some of them have few human resources, which deserves further study. This problem seemed likely to be present in all regions of Québec because, on November 3, 2014, the Prime Minister of Québec, Mr. Philippe Couillard, announced a 300$ million dollar cut for these RSOs (Huot, 2014). This announcement included the suppression of several RSOs in the province of Québec. This research thus intends to capture the profile of the RSOs and to test the factors determining the frequency of exchanges between them in the Chaudière-Appalaches region.

2. Conceptual Framework

In order to test the factors determining the frequency of exchanges between RSOs in the Chaudière-Appalaches region, it is important to really understand and take into account the various forms of proximity. The conceptual framework of this research, presented in Figure 1, is based on the works of Knoben and Oerlemans (2006) and Petruzzeli et al. (2007, 2009). First, Knoben and Oerlemans (2006) carried out a systematic review of the literature on the dimensions of the concept of proximity. They therefore covered geographical proximity as well as the main forms of non-spatial proximity. These authors thus identified three forms of proximity acting on interorganizational collaboration: geographical proximity, technological proximity, and organizational proximity. The work of Petruzzeli et al. (2007, 2009) has helped to identify the influence of the interactions between three forms of proximity: organizational proximity, geographical proximity, and cognitive

[2] Statistique Canada, accessed on February 15th 2015, available online at: http://www.statcan.gc.ca/pub/75-001-x/2009102/article/10788-fra.htm.
[3] ICRIQ, February 1st 2016, available online at: http://www.icriq.com/fr/.
[4] ISQ, accessed on February 15th 2015, available online at: http://www.stat.gouv.qc.ca/regions/profils/region_12/region_12_00.htm.
[5] Statistique Canada, accessed on February 15th 2015, available online at: http://www.statcan.gc.ca/pub/21-006-x/2008006/tbl/tbl3-fra.htm.
[6] OCDE, accessed on February 15th 2015, available online at: http://stats.oecd.org/index.aspx?queryid=224&lang=fr#.

proximity. It should be noted that organizational proximity happens more easily when the organizational cultures are similar (Knoben & Oerlemans, 2006). Firms in the same region tend to pull together because they share the same organizational culture. Petruzzeli et al. (2007) distinguished the concept of cognitive proximity from Knoben and Oerlemans' (2006) concept of technological proximity. In short, the adopted conceptual framework will make it possible to test the effects of the forms of geographical, cognitive, and technological proximity on organizational proximity.

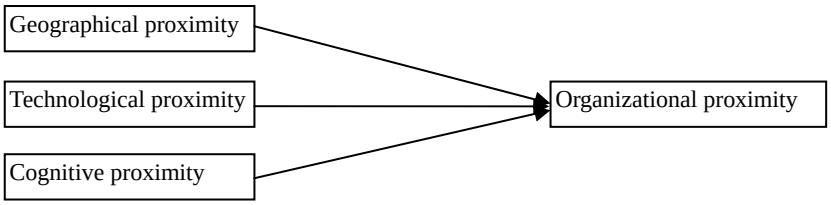

Figure 1 Conceptual Framework

In order to fully understand this conceptual framework, it is important to define certain concepts such as geographical proximity, technological proximity, cognitive proximity, and organizational proximity.

2.1 Geographical Proximity

According to Torre and Rallet (2005), geographical proximity is defined as the kilometric distance between two entities in a geographical space. This distance must be weighted by the time and money costs of its crossing.

2.2 Technological Proximity

As for technological proximity, it is based on the sharing of technological experiences and of basic knowledge (Crevoisier, 2004; Knoben & Oerlemans, 2006). This proximity refers to the knowledge that the actors possess with regard to their technologies. Technological proximity is defined by the level of similar technological knowledge between two actors (Knoben & Oerlemans, 2006).

2.3 Cognitive Proximity

According to Schamp et al. (2004), the concept of cognitive proximity is close to the concept of technological proximity. The main difference between these two concepts is that cognitive proximity is a broader concept and refers to "how" actors interact while technological proximity refers to "what" they exchange and the potential value of these exchanges (Petruzzeli et al., 2009). Nooteboom (2000) defined cognitive proximity as the common knowledge base and expertise between people. Cognitive proximity has also been defined and clarified by Petruzzelli et al. (2009) as the similarity between the actors' perception of the identification, interpretation, exploitation, and evaluation of knowledge. For this reason, this second definition will be favored in this study.

2.4 Organizational Proximity

Finally, organizational proximity has been defined by several authors in the literature. Some of them define it in a logic of belonging whereas other authors adopt the definition of this type of proximity in a logic of similarity. According to the logic of similarity, organizational proximity is associated with the resemblance between organizations, according to the technologies used or their common knowledge (Torre, 2000). As per this logic of belonging, organizations are close when they belong to the same group (Torre, 2000). Organizational proximity refers to organizations belonging to the same group. Although this belonging can foster a climate of trust, it is not enough for organizations to interact with one another (Bouba-Olga et al., 2005). In agreement with Petruzzeli et al. (2007), organizational proximity is defined as an organizational system that allows information sharing among organizations, such as multinational corporations, or between business leaders, that allows access to external

sources of knowledge. Torre and Rallet (2005) define organizational proximity as actors with whom interactions are facilitated by implicit or explicit rules and behavioral routines, and who share the same system of representation. This second definition further describes the complexity of interactions in RSOs.

According to these authors, these various forms of proximity interact between themselves. Moreover, geographical proximity favors face-to-face interactions, that is, organizational proximity (Petruzzelli et al., 2007). To interact, however, the actors do not need to be in constant geographical proximity. Several forms of proximity, including technological proximity and cognitive proximity, can offset against the effects of geographical distance (Knoben & Oerlemans, 2006; Petruzzeli et al., 2009) and have an effect on organizational proximity. These effects are taken into account in this study.

3. Methodology

The methodology used is based on a positivist approach. First of all, the websites of the RSOs in the Chaudière-Appalaches region were analyzed in order to identify their missions and their services. A questionnaire was constructed and validated with eight experts. This questionnaire was administered in 2013 to the target population, that is, the 27 managers of the RSOs in the Chaudière-Appalaches region. Moreover, 23 managers out of 27 responded to the survey, which represents a response rate of 85.1%. One of the questionnaires contained several missing data and had to be removed from the sample. In addition, the main mandate of the *Conférence régionale des élu(e)s de la Chaudière-Appalaches* is to foster consultation with the partners in the region and to advise ministers on the development of the region; it is not to offer services directly to businesses. Therefore, this organization was also removed from the sample. Additional information to this survey was needed to carry out this study. The geographical coordinates of various RSOs were used in the calculation of geographical distance. Moreover, the information needed to analyze the geographical proximity was extracted from Google Maps Canada data processing (Castonguay, 2012). This tool makes it possible to obtain the actual distance between two destinations without taking into account the distance in a straight line, but rather the road distance (Santos et al., 2011). Although the distance in kilometers and the time required to travel the distance between two destinations is highly correlated (Phibbs et al., 1995), time measurement takes into account different road speed limits, thus reflecting reality (Lovett et al., 2004). This method was used to construct the observed variable measuring the geographical distance between each of the RSOs in the Chaudière-Appalaches region. The data were processed using SPSS software version 23.0 to provide a portrait of the RSOs in the Chaudière-Appalaches region. The estimation of the multilevel ordinal regression model was performed using SAS statistical software version 9.3 to test the hypotheses based on factors determining the frequency of exchanges between the RSOs in the Chaudière-Appalaches region. This multilevel ordinal regression model was favored because the data used for two of the variables, TransfertBi and TransfertUni, are the same for all the RSOs' responses. It is therefore the same value for the set of responses related to each RSO, unlike the other variables of which each datum is unique for each frequency of exchanges between the RSOs.

4. Operating Framework and Hypotheses

The operating framework illustrated in Figure 2 presents the hypotheses of this study. These hypotheses will test the factors determining the organizational proximity between the RSOs.

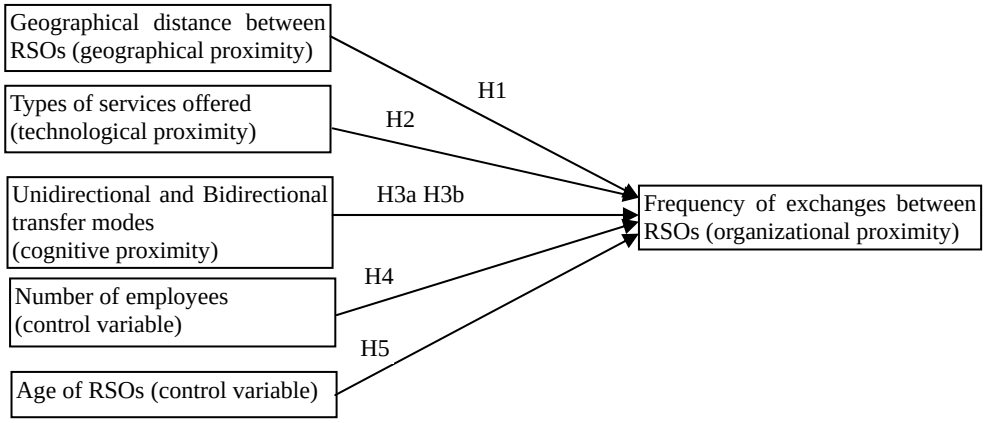

Figure 2 Operating Framework

Following are the hypotheses that will be tested:

H1: The geographical proximity of the RSOs positively influences the frequency of exchanges between the RSOs (organizational proximity).

H2: The types of services offered simultaneously among the RSOs (technological proximity) positively influence the frequency of exchanges between the RSOs (organizational proximity).

H3a: Unidirectional transfer modes (cognitive proximity) positively influence the frequency of exchanges between the RSOs (organizational proximity).

H3b: Bidirectional transfer modes (cognitive proximity) positively influence the frequency of exchanges between the RSOs (organizational proximity).

H4: The size of the RSOs positively influences the frequency of exchanges between the RSOs (organizational proximity).

H5: The age of the RSOs positively influences the frequency of exchanges between the RSOs (organizational proximity).

5. Results

The survey results provide a portrait of the RSOs in the Chaudière-Appalaches region and analyze the factors determining the frequency of exchanges between them. The hypotheses are tested using a multilevel ordinal regression model.

5.1 Portrait of the Regional Support Organizations in the Chaudière-Appalaches Region

Initial results show that, in 2012, the RSOs in the Chaudière-Appalaches region employed an average of 11.14 employees with a standard deviation of 5.03, and that the average number of employees with a university education was 7.86 employees with a standard deviation of 3.90. The RSOs in the Chaudière-Appalaches region had an average of 22.5 years of existence with a standard deviation of 15.3 years. This average was calculated based on 20 RSOs, because one datum was missing. During the fiscal year ending in 2012, 67% of the RSOs' services were provided to manufacturing firms and 33% to service companies. The majority of the RSOs' corporate clients had fewer than 50 employees. 27.5% of the services provided by the support organizations in the Chaudière-Appalaches region were provided to client companies with 1 to 4 employees. This rate decreased to 23.6% for corporate clients with 5 to 19 employees and to 21.7% for those with 20 to 49 employees. In addition, 16.3% of the services provided by the support organizations were provided to firms with 50 to 99 employees, and

9.3% to firms with 100 to 499 employees. Finally, only 1.6% of the corporate clients had more than 500 employees.

5.1.1 Frequency of Exchanges between the Regional Support Organizations

Although the Chaudière-Appalaches region's support organizations have similar missions, there is little interaction between them. Indeed, the analysis of the frequency of exchanges between these organizations reveals that the RSOs have exchanges very often with only 10.2% of other organizations and often with 9.5% of them. The RSOs interact with other organizations sometimes at the level of 22.9% and rarely at the 18.8% level. Finally, 33.7% of the possible exchanges are never made and 5.0% of the RSOs are not known to other organizations.

5.1.2 Offered Services

Several services are offered by the RSOs in the Chaudière-Appalaches region. The analysis of the services that have been sometimes, often or very often provided to businesses in the region shows that 69.7% of these services were free, 18.9% had an hourly rate, 7.4% had a fixed price, and 4.1% had an unknown price.

As showed in Table 1, networking support, which includes the search for partners, referrals, and mentors, was very often offered (47.6%), 10 out of the 21 RSOs in the region. In addition, 9 out of the 21 RSOs (42.8%) very often offered financial support. The RSOs also offered management advice (42.8%), innovation advice (38.0%), and start-up, transfer or business acquisition advice (38.0%). The RSOs often offered marketing advice (23.8%) and internationalization advice (import, export, license, subcontracting, etc.) (19.0%).

Table 1 Frequency of Services Offered by the RSOs in the Chaudière-Appalaches Region

Offered services	Frequency									
	Very often		Often		Sometimes		Rarely		Never	
	N	%	N	%	N	%	N	%	N	%
Management advice	9	42.8%	5	23.8%	2	9.5%	0	0%	5	23.8%
Entrepreneurship advice	8	38.0%	2	9.5%	3	14.2%	3	14.2%	5	23.8%
Marketing advice	5	23.8%	5	23.8%	3	14.2%	3	14.2%	5	23.8%
Innovation advice	8	38.0%	3	14.2%	4	19%	3	14.2%	3	14.2%
Internationalization advice	4	19.0%	0	0%	6	28.5%	2	9.5%	9	42.8%
Financial support	9	42.8%	7	33.3%	2	9.5%	0	0%	3	14.2%
Networking support	10	47.6%	4	19%	4	19%	2	9.5%	1	4.7%

Several binary variables were constructed to measure the technological proximity between the RSOs. Each of the binary variables has a value of 1 when two RSOs often or very often offer the same service. When one of the two RSOs offers only occasionally, rarely or never the service, the variable takes the value of 0.

5.1.3 Knowledge Transfer Mode

The support organizations in the Chaudière-Appalaches region use many modes of knowledge transfer. As indicated in Table 2, the RSOs in the Chaudière-Appalaches region attach more importance to tools, websites, and mini-conferences than to seminars, letters, and journals. Although several modes of unidirectional transfer are used by the RSOs, the advocated transfer modes are bidirectional. Indeed, counseling and training represent the two modes of transfer to which the RSOs attach the greatest importance. Mentoring is also a highly used mode of knowledge transfer.

Table 2 Importance of Modes of Knowledge Transfer

	N	Median	Mode	Average	Standard Deviation
Unidirectional transfer modes of knowledge					
Tools	21	3	3	2,810	1,601
Internet	21	3	2	2,810	1,470
Mini-conferences	21	3	4	2,619	1,322
Seminars	21	3	3	2,381	1,596
Letters	21	2	2	2,095	1,411
Journals	21	2	2	1,667	1,238
Bidirectional transfer modes of knowledge					
Counselling	21	4	5	4,238	0,889
Training	21	3	3	3,429	1,165
Mentoring	21	3	0	2,571	1,912

(1) Not Important (2) Not very Important (3) Important (4) Very Important (5) Extremely Important

5.1.4 Geographical Proximity between the Regional Support Organizations

The greater the frequency of exchanges between the support organizations in the Chaudière-Appalaches region, the shorter the time in seconds covering the geographical distance between them. As illustrated in Table 3, the RSOs that interact *very often* average 41.84 minutes, *often* 41.76 minutes, *sometimes* 53.19 minutes, *rarely* 58.43 minutes, and *never* 63.90 minutes. The ANOVA test shows that the means between the frequency levels are significantly different (p-value < 0.001).

Table 3 Time between the RSOs by Frequency of Exchanges

Frequency of exchanges between RSOs	N	Average in seconds (minutes)	Standard Deviation in seconds (minutes)
(0) Do not know	33	3317.27 (55.29)	1933.94 (32.23)
(1) Never	221	3833.71 (63.90)	1698.38 (28.31)
(2) Rarely	123	3505.53 (58.43)	1669.04 (27.82)
(3) Sometimes	150	3191.41 (53.19)	1688.03 (28.13)
(4) Often	62	2505.53 (41.76)	1885.58 (31.43)
(5) Very often	67	2510.69 (41.84)	1689.03 (28.15)
Total	656	3338.68 (55.64)	1779.30 (29.66)

5.2 Multilevel Ordinal Regression Model

Several postulates were verified before estimating the multilevel ordinal regression model (Field, 2009). In fact, the identification of extreme values, the homogeneity of variances, the multicollinearity between variables, and the residue independence were validated. Table 4 presents the coefficients of the independent variables studied to test each of the hypotheses used to estimate the effects of the factors determining the frequency of exchanges between the RSOs.

Several variables have a P-value of less than 0.05, thus demonstrating a significant effect on the dependent variable of the frequency of exchanges between the RSOs: Time, AgeAB, SizeAB, ManagementBi, EntrepreneurshipBi, InternationalizationBi, and NetworkingBi. Their hypotheses are therefore supported. Since the probabilities calculated for the other five coefficients, notably TransfertBi, TransfertUni, MarketingBi, InnovationBi, and FinancialBi are all greater than 0.05, theses hypotheses are rejected.

Table 4 Results of the Multilevel Ordinal Regression

Solutions for fixed effects						
Independent variables	Frequency	Coefficient	Standard Error	DF	t value	P-value
Intercept	5.00	-3.3174	0.6962	18	-4.76	0.0002
Intercept	4.00	-2.4256	0.6857	18	-3.54	0.0024
Intercept	3.00	-1.1187	0.6779	18	-1.65	0.1162
Intercept	2.00	-0.3144	0.6760	18	-0.47	0.6474
TransfertBi		0.09634	0.1921	18	0.50	0.6221
TransfertUni		0.03679	0.1725	18	0.21	0.8335
Time		-0.02040***	0.003685	386	-5.54	<.0001
Age AB		0.000603*	0.000254	386	2.37	0.0183
Size AB		0.005637**	0.001761	386	3.20	0.0015
ManagementBi		0.6493*	0.2804	386	2.32	0.0211
EntrepreneurshipBi		0.8956**	0.3144	386	2.85	0.0046
MarketingBi		-0.07039	0.3293	386	-0.21	0.8308
InnovationBi		-0.3355	0.3099	386	-1.08	0.2796
InternationalizationBi		-1.4750*	0.6188	386	-2.38	0.0176
FinancialBi		-0.3658	0.2669	386	-1.37	0.1713
NetworkingBi		0.5502*	0.2573	386	2.14	0.0331

Note: Level of Signification *** P-value < 0.001; ** P-value < 0.01; *P-value < 0.05

The analysis of the results of the multilevel ordinal regression model shows that the P-value of the Time variable is less than 0.001. Consequently, the geographical distance between two RSOs significantly influences the organizational proximity represented by the frequency of exchanges between the RSOs. The negative sign of the coefficient shows an inversely proportional relationship between the geographical distance and the frequency of exchanges, which means that the smaller the geographical distance, the greater the frequency of exchanges between the RSOs. Hence, hypothesis 1 is confirmed. This result corroborates the analysis of the literature which holds that the geographical proximity between the actors creates a climate of confidence and encourages the interactions in order to increase the organizational proximity (Boschma, 2005; Bell & Zaheer, 2007).

In addition, technological proximity is measured by the types of services offered simultaneously among the RSOs. These types of services are represented by the following variables: ManagementBi, EntrepreneurshipBi, MarketingBi, InnovationBi, InternationalizationBi, FinancialBi, NetworkingBi. Only three variables, ManagementBi, EntrepreneurshipBi, and NetworkingBi significantly and positively influence the frequency of exchanges between the RSOs, which supports hypothesis 2: the types of services offered simultaneously between the RSOs positively influence the frequency of exchanges between RSOs. Therefore, when the RSOs both offer the same service to businesses, they tend to exchange more with each other. These results confirm other studies on the interactions between the various forms of proximity (Knoben & Oerlemans, 2006; Castonguay et al., 2014).

However, the InternationalizationBi variable negatively influences the frequency of exchanges between the RSOs. This result may be explained by the fact that a RSO offering the internationalization service probably places more emphasis on exchanging with actors outside the region than inside its region. By exchanging with RSOs from another region or country, the RSO probably has less time to interact with the other RSOs in its region. This would explain the inverse relationship between the technological proximity based on the internationalization

service and the frequency of exchanges between the RSOs of the same region. This result deserves further study in future research.

Cognitive proximity is measured by two variables: unidirectional and bidirectional transfer modes. Unidirectional transfer modes are represented by letters, journals and the Internet, mini-conferences, seminars, and tools while bidirectional transfer modes are represented by counseling, training, and mentoring. The analysis of the results of the multilevel ordinal regression model reveals that the P-values of the TransfertBi and TransfertUni variables are higher than 0.05. Consequently, they do not significantly affect the frequency of exchanges between the RSOs. Therefore, hypotheses 3a and 3b are rejected. Although these hypotheses are rejected, the theory argues that cognitive proximity influences organizational proximity (Petruzzelli et al., 2009). Therefore, it would be relevant to test this concept with another measuring instrument.

Finally, the two control variables, AgeAB and SizeAB, positively influence the frequency of exchanges between the RSOs. Thus, the higher the age and the number of employees in two connected RSOs, the greater the frequency of exchanges between these RSOs. Hence, hypotheses 4 and 5 are supported.

6. Conclusion

To sum up, this study has allowed us to estimate the factors determining the frequency of exchanges between RSOs. Thus, the influences of geographical, technological, and cognitive proximity on organizational proximity were tested in order to reach the general objective of this research. On the one hand, the results obtained from the application of the multilevel ordinal regression model concluded that geographical proximity between RSOs and technological proximity positively influence organizational proximity, which is measured by the frequency of exchanges between RSOs. On the other hand, the results did not show that cognitive proximity, measured by unidirectional and bidirectional modes of transfer, does not influence organizational proximity. This study has certain limitations as to the interpretation of the obtained results. First, this study is only based on the RSOs in the Chaudière-Appalaches region, which does not allow for a generalization of the data. Moreover, the result obtained for the technological proximity based on the internationalization service shows an inverse relationship with the frequency of exchanges between the RSOs, which deserves being studied more. Another limitation of this research is the questionnaire administered to the Chaudière-Appalaches' RSOs. This questionnaire does not include questions related to the frequency of exchanges with RSOs outside of that region. It would therefore be relevant to take this into account in future research.

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Nexus between Energy Consumption and Economic Performance in China

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Abstract: This study analyzes the relationship between energy consumption and economic performance for China using 32 years of annual-frequency data. The urbanization and industrialization are used as control variables because of their role in mediating the relationship between energy utilization and economic output. Empirical results indicate unidirectional Granger causality from economic performance to natural gas consumption in the short run and long run is consistent with conservation hypothesis and unidirectional Granger causality from liquefied petroleum consumption to economic performance in the short run is consistent with growth hypothesis. The nexus between electricity consumption and economic performance, and the nexus between gas consumption and economic performance are consistent with neutrality hypothesis.

Key words: energy consumption; urbanization; industrialization; economic performance; China

JEL codes: C13, C22, O40, Q43

1. Introduction

There are many studies which examine nexus between energy consumption and economic growth but not many which examine the nexus among energy consumption, urbanization, industrialization, and economic growth in China. So, the objective of the paper is to examine the relationship among these variables. So, in this paper, we focus on the Granger causality nexus between the energy consumption, urbanization, industrialization, and economic growth in China from 1983 to 2014. And the dataset from China can provide us a time series data sample and the data are all historic and realistic.

In terms of the literature development, Johnson and Meuller (1973) examined how the metropolitan growth affected the size and structure of consumption. Tang and Croix (1993) used province-level cross-section data to explore the relationship between energy consumption and economic activity in China. Their key finding is that the income elasticity of energy consumption is approximately 1. When a province exports energy or has significant amounts of heavy industry, its energy consumption is higher. However, energy consumption is lower in coastal provinces than inland provinces, but the income elasticity is higher in the rapidly developing coastal provinces.

The literature has identified four possible hypotheses on the possible existence and nature of the nexus between energy consumption and economic performance. The first hypothesis is the conservation hypothesis that means unidirectional causality running from economic growth to energy consumption. On the contrary, the growth

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hypothesis postulates that there is unidirectional Granger causality running from energy consumption to economic growth. The third is the feedback hypothesis, where a bidirectional causality that energy consumption and economic growth are mutually influenced. The fourth view is the neutrality hypothesis of no direct causal links between energy consumption and economic performance.

Table 1 demonstrates the summary of recent literature review for these four hypotheses on the nexus between energy consumption and economic growth.

Table 1 Summary of Recent Literature Review for Energy Consumption and Economic Growth

Study	Methodology	Period	Country	Confirmed hypothesis
Balcilar, Ozdemir, and Arslanturk (2010)	bootstrap granger non-causality	1960-2006	G-7 countries	neutrality
Fuinhas and Marques (2012)	ARDL bounds test	1965-2009	Portugal, Italy, Greece, Spain and Turkey	feedback
Tugcu, Ozturk, and Aslan (2012)	ARDL methodology and causality analysis	1980-2009	G7 countries	growth, feedback, and neutrality
Dergiades, Martinopoulos, and Tsoulfidis (2013)	Granger causality test and A non-linear causality testing	1960-2008	Greece	growth
Bloch, Rafiq, and Salim (2015)	autoregressive distributed lag and vector error correction modeling	1977-2013 and 1965-2011	china	feedback
Odhiambo (2009)	autoregressive distributed lag bounds testing approach and Granger causality	1971-2006	Tanzania	growth
Zhang (2011)	Granger causality	1970-2008	Russia	feedback
Wang et al. (2011)	autoregressive distributed lag bounds testing approach and Granger causality	1972-2006	china	feedback
Yildirim and Aslan (2012)	the bootstrap-corrected causality test	1964-2009	OECD countries	growth, feedback, and neutrality
Herrerias, Joyeux, and Girardin (2013)	panel cointegration techniques	1999-2009	Chinese regions	conservation
Ertuğrul Yildirim, Saraç, and Aslan (2012)	Toda–Yamamoto procedure and bootstrap-corrected causality test	1949-2010	USA	neutrality
Ocal and Aslan (2013)	ARDL approach and the Toda–Yamamoto causality tests	1990-2010	Turkey	growth and neutrality
Lin and Moubarak (2014)	Autoregressive Distributed Lag approach to cointegration and Johansen cointegration	1977–2011	china	feedback
Qazi and Riaz (2008)	bounds-testing approach to cointegration and the Granger causality test	1971-2007	Pakistan	feedback and conservation
Kwakwa (2012)	Johansen test and granger causality test	1971-2007	Ghana	conservation
Muftaudeen and Omojolaibi (2014)	Granger causality test	1980-2011	Nigeria	feedback
Jakovac (2013)	Granger causality test	1952-2010	Croatia	feedback
Dhungel (2014)	Johansen cointegration test and Error Correction Model	1974-2011	Nepal	conservation
Shahbaz, Khan, and Tahir (2013)	ARDL bounds testing approach and Granger causality	1971-2011	china	growth
Yuan et al. (2008)	Johansen cointegration and Granger causality	1963-2005	china	growth and conversation
Pao and Fu(2013)	cointegration test and Granger causality	1980-2010	Brazil	growth, feedback and conversation
Zhao and Wang (2015)	Granger causality	1980-2012	china	feedback
Kasperowicz (2014)	panel least squares method	2000-2012	12 European countries	growth

Obviously, previous empirical studies above have come under scrutiny in distinct literatures, the literatures remain disjointed. The literature on the nexus between energy consumption and economic growth does not consider the effect of industrialization and urbanization. The studies on energy consumption and economic performance just refer to their relationship but not the indirect influence to energy consumption. Although some empirical researches have calculated the empirically the links between energy consumption and GDP, and the nexus between energy consumption and urbanization, they do not examine the causality among GDP, energy consumption, industrialization and urbanization in the same regression function. The exciting literature has not investigated the interaction relationship among energy consumption, industrialization and urbanization and national economic performance. This study begins by explicitly linking our three literatures while providing insights into the interaction relationship among those four variables.

He, Fullerton, and Walke (2017) analyze the relationship between electricity consumption per capita and metropolitan economic growth for Guangzhou, China using 64 years of annual-frequency data. The capital stock is used as a control variable because of its role in mediating the relationship between electricity utilization and economic output. Empirical results indicate unidirectional Granger causality from electricity consumption per capita to metropolitan economic performance in the short run. Meanwhile, He and Gao (2017) estimate the relationship among urbanization, industrialization, gross electricity consumption and metropolitan economic growth with annual data from 1950 to 2013 for Guangzhou in China. Based on Granger Causality Test in VECM, there is Granger causality from gross electricity consumption to GDP for long run and GDP Granger causes gross electricity consumption in short run, while there is bidirectional Granger causality between urbanization to gross electricity consumption and unidirectional Granger causality from industrialization to gross electricity consumption in short run. Additionally, He and Gao (2017b) further build a theoretic model to estimates the relationship between gas consumption and metropolitan economic performance with annual data from 1978 to 2013 for Guangzhou in China. Based on Granger Causality Test with VECM, empirical results show that there is Granger causality from GD P to gas consumption for long run in Guangzhou

The rest of the paper is organized as follows. Section two describes the data and introduces the econometric models. Section three carries out the econometric analysis and then summarizes empirical results. Section four provides the conclusions.

2. Data and Methodology

2.1 Data Source and Descriptive Statistics

Annual frequency data from 1983 to 2014 are used for the empirical analysis. The China statistical yearbooks from 1999-2016 are the source for the all data in the empirical analysis (ZSD, 2016).

Table 2 lists all variables and their definitions used in the empirical analysis.

Table 2 lists summary statistics for every variable included in the sample. As shown by the information contained in Table 2, the sample data exhibit good variability.

2.2 Neo-Classical Production Model

To investigate the relationship among energy consumption, urbanization and economic growth and includes the additional variables EC^h (energy consumption per capita h = PG, PE, PNG, PLPG), we can list the fundamental equation as below:

$$PGDP_t=f(UR_t, PFI_t, IR_t, EC_t^h) \quad (1)$$

Table 2 Mnemonic and Variable Definition

Variable	Mnemonic	Definition	Unit
Industrialization index	IR	ir = (0.5*the proportion of non-agricultural output +0.5*the proportion of non-agricultural employment)*100%	%
Per capita fixed asset investment	PFI	pfi = (the fixed asset investment of town/urban population)*100%	%
Economic Performance	PGDP	Gross domestic product/ total population	Yuan/person
urbanization	UR	ur = (nonagricultural population/total population)*100%	%
gas consumption Per capita	PG	Gross gas consumption/ total population	Stere/person
electricity consumption per capita	PE	Gross electricity consumption/total population	KWh/person
natural gas consumption Per capita	PNG	natural gas consumption/total population	stere/person
Liquefied petroleum gas consumption per capita	PLPG	natural gas consumption/total population	kg/person

Table 3 Descriptive Statistics

	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Observation
IR	66.32094	80.72	50.17	8.603282	-0.046626	1.942966	32
PG	7.31875	14.1	1.3	4.212687	-0.120862	1.652438	32
PE	169.9325	526	13.42	158.6432	0.976087	2.635527	32
PNG	6.218438	25.11	0.14	7.531586	1.371311	3.490193	32
PLPG	6.51875	15.9	0.6	4.63517	0.193879	1.741313	32
PFI	2725.453	10980.2	389.856	3019.367	1.499222	4.016182	32
PGDP	2690.538	7746.2	522.6	2163.826	1.055114	2.884917	32
UR	36.03656	54.77	21.62	10.42298	0.362644	1.751154	32

Where PGDP (economic performance) is the per real GDP, EC (energy consumption) is assumed to replace by the four different types of energy consumption including gas consumption per capita (PG), electricity consumption per capita (PE), natural gas consumption per capita (PNG), liquefied petroleum gas consumption per capita (PLPG), and the other variables are described at the Table 2. The subscript t is the time term, so that this model can also test the short-run dynamical behavior because the analysis above would suggest that the past changes in UR, PFI, IR and EC could contain useful information for predicting the future change of PGDP.

We use a logarithmic form to adjust the variable, so the equation can be written in the following form:

$$LPGDP_t = \beta_0 + \beta_1 LUR_t + \beta_2 LPFI_t + \beta_1 LIR_t + \beta_4 LEC_t^h + u_t, \text{ h = PG, PE, PNG, PLPG} \quad (2)$$

The error term, u_t, is assumed to be independent and identically distributed with a zero mean and a constant variance. If we take first difference into account, the variables in natural logarithms can be interpreted in growth rate, and the coefficient β_j; j = 1, 2, 3, 4 can be interpreted as elasticity estimates.

2.3 Econometric Methodology

2.3.1 Unit Root

The empirical analysis test for existence of a long-run relationship among the variables (estimation of equation (2)), while the vector error correction model could capture the short-run dynamics of the variable. So our target is to test whether these variables have a long run relationship as well as the Grander Causality. Then the process can be conducted by three steps

(1) ADF unit root test

Unit root tests are commonly used to test the stationary property of the time series data, and Augmented

Dickey–Fuller (ADF) unit root test is widely used in related literatures (F. Engle & Granger, 1987). The null hypothesis of ADF implies a presence of a unit root. And it is similar in principle uses the following regression.

$$\Delta X_t = u + \alpha X_{t-1} + \sum_{i=1}^{k} \psi_i \Delta X_{t-i} + \varepsilon_i \quad (3)$$

$$\Delta X_t = u + \beta_t + \alpha X_{t-1} + \sum_{i=1}^{k} \psi_i \Delta X_{t-i} + \varepsilon_i \quad (4)$$

The regression tests the unit root in variable X, where ΔX_{t-i} is the lagged differences to accommodate serial correlation in the errors, ε_i; ψ_i is the parameter to be estimated. The alternate hypothesis in equation (3) implies a mean-stationary process and that in equation (4) implies a trend-stationary process. So we firstly adopt Augmented Dickey–Fuller (ADF) unit root test to investigate the stationary and the order of the integration of the variables.

(2) unit root test with structural break

When there are any structural breaks in the data, the ADF test does not perform well. So the Zivot-Andrews (ZA) unit root test (Zivot & Andrews, 1992) and the Perron's modified ADF test (Perron & Perron, 1989) are the best choice for us to test the unit root with one structural break.

We further estimate the following equation for the Zivot-Andrews (ZA) unit root test:

Model (5): $\Delta X_t = \hat{\mu}^1 + \hat{\theta}^1 DU_t(\hat{\lambda}) + \hat{\beta}^1 t + \hat{\alpha}^1 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^1 \Delta X_{t-i} + \hat{\varepsilon}_t$

Model (6): $\Delta X_t = \hat{\mu}^2 + \hat{\gamma}^2 DT_t^*(\hat{\lambda}) + \hat{\beta}^2 t + \hat{\alpha}^2 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^2 \Delta X_{t-i} + \hat{\varepsilon}_t$

Model (7): $\Delta X_t = \hat{\mu}^3 + \hat{\theta}^3 DU_t(\hat{\lambda}) + \hat{\beta}^3 t + \hat{\gamma}^3 DT_t^*(\hat{\lambda}) + \hat{\alpha}^3 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^3 \Delta X_{t-i} + \hat{\varepsilon}_t$

The break point of equations (5), (6) and (7) is estimated endogenously. We use minimizing BIC to select the number of lags(k). The "hats" only emphasizes the fact that the break location is endogenously estimated one. The break date is selected as the date corresponding to the minimum ADF t-statistic α.

Also, there is another method (the Perron test) for us to use. The perron test uses the following three regression equations:

Model (8): $\Delta X_t = \hat{\mu}^4 + \hat{\theta}^4 DU_t + \hat{\beta}^4 t + \hat{d}^4 D(T_B)_t + \hat{\alpha}^4 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^4 \Delta X_{t-i} + \hat{\varepsilon}_t$

Model (9): $\Delta X_t = \hat{\mu}^5 + \hat{\gamma}^5 DT_t^* + \hat{\beta}^5 t + \hat{\alpha}^5 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^5 \Delta X_{t-i} + \hat{\varepsilon}_t$

Model (10): $\Delta X_t = \hat{\mu}^6 + \hat{\theta}^6 DU_t + \hat{\beta}^6 t + \hat{\gamma}^6 DT_t^* + \hat{d}^6 D(T_B)_t + \hat{\alpha}^6 X_{t-1} + \sum_{i=1}^{k} \hat{c}_i^6 \Delta X_{t-i} + \hat{\varepsilon}_t$

Where

$$D(T_B)_t = \begin{cases} 1, & \text{IF } t = T_B + 1 \\ 0, & \text{IF } t \neq T_B + 1 \end{cases}, \quad DU_t = \begin{cases} 1, & \text{IF } t > T_B \\ 0, & \text{IF } t \leq T_B \end{cases}, DT_t^* = \begin{cases} t - T_B, & \text{IF } t > T_B \\ 0, & \text{IF } t \leq T_B \end{cases}$$

The null hypothesis is the data is non-stationary. In this test the alternative is taken as trend-stationary with a break at time T_B. The asymptotic distributions of $\hat{\alpha}^4$, $\hat{\alpha}^5$, and $\hat{\alpha}^6$are different and so the statistic for testing the hypothesis are different for the three models (8), (9), and (10).

2.3.2 Cointegration Test

In the second step, we perform the Johansen cointegration test (Johansen, 1991) and ARDL approach to cointegration (Pesaran, Shin, & Smith, 2001) if the series are confirmed to be integrated of the same order. The existence of cointegration illustrates that there are more than one long-run equilibrium relationship among the variables, and thereby, Grander Causality can be used among them in at least one-way causality.

Johansen multivariate cointegration test takes the following form:

$$\Delta Y_t = \mu + \Pi Y_{t-1} + \sum_{i=1}^{k} \Gamma_i \Delta Y_{t-i} + \varepsilon_t \quad (11)$$

Where Y_t represents a 5*1 vector of the variables economic performance, urbanization, industrialization index, fixed asset investment and energy consumption; μ is a 5*1 vector of constant terms; the parameters Π and

Γ stand for 5*5 matrix of coefficients; ε_t is also a 5*1 vector of white noise error terms. Based on the maximum likelihood estimation and trace-statistics (λ_{trace}), we can test the null hypothesis of no cointegration against an alternative hypothesis of cointegration (r > 0).

The next stage is to apply the ARDL model based on the standard log linear functional specification with an unrestricted error correction mechanism (UECM). And this model is written by:

$$\Delta(LPGDP_t) = \beta_1 + \sum_{i=1}^{e_1} a_{1i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{f_1} b_{1i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{g_1} c_{1i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{w_1} d_{1i}\,\Delta\left(LEC_{t-i}^{h}\right)$$
$$+ \sum_{i=1}^{j_1} k_{1i}\,\Delta(LIR_{t-i}) + \Psi_1 LPGDP_{t-1} + \Psi_2 LUR_{t-1} + \Psi_3 LPFI_{t-1} + \Psi_4 LEC_{t-1} + \Psi_5 LIR_{t-1} + \varepsilon_{1t}$$

The possible presence of a cointegration is examined based the joint F-statistics. The null hypothesis of no cointegration (H_0: $\Psi_1 = \Psi_2 = \Psi_3 = \Psi_4 = \Psi_5 = 0$) is tested against the no cointegration (H_1: $\Psi_1 \neq \Psi_2 \neq \Psi_3 \neq \Psi_4 \neq \Psi_5 \neq 0$). If the calculated F-statistics fall below the lower critical bound, I(0), the null hypothesis cannot be rejected; in contrary, If the calculated F-statistics exceed the upper critical bound, I(1), the null hypothesis can be rejected in favor of the alternative hypothesis and thus the series are considered to be cointegrated.

2.3.3 Causality Analysis

In the last step, though confirming that the variables are I(1) and cointegrated, we do not reveal the causality directions among these variables. Given this purpose, we use the Granger causality in the VECM framework as fellow:

$$\Delta(LPGDP_t) = \beta_1 + \sum_{i=1}^{m_1} \gamma_{1i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{n_1} \delta_{1i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{p_1} \zeta_{1i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{q_1} \vartheta_{1i}\,\Delta(LEC_{t-i}^{h})$$
$$+ \sum_{i=1}^{s_1} \tau_{1i}\,\Delta(LIR_{t-i}) + \rho_1 ECM_{t-1} + \omega_{1t}$$

$$\Delta(LUR_t) = \beta_1 + \sum_{i=1}^{m_2} \gamma_{2i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{n_2} \delta_{2i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{p_2} \zeta_{2i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{q_2} \vartheta_{2i}\,\Delta(LEC_{t-i}^{h})$$
$$+ \sum_{i=1}^{s_2} \tau_{2i}\,\Delta(LIR_{t-i}) + \rho_2 ECM_{t-1} + \omega_{2t}$$

$$\Delta(LPFI_t) = \beta_3 + \sum_{i=1}^{m_3} \gamma_{3i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{n_3} \delta_{3i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{p_3} \zeta_{3i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{q_3} \vartheta_{3i}\,\Delta(LEC_{t-i}^{h})$$
$$+ \sum_{i=1}^{s_3} \tau_{3i}\,\Delta(LIR_{t-i}) + \rho_3 ECM_{t-1} + \omega_{3t}$$

$$\Delta(LEC_{t-i}^{h}) = \beta_4 + \sum_{i=1}^{m_4} \gamma_{4i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{n_4} \delta_{4i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{p_4} \zeta_{4i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{q_4} \vartheta_{4i}\,\Delta(LEC_{t-i}^{h}) + \sum_{i=1}^{s_4} \tau_{4i}\,\Delta(LIR_{t-i}) + \rho_{41} ECM_{t-1} + \omega_{4t}$$

$$\Delta(LIR_{t-i}) = \beta_5 + \sum_{i=1}^{m_5} \gamma_{5i}\,\Delta(LPGDP_{t-i}) + \sum_{i=1}^{n_5} \delta_{5i}\,\Delta(LUR_{t-i}) + \sum_{i=1}^{p_5} \zeta_{55i}\,\Delta(LPFI_{t-i}) + \sum_{i=1}^{q_5} \vartheta_{5i}\,\Delta(LEC_{t-i}^{h}) + \sum_{i=1}^{s_5} \tau_{5i}\,\Delta(LIR_{t-i}) + \rho_{51} ECM_{t-1} + \omega_{5t}$$

In this model, whereΔ is the first different operator; γ, δ, ζ, τ and ϑ are the coefficient parameter;ω is the error term which is the white noise; m, n, p, q are the optimal lag length captured by the Akaike's information criteria (AIC), ECM_{t-1} is the lagged error correction mechanism from the long-run relationship, and the coefficient parameter ρ is the speed of adjustment to the long-run equilibrium. In addition, the variable LEC is replaced by LPG, LPE, LPLPG, and LPNG, sequentially.

3. Empirical Results

3.1 Unit Root Tests

3.1.1 ADF Test

ADF test is applied to detect the possible presence of unit roots in LPGDP, LEC, LPFI, LIR, and LUR. The null hypothesis of unit root can be rejected in favor of the alternative hypothesis of no unit root when the absolute value of ADF-test statistic is greater than the absolute value of critical value. Table 4 represents that no variable is stationary in their levels since the absolute values of test statistics for each variable are smaller than 5% critical values. On the other hand, LPGDP, LEC, LPFI, LIR, and LUR are stationary process in their first differences because the absolute values of test statistics for each variable are greater than 5% critical values.

Table 4 ADF Unit Root Test Results

levels				first differences			
variables	ADF-test statistics	5% critical values	prob.	variables	ADF-test statistics	5% critical values	prob.
LIR	-2.26	-2.98	0.18	ΔLIR	-3.46**	-2.99	0.01
LPFI	0.99	-2.98	0.99	ΔLPFI	-3.08**	-2.99	0.03
LPGDP	0.28	-2.98	0.98	ΔLPGDP	-3.00**	-2.99	0.04
LUR	-0.42	-2.98	0.91	ΔLUR	-3.57**	-2.99	0.01
LPG	-1.80	-2.98	0.38	ΔLPG	-4.93***	-2.99	0.00
LPE	-2.75	-2.98	0.07	ΔLPE	-4.11***	-2.99	0.00
LPNG	-2.11	-2.98	0.24	ΔLPNG	-9.04***	-2.99	0.00
LPLPG	-2.24	-2.98	0.19	ΔLPLPG	-4.30***	-2.99	0.00

Note: ***indicates significance at 1% level, **indicates significance at 5% level, *indicates significance at 10% level.

3.1.2 Perron's Modified ADF Test with Exogenous Breakpoint

Table 5 reports that all variables are integrated of I(1) and thus stationary in first difference, comparing the absolute values of test statistics for each variable with the 5% critical values.

Table 5 Perron's Modified ADF Unit Root Test Results

levels					first differences				
variables	za-test statistics	lag length	break date	5% critical values	variables	za-test statistics	lag length	break date	5% critical values
LIR	-3.25	0	2003	-4.44	ΔLIR	-5.58***	4	1999	-4.44
LPFI	-1.35	6	2004	4.44	ΔLPFI	-5.39***	5	2004	-4.44
LPGDP	-2.38	7	2005	-4.44	ΔLPGDP	-5.35***	6	2005	-4.44
LPG	-1.54	0	2013	-4.44	ΔLPG	-6.23***	0	2008	-4.44
LPE	-4.5	0	2002	-4.44	ΔLPE	-5.11***	0	1995	-4.44
LPNG	-2.95	0	1997	-4.44	ΔLPNG	-8.90***	0	1999	-4.44
LPLPG	-4.28	6	1995	-4.86	ΔLPLPG	-5.79***	0	1996	-4.86
LUR	-4.21	5	2005	-4.86	ΔLUR	-9.93***	0	1995	-4.86

Note: ***indicates significance at 1% level;**indicates significance at 5% level; *indicates significance at 10% level.

3.1.3 Zivot and Andrews's Test by Break Data Endogenously

The results of Zivot-Andrews are detailed in Table 6 which shows that non-stationary process is found in all series at level with intercept and trend but variables are found to be stationary at first difference. This confirms that all variables except for ΔLPNG are integrated at I(1).

3.2 Cointegration Tests

According to the unit root test results, integration of the variables is of the same order, we continued to test whether these variables are cointegrated over the sample period.

3.2.1 Johansen Cointergration Test

Table 7 shows the results of the Johansen test. Because the trace statistic of none cointegrating equation and at most one cointegrating equation are greater than the 5% critical values, respectively, the test rejects the hypothesis of no cointegration, and indicates that there are more than two cointegrating equations at the 5% significance level, i.e., there is a long-run relationship among LPGDP, LPFI, LIR, LUR and LPG, LPE, LPNG, except for LPLPG.

Table 6 Zivot-Andrews's Structural Break Trended Unit Root Test Results

variables	za-test statistics	lag length	break date	5% critical values
LUR	-3.302	1	1998	-4.8
LPE	-2.6	0	1998	-4.8
LPNG	-3.863	2	1993	-4.8
LPLPG	-2.658	0	1993	-4.8
LPFI	-3.666	1	1994	-4.8
LPG	-1.228	0	1989	-4.8
LPGDP	-4.957**	1	2006	-4.8
LIR	-5.832**	1	1991	-4.8
ΔLPG	-7.506***	0	1988	-4.8
ΔLUR	-9.922***	0	1995	-4.8
ΔLPE	-7.412***	0	2002	-4.8
ΔLPFI	-4.604**	2	2002	-4.8
ΔLPLPG	-5.764***	0	1996	-4.8
ΔLPNG	-4.315	1	1989	-4.8
Δ^2LPNG	-10.08***	2	1992	-4.8

Note: ***indicates significance at 1% level;**indicates significance at 5% level; *indicates significance at 10% level.

Table 7 Johansen Cointegration Test Results

panel A: LPGDP LUR LIR LPFI LPLPG					
Eigeivalue	trace stat	5% critical value	max eigen stat.	5% critical value	Hypothesized number of cointegrating equation
0.857986	102.768	69.81889	58.55482	33.87687	None *
0.552509	44.21317	47.85613	24.12297	27.58434	At most 1
panel B: LPGDP LUR LIR LPFI LPG					
Eigeivalue	trace stat	5% critical value	max eigen stat.	5% critical value	Hypothesized number of cointegrating equation
0.855707	130.0288	69.81889	58.07723	33.87687	None *
0.676241	71.95156	47.85613	33.83266	27.58434	At most 1 *
0.478305	38.1189	29.79707	19.52016	21.13162	At most 2 *
0.411476	18.59874	15.49471	15.90414	14.2646	At most 3 *
0.085904	2.694599	3.841466	2.694599	3.841466	At most 4
panel C: LPGDP LUR LIR LPFI LPE					
Eigeivalue	trace stat	5% critical value	max eigen stat.	5% critical value	Hypothesized number of cointegrating equation
0.818805	122.921	69.81889	51.24543	33.87687	None *
0.631493	71.67559	47.85613	29.9489	27.58434	At most 1 *
0.519763	41.72668	29.79707	22.00424	21.13162	At most 2 *
0.421395	19.72244	15.49471	16.41408	14.2646	At most 3 *
0.104415	3.30836	3.841466	3.30836	3.841466	At most 4
panel D: LPGDP LUR LIR LPFI LPNG					
Eigeivalue	trace stat	5% critical value	max eigen stat.	5% critical value	Hypothesized number of cointegrating equation
0.799667	122.96	69.81889	48.2332	33.87687	None *
0.673006	74.7268	47.85613	33.53443	27.58434	At most 1 *
0.547005	41.19237	29.79707	23.75622	21.13162	At most 2 *
0.420549	17.43615	15.49471	16.37022	14.2646	At most 3 *
0.034907	1.065927	3.841466	1.065927	3.841466	At most 4

Note: ***indicates significance at 1% level;**indicates significance at 5% level; *indicates significance at 10% level.

3.2.2 ARDL Bounds Test Approach to Cointegration

Armed with information about stationarity, we apply the ARDL bounds testing approach to cointegration. The results of the bound test are given in Table 8. From these results, it is clear that there is a long run relationship among the variables when LPG, LPE and LPNG are the dependent variable, because their F-statistic are higher than the upper-bound critical value at the 5% level. However, when LPLPG is the dependent variable, the null hypothesis of no cointegration is accepted.

3.3 Granger Causality Analysis: Based on VECM in the Long Run and Short Run

After we find the existence of cointegration among the variables, the further step is to estimate the short and long run estimates of LPGDP, LPFI, LIR, LUR and LEC. Table 9 reports the short and long run coefficientson (1) LPGDP, LPFI, LIR, LUR, LPLPG; (2) LPGDP, LPFI, LIR, LUR, LPG; (3) LPGDP, LPFI, LIR, LUR, LPE; and (4) LPGDP, LPFI, LIR, LUR, LPNG.

Table 8 Bounds Test Results

Bound test					Diagnostic tests			
estimated model	lag length	F-statistic	5% I(0) Bound critical value	5% I(1) Bound critical value	normality test	ARCH test	Breusch-Godfrey Serial Correlation LM Test	Ramsey RESET Test
PART A								
f(LPGDP/LUR,LPFI,LPLPG,LIR)	(2, 4, 4, 3, 4)	6.617***	2.86	4.01	0.4014	0.1486	0.0001	0.8867
f(LUR /LPGDP,LPFI,LPLPG,LIR)	(3, 4, 4, 4, 4)	1.580	2.86	4.01	0.9017	0.0607	0.0000	0.2020
f(LPFI/LPGDP,LUR,LPLPG,LIR)	(3, 4, 4, 0, 3)	24.063***	2.86	4.01	0.3521	0.9423	0.0006	0.5358
f(LPLPG/LPGDP,LUR,LPFI,LIR)	(4, 3, 4, 4, 3)	3.431	2.86	4.01	0.7196	0.8612	0.0000	0.6966
f(LIR/LPGD ,LUR,LPFI,LPLPG)	(1, 3, 1, 3, 4)	9.032***	2.86	4.01	0.8377	0.4869	0.0007	0.3102
PART B								
f(LPGDP/LUR,LPFI,LPG,LIR)	(4, 2, 4, 4, 4)	3.338	2.86	4.01	0.0276	0.5454	0.0000	0.7259
f(LUR/LPGDP,LPFI,LPG,LIR)	(4, 4, 4, 2, 2)	27.465***	2.86	4.01	0.6669	0.2666	0.0375	0.0554
f(LPFI/LPGDP,LUR,LPG,LIR)	(4, 4, 4, 4, 4)	23.094****	2.86	4.01	0.7248	0.0086	0.0000	0.7105
f(LPG/LPGDP,LUR,LPFI,LIR)	(4, 4, 4, 4, 4)	15.212***	2.86	4.01	0.9597	0.0002	0.0000	0.1666
f(LIR/LPG,LUR,LPFI,LPLPG)	(4, 4, 3, 4, 4)	4.952**	2.86	4.01	0.8768	0.6364	0.0000	0.2777
PART C								
f(LPGDP/LUR,LPFI,LPE,LIR)	(3, 4, 4, 4, 4)	3.391	2.86	4.01	0.0000	0.1511	0.0000	0.4080
f(LUR/LPGDP,LPFI,LPE,LIR)	(3, 2, 3, 4, 4)	4.277**	2.86	4.01	0.6131	0.9160	0.0000	0.0664
f(LPFI/LPGDP,LUR,LPE,LIR)	(4, 2, 4, 3, 4)	30.236**	2.86	4.01	0.8056	0.4964	0.0000	0.1164
f(LPE/LPGDP,LUR,LPFI,LIR)	(1, 3, 0, 4, 0)	4.543**	2.86	4.01	0.9928	0.0106	0.0037	0.1120
f(LIR/LPG,LUR,LPFI,LPE)	(3, 0, 3, 4, 1)	5.045**	2.86	4.01	0.4634	0.5786	0.0033	0.2534
PART D								
f(LPGDP/LUR,LPFI,LPNG,LIR)	(4, 4, 4, 3, 4)	7.262***	2.86	4.01	0.8602	0.4063	0.0003	0.0214
f(LUR/LPGDP,LPFI,LPNG,LIR)	(4, 4, 3, 4, 4)	4.600	2.86	4.01	0.7804	0.4166	0.0002	0.0485
f(LPFI/LPGDP,LUR,LPNG,LIR)	(3, 4, 4, 4, 4)	22.056***	2.86	4.01	0.6757	0.7700	0.0023	0.4880
f(LPNG/LPGDP,LUR,LPFI,LIR)	(4, 4, 4, 3, 4)	7.468***	2.86	4.01	0.5031	0.3870	0.0003	0.0131
f(LIR/LPNG,LUR,LPFI,LPLPG)	(4, 4, 4, 4, 4)	0.940	2.86	4.01	0.7166	0.0193	0.0000	0.1245

Note: ***indicates significance at 1% level;**indicates significance at 5% level; *indicates significance at 10% level.

For panel A, considering the short run, there is unidirectional Granger Causality from LPLPG to LPGDP since the coefficient of LPLPG Granger causing LPGDP is 5.542043at 10% level of significance but the coefficient of LPGDP Granger causing LPLPG is 3.16432, which is non-significant statistically. However, we have no evidence to confirm there exits long run Granger Causality from LPLPG to LPGDP because the coefficient of ECT(-1) is -0.0136, which is non-significant statistically. There is also no evidence to confirm there exits long run Granger Causality from LPGDP to LPLPG because the coefficient of ECT(-1) is -0.341948, which is non-significant statistically. So, PLPG→PGDP in short run is consistent with growth hypothesis.

Table 9 VECMG Ranger Causality Analysis

panel A: LPGDP LUR LIR LPFI LPLPG						
dependent variable	short-run causality					long-run causality
	ΔLPGDP	ΔLIR	ΔLUR	ΔLPFI	ΔLPLPG	ECT(-1)
ΔDLPDP	-	2.606755	9.086756**	0.277811	5.542043*	-0.0136
	-	(0.2716)	(0.0106)	(0.8703)	(0.0626)	(0.1039)
ΔLIR	3.013777	-	5.018558*	6.623645**	3.425568	-0.543006**
	(0.2216)	-	(0.0813)	(0.0364)	(0.1804)	(0.0478)
ΔLUR	0.996066	0.327657	-	1.356717	0.254252	-0.00439
	(0.6077)	(0.8489)	-	(0.5074)	(0.8806)	(0.7127)
ΔLPFI	0.191652	1.718708	0.19604	-	1.820715	-0.378871
	(0.9086)	(0.4234)	(0.9066)	-	(0.4024)	(0.3109)
ΔLPLPG	3.16432	0.555989	10.38872***	1.301608	-	-0.341948
	(0.2055)	(0.7573)	(0.0055)	(0.5216)	-	(0.2771)
panel B: LPGDP LUR LIR LPFI LPG						
dependent variable	short-run causality					long-run causality
	ΔLPGDP	ΔLIR	ΔLUR	ΔLPFI	ΔLPG	ECT(-1)
ΔLPGDP	-	0.205881	2.452442	2.629368	1.308836	-0.209657
	-	(0.9022)	(0.2934)	(0.2686)	(0.5197)	(0.1077)
ΔLIR	4.181699	-	6.63325**	11.37241***	3.710483	-0.008985
	(0.1236)	-	(0.0363)	(0.0034)	(0.1564)	(0.0604)
ΔLUR	0.768784	1.284711	-	11.35789***	20.96932***	-0.018575**
	(0.6809)	(0.5261)	-	(0.0034)	(0.0000)	(0.014)
ΔLPFI	0.245905	0.932253	0.060829	-	3.53558	-0.34682
	(0.8843)	(0.6274)	(0.97)	-	(0.1707)	(0.3976)
ΔLPG	0.250868	10.75552***	8.125201**	0.487335	-	-0.251723
	(0.8821)	(0.0046)	（0.0172）	（0.7837）	-	（0.3096）
panel C: LPGDP LUR LIR LPFI LPE						
dependent variable	short-run causality					long-run causality
	ΔLPGDP	ΔLIR	ΔLUR	ΔLPFI	ΔLPE	ECT(-1)
ΔLPGDP	-	0.627185	4.573933	1.789827	0.068617	-0.024788
	-	(0.7308)	(0.1016)	(0.4086)	(0.9663)	(0.1744)
ΔLIR	1.609489	-	1.884412	5.54524*	0.162959	-0.075015
	(0.4472)	-	(0.3898)	(0.0625)	(0.9218)	(0.7314)
ΔLUR	0.387388	0.38359	-	2.616584	0.551709	-0.043741
	(0.8239)	(0.8255)	-	(0.2703)	(0.7589)	(0.3863)
ΔLPFI	0.795978	17.35102***	0.401018	-	14.43925***	-0.184468***
	(0.6717)	(0.0002)	(0.8183)	-	(0.0007)	0.0000
ΔLPE	2.362413	0.639977	0.281339	3.505977	-	0.151653
	(0.3069)	(0.7262)	(0.8688)	(0.1733)	-	(0.2320)
panel D: LPGDP LUR LIR LPFI LPNG						
dependent variable	short-run causality					long-run causality
	ΔLPGDP	ΔLIR	ΔLUR	ΔLPFI	ΔLPNG	ECT(-1)
ΔLPGDP	-	0.885906	5.710313	6.59551	1.930116	-0.020377
	-	(0.6421)	(0.0575)	(0.037)	(0.381)	(0.6122)

ΔLIR	1.699684	-	3.280237	7.530777**	0.768894	0.039011
	(0.4275)	-	(0.194)	(0.0232)	(0.6808)	(0.3923)
ΔLUR	3.642147	1.398152	-	8.137531**	3.831743	0.031482*
	(0.1619)	(0.497)	-	(0.0171)	(0.1472)	(0.073)
ΔLPFI	1.411134	1.040048	5.46483*	-	5.192553*	-0.381171**
	(0.4938)	(0.5945)	(0.0651)	-	(0.0746)	(0.0101)
ΔLPNG	9.890054***	15.82028***	7.24532**	1.690448	-	-0.578722***
	(0.0071)	(0.0004)	(0.0267)	(0.4295)	-	(0.0001)

Note:* Shows significance at 10% level, ** Shows significance at 5% level, *** Shows significance at 1% level. Values in parenthesis are p-values for Wald test based on Chi-square distribution. Values in square brackets are estimated coefficients of ECM_{t-1}.

For panel B, considering the short run, there is no Granger Causality from LPG to LPGDP since the coefficient of LPG Granger causing LPGDP is 1.308836 which is non-significant statistically and the coefficient of LPGDP Granger causing LPG is 0.250868, which is non-significant statistically. Additionally, we have no evidence to confirm there exits long run Granger Causality from LPG to LPGDP because the coefficient of ECT(-1) is -0.209657, which is non-significant statistically. There is also no evidence to confirm there exits long run Granger Causality from LPGDP to LPG because the coefficient of ECT(-1)is -0.251723, which is non-significant statistically. So, the nexus between PG and PGDP is consistent with neutrality hypothesis.

For panel C, considering the short run, there is no Granger Causality from LPE to LPGDP since the coefficient of LPE Granger causing LPGDP is 0.068617 which is non-significant statistically and the coefficient of LPGDP Granger causing LPE is 2.362413, which is non-significant statistically. Additionally, we have no evidence to confirm there exits long run Granger Causality from LPE to LPGDP because the coefficient of ECT(-1) is -0.024788, which is non-significant statistically. There is also no evidence to confirm there exits long run Granger Causality from LPGDP to LPE because the coefficient of ECT(-1) is 0.151653, which is non-significant statistically. So, the nexus between PE and PGDP is consistent with neutrality hypothesis (C. Zhang et al., 2017; Ge et al., 2017; Lin & Liu, 2016).

For panel D, considering the short run, there is no Granger Causality from LPNG to LPGDP since the coefficient of LPNG Granger causing LPGDP is 1.930116 which is non-significant statistically and the coefficient of LPGDP Granger causing LPNG is 9.890054, which is significant statistically at 1 percent level. Additionally, we have no evidence to confirm there exits long run Granger Causality from LPNG to LPGDP because the coefficient of ECT(-1) is -0.020377, which is non-significant statistically. There is also no evidence to confirm there exits long run Granger Causality from LPGDP to LPNG because the coefficient of ECT(-1)is -0.578722, which is significant statistically at 1 percent level. Hence, PGDP→PNG in short run and long run is consistent with conservation hypothesis but different from the empirical result of Bildirici and Bakirtas'sfinding (2014).

4. Conclusion

To analyze the nexus between energy consumption and economic performance in China, we utilize Granger Causality Test in VECM. The empirical results show that among four different types of energy consumption per capita (electricity consumption per capita, gas consumption per capita, natural gas consumption per capita, liquefied petroleum consumption per capita),there is unidirectional Granger causality from economic performance to natural gas consumption in the short run and long run is consistent with conservation hypothesis and unidirectional Granger causality from liquefied petroleum consumption to economic performance in the short run

is consistent with growth hypothesis. Additionally, the nexus between electricity consumption and economic performance is consistent with neutrality hypothesis. Furthermore, the nexus between gas consumption and economic performance is consistent with neutrality hypothesis.

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Taxation on E-Commerce: Evidence from China's Retail Sector

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Abstract: This paper presents a study on the distribution of tax liability across China's retail industries. Specifically, it deals with three types of taxes: sales tax, value added tax and corporate income tax. Our data includes three categories of firms: pure e-tailers, hybrid retailers and traditional retailers. We find substantial differences in tax liabilities among the three types of retailers. In general, in all three types of taxes, hybrid retailers with e-tail platforms incur lower tax burdens than do traditional bricks-and-mortar retailers. But contrary to conventional wisdom, pure e-tailers actually incur much higher effective tax rates on their incomes than do the other two types of retailers.

Key words: income tax, VAT, sales tax, e-commerce, China
JEL codes: H26, D22, M48

1. Introduction

E-commerce provides a fundamentally new way of conducting commercial transactions: It shrinks the geographic distance between national borders and markets, closes the gap between producers and consumers and diminishes the role of traditional intermediaries to the point where intermediaries are now fading away. E-commerce has far-reaching economic and social implications that affect many facets of life, not the least being the role of government with respect to the issue of taxation.

In the US, the impact of e-commerce on taxation manifests mostly in the erosion of the state's ability to collect use and sales taxes (Bruce & Fox, 2001; Bruce et al., 2009). This issue can be traced back to the US Supreme Court ruling in *Quill vs. North Dakoda*, 504 US 298 (1992). The ruling notes that states can only require firms to collect taxes on their behalf if these firms have a physical presence within state borders. Therefore, e-tailers must only collect sales taxes on the out-of-state purchases of goods supplied within the state, if the e-tailer has a nexus (or a substantial physical presence) within that state. Barring Amazon.com, which is the largest e-tailer in the US with a sizable network of operating facilities in several states, many online retailers have been able to offer more competitive prices because of their immunity from sales taxes.[1] Extensive studies on the impact of this taxation immunity on consumer online purchasing behavior use survey, experimental or real

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[1] The so-called Amazon tax is now imposed in five states: Texas, Pennsylvania, California, New Jersey and Virginia.

purchase data (e.g., Goolsbee, 2000; Ballard & Lee, 2007; Baugh et al., 2014; Einav et al., 2014). Although these authors disagree on the magnitude of the no-sales-tax effect, there is no doubt that e-tailers clearly enjoy a tax-related competitive advantage. More recently, Hoopes et al. (2016) empirically confirms this advantage by examining e-tailers' stock market returns.

In Europe, as most countries do not impose sales taxes, the issue of the tax-base erosion related to e-commerce is centered on the collection of value-added taxes (VATs). Here, the issue of online sales that blur the distinction between goods, services, intangibles and so-called virtual goods (electronically delivered goods) is further complicated by cross-border transactions, and this makes the issue of the VAT all the more complex.

In 1998, in response to the escalating challenges e-tailing poses to taxation, the OECD organized the Ottawa Ministerial Conference "A Borderless World: Realizing the Potential of Electronic Commerce" to start a series of BEPS (base erosion and profit sharing) initiatives. Subsequent to the Ottawa Ministerial Conference, a number of important reports were produced. One such publication is "Electronic Commerce: Taxation Framework Conditions", which was put forth by the OECD Committee on Fiscal Affairs.[2] Since its publication, most countries have come to accept "Taxation Framework Conditions" (hereafter TFC) as providing a sound basis for ongoing work on the taxation of e-commerce. This document proposes five broad taxation principles and recommends they be applied to e-commerce. They are neutrality, efficiency, certainty and simplicity, effectiveness and fairness, and flexibility.

This paper tests the TFC principle of neutrality. To accomplish this, we use income statement data on both publicly listed conventional Chinese bricks-and-mortar retailers and on e-tailers. By neutrality, the TFC means that taxation seeks to be neutral and equitable between forms of e-commerce and between conventional and electronic forms of commerce; this principle requires that business decisions be motivated by economic rather than tax considerations. Therefore, commercial entities that operate under similar conditions and carry out similar transactions should be subject to similar levels of taxation. The neutrality principle is also pursued as a major US legislative initiative. The current version of the Marketplace Fairness Act would give states the right to require e-tailers to collect sales taxes on the online purchases of their out-of-state customers.

The taxation-neutrality issue is particularly important to China, which has seen spectacular e-commerce growth over the past two decades and has become the world's largest e-commerce country. According to a McKenzie report, between 2003 and 2011, China's annual e-commerce growth rate was a staggering 120%.[3] Figure 1 shows that the compound annual growth rate of China's e-tailing market has posted the world's highest growth rate. In terms of dollar amount, by the end of 2015, China's total e-commerce revenues reached RMB 3.2 trillion (approximately US$ 500 billion), accounting for about 12% of total retail activities in terms of revenues. By the end of 2016, this ratio is expected to climb to 20%.[4] Apparently, a level playing field among the different forms of retailing is called for if e-commerce, and traditional commerce for that matter, is to sustain long-term growth.

Currently, however, our paper reveals that China decidedly lacks such a level playing field, as do the US and many European countries. The tax liability differentials among the three types of retailers we examined — are substantial on all three types of effective tax rate (ETR) measures with respect to sales tax, the VAT and corporate income tax, respectively. As expected, in all three types of taxes, hybrid retailers with e-tail platforms generally

[2] http://www.oecd.org/tax/consumption/1923256.pdf.
[3] "China's e-tail revolution", McKenzie Report, March, 2013.
[4] From China National Statistics Bureau.

have lower tax burdens than do traditional bricks-and-mortar retailers. But contrary to conventional wisdom, pure e-tailers actually incur much higher ETRs on their income taxes than do both hybrid and traditional bricks-and-mortar retailers. We venture to attribute this to the fact that all of the pure e-tailers in our sample are listed on US stock exchanges, and are, thus, subject to strict regulations and information disclosure requirements.

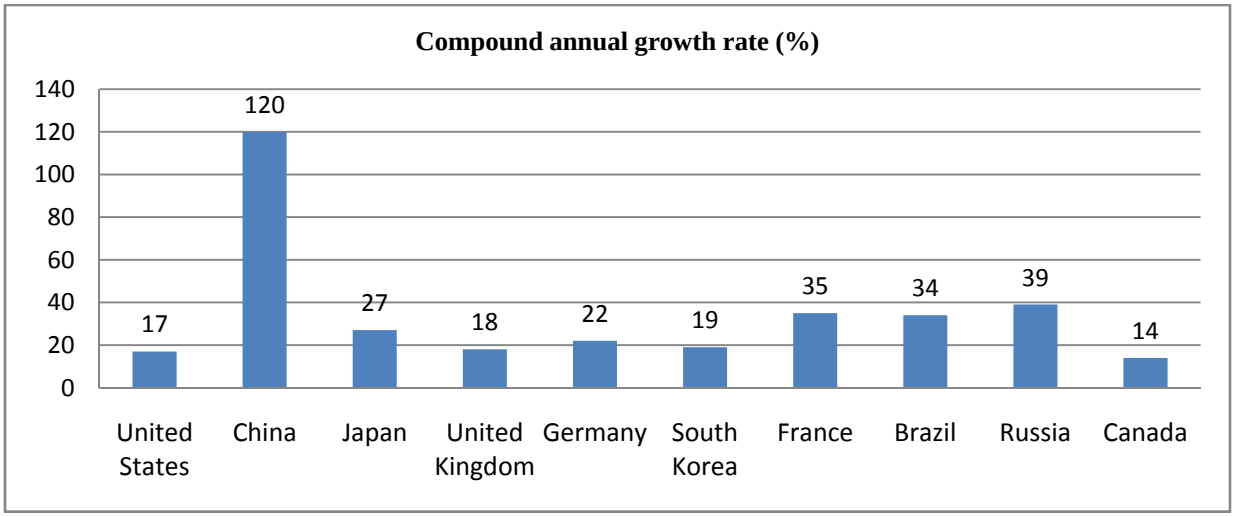

Figure 1 Compound Annual Growth Rate

Note: 1. Excluding online travel. 2. Japan's compound annual growth rate covers 2005-2011.

Data resource: Euromonitor; Forrester; US Census Bureau; Japanese Ministry of Economy, Trade, and Industry; iResearch; McKinsey Global Institute analysis.

Figure 1 presents the compound annual growth rate in different countries from 2003 to 2011.

China is one of the few countries in the world that imposes both sales taxes and a VAT on consumption. A VAT is levied on "above scale" companies at a rate of 17%, while sales taxes are usually levied on small- and medium-sized enterprises at a rate of 3% to 5%. In addition to these two types of taxes, there are also consumption taxes, which are government policy instruments intended to influence the consumption of certain products, for example, cigarettes, cosmetics, luxuries, automobiles, gasoline and other energy-intensive products. The income statements of companies listed on China's stock exchanges usually disclose their VAT information. They also disclose sales taxes, consumption taxes and other "beyond-price" taxes that are lumped together and reported on their income statements, which also disclose income taxes paid. We use information on these three types of taxes to come up with the ETR measures that assess the tax liability neutrality issue. Therefore, our ETR numerators are the three types of taxes (sales, VAT, and consumption), and the denominators are the sales revenues and the operating cash flow, both of which are intended to reflect the scale of companies' operations.

ETRs are usually studied in the context of income taxes in the literature (Plesko, 2003; Richardson & Lanis, 2007). But obviously the VAT ETR, the sales-tax ETR and the income-tax ETR are inherently inter-related, as a higher VAT ETR is likely to lead to a lower income-tax ETR. Therefore one of the main contributions of our paper lies in the fact that we address the taxation-neutrality issue in a comprehensive manner that takes into account of effect of all three types of taxes on all three types of retailers.

Our paper's other contribution touches upon another TFC principle regarding effectiveness and fairness in taxation. The effectiveness-and-fairness principle concerns the minimization of tax avoidance and evasion, while keeping counteracting measures proportionate to the risks involved. This is because our main finding that there

exist consistent lower tax burdens on all three types of ETRs on the part of hybrid retailers with online platforms leads to the tantalizing clue that tax avoidance and evasion might emerge as a possible explanation. Thus, in a way, our paper is also related to the expanding tax-avoidance-and-evasion literature (Slemrod, 2004; Desai & Dharmapala, 2006). Tax avoidance and evasion are certainly not news to China, as casual observations from experiences in the country would easily reveal, especially with respect to the VAT and sales tax collections.[5] Regarding corporate income tax avoidance and evasion in China, Cai and Liu (2009) present systematic evidence of its rampant existence, which is partly driven by intense product market competition. Our taxation study of the retail sector potentially reinforces their results by suggesting e-commerce as a possible factor in driving tax avoidance and evasion.

In terms of policy implications, our paper apparently points in two directions. First, it is about time the issue of equalizing tax liabilities between traditional bricks-and-mortar retailers and e-tailers is addressed so as to level the retail playing field. This probably calls more for reducing the tax burden on the former, as the overall corporate tax burden in China is already very high.[6] Second, it is also about time the lax taxation enforcement on e-tailers is strengthened, as this sector has already passed its infancy stage and has become a major force in retail today, accounting for more than 12% of total retail sales.

The rest of the paper is organized as follows. Section 2 discusses our sample data, model specifications and empirical strategies. Section 3 presents our main results. Section 4 provides concluding remarks and offers policy implications.

2. Data and Methodology

2.1 Data and Sample

We begin with 82 publicly traded retail firms in mainland China that were listed by the China Securities Regulatory Commission (CSRC) under the industry classification as of June 2014. One *ST firm is excluded from our sample as it had been losing money for three consecutive years and, therefore, was already facing the risk of being delisted.[7] For comparison purposes, we further include five pure e-commerce retailors listed on US stock exchanges,[8] thereby increasing our sample to a total of 86 retail firms.

We classify our sample firms into three categories, depending on the extent to which each one is involved in e-commerce: pure e-tailers, hybrid retailers and traditional retailers. The five firms listed in the US are pure e-tailers whose revenues are generated from online sales. We define a firm as a hybrid retailer if it has both online sales and retails offline in bricks-and-mortar outlets. We collected this information from a firm's official websites and determined whether it operates an independent online retail platform. If it does, then it is classified as a hybrid retailer. Otherwise, it is classified as a traditional retailer. Our findings show that there are 29 firms that fit under the category of hybrid retailer and 52 fit under the category of traditional retailer.

[5] For example, when dining out in China, it is common to encounter the question from the restaurant as to whether an invoice is required. A small discount of the bill would result if the answer is no. In this instance it is a clear indication that the VAT or the sales tax is evaded.

[6] China ranks fifth among nations on the Forbes Tax Misery Index.

[7] ST means special treatment and usually indicates that such a firm is in financial trouble. The CSRC will put an asterisk before ST, if the firm has been unprofitable in three consecutive years, and it will be delisted if the loss continues. This is a special arrangement in China to protect investors by drawing their attention to the firm's financial situation.

[8] The five companies listed in the US use the ticker symbols JMEI.N, VIPS.N, JD.O, DANG.N and BABA.N. These firms operate in China and pay taxes under Chinese tax law, thus, making them comparable to firms listed in China.

Our sample period is from June 2014 to September 2015. This allows us to synchronize our study with the earliest data available for the five e-tail firms listed in the US. This permits us to collect 516 firm-quarter observations in total under study. The data are all acquired from companies' quarterly income statements, which are found on Wind and Yahoo Finance, respectively, for China- and US-listed firms.[9]

2.2 Dependent Variables

The Effective Tax Rate (ETR) for each firm category is the dependent variable of interest. The literature offers various definitions of corporate ETRs (Plesko, 2003). They can generally be classified into two categories: marginal ETRs and average ETRs. Marginal ETRs are defined as the tax change divided by the corresponding change in income. Average ETRs are defined as the tax liability divided by income. When choosing between the two types of ETRs, Gupta and Newberry (1997) suggest that looking at the marginal ETRs is best when analyzing the incentives for new investments, while examining the average ETRs is appropriate when looking at how the tax burden is distributed across firms. This paper uses the average ETRs because our aim is to investigate the variations in tax burdens across different types of firms in the retail industry.

By definition, the average ETR is equal to the tax liability divided by revenue. In practice, the literature is not conclusive on the best variables be use when measuring tax liability (Shevlin & Porter, 1992; Wilkie & Limberg, 1993; Plesko, 2003). In China, the potential choices include income tax, sales tax and the VAT. For income tax, there is some debate as to whether this should be adjusted by subtracting the deferred tax expense. However, some studies do not adjust for deferred tax expenses (Porcano, 1986; Gupta & Newberry, 1997), while others do (Stickney & McGee, 1982; Omer et al., 1993). To be robust, we use both the adjusted and unadjusted income tax in the numerator in addition to sales tax and the VAT. For the denominators, we use both total sales and cash flow from operations as two alternative measures of the scale of operations. Thus, we have two denominators and four numerators, resulting in a combinatorial total of eight versions of the ETR definition. Table 1 shows the detailed definitions of our ETR measures.

2.3 Independent Variables

We add a set of variables to explain the variations in the ETRs. As discussed in Section 2.1, we classify the sample firms into three categories: pure e-tailers, hybrid retailers and traditional retailers. Thus, we use the variables *Pure* and *Hybrid* to define the first two types of firms, with traditional retailers treated as the reference point.

Although our 86 sample firms are all classified by the CSRC as being in the retail industry, their product lines and business portfolios significantly vary. Of these 86 firms, 27 are general merchandise retailers; 39 firms are conglomerates that are also involved in other types of businesses, such as real estate, hoteling and finance; and the 20 remaining firms are specialty retailers that focus on one specific type of business, such as pharmaceuticals, electronics, etc. Thus, we categorize our sample retail firms into diversified, specific and general merchandise. We use the dummy variables *Diversified* and *Specific* to represent the first two types of retail businesses and use general merchandise retail firms as the reference point.

Following customary practice (Richardson & Lanis, 2007), we further include a set of firm-specific variables to control for factors that may contribute to variations in the ETR, including age (*Listing Age* and *Firm Age*, measuring the years since the firm was listed or established, respectively); firm size (*Ln(TA)*), calculated as the natural logarithm of total assets; firm leverage (*Leverage*), measured by the firm's total debt divided by its total

[9] Wind is a database that provides financial information on publicly traded companies in China, similar to Bloomberg in the US.

assets; firm capital intensity (*Fixed*), measured by the firm's fixed assets divided by its total assets; firm intangibility (*Intangible*), measured by the firm's intangible assets divided by its total assets; and firm profitability (*ROS*), measured as earnings before interest and taxes (EBIT), divided by total sales. We use these control variables because they help us account for any variations that may be firm specific.

Table 1 Variable Definitions

Dependent variable: ETRs	
Incometax1	Income tax/total sales
Incometax2	Income tax/cash flow from operations
Incometax3	(Income-tax-deferred tax expense)/total sales
Incometax4	(Income-tax-deferred tax expense)/cash flow from operations
Salestax1	Sales tax/ total sales
Salestax2	Sales tax/ cash flow from operations
VAT1	Valued added tax/total sales
VAT2	Valued added tax/cash flow from operations
Independent variable	
Pure	An indicator of whether the firm is a pure e-commercial firm
Hybrid	An indicator of whether the firm is a hybrid e-commercial firm
Diversified	An indicator of whether the firm has a diversified product line
Specific	An indicator of whether the firm focuses on a specific type of product
Listing Age	The number of years since the firm was listed
Firm Age	The number of years since the firm was established
TA	Total assets
Leverage	Total Debt/Assets
Fixed	Fixed assets/Total assets
Intangible	Intangible Assets/Total assets
ROS	Earnings before interest and tax (EBIT)/total sales

2.4 Model Specification

To investigate the determinants of the ETRs and, particularly, to determine whether e-commerce firms incur different ETRs, we postulate the following regression model:

$$ETR_{i,t} = \alpha_i + \beta_1 * Pure_{i,t} + \beta_2 * Partial_{i,t} + \beta_3 * Diversified_{i,t} + \beta_4 * Specific_{i,t} + \beta_5 * Age_{i,t} + \beta_6 * Ln(TA)_{i,t} + \beta_7 * Leverage_{i,t} + \beta_8 * Fixed_{i,t} + \beta_9 * Intangible_{i,t} + \beta_{10} * ROS_{i,t} + time\ fixed\ effect + \epsilon_{i,t} \quad (1)$$

where the dependent variable, $ETR_{i,t}$, is the effective tax rate of firm *i* in quarter *t*. The independent variables include proxies for the firm type (*Pure*, *Hybrid*, *Diversified* and *Specific*), the firm age (*Listing Age or Firm Age*), the firm size (*Ln(TA)*), the firms' capital structure (*Leverage*), capital intensity (*Fixed*), capital intangibility (I*ntangible*), and profitability (*ROS*), in quarter *t*. We further include a set of dummies to represent each quarter to control for the time fixed effect. All variable definitions can be found in Table 1. We run OLS regressions instead of panel regressions, since the firm-type variables, such as *Pure*, *Hybrid*, *Diversified* and *Specific*, are time invariant.

3. Empirical Results

3.1 Summary Statistics

Table 2 presents some summary statistics of all variables used in this paper. Panel A reports the means of our dependent variables, that is, the various ETR measurements. We report the ETRs separately for traditional retailers, hybrid retailers and pure e-tailers. The means of *Incometax1* for these three types of firms are 1.33%, 1.05% and 2.12%, respectively. It can immediately be seen that the mean ETRs measured by *Incometax1* of the hybrid retailers are the lowest among the three groups. A *t*-test shows that the difference between hybrid retailers and other firms is significant at 1%. Similarly, pure e-tailers have the highest ETRs in the sample. Also, the *t*-test suggests that the ETRs of pure e-tailers are significantly higher than the ETRs other firms.[10] The results for other income tax rate measurements are quite similar. Regrettably, since SEC regulations do not require firm disclosure of sales taxes and the VAT, this data is not available for the pure e-tailers listed in the US. Thus, we can only compare the ETRs in terms of sales taxes and the VAT between traditional retail firms and hybrid retailers.

In terms of *Salestax1*, which is measured by the sales tax scaled by total revenue, hybrid retailers have an average sales tax rate of 0.95%, while the rate for traditional retail firms is 1.3%. A *t*-test suggests the difference is significant at 1%. The results are similar for *Salestax2, VAT1* and *VAT2*. Overall, we find significant differences in ETRs among the three types of firms. Pure e-tailers have the highest ETRs and hybrid retailers have the lowest.

These sharply contrasting results are quite noteworthy, as one would expect that firms conducting e-commerce business to have lower ETRs because revenue authorities may not heavily regulate the e-commerce proportion of firms' activities. Although hybrid retailers are found to have the lowest ETRs, the pure e-tailers on the other hand have the highest income-tax-related ETRs. We attribute this particular finding to the SEC's strict supervision of its listed foreign firms. Thus, foreign firms listed in the US probably have higher information transparency compared with other firms in our sample; this no doubt reduces incentives for tax avoidance.

Panel B reports the descriptive analysis of the independent variables. *Pure* and *Hybrid* have the mean of 5.8% and 34.9%, respectively, indicating their respective portion in the sample. Around 45% of the 86 retail firms in the sample (39 firms in total) are involved in multiple lines of business, while 20 firms (23.3% of the 86 firms) focus on a specific area of retail business. A typical firm has been listed for 14 years, with a relative large standard variation of 7 years. The average firm has been established for 19 years, it is also relatively large, as the mean of firms' total assets is RMB 12.9 billion. The mean of firms' leverage is 54.5%. Fixed and intangible assets account for 20.6% and 4.8% of total assets, respectively. The average ROS is 9.1%, indicating that our sample firms are quite profitable.

3.2 Regression Results

Table 3 reports the pooled cross-sectional OLS regression results of income taxes on firm characteristics, based on equation (1). Time fixed effects are controlled to capture the time effects on the ETRs. We use the Huber-White estimator of standard errors to obtain robust standard errors in our regressions (Wooldridge, 2002).

Pure has a significant and positive impact on income tax while *Hybrid* has a significant and negative impact on income tax in three of the four regressions. This is consistent with the univariate analysis in Table 2, thus confirming that the pure e-commerce firms, in our sample, have the highest income tax rates and the hybrid e-commercial firms have the lowest income tax rates.

[10] The t-test results are not shown in the tables to save space and results are available upon request.

Table 2 Summary Statistics

Panel A. ETRs

ETRs	Traditional	Hybrid	Pure	Whole sample
Incometax1	0.0133	0.0105	0.0212	0.0128
Incometax2	0.0111	0.0089	0.1433	0.0181
Incometax3	0.0123	0.0115	0.0212	0.0125
Incometax4	0.0104	0.0098	0.1433	0.0179
Salestax1	0.0130	0.0095	N/A	0.0110
Salestax2	0.0113	0.0082	N/A	0.0095
VAT1	0.0277	0.0214	N/A	0.0239
VAT2	0.0232	0.0177	N/A	0.0199

Panel B. Independent variables

Variables	N	Mean	std	p25	p50	p75
Pure	86	0.058	0.234	0	0	0
Hybrid	86	0.349	0.477	0	0	1
Diversified	86	0.453	0.498	0	0	1
Specific	86	0.233	0.423	0	0	0
Listing Age (years)	516	14.419	7.008	7	18	20
Firm Age (years)	516	19.350	5.464	16	21	22
TA (billion yuan)	516	12.921	31.320	2.748	4.500	11.167
Leverage	516	0.545	0.197	0.410	0.549	0.711
Fixed	516	0.206	0.154	0.078	0.165	0.291
Intangible	516	0.048	0.046	0.015	0.029	0.073
ROS	516	0.091	0.392	0.026	0.050	0.084

Table 2 presents the descriptive statistics of our sample. Panel A reports the mean of the various ETRs of the different types of firms. The last column presents the mean of the whole sample. N/A means data for *salestax1*, *salestax2*, *VAT1*, *VAT2* are not available for pure e-commerce firms. Panel B reports the mean, standard deviation, 25th percentile, median and 75th percentile of the independent variables. Definitions of the variables are listed in Table 1.

Diversified negatively affects the income tax rate and the impacts are very significant in all columns, indicating that the diversified firms tend to incur lower effective income tax rates. This may be due to these firms' ability to organize their activities around the objective of tax savings. *Specific* has a significant and negative impact on *Income tax 1* and *Income tax 3*, while the effect is insignificant on the other measurements of the income tax rate. Firm age, measured by *Listing age*, is positively related with *Income tax 3* and *Income tax 4*, which have incorporated adjustments for deferred tax payments.[11] Thus, older firms tend to incur higher ETRs. The impact of firm size, as measured by *Ln (TA)*, on the income tax rate is only positive and significant when we use *Incometax3* as the ETR measurement. These findings appear to be partly consistent with the political cost theory of Watts and Zimmerman (1986), who argue that larger firms tend to be the largest victims of governments' regulatory actions, and thus these actions have greater political costs. To avoid the political costs associated with tax avoidance, these firms probably comply more strictly with the tax code and, therefore, incur higher ETRs.

We use *Leverage* as a proxy for the firms' capital structure. The results indicate that *Leverage* has a significant and negative relationship with the income tax rate at the 5% significance level. This is most likely

[11] We use the alternative definition of firm age in Table 4 for robustness check.

because interest expenses are tax deductible. As a result, firms that are more highly leveraged would have higher tax-deductible interest expenses and, hence, lower ETRs. This is generally consistent with the findings of Stickney and McGee (1982) and Gupta and Newberry (1997).

Table 3 Regression Results

	Incometax1	Incometax2	Incometax3	Incometax4
	(1)	(2)	(3)	(4)
Pure	0.006	0.134***	0.007*	0.135***
	(1.257)	(5.424)	(1.734)	(5.478)
Hybrid	-0.005**	-0.004*	-0.002**	-0.002
	(-2.477)	(-1.759)	(-2.123)	(-1.124)
Diversified	-0.004**	-0.007**	-0.003**	-0.006*
	(-2.158)	(-2.228)	(-2.335)	(-1.874)
Specific	-0.007***	0.000	-0.006***	0.001
	(-2.997)	(0.038)	(-3.728)	(0.309)
Listing Age	0.000	0.000	0.000**	0.000**
	(1.597)	(1.524)	(2.435)	(2.048)
Ln(TA)	0.003**	0.002	0.003***	0.002
	(2.530)	(0.768)	(3.081)	(0.715)
Leverage	-0.031***	-0.031**	-0.031***	-0.030**
	(-5.811)	(-2.153)	(-7.423)	(-2.113)
Fixed	0.002	0.017*	-0.001	0.013*
	(0.284)	(1.918)	(-0.134)	(1.683)
Intangible	0.015	0.004	0.026**	0.013
	(0.844)	(0.128)	(2.000)	(0.416)
ROS	0.002	-0.002	0.003	-0.002
	(0.659)	(-0.997)	(0.866)	(-0.795)
Constant	-0.033	-0.021	-0.032*	-0.020
	(-1.314)	(-0.358)	(-1.682)	(-0.350)
Time fixed effect	YES	YES	YES	YES
N	516	516	516	516
Adjusted R^2	0.093	0.438	0.190	0.473
F	4.814	5.626	6.607	5.760

This table presents the OLS regression results, using income tax as the ETR measurement. All variables are defined in Table 1. Time fixed effects are controlled. All reported t statistics are based on Huber-White robust standard errors. *, **, and *** indicate that the coefficients are significant at the 10%, 5%, and 1% level, respectively.

We also use the other four ETR measurements as dependent variables, including two sales tax rates and two VAT rates. Table 4 reports the pooled cross-sectional OLS regression results of these ETRs on firm characteristics, based on equation (1). Similar to Table 4, time fixed effects are controlled and the *t*-tests are based on the Huber-White robust standard errors. Since the income statements of five pure e-tailers do not disclose information on sales tax and VAT, we do not include them in this analysis.

Our findings show that *Hybrid* has a negative and significant impact on all four ETRs. This is consistent with the results in Tables 2 and 3. Thus, judging from all the ETR measurements, hybrid firms have consistent and significantly lower effective tax rates. In contrast, diversified firms only have a marginally significant lower *VAT2*;

this differs from the impact of income taxes. This may be because the sales tax and the VAT are not easily manipulated, and diversified firms may not have much of an edge in organizing internal activities for tax-saving purposes. Specific firms incur lower sales taxes while their VAT burdens are not significantly different from those of other types of firms. For robustness checks, we use an alternative measurement of firm age, which is defined in Table 4 as the years since the firm's establishment.[12] Firm age has a very significant and positive impact on both the sales tax and the VAT. This is consistent with our hypothesis that revenue authorities tend to have more experiences in dealing with older firms. In contrast, firm size, as measured by Ln(TA), has a negative impact on the sales tax and *VAT1*. This is different from the results on income taxes; here, larger firms incur lower sales taxes. The *ROS* is found to be positively related with the sales tax and the VAT in all three regressions. Thus, more profitable firms have higher ETRs in both the sales tax and the VAT. This may be because, in China, profitable firms are usually the intensive targets of revenue authorities.

Table 4 Regression Results

	Salestax1	Salestax2	VAT1	VAT2
	(1)	(2)	(3)	(4)
Hybrid	-0.003***	-0.003***	-0.005**	-0.005**
	(-4.552)	(-3.113)	(-2.061)	(-2.425)
Diversified	0.000	0.002	-0.004	-0.004*
	(0.401)	(1.041)	(-1.448)	(-1.721)
Specific	-0.009***	-0.007***	0.001	0.004
	(-10.496)	(-5.759)	(0.366)	(1.153)
Firm Age	0.000***	0.000***	0.001**	0.001**
	(3.934)	(4.043)	(2.191)	(2.516)
Ln(TA)	-0.001***	-0.000	-0.001	-0.000
	(-3.950)	(-0.795)	(-1.249)	(-0.180)
Leverage	-0.000	-0.001	-0.008	-0.012
	(-0.105)	(-0.296)	(-0.852)	(-1.452)
Fixed	-0.005	-0.007	0.005	0.008
	(-1.410)	(-1.489)	(0.505)	(0.983)
Intangible	0.004	0.001	0.018	-0.007
	(0.473)	(0.120)	(0.691)	(-0.299)
ROS	0.002**	0.002	0.017***	0.005***
	(2.052)	(1.229)	(12.507)	(3.327)
Constant	0.037***	0.018**	0.058**	0.028
	(5.842)	(2.036)	(2.261)	(1.103)
Time fixed effect	YES	YES	YES	YES
N	486	486	486	486
Adjusted R^2	0.187	0.075	0.138	0.083
F	32.054	16.066	24.185	6.271

This table presents the OLS regression results, using the sales tax and the VAT as the ETR measurements. All variables are defined in Table 1. Time fixed effects are controlled. All reported t statistics are based on Huber-White robust standard errors. *, **, and *** indicate that the coefficients are significant at the 10%, 5%, and 1% levels, respectively.

[12] The results using listing age are similar.

4. Conclusions

This paper studies the issue of the distribution of the tax liability in the retail industry in China and, in particular, as it relates to the fast development of e-commerce. Our data includes three categories of firms: pure e-tailers, hybrid retailers and traditional retailers. The pure e-tailers in our sample are all publicly listed in the US. We include a comprehensive set of ETR measurements to account for the tax liabilities in the three types of taxes commonly paid by corporate China: income taxes, the VAT and the sales tax.

Our investigation reveals that, currently China, as in the US and many European countries, decidedly lacks a level playing field in taxation between e-commerce and the traditional bricks-and-mortar type of business operation. The tax liability differentials are substantial among the three types of retailers we examined. In general, in all three types of taxes, hybrid retailers with e-tail platforms have lower tax burdens than do traditional bricks-and-mortar retailers. But contrary to conventional wisdom, pure e-tailers actually incur much higher income-tax ETRs than do the other two types of retailers. We hypothesize that this might well be due to the fact that all the pure e-tailers in our sample are listed on US stock exchanges, which are subject to more strict regulations and information disclosure requirements.

Our paper also highlights the importance of the TFC's effectiveness and fairness principle in the age of e-commerce. Here, we reveal that hybrid retailers with online platforms incur consistently lower tax burdens across all three types of ETRs. This leads to the tantalizing clue that tax avoidance and evasion might be at play, emerging as a possible explanation for the differences in the reported ETR burdens.

In terms of policy implications, our paper points in two directions: First, it is important to address the issue of equalizing tax liabilities between traditional bricks-and-mortar retailers and t e-tailers so as to level the taxation playing field. We argue that this means reducing the tax burden on traditional bricks-and-mortar retailers rather than increasing taxes on e-tailers. The overall tax burden is already very high in corporate China. Second, it is also time to strengthen the lax taxation enforcement on e-tailers, as this sector has already passed its infancy stage and has become a major force in retailing today.

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Development of Entrepreneurial Attributes: A Case Study of Undergraduates in BSc Agribusiness Management Degree Program

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Abstract: Economists describe entrepreneurship in diverse ways. Some economists believe entrepreneur is a person who is willing to bear the risk of a new venture if there is a potential to make profit. Others define entrepreneurs as innovators. However, most of economists agree that entrepreneurship plays a vital role in stimulating economic growth and generating employment opportunities in all societies. Therefore government should generate new policies to foster entrepreneurship as it is an essential for job creation and economic growth. If government introduces appropriate programs to develop entrepreneurial characteristics (EnC) of undergraduates, it will help to develop job creators rather than job seekers. One such course is BSc Agribusiness Management (BSc ABM) degree program introduced by Faculty of Agriculture, University of Ruhuna. Therefore, this study attempted to analyze the development of EnC of students and to identify the student's attitudes towards entrepreneurship. 27, 41, 28 and 36 final, third, second and first year BSc ABM undergraduates, respectively were selected randomly as sample to collect data. Data were collected by administrating a structured questionnaire. Descriptive statistics and ANOVA were used to analyze the data. Results revealed that the final and third year students have illustrated high EnC as compared to first and second year students. Further, third and final year students showed the strong managerial competencies and higher desire for independency than first and second year students while there was no significant differences between first year to final year students regarding key personal attributes, creativity, need for achievement and self-confidence. Moreover, final year students possess the highest risk taking ability among the sample. An attempt was made to identify the students' wiliness of new venture creation. It was observed that 41%, 68%, 29% and 25% final, third, second and first year undergraduates, respectively prefer to start own business after graduation. Majority prefer to find a job in an existing organization. The study will be supportive to recognize attitudes toward entrepreneurship among the undergraduates and will provide suggestions for increasing the role of universities in improving student's entrepreneurial characteristics and developing policies in order to inspire entrepreneurial initiatives among students.

Key words: agribusiness management; entrepreneurship; key attributes; undergraduates

JEL codes: M13

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1. Introduction

Entrepreneurship plays a vital role in stimulating economic growth and generating employment opportunities and poverty reduction in all societies (Holt, 1998). Some economists believe entrepreneur is a person who is willing to bear the risk of a new venture if there is a potential to make profit. Others define entrepreneurs as innovators; a person who markets his innovation. However entrepreneurs possess a mindset which will add different values to resources and opportunities than does the general population and they have a mindset which encourages creativity and innovation, changing the game and being unique (Shane & Venkataraman, 2000).

Richard Cantillon, a French economist of Irish descent, is credited with giving the concept of entrepreneurship a central role in economics. In his *Essai sur la nature du commerce en general* (Essay on the nature of the general trade), published for posthumously in 1755, Cantillon described an entrepreneur as a person who pays a certain price for a product to resell it at an uncertain price, thereby making decisions about obtaining and using resources while consequently assuming the risk of enterprise.

Entrepreneur is a vital person in any economy. The number of entrepreneurs determine success of each society and economy in any country. Therefore, many developed and developing countries pay attention to backing entrepreneurs. Different types of projects and programmes are carried out to expand entrepreneurship in every country including Sri Lanka. However, the specific projects and programmes designed at developing the entrepreneurship among the farmers of subsistence agriculture in Sri Lanka are at a negligible level. Atapattu (2009) argued that one of the important reasons for poor development of agriculture sector was little improvement of entrepreneurship development among the farming community.

It is hard to find one indisputable definition on entrepreneurship. The evolution of the concept has created many definitions. Joseph Schumpeter described entrepreneurship as a force of “creative destruction” whereby established ways of doing things are destroyed by the creation of new and better ways to get things done. Say described an entrepreneur as a person who can convert low beneficial economic resources into high beneficial economic resources. He further clarified that an entrepreneur modify the natural resources to economic resources in a creative way (Holt, 1997). Hisrich, (2008) pointed out that the entrepreneurial characteristics are not borne. It can be created and identified. The antecedent, incubator organization and environment factors are able to improve entrepreneurial characteristics of any person. Schumpeter (1967) clarified entrepreneur as an innovator with potentialities of doing new things, as an economic leader, as a chief conducive function in the process of economic development. Rhman (1997) pointed out that entrepreneurship is the function that is specific to the entrepreneurs’ ability to take the factors of production: land, labour, capital and use them to produce new goods or service.

Antecedent features are genetic factors, family influences, educational choices and previous career experiences. Antecedent influences include many aspects of the entrepreneur’s back ground which affect motivations and perceptions, as well as skills and knowledge. It is clear that perceptions, skills and knowledge have been significantly influenced to entrepreneurial characteristics, previous career background and social circumstances of farmers. These factors combine with a personality which is determined to succeed, through attention to detail, in the achievement of success.

Incubator organization factors are geographic location**,** nature of skills of the person, knowledge acquired, contact with possible fellow founders and experience. The sector, in which the entrepreneur has previously been working, may be extremely influential in entrepreneurship. The location and the nature of the new farmer are also important effect. This represents the concept of apprenticeship and can be an integral part in the process of

shaping an entrepreneurial career. Thus, the part played by incubator organizations is significant.

Environment factors are economic conditions, accessibility and availability of capital, examples of entrepreneurial action, opportunities for interim consulting and availability of personnel, supporting services and accessibility of customers. Entrepreneurship does not take place in a vacuum and factors external to the individual and organization may make the climate more or less suitable to the birth of a new venture. These combine to influence entrepreneurial activities and degrees of success within certain markets. The debate regarding the supremacy of different approaches to the development of entrepreneurs continues, and each has its individual chance (Hisrich, 2008).

However most of economists agree that entrepreneurship plays a vital role in stimulating economic growth and generating employment opportunities in all societies. Entrepreneurship is one of the four mainstream economic factors: Land, Labor, Capital and Entrepreneurship. This concept is proved by the developing world, where successful small businesses are the primary engines of job creation and poverty reduction (Holt, 1998).

Therefore, new policies should generate by the government to foster entrepreneurship. If government creates strategies to develop entrepreneurial characteristics (EnC) of undergraduates, it will provide a better solution for the graduate unemployment problem. Because many students, who are fortunate to enter the universities, have to face numerous challenges especially at the end of the graduation in seeking suitable employments in Sri Lanka (Ariyawansa, 2011).

One strategy that government can adopt to unravel this problem, is introducing new course in Universities, which build EC of students. So that students will become job generators rather than being job seekers.

One such course is BSc Agribusiness Management (BSc ABM) degree program introduced by Faculty of Agriculture, University of Ruhuna. However, it is important to assess whether the course is achieving its objectives of developing the entrepreneurial characteristics of students.

Therefore, this study attempts at assessing entrepreneurial attitudes of undergraduate BSc ABM students. Only few existing researches provide literature on entrepreneurship in Sri Lanka. In such case, this study will helps to bridge the research gap in the area of entrepreneurship.

Entrepreneurs are examined from various perspectives, such as attitudes, backgrounds, personality traits, conceptual circumstances and aspects of social marginality, gender and geographical location (Beaver & Jennings, 2005).

Some researchers have identified several attributes associated with the likelihood of an individual becoming an entrepreneur. These attributes include, key personal attributes, strong managerial competencies, need for achievement, desire for independency, self-confidence, creativity and risk taking ability.

Therefore this study attempts at assessing entrepreneurial attitudes of undergraduate Bachelor of Science in Agribusiness Management students in Faculty of Agriculture, University of Ruhuna, Sri Lanka. Only few existing researches provide literature on entrepreneurship in Sri Lanka. In such case, this study will helps to bridge the research gap in the area of entrepreneurship.

2. Objectives

To assess the impact of BSc Agribusiness Management degree program on developing the entrepreneurial characteristics of undergraduate students.

3. Methodology

This study aims at assessing entrepreneurial attitudes and skills of BSc ABM undergraduates. 27, 41, 28 and 36 final, third, second and first year students, respectively were selected randomly as sample to collect data.
Data were collected by administrating a structured questionnaire. General Enterprising Tendency (GET) and Thematic Appreciation tests can be used to measure the EnCs of the individuals (Flora *et al.*, 1999.) The GET test was developed as a Likert Scale and compiled in such a way that the respondent could score; self-assess and interpret his or her own results. Seven EnCs, such as, key personal attributes (KPA), strong managerial competencies (SMC), need for achievement (NA), desire for independency (DI), self-confidence (SC), creativity (CR) and risk taking ability (RTA) were used. The scale consisted 44 items representing four dimensions which were assessed by using Likert scale (5 = "strongly agree" 1 = "strongly disagree"). Sandika (2009) and Sandika and Kulasinghe (2010). In evaluation of Entrepreneurial characteristics, scales were developed by considering the highest and the lowest scores of the respondents obtained for each key attribute. Validity and reliability of the scale was tested by using Conbrach alpa test. Descriptive statistical methods such as standard deviation, mean, percentage, table and ANOVA test were used to analyze data.

4. Results and Discussion

Entrepreneurship stands as a vehicle to improve the quality of life for individuals, families and communities and to sustain a healthy economy and environment. Entrepreneurial characteristics are the factors that are required for a best entrepreneur.

Cronbach's alpha is the most common measure of reliability. It is most commonly used for multiple Likert questions in a questionnaire. Cronbach's alpha value varies from 0 to 1. When the value is higher than 7, it indicates that reliability of the scale is acceptable. Cronbach's alpha of this scale was 0.787. This vale is close to 0.8. It is therefore, reliability of the scale is good. According to the statistical analysis, the final and third year students have illustrated high Total Entrepreneurial Characteristics (TEC) compared to first and second year students. The mean value of KPAs, NA, SC and CR have showed improvement, but not significant while there was a significant improvement of DI, SMC and RTA with year of respondents. It reveals that third and fourth year students possess highest desire for independency, strong managerial competencies and risk taking ability than the first and second year students (Table 1).

Table 1 Mean Values of Entrepreneur Attributes

	Mean Value					
	1st year	2nd year	3rd year	4th year	Total Sample	Remarks
KPA	38.64	39.18	40.83	40.74	39.86	not significant
SMC	21.94	22.21	23.98	23.74	23.00	significant
NA	14.72	14.39	15.54	15.63	15.10	not significant
DI	14.47	13.96	14.68	15.59	14.66	significant
SC	23.14	23.32	23.56	23.48	23.17	not significant
CR	14.72	14.74	15.59	15.78	15.19	not significant
RTA	30.75	30.96	31.54	34.30	31.76	significant
TEC	157.80	157.68	165.71	170.81	162.89	significant

The results of the ANOVA test further revealed that the final and third year students have high TEC when compared to first and second year students. Even though the mean value of KPA, NA and SC have showed an increasing trend with the years those were not significant. However, third and fourth year students possess SMC than the first and second year students (p value = 0.048) (Table 2).

Table 2 Results of ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
KPA	Between Groups	126.143	3	42.048	1.111	.347
	Within Groups	4843.403	128	37.839		
	Total	4969.545	131			
SMC	Between Groups	111.236	3	37.079	2.489	.063
	Within Groups	1906.764	128	14.897		
	Total	2018.000	131			
NA	Between Groups	34.517	3	11.506	1.546	.206
	Within Groups	952.392	128	7.441		
	Total	986.909	131			
DI	Between Groups	38.326	3	12.775	1.504	.217
	Within Groups	1087.333	128	8.495		
	Total	1125.659	131			
SC	Between Groups	29.082	3	9.694	.524	.666
	Within Groups	2367.251	128	18.494		
	Total	2396.333	131			
CR	Between Groups	31.996	3	10.665	1.387	.250
	Within Groups	984.269	128	7.690		
	Total	1016.265	131			
RTA	Between Groups	230.181	3	76.727	2.906	.037
	Within Groups	3379.539	128	26.403		
	Total	3609.720	131			
TEC	Between Groups	3712.207	3	1237.402	2.686	.049
	Within Groups	58976.308	128	460.752		
	Total	62688.515	131			

These results are alien with the past research finding related to entrepreneurial characteristics development of the undergraduates. Nishantha (2009) has done a study to explore the relationship existing between personality traits and socio-demographic background of business management undergraduates toward an entrepreneurial career (self employment) intention. For this study respondents has been assessed on three traits (risk taking propensity, internal locus of control and need for achievement), and three socio-demographic factors which are related to their personal background (Parents' occupation, gender and previous self employment experience). His results revealed that there was a significant relationship between personality traits and entrepreneurial attitude.

Nimeshi (2016) has made to explore the entrepreneurship profile of students of University of Kelaniya and to investigate the relationship between entrepreneurial inclination and entrepreneurial traits. For this study, she has used six traits namely, need for achievement, locus of control, risk taking propensity, tolerance of ambiguity self-confidence and innovativeness to measure the EC. And it has been tested that, how this relationship varies

with moderator variable, namely, gender. Results of the study have revealed that need for achievement, locus of control; risk taking propensity, self-confidence, and innovativeness positively affect entrepreneurial intention. But, tolerance of ambiguity did not positively affect entrepreneurial inclination.

Respondents were also divided into three categories named as high, medium, and low by considering the marks of each attribute (Table 3). Majority of the respondents of fourth year and third year batches were in the medium level for key personal attributes (KPA). But most of the respondents were in the high category in all other dimensions such as strong managerial competence (SMC), need for achievement attribute (NA), desire for independency (DI), self-confidence (SC), creativity (C) and risk taking ability (RTA) as compared to the second and first year batches. Last column of the Table 1 illustrates the overall EnC development of the respondents. It clearly illustrates that EnC development increased with the years because the percentage of the high category decreased as 81%, 78%, 54% and 50% from final year to first year respectively.

Table 3 Entrepreneurial Characteristics of Respondents

	4th Year			3rd Year			2nd Year			1st Year		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
KPA	0%	85%	15%	7%	51%	41%	0%	89%	11%	3%	89%	8%
SMC	0%	15%	85%	5%	12%	83%	0%	29%	71%	3%	31%	67%
NA	0%	4%	96%	7%	17%	76%	0%	61%	39%	3%	42%	56%
DI	0%	33%	67%	10%	29%	61%	7%	43%	50%	6%	36%	58%
SC	0%	26%	74%	7%	17%	76%	4%	36%	61%	0%	33%	67%
C	40%	22%	74%	7%	22%	71%	4%	32%	64%	6%	33%	61%
RTA	0%	19%	81%	2%	44%	54%	0%	54%	46%	0%	53%	47%
Total EnC	0%	19%	81%	7%	15%	78%	0%	46%	54%	0%	50%	50%

It was observed that family background was a positive influencing factor to increase EnC of the students. The EnC of the respondents was higher when one or both parents are engaged in businesses. Furthermore, the home town and the district were influencing factors for the development of creativity and the need for achievement of the respondents. Extracurricular activities engaged in the University life positively influenced the development of Key personal attribute ($r = 0.22$, $p = 0.01$), risk taking ability ($r = 0.20$, $p = 0.01$), and overall entrepreneur skill ($r = 0.21$, $p = 0.02$). Extracurricular activities engaged in the school period showed an influence to develop the Key personal attribute ($r = 0.20$, $p = 0.03$) and the need for achievement ($r = 0.19$, $p = 0.03$) of the respondents. This would be a very important silent feature of this study. These results were alien with the result of related studies.

An attempt was made to identify the students' wiliness of new venture creation. It was observed that 41%, 68%, 29% and 25% final, third, second and first year undergraduates, respectively prefer to start own business after graduation. Majority prefer to find a job in an existing organization.

5. Conclusion

According to the analysis of the study, the students have acquired satisfactory level in entrepreneur skills. Therefore it can be concluded, that they have basic entrepreneurial skills at a certain level.

The EnC development of respondents increased with the years spend as undergraduates. The results of the statistical analysis further revealed that the final and third year students have high EnC as compared to the first

and second year students. Mean score value of KPA, NA, and C showed an increasing trend with the years.

The study concludes that university students have lack of desire to start their own businesses. Only 40.75% prefer to be an entrepreneur. Others (59.25%) were interested in engaging in jobs under the existing organizations.

The family background was a positive influencing factor to increase the EnC of the students. Furthermore, home town and district were influencing factors for the development of creativity and the need for achievement. Key personal attribute, risks taking ability, and overall entrepreneur skills developed through engaging extracurricular activities in the University. Extracurricular activities engaged in the school also helped to develop the Key personal attributes and the need for achievement. This should be taken in to care by the relevant policy makers before promoting entrepreneurship among the graduate in Sri Lanka like middle income country.

This study therefore was able to provide understanding into entrepreneurship education, as to which entrepreneurial characteristics can be developed to raise good entrepreneurs through university education. The university educational systems need to be oriented to emphasize and value of entrepreneurship in order to promote an entrepreneurial culture among undergraduates. This study will help to fill the gap in the existing body of knowledge and provide new knowledge in to the Sri Lankan situation. On the other hand, innovative methods need to be not only applied but also should be explored further to teach entrepreneurship.

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Outsourcing of Finance-Accounting in View of the Requirements Arising from the Implementation of the Standard Audit File for Tax

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Abstract: Since 2005, the OECD introduces a truly revolutionary change in the form of tax inspections of taxpayers. This change involves collecting data directly from the tax books and reporting them to the tax authorities in an electronic format, using the files in xml format, which is called Standard Audit File for Tax (SAF-T) and in Poland it is called the Single Control File. This form of settlements with the authorities, forces taxpayers to computerize their businesses, as well as to perform a more careful approach to recording the data. It can be expected that the outsourcing of financial accounting will become more important in the near future, and the demand for such services will grow very high. One should be awared, however, that such a growing demand will imply many challenges for the outsourcing companies. The author has been providing trainings on the Standard Audit File for one year already. During these trainings she observed that taxpayers are not quite aware of all the consequences of the e-checks implementation by the Ministry of Finance. She decided to investigate the level of preparation of accounting offices in order to address the challenges to the new requirements of the tax authorities. The answers to the questionnaire unfortunately confirmed the initial assessment of the situation, that it becomes necessary to take this topic and discussion about the directions being well prepared for the upcoming changes.

Key words: SAF-T; outsourcing; accounting; Tax
JEL codes: K

1. Standard Audit File for Tax in Europe

The first document that was prepared by the OECD was entitled “Guidance for the Audit File Tax” and presented in May 2015. It described SAT-T as: “file including reliable accounting data, related to a given period of time, which were exported from the accounting system, which are easy to read due to its standard format and scope.” (Organization for the Economic Co-operation and Development, May 2005). That solution should improve controlling activities and tax audits. It is also expected to help execute tax law in a more efficient way. The elaboration from 2005 described the first version of SAF-T, while in 2010 the next document was prepared where SAF-T 2.00 was presented.

So far, e-controlling based on OCED have been implemented in the following countries: Portugal, Luxemburg, France, Austria, Lithuania, Norway and Poland. The second version of this solution was introduced in

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Luxemberg, Poland and Norway. That version was expanded with the inventory and fixed assets reports. It is assumed that the use of electronic version of data file exchange should be suitable for big companies as well as those from the SMEs segment and micro-enterprises.

The authors of the elaboration emphasize not only SAF-T implementation in the tax area but they also point to other possibilities where the generated files can be used:

- Reduction of funds allocated to compliance with regulations
- Development of SAF-T, as international standard may lead to decreasing costs of obeying of different requirements for numerous jurisdictions.
- SAF-T will allow different size companies to exchange information between different business systems. It can also be used to exchange data between following parties: accounting firms, tax authorities, government, and so on.
- Use of SAF-T as a source of automated investigation procedures would increase and efficiency both internal controls and the external audit.
- SAF-T as a form to back up and archive company data.
- Exchange of data between companies and fiscal authorities for taxing purposes can by supported by SAF-T,
- Standardization of basic structures will allow IT people to create files for different jurisdiction control, without duplication of work.
- Easy access to necessary information for tax authorities.

In May 2005 OECD pointed SAF-T model as the sole model based on free source XML for all 38 member countries. In 2010 a new version was elaborated, which consisted of 5 structures:

(1) General Ledger and the Logs

(2) Receivables, basic customers data, invoices, payments.

(3) Liabilities, basic suppliers data, invoices, payments.

(4) Inventory flows, basic data.

(5) Fixed assets, basic data, increase of value, depreciation.

Table 1 shows the implementation scope of SAF-T structures in particular countries, which already make use of this form of data exchange with fiscal authorities.

Table 1 SAF-T Implementation Scope

Country	Items that differ from SAF-T structures
Portugal	Only 4 structures were implemented
Austria	Only basic simplified structure was implemented.
Luxemburg	Intensive legal actions against companies that act against the law
France	Created its own format, which must be in accordance with Comptable Plan, which is mandatory in France.
Lithuania	Implemented about 68 sub-structures
Poland	The only country where all the boxes must obligatorily be completed

Source: Asquith R., Will EU SAFT reporting be the death of VAT returns?

Norway, which was not listed in the Table 1, has implemented in 2017 electronic exchange of data with fiscal authorities comprising: the Main Ledger and VAT (Norwegian TAX Administration, 2016). In all countries, except of Poland, OECD approach has become a starting point for own solutions, whereas Poland implemented its way of working, which was precisely based on OECD documents.

2. Challenges for Tax Payers

Introduction of the data exchange form with authorities using SAF-T format enforces a change in attitude to the collection of accounting data in the companies. So far, tax payers were allowed to register own data in any software. They could also give up the use of any ERP software at all. Their settlements with authorities could be prepared in any way, and only the final result of their own calculations was to be mailed to authorities. Moreover, entrepreneurs were not obliged by any legal act to provide said results in electronic form.

According to statistical research[1] conducted in 2012-2016 in Poland, 94.7% of all companies used computers, enabling 44% of their employees to use them for their work in 2016. Access to internet was available to over 90% of the companies, most of them with the broadband access. Computers with the access to global network were used by 39% of the people who used them. The widest access to internet was noticed in the Mazovia Province: 54%, and the least use of computers with the internet access — in Varmia-Mazuria Province: 25.2%.

As it can be seen, most companies are pretty well computerized and are able to implement data transfer in an electronic way to authorities. However, until now, the correctness of the supplied data could only be verified during actual controlling audit in the company. Such an audit could evaluate if the business data were stored, or booked in a correct way, and the taxes properly calculated. In view of the present requirement to generate and transfer (mandatorily and upon request) the SAF-T structures, the competences of the book keeping departments have become of great importance. It can be assumed that big companies will not have any problems recruiting highly qualified personnel, however it can become quite a challenge for SMEs segment. In order to ensure the correctness of the data, smaller companies will have to not only obtain specialists but they also have to be equipped with specialized hardware. There is a lot of data from statistical research on computerization of companies, however, research concerning the use of ERP systems in those companies is missing. The requirement to prepare SAF-T structures can only be well prepared in the IT systems that are dedicated to business environment. All other solutions create risks of inconsistency of the data, and the control of the data consistency is one of the elements of every tax inspection.

Preparing the company to create correct SAF-T structures can become a real challenge for all micro, small and medium size companies. They can choose one of the two possible options:

- Recruiting specialist accountants with relevant competencies
- Outsourcing of services from an external Accounting Office

It is difficult to evaluate, which option is better for a particular company. Each organization has different needs and different capabilities. The most important thing, however, is that in the end a company is able to prepare correct data in the XML format (SAF-T) for tax authorities as well as its management is aware that ongoing evolution of IT will have continuous impact on the relation format between businesses and with authorities.

3. Financial-Accounting Outsourcing as Professional Support to Companies

If we assume that the outsourcing of accounting services will be one of the options to meet all the requirements of the bill (including that most important one, which is to generate and send to the Ministry of

[1] http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-wyniki-badan-statystycznych-z-lat-2012-2016,1,10.html.

Finance current data concerning VAT as well as all other accounting data, which can be requested by authorities), it can be presumed that the demand for such services will grow significantly. However, it is important to realize that such services will have to demonstrate very high standard because in view of current statutory requirements professionalism of such services will become the most important.

One can also ask the question if accounting offices are aware of the challenges that they are about to face in near future? Are those offices prepared to meet the expectations of both their current clients and those that would decide to start collaboration with them?

Striving to find an answer to those questions SAGE Polska in January and February of 2017 made a research among such offices asking three questions:

(1) Will implementation of control in the JPK format improve collaboration of the offices with their clients?

(2) In view of the JPK implementation do you plan any formal changes in the communication with your clients?

(3) Do you think that your clients have sufficient knowledge about JPK control?

Already a cursory assessment of the answers shows that both the clients and the staff of the accounting offices are not aware of the difficulty and the complexity of the task they are about to deal with. They do not seem to notice positive aspects of the global data flows via IT channels between companies and the fiscal offices. 35.87% of the respondents replied to the first question that it will or may make the collaboration more difficult. 32.61% of the respondents expect a certain improvement of the cooperation and as much as 31.52% of the respondents did not have an opinion. They either did not see any relation or they did not know if there may be any impact on cooperation at all (Figure 1).

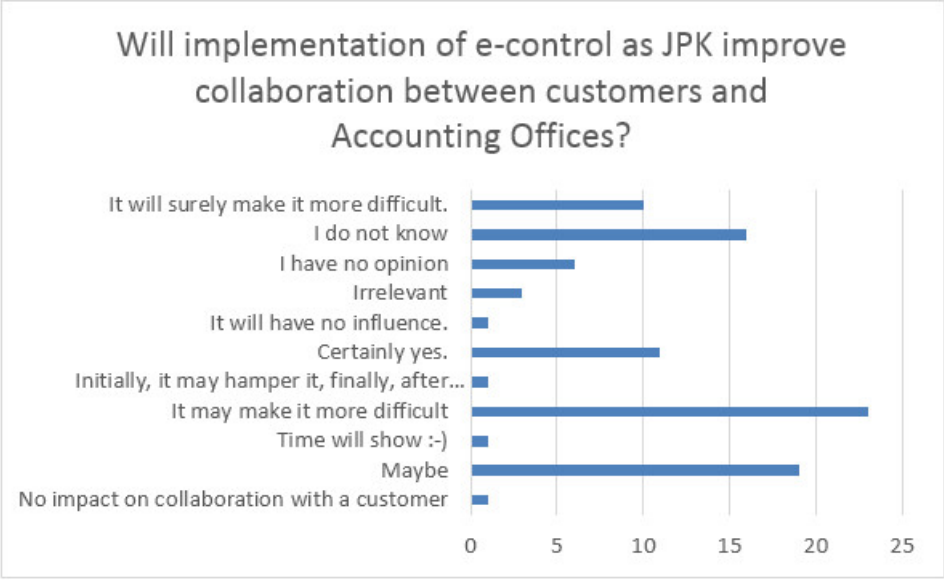

Figure 1 Graphic Presentation of Answers to the First Question

Source: own elaboration

In view of the fact that all data that will be collected in an electronic format in business organizations accounting offices should do their best to convince their clients well in advance to purchase software to create invoices as well as to manage inventory. Such an approach would not only make it easier to download the data but it would also ensure the uniformity of all data in the company. On the long run both sides should see the improvement

in the collaboration. Accounting offices should also be aware that accepting documents in the paper form would not only seriously hamper generating of all JPK structures but it would also create a big risk of data inconsistency.

Moreover, if we analyze the statutory requirement to prepare data for The Treasury, it can be stated with no doubt that all processes related to data collecting should be formalized. It means that both external accounting offices and the accounting departments in the companies should take any possible measures to oblige the personnel who is responsible for supplying accounting documents to do it precisely according to the deadlines that are mandatory for submitting tax accounting reports. It will not be done without prior formalization of contacts with well prepared procedures. Due to such an approach the completeness of the data as well as its chronological order can be ensured on the day of reports and declaration preparation and their further transfer to the offices. Thanks to that the cooperation between the offices and their clients should be more efficient.

Again, when we analyze the replies to the second question (Figure 2) related to the possible planed changes in the communication format only 30.42% stated that such formalization of contact will surely be necessary. The remaining nearly 70% of respondents completely ignored that issue. It should be realized that in view of the possibility to generate data files in an electronic version with just a press of the button fiscal authorities may request data from day to day, without any time left to prepare it (as it used to be so far). Without having put the client-office relation into order meeting such demand from the authorities may hardly be possible.

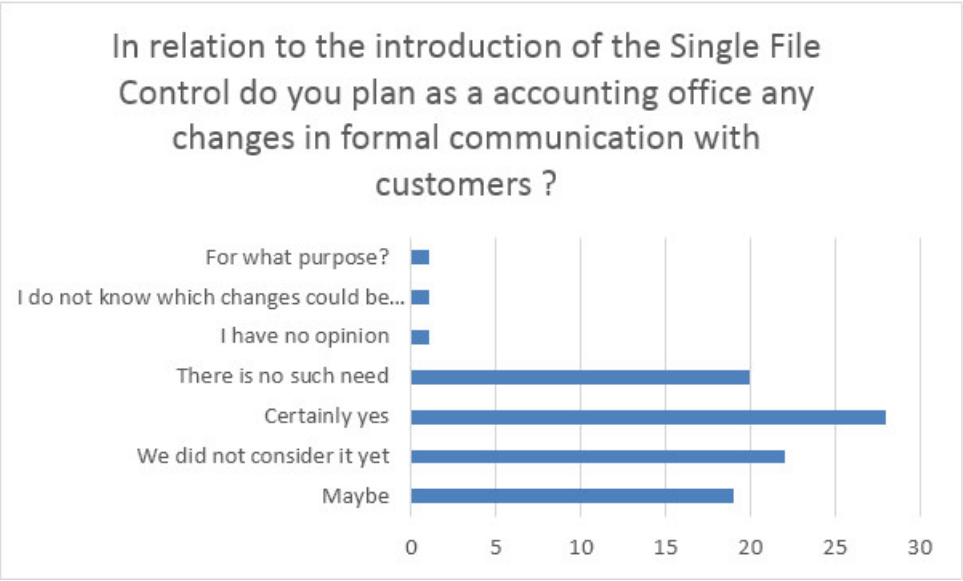

Figure 2 Graphic Presentation of Answers to the Second Question

Source: own elaboration

Disturbing is the fact, that knowledge of SAF-T and e-controlling among the businessmen is so scarce. Over half the accounting offices estimate their clients' knowledge as negligible and about 30% think that it is difficult to say or the clients do not know anything at all. Since the 1st of July 2018 e-controlling will become mandatory in Poland for all business forms. From that moment each company manager will need a computer, ERP software, access to Internet, qualified e-signature and knowledge, which will allow him to execute statutory requirements in a proper way.

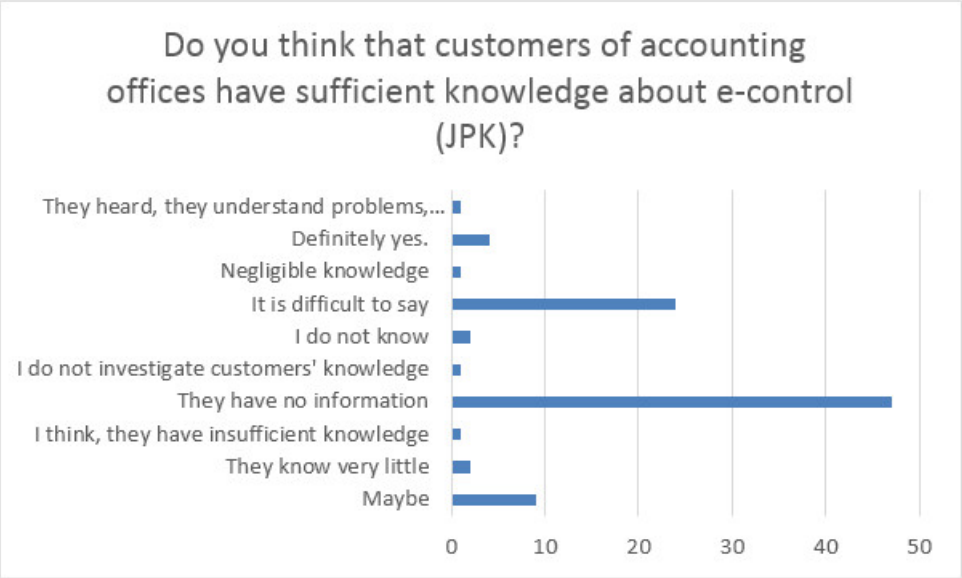

Figure 3 Graphic Presentation of Answers to the Third Question

Source: own elaboration

If that manager will not be able to meet those requirements, outsourcing the service will become necessity to him. It can be expected that the demand for professional accounting services will significantly increase and the accounting offices should already start preparing to that challenge.

4. Summary

By transferring the accounting activities to the accounting office an entrepreneur gives himself more space to get involved deeper in the business itself. However, bad communication is a frequent disadvantage of such collaboration. So, in view of the SAF-T and e-controlling implementations it is improvement of communication that should take the first focus of both parties involved. So far, bad communication resulted in incorrect qualifying of economical operations, delayed receipt of documents and the prolonged waiting time for reports or relevant information. Now the data will have to be collected and registered in the system so that correct structures can be generated in a well-organized and reliable way and transferred to the authorities at any moment at their request. Without a good communication it can be difficult or even impossible.

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A Disaggregated Capital Goods Import Model for Nigeria

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Abstract: The importance of import demand elasticities has long been established in several studies. Apart from shedding light on the structure of a country's trade behaviour, they help to highlight the extent to which it depends on foreign sources of goods and services. Many country studies have shown that imports generally depend on price, income and exchange rates. However, there is also a body of research, which shows that some other variables, such as inflation and foreign reserve, play key roles in import demand. This study examines Nigeria's capital goods import demand behaviour from a disaggregated point of view, which is a departure from the standard approach of existing studies. The results show that while some capital goods items were price elastic, there was a general tendency for most categories of capital goods to exhibit serious levels of insensitivity to price changes. Only five items, out of the eighteen items studied, were price elastic. The study therefore found evidence that lends credence to the argument that need for critical inputs rather than price seems to drive import demand in import dependent economies.

Key words: import demand, elasticity, capital goods, trade
JEL codes: F10

1. Introduction

Several studies have been carried out on Nigeria's import of goods and services. However, the studies made little or no distinction between capital goods and other categories of imports. Worse still, among the few studies on capital goods, there were very limited attempts to study the behaviour of the components of capital goods. Thus, in the area of her international trade, little systematic information on disaggregated capital goods import of Nigeria is available. Evidently, an empirical understanding of the interaction among the disaggregated components of capital goods, national income, relative prices, exchange rates and foreign reserves of the Nigeria will be of great value to her economic planning. Such data would be valuable in decisions relating to optimal tariff, domestic taxes, exchange rate and many other economic phenomena.

This work therefore tries to contribute to the body of knowledge in this area, by examining the behaviour of key components of capital goods import demand of Nigeria from 1960 to 2012, and provides estimates of import demand elasticity for eighteen different categories of capital goods.

2. Literature Review

In studies of import demand, several empirical formulations have been adopted to analyze the relationship

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between imports and its determinants. According to Frimpong and Oteng-Abayie (2006) who studied the imports of Ghana during the period, 1970-2002, Bahman-Oskooee (1984), Goldstein, Khan, Officer (1977), Boylan and Cuddy (1987) and Houthakkher and Magee (1969), the simplest formulation of an aggregate import demand function relates the quantity of imports demanded to relative prices (the ratio of import prices to the prices of domestic substitutes), and real income at a given period of time, *t*. The simple import demand function is usually stated as follows:

$$M^d = f\left(PM/PD, Y/PD\right) \tag{1}$$

where: M^d is quantity of goods imported, *PM* is price level of imports, *PD* is the price level of domestically produced goods; and *Y* is the level of nominal income.

In the above function, the basic explanatory variables are the price of imports relative to the price of substitutes, and real income. The choice of these variables is rooted in the theory of consumer behaviour and demand with regard to changes in income and the price of goods. From economic theory, the sign of the partial derivative of import with respect to income, $\partial M^d/\partial Y$, is generally expected to be positive, while the partial derivative of imports with respect to relative prices, is expected to be negative. This formulation assumes some level of substitutability (though imperfect) between imports and domestic goods, hence it is referred to as the imperfect substitute model.

It is noteworthy however, as Magee (1975) explained, that some ambiguity may arise, with regard to the direction of the partial derivatives of imports with respect to income. According to him, depending on whether or not imports are viewed as the difference between domestic consumption and domestic production of importables less export, the outcome of the partial derivative may vary. If income rises and domestic consumption rises faster than domestic output, then import demand will rise, yielding a positive sign for the partial derivative of the income variable. The reverse will be the case if consumption rises more slowly than domestic production as income increases.

Most of the traditional studies focus on the practical and theoretical importance of price elasticities, which without doubt, is valuable beyond question. However, it has been argued by Chang and Nair (2002) that income elasticities are also at least equally important, especially in developing countries.

Import dependence, which is one of the major hindrances to economic growth in many former colonial countries, has its origin in the immediate post-independence Import Substitution Industrialization (ISI) strategy, widely adopted by the founding fathers of such countries. The legacy of this development strategy, which is still with us, is highlighted by industrial sectors that are not only shallow but also highly reliant on imported inputs. Thus, we have a situation where import substitution activity ends up fueling more importation. According to Okongwu (1984), import substitution will always result in increased importation. This view was even further advanced by Ahmed (1983) who observed that it was mounting imports, in the face of unstable export performance, that partly explained the overall adverse external sector performance of many countries in the 1980s, especially Nigeria. Consequently, a large proportion of their foreign exchange earnings is spent on the importation of a wide range of goods and services including raw materials, plant and machinery and consumables, such as drinks, soaps, tooth paste and fruit juices. This awkward situation, according to Vogel and Wagner (2008), is the natural consequence of a flawed industrial sector with heavy dependence on imported inputs.

Some studies have attempted to analyze Nigeria's import behaviour and establish relevant elasticity coefficients but very few have focused on capital goods. The work of Olayide (1968) was a pioneering effort. It

estimated the elasticity of fifteen items of general import to three key variables, namely; price, income and foreign exchange earning capacity of the country. He focused on consumer goods and singled out fifteen of such items imported during the 1948 to 1964 period. His work produced what some unexpected results. The price variable had a positive sign while the income variable had negative sign. According to him, this seemingly incongruent result was the evidence that Nigeria's import substitution industrialization strategy was succeeding.

Another pioneering study and one of the earliest studies on Nigeria's import trade was carried out by Ajayi (1975). The study focused on aggregate import. He estimated an import demand function retained imports. His findings, showed that real income, relative prices and foreign exchange availability were significant determinants of Nigeria's retained imports.

To the best of my knowledge, the only attempt to analyze the components of Nigeria's capital goods import was made by Anusionwu (1984). His work is perhaps the only study on capital goods import in Nigeria. It covered the period 1960-80. He attempted to estimate the impacts of price, income, and exchange rate and foreign exchange earnings on the demand for capital goods on an aggregative basis. He found that some of the components were price elastic especially, Agricultural Machinery and Implements, and Telecommunication Apparatus, Railway Vehicles, Road Motor Vehicles and Electrical Power Machinery, which recorded less than -2 each. But the least price elastic items were Office Machines and Aircraft. It is on the basis of the foregoing literature that we attempt to analyze Nigeria's capital goods imports.

3. Theoretical Framework and Methodology

The typical import demand formulation is adapted in this analysis. Thus, the implicit form of the disaggregated import demand model to be estimated is formulated as follows:

$$M_{it} = e^{a} (GDP_t^{'})^{b_1} (PMT_{it})^{b_2} (CPI_t)^{b_3} (EXR_t)^{b_4} (FRE_t)^{b5} \; e^{u}$$
$$MT_t = f(GDP, PMT, CPI, EXR, FRE)... + \mu \quad (2)$$

where:

MT_t = Total value of imports in Naira

GDP_t = GDP or National income in Naira

PMT_t = Import Commodity Price Index in year t

CPI_T = Consumer price Index in year t

FRE_t = Foreign Exchange Reserve in year t

EXR_t = Exchange Rate to the U.S Dollars in year t

μ_t = Stochastic error term

Expressed in log linear form the relationship may be represented as follows:

$$Log(MT)_t = a + b_1 \log(GDP)_t + b_2 \log(PMT)_t + b_3 \log(CPI)_t + b_4 \log(EXR)_t \; b_5 \log(FRE)_t ..... + \mu_t \quad (3)$$

a = constant (intercept);

μ_t = stochastic error term.

b_1, b_2, b_3, b_4 *and* b_5 are respectively the elasticity coefficients of income, price, Consumer Price Index (which is a measure of inflation), exchange rates and foreign reserves.

The theoretical expectation of the coefficients, according to is that economic theory, the partial derivatives of the independent variables should turn out as follows: b_1 and $b_5$should be positive while b_2, b_3 and $b_4$should be negative.

3.1 The Disaggregate Capital Goods Import Demand Function

We estimated the parameters for each category of capital goods using the same basic framework discussed above, with appropriate modifications. In other to achieve our aim we replaced Log (Mt) with the relevant category of capital good to be estimated. For example $Log(PGDE)_t$ is the independent variable in the estimate for the capital good category known as Power Generating Equipment Other than Electric (PGDE). This was done for each category of capital goods. The estimates were carried out first at level with the following equation estimated for each category of capital goods:

$$Log(MT)_t = a + b_1 \log(GDP)_t + b_2 \log(PMT)_t + b_3 \log(CPI)_t + b_4 \log\left(EXR\right)_t \; b_5 \log(FRE)_t \ldots\ldots + \mu_t \qquad (4)$$

Table 2 gives the outcome of two selected categories. There was an equation for each category but the sample reflects the general direction of the results.

Table 1 List of 18 Capital Goods Items and Their Labels

	Capital good category	Label
1	Power Gen. Mach. Other Than Electric	PGDE
2	Agric. Machinery And Implements	AMAI
3	Office Machines	OMAC
4	Metal Working Machinery	MWMA
5	Textile Machinery And Leather Mach.	TMAL
6	Machiines For Special Industries	MFSI
7	Machinery And Appliances	MAAP
8	Electric Power Machinery & Switch Gear	EPMS
9	Eqip. For Distributing Electricity	EFDE
10	Telecommunication Apparatus	TEAP
11	Domestic Electrical Equipments	DEEQ
12	Med. Purp. (Elect..)/Radiological App.	MPRA
13	Other Electrical Machinery & App.	OEMA
14	Railway Vehicles	RAVE
15	Road Motor Vehicles	ROMV
16	Road Vehicles Not Motor Vehicles	RVNM
17	Aircraft	ACRA
18	Ships And Boats	SHAB

Source: Extracted from the Nigerian Trade Summary (various issues), modified and named by the author.

There is always the possibility of the results being affected by autocorrelation. We took appropriate steps to deal with this challenge. According to Quantitative Micro Software (2007) there are ways to modify an equation to take account of autocorrelation. One of such ways is to include lags of each of the independent variables. We therefore estimated a lagged model for each category of capital goods using the model presented as equation (5). This equation shows the estimate for Power Generating Equipment other than Electric (PGDE) but was modified for all the other 17 categories of capital goods. Both models will utilize an 18x1 cross sectional panel, reflecting the eighteen capital good components of interest to us.

$$Log(PGOE)_t = a + b_1 \log(GDP)_t + b_2 \log(PMT)_t + b_3 \log(CPI)_t + b_4 \log\left(EXR\right)_t + b_5 \log(FRE)_t + b_6 \log(GDP_{t-1}) + b_7 \log(PMT_{t-1}) + b_8 \log(CPI_{t-1}) + b_9 \log(EXR_{t-1}) + b_{10} \log(FRE_{t-1}) ..... + \mu_t \quad (5)$$

These models would enable us to establish the determinants of import demand characteristics of all the capital goods items brought into the country. To facilitate our estimation, we identified each capital good category with appropriate acronym as listed in Table 1.

4. Data Used in the Study

The data used in this study is time series data and was collected from the National Bureau of Statistics. In particular, secondary data from the publications of the Bureau including various issues of the Nigerian Trade summary, Annual Abstracts of Statistics, Digest of Statistics, Economic Indicators, Economic and Financial Review published by the Central Bank of Nigeria and International Financial Statistics published by the International Monetary Fund. Of course, needless to say that the data is subject to the usual shortcomings of statistics from most developing countries — questions of adequacy and reliability.

4.1 Data Adjustment and Quarterisation of Annual Data

The import figures in the equations are capital goods import data for the various years. These data come as annual figures and had to be converted to quarterly data. Several techniques of quarterization and benchmarking are in use. These techniques include the Pro Rata Distribution Technique, the Basic Extrapolation with an Indicator technique and the Proportional Denton Method. This study utilized the Proportional Denton Method of interpolation of annual flow time series, which is recommended by the World Bank and the International Monetary Fund.

The Basic Version of the Proportional Denton Method keeps the benchmarked series as proportional to the indicator as possible by minimizing (in a least-squares sense) the difference in relative adjustment to neighbouring quarters subject to the constraints provided by the annual benchmarks. Thus, the sum of the interpolated quarterly figures must equal the annual figure, which serves as a benchmark for each year.

5. Result Presentation and Analyses

Tables 2, 3 and 4 present the results of the analyses. As explained earlier, two separate models were estimated — one at level and the other was lagged one period. The result of the first model presented in Table 2 shows the outcome for only two categories of capital goods. It is meant to illustrate the general trend of other groups. The two sample results are those of Power Generating Equipment other than Electric (PGDE) and Agricultural Machinery and Implements (AMAI).

The results of the level estimates show low values for the Durbin-Watson (D-W) statistic and low R-squared. For the PGDE and AMAI, the D-W figures are 0.98 and 0.83 respectively, while the R-squared are 0.69 and 0.61. The D-W figures indicate the presence of serial correlation in the residuals of the estimated equation, while the R-squared show poor fits. This analysis was carried out for the remaining 16 categories of capital goods with similar outcomes. We proceeded to eliminate the possibility of the serial correlation appropriately.

Table 2 Sample Level Estimates of the 18 Groups of Capital Goods Import

Dependent Variable: LOG(MT_PGDE)					Dependent Variable: LOG(MT_AMAI)				
Method: Pooled Least Squares					Method: Pooled Least Squares				
Sample: 1964 2005					Sample: 1964 2005				
Included observations: 42					Included observations: 42				
Cross-sections included: 18					Cross-sections included: 18				
Total pool (balanced) observations: 756					Total pool (balanced) observations: 756				
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.945901	0.414301	21.59278	0	C	8.795498	0.448646	19.60456	0
LOG(PMT_PGDE)	0.579839	0.025327	22.89396	0	LOG(PMT_AMAI)	0.548995	0.024417	22.48375	0
LOG(GDP_PGDE)	0.801168	0.064316	12.45685	0	LOG(GDP_AMAI)	0.986291	0.072146	13.67085	0
LOG(CPI_PGDE)	-0.40673	0.042977	-9.46389	0	LOG(CPI_AMAI)	-0.39383	0.048511	-8.1183	0
LOG(EXR_PGDE)	0.047517	0.055065	0.862935	0.3884	LOG(EXR_AMAI)	-0.1956	0.06257	-3.1261	0.0018
LOG(FRE_PGDE)	-0.34763	0.054242	-6.40884	0	LOG(FRE_AMAI)	-0.37453	0.06094	-6.14584	0
R-squared	0.695534	Mean dependent variable	18.01052		R-squared	0.61189	Mean dependent variable	17.73308	
Adjusted R-squared	0.693504	S.D. dependent variable	2.345754		Adjusted R-squared	0.609302	S.D. dependent variable	2.357013	
S.E. of regression	1.298658	Akaike info criterion	3.368445		S.E. of regression	1.473271	Akaike info criterion	3.620752	
Sum squared resid	1264.885	Schwarz criterion	3.405176		Sum squared resid	1627.895	Schwarz criterion	3.657482	
Log likelihood	-1267.27	Hannan-Quinn criterion	3.382593		Log likelihood	-1362.64	Hannan-Quinn criterion	3.634899	
F-statistic	342.6654	Durbin-Watson statistic	0.979507		F-statistic	236.4879	Durbin-Watson statistic	0.830961	

Source: Estimated by the author

To remove the influence of serial correlation, a lagged model was estimated for each category. The full print out of the results of the lagged model for two of the categories namely; PGDE and AMAI are shown in Table 3 in the Appendix. The Durbin-Watson statistic of approximate 2.2 for each category reflects what was obtained in all the other groups of capital goods import items. This outcome effectively removes the risk of serial correlation and adds value to our regression results.

Table 4 summarizes the outcome of the estimates. From the figures obtained, and in relation to income (GDP) elasticity, we observe that with the exception of one item — Railway Vehicles (RAVE) that had a positive sign though very low coefficient, all other categories of capital goods had negative signs. They were also mostly significant at 5 and 10 percent level except for three items (MAAP), EPMS and ROMV). However, most of them had low elasticity. Four categories of import returned the highest estimates of income elasticity. They are Office Machines (OMAC), Textile and Leather Machinery (TMAL), Domestic Electrical Equipment (DEEQ), and Aircraft (ACRA).

The price elasticity was correctly signed for all but one item Agricultural Machinery and Implements (AMA1), which had a positive sign. All but two of the 18 categories namely Machinery and Appliances (MAAP) and Domestic Electrical Equipment (DEEQ), were significant at 5 percent level.

Table 3 Sample Lagged Models of PGDE and AMAI

Dependent Variable: LOG(MT_PGDE)					Dependent Variable: LOG(MT_AMAI)				
Method: Pooled Least Squares					Method: Pooled Least Squares				
Sample: 1965 2005					Sample: 1965 2005				
Included observations: 41 after adjustments					Included observations: 41 after adjustments				
Cross-sections included: 18					Cross-sections included: 18				
Total pool (balanced) observations: 738					Total pool (balanced) observations: 738				
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.597091	0.534988	6.723686	0	C	5.939201	0.450033	13.19727	0
LOG(GDP_PGDE)	1.250062	0.167894	7.445538	0	LOG(GDP_AMAI)	0.784255	0.151036	5.192514	0
LOG(PMT_PGDE)	0.644982	0.028408	22.70392	0	LOG(PMT_AMAI)	0.572912	0.018893	30.3237	0
LOG(CPI_PGDE)	0.048897	0.062811	0.778474	0.4365	LOG(CPI_AMAI)	0.178223	0.056093	3.177258	0.0015
LOG(EXR_PGDE)	0.044718	0.063057	0.709171	0.4784	LOG(EXR_AMAI)	-0.1247	0.058959	-2.11507	0.0348
LOG(FRE_PGDE)	-0.55563	0.092231	-6.02425	0	LOG(FRE_AMAI)	0.221277	0.080164	2.760315	0.0059
LOG(MT_PGDE(-1))	0.522685	0.033389	15.65452	0	LOG(MT_AMAI (-1))	0.644805	0.028367	22.7305	0
LOG(PMT_PGDE(-1))	-0.39078	0.02852	-13.7019	0	LOG(PMT_AMAI (-1))	-0.46761	0.024443	-19.1303	0
LOG(GDP_PGDE(-1))	-0.89042	0.197685	-4.50425	0	LOG(GDP_AMAI (-1))	-0.80058	0.157161	-5.09398	0
LOG(CPI_PGDE(-1))	-0.27524	0.064644	-4.25779	0	LOG(CPI_AMAI (-1))	-0.52833	0.059284	-8.9119	0
LOG(EXR_PGDE(-1))	0.118452	0.062175	1.905153	0.0572	LOG(EXR_AMAI (-1))	0.335826	0.056111	5.985081	0
LOG(FRE_PGDE(-1))	0.261712	0.051394	5.092308	0	LOG(FRE_AMAI (-1))	-0.13336	0.045485	-2.93204	0.0035
R-squared	0.811258	Mean dependent variable	18.05238		R-squared	0.849833	Mean dependent variable	17.73935	
Adjusted R-squared	0.808398	S.D. dependent variable	2.358651		Adjusted R-squared	0.847558	S.D. dependent variable	2.385276	
S.E. of regression	1.032438	Akaike info criterion	2.917849		S.E. of regression	0.931303	Akaike info criterion	2.711663	
Sum squared resid	773.8632	Schwarz criterion	2.99271		Sum squared resid	629.6783	Schwarz criterion	2.786523	
Log likelihood	-1064.69	Hannan-Quinn criterion	2.946716		Log likelihood	-988.604	Hannan-Quinn criterion	2.74053	
F-statistic	283.6831	Durbin-Watson statistic	2.239888		F-statistic	373.5112	Durbin-Watson statistic	2.187335	

Source: Computed by the author

The impact of inflation on capital goods import demand was properly reflected. All but one category had the right negative sign. Sixteen of the 18 group of items were significant at 5 per cent level. With regard to exchange rates, the results show that all the 18 items returned positive signs and were significant at 5 per cent level. The estimates for foreign reserves show that ten items returned positive signs while 8 items had negative signs.

Generally, the fitness of the data was very good as all categories of capital goods returned a high Adjusted R^2.

Table 4 Disaggregated Capital Goods Estimates

				Income Elasticity b1			Price Elasticity b2			Inflation Rate Elasticity b3			Exchange Rate Elasticity b4			Foreign Reserve Elasticity b5		
Group	Adj R2	D-W	Cons	Value	t-Stat	Prob	Value	t-Stat	Prob	Value	Prob	t-Stat	Value	Prob	t-Stat	Value	Prob	t-Stat
PGDE	0.81	2.2	3.5	-0.9	-4.5	0	-0.4	-13.7	0	-0.3	-4.3	0	0.1	1.9	0.06	0.3	5.1	0
AMAI	0.84	2.2	5.9	-0.8	-5.1	0	0.5	-19.1	0	-0.5	-8.9	0	0.3	6	0	-0.1	-3	0
OMAC	0.84	2.2	3.7	-1.2	-8.2	0	-0.2	-11.3	0	-0.4	-6.7	0	0.1	2.3	0	0	-0.1	0.9
MWMA	0.92	2.0	2.0	-0.4	-3.3	0	-0.5	-20	0	-3.1	-6.9	0	0.2	-6.8	0	-0.1	-2.5	0
TMAL	0.81	2.4	8.8	-1.5	-8.3	0	-0.14	-14.4	0	-0.7	-9.8	0	0.8	12.2	0	0	-0.4	0.7
MFSI	0.76	2.3	4.3	-0.5	-2.5	0	-0.4	-11.1	0	-0.2	-2.9	0	0.3	3.9	0	0	0.4	0.6
MAAP	0.82	2.7	6.4	-0.1	-0.7	0.4	-0.7	-0.2	1	-0.22	-4.3	0	0.17	3.5	0	-0.2	-5.8	0
EPMS	0.87	2.4	3.6	-0.2	-1.2	0.2	-0.4	-16.1	0	-0.6	-10.8	0	0.39	7.2	0	0.4	9.9	0
EFDE	0.94	2.2	3.8	-0.2	-1.5	0.1	-0.3	-8.6	0	-0.2	-2.9	0	0.37	7.4	0	0	0.1	0.9
TEAP	0.67	2.4	12.9	-1	-4	0	-0.7	-20.8	0	-0.4	-3.9	0	0.3	3.4	0	0.3	4	0
DEEQ	0.56	2.2	5.2	-1.6	-5.4	0	-0.05	-0.9	0	-0.8	-7.2	0	0.3	3	0	0.2	2.4	0
MPRA	0.87	2.2	6.0	-0.9	-5.7	0	-0.6	-23.2	0	-0.4	-6.3	0	0.5	9.2	0	-0.2	-0.7	0.5
OEMA	0.86	2.2	5.9	-0.9	-5.2	0	-0.2	-10.9	0	-0.4	-7.4	0	0.2	4.2	0	-0.2	-4.2	0
RAVE	0.80	2.1	16.1	0.4	1.5	0.1	-0.1	3.3	0	0.2	2.1	0	1.3	13.5	0	0.5	7.1	0
ROMV	0.76	2.2	8.0	-0.1	-0.4	0.7	-0.6	-19.1	0	-0.2	-2.5	0	0.1	2.0	0	0.1	1.4	0.2
RVNM	0.89	2.0	3.5	-0.4	-2.6	0	-0.6	-21.8	0	-0.5	-0.8	0	0.2	2.6	0	0	-0.6	0.6
ACRA	0.57	2.0	5.9	-1.2	-5.1	0	-0.1	-3.1	0	-0.2	-2.8	0	0	0.8	0	0.2	3.5	0
SHAB	0.90	2.3	3.2	-0.5	-3	0	-0.4	-15.1	0	-0.1	-1.3	0	0.1	2.3	0	0.3	8.9	0

Source: Computed by the author

6. Summary and Conclusion

The results show that price was an important factor in the import demand for capital goods in Nigeria during the review period. This was clearly demonstrated by the overwhelming return of negative signs for all but one of the 18 categories of imports. This is consistent with *a priori* expectation. The category that had positive sign was Agricultural Machinery and Implements (AMAI). All but two categories, Machinery and Appliances (MAAP) and Domestic Electrical Equipment (DEEQ), were significant at 5 percent.

Similarly, the level of inflation was an important factor in Nigeria's import demand for capital goods during the period. All but one category, Railway Vehicles (RAVE), reacted appropriately to inflation by returning the negative sign. All but two categories, Road Vehicles Not Motor Vehicles (RVNM) and Ships and Boats (SHAB), were significant at 5 percent.

The importance of foreign reserves was in Nigeria's demand for capital goods was not clearly manifested by the results. While many items had the expected positive sign, a large number of others were not significant. Of the 18 items studies, 13 had positive sign indicating that the imports were sensitive to the country's level of foreign exchange reserve. Five categories returned negative signs. Only eleven groups were significant at 5 percent level. This tends to confirm the findings in Anusionwu (1984) that the outcome of his study produced an inconclusive result on the importance of foreign exchange reserves in Nigeria's capital goods import demand.

Furthermore, the results show that income was not important in the demand for capital goods during the

study period, returning negative signs. This implies that as national income grew larger, the country imported fewer capital goods or spent relatively less on such items. Although this result may be contrary to theoretical expectation, it is not far-fetched. It appears to reflect correctly Nigeria's poor attitude to capital investment and also her poor maintenance culture. If we relate the result to the fact that the country has been battling unsuccessfully to bring down its recurrent budget and raise capital spending for so many years then we get the plausibility of this results.

In like manner, exchange rate appears not to be an important factor in Nigeria's capital goods import decision for study period. The results show that higher exchange rates did not discourage the import of capital goods in Nigeria during the review period. Again this may be theoretically inconsistent but practically plausible. Two things appear to be at play here. The first thing is that Nigeria introduced the Import substitution Industrialization (ISI) strategy soon after independence, seeking to produce at home some of the hitherto imported items. As we now know, import substitution industrialization failed to reduce the outflow of foreign exchange because the new substituting industries were import dependent. They imported most of the raw materials they used in production. Their survival depended on the import of spare parts and semi-processed input from abroad. They had to import the materials they needed to operate irrespective of the exchange rate. This may be the reason why they spent more as exchange rate increased.

Another reason is that Nigeria is not famous for its financial prudence. This pattern of spending is likely to result from poor procurement procedures and practices as well as corruption, where vested interest may continue to promote expenditure despite cost implications.

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The Perception of Parents, Teachers and Students of Parental Involvement and Its Impact on Junior High School Students in Arab Society in Israel

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Abstract: The present study examined the involvement of parents in junior high schools in Arab society in Israel, and the perception of parents, the educational staff, and students to contribute to parents' involvement in three main areas: academic achievement, the social and emotional aspects of the student. The research findings unequivocally indicated the contribution of parents' involvement to all these parties, and emphasized the importance of involvement in the educational development of the children.

In addition, the parents and teachers stressed the role of the school in designing open door policy with the parents and see the administration as the key figure in developing and leading this policy.

Key words: involvement of parents; Arab society in Israel; contribution of parents

JEL codes: I20, I21, I31, J5, J8

1. Introduction

Parents' involvement in the education of their children in the 20th century was of great importance in the laws, school regulations, or circulars of the CEO, as in Israel. Castelli and Pepe (2008) note that during the last ten years , the number of scientific publications on parental involvement doubled.

A number of researchers have been involved in the involvement of parents such as Friedman (2010), Friedman and Fisher (2009), Epstein (2009), Furgeson C. (2008) Wilder S. (2014) and many others. From those researches Parental Involvement is a term that describes the number and variety of activities that parents perform with their children. The involvement of parents in education or school refers to the actions taken by the parents with the child or with the school aimed at improving the child's learning achievements (Lavanda, 2009).

In the course of this study, I will follow the influence of the parents' involvement in a junior high school in the north of the country that belongs to the Arab education system, on the achievements of the students and on the motivation of both the teachers and the students.

The proposed study will deal with the impact of parental involvement on the academic achievements and social and the behavioral sides, of middle school students in Arab education in northern Israel

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2. Literature Review

2.1 Parents Involvement in the School

Lavanda (2009) claim that in the last 3 decades, the role of the parents in the Western world had changed dramatically. In their study they insist that the position of the parents regarding the education of their children is of much higher intensity level, and so is their involvement in school matters. In reference to the negotiation theory and the micro-political theory, the scholars mentioned above, explain the conditions for either conflict or cooperation with the principal, the faculty and the parents.

Although schools are sometimes defined as “conflict arena”, they claim in reality, this situation is not common. On the contrary, they found that when the school is headed by stable experienced principal, and operation is ”flows” parents tend to be relatively indifferent regarding decision making process. A comprehensive study that was conducted in nine districts in the USA, the scholars (Agronick, O’Donnell Clark & Stueve, 2009) summarize the diverse strategies of schools in relations with parents as follows:

Developing a written and audio guide to help families know and understand their rights and responsibilities, creating school availability to parents and the community, conducting courses to families on creating and nurturing an appropriate learning environment at home, developing professional staff to form staff ability to work with families, maintaining regular updated communication channels providing information to families, creating and supporting school based parents association, and employing an intermediary person to assist the parents.

Partnership between the school the parents and the community positively affect the teachers and the school as an organization. Circular of the General Director (SD 4/A, 2004) determines that: “a regular contact between parents and teachers may turn the school to a close familiar institution allowing them to affect its conduct and to be affected by it.”

The parents’ home is the most significant factor in youth education. The parents have both right and duty to be partners to the educational process occurring in school. The trust of the pupils in the school depends on the trust of the parents in the system. The more empathy the parents show to the educational deed in the institute, the higher the commitment level of the pupil to processes occurring in school, and to the demands of him (Betzer & others, 2011).

In recent years there are various diverse initiative and projects aimed to increase parental involvement in school within an educational framework aimed to achieve this objective. According to Thurston (2005), this policy is based on the recognition of the essential role of the family and the community in education.

This policy relays on the assumption that such programs neutralize the superiority enjoyed by pupils coming from upper socio-economic background and by forming a united net of management, teachers and parents of various socio-economic layers the gaps among pupils will diminish.

McNeal (2001), suggests to perceive parental involvement as kind of social capital received by the child. He points out a number of mechanisms affected by parental involvement in various areas — in-school socialization affecting involvement and behavior of pupils; creating social supervision affecting discipline; with a lesser affect on academic achievements, and of course. Involved parents get access to additional information regarding the school situation and their children as its pupils, leading to cognitive and behavioral results.

The linkage between parental involvement and various school processes and products was examined for years. Several studies found linkage between parental involvement and teaching quality, indicating that parents’ involvement in the education of their children contribute to academic achievement and intellectual skills, as well

as to improving self image and elevating motivation, and cause reduction of disciplinary problems (Noy, 2014).

Although academic achievements and positive output are not achieved by one factor but by wide diverse range of possible factors, the study of Grosin and Manor (inside Friedman, 1995), revealed statistically positive significant correlations between school climate and pupils achievements and behavior.

Vassallo (2000) and Jesse (2001) also examined the influence of parental involvement on pupils' achievements and found prominent positive connection between parents' involvement and the achievements of their children.

Noy (2014), claims that parents' involvement enables them to legitimately "peek" into the school world as active participants and not as external critics. In addition she points out that this partnership can nurture and satisfy the needs of the parents as well, and she adds those who can gain most from letting the parents to participate in the educational work are the teachers, depending on their personality, previous experience motivation and especially in the quality of the relations formed between the two sides, and above all, the emotional support parents can give the teachers when they have relationship of cooperation.

Trager (2013), points out that in a study conducted by the school of education of Bar-Ilan University on 2004, with a sample of960 parents of pupils in primary, junior high and high school in the secular sector of Haifa district, connection between parents involvement and pupil's academic achievement was validated and strengthened. This study developed a model of parents' involvement defining the nature of the involvement within the framework of various school activities.

This study strengthens findings of studies conducted in the USA on the connection between parents' involvement and the achievements of their children. The study examines the influence of parents' involvement on their children in academic achievements in diverse age groups differentially, with examination of the boundaries and characteristics of the involvement.

Not only the children benefit from parental involvement in school, the findings indicate that parental involvement provide teachers practical help, along with mental and emotional support reducing the teachers' burnout syndrome. Wagner (2002), found that parents involvement positively affects teachers' moral which in turn improves the class' climate and increases the teachers' motivation to invest more in teaching and education.

2.2 Parental Involvement in Arab Society

Bouakaz and Persson (2007), claim that the study of parental involvement in the educational system indicates distrust of teachers in urban schools towards parents of pupils belonging to minority groups. The findings indicate that educators view the parents as the source of problems their children have in the school. The consensus among teachers is that the parents who belong to a minority group do not fulfill their role adequately, and this is the reason for the repeating failures of their children.

Suwaed (2012) emphasizes that several parents of the Arab society never come to school and do not cooperate at all. There are some reasons for this: Physical distance from the school, Employment is more important than learning (no flower no torah), Norms and culture built on the principle that the teachers are entrusted with the children's education and parents have no business in school.

Majdala (2005) examined parental involvement in education in the Arab society in Israel. The aim of the research was to expose the various factors that might affect parental involvement or avoiding it, in school work in the Arabic sector, within the context of personal factors related to their education and economical ability, alongside factors like the school's position regarding parental involvement, the community level of the school and its social climate.

The research findings indicate that in the Israeli Arabic sector there is limited parental involvement in school. This places difficult questions to the Arab educational system which is supposed to be the initiating innovation leading factor in the Arab society. If the system is unable to understand the importance of parents' alertness to what happens in school and provide answers to the society's needs by means of the processes, structure and policy, there would not be anyone to lead a change and advance a higher parental involvement in the work of the school.

3. The Research Method

Field of study: This study will be conducted at elementary Arab school in an Arab Muslim village in the north of ISRAEL. The number of students studying there is five hundred and fifty students, two hundred seventy-three boys and two hundred and seventy-seven daughters. There are thirty-five teachers, fifteen teachers and twenty teachers, most of them Muslims, and only three Christian teachers. The students include a relatively good socio-economic background.

3.1 The Study Population

Teachers, parents and students participated in this study, ranging in terms of gender, age, academic degree, occupation and their role. This diversity reflects a broader view and a different perspective on the central question of this study.

3.2 The Research Method

This research will use a qualitative-ethnographic research method. Ethnography is a process of describing and interpreting cultures. Instead of exploring people, ethnography learns from people. When you want to learn the behavior of a group with a common culture, you choose an ethnographic strategy (Shkedi, 2003).

3.3 Research Tool

Half structured interview: The research focuses mainly on how the school staff translates, understands, implements, and implements reflective teaching. In order to collect the data, a semi-structured ethnographic interview with the teachers will be used. This is the type of interview that is common in surveys, but often also in ethnographic research (Bayt-Marom & Ashkenazi, 2001). In such an interview, the wording and order of the questions will be subject to change depending on the nature of the interview progress. That is, different people can get questions that are formulated differently and also answer a new question that comes from previous answers.

Prior to the interview, a general explanation of the main topics of this study was provided. This method allowed matching the interview process and the questions to the interviewee's point of view, in conjunction with focusing the interview around essential points, which enables comparison between the views of different interviewees (Tzabar Ben-Yehoshua, 1990).

4. Study Findings

The findings will be concentrated in four main categories: parent-child ratio, open door and student achievement, involvement and social contribution, involvement and contribution to discipline.

4.1 Impact of Involvement in Parent-Student Relations

Samia notes: "My daughter is in seventh grade. She always asks me to come to school to ask about her. She is an excellent student and classmate". I tended to think that we have the most sincere and open relationship and do have a good one but after the activity "Cafe of dilemmas" that was held at school I felt that I must listen to her more, I felt there are many problems and complaints of children regarding us as parents that we try to ignore them,

That my involvement in her class improved our relationship, Samar said “I do not like my parents coming to school to ask about me. I’m not a really good student, and every time they get to school my relationship with my mother deteriorates and we do not talk, but on the other hand, I do want them to come to school”, she says. Like other students, if they do not come I feel like no one cares about me.

The school principal says: “I think the involvement is very important for the children. The children certainly want their parents to come to the school and ask them to show that they are very important for the children. We are a school whose door is open to every parent who wants to go to school. I think that parents who are involved in the school, even at a more basic level, are confident of their children. They signal to the school that we are here and that we must take into consideration the fact that the parents are involved. The child himself feels more belonging to the school that a parent who comes to school signals to his son that he is there and that he needs to learn, and in general the children avoid many problems because they know that their parents may be at school.”

The social coordinator agrees with the principal and notes that “the students will feel more relevant. The home influences the child and when the parent is involved he gains confidence and training from the school and he passes it on to his son”. Adnan believes that even if the parents are involved, In some cases, the problem is exacerbated, especially after the parent came to school in other cases, “... there was no real change to the student when his parents were involved in the school and even if the parent was on the parents’ committee” The chairman of the student council notes: “I think that my parents do me a favor when they come to school and give me a sense of safety I also feel that they love me ....”

4.2 Engagement and Achievement

Sami, the head of the parents’ committee: I think that the influence of parents’ involvement is very great. I pass my education on to my children, which I see suitable ... especially on issues that develop identity and belonging. Our mission and that of the school is to transfer basic values from life and from Arab culture. And that the same values will be common to both home and school. This is my parental involvement, and when the goals of the home and the school and the values of both are shared, I think that our children will improve.

The teachers also have the same opinion as the parents: “There is no zero. The more you invest in educating the boys the better the results, even though there are students whose parents do not come to school very often and they are good students I think that both average and weak students also need help from parents who deserve the school knows the problems of his son very well and starts working on these problems, and when he really helps him they get the desired results.

“I want to be radical in my answer. The good students are those whose parents are interested in them and help them at home, the parents’ home is a school, and the students whose parents do not care about them and just bring them into this world are no good. Adnan, the class’ educator in contrast to Ahmad’s radicalization, notes that: “Every cooperation brings success to the majority, and I think that in our case as well, the involvement of the parents contributes to the students and improves their achievements.”

4.3 Category 3: Social Involvement and Contribution

Teachers see their involvement as contributing to the social development of boys:

“When the parents feel empowered and when the school empowers the parents and really conceives them as partners, the children are also empowered, and this is a kind of transfer from parents to children. I personally do not feel that my son will join a group of children whose parents are involved like me.”

Samia is also in a similar position to my past: I think parent involvement improves our boys’ position in school. Many teachers and my personal experience value children more when their parents are involved. They

even allow them to initiate activities related to their parents, And if the parent teaches Arabic, then the student must prepare a presentation in Arabic, and if the parent is a doctor, as in my case, then the father is always invited to the school to give lectures and my daughter is always asked to prepare materials and lectures on this subject."

The teachers also support the parents' position and note:

School principal: I have already told you that parental involvement improves the student's sense of belonging to the school. If the parent comes to school and contributes to the school and feels part of the school framework, then the son must feel a sense of belonging and when he feels a sense of belonging he will feel self-confidence in what he does at school"

Adnan: I feel that the children whose parents are involved in the school cooperate with other students and with the educators, they contribute more and always seek to help and have initiatives at school"

The students' position was also different in this regard:

Rabi'a: I do not think that children whose parents come to school regularly and ask about their kids are doing them any good for then other children will start mocking them as babies".

Samar: I think the involvement of my parents gives me a good feeling, I feel safe and know that my parents support me. It gives me a lot of self-confidence, but it sometimes causes a headache when other students mock us.

4.4 Category 4: Open Door and Parent Teacher Relation

In the present case, the school's relationship with the teachers is divided between the two sides and is not agreed upon by the teachers and the parents:

Director: "During the many years I taught at school and in the years I served as a school principal, my relationship with involved parents has always been a positive one that stems from mutual respect. I personally respect the parents involved in the way I see fit in terms of involvement."

The coordinator: "I always encouraged parents to be involved in school. I work together with my parents and I am part of the steering committee that was created at the school. I see parents as a central and important part of educational activity.

The teacher: "Despite what I mentioned earlier, there are about 10 parents who are involved in the classroom lifein my class. When I need their help, they get involved when we want the rest of the parents to come to school, so these parents help us. At class, we work in full cooperation as long as the parents and I understand the limits of their involvement."

The following questions related to the position of the parents, and they also see the involvement in a positive light. The chairman and the parents' committee state: "I pass my education on to my children,... especially in matters that develop identity and belonging. Our mission and that of the school is to transfer basic values from life and from Arab culture. And that these values will be shared both at home and at school. This is my parental involvement." This is how the Chairman of the Parents Committee defines the extent of involvement as the parent's representative. Parents' involvement should be involved in everything in the school as well. The teachers expect parents to be involved in superficial activities such as gatherings, meetings, trips, And of course contribute to the school, but I think we should be allowed to supervise the processes in the school to know what our children are learning who is teaching them, what are the school's goals for this year, what are the plans for me? "Mari agrees with this statement: I want to see myself involved in the school where they study I want the school to consult with us both in the appointment of teachers and in the curriculum that they teach our children. Many times during the course of studies, the teacher tells me that the problem is in the learning material but the school does not allow us to change the content taught in this lesson. We parents require maximum involvement in everything

related to the school."

The degree of reciprocal interaction between parents and school is also acceptable to the parents, but it is not enough to get information about the school in general and about their children in particular. This desire was expressed in the questions addressed to them.

There was a desire to have a more structured framework that would provide information about the children and a general discussion about the child's situation, behavior and specific problems, a framework that does not exist today. The source of the parents' information is the result of the private initiative of each parent and there is no initiative from the school.

At the same time, it is evident that parents do not believe that they are involved in decision-making and policy-making, and this indicates a lack of awareness of their right to intervene at this level, although they are interested in cooperating with the school. .

The last question related to the change in the educational paradigm in the Arab sector. Parents do not want to see the relationship between the student and the school as a business relationship. They think that school is not a profitable business. The chairman of the parents' committee also believes that the client's idea is not helpful: We began to lose education in these terms."

5. Discussion

This study sheds light on one of the most important issues in nowadays' education. We talk about democratization of the education system and the Knesset is a very important part of the school's parents' existence. The current study shows that parental involvement contributes to the academic, emotional and social levels. And demonstrate knowledge and skill when there is motivation to learn and actively engage. This will happen when the child's perception of how the parent guides, encourages, and reinforces behaviors related to achievement.

The child perceives parents as role models and imitates them in solving various aspects in life including problem solving, self-direction and learning in addition to providing encouragement to coping with problems that a child might face. And guide and mentor their children: Parents guide the child in learning strategies, problem solving and self-direction.

The results of the study reflected the improvement in children's achievements in various areas due to parents' involvement. The teachers also report that there has been an improvement in all the social levels and skills of the children, and above all I think that we have seen that the communication process has improved all the time and the results of the children improved.

The findings of the study show that there is a contradiction between the perception of the parents and the perception of the teachers and the school on the issue of involvement. There seems to be a contradiction between the desired and the actual status, on the one hand they want greater cooperation, and on the other hand they participate only in the on the most basic level, the parents have reached higher levels of involvement, the parents see the school principal and the school climate as factors that monitor the development of their involvement in the school. This, too, is the opinion of the social coordinator, who is even the manager's deputy, parents and teachers know the importance of the involvement of the parents, this contribution contributes to the school and contributes to the students (Although this is not always accurate in the opinion of the class educator), but the perception of involvement varies between teachers and parents. While most of the parents interviewed require a lot of involvement, as I mentioned, the school saw several issues of red lines that cannot be crossed. But the findings of

the parents 'interview and the findings of the teachers' interview reveal the following picture. The parent who is involved in the school is expressed in visits to the school, receiving information about his son, accompanying trips, accompanying projects such as Shivuzim or building in the school.

As for the characteristics of the non-involved parents in the school, they are:

(1) Non-educated parents, Parents whose children are academically weak, parents whose children are problematic and who only hear complaints, parents who are too busy at work and do not have time to get to school, In a non-significant manner, parents with a moderate economic status or below.

The principal of the school on parental involvement found that he considered them to be one of the four essential components of the children's education process, in addition to the local school and the Ministry of Education, "they are our source of income." In this case, the school principal tries to influence his teachers to change their attitude toward their parents.

The three school factors: the principal, the educator and the coordinator are claim that low-income parents are hesitant to be involved in the school. Parents whose children are weak in terms of achievement do not usually attend school. Women are more likely to come to school than men, and parents who do not have time to attend school the school does not teach on Saturdays and it makes it difficult for parents to come to school.) Parents who are anti-school no matter what they do, the principal adds, "Some parents are against the school and against its policy even if the school is the best among the schools they will not bother coming to school no matter how hard the school is willing to invest time and effort ..."

The school's social coordinator also thinks that the school's climate today does not contribute to parents' involvement because "the school (represented by its principal) agrees on the theoretical level of the declaration of parental participation but in practice it does not do and does not want to do something, they (the parents) are more of a target for activity than of a partnership in the school, but the principal said that the school has a steering committee that aims to empower them in a real way, but the work in joint teams for parents and teachers is still in its early stages, I think that the climate of our school is a contributing factor as soon as we deal with the current problems I believe that parents will be more involved in school".

The teacher believes that the climate in the school and in the entire sector does not contribute to the involvement of the parents in the school, the lack of coordination between the two causes leads to situation of confusion, excess expectations from school and from parents is also a problematic factor. "The teacher also notes that the organizational culture in our schools does not add to the school climate, Involving parents is not a simple task. It requires changing the organizational culture of the school and changing the parents' perception of the role of the school today."

6. Summary

Turning parents into active partners in educational activity will break the circle of apathy, alienation and separation between educational and social institutions ... (from the Parents' Committee).

The phenomenon of parental involvement has preoccupied policymakers in the Ministry of Education and especially parents and educators in all educational frameworks in Israel. In view of the increasing phenomenon and the recognition of the importance of parents in the education process, many questions were examined including the reasons for parents' involvement on the one hand, and ways of sharing on the other, were examined.

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External and Internal Factors that Support the Reform in the Educational System

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Abstract: Change in the field of education is defined as replacing one situation by another in order to achieve commendable purposes from viewpoints of those people proposing the change. Hubbard & Ottoson (1997) defined educational change processes according to the way of their introduction: initiatives that have grown from the bottom based on needs of the field, and initiatives based on theory and operated from the top. In Israel, different reforms were planned and executed over the years. A "*significant learning reform*", that is one of these changes, relates to organizational changes which reflect organizational responses to changes in conditions of external or internal environment of an organization.

"*Significant learning*" is an initiative that has grown from the top down, an external change originated by the government, and emphasizing restructuring of the working processes of teachers. Organizational changes are led by two primary fundamentals: factors which encourage change that are external to an organization, and factors encouraging organizational change from within an organization. These two fundamentals, in different conditions, can constitute a barrier or an encouragement to accepting the change.

Current paper will review the variables encouraging implementation of the reform both on an intra-organizational level in the schools — teachers and principals, and as well on extra-organizational level — stakeholders who affect implementation of the reform: parents, Inspectors and professional organizations.

Key words: change; reform; significant learning; external stakeholders; vinclusion in decision-making
JEL codes: I210

1. Introduction

The educational system is dynamic and changes occur occasionally in schools, be it specific or profound reforms that occur over time (Ranson, 2008). In Israel, different reforms were planned and executed over the years. Organizational changes reflect organizational responses to changes in external or internal environmental conditions of an organization. Changes occur each time a significant gap is created between the desired functioning of an organization and the existing one (Piderit, 2000). The educational system in Israel constitutes an example for an organization in which different forces existand that operate continuously to bring it to a change according to social and cultural changes in the Israeli society (Fridman, 1993).

A comprehensive reform executed in beginning of 2014 in the Israeli educational system, is the significant

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learning reform. Significant learning is defined as learning inviting emotional, social and cognitive learning experience based on three coexisting components: value to a learner and to society, involvement of a learner and a teacher, relevance to a learner (Wolansky, 2014). Such learning is motivated by external factors — Authorities, Minister of Education and Inspectors of the Ministry of Education, and its purpose is to effect a learning change in school. Success of the change process of "significant learning" depends upon both internal and external factors.

1.1 Organizational Change and Stakeholders External to the Organization

Organizational change is a complex process the success of which depends upon intra-organizational and extra-organizational processes and factors. Over the years, theories have developed on the subject of organizational change emphasizing the importance of external and internal factors involved in this process. For example, the contextual theory relates to influence of internal environment (employees, work groups and management) and external environment (for example competition organizations) on organizational change processes and according to it, examination of a change process must be performed in light of an economic context, a social context, a political context and the sector in which an organization operates. For example, emphasizing the need of an organization for segmentation and deepening the differentiation as compared to competition organizations (Durand, 2006).

Researches in the field of education (Bryk et al., 2010) address as well the processes related to school while using terms such as macro politics and micro politics in education, and in fact, the intent is determining which school receives budgets, when and how much, according to interests of individuals and groups connected to a school. Meaning, pressures upon the organization by factors from within and factors from its environment, as well as social and political pressures, expedite the change processes in an organization (Durand, 2006) and emphasize the need for cooperation between intra-organizational factors (for example management and employees) and factors external to the organization (for example Authorities, Inspection, Governmental Ministries) for the change processes to be implemented successfully.

This clarifies the importance of internal and external factors in the vicinity of stakeholders of a school, which involvement can increase the chance of success of change processes (Laplume et al., 2008). As appears from reviewing the significant part of external stakeholders (for example parents, Local Authority, Governmental Ministries) and internal stakeholders (principal, teachers) in the changes that have taken place in the educational system in the USA and Canada, which include reforms in pedagogic fields and in connections between different schools and between a school and parents (Hargreaves & Goodson, 2006) and highlights the importance of external stakeholders regarding their willingness to support, promote and assist the implementation of change which can be observed in all matters of success of a change in an organization as is expressed in stakeholder theory.

Stakeholders were defined by Freeman (1984) as those who are able to affect an organization. Part of those stakeholders in a routine life of an organization change and depend for example on the means that are at their disposal in order to affect the organization and leave their mark upon it (Laplume et al., 2008).

2. Internal Factors Affecting the Change

Bennett & Durkin (2000), define in their study employees who are committed to an organization as employees who would identify with the purposes of the organization, would be loyal to it and invest effort in achieving the purposes of the organization. They define organizational commitment as rational and mental

behavior of employees towards the organization they work in. Hence, through affecting these sensations it is possible to affect the response of an individual towards a change (Fedor et al., 2006). In this context, it was revealed that openness and inclusion on the part of management, communication and effective leading of a change increases the confidence in management particularly in employees who have commitment that was defined as effective and in employees whose commitment was defined normative, which brings about a deepening of commitment towards an organizational change and increases the chances of its success (Meyer et al., 2007), the same goes for connection between the Ministry of Education and schools – those connections are significant in basing organizational commitment and professional accountability on the part of teachers (Johnson & Chrispeels, 2010). These studies indicate that there is much importance to the extent of an individual's willingness for implementing the change and this can as well be expressed in preparedness level of an organization for implementation of the change.

Wagner (1994) defined that "inclusion in decision making creates similar involvement of a manager and of employees in processes of information transfer, decision-making or problem-resolution" (p. 312). Campion et al. (1993) addressed inclusion as involvement of employees in decision-making on the part of management. They assume that self-managing and inclusion is supposed to increase team effectively by increasing the sense of responsibility of members and sense of ownership of the work (Campion et al., 1993). Inclusion of teachers in decision-making and in any variety of knowledge, will increase the ability of staff members (for example De Dreu & West, 2001) and will motivate teachers' learning (Thoonen et al., 2011).

In the context of 'significant learning' reform, teachers are required to teach in small groups, big groups and by frontal teaching. Therefore, acquisition and transfer of knowledge amongst teachers through inclusion in decision-making will assist them in promoting teaching processes and promotion of their pupils, including promoting cooperation amongst teachers and between teachers and school management regarding the study program and teaching (Somech, 2010).

3. Research Model and Hypotheses

The research model proposed by current paper is innovative since it combines the examination of success of change in internal and external factors of an organization – Israeli educational system. Previous studies reveal that a change process depends upon the support of internal factors (for example employees and managers in an organization). Other researches claim that a change process depends upon external factors such as the Authorities, workers' union (Midthassel, 2004; Rorrer, Skarla & Scheurich, 2008). Evaluating the success of processes that have taken place in schools, emphasizes the great strength concealed in the effect of external stakeholders upon conduct of schools and the meaning of relationship forged between them and the external stakeholders in a context of organizational change (Ranson, 2008), in the process of the progress of schools towards their pedagogic and moral destiny and their conduct in a complexity of financial, social and political processes from which the success of change can be predicted, while addressing the predictors of success of the organizational change, organizational commitment and perception of preparedness for change, which were described in the literature as predictors of successful implementation of change (Elias, 2009; Holt et al., 2007). My Hypotheses that are from the model and the literature review are: H_1A positive correlation will be found between organizational commitment of teachers to the school and between success of implementation of the 'meaningful learning' reform. H_2 A positive correlation will be found between organizational commitment of teachers to the school and between success of

implementation of the "meaningful learning" reform. H_3 A positive correlation will be found between high motivation of teachers and success of implementation of the "meaningful learning" reform. H_4 A correlation will be found between organizational commitment of teachers to the school and success of implementation of the "meaningful learning" reform. H_5A correlation will be found between positive positions of principals regarding 'meaningful learning' and success of the "meaningful learning" reform and H_6 A correlation will be found between positive positions of Inspectors regarding "meaningful learning" and success of the implementation of the "meaningful learning" reform.

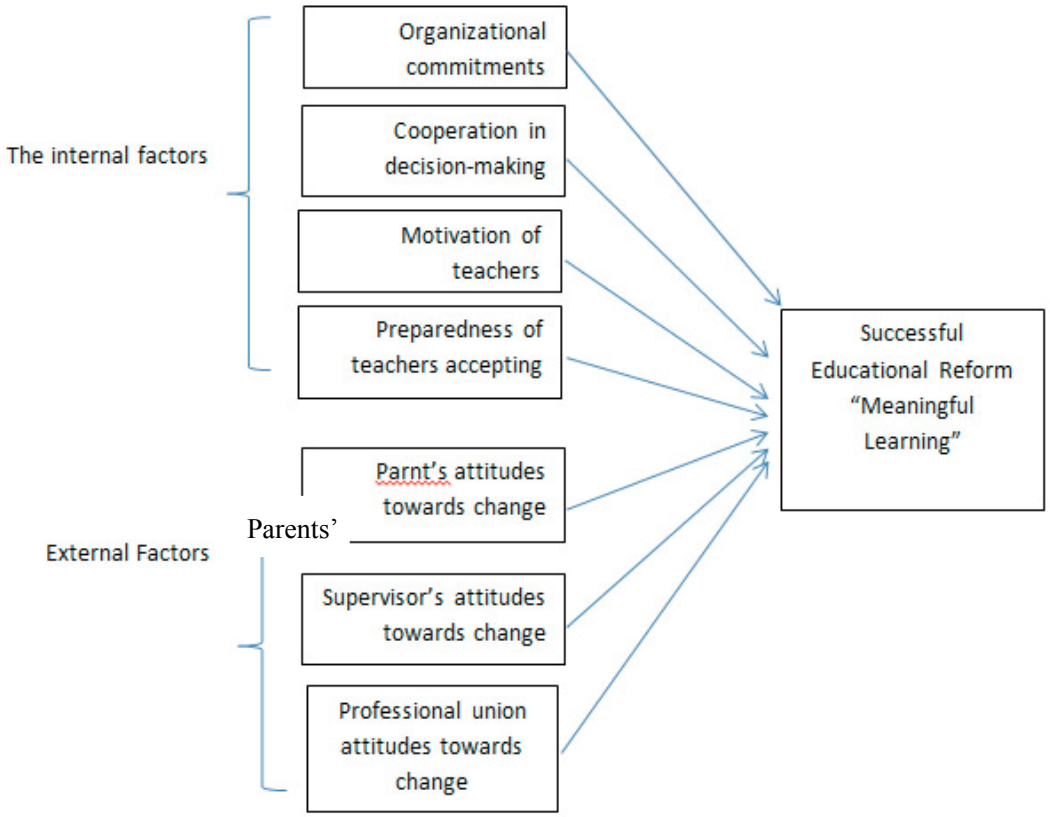

Figure 1 The Proposed Research Model

The study dealt in examination of high commitment of teachers to a school, their high motivation for change and positive view regarding the change itself and the success of organizational change and acceptance of "significant learning". An additionally that the participation of teachers in decision-making regarding the execution of change and implementation thereof in the organization would lead to success of implementation of the reform. The innovation of the study is in examining in parallel external variables which affect the success of the reform: positive views of parents, Inspectors and Local Authorities' Inspectors in charge of school principals and the professional union of teachers, who would demonstrate positive views towards the change and lead to success of the reform. The examined model was composed of the described variables.

4. Method

The research population was divided into two (1) Research population for examination of external factors that affect the success of "significant learning" reform. The sample included about 50 parents and 5 Inspectors and 10 representatives of the professional union of teachers were asked regarding their opinions. (2) Research population for examination of internal factors which included 125 teachers and principals from a number of schools in Israel. The research tool was closed questionnaires for teachers and parents and structured interviews for Inspectors and principals.

5. Findings and Conclusions

In current study, perceptions of key stakeholders, meaning Inspectors and principals were examined, regarding the preparedness of a school for a change. In parallel, internal factors which affect the success of the reform were examined: organizational commitment of teachers, motivation of teachers, inclusion in decision-making. All these dimensions were described in literature as dimensions related to successful implementation of change reforms (Holt et al., 2007; Elias, 2009).

The findings of the study are in preliminary stages. However, it is evident that the research model was found to be representative of the reality in the field. Internal factors of organizational commitment of teachers and high motivation are significant components for implementation and success of the "significant learning" reform. Moreover, it was found that inclusion of teachers in decision-making in the process of implementation of the reform significantly encouraged teachers to implement the "significant learning" reform in schools. External factors were as well found as affecting the success of "significant learning" reform, involvement of parents and their support of implementation of change, the support given by Inspectors to school principal on one hand and the professional unions on the other hand, all these have built a good foundation for the success of "significant learning" reform in a school. It is of importance to indicate that as current reform did not require cutting in personnel, but rather a thinking change, it was easier to gain support from external factors such as Inspection and the workers' committees.

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Cultural Policy from the Perspective of Support for the Arts: The Experience of the Czech and Slovak Republics*

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Abstract: In 1993 the newly democratic Republic of Czechoslovakia separated into two autonomous states. The two new countries, the Czech Republic and Slovakia, shared the same cultural-political history and traditions and similar infrastructure for the arts. Over the past two decades that initial starting point has transformed into two distinct cultural policies. In my paper I seek to identify the changes in the area of state support for the arts in the two countries and to map the current situation relating to funding in the field since 2008. In the period since then substantial cuts were made in the public budgets in both countries and these cuts primarily impacted the arts. In response to this, arts organizations have had to cope with decreasing financial support from the state on the one hand and to adapt to the rapidly changing environment of new technologies and new ways of working with and involving the public on the other.

Keywords: the arts; non-profit sector; funding; crowdfunding; Czech Republic; Slovak Republic

JEL code: Z1

1. Introduction

This paper focuses on the area of the traditional branches of the arts, which encompasses the performing arts, fine arts, crafts, publishing and the periodic press and consists of subjects that do not operate for the purpose of profit. This includes both the non-governmental non-profit sector and state and public institutions, most of which operate as contributory organizations.

The public budget cuts first impacted the non-governmental non-profit sector and then also the sector of contributory organizations and also have influenced the search for potential new sources of funding, including the greater role of crowdfunding, but also foreign sources of financial support. The state is also responding to this changing environment through its cultural policies. This paper therefore tries to answer the question: "What is the role of the state in supporting non-commercial professional arts in these two countries?"

2. The Starting Point

From 1969 to the breakup of Czechoslovakia in 1993, Czechoslovakia was a federation of two sovereign

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states, the Czech Socialist Republic and the Slovak Socialist Republic. They had two separate ministries of culture, but they operated according to the same principle of general centralization and control of culture and the arts. After the transition to democracy in 1989 the state divided peacefully in January 1993 into two wholly separate states – the Czech Republic (CR) and the Slovak Republic (SR).

The identical approach to support for the arts the two states had shared to that time then began to diverge along different paths, but the initial conditions in the two countries were the same. The dense network of ideologically and centrally controlled, subsidized institutions underwent mass privatization and denationalization in the 1990s. State institutions such as book and music publishers, film studios, circuses and arts agencies were privatized, while others were closed, and others, such as the state arts funds, were transformed into private legal subjects – foundations or endowment funds (Petrová, 2014).

Another significant step in the democratization process was the denationalization of cultural institutions in connection with the process of regional reform of public administration in the Czech Republic and Slovakia. The reform process had already begun by 1990, but a major part of the process occurred after Czechoslovakia broke up. As a result the individual stages of the reform process in the two countries differed and they varied in terms of their scope and the number of institutions that were transferred from the state to the municipalities and the newly established regions. While in the CR, for example, theatres were transferred to the municipalities in the first stage of the process by 1993, in Slovakia the process of transferring theatres to the municipalities and the regions unfolded gradually up until 2002.

The states began to draw up their first strategic materials. In the Czech Republic the first government cultural policy was the "Strategy of More Effective State Support for Culture" adopted in 1999, and in Slovakia the first policy was adopted in 2002 in a document titled the "Strategy of State Cultural Policy".

Between 2008 and 2015 the Ministry of Culture of the Czech Republic (MC CR) worked with several state strategic policy documents — the "State Cultural Policy for 2009-2014" and the "State Cultural Policy for 2015-2020 (with a view to 2025)". These materials were then elaborated in more detail for the field of the arts alone to produce the "Strategy of More Effective Support for the Arts 2007-2013" and the "Strategy of Support for the Arts 2015-2020".

The Ministry of Culture of the Slovak Republic (MC SR) was in the same period guided by its "Strategic Priorities for the Development of Culture 2012-2016" and the 'Strategy for the Development of Culture in the SR 2014 -2020".

In both countries strategic materials are developed in direct reference to the policy statements of the governments, which in recent years have included support for culture among their priorities, while at the same time there has been a shift in the outlook on this support so that alongside the traditional focus of support for cultural heritage attention has also begun to turn to support for the arts as a creative part of society with impacts on other sectors.

3. Defining the Sectors for Research

Defining the arts, like defining culture, is a complex matter and there is no single definition that is generally shared and applied. DiMaggio (1987) defines systems of classification of the arts in the context of the cultural industries (Hirsch, 1972, 2000). For the purposes of my research the best approach is a micro-sociological perspective and specifically the definition put forth by Howard Becker (2008) that understands art as a work that

has been created and is subsequently valued. Becker highlights the significance of the relations between those who create a work of art and those who consume it. This is a complex perspective that encompasses both the various actors within the arts world who have a hand in the production of art and the final consumer or audience of the work of art.

The different approach to classification is influenced by past experience, historical context, and the current political representation. For example, in the CR and the SR this classification system works with a division between the live and non-live arts, for-profit and not-for profit arts, art and entertainment, commercial and non-commercial arts, and professional and non-professional arts, and the given system of support is then structured accordingly on this basis.

In practice both countries still adhere to a traditional division in their subsidy systems. One branch of support goes to the sphere of cultural heritage, which means support among other things for institutions in the field of the non-live arts, which mainly concerns institutions that create collections. And the other branch of support goes to the sphere of the live arts, which is subdivided into the professional and non-professional (amateur) fields of the arts. The latter sphere encompasses those arts that are understood as the traditional fields and which David Throsby refers to as the 'core creative arts" (Throsby, 2001).

My paper restricts itself to analysing support for the live professional arts, which include music, theatre, dance, visual arts, and literature, and which is a sphere of the arts made up of subjects that are not established for the purpose of profit. The paper does not deal with leisure-time activities or folk arts.

3.1 Defining the Non-profit Sector

The CR and Slovakia both base their definitions of the non-profit sector on an internationally recognised institutional-operational definition of the non-profit sector (Salamon, Anheier, 1992), which is further elaborated in the definitions used by respective government advisory bodies – in the CR this means the Government Council for Non-State Non-Profit Organisations, and in the SR the Government Council for Non-Governmental Non-Profit Organisations. These bodies act as advisory, initiatory, coordinating agencies of the government for the sector of non-state non-profit organisations, and their viewpoints and positions form the foundation of the state's other strategic materials. They are dividing the non-profit organisations into two basic types:

(a) governmental (public, state) non-profit organisations whose purpose is to participate in and perform the work of public administration at the level of the state, the region, or the municipality. In both countries the legal form such organisations in the culture sector assume is 'contributory organisations' of the state, region, or municipality.

(b) non-state (non-governmental, civic, private) non-profit organisations in the CR, which in conformity with the Civil Code in effect to the end of 2013 usually took the legal form of civic associations, charity organisations, foundations, endowments, or as church entities. According to the new Civil Code they take the legal form of institutions, societies, social co-operatives, charity organisations, foundations, endowment funds, and church entities. In the SR they most often take the form of foundations, non-investment funds, charity societies, civic associations, interest groups of legal persons and organisations with an international component.

Non-profit organisations adapt their goals to stakeholders and above all to those who provide them with funding. Like in the for-profit sector, in the non-profit sector organisations try to meet the expectations of those who provide them with support. In the past three decades in the West and in the newly established CR and SR non-profit organisations are supported under the careful oversight of the government, on the one hand because government bodies expect the provision of goods and services from non-profit organisations and on the other

because, unlike in the past, they provide large financial subsidies for the production of these services (Brooks, 2004).

3.2 Statistics on the Culture Sector and State Expenditures in the Czech Republic and Slovakia

In the CR statistics on the culture sector are collected by the MC CR and the National Information and Consulting Centre for Culture (NIPOS), a state contributory organisation, is entrusted with performing this task on this ministry's behalf. One of the tasks established as part of the implementation of the "State Cultural Policy of the CR 2009-2014" (Ministry of Culture of the CR, 2008) was to create the Culture Account of the CR. The purpose of this account is to map the flow of revenue into culture from various sources and the flow of revenue that culture produces. The account should also show the level and effectiveness of financial management in different parts of the culture sector, the scale of employment and investment resources used by the sector, and wage levels, and, last but not least, it should with the aid of financial indicators be able to provide evidence of the overall contribution of culture to the economy.

In September 2011 the results of the first and pilot Culture Account of the CR for 2009 were presented. Since then the results have been published each year. The latest results were released at the end of June 2015 for the year 2013.

The Culture Account of the CR is compiled from a variety of data drawn from administrative sources and statistical surveys. Data from public budgets are obtained from the Czech Ministry of Finance and from available online sources (NIPOS, 2014) or are obtained directly from cultural entities.

Given that the methodology and scope of data observed since the Culture Account was initiated change each year, it is at present difficult to compare the Culture Account results in a time series. Even after several years it is apparent that some cultural activities are still not covered in the account or are represented only to a very limited extent. A fundamental obstacle to obtaining data in general is the high rate of nonresponse (Petrová, 2015).

In the SR, like in the CR, it is the MC that pursuant to the act on national statistics is responsible for collecting and maintaining statistics on the culture sector, and it assigns this task of obtaining statistics to the National Education Centre (NOC), a contributory organisation.

Statistical surveys conducted by the Slovak MC focus mainly on the area of cultural participation. A more comprehensive overview of the entire sector including economic and employment data does not exist. There are no data on the individual branches of the arts at the regional or municipal level. One of the tasks set out in the "Strategy for Development of Culture in the SR 2014-2020" (Ministry of Culture of the SR, 2014) is to set up a separate satellite account for culture, which should address this problem.

Given these findings and the great delay in the collection of relevant statistics and because the Czech Culture Account focuses on all providers of cultural services and not just on non-profit subjects, in my research I draw on my own calculations based on an analysis of all direct data that have been collected, both for the CR and for the SR.

4. Cultural Participation

Cultural participation has long been a component of state cultural policies dating back to when such policies first emerged in the 1960s. It was considered one of the basic indicators of the prosperity of a state and an important criterion for why the state should support the arts (Matarasso, Landry, 2015; Belfiore, 2012). Cultural participation is also a fundamental aspect of the current cultural policy because the forms of participation are

changing. Addressing cultural participation within government strategic documents is a sign that the state is interested in making the arts accessible to the widest possible public (Johanson, Glow, Kershaw, 2014).

There is no universal definition of cultural participation, but some new definitions conceive of two forms of participation — active and passive. This is a very important distinction because it reflects one element of change occurring in the arts environment. Passive participation refers to audiences or visitors in the passive role of an observer, a passive recipient of an artistic experience, while active participation is elaborated as the active involvement of audiences and visitors in the work of art (Novak-Leonard, Brown, 2011). In the case of passive participation, based on the presence of a spectator or visitor, participation is traditionally expressed and measured on the basis of visitor or spectator numbers calculated from admission ticket sales. However, in the case of active participation, which even includes such forms of active participation as crowdfunding, there is very little coverage or measurement of participation. In the comparison below presented for both countries we can observe the increase in active participation in the case of the visual arts.

4.1 Cultural Participation in the Czech Republic

Table 1 shows that from 2008 to 2014 the field of the professional performing arts (theatre, music) remained relatively steady and attendance slightly increased. Conversely, although the number of exhibition venues or galleries remained roughly unchanged, there was a dramatic decrease in the number of visitors at exhibitions. It is also clear that audience development is becoming a very important part of the work of exhibition venues and galleries, the number of creative symposia is growing, and the number of visitors at such events is also growing strongly.

Table 1 Cultural Entities and Attendance Figures in 2008-2014

Indicator		Year							Index
		2008	2009	2010	2011	2012	2013	2014	2014/ 2008
Music ensembles	No. of music ensembles	32	29	30	45	39	44	43	1.3
	No. of music groups in them	47	44	47	84	68	67	71	1.5
	Total no. of concerts	2321	2196	2166	2812	2546	2739	2983	1.3
	No. of concerts abroad	410	403	346	422	323	364	470	1.1
	No. of visitors (in thous.)	445	430	439	448	426	455	478	1.1
	Percentage of attendance	75.0	729	74.8	78.0	76.3	77.1	68.3	0.9
Theatres	No. of theatres (not incl. stagione)	133	137	151	153	153	152	152	1.1
	No. of visitors (in thous.)	5606	5657	5805	5794	5699	5846	6108	1.1
	No. of theatre festivals	x	97	97	120	114	125	142	x
Exhibitions activities	No. of exhibition halls	411	405	411	412	412	433	436	1.1
	No. of exhibitions	2984	2682	2719	2716	2716	2642	2504	0.8
	No. of visitors (in thous.)	2678	3116	2324	2249	2249	1971	2651	1.0
	No. of creative symposia	56	138	93	328	328	285	176	3.1
	No. of participants at these symposia	1987	7843	2945	7426	7426	8677	5928	3.0
	No. of catalogues published	281	245	229	212	212	237	219	0.8

Source: Based on statistics from NIPOS (2015).

4.2 Cultural Participation in the Slovak Republic

Table 2 shows that the number of music ensembles and galleries remained steady and the number of theatres

grew slightly between 2008 and 2014. Theatre festivals also showed a rising trend. On the other hand, the number of people attending the theatre decreased steadily. The number of concerts and attendance at concerts fluctuated between years with a significant decrease between 2010 and 2013.

In the field of the visual arts it is clear that galleries are struggling with a shortage of financial resources. The number of exhibitions organised has been on the decrease since 2011 in particular, and the number of published titles has also been decreasing since then. On the other hand, like in the Czech Republic, in Slovakia the number of accompanying events and visitors grew.

Table 2 Cultural Entities And Attendance Figures 2008-2014

Indicator		Year							Index
		2008	2009	2010	2011	2012	2013	2014	2014/ 2008
Music ensembles	No. of music ensembles and groups	12	12	12	12	12	12	14	1.2
	Total no. of concerts	815	552	575	683	460	685	735	0.9
	No. of concerts abroad	249	104	170	135	130	173	122	0.5
	No. of visitors (in thous.)	1466	1190	893	1048	1035	606	1640	1.1
	Percentage of attendance	82.71	79.04	79.23	82.47	84.36	89	75	0.9
Theatres	No. of professional theatres	51	54	53	49	59	66	77	1.5
	No. of permanent stages	68	74	71	66	87	76	105	1.5
	No. of visitors (in thous.)	1456	1574	1574	1389	1529	1086	1151	0.8
	No. of theatre festivals	32	29	28	24	29	37	41	1.3
Galleries	No. of galleries	25	25	25	25	25	25	25	1
	Total no. of exhibitions	499	519	502	465	446	392	387	0.8
	No. of visitors (in thous.)	428	377	414	420	387	964	490	1.1
	No. of creative symposia	7619	6277	4366	7546	5969	8488	8945	1.2
	No. of participants at these symposia	145018	135445	115993	158487	151312	238133	189850	1.3
	No. of exhibition catalogues published	160	148	133	151	107	93	77	0/5

Source: Based on statistics from NOC and MC SR.

5. Models of State Funding for the Arts

State cultural policies and strategies describe funding for the arts and the models of funding to be used. In the past in the advanced parts of the world cultural policies focused directly on support for the arts (Throsby, 2012). Tradition components of this support included most notably support for the creative work of artists and arts organisations, support for the operations of arts organisations, and, finally, support for cultural participation and improved access to the arts. Instruments to achieve these ends include regulation, for instance in the form of copyright protection of works of art and support for arts education. Another form of support is provided through indirect state support in the form, for instance, of tax deductions and various voucher programmes. The objective of this support is to stimulate the private sector and private-sector stakeholders to support the arts.

Funding models at the state level in every country that supports the arts contain an element of multi-source financing. This means that the conditions for allocating support include among other criteria the requirement that an applicant for support also obtains funding from other sources or provides co-financing from its own sources of

income. The state is in this case a co-financer and not the sole source providing one hundred percent of the funding. This practice, which since the end of the last century has become a firm part of state subsidy systems and generally also of systems of support for the arts using public sources, was adopted from the American model of "matching grants", combining several sources of funding to support projects originally used in relation to donors in the private sector (Schuster, 1989). One of the basic forms is co-financing, which is a customary practice in the CR and SR. In this approach the state contributes support for a portion of the costs associated with a project.

5.1 State Expenditures on the Arts in the Czech Republic

State support for the arts in the CR is provided solely in the form of direct financial support. No new forms of support were recorded during the period under observation. The MC directs the largest volume of funding in this area to support the operations of the state's contributory organisations — national cultural institutions, of which there are 27 in total, 6 of them national arts institutions.

In the field of the arts there is one intermediary — the Arts and Theatre Institute (ATI)–and then there are the providers of arts services. Current or past providers of arts services in the field of theatre include the National Theatre in Prague, the State Opera Prague, and Laterna magika; in the field of music they include the Prague Philharmonic Choir and the Czech Philharmonic; in the field of contemporary visual arts include Rudolfinum Gallery (part of the Czech Philharmonic), the National Gallery in Prague), and the Moravian Gallery in Brno. The State Opera Prague and Laterna Magika eventually ceased to exist as independent organisations and were incorporated into the National Theatre in Prague. The ATI and the Czech Philharmonic are included under interdisciplinary institutions as they do not focus on just one branch of the arts.

Figure 1 shows that the budget cuts in state contributory organisations began in 2010 and the largest cuts occurred in 2011. The field of theatre suffered the most dramatic impact from the cuts. By 2015 state expenditures on every field of the arts supported through contributory organisations had risen again to a level above that in 2008. Since 2012 both theatre and especially interdisciplinary institutions have seen increases (in support), particularly as a result of the sharp increase in the budget of the Czech Philharmonic.

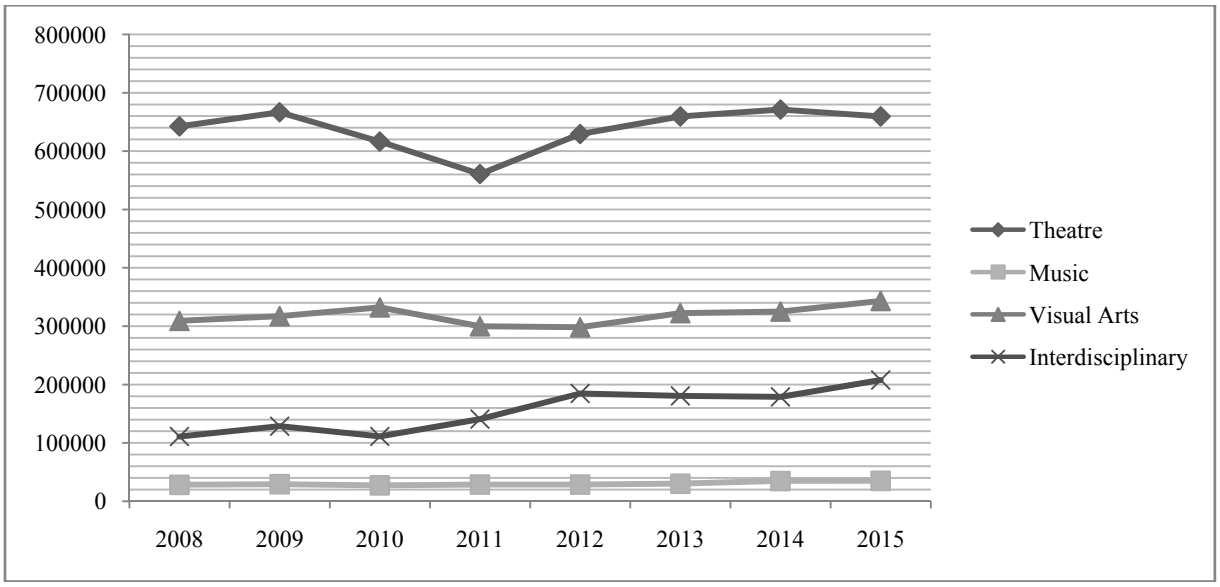

Figure 1 Real Expenditures of the Ministry of Culture Made through State Contributory Organisations in the Field of the Arts (in Thousands of CZK)

Source: Authors´s calculation based on the annual reports of the MC between 2008 and 2015 and other data from the MC.

The MC also supports the contributory organisations that operate in the towns and municipalities across the country through three programmes: the Programme of Support for Professional Theatres, the Programme of Support for Philharmonic Orchestras and Choirs, and, in the past, the Programme of Support for the Contemporary Visual Arts in Museums and Galleries. Figure 2 also shows clearly how state funding is concentrated exclusively on the sectors of theatre and music, which survived the crisis years of 2011 and 2012 and are now again witnessing an increase in funding. The Programme of Support for the Visual Arts ended in 2008 and no other programme was introduced to replace it.

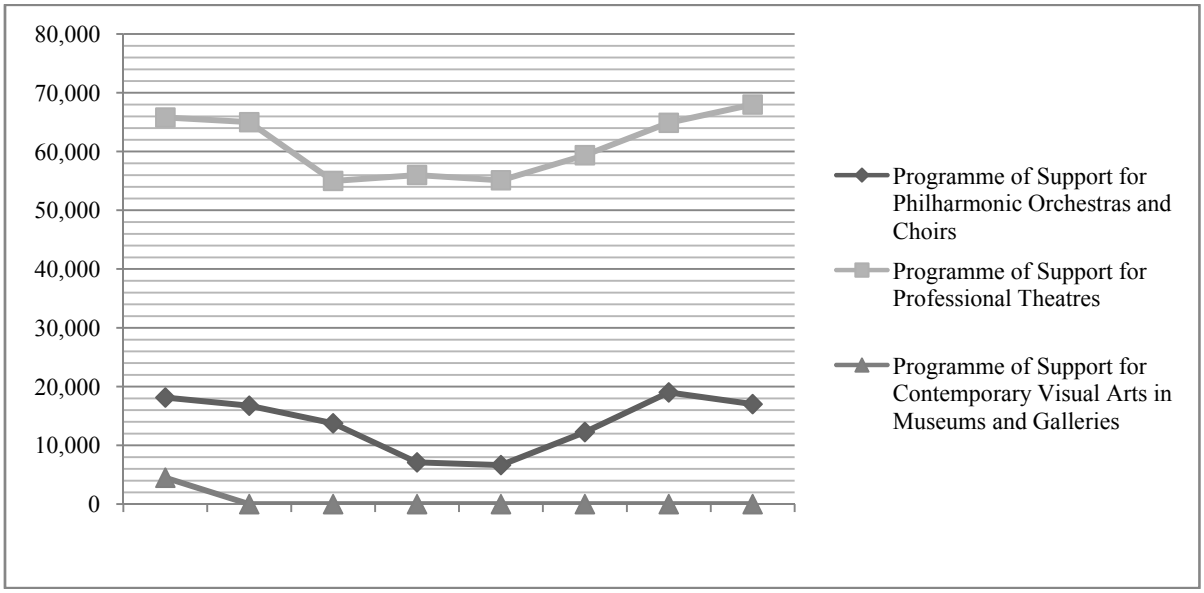

Figure 2 Expenditures of the Ministry of Culture Made through Individual Programmes of Support for the Arts (in Thousands of CZK)

Source: Authors´s calculation based on the annual reports of the MC between 2008 and 2015 and other data from the MC.

The MC uses several sources of funding through which it provides support for the arts in the non-state non-profit sector. The majority of funding is provided through grant programmes aimed at supporting theatre, music, dance, the visual arts, and literature. While for contributory organisations in the arts the year 2011 was the most critical one, in the non-profit sector cuts to grant programmes were instituted by the state in two waves, first in 2009-2010 and again in 2012-2013 (Figure 3). By contrast, 2011 was a strong year for the non-profit sector. Since 2014 expenditures on this area have grown substantially.

Figure 4 shows the funding that is provided in support of international cultural cooperation and mobility, an area in which there exist four different programmes of funding support. The figure clearly shows that this is not a priority area within the framework of state support for culture; no new instruments of support have been introduced and existing programmes continue to see their funding cut. The final item in this figure indicates funding from the State Cultural Fund, which was re-introduced in 2012 to make up for decreases in other state funding programmes. It has not, however, been very successful at living up to this objective.

Figure 5 presents the consolidated expenditures based on all types of expenditures on individual fields of the arts. It is very apparent from this overview of support and funding for individual sectors of the arts that the theatre has been the clear priority area for funding under the state's cultural policy. International cooperation and mobility by contrast have been of marginal interest.

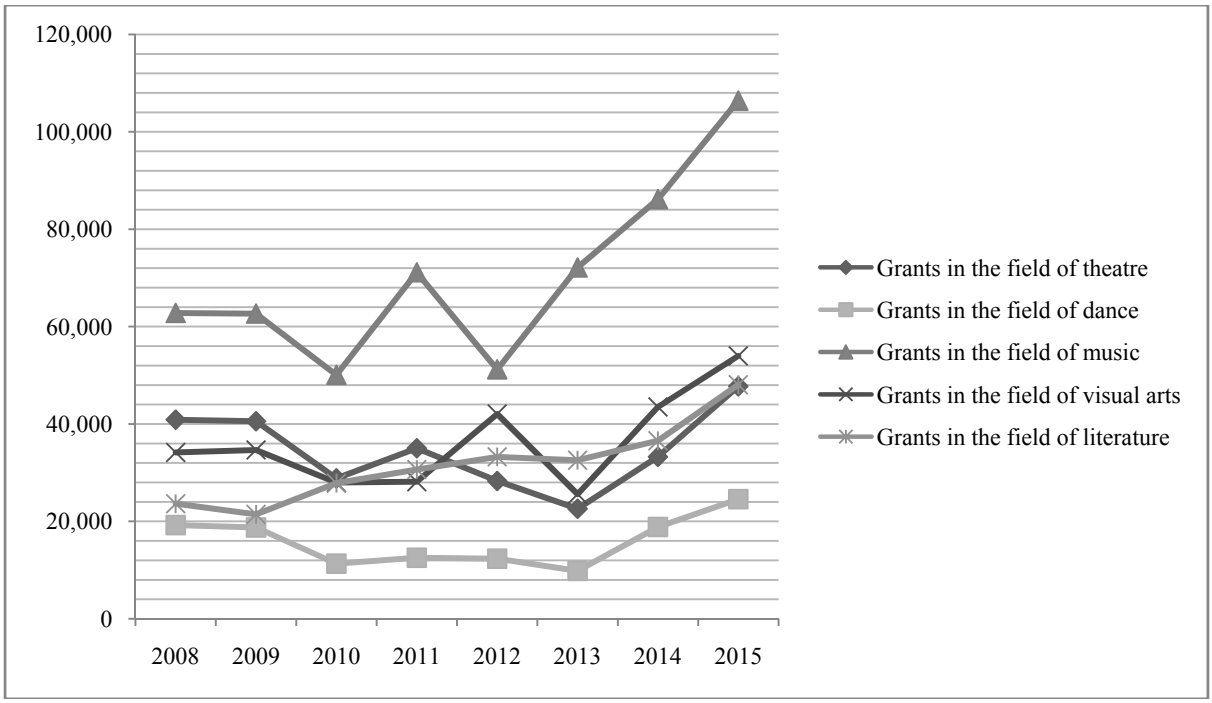

Figure 3 Expenditures of the MC Made through Grant Programmes in Support of the Arts in the Non-profit Sector 2008-2015 (in Thousands of CZK)

Source: Authors' calculation based on data from the MC for the years 2008-2015.

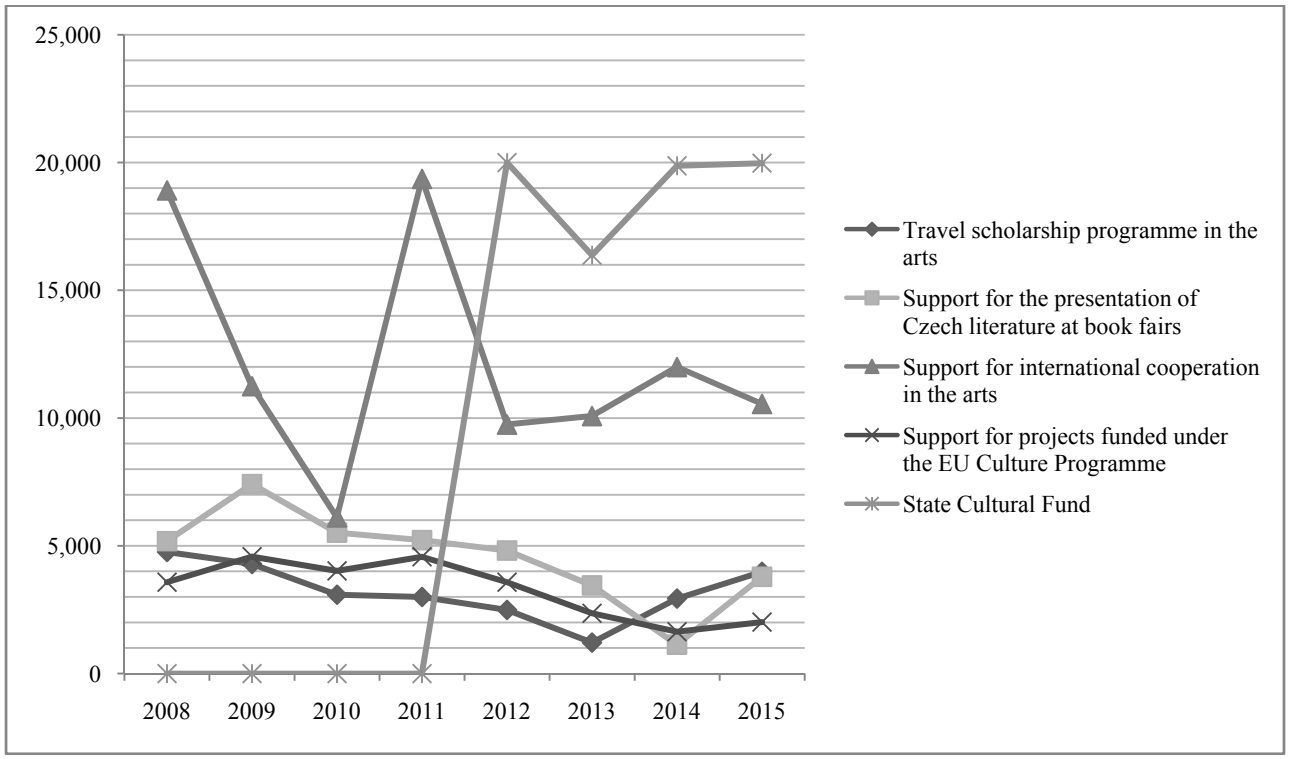

Figure 4 Expenditures of the MC through Individual Funding Schemes in Support of International Cooperation in the Arts in the Non-profit Sector International Cooperation and the State Cultural Fund 2008-2015 (in Thousands of CZK)

Source: Author's calculations based on data from the MC for 2008-2015.

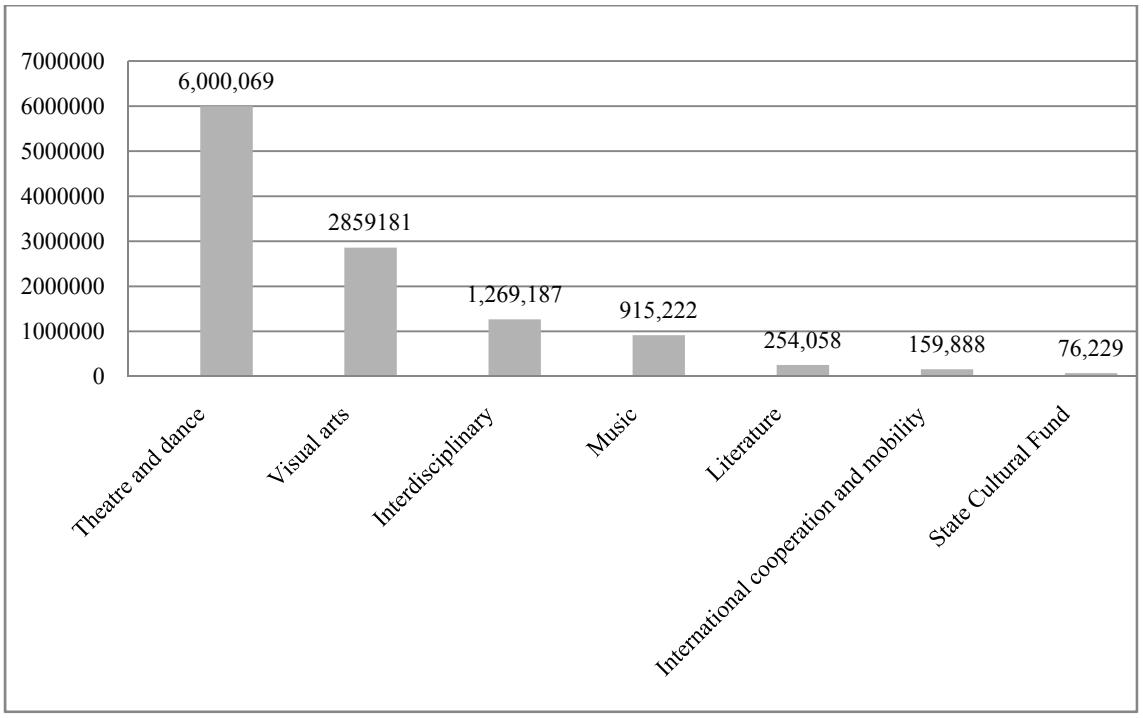

Figure 5 Expenditures of the MC on Individual Artistic Fields — Consolidated Expenditures from All Types of Expenditures of the MC from 2008 to 2015 (in Thousands of CZK)

Source: Author's calculations based on data from the MC for 2008-2015.

5.2 State Expenditures on the Arts in Slovakia

The Slovak MC began during the period under observation to view the arts and culture as important economic factors that should be stimulated. It sees the state, culture, and the economy as basic interconnected systems of creating the tangible and intangible wealth of society. In definitions of the creative industries in strategic materials in Slovakia (Ministerstvo kultury SR, 2014), all the traditional arts are part of these industries.

Unlike the Czech state Slovakia uses several instruments of state support for the arts, both direct and indirect.

Indirect instruments:

- Income tax deductions

A 2% income tax deduction can be made for contributions to specific recipients in the non-profit sector. A 3% income tax deduction is allowed if the taxpayer engages in volunteer work for more than 40 hours a year. Arts organisations draw attention to the deduction option in campaigns targeting the public and visitors.

Direct instruments:

- A personal contribution for singers, musicians who play wind instruments, and dancers

The contribution exists since 1997 when it was introduced in legislation[1] and it is granted to persons in the aforementioned professions who are employees of state arts institutions after they have worked there for a prescribed minimum number of years.

- Culture vouchers/coupons

These are provided for the purpose of enhancing schools' access to cultural values and the arts. They are intended for school students and arts and cultural institutions.

[1] Act No.103/2014 on theatre.

- Direct expenditures in the form of subsidies

Subsidies are intended to help in the distribution or dissemination of works of art and artistic reflection. Subsidies are provided by state-founded arts organisations, arts organisations founded by the regions or municipalities, and non-profit non-governmental organisations to physical persons.

Like the CR, the Slovak state directs the largest volume of its expenditures on the arts into the arts organisations founded by the state. The Slovak MC has 29 contributory organisations, 12 of which are arts organisations. These include four intermediaries — the Theatre Institute, the Music Centre, the Centre for Information on Literature, and the Slovak Design Centre. The other organisations are the eight institutions that provide services in the arts — in theatre these include the Slovak National Theatre, the State Opera, State Theatre Košice, and the New Scene; in music they include the Slovak Philharmonic, the Slovak State Philharmonic Košice, and the Slovak Sinfonietta; and in the visual arts there is the Slovak National Gallery.

Figure 6 shows that state contributory organisations did not suffer significant expenditure cuts during the period under observation and with the exception of the visual arts they in 2015 received the same level of state support or more than they did in 2008. The field of literature remained at roughly the same level without major fluctuations, while expenditures grew significantly in the field of music and to some extent also in the field of theatre.

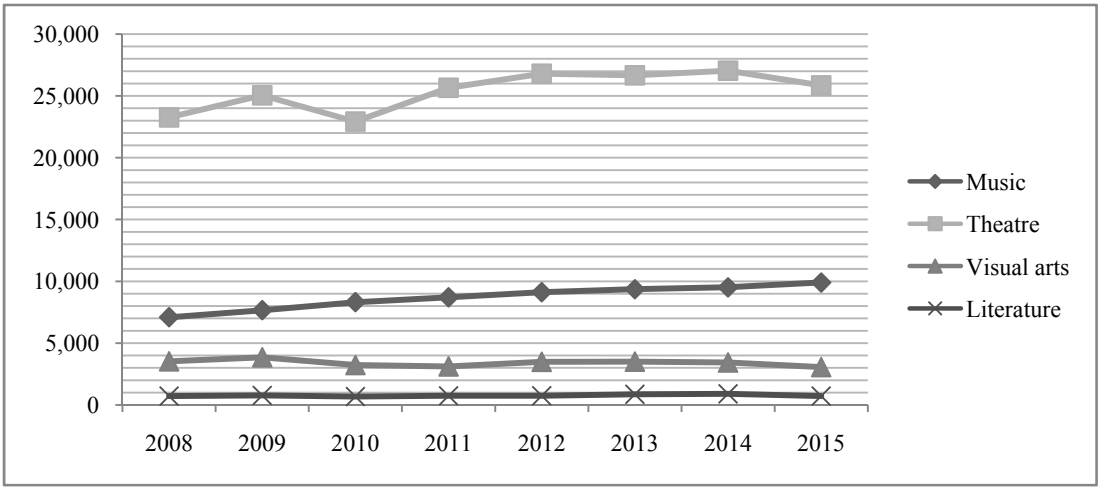

Figure 6 Real Expenditures of the MC through the State Contributory Organisations in the Arts (in Thousands of EUR)
Source: Author's calculations based on the annual reports of contributory organisations and the MC for 2008-2015.

As well as direct support of its own contributory organisations the MC also provides support to the rest of the non-profit sector in the arts, and during the period under observation it did this through two subsidy programmes — the Programme for the Arts and the Pro-Slovakia Programme. This system was in effect until the end of 2015. As of 2016 the entire system has undergone a transformation and support has been transferred from the MC to the State Arts Fund, a public institution that has been newly founded and whose work is funded by the state.

The Programme for the Arts focused on the creation and distribution of art, artistic reflection, and education in and through the arts. Special attention was devoted to supporting artists up to the age of 35. The Programme for the Arts was divided up according to the different branches of the arts.

The Pro-Slovakia Programme focused on supporting international cooperation in the sector of culture and the arts and on the mobility of artists and other workers in the culture sector. The programme also provided support to

projects supported under the EU's Culture and Creative Europe programmes.

As can be seen in Figure 7, while the non-profit sector in the arts was not seriously impacted by budget cuts in 2009, in 2010-2011 the fields of music and the visual arts were both hard hit by budget cuts. Since 2012 state expenditures in every field of the arts have slowly begun to increase again.

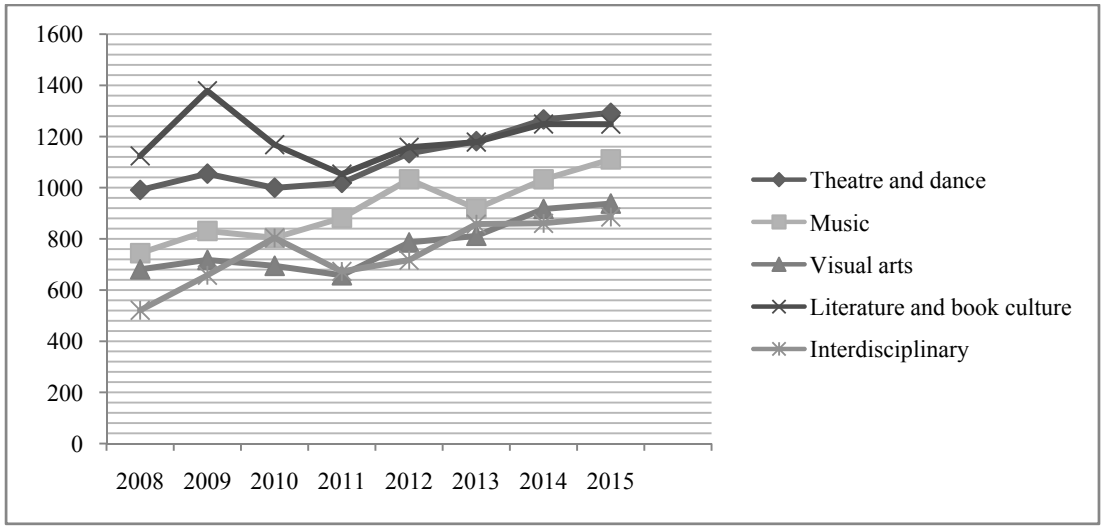

Figure 7 Programme for the Arts (in Thousands of EUR)
Source: Author's calculations based on data from the MC for 2008-2015.

In Slovakia support for international cooperation was, like in the CR, suffered more substantially from budget cuts than support for the actual creation of artistic work. Figure 8 shows the large fluctuations in the annual amount of financial support allocated to international cooperation and the instability of this area of activity, with no significant increase in support having occurred even in the past three years. The decline in co-financing for projects supported under the EU's Culture and Creative Europe programmes has less to do with drops in total expenditures and more to do with the small number of Slovak projects that are successful in these programmes (see below on support from international sources).

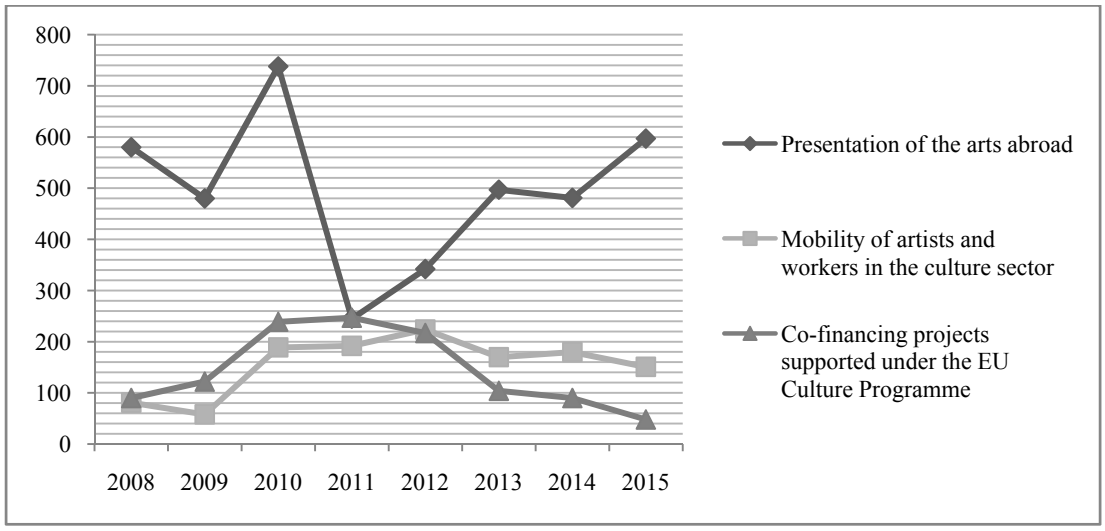

Figure 8 Pro-Slovakia Programme (in Thousands of EUR)
Source: Author's calculations based on data from the MC for 2008-2015.

When we look at the consolidated expenditures in each branch of the arts in Figure 9, we see that, like in the CR, theatre and dance are the fields that continued to enjoy the strongest support followed then by music. This is understandably due to the number of state contributory organisations that exist in Slovakia and the focal activities of these organisations. International cooperation and mobility are clearly the most neglected priority areas.

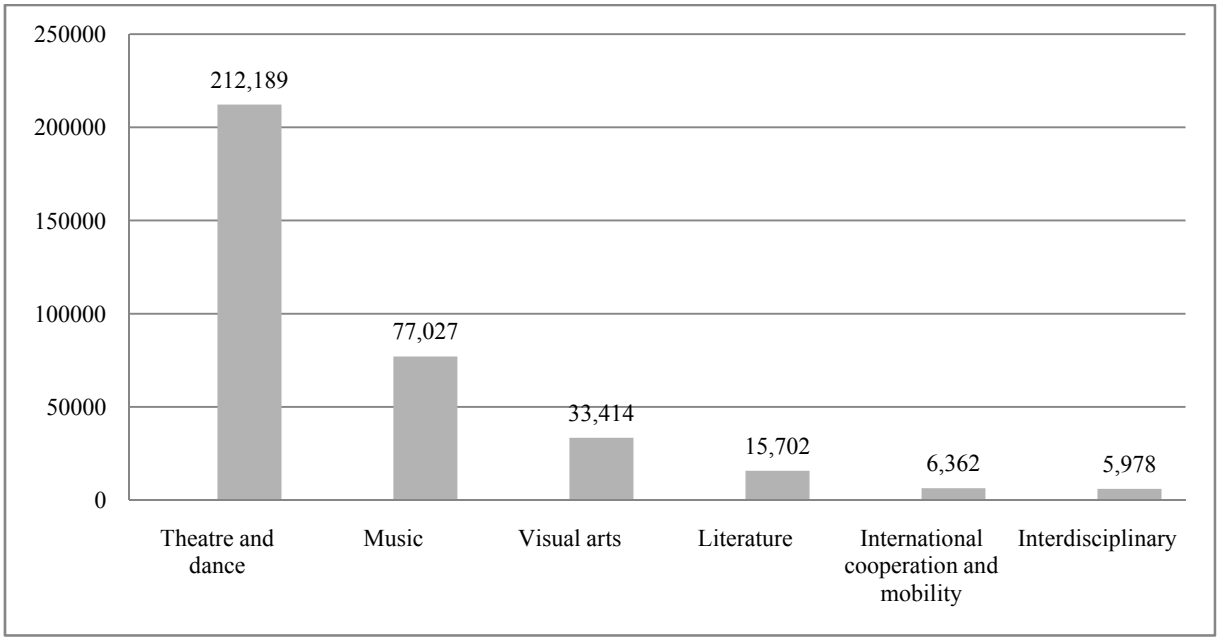

Figure 9 Expenditures of the MC in Individual Branches of the Arts — Consolidated Expenditures from All Types Of Sources (in Thousands of EUR)

Source: Author's calculations based on data from the MC for 2008-2015.

6. International Sources of Support for the Arts in the CR and Slovakia

The non-profit arts sector has few opportunities open to it for obtaining funding from abroad or from international sources. Between 2008 and 2015 the main such opportunity was through the EU Culture Programme. During the second programme term of the EU Culture Programme in 2007-2013 there were 160 projects from Czech organisations that received support: 44.14% of them in the performing arts, 42.88% were interdisciplinary projects, 8.27% were projects in the visual arts, and 4.71% were in the field of literature. Slovak organisations had a total of 89 projects supported under the programme: 48.99% in the performing arts, 24.0% were interdisciplinary projects, 8.83% were projects in the field of the visual arts, and 18.18% projects in the field of literature 18.18%.

A new international source of funding for the arts in the CR is the arts funding that is provided through a programme supported by the countries of the European Economic Area (EEA) — Norway, Island and Lichtenstein — in the form of grants administered by the Financial Mechanism. Support for the arts was newly introduced in the current programme term (previously support went solely to cultural heritage). Funding is distributed through the CZ 06 Cultural Heritage and Performing Arts programme, and in 2014 for the first time projects in the arts received support that amounted to a total of 40,004,000 CZK: 27% of the funding went to projects in the field of music, 33% to theatre, 17% to dance, 17% to the visual arts, and 6% to interdisciplinary projects. In the second call for applications issued in 2015 a total of 32,728,327 CZK was distributed in support: 40% to music, 9% to theatre, 6% to dance, and 45% to the visual arts. All these projects were supported under Programme Area 17 "Promotion of

Diversity in Culture and Arts within European Cultural Heritage".

In Slovakia the EEA Financial Mechanism in the culture sector are solely directed at cultural heritage, so the arts sector has been unable to receive any financial support from this funding source.

7. Crowdfunding in the Arts

Over the past decade cultural policies in the CR and Slovakia have been working more and more with data on cultural participation. Visitors and attendance have always been important factors in support for the arts, but their significance and role have transformed significantly in recent years.

New technologies and the development and growth of the internet in the knowledge society are offering new forms of communication and changing the relations between artists and their audiences. The public no longer wants to remain just a passive recipient, it wants to participate in an active and engage way. Active participation can either be direct in form, for instance, as workshops, or can directly intervene in the creative process and thus influence the course and content and so forth of the artistic process.

There are strong links between the arts working with the public and crowdfunding, which is a new area of opportunity for funding in the arts. A growing search for new resources has been driven by cuts in the budgets of cultural organisations both in Europe (Alexander, Bowler, 2015) and the United States (Colbert, 2009; Boeuf et al., 2014). The reduced budgets, which are largely the result of the reduced budgets of traditional supporters of the arts, have led institutions to focus more on their audiences and widen their view of who could potentially become their supporters. The development of new technologies and the internet have proved to be ideal tools in this respect.

The first crowdfunding platforms began appearing in 2006 in the United States. The largest American crowdfunding platform, Kickstarter, soon began to be used for cultural and arts projects, and not just by entities in the United States but also by those in other countries, including in Europe and eventually also the CR and Slovakia.

Kickstarter was the model for the first crowdfunding platforms in the CR, which began emerging around the year 2011. They began appearing in Slovakia in 2013, but none of the Slovak platforms has ever focused specifically on the field of culture; ideasstarter.com, dobrakrajina.sk, ludialudom.sk and dakume.sme.sk and all the new platforms that have emerged, if they still exist, operate only on a very limited scale.

My research revealed that because of the small market in Slovakia the arts in Slovakia make use of some platforms set up in the CR. The one used most frequently is Startovac.cz and to a lesser extent also Hithit.cz. Support provided through Startovac.cz for Slovak and Czech arts projects is broken down in Figure 10. The largest numbers of successful Slovak projects were from the fields of literature (22), music (11), and the visual arts (7). The largest numbers of successful Czech projects were from the fields of music (81) and literature (71). Unlike Slovakia, there were also successful Czech projects in the fields of theatre and dance (15) and the visual arts (6).

In the CR crowdfunding platforms focused on support for the arts are not yet surveyed or taken into account in terms of their annual contribution to funding for the arts in the country. Based on my own research, which I conducted based on data I collected from individual crowdfunding platforms and based on interviews with selected cultural entities and the platform operators, from 2011 to the end of 2015 a total of 37,214,000 CZK was collected on crowdfunding platforms in support of projects in the arts.

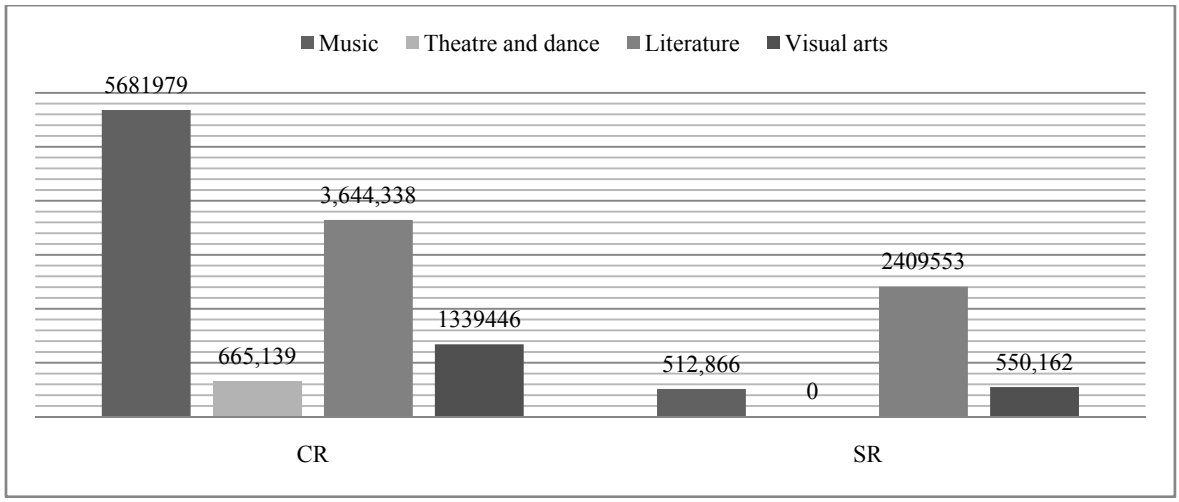

Figure 10 Crowdfunding Platform Startovac.cz – Support for Czech and Slovak Arts Projects in CZK
Source: Author's calculations based on data available from Startovac.cz. Support for Slovak projects is converted to Czech crowns based on the average exchange rate in 2015 – 27.283 CZK per 1 EUR.

There are currently eight different platforms on which Czech and Slovak arts can look for support. Based on the data that have been collected the market in this sector appears to be fully saturated and the competition between platforms has pushed some platforms out of the market or forced them to specialise more narrowly and provide other service.

Figure 11 shows the volume of funding provided by all the aforementioned crowdfunding platforms in existence to individual branches of the arts summed up to include both Czech and Slovak projects. It highlights the fact that while under traditional grant-funding schemes and direct forms of state support the performing arts and especially theatre and classical music predominate in terms of total allocated funding, when it comes to funding tools in which creativity and innovative marketing are primary for obtaining support, other fields dominate, pop music in particular. In some artistic fields the amount of support provided through crowdfunding even exceeds the amount of state support that it is possible to obtain and in the period of crisis in public funding generally this funding tool is beginning to become a powerful tool of support, even though it is still just a supplementary tool (Petrová, 2015).

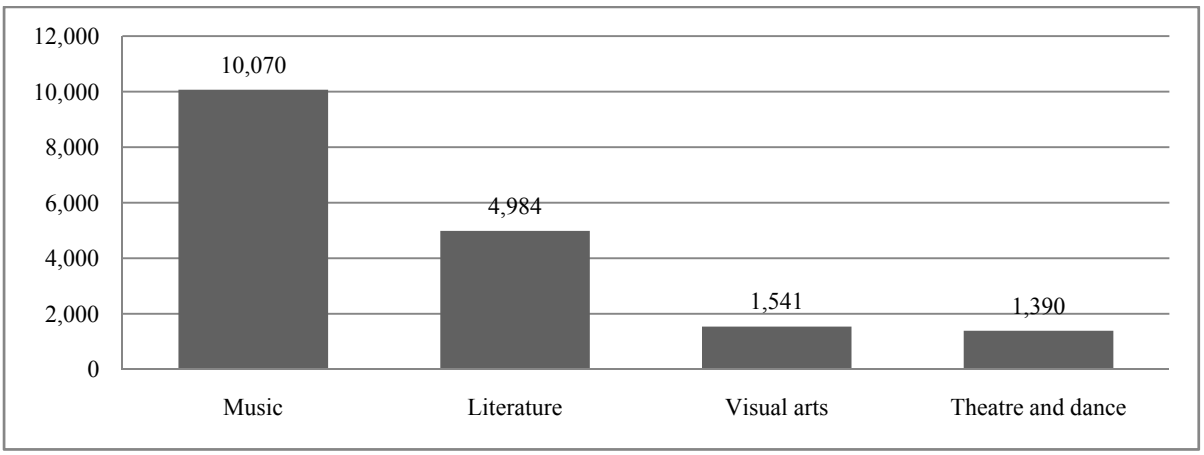

Figure 11 Crowdfunding in the Arts 2011-2015 (in Thousands of CZK)
Source: Author's calculations based on data available from individual crowdfunding platforms.

8. Conclusion

In my research I tried to capture the main changes that occurred in or affected support and funding for the arts in the CR and Slovakia between 2008 and the end of 2015, and to assess the approach the two states take to support for the arts. In 1989 Hillman-Chartrand and McCaughey (1989) outlined four models of state cultural support for the arts. Each model is characterised by a different approach taken by the state to the arts and by a different form of support. The models also differ according to whether they direct more support towards the creative process or the resulting artistic product. The US was seen as a 'facilitator' of the arts (through tax relief), the UK and Australia as 'patrons' (through arms-length arts councils), France as an 'architect' (a strong ministry of culture), and the former Eastern bloc countries as "engineers" (full control over the production of culture).

These models exist but in practice we tend rather to see combinations of various components of each model. Given that cultural policies derive from the dominant political actors in a country the prevailing model in any country will change over time. In the two countries compared in this paper there occurred a shift form the engineer to the architect model. In Slovakia there are efforts to combine the architect model with that of a facilitator.

Even more than a quarter century after the collapse of the communist regime we can clearly see in both countries that they are still trying to retain some control and influence over the infrastructure in the arts by means of direct financial support channelled through state-chartered arts institutions. There are 6 such arts institutions in the CR, and in Slovakia, which in population size is half that of the CR,[2] there are 12 such institutions. Nevertheless, even in the CR there is still a disproportionate imbalance between the amount of support for the arts that is channelled through state institutions and the amount than proceeds through the non-profit arts sector.

State support for the arts in both countries is still one of the most essential sources of support for the arts given that not many new instruments are emerging that could spark the development of other forms of support. In Slovakia we can see that as well as direct state support the MC also has other direct and indirect instruments of support. Nevertheless, the impact of these instruments again is primarily aimed at state organisations.

State support for the arts experienced some of its most critical years in the first half of the period that is the focus of this paper. The most critical year was 2011. In the CR in particular the state did not respond to the economic crisis with any new stimulus instruments and just introduced budget cuts across the board, and made securing the operations of state organisations the priority. The research showed that the largest amount of support for the arts goes to theatre and dance, while international cooperation and mobility is of almost no priority at all.

The non-profit sector responded to the economic crisis by looking for new avenues of funding, which different branches or entities did by rediscovering who 'their' audience is and, in this connection, through the rise of crowdfunding platforms. In 2012 another source of support in CR was re-introduced – the State Culture Fund. Nevertheless, the resources obtained from crowdfunding, the State Culture Fund, and even from international sources of support for the arts, are only supplementary sources of funding for the arts.

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[2] Based on data from the Czech and the Slovak national statistics bureaux, as of 31 December 2015 the CR had a population of 10,553,843 and Slovakia a population of 5,426,253 inhabitans.

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