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Informal Investment in Transition Economies: Individual Characteristics and Clusters

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ABSTRACT. This paper investigates the factors driving informal investment in Croatia, Hungary and Slovenia. Using Global Entrepreneurship Monitor (GEM) data, we find that the low rates of informal investment activity and the small amounts of investments in these countries are driven by entrepreneurial behaviors consistent with limited market economy experience. We extend prior studies by investigating the role of business ownership, and identify significant differences between individuals with and without business ownership experience in terms of having start-up skills, knowing an entrepreneur and fearing failure. Cluster analysis identifies seven distinct groups of informal investors, and reveals the heterogeneity in terms of investors' age, gender, level of education, amount of investment, start-up skills, ownership status, income, opportunity perception and country of residence.

KEY WORDS: informal investment, entrepreneurship, Global Entrepreneurship Monitor, CEE, transition economies.

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1. Introduction

Following Wetzel's (1981) seminal study of high net worth individuals in New England, a growing body of research profiles informal investors, mostly in developed countries. Summarizing research on informal venture capital, John Frear, Jeffrey Sohl and Bill Wetzel conclude, "Today, no-one doubts that private investors exist" (2002, 278). But what of under-studied, developing nations elsewhere in the world? Case studies of entrepreneurship in transitioning economies offer anecdotal evidence of informal investment activity. For example, Zvonko Bezic and Zeljko Perovic, the Croatian co-founders of Victory Sailmakers, a Slovenia-based sail-manufacturing firm began in 1989 with a US $2,000 loan from a friend (Hisrich, Peters and Shepherd, 2005: 312). The friend stipulated that if the enterprise survived for two years, Zvonko and Zeljko would not have to pay back the loan, but if it failed and they went bankrupt, they must pay back the loan with interest. Victory Sailmakers now manufactures sails for Olympic and world champions. Szeged, Hungary-based biotechnology firm SOLVO was founded in 2000 with financing from the owners and two business angels who each contributed $10,000, and later received formal venture capital. SOLVO now has over US $2 million in annual sales and recently received the Grand Prize for Innovation from the Hungarian parliament for the firm's development and successful commercialization.

The stories of Victory Sailmakers and SOLVO highlight the rich role of informal investment in stimulating entrepreneurship in transitioning economies. However, in contrast to the developed world, where a body of research explores

informal investors' personal characteristics, investment activities, behavior, risk and return expectations and the sources of information on portfolio firms (Mason and Harrison, 2000; Wetzel, 1981, 1983), we know little about such activities in developing countries. Reviews have highlighted the need for further research on informal investment and angel activity in understudied economies, and specifically the size of the informal venture capital market, the typology of angels and comparative differences by country (Mason and Harrison, 1999). In this paper, we answer such calls by investigating informal investment activity in the Central and Eastern European (CEE) countries of Croatia, Hungary and Slovenia. We use Global Entrepreneurship Monitor (GEM) data to identify Croatian, Hungarian and Slovenian informal investors, and explore their profile and factors linked to informal investment behavior. We build on prior GEM studies of informal investment (e.g. Bygrave et al., 2003, Maula et al., 2005, O'Gorman and Terjesen, 2006) to investigate informal investors with and without business experience, and classify the different groups of informal investors.

Our paper proceeds as follows. Following a review of entrepreneurial development and the role of financial constraints in the transitional countries (Section 2), we analyze the potential informal venture capital market (Section 3) and put forward ten hypotheses (Section 4). GEM data and the multinomial logistic regression (MLR) and cluster methodology are detailed in Section 5. We then discuss our findings regarding differences between informal investors with and without business experience (Section 6) and the clusters of informal investors across countries (Section 7). We conclude with a discussion of findings (Section 8) and a set of recommendations for policy makers and entrepreneurs (Section 9).

2. Entrepreneurship and financial constraints in the CEEs

In the 1990s, the CEEs' planned economy system collapsed, ushering in a transition to a market economy, initially dominated by privatization and macroeconomic issues, and later by institutional and entrepreneurship development. Despite considerable changes to these economies, such as the dominance of a private sector, the restructuring of the economy and steps towards liberalization and stabilization, the transition continues, even in the most advanced CEE countries. For transitional countries, the major challenge is fostering economic growth (World Bank, 2002), which is often achieved through foreign direct investment and new entrepreneurial activity (Acs et al., 2007, Mueller and Goič, 2002, Ovaska and Sobel, 2004). The elimination of institutional administrative barriers in the CEE countries brought a series of changes: the privatization of state-owned enterprises, the creation of new firms (Kornai, 1990) and the transformation of the industrial structure (Tyson et al., 1994). However, the environment was still characterized by highly uncertain institutions, an inefficient market economy and low-risk investments (Yamin, 1997). Furthermore, entrepreneurial activity weakened in the late 1990s with the saturation of the markets and the start-ups' increasingly unmet resource needs. In parallel, the economy improved and foreign-owned firms began to hire, eliminating the necessity motivation of most new firm entrepreneurs. According to GEM, the CEE countries have some of the lowest rates of [total] entrepreneurial activity (TEA)[1], averaging 6% compared to 11% in developed Anglo-Saxon countries.

Why are there low levels of entrepreneurial activity in the CEE countries? The answer is rather complex and associated with the countries' accelerated, but ongoing, transition to a market economy. First, CEE countries are still in a transition and lack appropriate institutions, infrastructure and supporting cultural environments. Furthermore, entrepreneurs in the CEE countries face limited access to financial resources, termed a "finance gap" (Storey, 1994). Entrepreneurs' inadequate access to financial resources constitutes one of the most significant barriers to development of new and small firms (Harding, 2002, Harrison and Mason, 1996, Mason and Harrison, 1995). There is growing evidence, in economies with perfect market conditions and developed financial intermediation systems, that significant finance

gaps do not exist (Mason and Harrison, 2002, Storey, 1994, Vos et al., 2005). In the absence of funding from traditional suppliers such as banks and stock markets, the informal market can play an important role in these countries. Bygrave and Hunt (2005) claim that informal investment, especially from family members, relatives, work colleagues and friends, is the most important source of capital for start-ups.

2.1. *Why is there less financial capital available in CEEs?*

The finance gap lingers in countries characterized by inefficient markets and limited market experience. Analyzing startups and SME financing in transitional countries, Bilsen and Mitina (1999) report mixed evidence for supply side problems such as credit rationing and adverse selection in the credit market. However, start-ups and small firms have less access to external financing than do large firms, especially in transitioning economies. In a study of SME financing in 15 CEE SMEs, Klapper et al. (2002) found that SME growth potential was limited by the lack of long term financial resources, trade credit and outside equity. In addition to the usual supply side market imperfections (e.g. lack of proper financial resources), demand side factors including missing entrepreneurial skills, inexperience and a tradition of risk averse behavior hinder start-ups and small firms in Hungary (Szerb and Ulbert, 2002, Wright et al., 1999). Supply side institutional factors and external financing constraints also constitute key barriers for Slovenian SME growth (Bartlett and Bukvič, 2001). Among Croatian SMEs, the major obstacles are identified as a mix of supply and demand side elements, considerable financial barriers, under-developed financial markets, lack of entrepreneurial knowledge and skills (Singer and Lauch, 2004). Taken together, extant research suggests that CEEs have both an inadequate supply of financial resources as well as a severe demand side problem, stemming from the local entrepreneurs' limited knowledge and market economy experience.

Furthermore, evidence from GEM expert data illustrates the magnitude of the supply side finance gap in these three CEE countries. Each year, GEM experts independently evaluate the supply of finance, the ease of access to capital, loans, government support, outside private money, classic venture capital, and stock market opportunities.[2] Table I depicts the averages of the three selected countries, the EU and the rest of the world.

As indicated in Table I, the CEE experts report poorer access to financial resources, except loans, in the benchmarked EU and world countries. There is a significant difference in terms of access to capital, private money, and venture capital, and a sizeable difference for government support. Taken together, it seems that entrepreneurs in CEE countries face greater problems accessing equity finance.

3. Role and significance of informal investment

Entrepreneurship is an engine of economic growth (Acs et al., 2005; Reynolds et al., 2002; Rocha, 2004), and is fueled by the availability of sufficient funding (Bygrave and Hunt, 2005). The supply of equity capital for start-ups and small firms depends on the efficiency of the informal venture capital market (Harrison and

TABLE I
National expert opinion on access to financial resources (2001–2004 average)

	Capital	Loan	Government Sources	Private Money	Venture Capital	Average
Croatia	2.71	3.48	2.80	2.06	2.41	2.69
Hungary	2.65	3.10	2.82	2.33	2.00	2.58
Slovenia	2.47	2.80	2.30	2.02	1.79	2.27
EU average	3.00	3.04	3.11	2.93	3.01	3.02
World average	2.92	2.92	2.94	2.92	2.90	2.92

Source: GEM expert dataset 2001–2004; based on 1–5 scale where 1 = worst, 5 = best.

Mason, 1995). The informal investment market is the largest single source of risk finance for entrepreneurial firms, exceeding the investment activity of venture capital funds (Bygrave et al., 2003; Gaston, 1989; Harrison and Mason, 1996; Mason and Harrison, 1995, 2000; Van Osnabrugge and Robinson, 2000). Around the world, classic venture capital investment constitutes about 0.08% of GDP while informal investment comprises 1.55% – almost twenty times more (Bygrave and Hunt, 2005).

Who are these informal investors? In the literature, the terms ''informal investor'', ''private venture capitalist'', ''informal risk capital investor'' and ''business angel'' are often used interchangeably. Reviewing and synthesizing the different definitions the category of ''informal venture capital investor'' can be interpreted in two ways. First, in a narrow sense, an informal investor is a private individual, often referred to as a ''business angel'' who invests equity and knowledge capital directly in unlisted entrepreneurial ventures which they he/she has no prior (formal or family-related) connection. These individuals generally have high net wealth and entrepreneurial experience. In the second, broader definition, an informal investor is a non-institutional investor who invests money in unlisted firms owned by others. This approach includes family members, relatives and friends who provide non-collateral funds by courtesy (''love money''). In this research, we use the broader definition. We follow GEM (Reynolds et al., 2002) in defining an informal investor as an individual who reports having invested at least US $1 in a business not his or her own in the previous 3 years.

Informal investment rates in Croatia, Hungary, Slovenia, the EU and the rest of the world are depicted in Table II. When compared to the EU and the rest of the world, the CEE countries have fewer informal investors who provide smaller amounts of financial capital. Computing the ratio of total informal investment as a percentage of GDP, Hungary (0.23%) is ahead of only one country in the world (Brazil) and Slovenia is also near the bottom (0.61%), compared to the EU (0.93%) and the World (1.55%).

TABLE II
Informal investment and start-up capital needs, 2001–2004

	Informal Investors per 100 adults † (%)	Informal venture capital investment † (%GDP)	Amount/investment † ($US)	Amount/investor † ($US)	Total informal investment /capita † ($US)	Start-up capital Required ‡ ($US)	Owner percent ‡ (%)	Start-up outside capital need ‡ ($US)	Finance deficit ‡ ($US)
Croatia**	0.92	1.28	33,657	11,219	10,292	17,134	60.4	6,784	26,873
Hungary	2.18	0.23	3,254	1,085	2,367	14,442	63.2	5,320	-2,066
Slovenia	2.21	0.61	14,045	4,682	10,334	23,482	54.3	10,702	3,344
EU + 3 avg	2.76	0.93	40,719	13,573	33,964	n.a.	n.a.	n.a.	n.a.
World avg	3.97	1.55	30,576	10,192	27,281	53,673	65.8	18,356	12,220

Notes: † Average of 2001–2004 data; ‡ 2004 data; **Croatia data based on only 8 investors.

Using data from Table II, we calculate the capital needs and the capital structure of business start-ups in the five regions. On average, around the world, new firms require about US$53,673 in capital, and entrepreneurs provide almost two-thirds of this amount. However, on average, Croatian, Hungarian, and Slovenian entrepreneurs require just under $17,000, and finance almost 60% themselves. In order to measure the existence and the magnitude of the equity gap, we created a rough measure of the finance deficit using the average amount of informal investment from the outside capital needs (last column, Table II). As the bulk of start-ups' external financing is provided by informal investors and there are few differences among countries (Bygrave and Hunt, 2005), we can easily compare this deficit.[3] When the financing deficit is positive, informal investors provide more money than is required by entrepreneurs. When the financing deficit is negative, e.g. Hungary, there is insufficient funding available for start-ups. In this case, aspiring entrepreneurs may decide to either postpone start-up or to launch the venture with inadequate financial resources and face serious undercapitalization, liquidity constraints and restricted growth. Bygrave and Hunt (2005) estimate that only 5% of Hungarian nascent businesses could be funded by the informal investment currently available in the country. Slovenian informal investors are willing to provide more money than Hungarians, however, the excess financing is considerably less (US$3,344) than the world average (US$12,220). In Croatia, the small sample size limits reliable estimates, however we expect the country's entrepreneurs to face similar financial constraints.

We have demonstrated the existence of a finance gap from the supply side in the equity market for start-ups and growing businesses in the three CEE countries. The limited supply is attributable to the underdevelopment of informal equity markets, financial intermediaries and bridge institutions. Demand side imperfections can also explain the finance gap and include a population of inexperienced entrepreneurs with limited business skills and knowledge.

4. Determinants of informal investment and the derivation of hypotheses

Why are there so few informal investors in the three CEE countries? To answer this question, we must examine the characteristics of these investors, including factors related to their decision to invest. GEM data enables comparative analysis across different countries, and our work builds on two GEM studies.

First, Bygrave et al. (2003) found that opportunity-oriented total entrepreneurial activity (TEA) is positively related to opportunity perception, knowledge and start-up skills, and annual informal investment per GDP. They did not find any significant factors related to TEA necessity. In the second study, Maula et al. (2005) used GEM data from 6,007 Finnish adults and theories related to social psychology of planned behavior and demand for risky assets, to test 10 hypotheses explaining the propensity of individual to engage in informal investment. Using multinomial logistic regression (MLR), parameters were established independently for close family and more distant (distant relatives, friends, work colleagues, strangers) investors. Maula et al. (2005) concluded that personal context, including ownership status and entrepreneurial skills are more important determinants of becoming an informal investor than are demographic factors such as income, age and education. Contrary to initial expectations, they identified only minor differences between close and distant family investors.

We also build on an emerging body of research identifying the determinants of informal investment and the behavioral and demographic characteristics of informal investors, Informal investors have been classified by kinship (Maula et al., 2005), amount invested (Landström, 1992), frequency of investment activity (Sörheim and Landström, 2001), and type of experience (Politis and Landström, 2002). Informal investors are also reported to differ by career experience (Hindle and Rushworth, 1991) which has been linked to differences in risk perception (Sullivan, 1991), opportunity search activity (Landström, 1998), and personal contribution and advice (Harrison

and Mason 2002). Moreover, business owners are four times more likely than non-business owners to act as informal investors (Bygrave and Hunt, 2005). Maula et al. (2005)'s study highlighted the positive effect of ownership status on informal investor decisions, however we could identify no research on the driving forces of informal investors with ownership experience. In our study, we segregate informal investors by those with business ownership experience ("business owners") and those without such experience ("non-business owners") and expect that the two groups will be motivated by different forces.

The first hypothesis relates to the cultural and historical heritage of the three CEE countries. As these countries share similar sociocultural and economic roots and transitioned to a market economy at approximately the same time, we believe that there will be negligible country differences in the informal investor prevalence rates.

Hypothesis 1: There are no differences in informal investor prevalence rates among the business owner and non-business owner populations in Croatia, Hungary and Slovenia.

Several studies highlight the role of entrepreneurial attitudes and skills in motivating informal investment decisions. Start-up skills (Wright and Robbie 1998), personal acquaintance with an entrepreneur (Sætre, 2003, Svendsen, 2001) and the ability to recognize good investment and business opportunities (Mason and Harrison, 2002, Sörheim and Landström, 2001), increase the probability of informal investment. Maula et al. (2005) report that start-ups skills and knowing an entrepreneur significantly increase the likelihood of informal investment activity. In the case of the three CEE countries, we expect that this entrepreneurial context will more significantly influence individuals with ownership experience than those who lack this expertise.

Hypothesis 2: There should be a positive relationship between an individual's perceived start-up skills and propensity to make informal investments. This relationship should be stronger among business owners than non-business owners.

Hypothesis 3: There should be a positive relationship between an individual's personal acquaintance with an entrepreneur and propensity to make informal investments. This relationship should be stronger among business owners than non-business owners.

Hypothesis 4: There should be a positive relationship between an individual's perception of good opportunities to start a business and propensity to make informal investments. This relationship should be stronger among business owners than non-business owners.

The personal context of risk should also be evaluated and we follow Maula et al. (2005) in interpreting fear of failure as a measure of risk aversion. Maula et al. (2005) report an insignificant relationship between fear of failure and the propensity to make informal investments, however we believe that the consideration of business ownership experience may reveal new insights. First, individuals without previous ownership experience who are averse to starting their own businesses and are not confident of their personal start-up skills will likely not invest in others' firms. However if these non-business owners have confidence in their own skills, they will be more likely to start a firm or to lend this expertise, together with financial capital, to others. The situation may be different for business owners. Business owners who fear failure may do so based on past negative experience, and will avoid similar entrepreneurial endeavors in the future.

Hypothesis 5: There should be a negative relationship between an individual's fear of failure and propensity to make informal investments. This relationship should be stronger among business owners than non-business owners.

Demographic characteristics such as age, gender, education and household income may also influence informal investment decisions. A consistent finding in first generation research is that business angels are middle-aged, wealthy males with university degrees (see Hindle and

Rushworth, 1999). However, when the wider definition of the informal investors is applied, the importance of these characteristics diminishes. Maula et al. (2005) report a moderate influence of higher household income and possession of university education on becoming an informal investor. In a study of informal investors in Ireland, O'Gorman and Terjesen (2006) convey limited gender differences. Following Maula et al. (2005), we expect that demographic characteristics will be less important determinants of informal investment than the previously hypothesized behavioral features.

Hypothesis 6: There should be a positive relationship between an individual's age and propensity to make informal investments. This relationship should not be different between business owners and non-business owners.

Hypothesis 7: There should be a positive relationship between an individual's university education and propensity to make informal investments. This relationship should not be different between business owners and non-business owners.

Hypothesis 8: There should be a positive relationship between an individual's male gender and propensity to make informal investments. This relationship should not be different between business owners and non-business owners.

Hypothesis 9: There should be a positive relationship between an individual's household income and propensity to make informal investments. This relationship should not be different between business owners and non-business owners.

Finally, Maula et al. (2005) assume that the full-time working status of the individual positively affects the individual's propensity to become an informal investor because of the security of the income stream. We expect the same, and acknowledge that this employment may also provide access to new business opportunities.

Hypothesis 10: Individuals engaged in full-time work experience are more likely to act as informal investors.

5. Data and methodology

5.1. *Data*

Each year, Global Entrepreneurship Monitor (GEM) gathers data from at least 2,000 adults in over 30 countries, using a combination of telephone survey and face-to-face interviews. In this research, we use GEM individual data for Croatia (2002, 2003, 2004), Hungary (2001, 2002, 2004), and Slovenia (2002, 2003, 2004), incorporating 18,940 data points: 6,017 Croatians, 6,878 Hungarians and 6,043 Slovenians. Informal investors answered yes to the following statement: "You have, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stock or mutual funds". Due to missing data points, only 276 are included in the multinomial logistic regression and 160 in the cluster analysis. The distribution of 276 informal investors in the MLR includes 39 Croatians, 125 Hungarians and 112 Slovenians; while the distribution of 160 informal investors in the cluster analysis includes 10 Croatians, 77 Hungarians and 73 Slovenians. The variables are described in Table III. The descriptive statistics can be found in Table IV.

Table IV reveals considerable differences between individuals who have invested informally and those who have not, for the following four behavioral variables: have skills, know an entrepreneur, see opportunities and fear failure. In terms of demographic variables, education, gender and household income appear to play more influential roles than age and employment status. Taken together, having skills, fearing failure, possessing a university degree and being employed are the most important factors distinguishing business owner and non-business owner informal investors.

5.2. *Methodology*

We examine the individual factors related to the informal investment decision, and then group

TABLE III
Description of variables

Name	Type	Definition (for Respondent)
Informal Investor	Categorical (Dependent)	0: Has not invested in a new business owned by somebody else in the last 3 years, 1: Is not an owner manager of existing or young business and/or his/her current job does not involves start-up, and has made an informal investment in a firm owned by somebody else, 2: is an owner manager of existing or young business and/or his/her current job does not involves start-up, and has made an informal investment in a firm owned by somebody else
Relationship	Categorical	Informal investor relationship to investee: 1: Close family member, 2: Other relative, 3: Work colleague, 4: Friend/neighbor 5: Stranger 6: Other
Female	Dummy	0: Male, 1: Female
Age (3)	Categorical	Age at the time of the interview in three categories: 1: 15–34, 2: 35–54, 3: 55 and up
Age (6)	Categorical	Age at the time of the interview in six categories: 1: 15–24, 2:25–34, 3: 35–44, 4:45–54, 5: 55–64, 6: 65 and up
Education (4)	Discrete	Level of education: 0: None, 1: Some secondary, 2: Secondary, 3: Post secondary, 4: Graduate
Education (2)	Dummy	University education: 0: No university (graduate degree), 1: Graduate degree
Household Income (3)	Categorical	Household income in thirds 1: Lowest 1/3, 2: Middle 1/3, 3: Upper 1/3
Household Income (2)	Dummy	0: Household income does not belong to the upper third, 1: Household income is among the upper third
Employed	Dummy	0: Not employed, 1: Employed
Business Owner	Dummy	0: Not owner-manager of existing business 1: Owner or manager of existing business
Have Skills	Dummy	0: Do not feel that her/him (self) possesses the knowledge and skills to start a business1: Feels that her/him (self) possesses the knowledge and skills to start a business
See Opportunities	Dummy	0: Do not see good start up opportunities in a region where her/him (self) lives1: Sees good start up opportunities in a region where her/him (self) lives
Know Entrepreneur	Dummy	0: Do not know anyone who started a business in the last two years1: Know someone who started a business in the last two years
Fear Failure	Dummy	0: Do not feel a fear of failure prevents her/him (self) from starting a new business1: Feels a fear of failure prevents her/him (self) from starting a new business
Amount Funded	Categorical	Amount of investment in $US: 1: $1–1000, 2: $1001–5000, 3: $5001–10000, 4: $10001–15000, 5: $15001 +
Year	Dummy	Year dummy, 0: Other than given year, 1: Given year
Croatia	Dummy	Country dummy: 0: Not Croatian; 1: Croatian
Hungary	Dummy	Country dummy: 0: Not Hungarian; 1: Hungarian
Slovenia	Dummy	Country dummy: 0: Not Slovenian; 1: Slovenian

informal investors according to their major characteristics. Hypotheses developed in the previous section serve as the basis for econometric analysis, and further statistical methods (cluster and correspondence analyses) help to classify informal investors and to estimate the significance of the association. The results of both the MLR and cluster analyses are reported in Section 6.

Multinomial logistic regression. In order to test the individual influential factors of the informal investment decision we use multinomial logistic regression (MLR). MLR enables a comparison between informal investors and non-informal investors. Moreover, informal investors are divided into two groups regarding their prior business ownership-managerial experience. For the dependent variable, "Informal Investor," the base category is individuals who have not made informal investments. The two categories used in the simultaneous pair-wise estimation are (1) non-business owners who make informal investments versus individuals who have not made informal investments and (2) business owners who make informal investors versus individuals who have not made informal investments. Year dummies control for potential changes over time. Hungary is the base country.

Clustering. In the second stage of analysis, cluster analysis classifies informal investors

TABLE IV
Basic descriptive statistics of variables used in MLR

	Informal investor			Non-Informal Investor	Total
	Non-business owner	Business Owner	Total		
Number of observations	129	147	276	18,664	18,940
Croatia	7.8%	19.7%	14.1%	32.0%	31.8%
Hungary	50.4%	40.8%	45.3%	36.2%	36.3%
Slovenia	41.9%	39.5%	40.6%	31.8%	31.9%
Have Start-Up Skills	55.0%	81.0%	68.8%	30.1%	30.7%
Know an Entrepreneur	80.6%	74.8%	77.5%	29.1%	29.8%
See Opportunities	42.6%	42.2%	42.4%	12.9%	13.3%
Fear Failure	32.6%	14.3%	22.8%	12.9%	21.0%
Age (3 categories)	1.91	1.71	1.80	1.90	1.90
Education	3.1%	11.6%	7.6%	5.5%	5.5%
Female	46.5%	38.1%	42.0%	52.5%	52.3%
Household Income	42.6%	35.4%	38.8%	23.1%	23.3%
Employment Status	83.2%	93.2%	88.0%	79.9%	79.0%

according to their main features and mean values. Due to missing data, the final sample consisted of 160 informal investors. We used the same variables as in the MLR, however with more detailed categories for age, education and household income. We add a new variable: relationship to the investee.

6. Results: multinomial logistic regression

The results of the MLR are presented in Table V, and mostly support our hypotheses.

Hypothesis 1, regarding the insignificance of the country dummies, is rejected for the non-business owner informal investors as Croatian and Slovenian non-owner informal investors differ significantly from Hungary. We find that informal investors with ownership experience form a more homogenous group. Both country dummies are insignificant, implying similar informal investment behavior among owners.

Our results suggest that the entrepreneurial behavior variables ''have start-up skills'' (hypothesis 2), ''see opportunities'' (hypothesis 3) and ''know an entrepreneur'' (hypothesis 4) are overwhelmingly the most important factors predicting informal investment behavior. However, there are notable differences in magnitude between the two groups. A personal belief in possessing start-up skills is insignificant for non-business owners, but the most significant and essential factor for business owners. Personal acquaintance with an entrepreneur is the most critical factor for non-business owners, and is also significant for business owners. Both groups of informal investors are sensitive to good business opportunities, reinforcing previous research findings.

Our analysis reveals significant differences between the two examined informal investor groups in terms of fear of business failure, supporting hypothesis 5. Fear of business failure may decrease the chance of own start-up but significantly increase the probability that the non-business owners will finance others' businesses. It may be that an individual's personal and negative start-up experience may decrease the incentive to make informal investments if he/she has already had a business. Both effects are significant, however the influence is stronger for non-business owners.

Among demographic characteristics, age significantly increases the propensity to invest informally, but only among non-owners (hypothesis 6). We do not find support for hypothesis 7 regarding education. Higher education decreases the likelihood of informal investment by non-owners, but the effect is not significant. On the other hand, business owners with university education are significantly more likely to invest informally.[4] Hypothesis 8, gender, is highly insignificant in both informal investor groups. High household income increases the likelihood of informal investment

TABLE V
Informal investment in owners and non-owners: MLR Results

Parameter	Non-Business owners		Business Owners		*T*-value	Difference between business owners and non-business owners
Number of observations	129		147			
Intercept	−6.592***		−6.106***		−1.09	n.s
SE	0.464					
Croatia	−2.085***		−0.301		−5.54	***
SE/ME	0.364	0.124	0.28	0.740		
Slovenia	−0.683***		0.128		−3.37	***
SE/ME	0.228	0.505	0.251	1.137		
Have Start-Up Skills	0.16		1.407***		−5.79	***
SE/ME	0.197	1.173	0.23	4.085		
Know Entrepreneur	2.01***		1.116***		3.99	***
SE/ME	0.243	7.463	0.206	3.052		
See Opportunities	0.968***		0.845***		0.66	n.s
SE/ME	0.194	2.633	0.182	2.327		
Fear Failure	0.431**		−0.474**		4.11	***
SE/ME	0.195	1.539	0.24	0.622		
Age (3)	0.36**		0.013		2.40	**
SE/ME	0.151	1.433	0.139	1.013		
Education	−0.737		0.656**		−3.29	***
SE/ME	0.53	0.479	0.301	1.928		
Female	0.094		−0.136		1.28	n.s
SE/ME	0.184	1.099	0.176	0.872		
Household Income	0.599***		0.104		2.65	***
SE/ME	0.19	1.820	0.184	1.110		
Employed	0.08		−0.676*		−2.21	**
SE/ME	0.297	1.083	0.377	0.509		
Year 2001	−0.865**		0.125		−2.45	***
SE/ME	0.44	0.421	0.371	1.133		
Year 2002	−0.194		0.054		−0.96	***
SE/ME	0.278	0.824	0.239	1.055		
Year 2004	−0.211		−0.97***		2.51	***
SE/ME	0.296	0.809	0.308	0.379		

*Notes:*** 1% significance level, ** 5% significance level, * 10% significance level; n.s: not significant.

for non-owners but is insignificant among owners, providing evidence for hypothesis 9. The marginal effect is relatively high among non-business owners, however, less important than knowing an entrepreneur or perceiving opportunities. Finally, hypothesis 10 explores the impact of full-time employment status. We find this effect positive for non-owners, but negative for owners, suggesting that business owners have sources of income beyond wages and salaries.

7. Clusters of Croatian, Hungarian and Slovenian informal investors

In the second stage of our analysis, we sought to create clusters of informal investors in the three CEE countries. The results are presented in Table VI.

The seven clusters reveal the heterogeneity of informal investors. Unlike the MLR results in which demographic characteristics appear relatively unimportant, cluster analysis group membership is significantly influenced by age, level of education and household income. Furthermore, the relationship between the informal investor and the investee, not analyzed in the previous section, is also critical. Among the demographic characteristics, only gender is insignificant. The behavioral factors, opportunity perception, personal acquaintance with an entrepreneur and fear of failure were key factors in the MLR, but do not significantly affect cluster group membership.

TABLE VI
Clusters of informal investors

	Clusters						
	1	2	3	4	5	6	7
Cluster	Inexperienced Low Investment	Elderly Females	Non-family Focused	Male Angels	Educated Low Income	Young Owners	Rich, family Focused
# of cases (total = 160)	45	26	18	13	32	11	15
Female	1.49	1.58	1.44	1.15	1.41	1.45	1.27
Education (4) (***)	2.69	3.00	2.89	3.38	3.31	2.64	3.13
Household Income(***)	2.31	2.00	2.39	2.69	1.94	2.18	2.67
Age (6) (***)	2.20	4.50	4.22	3.00	2.00	1.55	4.33
Relationship (***)	1.20	1.12	4.06	4.00	3.78	1.18	1.00
Funding Amount (***)	1.47	1.50	1.56	4.38	1.78	4.09	4.00
Business Ownership Experience (**)	0.20	0.19	0.44	0.46	0.28	0.73	0.27
Have Start-up Skills (*)	0.53	0.62	0.83	0.77	0.81	0.82	0.60
See Opportunities (ns)	0.44	0.50	0.50	0.62	0.47	0.73	0.53
Know Entrepreneur (ns)	0.89	0.81	0.83	0.92	0.78	1.00	0.73
Fear Failure (ns)	0.33	0.19	0.28	0.08	0.22	0.09	0.40
Employment Status (***)	1.00	0.69	0.78	1.00	1.00	1.00	0.73
Hungary (***)	0.69	0.62	0.50	0.15	0.34	0.27	0.33
Croatia (***)	0.02	0.00	0.06	0.31	0.03	0.00	0.20
Slovenia (**)	0.29	0.38	0.44	0.54	0.63	0.73	0.47

Notes: *** Report a significance level of 1%, ** of 5%, and * of 10%, ns: not significant.

However, notable differences can be found among the groups in terms of business ownership status, start-up skills assessment and employment status. Country differences are also significant. Although there are a number of drivers available for discussion, we focus on three factors: informal investor–investee relationship, the amount of investment and country differences.[5]

Three of the seven groups (3, 4 and 5), together comprising 63 informal investors, have investor–investee family relations which are not dominant. In contrast, for groups 1, 2, 7 and 8 (comprising 97 investors), two-thirds of the finance is provided exclusively to family members' businesses. The clustering identified several country differences. Hungarians tend to support, almost exclusively, family members and individuals whom they knew previously. In our sample, there are only two Hungarians who reported investing in a stranger's business. In contrast, Slovenian informal investors provide more balanced sums, accommodating both strangers and distant relatives.

Finally, there are also three groups (4, 6, and 7), totaling 39 investors, dominated by Slovenians, where the amount of informal investment reaches or exceeds US$10,000. One group, 4, consists of 13 investors who are willing to support strangers' businesses with relatively high amounts of money. These business angels are vital for two reasons. First, they provide money independent from the financial resources of the entrepreneur's family. Second, business angel funding generally exceeds other informal investors' amounts, which is essential for capital-intensive, high growth potential ventures.

As a major problem in the CEE countries is not only the low prevalence rate, but also the small amounts of investment, we further analyze individuals who invest the highest amounts in others' business. The data were divided into two parts: one group of 37 business angels with investment exceeding US$10,000 and the other, 155 informal investors. Table VII below provides the basis of comparison.

According to Table VII, there are few differences between the two groups in terms of age, university education, knowing an entrepreneur and employment status, however business angels tend to be male and possess high household incomes. Moreover, informal investors who believe that they possess business skills are more

TABLE VII
Characteristics of business angels and other informal investors in CEE countries

	Business angels	Other informal investors
Women	30%	44%
Age (years)	41.3	40.3%
University degree	8%	6
Support non-family related businesses	61%	49%
Business ownership experience	48%	28%
Have Start-up skills	76%	68%
See opportunities	60%	46%
Know an entrepreneur	86%	81%
Household income in the top third	60%	39%
Employment Status (employed)	92%	94%

likely to have business ownership experience and to see good business opportunities. In addition, 61% of angel informal investors are willing to invest in non-family businesses as opposed to 49% of the non-angel group. According to these findings, we characterize these male-dominated, relatively rich business angels as more experienced in business management and skills and more opportunity oriented, and we expect that they are better able to deal with the increased risk and uncertainty of non-family investment than other informal investors.

8. Discussion and comparison

What conclusions can we draw from this study? Indeed, private investors exist in the CEE countries of Croatia, Hungary and Slovenia, however in limited numbers, and provide small amounts of funding. Secondly, the drivers of informal investment in CEE countries are similar to those reported in developed countries. The most influential factors are personal acquaintance with an entrepreneur and business ownership experience. When we compare our findings to Maula et al. (2005), informal investors in CEE countries are more sensitive to start-up skills and good business opportunities than are Finnish informal investors. Traditional demographic characteristics such as age, gender, education and employment status play a marginal role.

Maula et al. (2005) did not report any real differences between informal investors who invest in the businesses of close family members and those who invest in more distant relatives and acquaintances' firms, suggesting that there may be other distinctions more important than family linkages. In our study, we identify highly significant differences between informal investors with ownership experience and those without such experience. For non-owners, personal acquaintance with an entrepreneur is the dominant factor driving informal investment; however for owners, having start-up skills is even more important. This finding implies that business owner informal investors provide both financing and advice to new start-ups, and this counsel cannot be expected from non-owners. Consistent with prior research, both business owner and non-business owner informal investors are driven by the identification of good business opportunities. There are some differences between the two groups regarding demographic characteristics: Older individuals with high household incomes are more likely to become informal investors if they have not owned a business. For owners, individuals who have a university degree and are employed are less likely to act as informal investors.

Our study of the role of business ownership experience interprets fear of failure differently from Maula et al.'s (2005) family study. We find support for the idea that a fear of failure significantly increases the probability of informal investment by non-business owners. This suggests that the informal investors with no ownership experience may place more trust in others' capabilities to successfully start a business. For business owners, we find the opposite effect: business owners who fear failure are less likely to act as informal investors.

Unlike the informal investor decision-making model, demographic characteristics of age, education and income significantly explain group membership. Our sample includes a number of young, lower income informal investors in both family and non-family related businesses. In the future, we might expect these individuals to accumulate more income (wealth) and experience, enabling greater investments in the future. Older, higher income and probably more

risk-averse individuals tend to support family-related businesses, or invest if they have ownership experience and/or feel that they possess start-up skills. To test these ideas, future research should include longitudinal studies of informal investors.

As the amount of informal investment significantly affects group membership, we investigate informal investors who supported with relatively high amounts of money, defined as over US$10,000. We found that these business angels have an optimistic view of their start-up skills and opportunities in the environment, ownership experience and higher incomes. These findings are consistent with the main characteristics of business angels elsewhere in the world.

When we compare the two former Yugoslavian countries that split apart just over a decade ago, Croatia and Slovenia, informal investors with ownership experience constitute a much more homogenous group and display similar informal investment behavior. A cluster analysis revealed significant country differences. Slovenia's informal finance market appears more balanced, with greater amounts of investment and to non-family firms. In contrast, classic business angels are rare in Hungary, which is dominated by low amounts of family related investment.

9. Conclusion and policy recommendations

The informal venture capital market exists in the transitioning CEE countries, however the major drivers of informal investment appear to be similar to more advanced market economies. The low prevalence rate and amount of informal investment in Croatia, Hungary and Slovenia can be explained, at the individual level, by a lack of (1) start-up and business management skills and expertise, (2) opportunity perception and (3) personal acquaintance with an entrepreneur. These behaviors are consistent with the limited market economy and entrepreneurial experience present in these environments. We have described a heterogeneous population of informal investors in the three CEE countries; informal investors can be found in any age, income group, gender and education, however, the investment amount is limited, significantly lower than in other countries with similar level of development. Moreover, classic angels investing in non-family firms are rare. Individuals with ownership experience provide the major share of informal investment and differ from those without ownership expertise. Despite these similarities, there are some significant differences across countries. Compared to Hungary and Croatia, Slovenia has a more balanced and mature informal investment market. Differences in economic development and GDP may partially explain these differences, however further research is necessary to unpack driving factors.

Our analysis extends Maula et al.'s (2005) model, splitting the group of informal investors into owners and non-owners, and proves this classification to be more revealing than their distinction between close family members and other acquaintances. Furthermore, we corrected some potential variable misspecifications of Maula et al. (2005), but these modifications have not changed the major conclusions of their paper. Finally, we clustered and investigated different types of business angels, enabling a more fine-grained description of the informal investment market.

What can we say to policy makers and entrepreneurs in these three CEE countries with such limited informal investment activity? On the supply side, policy makers should focus on the development of formal and informal equity markets. Furthermore, overall improvements to the business environment will likely result in increased levels of informal investment activity, enabling new CEE firms such as Victory Sailmakers and SOLVO to emerge. Greater numbers of opportunities and attention to success stories may improve the informal investor prevalence rate, and the amounts invested. Governments may also consider taking action to improve the information flow and strengthen start-up, entrepreneurial, and business skills through business education. Personal acquaintance with existing entrepreneurs is the single most important determinant of informal investment decision, particularly for non-owners. However, it is difficult to use policy mechanisms to structure such informal investment relationships. In the long run, these networks can best be activated by building the basics of an entrepreneurial society,

by accepting entrepreneurs in the society, recognizing their initiatives and promoting their activities. The Hungarian parliament has taken such a proactive step, with its Innovation award. Industry and government bodies should promote informal investments by individuals with business ownership experience. Moreover, there is a potential to encourage individuals who have already made informal investments to consider other such opportunities. Informal investors who finance only family members should be encouraged to evaluate opportunities in strangers' businesses, and those who invest only small amounts of money should be encouraged to increase the amount of informal investment.

Finally, our results also offer some implications for entrepreneurs. Aspiring entrepreneurs should seek financing from business owners first, as it is more likely that these individuals will provide start-up capital. Entrepreneurs should also recognize the importance of networking with other entrepreneurs, as this also increases the likelihood of accessing informal venture capital. Finally, 'love money' from family members may come more easily, however entrepreneurs should approach all potential informal investors, including family members, with robust start-up ideas and plans to assure the viability of their start-up.

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Notes

[1] GEM's Total Entrepreneurial Activity Index (TEA) measures the percentage of nascent and young (less than 42 month) businesses in the adult population. Opportunity oriented entrepreneurs start a business because they perceive good business opportunities; necessity entrepreneurs start because they feel that they have no other choice.

[2] The experts complete a 10-page standardized questionnaire, evaluating the presence and level of the nine entrepreneurial framework indexes of the countries on a 5-point scale where 1 = completely false and 5 = completely true.

[3] This finance is not an exact measure but rather a rough estimate of the equity gap.

[4] Note: business owners are more likely to have higher education degrees than non-business owners, suggesting a potential multicollinearity problem between ownership and education. However, a test does not indicate serious multicollinearity.

[5] As there are only eight Croatian informal investors in our dataset, we can not say much with respect to country differences.

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