INTERNATIONALISATION-LOCALISATION DEBATE IN CASE OF CROATIAN EXPORTERS' INTANGIBLE-TANGIBLE ASSET INVESTMENT

Maja Bašić

Abstract

This study analyses the role of investment in intangible and tangible fixed assets on firm internationalisation pace. Financial microdata of the largest 300 Croatian exporters for the period 2006-2015 were examined by system dynamic panel GMM. Results illustrate that investments in intangible assets significantly and positively increase export growth but not domestic revenue growth. The study also analysed differences in internationalisation and localisation growth depending on investments in intangible and tangible fixed assets. Investments in intangible assets positively affect firm internationalisation growth, while an increase in intangible assets negatively affects localisation growth. Significance of this study is twofold. Firstly, it provides evidence of the importance of investments in intangible assets for export growth and internationalisation growth. Secondly, it shows that investments in intangible assets are more important that investments in fixed assets, thereby providing practical implication for firms aiming to increase the pace of their international expansion.

Keywords: *Export, internationalisation, localisation, intangible asset investment, Croatia*

JEL classification: *F1, F21*

1. Introduction

International expansion aims to accumulate internationally transferable capabilities that serve both domestic and international markets. Maturity of firms' internationalisation process enables managers to reconsider possible ways to increase their international sales (Camison and Villar 2009), which in turn increases their resistance to external shocks, such as those unveiled by the covid-19 pandemic (Stojcic 2020; Kersan-Skabic and Belullo 2021). Herein, the value originates from learning from exporting, i.e., exporting experience and knowledge about the foreign market that is intertwined with firms' internal knowledge and capabilities. A dynamic component, i.e., the effect of previous exporting experience is as important as an introduction of novel products or services.

Firms with low capital intensity profit from an increase in export intensity, while firms with high capital intensity do not experience the same beneficial 'learning-by-exporting' effect (Cantele and Campedelli

Maja Bašić, PhD
Lecturer
University of Zagreb
Faculty of Economics and Business
J. F. Kennedy Square 6
10000 Zagreb, Croatia
E-mail: mbasic1@net.efzg.hr
ORCID: 0000-0002-1842-7091

2016). This occurs due to an increase in knowledge about foreign markets which builds more upon the knowledge firms with low capital intensity than those of high capital intensity as a result of higher absorptive capacity of employees of low capital intensity firms. Additionally, firms acquire knowledge and technologies from competitive industries abroad, whereby once they enter international markets they forego sunk cost of entry, including the costs of technology transfer, and focus on cost cutting activities (Stojcic and Bezic 2012). Competition based on quality improvements adds to firms' growth potential more than cost cutting activities (Stojcic, Becic, and Vojinic 2012), especially in times of severe economic crisis such as those caused by covid-19 pandemic (Stojcic 2020). Under certain assumptions there is a positive and strong relationship between R&D intensity and internationalisation (Bryl, 2020). Denicolai, Zucchella, and Strange (2014) find that R&D intensity has a positive linear impact upon foreign sales intensity, while knowledge assets and foreign sales intensity have an inverse quadratic relationship. Hence, this study aims to inspect the role and value of tangible and intangible assets and investment in tangible and intangible assets for both export growth on one side, and internationalisation and/or localisation growth of the other side.

Growth on domestic market can sometimes be as valuable as internationalisation growth. Recombination of existing internal resources that serve developing markets' needs can be recombined to serve international customised markets. Also, proximity to international developed markets and being a part of the customs union as is the case of Croatia in the European union, can serve as a starting point for rapid internationalisation not just of high-tech firms but of the entire industries. Therefore, this paper depicts the role and value of the both intangible and tangible assets and investment in intangible and tangible assets on export growth on one side, and internationalisation and localisation growth on the other side of Croatian exporters in various industries. Robust twostep GMM is used for this analysis with dependent variables (1) export growth, (2) domestic growth, (3) export intensity (internationalisation) growth, and (4) domestic intensity (localisation) growth.

After the introductory section, the paper is structured as follows: the following section provides a brief literature review, after which methodology of the paper is elaborated. Section four illustrates the results of the study and discusses its findings, while the final section concludes the paper with main findings, limitations of the study and practical implications.

2. Literature review

This paper builds on dynamic capabilities (Roberts 1999; Eisenhardt and Martin 2000) and resource—based view approaches (Barney 1991). Combination of the two approaches enables theoretical foundation for firms wanting to sustain international competitive advantage using their exclusive bundle of resources (Conner and Prahalad 1996). Thereby, these approaches enable realisation of superior export performance, as well as a creation of new firms both in low and high technology intensive industries (Stojcic, Anic, and Svilokos 2021). Since both tangible and intangible resources are antecedents of competitive advantage, whose effect can be explained by the process of learning, this paper addresses them both in the context of dynamic capabilities (Penrose 1959; Barney 2001; Miočević and Crnjak-Karanović 2010).

Tangible resources are both fixed and current assets of an organisation. Tangible resources include a fixed set of investments, including machinery and equipment. In todays' concentrated international markets, utilisation of competitive advantages comes from a quick response to customer demands according to which products and services are customised based on specific market segments (Cantele and Campedelli 2016). Investment in tangible fixed assets demands huge financial expenditure, which is expected to quickly yield high returns.

Intangible assets include goodwill, research and development expenditure, and intellectual property rights including: patents, trademarks, copyright and registered design, i.e., firms' 'intellectual capital'. Intangible assets are intra-linked. Namely, R&D intensity is path dependent and determined by the level of accumulated intangible assets (Filatotchev and Piesse 2009). Intangible resources are often used as a control or explanatory variable in innovation - internationalisation studies as they tend to be complementary or subsequent strategies to one another (Golovko and Valentini 2011). If exporting is analysed as a learning process, exploitation of intangible assets in international markets leads to a specific set of dynamic capabilities (Buckley 1988; Bortoluzzi et al. 2014). Increase in the volume of international sales leads to a decrease in average fixed costs, as well as the accumulation of learning leads to new skills and managerial and advanced technological knowledge (Thomas 2006; Kotorri and Krasniqi 2018). Also, firm builds on their reputation and brand name by employing organisational culture that fits into international environment (Shih 2017).

In addition, increased internationalisation is the result of an increase in the growth rate of intangible

assets (Cui and Xu 2019). R&D intensity is an antecedent of internationalisation (Filatotchev and Piesse 2009; Bryl 2020). Liu, Kim and Yoo (2019) find that intangible resources and the innovation performance of Chinese high-tech firms are significantly positively moderated by internationalisation, while Mohr and Bastakis (2014) depict a direct effect of intangible asset and international experience on internationalisation speed. When Mohr and Bastakis (2014) examined the retail sector's mature firms, they found that intangible assets are a prerequisite for rapid internationalisation (see also Chang and Rhee 2011). As intangible assets serve both mature and, as confirmed in previous studies, young high-tech firms' internationalisation pace (Autio, Sapienza, and Almeida 2000), Wu (2016) identifies strategies of internationalisation associated with differences in firm internationalisation pace. MNEs from developing markets that are cost efficient and have few intangible resources tend to internationally expand and attain high internationalisation level (Xiao, Lew, and Park 2019), while firms with higher level of knowledge assets have a flatter inverted U-shaped relationship between internationalisation pace and performance (Zhang et al. 2021). Metaanalysis disclosed various effects of human and relational capital endowment on export behaviour implying context-dependent positive influences of intangible assets for exporting firms from developing economies (Mansion and Bausch 2020). Herein, sequential internationalisation is more common, while structural factors explain international strategy better than firm's internal factors (Ocampo Figueroa, Alarcón Osuna, and Fong Reynoso 2014). Furthermore, fast internationalisation is not an exclusive behaviour of technology intensive or innovating companies (Fong-Reynoso and Ocampo Figueroa 2010), as born-globals can be found in mature and traditional sectors as a result of strategic intangible resources like experience and relational capital of managers. From this perspective, it is possible to argue that tangible and intangible investments have a positive effect on firm profitability (Cantele and Campedelli 2016), internationalisation and, hence, internationalisation pace.

This study focuses on the geographic area of the Republic of Croatia, a country that has undergone several transitions: (a) from socialist to capitalist market system, and (b) from being a member of a Socialist Republics of Yugoslavia to political independence in the early 1990s to accession into the European union in 2013. As such, the Republic of Croatia provides an interesting example for observation of effects of both economic and political transitions firms' behaviour in terms of international expansion and tangible and intangible resource endowments. Economic transition of Croatian firms follows a pattern of price competition enabled through labour cost cuts (Stojcic 2012; Stojcic, Becic, and Vojinic 2012), with current developments in line with quality competition through export-targeting policies and infrastructure investment. As Croatia has the lowest global value chain participation among the European union member states (Kersan-Skabic 2017, 2019), uneven regional development that emerged as a result of depicted cost-cutting activities and infrastructure investment (Stojcic, Benic, and Karanikic 2014) opened a gap that could be filled in by foreign direct investment. Investment would raise the quality of products and services and aid in structural transformation of Croatian economy (Kersan-Skabic 2016; Stojcic and Orlic 2016), especially if directed towards intangible capital whose products and services could move up on the global value chains.

3. Methodology

This study employs microfinancial data of the largest 300 exporters in the Republic of Croatia measured by their export revenue in the period 2006-2015. Data are obtained from Amadeus Bureau van Dijk database whose provisional access was granted in 2016. This period is interesting to observe due to two effects that happened during that period: (1) global recession in 2008, and (2) accession of the Republic of Croatia into the European union in 2013. Additionally, this study adds to the study of Stojcic (2012), who analysed the competitiveness of Croatian exporters in the manufacturing industry in the period 1999-2007.

Majority of data were transformed into logarithmic returns to validate econometric testing procedures that could be reversed due to large disparities in numbers: export revenue, domestic revenue, export intensity (internationalisation), domestic intensity (localisation), firm age, number of employees, earnings before income and tax (EBITDA), value of intangible and value of tangible asset. Variables that are not in log form include: number of domestic and foreign subsidiaries, industry according to NACE 2 classification, foreign ownership dummy (assuming value 0 in case of domestic ownership and value 1 in case of foreign ownership). Domestic subsidiaries are calculated by subtracting the number of foreign subsidiaries from the total number of subsidiaries, and domestic revenue is calculated by subtracting export revenue from total operating revenue. Firm age was calculated by deducting current year from the firm foundation year. More variables could have been included in the analysis. However, to include those variables, larger sample is needed both in terms of number of firms

and time period. Even in that case issues of multicollinearity might arise. Hence, the choice of variables is based on the variables depicted from the literature. Analysis was done by statistical software package STATA 13. Results of descriptive statistics of the variables are in Table 1.

Econometric analysis is made to study a relationship between intangible assets and export growth.

$$U = (\Delta Export\ revenue_{t,i}, Investment\ in\ tangible\ asset_{t,i},$$
$$Investment\ in\ intangible\ asset_{t,i}) \qquad (1)$$

Furthermore, we investigated the impact of investments in tangible and intangible assets on domestic revenue increase in the following model:

$$U = (\Delta Domestic\ revenue_{t,i}, Investment\ in\ tangible\ asset_{t,i},$$
$$Investment\ in\ intangible\ asset_{t,i}) \qquad (2)$$

and then used similar reasoning to test the impact of tangible and intangible asset on export intensity (internationalisation) growth and domestic intensity (localisation) growth:

$$U = (\Delta Export\ intensity_{t,i}, Tangible\ asset_{t,i},$$
$$Intangible\ asset_{t,i}) \qquad (3)$$

$$U = (\Delta Domestic\ intensity_{t,i}, Tangible\ asset_{t,i},$$
$$Intangible\ asset_{t,i}) \qquad (4)$$

Growth in export intensity is internationalisation growth, while growth in domestic intensity is localisation growth. We used several control variables, such as: firm age, employee number, EBITDA, number of foreign or domestic subsidiaries, foreign ownership and industry dummies. In the beginning we used time variables for all years as proposed by Roodman (2009) and Arellano and Bond (1991), but majority of the time variables were dropped from models due to multicollinearity issues. We expected financial crisis dummies for years 2008 through 2010 to be included in the model. However, due to multicollinearity issues 2008 was dropped from of a model. Although dummy variables for all years were included in the analysis, Stata results rejected all years as superfluous, apart from the aforementioned 2009 and 2010. That is the reason why dummy variables only for 2008-2010 are used, i.e., based on a computational algorithm.

Autocorrelation analysis of each variable in the model has shown the existence of AR (1) for the majority of variables in the model apart from dummy variables and investment in intangible and tangible assets. Table 2 shows correlations between the variables in the model. VIF analysis test for multicollinearity depicts centred VIF of each variable that is less than 3 indicating that multicollinearity in the model should not be an issue. Breusch-Pagan-Godfrey test for heteroskedasticity of sum of squared residuals confirmed that we can accept the hypothesis of homoskedasticity. Additional analysis (ADF test) indicated that the fixed effect panel model is to be used. However, as the

Table 1. Descriptive statistics of variables

	Number of observations	Mean (μ)	Standard deviation	Minimum	Maximum
Δ Export revenue	2583	0.204	1.550	-8.112	8.112
Δ Domestic revenue	2396	0.202	1.329	-15.856	17.844
Δ Export intensity	2583	0.050	2.983	-18.793	18.778
Δ Domestic revenue intensity	2329	-0.027	0.815	-6.702	7.585
Age	2866	1.236	0.526	0	2.504
Number of employees	2620	5.111	1.705	0	11.926
EBITDA	2370	13.941	2.118	6.080	19.678
Intangible asset	2870	3.339	2.285	0	7.855
Investment in intangible asset	2583	0.137	1.241	-6.838	6.574
Tangible fixed asset	2870	5.828	2.139	0	8.575
Investment in tangible fixed asset	2583	0.132	0.918	-6.005	8.288
Foreign owned	2870	0.359	0.480	0	1
Number of foreign subsidiaries	1930	0.021	0.287	0	4
Number of domestic subsidiaries	1930	2.264	5.090	0	44
Industry	2870	2.934	2.980	1	13

Source: Amadeus Bureau van Dijk database (2016). Authors' calculations.

number of groups in the model (N) is larger than observed time period (T), N > T, and when there exists within group but not between group cross-sectional dependence, As parameter estimates with weak exogeneity properties are used as dependent variables with time lag within a dynamic model (Sarafidis and Wansbeek 2012), a popular method of estimation is estimation of a dynamic model with a set of instrumental variables and generalised method of moments (e.g., Arellano and Bond 1991; Arellano and Bover 1995; Blundell and Bond 1998). Roodman (2009) recommends using panel system GMM (generalised method of moments) analysis. System GMM assumes endogenous and instrumental variables in addition to independent or exogeneous variables. Endogenous variables in our system GMM are independent variables in the model with time lags. Robust system twostep dynamic GMM panel model is used to obtain estimated parameters leading to more consistent estimation of parameters in the model., as follows:

$$y_{it} = \alpha y_{i,t-1} + \boldsymbol{x}'_{i,t-1}\beta + \varepsilon_{it}$$
$$\varepsilon_{it} = \mu_i + v_{it}$$
$$E(\mu_i) = E(v_{it}) = E(\mu_i v_{it}) = 0$$
$$i = 1,2 \dots N \quad t = 1,2,..T \tag{5}$$

And, as stated, models were estimated in log linear form:

$$\log y_{it} = \beta_1 + \alpha \log y_{it-1} + \beta_2 \log \boldsymbol{x}'_{i,t-1} + \varepsilon_{it}$$

$$i = 1,2 \dots N \quad t = 1,2,..T \tag{6}$$

where y_{it} is dependent variable, y_{it-1} dependent variable with one lag period, x'_{it-1} is a vector of independent variables, β is a vector of independent variable estimated parameters, i is time period of year t, the error of residual difference pertains two orthogonal components, one with fixed effect μ_i and idiosyncratic shocks v_{it}. The main assumption of the model is that error terms are not correlated between groups, but

Table 2. Correlations of variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	0.20	1.00													
3	0.98	-0.05	1.00												
4	-0.39	-0.03	-0.39	1.00											
5	-0.06	-0.20	-0.02	-0.02	1.00										
6	-0.03	-0.11	0.00	-0.01	0.36	1.00									
7	-0.02	0.00	-0.01	0.01	0.16	0.08	1.00								
8	0.01	-0.02	0.01	-0.03	0.14	0.33	0.45	1.00							
9	0.07	0.04	0.04	-0.03	-0.01	0.03	-0.01	0.24	1.00						
10	-0.01	-0.03	0.00	-0.01	0.28	0.36	0.73	0.45	-0.01	1.00					
11	0.07	0.09	0.03	-0.05	-0.06	-0.04	-0.02	0.01	0.05	0.16	1.00				
12	0.03	0.04	0.02	-0.02	-0.12	0.08	0.13	0.12	-0.02	0.05	-0.04	1.00			
13	-0.01	-0.02	-0.00	-0.00	-0.08	0.12	-0.10	0.00	-0.01	-0.06	0.00	0.11	1.00		
14	-0.06	-0.07	-0.05	0.02	0.30	0.37	-0.10	0.05	0.01	0.01	-0.00	-0.11	-0.01	1.00	
15	0.02	0.02	0.02	-0.00	-0.24	-0.22	-0.17	-0.20	-0.00	-0.26	-0.00	0.03	-0.05	-0.09	1.00

Note: (1) Δ Export revenue, (2) Δ Domestic revenue, (3) Δ Export intensity, (4) Δ Domestic revenue intensity, (5) Age, (6) Number of employees, (7) EBITDA, (8) Intangible asset, (9) Investment in intangible asset, (10) Tangible fixed asset, (11) Investment in tangible fixed asset, (12) Foreign owned, (13) Number of foreign subsidiaries, (14) Number of domestic subsidiaries, (15) Industry.

Source: Amadeus Bureau van Dijk database (2016). Authors' calculations.

can be correlated within a group in an observed time period. Hence, the importance of using time dummy variables as mentioned earlier. We additionally made assumptions that standard errors are robust to heteroskedasticity and particular arbitrary patterns of within group autocorrelation (Roodman 2009).

Instrumental variables of system GMM are exogeneous to the specific model, incorporating endogenous variables with time lag 2, *dummy* variables of the original model and additional variables not specified in the model but which explain the analysed model. Hansen (1982) test for overriding restrictions is used for the analysis of model adequacy whose p - values should be between 0.1 and 0.3. It tests exogeneity of subset of regressor variables when factor loadings are zero or mutually uncorrelated. Additionally, Arellano and Bond autocorrelation function p - values should be insignificant, i.e., greater than 0.05 (Roodman 2009).

4. Results and discussion

Amadeus Bureau van Dijk financial microdata on the largest three hundred Croatian exporters were used in this analysis. The largest Croatian exporters were extracted based on export revenues for the periods between 2006 and 2015. Each independent variable in the original model displayed in Tables 3 and 4 is also used as instrumental variable. Tables 3 and 4 additionally display the number of instruments and the p-value of Hanson test for overriding restrictions. Results of unbalanced system twostep robust dynamic panel GMM analysis are given in Tables 3 and 4.

Number of firms in the analysis is based on the model used and depends on the number of instruments of each model. It is inserted in the Tables 3 and 4 as number of groups. Although the total of the largest 300 exporters are examined, due to missing data, in some models only 180 firms are used (e.g., Model 1 and 2 in Table 3), while in others 261 (e.g., Model 3 in Table 3).

Table 3 shows the results of robust twostep system GMM panel regression for four estimated models. Models 1 and 3 aim to estimate the effect of investment in intangible assets on the growth of export revenue (Model 1) or growth of domestic revenue (Model 3). Models 2 and 4 estimate the effect of both investment in intangible and tangible asset on growth of export (Model 2) and domestic (Model 4) revenue. Endogenous variables in each model are with time lag 1 (up to lag 4 in Model 1 and lag 5 in all other models) and include number of employees, earnings begore interest and tax, investment in intangible assets

and investment in tangible assets (only in Models 2 and 4). Instrumental variables are also all variables in the model, whereby endogenous variables obtain a time lag 2, company age, number of foreign subsidiaries (Model 1 and 2), foreign ownership of a company (Model 1 and 2), group size (Model 1), dummy for construction sector as we expect greater investment in intangible assets in the construction sector, and intangible asset, tangible fixed assets (Models 2 and 4) and number of domestic subsidiaries (Model 4) as we expect that might have an effect on investment on tangible fixed asset investment.

Results indicate that significant effect on export revenue growth has investment in intangible assets in the previous time period, i.e., with lag 1. Investment in tangible asset are not significant for either export revenue or domestic revenue growth. Additionally, we can clearly see the significant negative effect of the financial crisis for the export growth of companies in 2009.

Table 4 depicts an unbalanced dynamic twostep robust system GMM panel regression for the internationalisation (Model 5) or localisation (Model 6) growth of the top 300 exporters in the Republic of Croatia in the period 2006-2015.

Export intensity change depicts the internationalisation pace and domestic intensity change shows localisation pace. The results of robust system dynamic twostep GMM panel regression of the two model describe the influence of both investment in intangible and tangible asset on the internationalisation and localisation pace. As is Table 3, endogenous variables in both models are with time lag 1 to 5 and include: number of employees, earnings before interest and tax, intangible and tangible fixed assets. Additional instrumental variable used in the model for localisation pace is a region dummy for Zagreb region as domestic companies tend to move or have their headquarters in Zagreb which could impact the localisation regression. It is important to note that in both models regressors intangible and tangible fixed assets are inserted at level and with time lag 1, but only the intangible asset at level and tangible asset with lag 1 were displayed in results, indicating an insignificant regressors rejected also due to collinearity issues. As we can note, at the 10% significance level investment in intangible asset in the previous period leads to an increase in internationalisation pace, while intangible asset at level significantly and negatively contribute to localisation pace. We can also note that internationalisation and localisation pace tend to decrease, but internationalisation pace decreases at a higher rate than localisation pace.

It is important to note that a positive change in

export growth in previous period leads to a slowdown in export growth in the current time period. The effect is more pronounced when investments in tangible fixed assets are considered. Investment in intangible assets quickens export pace, while investment in tangible assets in the previous period slows them down. This is logical because a firm needs to reconsider

depreciation as noted in the literature review section. In case of depleted fixed assets, an increase in investment in fixed assets cannot yield an increase in speed of exports over a period of several years, but needs to be reconsidered under a longer time period. Additionally, it needs to occur constantly in order to have an effect on the firm's profitability. The effect

Table 3. Dynamic panel GMM regression for changes in export and domestic revenue for the period 2006-2015

Variables	$\hat{\beta}$ (S.E.)			
	Model 1	Model 2	Model 3	Model 4
Export revenue change $_{t-1}$	-0.181** (0.091)	-0.195** (0.093)		
Domestic revenue change $_{t-1}$			0.083 (0.061)	0.061 (0.063)
Age	-0.060 (0.047)	-0.079 (0.068)	-0.068*** (0.020)	-0.074*** (0.028)
Employment	-0.000 (0.010)	-0.001 (0.011)	-0.017 (0.011)	-0.012 (0.008)
EBITDA	0.004 (0.008)	0.006 (0.012)	-0.017 (0.005)	-0.007 (0.005)
Y2009	-0.197*** (0.065)	-0.295*** (0.098)	-0.164*** (0.023)	-0.174*** (0.026)
Y2010	-0.032 (0.049)	-0.043 (0.072)	-0.010 (0.019)	0.006 (0.026)
Industry dummy	0.007 (0.009)	0.009 (0.010)	0.001 (0.003)	-0.002 (0.003)
Investment in intangible asset	0.057 (0.038)	0.059 (0.046)	0.006 (0.008)	0.012 (0.013)
Investment in intangible asset $_{t-1}$	0.033** (0.014)	0.042** (0.019)	0.007 (0.006)	0.006 (0.009)
Investment in tangible fixed asset		0.039 (0.072)		0.016 (0.023)
Investment in tangible fixed asset $_{t-1}$		-0.011 (0.045)		0.003 (0.025)
Intercept	0.118 (0.145)	0.139 (0.196)	0.327*** (0.124)	0.338*** (0.103)
Number of observations	1055	1055	1538	1037
Number of groups (firms)	180	180	261	178
Number of instruments	104	151	111	146
Wald test	$\chi2 (9) = 35.56$	$\chi2 (11) = 30.60$	$\chi2 (9) = 175.71$	$\chi2 (11) = 127.29$
Hansen test overriding restrictions (p-value)	0.164	0.231	0.141	0.186
Hansen test excluding group GMM (p-value)	0.244	0.509	0.403	0.073
Hansen test IV (p-value)	0.294	0.233	0.212	0.281
AR (1) p-value	0.016	0.018	0.003	0.000
AR (2) p-value	0.786	0.729	0.494	0.144

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Source: Amadeus Bureau van Dijk database (2016). Authors' calculations.

Table 4. Dynamic panel GMM regression for changes in export intensity and domestic intensity for the period 2006-2015

Variables	$\hat{\beta}$ (S.E.)	
	Model 5	Model 6
Export intensity change $_{t-1}$	-0.259*** (0.087)	
Domestic intensity change $_{t-1}$		-0.196* (0.114)
Age	-0.131 (0.168)	-0.055 (0.035)
Employment	0.009 (0.042)	0.022 (0.014)
EBITDA	0.036 (0.067)	-0.005 (0.016)
Y2009	-0.618** (0.262)	0.055 (0.046)
Y2010	-0.062 (0.165)	0.022 (0.037)
Intangible asset	0.003 (0.042)	-0.017** (0.008)
Tangible fixed asset $_{t-1}$	-0.018 (0.097)	0.000 (0.028)
Investment in intangible asset	0.107 (0.107)	0.018 (0.025)
Investment in intangible asset $_{t-1}$	0.090* (0.050)	0.018 (0.014)
Investment in tangible fixed asset	0.789 (0.177)	-0.010 (0.045)
Investment in tangible fixed asset $_{t-1}$	-0.035 (0.118)	0.005 (0.031)
Intercept	-0.007 (0.581)	0.029 (0.156)
Number of observations	1055	1525
Number of groups (firms)	180	261
Number of instruments	170	168
Wald test	$\chi 2$ (12) = 29.47	$\chi 2$ (12) = 46.87
Hansen test overriding restrictions (p-value)	0.277	0.211
Hansen test excluding group GMM (p-value)	0.321	0.139
Hansen test IV (p-value)	0.175	0.167
AR (1) p-value	0.021	0.004
AR (2) p-value	0.572	0.634

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: Amadeus Bureau van Dijk database (2016). Authors' calculations.

of investment in tangible assets on export growth is insignificant nonetheless. On the other hand, investments in intangible assets in the previous period increase export pace in the subsequent period significantly and positively.

Firm age is not significant for exporting pace. This notion is in line with literature review stating that fast exports can be attributed by mature firms, i.e. having a born-again global periods, especially in the context of Croatia's joining the European union in 2013, right after the negative impact of financial crisis in 2008. The financial crisis had an effect on Croatian exporters mainly in 2009 and 2010, and this can be seen in all presented models.

Neither investments in intangible nor tangible assets have an effect on domestic revenue change. An increase in domestic revenue of the previous year increases the pace of localisation. Herein, only firm age is a significant negative contributing factor, implying, to an extent, that largest Croatian exporters have an increasing pace of presence on domestic market that is decreasing with maturity of the company. Namely, younger firms tend to establish their strong presence on domestic market first, and then start their expansion on international markets.

Internationalisation pace decreases slowly, while investment in intangible asset increase internationalisation pace and are complementary to the internationalisation pace strategy, i.e., innovation – internationalisation seem to be complementary strategies of firms aiming to internationalise fast. On the other hand, localisation pace also decreases but more slowly than internationalisation pace. Size of intangible assets negatively affect localisation pace signalling that firms that tend to establish their domestic presence fast, tend to disregard intangible assets as important and focus on less innovative products or services.

5. Conclusion

The aim of this study was to answer the question on the role and value of intangible assets and investment in intangible assets for internationalisation growth. Significant negative effect of the financial crisis in 2009 is evident in case of export growth depicting the spillover effect. In case of the largest Croatian exporters for the period 2006-2015, the results of the robust twostep system GMM panel analysis showed that there exists a significant effect of investment in intangible assets on export revenue growth. Investment in tangible asset are not significant for neither export revenue nor domestic revenue growth. This is in line with previous research (e.g., Stojcic, Benic, and

Karanikic 2014) whereby infrastructure investment was led by the state and led to uneven development. In terms of internationalisation-localisation pace, the study has shown that investment in intangible asset in the previous period leads to an increase in internationalisation pace (at the 10% significance level), while intangible asset at level significantly and negatively contribute to localisation pace. As investments in intangible assets take time to appropriate, the expectations were that firstly export growth would increase, and then internationalisation growth. However, the results have not shown this to be true. Namely, primarily export intensity growth or internationalisation growth increased. On the other hand, localisation pace decreased, which is in line with theoretical expectation on the inclusion of higher value-added products in global value chains (e.g., Kersan-Skabic 2016; Stojcic and Orlic 2016). Additionally, results show that both internationalisation and localisation pace tend to decrease, but internationalisation pace decreases at a higher rate than localisation pace. Intangible assets contribute to the decrease in localisation pace leading to a conclusion that Croatian exporters use a combination of innovation – internationalisation strategy adding to the dynamic capabilities' theory.

There exist several limitations of the study. Firstly, we used data for the period 2006-2015 that enable us to account to financial crisis effect. However, it would surely be more valuable to include data for the longer time periods in order to make predictions between the data. Secondly, additional analysis had been made to inspect whether transition from command to capitalist system had an effect on internationalisation pace, i.e., we distinguished between firms founded before and after 1991, i.e., Croatia's independence, and did not find significant differences on these samples. It would surely be interesting to inspect differences between firms founded before and after 1991 in detail as well as between service and manufacturing firms, although an industry *dummy* is included in the analysis.

Finally, this paper contributes to the dynamic capabilities' literature according to which innovation – internationalisation link is undisputed and presents an export – led learning path for Croatian firms. Therefore, practical recommendations for firms include stressing intangible assets and customisation approach to international markets wherein these firms efficiently use their dynamic capabilities to increase their presence on the foreign market and enabling a spillover effect on other sectors by participation in global value chains with higher value added products and services. As more intangible asset investment requires substantial amount of money, timely capital financing and government subsidies aid firms to resist external

economic downturns (Stojcic 2020). Especially in the long run and for the mutual benefit of domestic and international firms. Investments in tangible assets do not affect internationalisation, only negatively if not dynamically followed by yearly increases, firms should consider to steadily and continuously increase their intangible investment by following market and industry trends.

References

Arellano, M. and Bond, S. 1991. Some tests on specification for panel dana: Monte Carlo evidence and an application to Employment Equations. Review of Economic Studies 58: 277-297.

Arellano, M. and Bover, O. 1995. Another look at the instrumental variable estimation of error-component models. Journal of Econometrics 68: 29-51. https://doi.org/10.1016/0304-4076(94)01642-D

Autio, E., Sapienza, H. J. and Almeida, J. G. 2000. Effects of age at entry, knowledge intensity, and imitability of international growth. Academy of Management Journal 43 (5): 909-924.

Barney, J. 1991. Firm resources and sustained competitive advantage. Journal of Management 17 (1): 99–120.

Barney, J.B. 2001. Resource-based theories of competitive advantage: a ten-year retrospective on the resource-based view. Journal of Management 27 (6): 643–650

Blundell, R. and Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics 87: 115-143. https://doi.org/10.1016/S0304-4076(98)00009-8

Bortoluzzi, G., Ghiarvesio, M., Di Maria, E. and Tabacco, R. 2014. Exporters moving toward emerging markets: a resource-based approach. International Marketing Review 31 (5): 506–525.

Bryl, L. 2020. Intangible assets in the process of internationalization. International Journal of Management and Economics 56 (1): 63–78. https://doi.org/10.2478/ijme-2020-0004

Buckley, P.J. 1988. The limits of explanation: testing the internationalization theory of the multinational enterprise. Journal of International Business Studies 19 (2): 181–193.

Camisón, C. and Villar, A. 2009. Capabilities and propensity for cooperative internationalization. International Marketing Review 26 (2): 124-150. https://doi.org/10.1108/02651330910950394

Cantele, S. and Campedelli, B. 2016. Internationalisation and performance of SMEs: exploring the moderating effects of intangible assets and capital intensity. International Journal of Business and Globalisation 17 (2): 205-223. https://doi.org/10.1504/IJBG.2016.078407

Chang, S.-J. and Rhee, J. H. 2011. Rapid FDI expansion and firm performance. Journal of International Business Studies 42 (8): 979-994.

Conner, K.R. and Prahalad, C.K. 1996. A resource-based theory of the firm: knowledge versus opportunism. Organization Science 7 (5): 477–501.

Cui, L. and Xu, Y. 2019. Outward FDI and profitability of emerging economy firms: Diversifying from home resource dependence in early stage internationalization. Journal of World Business 54 (4): 372-386. https://doi.org/10.1016/j.jwb.2019.04.002

Denicolai, S., Zucchella, A. and Strange, R. 2014. Knowledge assets and firm international performance. International business review 23 (1): 55-62.

Eisenhardt, K. M. and Martin, J. A. 2000. Dynamic capabilities: what are they? Strategic Management Journal 21 (10-11): 1105-1121.

Filatotchev, I. and Piesse, J. 2009. R&D, internationalization and growth of newly listed firms: European evidence. Journal of International Business Studies 40 (8): 1260-1276. https://www.jstor.org/stable/27752446

Fong Reynoso, C. and Ocampo Figueroa, L. E. 2010. Intangible resources as a determinant of accelerated internationalization. Global Journal of Business Research 4 (4): 95-105. Available at SSRN: https://ssrn.com/abstract=1873455

Golovko, E. and Valentini, G. 2011. 'Exploring the complementarity between innovation and export for SMEs' growth', Journal of International Business Studies 42 (3): 362–380.

Hansen, L. P. 1982. Large sample properties of generalized method of moments estimators. Econometrica 50: 1029-1054. https://doi.org/10.2307/1912775

Kersan-Škabić, I. 2016. Capital mobility in the EU new member states. An Enterprise Odyssey. International Conference Proceedings; Zagreb: 577-586. Zagreb: University of Zagreb, Faculty of Economics and Business. (Jun 8-Jun 11, 2016). https://www.proquest.com/openview/2f40179508ec0d3f7a9a9bff011b5401/1?pq-origsite=gscholar&cbl=38689

Kersan-Škabić, I. 2017. Trade in Value Added (TiVA) in EU New Member States (EU NMS). Croatian Economic Survey 19 (2): 105-133. https://doi.org/10.15179/ces.19.2.4

Kersan-Škabić, I. 2019. The drivers of global value chain (GVC) participation in EU member states. Economic research - Ekonomska istraživanja 32 (1): 1204-1218. https://doi.org/10.1080/1331677X.2019.1629978

Kersan-Škabić, I. and Belullo, A. 2021. The Characteristics of Regional Value Chains in the Sector of Chemicals and Pharmaceutical Products in the EU. Economies 9 (4): 167. https://doi.org/10.3390/economies9040167

Kotorri, M. and Krasniqi, B. 2018. Managerial characteristics and export performance in a transition economy. South East Journal of Economics and Business 13 (2): 32-48.

Retrieved from http://journal.efsa.unsa.ba/index.php/see/article/view/824

Liu, Y., Kim, J. and Yoo, J. 2019. Intangible resources and internationalization for the innovation performance of Chinese high-tech firms. Journal of Open Innovation: Technology, Market, and Complexity 5 (3): 52. https://doi.org/10.3390/joitmc5030052

Mansion, S. E. and Bausch, A. 2020. Intangible assets and SMEs' export behavior: a meta-analytical perspective. Small Business Economics 55 (3): 727-760.

Miocevic, D. and Crnjak-Karanovic, B. 2010. New realities of the SME internationalization: A capability perspective. Economic research-Ekonomska istraživanja 23 (3): 43-56. https://doi.org/10.1080/1331677X.2010.11517422

Mohr, A. and Batsakis, G. 2014. Intangible assets, international experience and the internationalisation speed of retailers. International Marketing Review 31 (6): 601-620. https://doi.org/10.1108/IMR-09-2013-0186

Ocampo Figueroa, L. E., Alarcón Osuna, M. A. and Fong Reynoso, C. 2014. Determinants of the internationalization of the firm: the accelerated model vs the sequential model. The International Journal of Business and Finance Research 8 (5): 81-93.

Penrose, E.T. 1959. The Theory of the Growth of the Firm, Basil Blackwell, Oxford.

Roberts, J. 1999. The Internationalisation of Business Service Firms: A Stages Approach. Service Industries Journal, 19 (4): 68-88, DOI: 10.1080/02642069900000045

Roodman, D. 2009. How to do xtabond2: An introduction to difference and system GMM in Stata. The Stata Journal 9 (1): 86-136. https://doi.org/10.1177/1536867X0900900106

Sarafidis, V. and Wansbeek, T. 2012. Cross-sectional dependence in panel data analysis. Econometric Reviews 31 (5): 483-531. https://doi.org/10.1080/07474938.2011.611458

Shih, T. Y. 2017. An empirical study of food and beverage chains' internationalisation: advancing intangible resource theory and research. European Journal of International Management 11 (6): 660-687. https://doi.org/10.1504/EJIM.2017.087560

Stojcic, N. 2012. The Competitiveness of Exporters from Croatian Manufacturing Industry // Ekonomski pregled: mjesečnik Hrvatskog društva ekonomista 63 (7-8): 424-445. https://hrcak.srce.hr/86494

Stojcic, N. 2020. Učinci pandemije Covid-19 na izvoznu konkurentnost poduzeća prerađivačke industrije u Hrvatskoj. Ekonomska misao i praksa: časopis Sveučilišta u Dubrovniku 20 (2): 347-365. https://doi.org/10.17818/EMIP/2020/2.2

Stojcic, N., Anic, I.-D. and Svilokos, T. 2021. The Entrepreneurial Gains from Market Integration in the New EU Member States. Small business economics 57 (3): 1601-1620. https://doi.org/10.1007/s11187-020-00363-7

Stojcic, N., Becic, M. and Vojinic, P. 2012. The Competitiveness of Exports from Manufacturing Industries in Croatia and Slovenia to the EU-15 Market: A Dynamic Panel Analysis. Croatian economic survey 14 (1): 69-105. https://hrcak.srce.hr/80034

Stojcic, N., Benic, D. and Karanikic, P. 2014. Regional Determinants of Export Competitiveness in Croatian Manufacturing Industry. Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu 32 (2): 193-212. https://hrcak.srce.hr/131530

Stojcic, N. and Bezic, H. 2012. Restructuring and barriers: Cross-country evidence on the competitiveness of exporters in transition. Managing Global Transitions: International Research Journal 10 (2): 145-170. [online] Retrieved from: https://www.fm-kp.si/zalozba/issn/1581-6311/10_145-170.pdf (14 January 2022).

Stojcic, N. and Orlic, E. 2016. Foreign direct investment and structural transformation of exports. Ekonomska misao i praksa: časopis Sveučilista u Dubrovniku 25 (2): 355-378. https://hrcak.srce.hr/171468

Thomas, D.E. 2006. 'International diversification and firm performance in Mexican firms: a curvilinear relationship?', Journal of Business Research 59 (4): 501–507.

Wu, J. J. 2016. Total Resources and Speeds of Internationalization. In Global Entrepreneurship: Past, Present & Future. 29, Emerald Group Publishing Limited. ISSN: 1571-5027: 279-314. https://doi.org/10.1108/S1571-502720160000029016

Xiao, S. S., Lew, Y. K. and Park, B. I. 2019. '2R-based view'on the internationalization of service MNEs from emerging economies: Evidence from China. Management International Review 59 (4): 643-673.

Zhang, B., Li, Z., Li, X. and Liu, Z. 2021. Speed of internationalization and firm performance: the moderating role of potential slack and knowledge assets. Chinese Management Studies. https://doi.org/10.1108/CMS-06-2020-0249