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Differences in Innovative Orientation of the Entrepreneurially Active Adults: The Case of Croatia

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***Abstract*—**This study analyzes the innovative orientation of the Croatian entrepreneurs. Innovative orientation is represented by the perceived extent to which an entrepreneur's product or service or technology is new, and no other businesses offer the same product. The sample is extracted from the GEM Croatia Adult Population Survey dataset for the years 2003-2013. We apply descriptive statistics, t-test, Chi-square test and logistic regression. Findings indicate that innovative orientations vary with personal, firm, meso and macro level variables, and between different stages in entrepreneurship process. Significant predictors are occupation of the entrepreneurs, size of the firm and export aspiration for both early stage and established entrepreneurs. In addition, fear of failure, expecting to start a new business and seeing an entrepreneurial career as a desirable choice are predictors of innovative orientation among early stage entrepreneurs.

***Keywords*—**Multilevel determinants of the innovative orientation, Croatian early stage entrepreneurs, established businesses, GEM evidence.

I. Introduction

SMALL and medium sized enterprises are the backbone of every economy. Their innovative capacity is an important factor that significantly impact business performance and competitiveness. In addition, it is an important driver of regional and national economic growth. Innovative orientation is recognized and measured through entrepreneurs' capacity to conceive and introduce new process or technology, new product or service, new structure or system [1]. Understanding what differentiate those innovative oriented entrepreneurs from less innovative ones is important in order to encourage entrepreneurs to realize their innovative potential, as well as to find ways how to scale up effects of the innovations on the regional or national level.

However, the research based on longitudinal as well as entrepreneurially young or transitional countries are markedly absent from the literature. This is particularly true for research that use a multi-level (individual, micro, meso and macro) variables to explain innovative or high growth businesses.

In order to bridge this gap, our study aims to provide insight in the innovative behavior of the entrepreneurially active adults in Croatia. In addition, we will test the theoretically validated determinants of innovation propensity and predict probability of high innovative orientation among entrepreneurs in the Croatia.

The data from the Croatia Adult Population Survey (APS) from the Global Entrepreneurship Monitor (GEM) dataset from 2003 to 2013 were used to extract the sample of the entrepreneurially active adults engaged in owning or managing early stage (less than 42 months old) or established businesses (business more than 42 months old). We use descriptive statistics, t-test, Chi-square test and logistic regression.

The paper is structured as follows: we start with the brief overview of the theoretical background and previous research on the interrelations between entrepreneurship, innovation and growth. We explain the relevant determinants of the innovative activity and our hypotheses. After that we describe the instrument, sample, variables and methods used in our study and proceeds with the main results. We conclude with the interpretations of the major findings, implications, limitations and further research suggestions.

II. Theoretical Background

A. Entrepreneurship, Innovations and Growth

Entrepreneurship, innovation, and growth have complex, non-trivial and non-linear relationships [2]. Different types of entrepreneurship coexist and only a few, namely: opportunity driven, high growth, and innovations oriented types of entrepreneurship account for the majority of new job openings and economic growth [3]-[5].

High growth and innovation oriented entrepreneurial activity, are usually relatively rare and represents only a small percentage of all entrepreneurship activity in any country [6]. High growth firms, primarily through new job openings, constitute the most visible medium-term impact of entrepreneurship. Innovative orientation of the entrepreneurs is less visible yet equally important for economic prosperity and sustainability in the long term. Higher level of innovation oriented entrepreneurship is linked with higher level of economics development. In addition, innovative orientation presupposes the high growth ambitions of the entrepreneurs [7].

During the last decade, notable worldwide efforts to support entrepreneurship, innovations and growth oriented entrepreneurs resulted in a variety of international research consortiums and higher availability of standardized and longitudinal data sets. The Global Entrepreneurship Monitor (GEM) collects multi- year and multi-level data that measure entrepreneurship attitudes, activity and aspirations for a number of countries. Aspirations of the entrepreneurs are measured through job (growth) expectation, innovative

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orientation and internationalization of the entrepreneurially active individuals. These forms of entrepreneurial aspirations have been positively associated with economic development [8]-[10]. However, majority of the empirical evidence is focused on the relationship between high new job expectations and high economic growth [11]-[13]. For example, empirical evidence confirms that entrepreneur's expectation to hire more than 20 new employees in the next 5 years' time has been significantly and positively related to the economic growth [10]. In addition, strong correlation between determinants of high growth expectation and actual growth were found [14]. Therefore, high aspirations can be used as a reliable proxy for actual performances. Furthermore, evidence suggests that entrepreneurially active individuals with high growth expectations tend to be male, younger, have higher education, household incomes and hold full or part time employment. These characteristics significantly differentiate those with high, moderate or less growth aspirations. However, evidence about the multi-level determinants on the innovative orientations is underrepresented in the literature.

GEM project tracks innovative orientations by entrepreneurs' expectations about the competition, novelty of the product from the customer perspective, and novelty of the deployed technology. The entrepreneurs who perceive no other businesses offer the same product, perceive their technology as less than a year known by others, and who perceive all of their customers would perceive their product or service novel are categorized as highly innovative oriented entrepreneurs. Previous research showed that innovation orientation is significant for explaining expected growth [13], and significantly and positively related to growth ambitions [12]. On other hand, the innovation was found to be insignificant to explaining growth expectation [15]. However, antecedents of the innovative orientation have been left unexplored. Our study aims to fill this particular gap and provide more in depth insight into the determinants of the innovative orientation of the entrepreneurs.

B. Impact and Determinants of the Innovative Orientation

Innovative activity significantly and positively impact business performance and success of the individual firm [16]. It is assumed to enhance competitive advantage and precede the growth of the firm. It is also key driver of competitiveness and growth on industry, regional or national level, which explain the extant body of literature on innovative behavior.

Majority of researchers explore innovativeness at the particular level of analysis such as macro (national-level), meso (industry-level; regional-level), micro (firm-level) or personal-level. On the macro level, previous research suggests that entrepreneurial individuals with high innovative capacity contribute more than others and significantly impact the overall national economic growth and development. Interestingly, the relationship seems to be bidirectional since the level of the economic development impact the level of innovative entrepreneurial activity [17].

Overlapping the macro and meso context, innovative activity tends to be positively associated with supportive cultural norms, beliefs and values, rule of law, physical proximity and agglomerated infrastructure. In addition, it tends to be higher in the substantially dynamic or disturbed markets [16]. Innovation activity significantly varies with industry life cycle [18]. Market size is also very important in fostering innovativeness. Entrepreneurs with international orientation or wider markets are more likely to innovate, particularly in the small transitional economies [19].

At the firm-level, innovative activity is influenced by the firm size and multitude of other factors, including the stage of the firm lifecycle. It is widely accepted that innovative activity are significantly higher in early stage of the firms' development. It is also accepted that innovativeness decrease as firms become mature. However, the evidence on the effect of the firm level determinants of innovative activity is often inconclusive, mixed and curvilinear. For example, the firm size has significant positive effect, but the size effect diminishes as the number of the employees increase [20]. The allertness, cooperation, and networking have positive impact on innovative activities in general, however sometimes it is significant and otherwise not [20].

On the personal level, innovative activity tend to vary with gender, age, education, previous experiences, and psychological characteristics such as the tolerance of risks. These characteristics tend to be particularly important in the early stages of entrepreneurial process. However, the empirical evidence is even more inconsistent and elusive.

C. The Case of Croatia

Only a few studies on the determinants of innovation are performed in developing and transitional countries [19], [15]. Croatia is the central and eastern European country in the transition between efficiency and innovation driven phase of economic development. In 2013, Croatia joined EU as its latest member. However, Croatia has been struggling with the negative growth rate and increasing unemployment rate since 2008. The negative economic trends seem to be associated with the widening gap between EU average and Croatian rate of early stage entrepreneurship, established entrepreneurship and improvement-driven entrepreneurship. In all these categories Croatia lags the EU average [7]. The situation necessitates more attention to entrepreneurship activity with the high innovative orientation. In prior to crafting measures for enhancing it, we would like to test the generalizability of the theoretically valid determinants in the Croatian context.

Following the multi-level approach we propose the conceptual framework for our study as shown in Fig. 1. Innovative orientation of the entrepreneurs is related to the personal demographic and psychological characteristics of entrepreneurs, the firm-level, meso/macro-level characteristics such as industry, regional or national level of economics development, social norms, and culture.

We examine entrepreneurial individuals who have high innovative orientation in order to address following research questions: (i) What differentiate entrepreneurs with high innovative orientation from other entrepreneurs in the Croatia? (ii) How these characteristics differ between early stage

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(businesses less than 42 months old) and established business (more than 42 months old)? (iii) What predicts probability of having high innovative orientation among Croatian entrepreneurs?

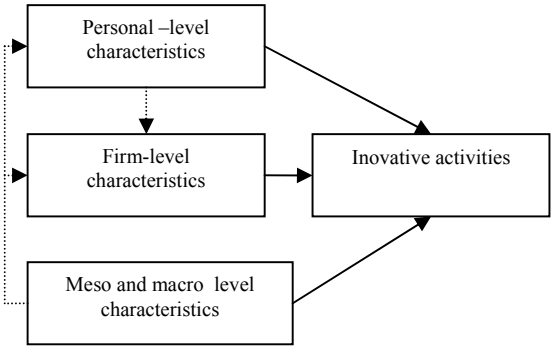


Fig. 1 Conceptualization of the characteristics associated with the innovative orientation

In doing so, this study may contribute to the empirical evidence and understanding of the innovative orientation in different context (regions) and in different stages of entrepreneurship process. It may also enable entrepreneurs to have more control over typical trajectories in developing their own innovativeness. This study may also provide insights for the policy makers on how to scale up particular stage or type of entrepreneurial activity such as high innovative orientation, and high growth.

D. Hypotheses

Focus of this study in on the innovative orientation of entrepreneurially active individuals. We presume, consistent with the relevant theoretical and empirical findings that innovative aspirations antecede high growth and similarly to the previous research [14], we presume that high innovative aspirations serve as reliable proxy for actual innovative behavior. We expect innovative orientation of Croatian entrepreneurs vary in accordance to the personal, firm, meso or macro characteristics, and across different stages of entrepreneurship process.

Several research hypotheses are stated:

H1. There are significant differences between high innovative orientation versus moderate or low innovative orientations of entrepreneurs in Croatia.

H2. There are significant differences between high innovative orientation according to stages of entrepreneurship process.

H3. Personal characteristics are the most important predictors of innovative orientation in the early stage of the entrepreneurial process. The innovative activity in the more mature stages of the entrepreneurial process is more closely associated with the firm, meso and macro-level characteristics.

III. Methodology

In order to provide insights into innovative orientation of entrepreneurially active population in Croatia we use the Global Entrepreneurship Monitor (GEM) data set for Croatia. GEM is the international research consortium which produces annual assessment of the entrepreneurial activity of individuals across a wide range of countries. GEM studies behavior of individuals with respect to starting and managing a business. One of the instruments used to collect data is Adult Population Survey (APS). The APS is a comprehensive and standardized questionnaire, administered to a minimum of 2000 adults in each GEM country, designed to collect detailed information on the entrepreneurial activity, attitudes and aspirations of respondents. It is based on the carefully tailored and monitored procedures to assure comparability of datasets across different nations and different years. The data is harmonized to be representative of the adult-age population in particular country. In Croatia, APS is administered by the telephone survey.

A. Sample

The GEM Croatia adult population survey comprise sample of at a minimum 2000 randomly selected respondents in the adult age (18 to 65 year old) for each year during the 2002-2013. We use the GEM Croatia APS data from 2003 to 2013. As we expect that the predictors of the innovative orientation differ for entrepreneurs in early stage and more established businesses, we isolated two main datasets and we run two separate regressions to predict probability of innovative orientation. The sample is presented in Table I. The respondents who are actively involved in early stage businesses (an adult-age individual who is starting a business, managing, and personally own all or part of the firm which is not more than the 42 months old) were treated as one subsample. The respondents who are entrepreneurially active in established business (an adult-age individual who is actively managing the firm, personally owns all or part of it, and the firm in question is over 42 months old) constitute second subsample.

TABLE I
SAMPLE

APS Croatia 2003-2013 datasets	Total number	% High innovative orientation	% Moderate or low innovative orientation
Number of early stage entrepreneurs	1332	38.4%	61.6%
Number of established entrepreneurs	679	30.9%	69.1%

B. Variables

The innovative orientation of the entrepreneurs in APS Croatia derives from three survey questions: (i) Will all, some, or none of your customers consider this product or service new and unfamiliar? (ii) Are there many, few, or no other businesses offering the same products or services to your customers? (iii) Have the technologies or procedures required for this product or service been available for less than a year, or between one to five years, or longer than five years? If respondent expects no other competitors, or uses technology less than a year known, or expects all of his customers would perceive his product/service novel, than he is categorized as

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entrepreneur with high innovative orientation. All other respondents were categorized as moderate or less innovative oriented.

Similarly to other previous research [12] we include following four overlapping categories of variables:

(i) Personal demographics: gender, age, education, household income, working status and occupation,
(ii) Personal psychological attitude: self-confidence in possessing necessary competences for starting and managing new venture, and fear of failure, motivation for starting a venture.
(iii) Firm demographic and strategy: size, number of owners, amount of the equity fund provided to start a firm, trade area (level of internationalization),
(iv) Meso and macro level variables: perception of opportunities, networking, interest in starting up in the three years' time, social norms about status of the entrepreneurs, and entrepreneurship as a career option. Table VII in the appendix contains codes and description of variables used in our study.

C. Methods

In this research the following methods were used: descriptive statistics, t-test, Chi-square test and logistic regression. T-test was used to test difference between two means. Chi-square was used to test dependence between categorical variables [21]. Logistic regression was used for developing models to predict probability of being innovative.

Logistic regression modeling is widely used for analyzing multivariate data involving binary responses that we deal with in our research: 1-high innovation vs 0-low innovation. It provides a powerful technique analogous to multiple regression and ANOVA for continuous responses. Since the likelihood function of mutually independent variables $Y_1,...,Y_n$ with outcomes measured on a binary scale is a member of the exponential family with

$$\left(\log\left(\frac{\pi_1}{1-\pi_1}\right),..., \log\left(\frac{\pi_n}{1-\pi_n}\right)\right) \quad (1)$$

as a canonical parameter (π_j s a probability that Y_j becomes 1), the assumption of the logistic regression model is a linear relationship between a canonical parameter and the vector of explanatory variables $\mathbf{x}_j$ (dummy variables for factor levels and measured values of covariates):

$$\log\left(\frac{\pi_j}{1-\pi_j}\right) = \mathbf{x}_j^T\boldsymbol{\beta}. \quad (2)$$

This linear relationship between the logarithm of odds and the vector of explanatory variables results in a nonlinear relationship between the probability of Y_j equals 1 and the vector of explanatory variables:

$$\pi_j = \exp\left(\mathbf{x}_j^T\boldsymbol{\beta}\right)/\left(1+\exp\left(\mathbf{x}_j^T\boldsymbol{\beta}\right)\right). \quad (3)$$

Detailed description of the logistic regression can be found in [22].

For both models we present ROC curve and c statistics which show discriminatory power as well as average hit rate which shows model accuracy.

IV. Results

The first step in our analysis was to compare high innovative oriented entrepreneurs and those with moderate or low innovative orientation separately for early stage and established entrepreneurs.

The profile of the Croatian highly innovative oriented entrepreneurs fits well to the conceptual model. The early stage high innovative oriented entrepreneur tends to be male, more often have graduate education, full or part time employment. They tend to have lower level of fears regarding failures, high self-confidence in their competences. From the firm level perspective, they invest more in their startups. They tend to export more, have bigger businesses, and lesser number of co-owners. From the meso-level perspective they have higher opportunity drive, better networks, they are optimistic about opportunities in the environment and possibility of starting a business in the next three years. In addition, from the macro level perspective, high innovative oriented early stage entrepreneurs more often perceive entrepreneurs are accepted as persons with high status, and entrepreneurship as good career choice.

TABLE II
Significant differences Between Innovative and Non-Innovative Entrepreneurs

Variable level	Variable code	Early stage (less than 42 months old business)	Established businesses (more than 42 months old business)
Person-level	*Gender*	*	
	Age		
	HHSIZE		
	HHINC		
	Gemwork		
	Gemocc	*	**
	Gemeduc	*	*
	Suskill		*
	Frfail	**	*
	Reason	**	
Firm-level	*Owners*	*	
	Bafund	*	***
	Size	**	
	Export	***	***
Meso-level	*Knowent*	***	
	Opport	***	
	Futsup	**	
	Equal	*	
Macro-level	*Nbgood*	**	
	Nbstatus	*	*
	Nbmedia	*	

statistical significance ***1% **5% *10%

The established business owners with high innovative orientations have more often graduate education, higher self-confidence, lower fear of failures. They tend to be self-employed. From the firm level perspective, they have higher personal investments in their businesses and export more than

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25% of their products in comparison to entrepreneurs with moderate or low innovative orientation in the established stage. The summary of the significant differentiators can be found in Table II. The detailed distribution of frequencies is shown in Appendix (Table VIII).

As shown in Table II there are large number of significant variables that differentiate highly innovative orientation entrepreneurs from others in the early stage of business. On the other hand, there are few significant variables between the characteristics of innovative oriented entrepreneurs and those others, in the established businesses.

The next step in our analysis was to compare highly innovative oriented entrepreneurs in two different stages of entrepreneurship process: early stage entrepreneurs with established entrepreneurs. As shown in Table III there are significant differences in determinants of high innovative orientation across different stages of firm life-cycle.

TABLE III
SIGNIFICANT DIFFERENCES BETWEEN EARLY STAGE INNOVATIVE ENTREPRENEURS AND ESTABLISHED ENTREPRENEURS

Variable level	Variable code	Early stage vs established
Person-level	*Gender*	*
	Age	***
	HHSIZE	
	HHINC	
	Gemwork	***
	Gemocc	***
	Gemeduc	
	Suskill	
	Frfail	
	Reason	
Firm-level	*Owners*	*
	Bafund	
	Size	
	Export	**
Meso-level	*Knowent*	***
	Opport:	**
	Futsup	***
Macro- level	*Equal*	
	Nbgood	
	Nbstatus	
	Nbmedia	

statistical significance ***1% **5% *10%

The significant differentiators of innovative orientation between early stage and established entrepreneurs stem mainly from person and firm-level variables such as gender, age, work status, occupation, number of owners, export aspiration, and perception of knowing other entrepreneurs, seeing opportunities, intention to start a new business in the future. Neither of the macro level variables was found significant.

High innovative oriented established businesses have more owners, and their average age is 43. Women tend to be associated with the established (33,2%), rather than early stage businesses (26,8%). Established stage, in comparison to early stage entrepreneurs tend to be associated with more previous work related experiences in self-employed or full time occupations. They have less international orientation. In addition, innovative oriented entrepreneurs associated with the established businesses less frequently see opportunities, have lesser intentions to start a new business in the future, and more often do not know other entrepreneurs.

The final step in our analysis is to create two models, separately for early stage and established entrepreneurs, to estimate probability of being innovative.

In the modeling procedures several logistic regression models for each group (early stage and established) were developed taking into account the assumptions of logistic regression especially independence of observations and multicollinearity. Models with the best goodness of fit measures, discriminatory power and accuracy were selected. Table IV depicts significant variables in the predicting probability of having innovative orientation among early and established entrepreneurs in Croatia.

TABLE IV
SIGNIFICANT PREDICTORS OF INNOVATIVE ORIENTATION

Early stage entrepreneurs		Established entrepreneurs	
Variable	Significance	Variable	Significance
Gemocc	***	Gemocc	***
Frfail	**	Suskill	***
Size	***	Size	***
Export	***	Export	**
Futsup	**		
Nbgood	*		

statistical significance ***1% **5% *10%

TABLE V
LOGISTIC REGRESSION MODEL FOR THE EARLY STAGE ENTREPRENEURS

Variables code and categories		Regress. coeff.	Odds ratio
Gemocc:	No answer	0.64	1.91
	Part time	-0.46	0.63
	Retired	-0.23	0.80
	Homemak	-0.76	0.47
	Student	-0.59	0.56
	Not-work.	-0.35	0.71
	Self-emp.	0.05	1.05
	Full time	0.00	1.00
Export:	No answer	0.23	1.26
	1-25%	-0.23	0.79
	26-75%	0.15	1.16
	76-100%	0.51	1.66
	0%	0.00	1.00
Size:	No answer	0.4	1.24
	<= 2	-0.03	0.97
	> 2 and <10	-0.49	0.61
	>= 10	0.00	1.00
Frfail:	No answer	0.92	2.50
	No	0.18	1.19
	Yes	0.00	1.00
Futsup:	No answer	-0.14	0.87
	No	-0.37	0.69
	Yes	0.00	1.00
Nbgood:	No answer	0.06	1.07
	No	-0.25	0.78
	Yes	0.00	1.00

Regardless of whether we have early stage entrepreneurs or established entrepreneurs, the significant predictors are occupation of the entrepreneurs, size of the firm and export aspiration. On one hand, having enough knowledge and skills for running a business is significant for established entrepreneurs. On other hand, fear of failure, expecting to start a new business and seeing an entrepreneurial career as a

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desirable choice are predictors of innovative orientation among early entrepreneurs.

In Table V we present regression coefficients and odds ratios for logistic regression model for early stage entrepreneurs.

Likelihood ratio of the model is 91.706 ($p<0.0001$). AIC is 1721.56.

ROC curve is presented in the Fig. 2. Area under curve is 0.6525. Average hit rate of the model is 60%.

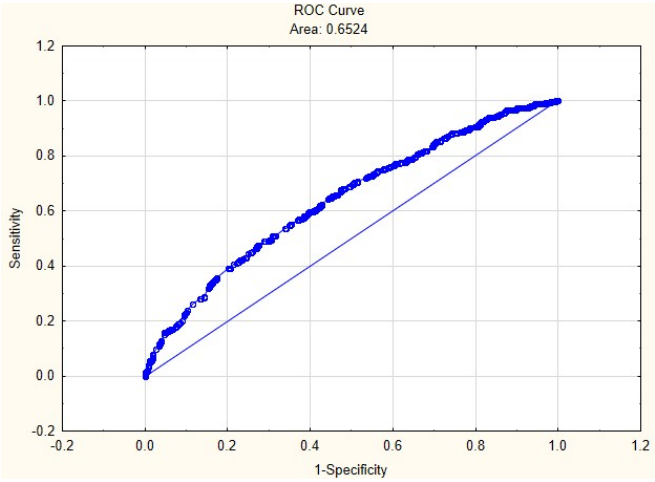


Fig. 2 ROC curve for the logistic regression model for early stage entrepreneurs

The highest probability of being innovative in the early stage of entrepreneurial process, have entrepreneurs who are self-employed and have full-time occupation. Probability of being innovative increases with firm size and export. Intentions to start new business and positive opinion about entrepreneurship as a desirable career choice increase probability of having high innovative orientation whereas fear of failure decreases it.

Table VI presents regression coefficients and odds ratios for logistic regression model for established entrepreneurs.

TABLE VI
LOGISTIC REGRESSION MODEL FOR THE ESTABLISHED ENTREPRENEURS

Variables code and categories		Regress. coeff.	Odds ratio
Gemocc:	No answer	0.63	1.87
	Stud, ret, home	-0.29	0.75
	Self-emp.	0.12	1.13
	Full time	0.00	1.00
Export:	No answer	0.14	1.15
	0%	-0.34	0.71
	1-25%	-0.67	0.51
	26-75%	-0.0005	0.99
	76-100%	0.00	1.00
Size:	No answer	1.14	3.11
	<= 2	0.55	1.73
	> 2 and <10	0.38	1.47
	>= 10	0.00	1.00
Suskill:	No answer	0.005	1.004
	No	-0.96	0.38
	Yes	0.00	1.00

Likelihood ratio of the model is 62.415 ($p<0.0001$). AIC is 803.81. ROC curve is presented in the Fig. 3. Area under curve is 0.6698. Average hit rate of the model is 62.63%.

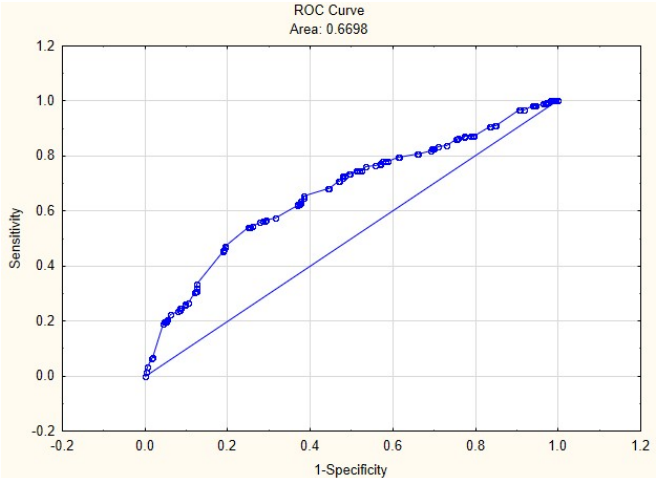


Fig. 3 ROC curve for the logistic regression model for established entrepreneurs

The probability of having high innovative orientation in the established businesses increases with full time occupations or being self-employed, higher confidence in knowledge and skills of the entrepreneur, and high export orientation. As opposed to early stage entrepreneurs, probability of being innovative in the established stage decreases with the number of employees.

V. CONCLUSION

Our findings contribute to the body of empirical evidence which derive from different contexts. It underlines the relevance of the conceptual framework for a transitional and entrepreneurially young context such as Croatia. While previous studies emphasize the growth aspirations our study provide more in depth insights in the antecedents of growth such as innovative orientation.

Our results indicate that innovative orientations vary with personal, firm, meso and macro level variables. The profile of the high innovative orientation is significantly different from moderate or low innovative orientation, particularly for the early stage entrepreneurs. Theoretically relevant determinants of the early stage innovative orientations cut across all level of the analysis and include attributes such as gender, occupation, education, opportunity drive and fear of failure. Interestingly, age and income do not contribute to the distinctiveness of the early stage innovative orientation in Croatia. In addition, highly innovative orientation is influenced by the number of owners, personal investments, size, and export orientation. The meso-level variables such as networking, perception of opportunities and entrepreneurial intentions in the future, together with the social norm contribute to the distinctiveness of the early stage high innovative orientation. However, the profile of the established high innovative entrepreneurs is much less distinctive and contains mainly firm-level and

education or previous experience- related determinants.

Innovative orientation varies across the different stages of entrepreneurship process. There are significant differences between innovative oriented entrepreneurs in the early stage in comparison with the established entrepreneurs. Early stage innovative orientation is differentiated from established by gender, age and education, number of owners, export orientation. In addition, early stage innovative orientation is characterized by larger networks, higher optimism about good opportunities and higher intentions toward starting new ventures. These findings are consistent with the previous research. H1 and H2 are confirmed.

H3 is partially confirmed. Personal and firm-level variables are important predictors for both early and established entrepreneurs. Those early stage entrepreneurs who have entrepreneurial intentions, consider starting a business as a desirable career choice, who do not have fear of failure, who have work related experiences, higher number of employees and higher export have higher probability of being innovative. Innovative entrepreneurs in the established stages who have work related experience, higher self-confidence; higher export and smaller firm-size have higher probability of being innovative. Interestingly, the innovative orientation diminishes as the number of employees increases, which is also consistent with previous research.

Our findings indicate the necessity of having full set of strategies and policies across person, firm, meso and macro level to scale up number of high innovative orientation among early stage entrepreneurs, but for practicing established entrepreneurs more targeted strategies and policies are more beneficial. Investments in education, work related experiences, and social norms about career choices and status increase the probability of having more entrepreneurs with high innovative orientation. Export orientation provides Croatian entrepreneurs with international exposure and significantly contributes to innovative orientation. Therefore more and better incentives for internationalization from the policy makers are called for.

It should be also emphasized that our study has some limitations which derive from the datasets we have used. For example, the responses regarding innovative orientation are perceptual and unit of the analysis are not businesses but entrepreneurially active adults. As a guideline for further research we would like to explore validity of the prediction model across different nations participating in the GEM research with inclusion of more variables in multi-level approach.

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APPENDIX

TABLE VII
CODES, VARIABLES CATEGORIES AND DESCRIPTIONS

Code and variable categories		APS questionnaire 2003-2013 Survey question
Gender:	Female Male	What is your gender?
Age		What is your current age (in years)?
HHSize		How many members make up your permanent household, including you?
HHInc:	Lower Middle Upper	Which of these ranges best describes the total annual income of all the members of your household, including your income, as one combined figure?
Gemwork:	Working Not-work. Stud/Ret.	Working status?
Gemocc:	Full/part Part Retired Homemak Student Not-work. Self-emp.	Which of the following describes your current employment status?
Gemeduc:	Some sec. Second. Post.sec. Graduate	What is the highest level of education you have completed?
Suskill:	Yes No	Do you have the knowledge, skill and experience required to start a new business?
Frfail:	Yes No	Would fear of failure prevent you from starting a business?
Reason:	Opport. No choice Both Seek better Other	Why did you become involved in this firm?
Owners	No. of owners	How many owners own part or whole business?
Bafund	mil.kunas	Approximately how much, in total, have you personally provided to these business start-ups in the past three years, not counting any investments in publicly traded stocks or mutual funds?
Size	No. of employees	Not counting the owners, how many people are currently working for this business?
Export:	0 1-25% 26-75% 76-100%	What proportion of your customers normally lives outside your country?
Knowent:	Yes: No:	Do you know someone personally who started a business in the past 2 years?
Opport:	Yes No	In the next six months, will there be good opportunities for starting a business in the area where you live?
Futsup:	Yes No	Are you, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years?
Equal:	Yes No	In your country, most people would prefer that everyone had a similar standard of living
Nbgood:	Yes No	In your country, most people consider starting a new business a desirable career choice
Nbstatus	Yes No	In your country, those successful at starting a new business have a high level of status and respect
Nbmedia	Yes No	In your country, you will often see stories in the public media about successful new businesses

statistical significance ***1% **5% *10%

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TABLE VIII
DIFFERENCES BETWEEN HIGH INNOVATIVE ORIENTED ENTREPRENEURS AND OTHERS IN YOUNG AND ESTABLISHED BUSINESSES

Code and description of the variables		Early stage		Established	
		High Innovation	Moderate or low innovation	High Innovation	Moderate or low innovation
Gender:	Female	26.8	31.3	33.2	34.8
	Male	73.2	68.7	66.8	65.2
Age	In years	36.5	37.0	43.4	44.5
HHSize	No. of members	3.8	3.9	3.7	3.9
HHInc:	Lower	17.7	17.1	13.6	12.9
	Middle	29.1	32.6	32.4	31.2
	Upper	53.2	50.3	54.0	55,9
Gemwork	Working	72.0	72.8	91.1	91.7
	Notwork.	17.5	16.1	3.6	3.9
	Stud/Ret.	10.5	11.1	5.3	4.4
Gemocc:	Full/part	47.1	41.8	34.0	30.9
	Part	3.11	4.3	0.0	1.0
	Retired	4.61	5.1	10.6	2.4
	Homema	1.1	2.1	0.0	1.4
	Student	3.6	5.3	0.0	1.9
	Notwork.	12.4	14.0	0.8	1.6
	Self-emp.	28.1	27.6	54.6	60.8
Gemeduc:	Some sec.	33.9	31.0	29.7	26.7
	Second.	35.5	41.5	39.9	38.0
	Post.sec.	22.4	21.3	18.2	26.1
	Graduate	8.3	6.3	12.1	9.2
Suskill:	Yes	92.4	91.1	94.6	91.8
	No	7.6	8.9	5.4	8.2
Frfail:	Yes	22.8	28.5	22.7	28.5
	No	77.2	71.5	77.3	71.5
Reason:	Opport.	50.4	45.2	42.7	44.3
	No choice	35.0	38.9	39.8	43.3
	Both	10.6	10.3	13.4	8.7
	Seek better	2.9	2.7	1.8	1.1
	Other	1.1	3.5	2.4	2.6
Owners	No.of own.	1.8	2.3	3.1	3.1
Bafund	mil.kunas	6.7	0.7	5.8	1.7
Size	No.of employee	8.3	7.3	10.5	10.2
Export:	0	31.2	30.5	41.0	30.4
	1-25%	24.9	34.6	27.4	43.0
	26-75%	19.9	17.6	16.9	13.7
	76-100%	14.8	10.5	8.7	9.2
	No answer	9.2	6.8	6.0	3.6
Knowent:	Yes:	72.2	64.9	61.8	59.6
	No:	27.8	35.1	38.2	40.4
Opport:	Yes	53.1	44.8	42.5	37.5
	No	46.9	55.2	57.5	62.5
Futsup:	Yes	52.0	46.0	24.8	21.8
	No	48.0	54.0	75.1	78.2
Equal:	Yes	72.5	76.7	74.7	76.4
	No	27.5	23.3	25.3	23.6
Nbgood:	Yes	68.5	63.0	64.9	62.3
	No	31.5	37.0	35.1	37.7
Nbstatus	Yes	46.2	43.0	43.0	37.3
	No	53.8	57.0	57.0	62.7
Nbmedia	Yes	46.5	51.3	46.8	44.7
	No	53.5	48.7	53.2	55.3

statistical significance ***1% **5% *10%

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REFERENCES

[1] F. Damanpour, "Organizational innovation: A meta analysis of effects of determinants and moderators," *Academy of Management Journal*, vol.34, no.3, pp. 555-590. 1991.

[2] A. A. Wennekers, R. Thurik, P.D. Reynolds, and S. Wennekers, "Nascent entrepreneurship and the level of economic development.", *Small Business Economics,* vol.24, no.3, 2010, pp.293.

[3] D. Kelley, N. Bosma and J.E. Amorós, *Global Entrepreneurship Monitor, 2010 Global Report.* Babson Park MA, Santiago, Chile: Babson College, Universidad del Desarrollo, 2011.

[4] S. Shane, "Why encouraging more people to become entrepreneurs is bad public policy", *Small Business Economics,* Vol.33, 2009, pp. 141-149.

[5] M. van Praag and A. van Stel, "The more business owners the merrier? The role of tertiary education", *Small Business Economics*, 42, no.2, 2013, pp. 335-357.

[6] F. Delmar, P. Davidsson, and W.B. Gartner, "Arriving at the high growth firm", *Journal of Business Venturing,* vol. 18, no.2, 2003, pp.189-216.

[7] J. E. Amoros and N. Bosma, "Global Entrepreneurship Monitor, 2013 Global Report: Fifteen years of Assessing Entrepreneurship across the Globe", www.gemconsortium.org (access: 10.09.2014)

[8] P. K. Wong, Y. P. Ho and E Autio, "Entrepreneurship, innovation and economic growth: Evidence from GEM data", *Small Business Economics*, Vol. 24, no.3, 2005, pp. 335-350.

[9] S. Wennekers, A. Van Stel, M. Carree and A.R. Thurik, "The relationship between entrepreneurship and economic development: Is it U-shaped?" *Foundations and Trends in Entrepreneurship*, Vol.6, no. 3, 2010, pp. 167-237.

[10] N. Bosma, "Entrepreneurship, Urbanization economies and productivity of European Regions" chapter in M.F. Fritsch (ed.). *Handbook of Research on Entrepreneurship and Regional Development*, Cheltenham (UK); Northampton, MA (USA): Edward Elgar, 2011, pp.107-132.

[11] E. Autio, *Global Report on High-Expectation Entrepreneurship*, London: Babson, Mazars, London Business School, 2005.

[12] S. Terjesen and L. Szerb, "Dice thrown from the beginning? An empirical investigation of determinants of firm level growth expectations", Estudios de Economia, Vol.35, no.2, 2008, pp.153-178.

[13] I. Verheul and L. Van Mil, "What determines the growth ambition of Dutch early-stage entrepreneurs?" Scientific *Analysis of Entrepreneurship and SME?s,* 2008, H200811.

[14] E. Autio, *Global Report on High-Growth Entrepreneurship*, London: Babson, Mazars, London Business School, 2007.

[15] E. Karadeniz, and A. Őzcam, "The determinants of the growth expectations of the early-stage entrepreneurs (TEA) using the Ordinal Logistic Model (OLM): The Case of Turkey", *Economic and Business Review*, Vol. 12, No.1, 2010, pp. 61-84.

[16] G.T.M. Hult, R.F. Hurley, and G.A. Knight, "Innovativeness: Its antecedents and impact on business performance," *Industrial Marketing Management*, Vol. 33, 2004, pp. 429-438.

[17] Z. J. Acs, "How is entrepreneurship good for economic growth?", *Innovations,* vol. 1, no.1, 2007, pp. 97-107.

[18] S. Tavassolli, "Innovation determinants over industry life cycle", *Technological Forecasting and Social Change,* Early view online published 4 Feb. 2014.

[19] S. Radas and Lj. Božić, "The antecedents of SME innovativeness in an emerging transition economy", *Technovation,* vol.29, 2009, pp. 438-450.

[20] I. Romero, and J.A. Martinez-Roman, "Self-employment and innovation. Exploring the determinants of innovative behavior in small businesses", *Research Policy*, vol.41, 2012, pp. 178-189.

[21] D. J. Sheskin, "*Handbook of parametric and nonparametric statistical procedures"*, Chapman & Hall/CRC, Washingon D.C., 2004.

[22] F. E. Jr. Harrel, "*Regression modeling strategies with applications to linear models, logistic regression and survival analysis"*, Springer: Berlin, 2001.