

Micro Entrepreneurship in Rural Vietnam
A Multilevel Analysis of Business Start-Up and Closure

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*The highest activity a human being can attain is learning for understanding, because to understand is
to be free.*

-Baruch Spinoza

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Surround yourself with people who make you happy. People who make you laugh, who help you when you're in need. People who genuinely care. They are the ones worth keeping in your life.

- Karl Marx

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List of abbreviations and acronyms

CAP	Centre for Agricultural Policy
CIEM	Central Institute for Economic Management
CRD	Centre for Rural Development in Central Vietnam
DFG	Deutsche Forschungsgemeinschaft
DFID	Department for International Development
e.g.	for example (exempli gratia)
GEM	Global Entrepreneurship Monitor
HUAF	Hue University of Agriculture and Forestry
IPSARD	Institute of Policy and Strategy for Agriculture and Rural Development
OLS	Ordinary Least Square
PPP	Purchasing Power Parity
SOE	State Owned Enterprise
std. dev.	Standard Deviations
USD	United States Dollar
VIF	Variance Inflation Factors

1 Introduction

No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable.

- Adam Smith

Within the scope of globalization, the last decades have been characterized by a catching up process of the Global South¹, driven by high economic growth. Though global inequality has decreased during this process, the catching up has been unequally distributed, resulting in an increasing divergence within the Global South (NAYYAR 2013).

Southeast Asia is one of the fastest growing regions in the Global South in economic terms (MCGREGOR 2008). The high economic growth is the result of a process of structural change, leading to a decline in the relative importance of agriculture and to a reduction of poverty (BALISACAN et al. 2005). In the former centrally planned economies of Cambodia, Laos, Myanmar and Vietnam, the process of structural change was initiated and accompanied by gradual processes of political transition toward constrained capitalism (SCHULTZ & PECOTICH 1997). The idea behind choosing such a gradual transformation process was to convert the economy slowly and with political stability to avoid loss of control and allow for pro-poor growth (SCHULTZ & PECOTICH 1997). Nevertheless, regional economic disparities have increased in Southeast Asian transition economies during the last few decades, as economic prosperity, mainly driven by foreign direct investments, industrial production and the service sector, has been concentrated particularly in the urban centers, leaving rural areas² behind (REVILLA DIEZ 2016). Consequently, poverty persists in rural areas and out-migration

¹ The term Global South is used to describe global differences and is an attempt to replace the term ‘developing world’ (DEL CASINO JR 2009). In this dissertation, the term Global South is used synonymously with the economic term ‘developing and emerging markets’. In contrast, the term Global North is used synonymously with the economic term ‘developed countries’.

² In this dissertation, ‘rural areas’ are defined as areas that are agriculture-based and non-urban (ASSCHE & HORNIDGE 2015), being located some distance from the core economic areas (TORRE & GILLY 2000).

to the urban centers, as a common response, further increases regional inequality (BALISACAN et al. 2005).

To counteract the process of growing regional inequality, policy makers are interested in drawing up economic development³ strategies for peripheral areas that enable the rural population to benefit from the prospering domestic markets (BALISACAN et al. 2005). While one possibility is to attract exogenous economic actors and investment from outside the rural areas (SLEE 1994), another possibility is to exploit the endogenous potentialities of a region to foster regional development from within (LOWE et al. 1995). In this respect, attracting exogenous actors and investment might not be the most sustainable solution for creating economic development in rural areas (VÁZQUEZ-BARQUERO 2003), as exogenous actors are often not adapted to the regional circumstances, not integrated into the local community and sometimes not even interested in contributing to it. Rather, it is possible that conflicts of interests may evolve between local and exogenous actors, especially with respect to the use of land and resources (CUFFARO & HALLAM 2011). In addition, being dependent on a small number of exogenous actors bears the risk of an economic downturn in the case of business relocation (LOWE et al. 1995). These problems have led policy makers to shift their focus from exogenous development strategies to endogenous ones in order to foster a sustainable socio-economic development in rural areas (LOWE et al. 1995, RAY 1999).

In the last decade, endogenous development efforts have shifted from focusing on agriculture to concentrating on the rural non-farm sector (BALISACAN et al. 2005). In this respect, one possible way to activate the endogenous development potentialities within rural areas is to enable local actors to identify, assess and exploit local economic opportunities (SHANE 2003) by starting a micro enterprise⁴ outside of agriculture. As empirical work has shown that micro entrepreneurship is able to reduce poverty as well as to increase income and consumption (LANJOUW & LANJOUW 2001, VAN DE WALLE & CRATTY 2004, GRIES & NAUDÉ 2010), policy makers hold high hopes that micro entrepreneurship may have the potential to trigger a cumulative economic development process within rural areas (HAGGBLADE et al. 2010).

³ In this dissertation, the term ‘economic development’ is defined in line with the definition in the Cambridge Business English Dictionary (2017) as “the process in which an economy grows or changes and becomes more advanced, especially when both economic and social conditions are improved”.

⁴ In this dissertation, the term ‘micro enterprise’ is used to refer to enterprises with a maximum of ten workers (MEAD & LIEDHOLM 1998).

Though micro entrepreneurship is often seen as a panacea to reduce poverty and to foster regional development in rural areas of the Global South, it is questionable whether this development strategy is adequate in all regional settings (HAGGBLADE et al. 2010). Rural areas in the Global South vary in terms of access to resources, the quality of infrastructure and institutions, the degree of competition, the degree of industrialization and the market potential, as well as the distances to urban centers, all of which influence both entrepreneurial opportunities and the outcome of households' business activities (SHANE 2003, SHAW 2004, KIIRU 2007, AUDRETSCH et al. 2012). Hence, it can be assumed that the ability of micro entrepreneurship to reduce poverty depends strongly on the local economic and social conditions in which the micro entrepreneurial activities are embedded (SHANE 2003, HAGGBLADE et al. 2010). Moreover, the term micro entrepreneurship covers a highly heterogeneous group of different entrepreneurial activities (HAGGBLADE et al. 2010, BRÜNJES 2012) that exhibit considerable differences in their internal characteristics, such as the number of employees, the initial investment, and in the initial motivation behind the entrepreneurial activity (GOTTSCHALK et al. 2010, BRÜNJES & REVILLA DIEZ 2012). It is therefore debatable whether all types of micro enterprises have the same potential to reduce poverty and foster regional development in rural areas of the Global South. Rather, it can be assumed that the ability of micro entrepreneurship to reduce poverty also depends on the specific characteristics of the micro entrepreneurial activity.

To date, most of the empirical work conducted on spatial variation in entrepreneurship has focused on the start-up of technologically dynamic enterprises with high value-added in core regions of developed countries (SHANE 2003, FRITSCH & FALCK 2007, HINDLE 2010, BOSMA & SCHLUTJES 2011, STAM 2011, AUDRETSCH et al. 2012, HUNDT & STERNBERG 2016). In contrast, empirical work on the start-up of micro enterprises in rural areas of the Global South remains scarce and is mainly discussed within the literature on development economics. In addition, there are few studies that analyze micro entrepreneurship in the context of transition economies (for an exception see MCMILLAN & WOODRUFF 2002). To date, most of the previous empirical work adopts a *static view* by focusing on *being* self-employed rather than *becoming* self-employed (FOX 2008, HAGGBLADE et al. 2010, FELKNER & TOWNSEND 2011, FOX & SOHNESEN 2012, BRÜNJES & REVILLA DIEZ 2013, TAMVADA 2015). Hence, so far little is known about whether entrepreneurial activities in rural areas of the Global South are influenced by similar explanatory factors to those generally used to explain entrepreneurship in the Global North. In particular, there is a lack of empirical work focusing on factors that explain the spatial variation of entrepreneurial activities between peripheral areas of the Global South (BÜRCHER

et al. 2015). Especially studies that analyze the survival probability of micro enterprises are still rare (for an exception see VIJVERBERG & HAUGHTON 2002), as reliable information about business closure is limited, particularly in the context of rural areas within the Global South (MEAD & LIEDHOLM 1998).

The aim of this dissertation is to contribute to the broader discussion surrounding the potential of micro entrepreneurial activities to reduce poverty in rural areas of Southeast Asian transition economies as well as to add further insights into the potential that rural areas within Southeast Asian transition economies possess for micro entrepreneurial activities. To achieve this aim, the research questions of this dissertation were specified as follows:

1. Can micro entrepreneurship help to reduce the vulnerability to poverty⁵ of rural households within Southeast Asian transition economies? Does this effect apply to all types of micro entrepreneurship and in different regional economic settings?
2. What individual and spatial factors determine the start-up and closure of different types of micro enterprises in rural areas of Southeast Asian transition economies?

The following Chapter 2 describes the theoretical and conceptual background of this dissertation, while Chapter 3 presents the selected case study regions, the survey design and the methodological approach. The research questions defined above provide the basis for the scientific papers presented in Chapters 4 to 6. Chapter 4 discusses the effect of starting different types of micro enterprise on the vulnerability to poverty of households located in different regional settings, while Chapters 5 and 6 discuss the individual and regional determinants that explain the start-up (Chapter 5) and the closure (Chapter 6) of different types of micro enterprises. Finally, Chapter 7 concludes this dissertation by providing a cohesive discussion of the empirical results.

⁵ In this dissertation, the term ‘vulnerability to poverty’ captures the probability of poor household remaining in poverty as well as the probability of non-poor household falling into poverty (WAI-POI 2013).

2 Conceptual framework

Experience without theory is blind, but theory without experience is mere intellectual play.

-Immanuel Kant

Self-employment, besides off-farm wage-employment, is one of the pillars of the rural non-farm economy in the Global South (HAGGBLADE et al. 2002). In the past, the rural non-farm economy has provided the motivation for several studies analyzing the relationship between participation in non-farm activities and economic wellbeing, showing that non-farm participation significantly increases the wellbeing of rural households (VAN DE WALLE & CRATTY 2004, MCNAMARA & WEISS 2005, FOX & SOHNESEN 2012). However, most empirical studies on non-farm participation simply define non-farm participation as economic activities that are non-agricultural (LANJOUW 2007), while neglecting its heterogeneity (for an exception see BRÜNJES 2012).

A first step towards capturing the heterogeneity of non-farm participation is to distinguish between wage-employment and self-employment (BRÜNJES 2012). The concept of self-employment is quite vast and there is no unique definition of it. According to FIELDS (2014), self-employment can be defined as being an own-account worker or operating a formal or informal enterprise (FIELDS 2014). In fact, the majority of self-employment activities in rural areas of the Global South concern own-account workers and micro enterprises (DE MEL et al. 2008). However, this definition can cover a heterogeneous group of agents and activities that differ strongly as regards their internal characteristics, such as in the initial investment, the numbers of employees, annual sales and the input-output relations, and in their needs regarding their business environments (GOTTSCHALK et al. 2010, HAGGBLADE et al. 2010, BRÜNJES & REVILLA DIEZ 2012, CALDERON et al. 2016).

One possibility to capture the heterogeneity of self-employment is to discuss self-employment in relation to different definitions used within the entrepreneurship literature. Here,

the simplest definition equates entrepreneurship with self-employment (DALE 2015). Aside from this static definition, entrepreneurship can be defined in more dynamic ways. In this respect, the creation-based approach defines entrepreneurship as the formation of a new enterprise, and an entrepreneur as the founder of this enterprise (CARTER et al. 1996, GARTNER & CARTER 2003). Consequently, the focus is on *becoming* self-employed as opposed to *being* self-employed. The innovation-based approach, on the other hand, defines entrepreneurship as the dynamic innovative creation of new products or new ways of doing business (SCHUMPETER 1934). Here, the focus is on the innovativeness of the self-employment activity. In addition, in the opportunity-based approach entrepreneurship is defined as a dynamic process of opportunity discovery, evaluation and realization performed by individuals (SHANE & VENKATARAMAN 2000). In this respect, entrepreneurial activities can be split into two different types, namely opportunity-driven and necessity-driven entrepreneurship, by examining the motivation behind becoming and being self-employed. While opportunity-driven entrepreneurship is based on the perception that an underexploited business opportunity with growth potential exists, necessity-driven entrepreneurship is chosen due to a lack of adequate alternatives to earn a living (ACS 2006).

Transition economies within the Global South are characterized by very dynamic market mechanisms leading not only to high start-up but also to high failure rates (GORESKI 1995). However, innovation-based entrepreneurship is uncommon particularly in rural areas of the Global South, as these areas are still characterized by a low level of technology (GINDLING & NEWHOUSE 2012). In contrast, entrepreneurship that corresponds to the definition in the opportunity-based approach can indeed be found in rural areas of the Global South. Here, technological innovation leads to a modernization of agricultural production, requiring input and services of higher quality, such as seeds, fertilizers and machinery (HAGGBLADE et al. 2010). Moreover, the technological innovations in the agricultural sector lead to higher productivity of agricultural labor, and consequently to higher agricultural income (FOX 2008). Within the so-called *pull scenario*, both aspects stimulate the demand for goods and services outside the agricultural sector (HAGGBLADE et al. 2010). To satisfy the increasing demand, some individuals respond by starting micro enterprises (FOX 2008), with the aim of exploiting the developing economic opportunities anticipatorily (GINDLING & NEWHOUSE 2012). Such individuals are known as *opportunity-driven entrepreneurs* and can be identified from the motivations behind starting their micro enterprise, such as recognizing the potential success of that type of business, having previous experience of the particular type of business, or seeing other successful businesses of that type (BRÜNJES & REVILLA DIEZ 2012). In contrast, within

the so-called *push scenario* higher productivity of agricultural labor leads to a surplus of agricultural labor, bearing the risk that agricultural workers will be pushed into low-return micro enterprise activities (HAGGBLADE et al. 2010). Such individuals start a micro enterprise in order to survive and are known as *necessity-driven entrepreneurs*. Entrepreneurs can be regarded as necessity-driven if they start their micro enterprise to overcome unemployment or because they earn insufficient income from other sources (BRÜNJES & REVILLA DIEZ 2012). Distinguishing between opportunity-driven and necessity-driven micro entrepreneurship can be seen as an expedient approach, as they differ in several aspects. While opportunity-driven entrepreneurs achieve higher profits, are more willing to hire non-family employees, dare to take greater risks, and show a larger initial investment than necessity-driven entrepreneurs (GOTTSCHALK et al. 2010, BRÜNJES & REVILLA DIEZ 2012), necessity-driven entrepreneurs are more likely to work in the informal sector, to have lower skills and smaller-scale businesses, and to use less capital than their opportunity-driven counterparts (DESAI 2011, GRIMM et al. 2012, BRÜNJES & REVILLA DIEZ 2012).

Based on the discussion above, in this dissertation micro entrepreneurship is represented by the start-up of a micro enterprise outside of agriculture (CARTER et al. 1996, FIELDS 2014). In addition, the dissertation considers the performance of existing micro enterprises by investigating their survival respectively closure. To capture the heterogeneity of micro entrepreneurial activities and to integrate the opportunity-based approach, the dissertation differentiates between opportunity-driven and necessity-driven micro entrepreneurship by using the motivation behind starting a micro enterprise (BRÜNJES & REVILLA DIEZ 2012).

2.1 Micro entrepreneurship as a livelihood strategy

In the entrepreneurship literature, starting an enterprise is mainly seen from a micro-economic perspective as a decision made by an individual person (SCHADE & BURMEISTER-LAMP 2009). Although this decision is assumed to be influenced by the social environment in which an individual is embedded, for instance by having family role models (CHLOSTA et al. 2012), the focus is mainly on the individual entrepreneur him- or herself. In a Global South context, the decision to start an enterprise has to be seen more strongly from a household perspective, as there the household is regarded as a collective unit based on pooled consumption, and is consequently an important unit for collective decision making (BYRNE 2001, NAUDÉ et al. 2009, DE HAAS 2010), especially regarding decisions related to their livelihood strategy (ELLIS 2000).

In the Sustainable Livelihood Framework⁶ (DFID 1999), all actions undertaken by a household to increase its standard of living are seen as part of its livelihood strategy (FOX & SOHNESEN 2013). According to FOX (2008), the economic livelihood of a household can be specified by the structure of its income sources. In this regard, micro entrepreneurship can be seen as one possible economic livelihood strategy available to households that has the potential to influence the livelihood outcome (FOX & SOHNESEN 2012). The term livelihood outcome refers to a household's wellbeing and is commonly measured using the household's income, consumption or vulnerability to poverty (RAVALLION 1992, SCOONES 1998). Several empirical studies have shown the positive effect of participating in micro entrepreneurial activities on the household's wellbeing. For instance, VAN DE WALLE & CRATTY (2004) show that the probability of being poor is lower among Vietnamese households who undertake micro entrepreneurial activities. Moreover, MCNAMARA & WEISS (2005) find that micro entrepreneurship leads to a more stable household income, and FOX & SOHNESEN (2012) demonstrate that micro entrepreneurship is positively related to increasing household income. These positive effects can be traced back to three main advantages that participation in micro entrepreneurial activities entails. *First*, micro entrepreneurship is used as a diversification strategy by risk-averse farm households in order to deal with uncertainties linked to price fluctuations in input and output markets, as well as uncertain weather conditions, both of which affect agricultural production. Diversification into non-farm activities can enable households to generate a more stable income and to reduce income risks (MCNAMARA & WEISS 2005, GRIMM et al. 2012). *Second*, running a micro enterprise has the advantage of flexible decision-making and adaption of the business activities in times of uncertainty (MEAD & LIEDHOLM 1998). *Third*, the average revenue that can be generated by selling non-farm products and services is higher than that generated by selling primary agricultural commodities (SONG 2012). Hence, it can be assumed that households that choose micro entrepreneurship as a livelihood strategy are able to increase their wellbeing, reduce their vulnerability to poverty and perform better in times of crises.

Against this background, micro entrepreneurship does indeed appear to be a panacea to reduce poverty and to increase the wellbeing of households in rural areas of the Global South. However, in reality the causal relations are far more complex. To begin with, all types of micro entrepreneurial activities cannot be assumed to have the same effect on the livelihood outcome. This assumption is backed by the empirical work of FOX (2008), who shows that households

⁶ The Sustainable Livelihoods Framework was developed by the Department for International Development (DFID) and seeks to conceptualize livelihoods in a holistic way to capture their complexities.

that run micro enterprises in very low-skilled sectors in order to survive demonstrate a high likelihood of remaining poor. Moreover, FOX & SOHNESEN (2012) highlight the importance of hiring workers from outside the household for running a micro enterprise successfully. Against this background and with reference to the discussion above, it can be assumed that opportunity-driven and necessity-driven micro entrepreneurship have different effects on the livelihood outcome and that participation in opportunity-driven entrepreneurship has greater potential to increase a household's livelihood outcome. Even though opportunity-driven entrepreneurship can be assumed to have an advantage compared to necessity-driven entrepreneurship, as the decision to start the micro enterprise is often more far-sighted and done with careful deliberation after weighing up the potential risks and benefits (COMPANYS & MCMULLEN 2007), the higher initial investment that is associated with opportunity-driven entrepreneurship might reduce the ability to respond flexibly to changing circumstances. Consequently, even opportunity-driven entrepreneurship might not guarantee an improvement of the livelihood outcome in all cases.

In addition, the heterogeneity of individual and household-related characteristics has to be taken into account, as not all types of households and individuals have the same ability to participate in micro entrepreneurship (VAN DE WALLE & CRATTY 2004). Referring to the Sustainability Livelihood Framework (DFID 1999), it can be assumed that starting a micro enterprise, especially out of opportunity, as well as running a micro enterprise successfully is limited by the livelihood assets available to an individual or a household (FOX 2008), such as human capital, natural capital, financial capital, social capital and physical capital (BOHLE 2008). In light of this, a weakness in these assets, such as having a low educational level, being landless, having no savings or a low income, not being integrated into social networks or even being discriminated by society, and being poorly equipped with tools and technologies, is very likely to lower the probability of being able to diversify one's livelihood by starting a micro enterprise outside of agriculture or of running such a micro enterprise successfully.

2.2 Micro entrepreneurship in a regional context

Although rural areas in the Global South are often simplified as relatively homogeneous agriculture-based and non-urban areas (ASSCHE & HORNIDGE 2015), in reality regional⁷ economic conditions differ considerably within rural areas (BÜRCHER et al. 2015), for example as regards the market potential, the proximity to urban centers, the entrepreneurial culture or the availability of financial services. As all enterprises are in constant co-evolutionary

⁷ In this dissertation, the term 'region' is defined as a specific part of the earth's surface, being distinguishable from other regions due to its specific characteristics (BLOTEVOGEL 1999). This definition is operationalized by using administrative units, such as communes, district or provinces (BATHELT & GLÜCKLER 2012).

interaction with their environment (MOORE 1993), both the start-up process and the micro enterprise performance can be assumed to be shaped to a certain degree by these regional conditions (HODGSON 1993, STOREY & WYNARCZYK 1996, MARTIN & SUNLEY 2007). This perception forms the basis for the individual-opportunity nexus introduced by SHANE (2003), who argued that entrepreneurial activities rely on entrepreneurial opportunities that are location-specific results of changing regional settings, which in turn are the result of the sum of all individual (inter)actions over time (ESSLETZBICHLER & RIGBY 2010). Against this background it can be concluded that, even though entrepreneurship itself is indeed a micro-economic phenomenon, it is necessary to incorporate a regional perspective into conceptual frameworks used to analyze micro entrepreneurial activities.

Within the Sustainable Livelihood Framework (DFID 1999), such a regional perspective is implemented implicitly in the factors that make up the ‘vulnerability context’ and within the domain of ‘transforming structures and processes’. In this respect, the ‘vulnerability context’ covers shocks, trends and seasonality, which are seen as regional events that have the potential to destroy a household’s assets directly and to influence the decision not to choose or to abandon a specific livelihood strategy. The domain of ‘transforming structures and processes’ covers regional institutions, policies and legislation that determine access to assets, and consequently the ability to choose a specific livelihood strategy. However, the regional perspective within the Sustainable Livelihood Framework remains implicit and does not provide specific regional explanatory factors. Moreover, micro entrepreneurship is only included implicitly as one of several livelihood strategies. Nevertheless, the Sustainable Livelihood Framework is widely acknowledged and commonly used for analyzing livelihood strategies in the context of the Global South (EYHORN 2007).

Against this background, the question arises of how to make use of the advantages provided by the Sustainable Livelihood Framework, while making the regional perspective more explicit and measurable, and focusing on micro entrepreneurship specifically. One promising solution could be to integrate aspects of the Entrepreneurial Ecosystem Approach (ISENBERG 2011), which has become established in entrepreneurship research in recent years (MASON & BROWN 2014), into the Sustainable Livelihood Framework. Initially promoted by ISENBERG (2011) as a practical approach rather than a coherent theory (SPIGEL 2015), the concept of entrepreneurial ecosystems focuses on how entrepreneurial activities are embedded

in broader regional contexts and highlights entrepreneurship as a multi-scalar⁸ phenomenon that is driven by explanatory factors at different levels. According to STAM & SPIGEL (2016:1), entrepreneurial ecosystems can be defined as “a set of independent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory”. In this respect, they argue that, even though the entrepreneurial actors and the interaction between them are at the heart of an entrepreneurial ecosystem, the historically produced place-based factors have to be regarded as having an important impact on entrepreneurial activities (STAM & SPIGEL 2016). This perception can be seen as closely linked with the work of economic geographers, who have been trying to explain the regional variation of economic activities for many years (PIORE & SABEL 1984, ASHEIM & ISAKSEN 2002, BATHELT et al. 2004, SCHÄTZL & REVILLA DIEZ 2012).

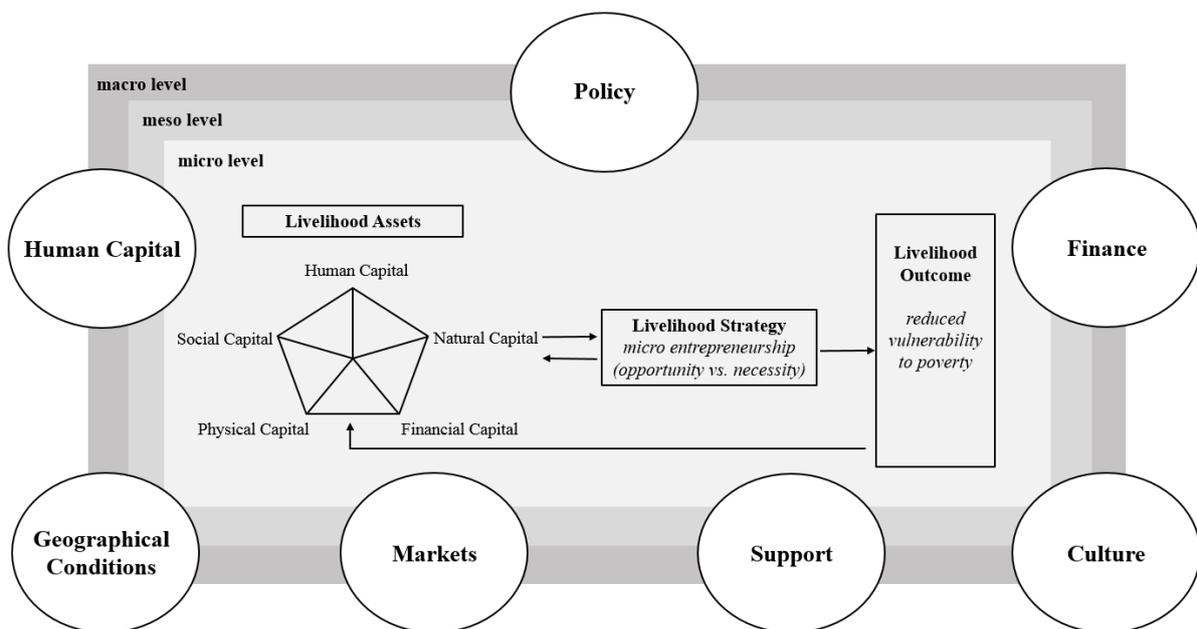
To operationalize the regional perspective of the Entrepreneurial Ecosystem Approach, ISENBERG (2011) formulates six distinct domains, representing regional key resources that influence entrepreneurial activities: policy, markets, finance, human capital, culture and supports. There, the domain of policy includes formal and informal institutions, laws and government activities, while the domain of markets comprises access to customers. In addition, the domain of finance describes the availability of entrepreneurship funding, such as micro-loans and venture capital. The domain of support includes the existence of support infrastructure, such as entrepreneurship incubators, the availability of support professions, such as accounting, and support offered by non-government institutions. Moreover, the domain of human capital comprises the availability of skilled labor, educational institutions and entrepreneurship training. Finally, the domain of culture encompasses all social characteristics of a community, such as the existence of success stories, role models, tolerance, creativity and the appreciation of entrepreneurship.

As the interactions between economic actors are an important driver of the evolution of economic systems (STAM & SPIGEL 2016), these interactions are also a key element within the Entrepreneurial Ecosystem Approach. From the perspective of economic geography, the spatial dimension of such interactions is of particular interest. In this respect, intra-regional and inter-regional linkages can be distinguished. While intra-regional linkages concern interactions with economic actors within the local economy, inter-regional linkages refer to interactions with those outside the local economy. In the context of rural areas in the Global South, inter-regional

⁸ In this dissertation, the adjective ‘multi-scalar’ refers to processes that are influenced by factors located on multiple hierarchically ordered spatial levels simultaneously (CHOWDHURY et al. 2011).

linkages can be seen as an important channel to broaden the information basis as well as the access to potential customers and suppliers, and consequently can be assumed to have a positive impact on micro entrepreneurial activities. In the context of transition economies, the particular importance of social linkages between economic actors has to be highlighted (KAUFMANN & KALIBERDA 1996). As the legal system is not transparent and corruption is prevalent in such an institutional environment (REVILLA DIEZ 2016), a lack of confidence in official actors and institutions is still persistent (GËRKHANI 2004, NGUYEN 2005). As a result, enterprises rely strongly on trust-based interactions, which substitute effective market mechanisms (GUSEVA & RONA-TAS 2001). In this regard, trust-based interactions with middlemen and traders are of particular importance, as in a Global South context these intermediaries are essential for connecting rural entrepreneurs with the wider economy (MITCHELL 2011).

Figure 2-1: Conceptual framework - combining the Sustainable Livelihood Framework and the Entrepreneurial Ecosystem Approach



Source: Own illustration based on DFID (1999) and ISENBERG (2011).

To date, most of the empirical work on entrepreneurial ecosystems has focused on the Global North, while most of the empirical work on sustainable livelihoods has concentrated on the Global South. So linking the Sustainable Livelihood Framework with the Entrepreneurial Ecosystem Approach provides the opportunity to analyze whether micro entrepreneurial activities in rural areas of the Global South are driven by similar factors to those generally used to explain entrepreneurship in the Global North, without neglecting the reality of the lives of households in rural areas of the Global South. At the heart of the resulting conceptual framework, micro entrepreneurship is seen as a livelihood strategy that has the potential to influence the livelihood outcome (VAN DE WALLE & CRATTY 2004) and is operationalized in

this dissertation by using vulnerability to poverty. The ability to choose different types of micro entrepreneurship as a livelihood strategy as well as the ability to run a micro enterprise successfully are determined by the livelihood assets available to a household (FOX 2008). These economic processes are situated on a micro level that is embedded in a multi-scalar regional context, and are consequently influenced by various regional factors that can be derived from the Entrepreneurial Ecosystem Approach (ISENBERG 2011). Due to the importance of agriculture in rural areas of the Global South, the regional geographical conditions, too, have to be taken into account and were included in the conceptual framework in addition to the domains formulated by ISENBERG (2011). The domain of geographical conditions is associated with the opportunities that a location provides for earning a living from agriculture. It covers the factors that form the ‘vulnerability context’ within the Sustainable Livelihood Framework as well as factors that describe physical characteristics of a location, such as being located on a slope.

With reference to possible multi-scalar dimensions, two different levels can be distinguished, namely the macro level and the meso level (DOPFER et al. 2004). In this respect, the macro level refers to national forces, such as demographics, politics, the economic and social development of a country, as well as its position in the world economy (THAI & TURKINA 2014). For example, national policies can influence the development of micro entrepreneurial activities by shaping the basic institutional and legal setting. Moreover, the development of macroeconomic key factors, such as the trade balance or the inflation level, creates the basis for business opportunities within the country. However, from a geographical perspective the macro level is not the most important spatial entity when it comes to explaining micro entrepreneurial activities. Instead, the meso level, which encompasses sectors and clusters (ATKINSON & COLEMANN 1989), as well as all different types of administrative units, such as communes, districts and provinces (ILONA et al. 2004), is of particular interest. As in rural areas within the Global South micro entrepreneurial activities are generally integrated into the local economy and the villages remain an important social institution (Oxfam 2013), the spatial dimension used in this dissertation is small-scaled referring to the meso level and captures the village, commune, district and province levels. The resulting conceptual framework forms the theoretical basis for the scientific papers presented in Chapters 4 to 6.

3 Research settings and methodology

If we knew what it was we were doing, it would not be called research, would it?

- Albert Einstein

This dissertation is embedded in the DFG Research Unit FOR 756, entitled “Impact of shocks on the vulnerability to poverty: consequences for development of emerging Southeast Asian economies”. The project focused on vulnerability to poverty by analyzing the role of shocks and risks for the development of developing and emerging market economies, based on the example of rural Thailand and rural Vietnam. The research project pursued an interdisciplinary approach by interconnecting three different disciplines, each representing a different field of economics, namely agriculture, financial institutions and economic geography. While the agriculture subproject concentrated on the changing role of agriculture before and after the food price crisis in 2008 as well as on the capacity of agriculture to adapt to environmental shocks, the finance subproject focused on the role of financial institutions as an instrument of shock absorption as well as on the interconnection between risk behavior and financial decisions. The economic geography subproject analyzed the impact of the economic environment on wage- and self-employment.

3.1 The Vietnamese transformation process: Economic development and regional disparities

Vietnam was chosen as the case country for this dissertation for two different reasons. On the one hand, Vietnam is an example of a typical Southeast Asian emerging economy, showing high rates of economic growth, success in poverty reduction and significant structural change, but also exhibiting growing regional disparities with persistent poverty in rural areas (RONNÅS & RAMAMURTHY 2003, REVILLA DIEZ 2016). On the other hand, Vietnam is also an example of a typical Southeast Asian transition economies due to the transformation process (Doi Moi)

initiated in 1986 (REVILLA DIEZ 2016). This makes it possible to analyze the impact of the remaining socialist influence on micro entrepreneurship.

In the twentieth century, Vietnam was affected by French colonial rule, two wars and the implementation of socialism. The inability to rebuild the infrastructure after the end of the Second Indochina War, shortcomings in the reorganization of agriculture as well as decreasing development aid from the Soviet Union cumulated in deteriorating living conditions in the 1980s, leaving Vietnam one of the poorest countries in the world, facing hyperinflation, famine and poverty (PHAM 2001, REVILLA DIEZ 2016). To overcome these problems, during the 6th Party Congress in 1986 the political leaders decided to initiate a transformation process called Doi Moi (renovation) that was intended to gradually shift the economy from a planned economy to a socialist market economy (REVILLA DIEZ 2016). In the subsequent years, basic market economy mechanisms were implemented by decollectivizing agriculture, opening up the economy for foreign trade and investment, permitting banks to provide credit to non-state actors and allowing non-state actors to work as independent production units (RONNÅS & RAMAMURTHY 2003, REVILLA DIEZ 2016). Another major change was the privatization and closure of a significant share of state-owned enterprises. Initially in 1987, state-owned enterprises were given more autonomy to draw up and implement their own business plans instead of following the business plans laid down by the Vietnamese government. From 1991 onwards, inefficient state-owned enterprises were forced to close or to merge with other business units. In 2000, the government passed the New Enterprise Law, which simplified the registration procedures for new private enterprises and consequently reduced the costs of setting up a business (VO & PHAM 2004). Finally, the Enterprise Law 2005 came into effect and was to ensure fair competition between state-owned and private enterprises (REVILLA DIEZ 2016).

Despite the profound macro-economic reform process, 32% of GDP was still generated by state-owned enterprises in 2015 (General Statistics Office 2017). Moreover, the government continues to support the remaining state-owned enterprises by means of subsidies and trade protection (PINCUS et al. 2012), which leads to distortions of competition. The Communist Party has also maintained its influence on privatized former state-owned enterprises, as the old management structures and consequently the personal links to the government often continue to exist (World Bank 2005). In addition, strong ties between the government and banking institutions remain, resulting in an ongoing discrimination against non-state actors as regards credit access (Bertelsmann Stiftung 2016). Furthermore, Vietnam's political system has not yet been fundamentally transformed. The Communist Party is still in power and restricts basic

rights such as freedom of speech and press (REVILLA DIEZ 2016). Fittingly, the World Bank (2005) names the lack of access to credit and policy uncertainty as major constraints that hamper the development of private enterprises in Vietnam, in addition to a lack of access to land, inadequately skilled labor and poor transportation infrastructure. The Global Entrepreneurship Monitor (2013) corroborates these findings by showing that commercial institutions that support private enterprises, the availability of financial resources-equity, as well as entrepreneurship education at post-secondary levels are underdeveloped in Vietnam.

Nevertheless, Vietnam's economy has undergone significant structural changes since Doi Moi was launched, which has led to a considerable increase in the average monthly income per capita and a substantial reduction of poverty and has allowed Vietnam to grow from one of the poorest countries in the world to a middle-income country in less than 30 years (RONNÅS & RAMAMURTHY 2003, REVILLA DIEZ 2016). Especially since the New Enterprise Law came into effect in 2000, the Vietnamese non-farm sector has grown rapidly⁹. This development can be traced back to a huge increase in the number of domestic enterprises, providing wage employment, while reducing the importance of agriculture¹⁰. Although structural change also has reached the rural provinces, regional economic disparities within the country have increased during the last few decades, as industrial growth, foreign direct investment and the service sector have been highly concentrated in the urban centers of the Southeast (with Ho Chi Minh City) and the Red River Delta (with Hanoi), leaving rural areas behind (REVILLA DIEZ 2016). The regional economic disparities have become manifested in an increasing Gini coefficient¹¹ as well as in the share of the population classified as poor in different Vietnamese provinces¹². Moreover, agriculture continues to be an important income source for the rural Vietnamese population¹³. Nevertheless, the number of micro enterprises has grown in rural areas of Vietnam over the past decades and contributes significantly to the development of the rural regional economy by absorbing surplus labor from the agricultural sector, boosting income and consumption, and thereby slowing down rural-urban migration (LANJOUW & LANJOUW 2001,

⁹ The total number of non-farm individual business establishments increased from 2.62 million to 4.75 million in 2015 (General Statistics Office 2006, General Statistics Office 2016a).

¹⁰ The share of GDP attributed to the primary sector decreased from 22% in 2006 to 18% in 2014 (General Statistics Office 2017).

¹¹ The Gini coefficient rose from 0.374 to 0.427 between 2006 and 2010 (World Bank 2016).

¹² At the beginning of the research project, back in 2006, the share of the population classified as poor ranged from 0.5% in Ho Chi Minh City and Binh Duong to 58.2% in the rural province Lai Chau. In 2015, a similar structure can be found, but on a lower level. At that time, the share of the population classified as poor ranged from 0.0% in Ho Chi Minh City and Binh Duong to 31.5% in the rural province Lai Chau (General Statistics Office 2017).

¹³ In 2016, 55.5% of the employed population was working in agriculture, forestry and fishery in the rural areas of Vietnam, while in the urban areas only 12.0% of the employed population was working in these industrial sectors (General Statistics Office 2016b).

VAN DE WALLE & CRATTY 2004, GRIES & NAUDÉ 2010). As a large proportion (66%) of the Vietnamese population still lives in rural areas (REVILLA DIEZ 2016), it is crucial to strengthen the economy of these areas in order to provide better income possibilities in the non-farm sector and to enhance social and economic welfare.

3.2 The case study regions

As this dissertation addresses micro entrepreneurship under different regional economic conditions in rural Vietnam, the analyses focus on three rural provinces, namely Ha Tinh and Thua Thien-Hue in the North Central Coast region, and Dak Lak in the Central Highlands region. The three case study regions are comparable to each other in several respects. *First*, they all have a population density below the country's average¹⁴ and are located a long way from the economic centers of the Southeast and the Red River Delta (WAIBEL & HOHFELD 2016). *Second*, they are hallmarked by a relatively large share of the population living below the national poverty line¹⁵. Despite these similarities, the case study regions differ in terms of economic structure.

In Dak Lak, a large share of the population relies heavily on agricultural production and the region experiences an inflow of poor migrants from other Vietnamese provinces (World Bank 2003). The main agricultural activity in this province is cash crop production, especially of coffee, cashew and pepper (DANG 2010), aside from subsistence farming. The dominance of cash crop production leads to large investments and extensive cultivation of land (LINDSKOG et al. 2005), resulting in a strong dependence on the world market and commodity price development, which is accompanied by economic uncertainties (AGERGAARD et al. 2009). Consequently, declining coffee prices in late 2008 led to an economic slowdown in Dak Lak in 2009 and 2010¹⁶.

In contrast, coffee production is not economically relevant in Ha Tinh and Thua Thien-Hue. Instead, paddy rice and cattle are the most important agricultural products in Ha Tinh

¹⁴ In 2015, the average population density of Vietnam was 277 persons per km². The province Thua-Thien Hue showed an average population density of 227 persons per km², in the province of Ha Tinh the figure was 210 persons per km² and in the province of Dak Lak it was 141 persons per km² (General Statistics Office 2017).

¹⁵ When the research project began in 2006, the share of the Vietnamese population living below the national poverty line was 15.5%. At that time, 16.4% of the population in Thua-Thien Hue, 31.5% of the population in Ha Tinh and 24.3% of that in Dak Lak was living below the national poverty line. By 2015 this structure had changed. The share of the Vietnamese population living below the national poverty line had declined to 7%. At that time, 4.7% of the population in Thua-Thien Hue, 13.3% of the population in Ha Tinh and 10.0% of that in Dak Lak was living below the national poverty line (General Statistics Office 2017).

¹⁶ The coffee price fell from 1.70 USD per pound in early 2007 to under 1 USD in late 2008 (Trading Economics 2015).

(BRÜNJES et al. 2012), while in Thua Thien Hue the production of paddy rice and rubber dominates (AN 2006). Moreover, the regional economies of Ha Tinh and Thua Thien-Hue exhibit a more diversified economic structure and higher industrial production (General Statistics Office 2017). Ha Tinh was long characterized as a structurally weak province, with persistent poverty, poor job opportunities, underdeveloped infrastructure and out-migration. However, the economy of this province has recently begun to catch up (DANG 2010, Vietnam Trade Promotion Agency 2013a; Vietnam Trade Promotion Agency 2013b). This was triggered by infrastructural projects initiated by the Vietnamese government (DE WIT et al. 2012), such as the construction of the port of Vung Ang in the mid-1990s and its extension in 2004, as well as the establishment of the Vung Ang Economic Zone in 2006. Since then, the Vung Ang Economic Zone has attracted several foreign direct investments and Vietnamese-foreign joint ventures (Japan Development Institute 2010). The positive development trend weakened during the economic slowdown in the aftermath of the global financial crisis, but has since recovered. Thua Thien-Hue is the wealthiest and most urban of the case study provinces. There, the structural change was initiated much earlier and the province now benefits from a well-developed infrastructure, a prospering provincial capital, tourist attractions such as the old imperial city of Hue, and its proximity to Da Nang – the most important economic center on the Central Coast of Vietnam (MALESKY 2002).

3.3 Data collection

The data base used in this dissertation is based on a panel household survey, which was conducted in 2007, 2008, 2010 and 2013. The panel structure makes it possible to track households over the seven-year period. The original household sample was formed using a heuristic procedure. In a first step, communes were chosen according to the size of their population, ensuring that every district of the case study provinces is represented in the sample. In a second step, two villages were selected in each commune. In a third step, in each village 10 households were selected randomly from a list of households. The sampling process resulted in 2,200 selected households located in 220 villages and 110 communes. While the first survey wave included 2,195 households, 1,929 households could be surveyed across all waves, representing an accumulated response rate of 88%.

A standardized questionnaire was used to guarantee that all questions and the respective answers were comparable across all four waves. However, some new questions were added to the questionnaire in each wave. Consequently, these questions are not available for the earlier waves. The questionnaire comprises different sections representing different aspects of the

livelihood of rural households. One section focuses on the household members and includes their socio-economic characteristics such as age, gender, ethnicity, occupation, education and health. Another section summarizes shocks faced by the household since the previous survey was conducted, as well as the perception of future risks. Further sections deal with land use, agricultural production, livestock, hunting and fishing. Other sections ask about non-farm wage-employment and self-employment, investments, borrowing and lending, savings, public transfers and insurances as well as household expenditures and property. In 2013, two new sections were added to the questionnaire, dealing with trust-based networks and taxation. In a final step, the per capita income and the consumption of the households were calculated, by using the monetary values reported in the different sections of the questionnaire.

For this dissertation the section on non-farm self-employment is of particular importance. It includes information about each micro enterprise run by the household members separately, such as the type, the legal form, the location and the founding date of the business, the amount of initial investment, the number of family and non-family employees and their payroll, the number, type and location of the customers and inputs, and the sales volume of the businesses. Moreover, it contains the household member ID of the business head. This information makes it possible to merge the enterprise-specific information with the socio-economic characteristics of the manager. As the household survey only includes limited information on entrepreneurial activities, in 2010 an additional small-business questionnaire was used to survey a subsample of almost 50% of the original households (N=1064). To preserve the spatial structure within both surveys, these households were not chosen randomly from all the original households, but randomly from within each village. An important question in the additional small-business questionnaire concerned the motivation behind starting a micro enterprise. This question is particularly relevant for differentiating between opportunity-driven and necessity-driven micro enterprises. The question was therefore added to the section about non-farm self-employment in the household questionnaire used in 2013.

Although villages are not official administrative units, they are unofficially regarded as the fourth tier of the administrative system in rural Vietnam. They constitute an important social institution and are managed as autonomous political entities by a village head (DE WIT et al. 2012, Oxfam 2013, XUAN 2017). For this reason, in this research project a further survey was conducted among the village heads of the 220 surveyed Vietnamese villages. This made it possible to gather further village-specific information about natural resources, infrastructure, market conditions and institutions that differ considerably between the investigated villages.

During the survey, the research team closely collaborated with the following Vietnamese bodies: the Central Institute for Economic Management (CIEM), the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), the Centre for Agricultural Policy (CAP) and the Centre for Rural Development in Central Vietnam (CRD), subordinated to the Hue University of Agriculture and Forestry (HUAF). This co-operation proved valuable not only in regard to facilitating the surveys. These partners were also essential for designing and conducting the surveys and for interpreting the final results. In the preparation phase, the questionnaires were first translated into Vietnamese and then retranslated. In a second step, the survey instrument was field-tested in Vietnam, and final adjustments were made accordingly. A kick-off training workshop for the enumerators was conducted at the start of each wave. This intensive training involved preparatory plenary sessions, role plays and, most importantly, three field tests for the enumerators to conduct first household interviews in small groups. For the official survey implementation, each province was investigated by a separate team of enumerators supervised by senior project researchers. The teams then visited different communes each day. The enumerators' work involved conducting the face-to-face interviews with the households, while the additional face-to-face interviews with the village heads were carried out by the project researchers. Finally, after completing the fieldwork, the project researchers cleaned the raw data.

In addition to the data collected in the course of the DFG Research Unit FOR 756, this dissertation utilizes the Vietnam Enterprise Survey of the General Statistics Office of Vietnam. The Vietnam Enterprise Survey is conducted annually and includes all domestic firms that are formally registered under the Enterprise Law and have more than 10 employees. It also covers all multinational and state-owned enterprises irrespective of their size. The Vietnam Enterprise Survey provides detailed information about all relevant enterprise-specific characteristics, such as the number of employees and the annual revenue and profit. Another advantage of the Vietnam Enterprise Survey is that it contains information about the location of an enterprise. It is therefore possible to derive the economic structure and the economic development of all administrative units.

3.4 Data analyses

Performing quantitative analyses using survey data that track units over time and are clustered within a regional hierarchical system entails the risk of the standard assumption of independent observations being violated due to temporal and spatial autocorrelation. Temporal autocorrelation occurs in panel surveys, because each unit is observed repeatedly at different

points in time (RABE-HESKETH & SKRONDAL 2008). In contrast, spatial autocorrelation occurs when observations are nested within a regional hierarchical system (HOX 2010). In the presence of both temporal and spatial autocorrelation, running standard regressions would lead to inefficient and biased standard errors (MIZON 1995).

A common way to deal with temporal autocorrelation is to use panel regressions. Aside from fixing the violation of the assumption of independence, panel regressions have the advantage of controlling for unobserved heterogeneity, to study individual changes over time and to link within and between-subject comparisons (GIESSELMANN & WINDZIO 2013). Generally, random-effects and fixed-effects panel regressions can be distinguished. Fixed-effects regressions are used to estimate average within-subject relationships between time-varying covariates and the response variable (RABE-HESKETH & SKRONDAL 2008). In contrast, random-effects regressions allow the integration of covariates that do not vary over time and are consequently suitable for linking within and between-subject comparisons (GIESSELMANN & WINDZIO 2013). In the field of economic geography, panel regressions are frequently used to analyze the time-serial dimension of economic phenomena, such as economic growth (LIM & KIM 2015).

Under the widely acknowledged assumption that space can be partitioned into regions (BLOTEVOGEL 1999, BATHOLT & GLÜCKLER 2012), multilevel approaches can be used to deal with the resulting spatial autocorrelation (RABE-HESKETH & SKRONDAL 2008). In this respect, hierarchically fixed-effects models, in which unique dummy variables for each higher level are integrated into the model to control for potential regional differences, are commonly used (ROGERSON 2014). Utilizing robust standard errors to reduce the influence of multiple cases per higher level is another simple approach to control for possible regional effects (WHITE 1980, WHITE 1984, ROGERS 1993). From an economic geography perspective, both approaches have the disadvantage of just fixing the violation of the assumption of independence, but do not permit a detailed investigation of the regional effects that cause the occurrence of regional autocorrelation (STAM & SPIGEL 2016). In cases where empirical analyses are to examine whether the estimated effects of the explanatory variables on the dependent variable differ between different regions, it is possible to calculate separate regression models for each geographical unit (HOX 2010). This approach is widely utilized by economic geographers (RAVALLION & VAN DE WALLE 2008), but has several limitations for answering geographically related research questions. *First*, comparing the results of region-specific regression models quickly becomes incomprehensible when the number of geographical units investigated is too

large. *Second*, even though this approach makes it possible to compare the effects of the explanatory variables in different regional units, it does not assess the specific regional factors that determine these differences. *Third*, this approach does not permit the investigation of different regional levels simultaneously.

Established in the social and educational sciences for many years (PATERSON & GOLDSTEIN 1991, DIPRETE & FORRISTAL 1994, GORARD 2003, LECKIE et al. 2010), hierarchical random-effects models can be seen as an innovative approach to overcome the described shortcomings. An advantage of hierarchical random effect models is that they allow estimations of the effects of different geographical units simultaneously. Generally, random intercept models permit the error term to differ for different geographical levels, whereas random coefficient models also permit the effects of covariates to vary for different geographical levels (RABE-HESKETH & SKRONDAL 2008). Conceptually, random intercept models are chosen in situations in which each geographical unit is assumed to have a different general pattern in the outcome of the dependent variable, in order to estimate the importance of different geographical units (HOX 2010). This can then be done to explain the variance of a dependent variable and to estimate which regional characteristics capture the regional effect. In contrast, random coefficient models allow for situations in which the impact of the explanatory variables on the outcome is assumed to vary in different geographical units (HOX 2010). This makes it possible to estimate whether and in what way the effect of an independent variable varies between different geographical units. By integrating cross-level interaction effects, it is also possible to estimate which regional characteristics cause the differences in the effects (STUETZER et al. 2014). Summing up, hierarchical random effects models can provide an innovative contribution to the debate of how to translate complex geographical realities into an easily performable empirical research design. Although the hierarchical structure of geographical data and the described advantages for geographical questions suggest a multilevel approach, surprisingly few empirical studies have used multilevel regression models (for exceptions see STUETZER et al. 2014, HUNDT & STERNBERG 2016).

The quantitative approaches used in this dissertation were chosen on the basis of the methodological considerations discussed above and can be summarized as follows:

As the research goal of the scientific paper presented in Chapter 4 is to estimate the effects of starting a micro enterprise on the likelihood of falling back into poverty or of remaining in poverty in different economic settings, all the survey waves are combined to form a panel, which leads to the existence of temporal autocorrelation. To estimate whether the effect of

starting a micro enterprise is context-specific, separate regression models are estimated for each province and the province-specific effects are compared with each other. Consequently, the quantitative analyses used are based on province-specific logistic random-effects panel regressions.

To estimate whether there are significant differences in the level of micro entrepreneurship in different villages and communes as well as to determine what individual and regional characteristics explain the start-up of micro enterprises, hierarchical random-effects models are chosen for the analyses described in the scientific paper presented in Chapter 5. The quantitative analyses are therefore based on three-level binary-logistic random intercept regressions.

In the scientific paper presented in Chapter 6, the research goal is to estimate whether there are significant differences in the hazard ratio in different villages and different districts. Another aim is to estimate what individual and regional characteristics explain the hazard ratio of micro enterprises. To this end, the quantitative analyses are based on three-level proportional hazards mixed effects regressions.

4 Self-employment and its influence on the vulnerability to poverty of households in rural Vietnam – A panel data analysis

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SELF-EMPLOYMENT AND ITS INFLUENCE ON THE VULNERABILITY TO POVERTY OF HOUSEHOLDS IN RURAL VIETNAM—A PANEL DATA ANALYSIS*

FRANZISKA SOHNS and JAVIER REVILLA DIEZ

ABSTRACT. The following paper analyses whether becoming self-employed can help to reduce the vulnerability to poverty of rural households. We use data collected during four survey waves in three rural provinces in Vietnam to calculate region-specific logistic panel regressions. The results show that becoming self-employed increases the likelihood of poor households escaping poverty, but only if they are located in a regional economic environment characterized by an advanced stage of structural change, good infrastructural conditions, and proximity to markets. In less well-developed regions, becoming self-employed is not sufficient to increase the probability of poor households escaping poverty. What matters more is that self-employment is driven by opportunity and not by necessity. However, even opportunity-driven self-employment does not guarantee a reduction of vulnerability to poverty in all regional settings and for all household types. Especially, regional overspecialization in cash-crop production and inequality in access to assets have to be taken into account. In times of declining commodity prices, self-employment entails a risk of business failure in regions that are overspecialized in cash-crop production. For households whose initial investment is high and whose endowment with social and educational assets is low, this can result in increased vulnerability to poverty. *Keywords:* opportunity-driven self-employment, rural Vietnam, vulnerability to poverty.

In Vietnam, self-employment has grown constantly during the last decades. This shift is the result of the ongoing structural change in Vietnam since the introduction of the economic transformation (Doi Moi) towards a market economy in 1986, which has led to a significant increase in the average monthly income per capita and to a substantial reduction of poverty (General Statistics Office of Vietnam 2012). However, despite this overall positive trend, social and regional inequalities have not been eliminated. On the contrary, economic prosperity has been concentrated mainly in the urban centers of the Southeast (with Ho Chi Minh City) and the Red River Delta (with Hanoi), leaving rural areas behind. Between 2006 and 2010, the Gini coefficient—the standard measure of inequality—rose from 0.374 to 0.427 (World Bank 2016). Furthermore, inequality has become manifested regionally in the share of the population classified as poor in different Vietnamese provinces. As a consequence, the unequal distribution of household access to capital and opportunities in the rural regions persists (McKay 2002). Additionally, rural households are often hit by

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external shocks such as weather-related hazards, fluctuation on the input and output markets and individual challenges. The coexistence of these shocks with low asset endowment leads to increased vulnerability to poverty, which then reinforces inequalities (Ellis 2000; Few and Tran 2010; King 2011).

In rural areas of Vietnam, there are few alternatives for adapting to the unstable environment. The structural change is proceeding very slowly and jobs in manufacturing are not evolving as needed. Outmigration to the urban centers is a very common response to this. Several studies show that under such conditions, self-employment can be seen as a chance to expedite structural change by creating new firms, absorbing surplus labor from the agricultural sector, providing innovative intermediate inputs, slowing down rural-urban migration, and boosting productivity and employment (Lanjouw and Lanjouw 2001; Van de Walle and Cratty 2003; Gries and Naudé 2010).

Furthermore, starting a business enables households to expand their assets and become more resilient, because it provides the advantage of flexible decision making and adaptation of business activities, especially in times of uncertainty (McNamara and Weiss 2005; Coad and Tamvada 2008). However, it is questionable whether becoming self-employed in general reduces vulnerability to poverty in all regional settings and for all types of households. On the one hand, households differ with regard to their reasons for starting a business, their ability to run a business successfully and their endowment with educational, natural, financial and social assets. On the other hand, rural areas in emerging markets are not as homogeneous as is often assumed. Very different regional conditions can be found, such as the degree of regional specialization on cash crop production, the quality of infrastructure, the proximity to markets or the degree of industrialization, all of which influence the outcome of households' self-employment activities (Shaw 2004; Kiiru 2007).

Most of the recent studies that analyze the effects of self-employment adopt a static view, using the poverty status, household income, or consumption as the dependent variable and focusing on the effect of being self-employed rather than becoming self-employed (Fox 2008; Fox and Sohnesen 2012). Other studies, which analyze vulnerability to poverty from a dynamic perspective, do not focus on self-employment, and especially not on the different motivations behind becoming self-employed (Arpino and Aassve 2014; Hoang, Pham, and Ulubaşoğlu 2014; Klasen, Lechtenfeld, and Povel 2015). Furthermore, studies that compare the effects of different types of self-employment on the vulnerability to poverty in different regional economic settings in rural areas of Vietnam are scarce. Therefore, we wish to address the research question whether becoming self-employed can help to reduce the vulnerability to poverty of rural households, considering that they exhibit different characteristics and motivations, and are located in different regional settings. Based on a household panel survey conducted in rural areas of three Vietnamese provinces, namely Ha Tinh, Dak Lak, and Thua Thien-Hue, we are able to conduct a comparative

dynamic time series analysis and to contribute to the discussion surrounding the impact of becoming self-employed for rural households in different regional settings of emerging markets.

The next section discusses the theoretical background, while the third section describes the database, the empirical framework, and the methodology used. Following that, the fourth section presents and discusses the empirical results, while the fifth section concludes the paper.

WHY DOES SELF-EMPLOYMENT MATTER? — THE IMPACT OF SELF-EMPLOYMENT ON VULNERABILITY TO POVERTY FROM A THEORETICAL PERSPECTIVE

The first systematic definition of vulnerability can be traced back to the work of Robert Chambers, who defined vulnerability as consisting of external threats and internal coping capacity (1989). The external side is associated with the intensity of external shocks and stress, and the internal side with the capacity of households to deal with these external events (Bohle 2001). The capacity to cope can be limited by numerous factors linked with individual household characteristics and behaviors (Billing and Madengruber 2007). It is possible to identify groups of vulnerable households by using a panel dataset that tracks the poverty status of households over time. Households that were poor at time t_1 and still are poor at time t_2 can be defined as “chronically poor”; households that were not poor at time t_1 but are poor at time t_2 can be defined as “entering poverty.” Both groups can be seen as vulnerable to poverty from a dynamic point of view (Wai-Poi 2013). Furthermore, there are two successful groups of households: those that were poor at time t_1 and are no longer poor at time t_2 , as well as the households that were not poor at time t_1 and at time t_2 . The first group can be defined as “escaping poverty” and second group can be considered “never poor” (Haughton and Khandker 2009; Wai-Poi 2013).

Poverty can be defined and measured in different ways. According to Gary S. Fields, a household can be classified as “extremely poor” if its members are living on less than \$1.25 purchasing power parity (PPP) a day, and it can be considered “absolutely poor” if the household members have less than \$2.50 (PPP) to live on per day (2014). We define vulnerability to poverty in terms of the probability of falling into poverty and the probability of remaining in poverty using the absolute poverty line.

All actions undertaken by a household to earn a living are part of the livelihood strategy of the household (Fox and Sohnesen 2013). According to Louise Fox, the economic livelihood of a household can be specified by the structure of income sources used for income generation during a period of time (2008). In a broader definition, the livelihood in general includes all assets, theorized as the stock of capital that can be used by households to earn their living, namely human capital, natural capital, financial capital, social capital, and physical capital (Ellis 2000; Bohle 2008). The unequal capabilities of households to accumulate these forms of capital result in unequal endowment with these

assets among households and lead to difficulties in dealing with external shocks. As a consequence, disadvantaged households move into or remain in poverty, which then reinforces inequalities (Ellis 2000; Few and Tran 2010; King 2011). The majority of households in developing countries and emerging markets rely on agricultural income sources (Gindling and Newhouse 2012). In times of uncertain weather and market conditions that come along with high fluctuations of rainfall or world market prices for instance, this one-sidedness can lead to economic vulnerability (McNamara and Weiss 2005). One possible way to reduce vulnerability is to diversify by widening the portfolio of the farm products or integrating off-farm income sources into the livelihood, thereby generating a more stable income and reducing income risks (McNamara and Weiss 2005). The potential to use different income sources and diversify the economic livelihood successfully is influenced by the attributes of the household members, such as the level of education, the health status, or the per capita income (Fox 2008; Duc and Waibel 2009).

In periods of structural change, a significant shift in the domestic market can be seen, creating new opportunities to earn money outside agriculture (Desai 2009). Technological innovation in agricultural production leads to higher labor productivity and income (Fox 2008). This higher income stimulates demand for goods and services outside the agricultural sector. As a result, households respond by setting up businesses to satisfy the increasing demand (Fox 2008). These households are identifying and using the economic opportunities brought about by structural change, and opting for self-employment because they have good ideas, ambitions, business plans, and they prefer autonomy and flexibility (Gindling and Newhouse 2012; Margolis 2014). According to Jürgen Brünjes and Javier Revilla Diez, these opportunity-driven self-employed are more willing to hire nonfamily employees in the future (Brünjes and Revilla Diez 2012). Referring to Sandra Gottschalk, Kathrin Müller, and Michaela Niefert, it can also be assumed that the opportunity-driven self-employed “are more convinced of their business idea than the average firm and consequently dare to take higher risk, [so] initial investments will be larger” (2010, 4). According to Thomas Gindling and David Newhouse, opportunity-driven self-employment only applies to the minority of the self-employed in developing countries and emerging markets, while the majority have to be seen as necessity-driven (2012). Especially in countries hallmarked by an absence of unemployment insurance and social protection, and a lack of employment opportunities, unemployment, and insufficient income from agriculture encourage people to take up self-employment (Fields 2014). Such individuals become self-employed out of necessity and their businesses show limited growth prospects (Gindling and Newhouse 2012). The main difference between these two groups of self-employed persons seems to be their reason for being self-employed. Jürgen Brünjes and Javier Revilla Diez use the motivation behind becoming self-employed to differentiate between opportunity-driven

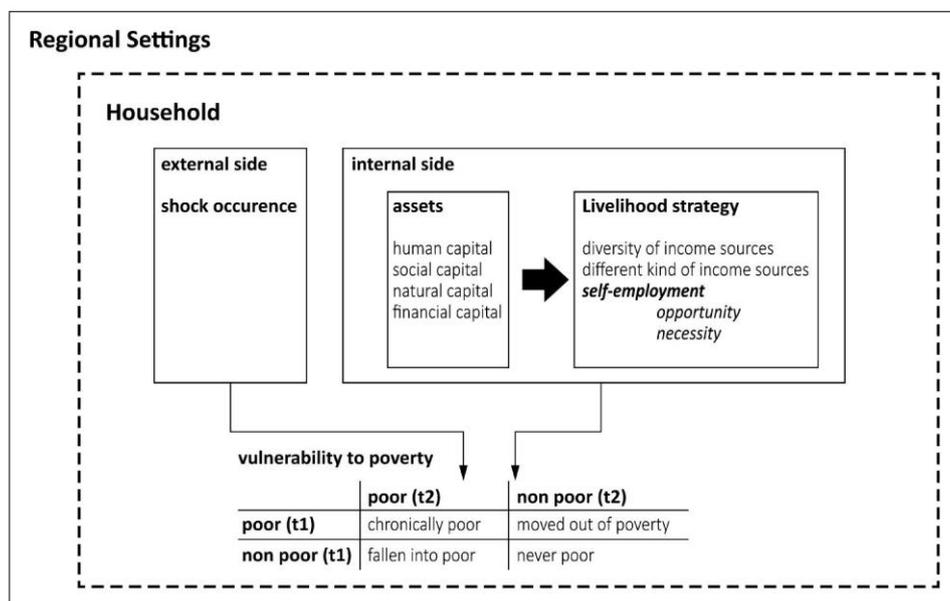


FIG. 1—Theoretical framework.

and necessity-driven self-employment (2012). Three motivations were classed as opportunity-driven, namely: previous experience in the relevant kind of business, having seen other successful businesses of that kind, and deducing that this kind of business can be successful. Two motivations are regarded as necessity-driven, namely: unemployment and insufficient income from other sources (Brünjes and Revilla Diez 2012). Opportunity-driven self-employment thus plays an important role in expediting structural change by creating new firms, absorbing surplus labor from the agricultural sector, providing innovative intermediate inputs, and boosting productivity and employment (Gries and Naude 2010). Furthermore, starting a business enables households to expand their assets and become more resilient, because it provides the advantage of flexible decision making and adaptation of business activities, especially in times of uncertainty (McNamara and Weiss 2005; Coad and Tamvada 2008).

However, it is questionable whether becoming self-employed reduces the vulnerability to poverty of households in all regional settings. In rural areas of emerging markets, too, very different regional conditions can be found that can influence the outcome of household's self-employment activities (Shaw 2004; Kiiru 2007). Particularly, a region's economic specialization has to be taken into account. Becoming self-employed in a region that is integrated into the world market by being specialized in cash-crop production can be risky in times of declining commodity (Lin 2008). This risk can lead to increasing vulnerability to poverty, especially for households that made a large initial investment in their businesses and do not have enough assets left to cope with the

resulting losses. Moreover, the regional degree of industrialization, the proximity to markets, and the quality of infrastructure are crucial for the potential success of a household's self-employed activities (Shaw 2004, 1248; Kiiru 2007). It can be assumed that in a very poor area, characterized by an undiversified regional economic structure, low income, a lack of demand, poor infrastructure, and long distances to markets, especially necessity-driven self-employment might be unable to help households to reduce their vulnerability to poverty on a large scale (Shaw 2004) (Figure 1).

DATA, STUDY AREA, EMPIRICAL FRAMEWORK, AND METHODOLOGY

Because household surveys collect more indepth information about other family members and about the household in general, more accurate information about informal household enterprises can be gathered from household surveys than from enterprise surveys (Vijverberg 1992; Mead and Liedholm 1998). For this reason, we use a household survey that was conducted repeatedly in 2007, 2008, 2010, and 2013 in the course of the DFG Research Unit FOR 756, entitled "Impact of shocks on the vulnerability to poverty: consequences for development of emerging Southeast Asian economies." The survey was conducted in close cooperation with the Institute for Policy and Strategy in Agriculture and Rural Development (IPSARD), the Centre of Agricultural Policy (CAP), and the Centre for Rural Development in Central Vietnam (CRD), subordinated to the Hue University of Agriculture and Forestry (HUAF). These institutions not only facilitated the surveys, they also provided necessary inputs in designing and conducting the surveys and interpreting the results. After the questionnaires had been translated and retranslated into Vietnamese, the survey instrument was field-tested in Vietnam and adjustments were made. In each wave, the implementation of the household survey started with a training workshop for the enumerators. The training was intensive, with preparatory plenary sessions, including evening meetings, training in the form of role play, and three field visits during which enumerators conducted household interviews in groups. Enumerators conducted the interviews in each wave.

STUDY AREA

The survey was conducted in three provinces in rural Vietnam: Ha Tinh and Thua Thien-Hue in the north-central coast region, and Dak Lak in the central-highlands region. The survey was also conducted in three provinces in rural Thailand, though these were not analyzed in order to avoid biases due to the differences in the political and economic situations in the two countries. The first survey wave included 2,195 households in Vietnam. After combining the four different waves to form a panel data set, 1,929 households could be identified in each wave and were used as the base sample.

Though all three provinces can be characterized as rural provinces hall-marked by a relatively large share of the population living below the national

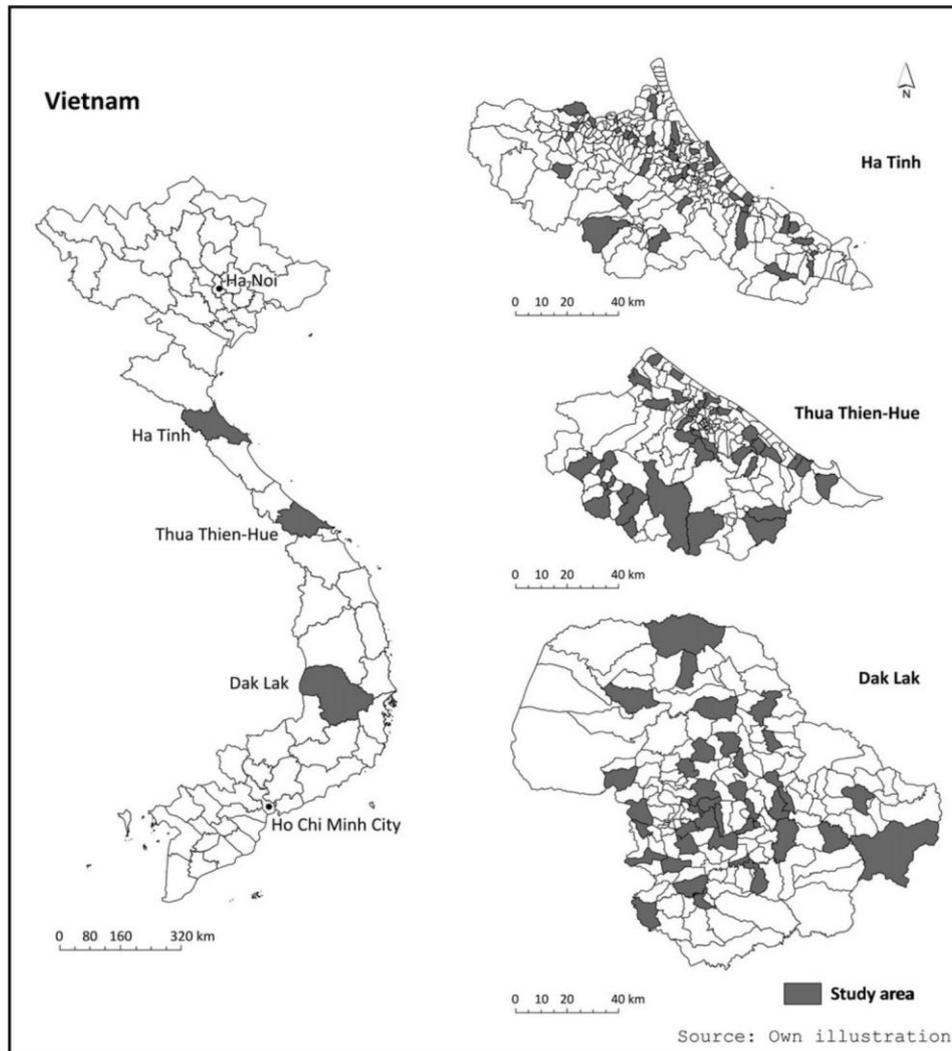


FIG. 2—Study area.

poverty line and by uncertain weather conditions, there are regional differences in the economic structure. Dak Lak is characterized by a large share of the rural population being heavily reliant on agricultural activities, as well as by an inflow of poor migrants from other Vietnamese provinces (World Bank 2003). Besides subsistence farming, cash-crop production, especially of coffee, cashew, and pepper, is the main agricultural activity in Dak Lak (Dang 2010). Therefore, Dak Lak is strongly dependent on the world market and commodity price development, resulting in uncertain economic conditions (Agergaard, Fold, and Gough 2010). In contrast to Dak Lak, the regional economies of Ha Tinh and Thua Thien-Hue are not mainly based on agricultural activities and cash-crop

production. Instead, they exhibit a more diversified economic structure and higher industrial production (General Statistics Office of Vietnam 2016). While Ha Tinh was long characterized as a structurally weak province, showing a persistence of poverty, poor job opportunities, less well-developed infrastructure, and out-migration, the structure of the economy has recently started changing (Dang 2010; Vietnam Trade Promotion Agency 2013a; Vietnam Trade Promotion Agency 2013b; Nguyen, Raabe, and Grote 2015). In contrast, in Thua Thien-Hue the structural change has already been ongoing for a longer time, resulting in a smaller share of the agricultural sector and higher industrial production. Unlike Ha Tinh, Thua Thien-Hue benefits from a well-developed infrastructure, a prospering provincial capital, and the proximity to Da Nang — the most important economic center on the central coast of Vietnam (Malicky 2002) (Figure 2).

EMPIRICAL FRAMEWORK

To operationalize vulnerability to poverty as the dependent variable, the sample was split into two groups: households that were absolutely poor in the previous waves and households that were not absolutely poor in the previous waves. Then two binary variables were generated as dependent variables: remaining in absolute poverty (no=0, yes=1) for the group of poor households, and falling into absolute poverty (no=0; yes=1) for the group of nonpoor households. The poverty calculation is based on the per capita income of the nucleus household members. The household income is calculated for each wave by summing up the income from all income sources used by the nucleus household members. Following Bernd Hardeweg and Hermann Waibel, a household includes the household head and all persons who live in the household for at least 180 days per year (2009). All these persons were defined as nucleus household members (Gloede and Rungruxsirivorn 2013).

The external side of vulnerability is represented by the number of shocks with a high negative impact on the households. The level of impact of a shock is measured using the household's subjective perceptions on a scale ranging from low to high impact. We split the shocks into individual shocks, natural shocks, and economic shocks in order to compare the influence of different types of shocks. Individual shocks include, for example, illness or the death of a household member, while natural shocks cover, for instance, flooding of agricultural land or droughts. Examples of economic shocks are fluctuation of input or output prices or a strong increase in credit interest rates.

According to Richard J. Culas and Mahen Mahendrarajan, there are different options for measuring income diversity (2005). The simplest one is based on the number of income-generating activities. The weakness of this measurement of income diversity is that "it gives no weight at all to the distribution of the farm's employment over the activities" (Culas and Mahendrarajan 2005, 6). More accurate measurements would give weight to the distribution of the

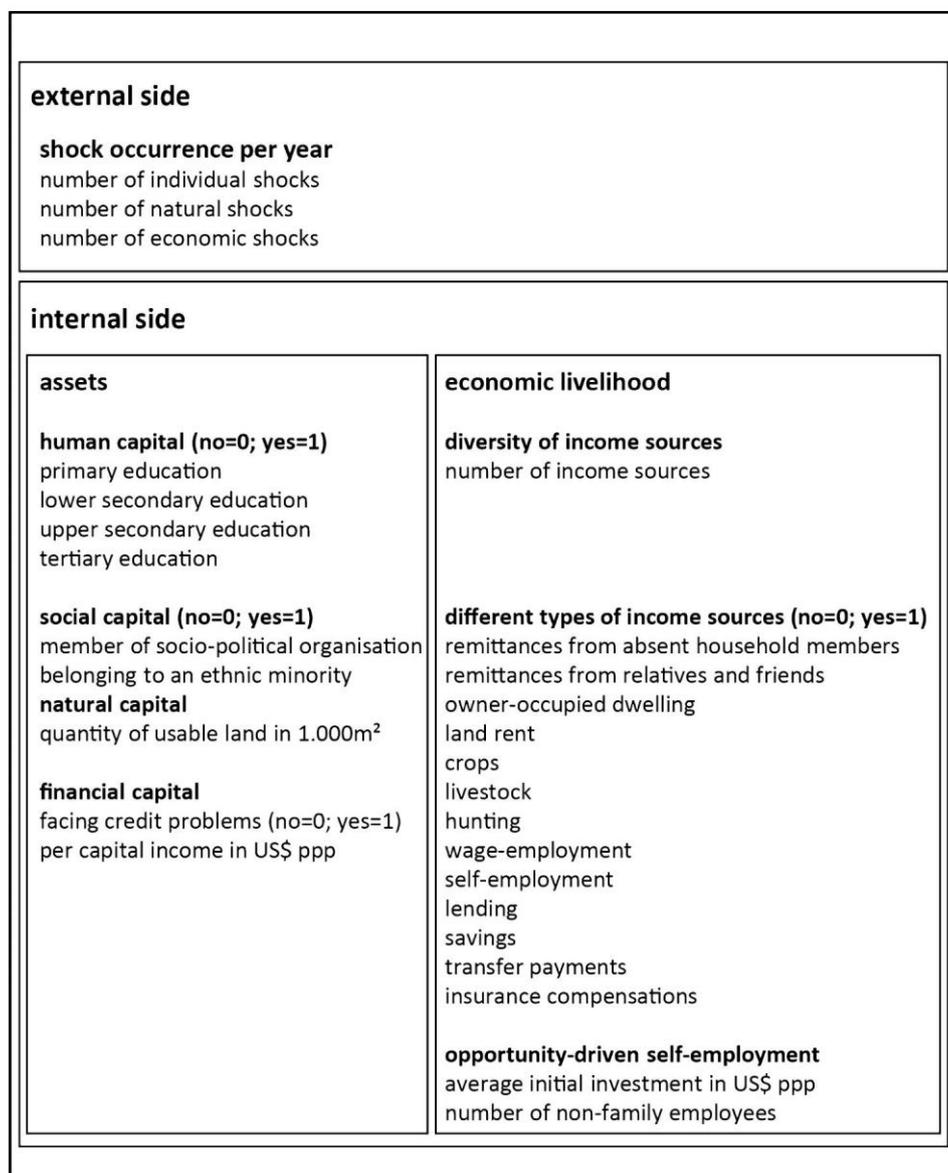


FIG. 3—The empirical framework.

farm's employment, but they cannot be used for negative net income (Duc 2012). Because we have to deal with negative net income for some households whose expenses exceeded their returns in total, the diversity of income sources is parameterized by using the number of income sources involved in a household earning a living. Following Gary S. Field, we define self-employment as households running a formal or informal household enterprise outside of agriculture (2014). To bring the effects of self-employment into focus, a dummy

variable is used to show if a household used self-employment as a source of income. In addition, we use further dummy variables for all other income sources. Because information about the motivation behind being self-employed were only collected in the fourth survey wave, opportunity-driven self-employment had to be parameterized using two instrumental variables. According to the present literature, opportunity-driven self-employment is characterized by a higher initial investment and a larger number of hired nonfamily employees (Brünjes and Revilla Diez 2012; Gottschalk, Müller, and Niefert 2010). After finding significant positive correlations between these instrumental variables and the motivation behind starting up the business, they were used to approximate opportunity-driven self-employment.

The assets of households are used as control variables and are split into human capital, social capital, natural capital, and financial capital. One common way to operationalize human capital is to use the number of years the household head was educated (Minot 2003). As Vietnam features complex options of tertiary educational pathways, however, the calculated number of years of education would not be reliable (World Bank 2008). We therefore split the education of the household head into four categories: primary education, lower secondary education, upper secondary education, and tertiary education, and analyze the effect of these educational levels compared to noneducated household heads.

According to Neil Adger, social capital is important for reducing vulnerability because it allows households to respond collectively to external shocks (2003). Frederick Foxtan and Richard Jones argue that social capital can be differentiated into bonding, bridging, and linking social capital (2011). We operationalize social capital using the belonging of at least one household member to an ethnic minority or a social or political organization. Belonging to an ethnic minority can be assumed to increase bonding social capital because of greater trust within the ethnic group. However, these strong ties, which also reduce connections to other ethnic groups, and the ongoing discrimination against minorities in Vietnam, limit bridging social capital (World Bank 2002). In Vietnam, the government continues to play an important role and to possess a great deal of power, especially at the community level (Tran 2003). Belonging to a social or political organization can therefore be assumed to increase linking social capital.

The availability of productive land can be seen as a good proxy for natural capital according to Mathis Wackernagel and colleagues (1999). Accordingly, we operationalize natural capital by the land available to the households.

According to Sharon Danes and others, financial assets include money belonging to the household members as well as credit from financial institutions (2009). Mikkel Barslund and Finn Tarp highlight the fact that access to credit is a key factor for smallholders in rural Vietnam in order to increase their risk-bearing capacity in times of crisis (2007). Problems in gaining access

to credit would hamper the possibility to smooth income and recover from external shocks. We therefore classify households as having credit problems if they had applied for credit in the formal or informal market and were not given the full amount of money applied for at least once between the waves (Barslund and Tarp 2007). By referring to Sharon Danes and others, we use the per capita income in USD to control for the issue that high per capita income lowers the likelihood of falling into poverty and remaining in poverty (2009) (Figure 3).

METHODOLOGY

As mentioned above, the four different survey waves were combined to form a panel dataset. This makes it possible to apply a panel regression approach in order to analyze the effects of the independent variables on vulnerability to poverty. To take advantage of as much information as possible, a pooled regression, a random-effect regression, and a fixed-effect regression are calculated. Because we have to deal with a bivariate independent variable, the assumptions of linear regression as homogeneity of variance and normality of distribution would be violated if a conventional regression model were used. For this reason, a logistic panel regression model was chosen (Giesselmann and Windzio 2012). The advantages of panel data analysis are the differentiation of between and within variation, the possibility to control for unobserved heterogeneity and the extension of the number of cases (Giesselmann and Windzio 2012). Our analyses are based on a strongly balanced short panel dataset. To analyze the time-serial dimension, it is necessary to test for the consistency of the models. If the Hausman test yields an insignificant result, the logistic fixed-effects model and the logistic random-effects model can be seen as consistent. If the likelihood ratio test also produces an insignificant result, the logistic pooled OLS regression does so, too (Giesselmann and Windzio 2012). We use the estimations of the random-effect models, because the Hausman test yields insignificant results in all cases. In the cases where the likelihood ratio test also produces an insignificant result, the effects of the logistic pooled OLS regression are also interpreted.

THE IMPACT OF SELF-EMPLOYMENT ON VULNERABILITY TO POVERTY — EMPIRICAL RESULTS FOR RURAL VIETNAM

Overall, our data show that absolute poverty has declined over time. However, we find regional differences in this poverty reduction. In 2006/2007, Ha Tinh exhibited the largest share of absolutely poor households, at almost 65 percent, while Dak Lak showed the lowest share at 47 percent. By 2012/2013, this distribution had changed fundamentally, with Dak Lak exhibiting the largest share of absolutely poor households, at just under 40 percent. Over time, we observe the strongest poverty reduction in Ha Tinh, while in Dak Lak the share of absolutely poor households has not changed. While we see a constant decline

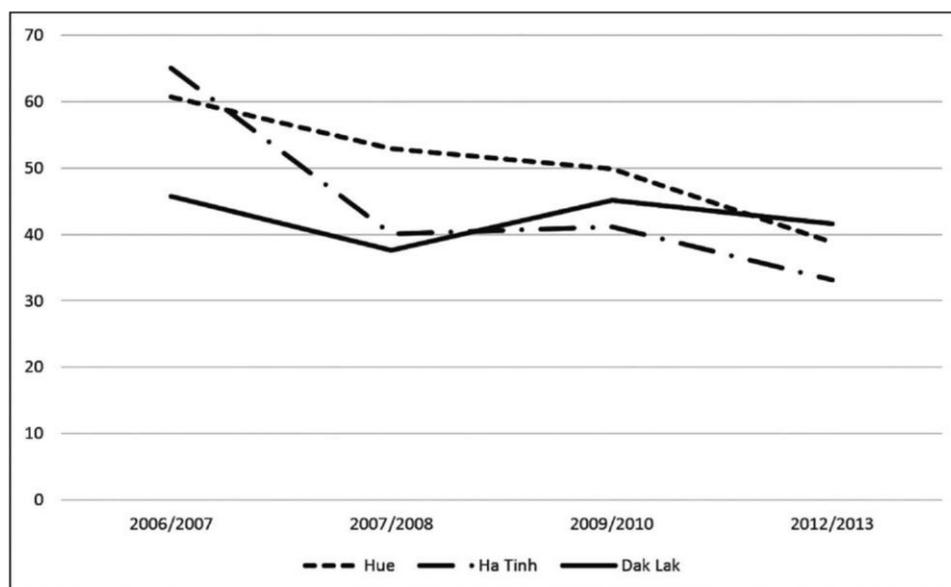


FIG. 4—Absolutely poor households as percent

in absolute poverty in Thua Thien-Hue, it increased in Dak Lak and Ha Tinh between 2007/2008 and 2009/2010 (Figure 4).

Although the share of absolutely poor households has decreased over time, we see dynamic changes in the poverty status of individual households. Between 2006/2007 and 2007/2008, Thua Thien-Hue exhibited the largest share of households falling back into absolute poverty, at 30.9 percent, and the largest share of households remaining in absolute poverty, at 67.2 percent. At the same time, Ha Tinh exhibited the smallest share of households in both categories. This distribution changed in the following years. While in Thua Thien-Hue the share of households falling into and remaining in absolute poverty decreased constantly, in Dak Lak and Ha Tinh the share of households in both categories increased initially and then decreased. Finally, between 2009/2010 and 2012/2013 Dak Lak showed the largest share of households that were vulnerable to absolute poverty in both categories (Table 1).

TABLE 1—HOUSEHOLDS FALLING INTO AND STAYING IN ABSOLUTE POVERTY AS PERCENT

	2006/2007-2007/2008		2007/2008-2009/2010		2009/2010-2012/2013	
	FALLING	STAYING	FALLING	STAYING	FALLING	STAYING
Thua Thien-Hue	30.89	67.19	30.51	67.17	22.93	54.63
Ha Tinh	16.30	52.83	27.44	61.69	21.15	50.37
Dak Lak	22.66	55.37	30.30	69.80	29.41	56.46

Source: Own calculations based on DFG-FOR 756 Household Survey 2007-2013

TABLE 2—NUMBER OF SHOCKS PER YEAR AND HOUSEHOLD

	2006/2007			2007/2008			2009/2010		
	HUE*	HA TINH	DAK LAK	HUE*	HA TINH	DAK LAK	HUE*	HA TINH	DAK LAK
economic shocks	2.23	0.92	0.46	1.44	5.84	7.99	5.42	4.76	5.38
natural shocks	44.34	57.60	29.34	36.52	27.04	42.70	33.65	37.63	39.48
individual shocks	19.78	23.96	8.29	23.92	32.87	33.64	34.77	45.01	29.34

Notes: * Thua Thien-Hue

Source: Own calculations based on DFG-FOR 756 Household Survey 2007-2013

Besides regional differences in poverty reduction and in the dynamics of households falling into and staying in poverty, regional and temporal differences in the occurrence of shocks can also be observed. Natural and individual shocks seem to be the most dominant types of shocks. Although economic shocks seem to be less common, the number of this type of shock per household has increased over time, peaking in 2007/2008 for Ha Tinh and Dak Lak, and in 2009/2010 for Thua Thien-Hue (Table 2).

ANALYTICAL RESULTS

Initially, we used the number of income sources to analyze the effect of income diversification on vulnerability to poverty (Table 3). It can be observed that the probability of poor households remaining in absolute poverty is positively correlated with an increasing number of income sources in Ha Tinh and Dak Lak. However, no significant relationship can be found between the number of income sources and the probability of nonpoor households falling into absolute poverty. These results are surprising because they contradict the hypothesis that a diverse income structure is related to lower vulnerability to poverty (McNamara and Weiss 2005). We calculated a second model to control for diversity by using the different income sources involved in a household earning a living to verify the robustness of the other regression results. There, the significance and the signs of the regression coefficients differ only marginally from the first models. This finding can be seen as evidence that the regression results are robust.

To take into account the fact that households that are located in the same province are influenced by the same regional economic factors, we calculate province-specific panel regressions to compare the effects of the independent variables in these provinces (Table 4).

With regard to external shocks, we can see that poor households faced by an increasing number of natural shocks exhibit an increasing probability of remaining in absolute poverty in all three provinces. In Dak Lak and Thua Thien-Hue, a higher number of natural shocks also raises the probability of nonpoor households falling into absolute poverty. In contrast, an increasing number of economic shocks increases the probability of nonpoor households falling into absolute poverty only in Ha Tinh.

TABLE 3—PROVINCE-SPECIFIC REGRESSION MODELS – DIVERSIFICATION

	STAYING IN ABSOLUTE POVERTY			FALLING INTO ABSOLUTE POVERTY		
	HUE ¹	HA TINH	DAK LAK	HUE ¹	HA TINH	DAK LAK
shocks						
individual shocks per year	-0.1250	-0.1372	0.4917*	-0.0927	0.4014	0.0947
natural shocks per year	0.6229***	0.4493***	0.5057**	0.5990***	-0.0765	0.8134***
economic shocks per year	-0.4260	-0.3820	-0.8392	0.3041	1.4209**	0.2038
number of income sources	-0.0847	0.1720**	0.2614***	0.0232	0.0096	-0.0032
self-employment	-0.2084	-0.2216	-0.3259	-0.1807	-0.2758	-0.5275***
average initial investment	-0.0003**	-0.0003*	-0.0003	-0.0002	-5.83e-06	0.00006***
number of non-family-employees	-0.6081**	-0.4580	0.6834	-0.4985	0.0289	0.1006
member of socio-political organisation	-0.2221	-0.1499	-0.2543	0.3392	0.3665	-0.1344
ethnic minority	1.0995***	0.6511	0.7643***	1.2707***	-0.3135	0.2601
quantity of used land	-0.0039	-0.1256	-0.2869***	-0.0003	0.1177	-0.1321**
credit problems	0.3690	0.0677	-0.3531	0.0805	0.0309	-0.2049
primary education	0.0120	-0.5063	-0.2369	-0.5017*	-0.9716	-0.4605*
lower secondary education	-0.3272	-1.2784***	-0.2058	-1.2380***	-1.6334**	-0.9448***
upper secondary education	-0.7294**	-0.9861**	-0.8320**	-0.5291	-1.9755***	-1.0122***
tertiary education	-1.7790***	-1.9689***	-1.6007	-1.9484***	-3.9632***	-2.1641***
income in US \$ ppp	-0.0007	-0.0135***	-0.0039*	-0.0017**	-0.0038***	-0.0028***
_cons	3.2028	45.2443	12.1699	5.1480	13.1684	98.136
rho	5.81e-06	0.2524	0.1927	0.0870	0.2375	4.67e-06
Prob>=chibar ² (likelihood-ratio-test)	0.4970	0.0000	0.0080	0.1790	0.0180	0.4950
Prob>chi ² (hausman-test)	0.5992	0.7446	0.0558	0.2756	1.0000	0.0853
n	1026	953	837	855	1000	1116

Notes: ¹Thua Thien-Hue

*** significant at 1% level (p < 0.01)

** significant at 5% level (p < 0.05)

* significant at 1% level (p < 0.1)

Source: Own calculations based on DFG-FOR 756 Household Survey 2007-2013

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TABLE 4—PROVINCE-SPECIFIC REGRESSION MODELS – DIFFERENT INCOME SOURCES

	STAYING IN ABSOLUTE POVERTY			FALLING INTO ABSOLUTE POVERTY		
	HUE ¹	HA TINH	DAK LAK	HUE ¹	HA TINH	DAK LAK
shocks						
individual shocks	-0.0987	-0.1218	0.3533	-0.0381	0.3960	0.0838
per year						
natural shocks per year	0.6014***	0.4521***	0.6383***	0.6075***	-0.0449	0.7985***
economic shocks per year	-0.2382	-0.4429	-1.0294	-0.0308	1.5374**	0.1897
remittances from absent	-0.7625***	-0.0838	0.1845	-0.3402	-0.3999	-0.0405
hh-members						
remittances from	0.2150	0.1817	0.5454*	0.0025	0.1641	-0.0914
friends and relatives						
owner-occupied dwelling	omitted	-0.3686	-0.3305	omitted	omitted	-1.3625
land rent	-0.1220	0.3458	-1.2192	-0.0421	1.5074	0.7245
crop production	0.1498	0.5541	-0.4213	0.0339	-0.1764	-0.2533
livestock	-0.0463	-0.0781	-0.1081	-0.0231	0.7171	-0.0194
hunting	-0.3586***	0.2973	0.3973*	0.1727	0.4522**	0.1201
wage-employment	0.2944*	0.1636	0.4510**	0.0519	0.1220	-0.2474
self-employment	-0.3202*	-0.1021	-0.1100	-0.1589	-0.2074	-0.6152***
lending	omitted	omitted	omitted	omitted	-0.6172	-0.5716
savings	-0.9832	0.0165	0.1666	0.0428	-0.3527	-0.2039
transfer payments	-0.2397	0.2469	0.4941**	0.0096	-0.4058**	0.2218
insurance compensations	-0.0602	0.0298	-0.6098	0.0422	0.04185	0.0608
average initial	-0.0003**	-0.0003*	-0.0003	-0.00001	-0.000006	0.0001***
investment						
number of	-0.5271**	-0.4032	0.5713	-0.4769	0.0218	0.1192
non-family-employees						

(continued)

TABLE 4—CONTINUED

Assets/Control Variables	STAYING IN ABSOLUTE POVERTY			FALLING INTO ABSOLUTE POVERTY		
	HUE ¹	HA TINH	DAK LAK	HUE ¹	HA TINH	DAK LAK
member of socio-political organisation	-0.2250	-0.1698	-0.2034	0.3044	0.4538	-0.0978
ethnic minority	1.2055***	0.7603	0.7516***	1.0596***	-0.3611	0.2406
quantity of used land	-0.0031	-0.1072	-0.2045**	-0.0006	0.0767	-0.1437**
credit problems	0.4564	0.0632	-0.3820	0.0680	0.1630	-0.1890
primary education	-0.0944	-0.4235	-0.2087	-0.4684*	-1.1233	-0.4288*
lower secondary education	-0.4994**	-1.1918***	-0.1307	-1.1688***	-1.8262**	-0.8895***
upper secondary education	-0.9337***	-0.8850*	-0.8263**	-0.4983	-2.1752***	-0.9675***
tertiary education	-1.9804***	-1.8929***	-1.6018	-1.8736***	-4.1999***	-2.0399***
income in US \$ ppp	-0.0015	-0.0133***	-0.0038*	-0.0017**	-0.0035***	-0.0029***
cons	5.8260	449.897	13.0899	5.2737	11.5952	11.6584
rho	0.000005	0.2197	0.1960	0.0761	0.2576	0.000001
Prob>=chibar ² (likelihood-ratio-test)	0.4960	0.0010	0.0100	0.2200	0.0130	0.4970
Prob>chi ² (hausman-test)	0.1272	0.3080	0.9509	0.1916	1.0000	0.2488
n	1025	951	835	853	999	1116

Notes: ¹Thua Thien-Hue

*** significant at 1% level (p < 0.01)

** significant at 5% level (p < 0.05)

* significant at 1% level (p < 0.1)

Source: Own calculations based on DFG-FOR 756 Household Survey 2007-2013

Concerning the different income sources, we observe that different types of income sources have different effects in different regional settings. In Thua Thien-Hue, poor households that start receiving remittances from absent household members, take up hunting, or become self-employed show a lower probability of remaining in absolute poverty than households that do not use these income sources. Furthermore, poor households that take up wage employment show an increasing likelihood of remaining in absolute poverty. In contrast, the types of income sources do not have a significant effect on the probability of nonpoor households falling into absolute poverty. In Ha Tinh, we cannot find any significant effect of different income sources on the probability of poor households remaining in absolute poverty. However, nonpoor households that take up hunting show a greater likelihood of falling into absolute poverty. In Dak Lak, poor households that start receiving remittances from friends or relatives, take up hunting or wage employment, or start receiving transfer payments show an increasing probability of staying in absolute poverty. In contrast, nonpoor households that become self-employed show a decreasing probability of falling into absolute poverty.

With regard to opportunity-driven self-employment, we find evidence that poor households with a higher initial investment or a larger number of non-family employees have a lower probability of remaining in absolute poverty in Thua Thien-Hue. However, we cannot find any significant effects on the probability of nonpoor households falling into absolute poverty. In Ha Tinh, a larger initial investment also reduces the probability of poor households remaining in absolute poverty. In contrast, no significant effect on the probability of nonpoor households falling into poverty can be found. In Dak Lak, a larger initial investment is not found to have any significant effect on the probability of poor households remaining in poverty. Moreover, we observe that households with higher initial investment show an increased likelihood of falling back into absolute poverty in Dak Lak.

Regarding the household's endowment with assets, we find evidence that human capital, measured by the education level of the household head, lowers the probability of staying in and falling into absolute poverty in all provinces. Furthermore, belonging to an ethnic minority, which is associated with low levels of bridging social capital, increases the probability of remaining in absolute poverty in Thua Thien-Hue and the probability of staying in and falling into absolute poverty in Dak Lak. Natural capital, represented by the amount of usable land, reduces the probability of staying in and falling into absolute poverty in Dak Lak. Moreover, the per capita income, which represents financial capital, lowers the probability of staying in and falling into poverty in almost every province.

DISCUSSION

By comparing the different provinces, similarities and differences in the effects of the independent variables on vulnerability to poverty become visible. What

all the provinces have in common is that an increasing number of natural shocks raise the probability of a household staying in or falling into poverty. This can be put down to a constantly high relevance of agricultural activities for households in rural areas of Vietnam, which are vulnerable to uncertain weather conditions and to the repeated occurrence of natural shocks in our research area (McNamara and Weiss 2005; Makoka 2008; Ahmed and others 2011; Tran 2015).

With regard to economic shocks, it is interesting to see that an increasing number of this type of shock raises the probability of nonpoor households falling into poverty only in Ha Tinh. This can be explained by the connection of Ha Tinh to regions that were directly affected by the aftermath of the global financial crisis, which hit the Vietnamese economy in the form of falling export earnings, less FDI activity, and a drop in commercial lending (Lin 2008; World Bank 2010). In contrast to Thua Thien-Hue and Dak Lak, Ha Tinh shows a relatively large share of households with members working as migrant workers in the economic centers of the northern provinces, the capital city of Hanoi and other Asian countries, where they are often employed in crisis-sensitive sectors such as construction, electronics, and the mechanical sector (Nguyen, Raabe, and Grote 2015). While sending household members to the economic centers as migrant workers is generally associated with income growth and moving out of poverty (Nguyen, Raabe, and Grote 2015), in times of economic slowdowns, migrant workers in crisis-sensitive sectors in the economic centers risk losing their jobs, especially if they are employed on contracts that are easily terminated, which then increases the vulnerability to poverty of the rural households as was seen in the aftermath of the Asian Crisis in the late 1990s (Fallon and Lucas 2002).

Becoming self-employed influences vulnerability to poverty in all the provinces analyzed, but in different ways. In Thua Thien-Hue, becoming self-employed increases the probability of escaping poverty. This effect can be detected for both necessity-driven and opportunity-driven self-employment. In Ha Tinh, only becoming self-employed driven by opportunity increases the probability of escaping poverty, while becoming self-employed driven by necessity has no significant effect on the likelihood of escaping poverty. In Dak Lak, neither necessity-driven nor opportunity-driven self-employment has any significant effect on the probability of escaping poverty. This seems to indicate that not only becoming self-employed out of opportunity but also doing so out of necessity can help households to escape poverty if they are located in a regional economic environment characterized by an advanced stage of structural change, a diverse economic structure, high demand, good infrastructural conditions, and proximity to markets, as we see in Thua Thien-Hue. In a regional economy that is less well developed but beginning to catch up, like Ha Tinh, becoming self-employed in anticipation of finding opportunities in the markets seems to be of importance in escaping poverty. Economic opportunities arise in regions that are catching up, and households that are able to

recognize and use these opportunities can benefit. In contrast, in a highly agricultural and poorer regional economic environment, such as Dak Lak, neither becoming necessity-driven nor becoming opportunity-driven self-employment helps households out of poverty, probably because of a lack of demand and long distances to markets.

It seems that becoming self-employed can help nonpoor households to stay out of poverty as long as they do not invest a large amount of money at the beginning of their venture, in Dak Lak. As this finding is quite unexpected, a closer look at the regional economy of Dak Lak is needed. The regional economy of Dak Lak is dominated by coffee production, which is characterized by large investments, extensive cultivation of land, and highly fluctuating world market prices (Agergaard, Fold, and Gough 2010). Our data show that in Dak Lak, coffee is the second most important agricultural product after rice, with a total production of 856.6 tons. In contrast, coffee production can be seen as negligible in Thua Thien-Hue and does not exist at all in Ha Tinh. Consequently, unlike Ha Tinh and Thua Thien-Hue, Dak Lak was hit by an economic slowdown triggered by declining coffee prices in late 2008 when the coffee price fell to just under US\$1 per pound after having risen to nearly US \$1.70 per pound in early 2007 (Trading Economics 2015). Our data show that nonpoor households that owned businesses with a high initial investment in 2007/2008 had a higher probability of falling into poverty by 2009/2010. In Dak Lak, business activities are often related to the processing and trading of coffee, which entails a risk of business failure when world market prices decline. By spending a large amount of money on starting such a business, the risk of falling back into poverty increases if the business fails, especially if the money was borrowed or all of the household's savings were used for the business start-up, leaving the household without enough remaining assets to cope with the resulting losses. It therefore comes as no surprise that a large initial investment increases the probability of nonpoor households falling into poverty in Dak Lak during times of declining coffee prices.

CONCLUSIONS

Our research question was whether becoming self-employed can help to reduce the vulnerability to poverty of rural households, considering that they exhibit different characteristics and motivations, and are located in different regional settings. On the basis of the results above, we can answer this question as follows: becoming self-employed can reduce the vulnerability to poverty of poor rural households by increasing their probability of escaping poverty, but only if they are located in a regional economic environment that is characterized by ongoing structural change and offers economic opportunities for successful self-employment. In very poor regions based on agriculture, self-employment does not help households to escape poverty. Moreover, a large amount of initial investment at the beginning of the venture even increases the probability of

nonpoor households falling into poverty if they are located in an overspecialized and risky market and commodity prices decline.

Besides these aspects, it must also be taken into account that becoming self-employed, whether driven by necessity or opportunity, is not sufficient to reduce the vulnerability to poverty of all types of households in rural Vietnam. As we have shown, the different household capabilities to accumulate assets play a decisive role for vulnerability to poverty. Households with low education levels, belonging to an ethnic minority, or operating on low incomes will have problems escaping and staying out of poverty even if they are using self-employment, which then reinforces inequality.

POLICY IMPLICATIONS

We found evidence that the effect of becoming self-employed is context-specific and depends on the regional economic circumstances. It is therefore very important to take the particular regional economic circumstances into account in order to deduce accurate statements and policy recommendations. Nonetheless, we discovered that especially opportunity-driven self-employment increases the probability of poor households escaping poverty in regions characterized by ongoing structural change and economic opportunities. Promoting self-employment could therefore be a way to further reduce vulnerability to poverty in these provinces.

Furthermore, teaching programs, such as the Start and Improve Your Business Program, which foster the entrepreneurial skills of potential entrepreneurs by teaching them how to discover, assess, and implement possible opportunities in the regional market and training owners of small and microbusinesses how to improve the performance of their businesses (Goppers and Cuong 2007), could be extended to rural areas. Currently, the teaching centers are located in the provincial capitals of Thua Thien-Hue, Ha Tinh, and Dak Lak and are not accessible to and affordable for poor households living far from the provincial capitals (Xuan 2016). By providing local, specialized, and affordable teaching programs in addition to those already in existence, the business skills of poor rural households could be fostered, too. In order to avoid misinvestment and overspecialization in risky markets, these programs should also provide information about the risks of self-employment as well as the price trends in world markets that are related to the regional self-employment activities.

Since opportunity-driven self-employment is characterized by large initial investment, facilitating access to microcredit could be a suitable policy action, especially against the background that financial constraints are the major obstacle preventing households from becoming self-employed (GEM 2013). The work of the Vietnam Bank for Agriculture and Rural Development and the nonprofit Viet Nam Bank for Social Policies, which provide subsidized credit for the rural poor, can therefore be seen as crucial (Laureson and Nghiem 2005).

Furthermore, the different household capabilities to accumulate assets play a decisive role for vulnerability to poverty. A regionally unequal distribution of assets can lead to increasing vulnerability to poverty and consequently to growing regional inequality. In order to reduce vulnerability to poverty in rural areas of Vietnam it can therefore be seen as essential to establish equal living conditions, especially in terms of education, and to eradicate discrimination against ethnic minorities.

Moreover, it is necessary to improve infrastructure and to foster further structural change in rural regions with a strong agricultural base by strengthening industrial development in order to create a regional economic environment that allows households to successfully use self-employment as a way out of poverty.

LIMITATION OF THE ANALYSIS AND FURTHER RESEARCH NEEDS

The results presented in this paper show that vulnerability to poverty is a complex issue. We have demonstrated that there are considerable differences between regions, so self-employment can have different effects in different regions. Further research is therefore needed that integrates regional determinants into the analysis by using a multilevel approach to ascertain the effects of different regional economic circumstances.

It is also necessary to point out that our panel data set only covers a limited time frame of eight years represented by four points in time. We thus had to deal with a short panel that shows little variation over time. In order to analyze the time-serial dimension in more detail, a longer time frame is needed for further research. As it was not possible to conduct the survey annually, we have to deal with a time span of two years between waves three and four. It may therefore not be possible to measure short-term effects on vulnerability to poverty.

In addition, it must be mentioned that we had to use instrumental variables in order to estimate the effects of opportunity-driven self-employment, because direct data about opportunity-driven self-employment were only available for the last survey wave. Further research should use a variable directly representing opportunity-driven self-employment, instead of using instrumental variables. The reason for becoming self-employed could be one possibility.

REFERENCES

- Adger, W. N. 2003. Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography* 79 (4): 387–404.
- Agergaard, J., N. Fold, and K. V. Gough. 2010. *Rural-Urban Dynamics: Livelihoods, Mobility and Markets in African and Asian Frontiers*. London: Routledge.
- Ahmed, S. A., N. S. Diffenbaugh, T. W. Hertel, D. B. Lobell, N. Ramankutty, and Others. 2011. Climate Volatility and Poverty Vulnerability in Tanzania. *Global Environmental Change* 21 (1): 46–55.
- Arpino, B., and A. Aassve. 2014. The Role of Villages in Households' Poverty Exit: Evidence from a Multilevel Model for Rural Vietnam. *Qual Quant* 48 (4): 2175–2189.

- Barslund, M., and F. Tarp. 2007. Formal and Informal Rural Credit in Four Provinces of Vietnam. University of Copenhagen, Denmark: Department of Economics (07-07).
- Billing, P., and U. Madengruber. 2007. Overcoming the Black Hole: Outline for a Quantitative Model to Compare Coping Capacity across Countries. In *Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies*, edited by J. Birkmann, 403–414. Tokyo: United Nations University Press.
- Birkmann, J., ed. 2007. *Measuring Vulnerability to Natural Hazards. Towards Disaster Resilient Societies*. Tokyo: United Nations University Press.
- Bohle, H.-G. 2001. Vulnerability and Criticality: Perspectives from Social Geography. IHDP Update 2/2001. *Newsletter of the International Human Dimensions Programme on Global Environmental Change*: 1–7.
- . 2008. Leben mit Risiko - Resilienz als neues Paradigma für die Risikowelten von morgen. *Naturrisiken und Sozialkatastrophen*, edited by C. Felgentreff and T. Glade, 435–442. Berlin, Germany: Spektrum Akademischer Verlag.
- Brünjes, J., and J. Revilla Diez. 2012. Opportunity Entrepreneurs—Potential Drivers of Non-Farm Growth in Rural Vietnam? *Working Papers on Innovation and Space 1*. Marburg, Germany: Philipps Universität Marburg.
- Chambers, R. 1989. Editorial Introduction: Vulnerability, Coping and Policy. *IDS Bulletin* 20 (2): 1–7.
- Coad, A., and J. P. Tamvada 2008. The Growth and Decline of Small Firms in Developing Countries. *Papers on Economics and Evolution* 8: 2008-08.
- Culas, R. J., and M. Mahendrarajah. 2005. Causes of Diversification in Agriculture over Time: Evidence from Norwegian Farming Sector. *11th International Congress of the European Association of Agricultural Economists, Annals...* Copenhagen: EAAE.
- Danes, S. M., K. Stafford, G. Haynes, and S. S. Amarapurkar. 2009. Family Capital of Family Firms: Bridging Human, Social, and Financial Capital. *Family Business Review*.
- Dang, H. L. 2010. Wirtschaftlicher Strukturwandel und außerlandwirtschaftliche Beschäftigung in Vietnam. *Hannoversche Geographische Arbeiten* 60, Hannover.
- Desai, S. 2009. *Measuring Entrepreneurship in Developing Countries*. Helsinki, Finland: United Nations University, World Institute for Development Economics Research.
- Duc, T. P. 2012. Vulnerability to Poverty in Rural Vietnam. Data Collection Issues, Coping Strategies and Crisis Events. PhD diss., Leibniz Universität Hannover.
- , and H. Waibel. 2009. Diversification in Land and Labor Allocation in Response to Shocks among Small-Scale Farmers in Central Vietnam. Paper presented at the 49th Annual Conference of German Association of Agricultural Economists, Kiel, 30 September – 02 October.
- Ellis, F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford, U.K.: Oxford University Press.
- Fallon, P. R., and R. E. B. Lucas. 2002. The Impact of Financial Crises on Labor Markets, Household Incomes, and Poverty: A Review of Evidence. *The World Bank Research Observer* 17 (1): 21–45.
- Felgentreff, C., and T. Glade, eds. 2008. *Naturrisiken und Sozialkatastrophen*. Berlin: Spektrum Akademischer Verlag.
- Few, R., and P. G. Tran. 2010. Climatic Hazards, Health Risk and Response in Vietnam: Case Studies on Social Dimensions of Vulnerability. *Global Environmental Change* 20 (3): 529–538.
- Fields, G. S. 2014 Self-Employment and Poverty in Developing Countries: Helping the Self-Employed Earn More for the Work They Do. *IZA World of Labor*: 1–10.
- Fox, L. 2008. *Beating the Odds: Sustaining Inclusion in Mozambique's Growing Economy*. Washington, D.C.: The World Bank.
- , and T. P. Sohnesen. 2012. *Household Enterprises in Sub-Saharan Africa: Why They Matter for Growth, Jobs, and Livelihoods*. Washington, D.C.: The World Bank.
- , and ———. 2013. *Household Enterprises in Mozambique: Key to Poverty Reduction but Not on the Development Agenda?*. Washington, D.C.: The World Bank.
- Foxton, F., and R. Jones. 2011. *Social Capital Indicators Review*. London: Office for National Statistics.
- GEM [Global Entrepreneurship Monitor]. 2013. *Viet Nam Report 2013*. Hanoi, Vietnam: Viet Nam Chamber of Commerce and Industry.

- General Statistics Office of Vietnam. 2012. *Results of the Viet Nam Household Living Standards Survey 2012*. Hanoi, Vietnam: GSO.
- General Statistics Office of Vietnam. 2016. Statistics. [https://www.gso.gov.vn/Default_en.aspx?tabid=766]
- Giesselmann, M., and M. Windzio. 2012a. Panelmodelle für binäre abhängige Variablen: logistische Regression. *Regressionsmodelle zur Analyse von Paneldaten*, edited by M. Giesselmann und M. Windzio, 127–181. Wiesbaden, Germany: VS Verlag für Sozialwissenschaften.
- , and ———, eds. 2012b. *Regressionsmodelle zur Analyse von Paneldaten*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Gindling, T., and D. Newhouse. 2012. *Self-Employment in the Developing World*. Washington, D.C.: The World Bank.
- Gloede, O., and O. Rungkruxsirivorn. 2013. Local Financial Development and Household Welfare: Microevidence from Thai Households. *Emerging Markets Finance and Trade* 49 (4): 22–45.
- Goppers, K., and M. T. Cuong. 2007. *Business Training for Entrepreneurs in Vietnam: An Evaluation of the Sida-Supported Start and Improve Your Business (SIYB) Project*. Stockholm, Sweden: Swedish International Development Cooperation Agency.
- Gottschalk, S., K. Muller, and M. Niefert. 2010. Entry Strategies, Founder's Human Capital and Start-Up Size. *International Journal of Entrepreneurship and Small Business* 11 (4): 403–423.
- Gries, T., and W. Naudé. 2010. Entrepreneurship and Structural Economic Transformation. *Small Business Economics* 34 (1): 13–29.
- Hardeweg, B., and H. Waibel. 2009. Collecting Data to Measure Vulnerability to Poverty: An Overview. *Workshop of Research Unit 756*: 22–26.
- Haughton, J. H., and S. R. Khandker. 2009. *Handbook on Poverty and Inequality*. Washington, D.C.: World Bank.
- Hoang, T., C. Pham, and M. A. Ulubaşoğlu. 2014. Non-Farm Activity, Household Expenditure, and Poverty Reduction in Rural Vietnam: 2002–2008. *World Development* 64:554–568.
- Kiiru, J. M. 2007. Microfinance, Entrepreneurship and Rural Development: Empirical Evidence from Makueni District, Kenya. Paper delivered at the *Global Poverty Research Group (GPRG) Conference*, Oxford University, Oxford, U.K., 18 March.
- King, B. 2011. Spatialising Livelihoods: Resource Access and Livelihood Spaces in South Africa. *Transactions of the Institute of British Geographers* 36 (2): 297–313.
- Klasen, S., T. Lechtenfeld, and F. Povel. 2015. A Feminization of Vulnerability? Female Headship, Poverty, and Vulnerability in Thailand and Vietnam. *World Development* 71: 36–53.
- Laurenceson J., H. S. Nghiem. 2005. The Nature of NGO Microfinance in Vietnam and Stakeholder's Perceptions of Effectiveness. *Discussion Paper (3)*. Queensland, New Zealand: School of Economics, University of Queensland.
- Lin, J. Y. 2008. The Impact of the Financial Crisis on Developing Countries. *Korea Development Institute* 31.
- Lanjouw, J. O., and P. Lanjouw. 2001. The Rural Non-Farm Sector: Issues and Evidence from Developing Countries. *Agricultural Economics* 26 (1): 1–23.
- Makoka, D. 2008. The Impact of Drought on Household Vulnerability: The Case of Rural Malawi. Bonn, Germany: University of Bonn, Centre for Development Research.
- Malesky, E. 2002. Study of Foreign Direct Investment Environment in Ha Tinh Province. PhD diss., Duke University.
- Margolis, D. N. 2014. By Choice and by Necessity: Entrepreneurship and Self-Employment in the Developing World. *The European Journal of Development Research* 26 (4): 419–436.
- McKay, A. 2002. Defining and Measuring Inequality. *Briefing Paper 1*. Nottingham, U.K.: Overseas Development Institute, University of Nottingham.
- McNamara, K., and C. Weiss. 2005. Farm Household Income and On-and-Off Farm Diversification. *Journal of Agricultural and Applied Economics* 37: 37–48.
- Mead, D., and C. Liedholm. 1998. The dynamics of micro and small enterprises in developing countries. *World Development* 26 (1): 61–74.
- Minot, N. 2003. Income Diversification and Poverty Reduction in the Northern Uplands of Vietnam. *Annual Meeting of the American Agricultural Economic Association*, Montreal.
- Nguyen, L. D., K. Raabe, and U. Grote. 2015. Rural-Urban Migration, Household Vulnerability, and Welfare in Vietnam. *World Development* 71: 79–93.

- Shaw, J. 2004. Microenterprise Occupation and Poverty Reduction in Microfinance Programs: Evidence from Sri Lanka. *World Development* 32 (7): 1247–1264.
- Trading Economics. 2015. *Coffee 1972–2015*. [<http://www.tradingeconomics.com/commodity/coffee>].
- Tran, D. 2003. *The Farm Economy in Vietnam*. Hanoi, Vietnam: The Gioi Publishers.
- Tran, V. 2015. Household's Coping Strategies and Recoveries from Shocks in Vietnam. *The Quarterly Review of Economics and Finance* 56:15–29.
- Van de Walle, D., and D. Cratty. 2003. *Is the Emerging Nonfarm Market Economy the Route Out of Poverty in Vietnam?* Washington, D.C.: The World Bank.
- Vietnam Trade Promotion Agency. 2013a. Economic Growth Achievement in Thua Thien Hue. [http://www.vietrade.gov.vn/en/index.php?option=com_content&view=article&id=2028:economic-growth-achievement-in-thua-thien-hue&catid=325:brief-introduction&Itemid=361].
- Vietnam Trade Promotion Agency. 2013b. State of Ha Tinh Socio-Economic Development. [http://www.vietrade.gov.vn/en/index.php?option=com_content&view=article&id=2066:state-of-ha-tinh-socio-economic-development-in-2006-2010-part-1&catid=325:brief-introduction&Itemid=361].
- Vijverberg, W. 1992. Measuring Income from Family Enterprises with Household Surveys. *Small Business Economics* 4 (4): 287–305.
- Wackernagel, M., L. Onisto, P. Bello, A. C. Linares, I. S. L. Falfán, and Others. 1999. National natural capital accounting with the ecological footprint concept. *Ecological Economics* 29 (3): 375–390.
- Wai-Poi, M. 2013. Measuring Vulnerability to Poverty. *Asia Policy Forum 2013*. Jakarta, Indonesia: The World Bank.
- World Bank. 2002. *Ethnic Minority Development in Vietnam: A Socioeconomic Perspective*. Washington, D.C.: The World Bank.
- World Bank. 2003. *Participatory Poverty and Governance Assessment: Dak Lak Province*. Washington, D.C.: The World Bank.
- World Bank. 2008. *Vietnam: Higher Education and Skills for Growth*. Washington, D.C.: The World Bank.
- World Bank. 2010. *How Deep Was the Impact of the Economic Crisis in Vietnam? A Focus on the Informal Sector in Hanoi and Ho Chi Minh City*. Washington, D.C.: The World Bank.
- World Bank. 2016. *Indicators: GINI Index (World Bank Estimate)*. [<http://data.worldbank.org/indicator/SI.POV.GINI>].
- Xuan, T. N. 2016. Start and Improve your Business Program: Location of Teaching Centers. E-mail message to Franziska Sohns. 29 February.

5 Explaining micro entrepreneurship in rural Vietnam - A multilevel analysis

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Explaining micro entrepreneurship in rural Vietnam—a multilevel analysis

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Abstract In the literature on entrepreneurship, there is an ongoing debate about the impact of regional factors on the entrepreneurial process. To date, most of the empirical work on the influence of regional characteristics on entrepreneurship has focused on developed countries, while empirical work that analyses the regional determinants of micro entrepreneurship in rural areas of emerging markets remains scarce. This paper uses three-level binary-logistic random intercept models to analyse the effects of explanatory factors at different levels on micro entrepreneurship in rural Vietnam. Our analyses show that identifying the motivation behind starting a micro enterprise is a good way to split entrepreneurship into two groups: namely opportunity- and necessity-driven entrepreneurship, which are influenced by very different explanatory factors at different levels. We find evidence that in rural areas of emerging markets, the individual level dominates with regard to explaining both opportunity- and necessity-driven entrepreneurship. Nevertheless, the regional level has a significant impact, albeit only on opportunity-driven entrepreneurship.

Keywords Entrepreneurial ecosystems · Opportunity-driven entrepreneurship · Necessity-driven entrepreneurship · Rural Vietnam · Multilevel analysis

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1 Introduction

Entrepreneurship has grown constantly over the past decades in Vietnam. The associated increase in the number of new ventures can be seen as part of the ongoing structural change, which started after the Doi Moi reforms in 1986. The majority of these new ventures are non-farm business establishments, also known as micro enterprises (General Statistics Office of Vietnam 2013). These micro enterprises have become an important factor for the development of the rural economy by absorbing surplus labour from the agricultural sector, reducing poverty and slowing down rural-urban migration (Lanjouw and Lanjouw 2001; Van de Walle and Cratty 2004; Gries and Naudé 2010; Sohns and Revilla Diez 2017).

As the entrepreneurial process is influenced not only by the entrepreneur's individual characteristics, such as a willingness to take risks, a preference for making one's own decisions, a high education level and prior experience of self-employment (Sternberg 2009; Stam 2011), but also by regional characteristics (Fritsch and Falck 2007; Hindle 2010; Stam 2011), such as access to markets and infrastructural conditions, it is questionable whether micro entrepreneurship can develop to an equal degree in all regional settings. To date, most of the empirical work on the influence of spatial factors on entrepreneurship has focused on developed countries (Audretsch et al. 2012; Hundt and Sternberg 2016),

while empirical work on entrepreneurship in emerging markets, remains scarce. The majority of the studies that look at emerging markets focus on *being* self-employed rather than *becoming* self-employed (Felkner and Townsend 2011; Brünjes and Revilla Diez 2013a, b; Tamvada 2015). Consequently, they estimate the effects of factors that explain individual involvement in self-employment, but not the effects of explanatory factors that have an influence at the time of the start-up. In addition, there is a lack of empirical work focusing on the spatial variation in entrepreneurship within rural areas of emerging markets. In this respect, it is interesting to address the question of whether significant regional effects on micro entrepreneurship can be found even in rural areas, which are assumed to show relatively little variation in local characteristics. Furthermore, it is interesting to examine whether different types of micro entrepreneurship in rural areas of emerging markets are influenced by the same explanatory factors as those generally used to explain entrepreneurship in developed countries or by different ones.

The aim of the present paper is to contribute to the discussion surrounding the hierarchical regional impact on *start-up activities in rural areas of emerging markets* by estimating the effects of explanatory factors at different levels (individual, village and commune) on the probability of starting different types of micro enterprise as well as by identifying independent variables that capture these effects. To this end, we run three-level binary-logistic random intercept models using data from a household survey conducted in three rural provinces in Vietnam.

The remainder of the paper is organized as follows: The next section discusses the theoretical background. The third section describes the database, empirical framework and methodology. The fourth section presents and discusses the empirical results, and the fifth section concludes the paper.

2 The entrepreneurial ecosystem and its influence on micro enterprise creation

In the literature, entrepreneurship has been defined in many different ways. The simplest definition equates entrepreneurship with self-employment (Dale 2015), but there are other more complex definitions. The creation-based approach, for example, defines entrepreneurship as the creation of a new venture and an

entrepreneur as the founder of that venture (Carter et al. 1996; Gartner and Carter 2003). In contrast, the innovation-based approach defines entrepreneurship as the innovative creation of new products or new ways of doing business (Schumpeter 1934), while in the opportunity-based approach, entrepreneurship is defined as a process of opportunity discovery, evaluation and exploitation performed by individuals (Shane and Venkataraman 2000). According to Gindling and Newhouse (2012), especially innovation-based entrepreneurship is uncommon in rural areas of emerging markets, which are still characterized by a low level of technology. Most individuals who start a business venture in rural areas of emerging markets do so because they have no better options. These individuals are known as necessity-driven entrepreneurs. In contrast, other individuals start a business venture because they see opportunities in the market and want to use these opportunities anticipatorily (Gindling and Newhouse 2012). Such individuals are known as opportunity-driven entrepreneurs and correspond to the definition of entrepreneurship in the opportunity-based approach (Shane and Venkataraman 2000). According to Brünjes and Revilla Diez (2012), opportunity-driven entrepreneurship can be identified from the motivations behind starting the venture. Thus, entrepreneurs can be seen as opportunity-driven if they have previous experience of the particular type of business, see other successful businesses of that type or recognize the potential success of that type of business. Entrepreneurs can be regarded as necessity-driven if they start a venture to overcome unemployment or because they earn insufficient income from other sources (Brünjes and Revilla Diez 2012). In this paper, we follow a combined approach in which micro entrepreneurship is represented by individuals starting up a micro enterprise outside of agriculture (Carter et al. 1996, Fields 2014). However, we integrate the opportunity-based approach by using the motivation behind starting the micro enterprise to distinguish between opportunity- and necessity-driven entrepreneurship (Brünjes and Revilla Diez 2012).

In recent years, the concept of entrepreneurial ecosystems, which focuses on how enterprises are embedded in their regional environment, has become established in entrepreneurship research (Mason and Brown 2014). It 'provides a new and distinctive perspective on the geographical clustering of economic activity' (Mason and Brown 2014, p. 7), by highlighting entrepreneurship as a multi-scalar phenomenon that is

driven by explanatory factors at different explanatory levels. Initially promoted by Isenberg (2011) as a practical approach ‘encompassing a variety of different perspectives on the geography of entrepreneurship rather than [providing] a coherent theory’ (Spigel 2015, p. 1), the term ‘entrepreneurial ecosystem’ can be traced back to an article by Moore (1993) in which he argues that new businesses constantly evolve due to their interaction with their regional environment. This perspective can be seen as related to the work of economic geographers, who have tried to explain why economic activities tend to be concentrated in specific locations for many years (Piore and Sabel 1984; Saxenian 1994; Asheim and Isaksen 2002, Bathelt et al. 2004).

The idea behind the entrepreneurial ecosystem approach is also related to the individual-opportunity-nexus introduced by Shane (2003), who argued that entrepreneurial opportunities are location-specific results of changing regional settings and that the ability of individuals to discover and exploit them consequently has to be context-specific to a certain degree. Referring to Shane’s arguments (2003), the impact of the regional level can be assumed to be stronger for opportunity-driven entrepreneurship than for necessity-driven entrepreneurship, as differences in the range of economic opportunities available in a regional environment are more important for opportunity-driven entrepreneurship than for necessity-driven entrepreneurship.

Rural areas in Vietnam are not as homogeneous as is often assumed. Rather, the economic conditions at local levels differ considerably, for example, as regards the proximity to markets, the population density or the economic structure, all of which influence the entrepreneurial process. As micro enterprises in rural Vietnam are mainly integrated into local markets, the spatial dimension used in this paper is small-scaled referring to the village and commune levels. We chose the commune level because it is the smallest administrative unit in Vietnam, and the Vietnamese governance system concedes extensive autonomy to the communal authorities (Fforde and Vylder 1996). Furthermore, we regard the commune as an extended job market and a broad area in which competition takes place. A rural commune consists of several villages, each of which is defined as a cohesive spatial entity and managed as an autonomous system by a village head (Oxfam 2013). We selected the village level because it is the basis for local governance and an important social institution in rural Vietnam. Although the village level is not an official administrative

unit, it is unofficially regarded as the fourth tier of the administrative system in rural Vietnam (Oxfam 2013).

2.1 The impact of individual characteristics

There are several individual factors that influence entrepreneurship, one of which is education. Reaching a higher educational level can be assumed to increase the probability of starting an enterprise out of opportunity, because it increases the ability to identify and exploit business opportunities in the market (Shane 2003). On the other hand, having a higher level of education can be assumed to lower the probability of starting an enterprise out of necessity, because of the higher likelihood of finding wage employment (Bhola et al. 2006). Another well-studied individual determinant that influences individuals’ entrepreneurial activities is their age. In this respect, most of the empirical work estimates an inverted u-curve for the effect of age on the probability of starting an enterprise, peaking for middle-aged individuals (Bönte et al. 2009). In the literature, gender is also seen as an important factor to explain an individual’s entrepreneurial activity. Males are found to be more likely to start an enterprise than females (Wagner 2007). Furthermore, household income has to be taken into account. On the one hand, it can be assumed that a large household income might increase the probability of starting an enterprise out of opportunity as a result of the greater financial assets available for the initial investment (Mueller 2006). On the other hand, a high level of household income might lower the likelihood of starting an enterprise out of necessity (Mueller 2006). Moreover, it can be assumed that risk-taking individuals will be more likely to start a business venture (Sepúlveda and Bonilla 2014). This effect might have a higher impact on opportunity-driven entrepreneurship than on necessity-driven entrepreneurship, because acting out of opportunity does permit a proactive consideration of risks (Gindling and Newhouse 2012). Social capital can also be assumed to be crucial for starting an enterprise (Westlund and Bolton 2003; Foxtan and Jones 2011). In this context, it is necessary to take ethnicity into account for Vietnam. It can be assumed that the continuing social exclusion of ethnic minorities in Vietnamese society could limit social capital and therefore also the ability to start a micro enterprise (Aldrich and Waldinger 1990). In addition, it can be assumed that having experience of running an enterprise may increase the probability of starting a

micro enterprise, especially out of opportunity (Reynolds 1997). This can be attributed to the prior processes of learning by doing and learning by failure, which improve the ability to seek and evaluate market opportunities. An individual's decision to engage in entrepreneurship is likely to be influenced not only by his or her own prior actions, but also by the actions of others (Krumboltz et al. 1976; Akerlof and Kranton 2000). In this context, it is widely acknowledged that the decision to start up an enterprise is positively correlated with having parents who run or ran their own business and therefore serve as role models (Chlosta et al. 2012). For entrepreneurship in rural Vietnam, where the family is seen as one of the most important social institutions and as the foundation of society and the economy, not only parents but also other family members can be assumed to serve as entrepreneurial role models (Pham 2001).

2.2 The impact of regional characteristics

According to Isenberg (2011), six domains that influence entrepreneurship in a region can be distinguished: policy, markets, finance, human capital, culture and supports. For our regional focus, we incorporate four of these domains into our theoretical framework, namely policy, markets, finance and culture (Fig. 1). Moreover, we add the domain of geographical conditions due to the importance of agriculture in rural areas of emerging markets. The analysis will not take into account the category of supports, as specific policies to support entrepreneurship in rural Vietnam are not in the focus of national politics. The domain of human capital comprises the availability of skilled and unskilled labour and the existence of educational institutions. In this paper, the domain of human capital is treated as an individual factor.

The domain of markets comprises access to customers. It can be assumed that a large population increases the probability of starting an enterprise, due to a wider base of potential consumers (Lingelbach et al. 2005). However, rural villages in Vietnam are commonly characterized by poor infrastructure and small markets. In such an economic environment, proximity to local markets can be seen as a crucial factor to reach a broader base of customers and be connected with the wider economy (Shaw 2004). A long distance to market centres can therefore be assumed to reduce the probability of starting an enterprise owing to higher

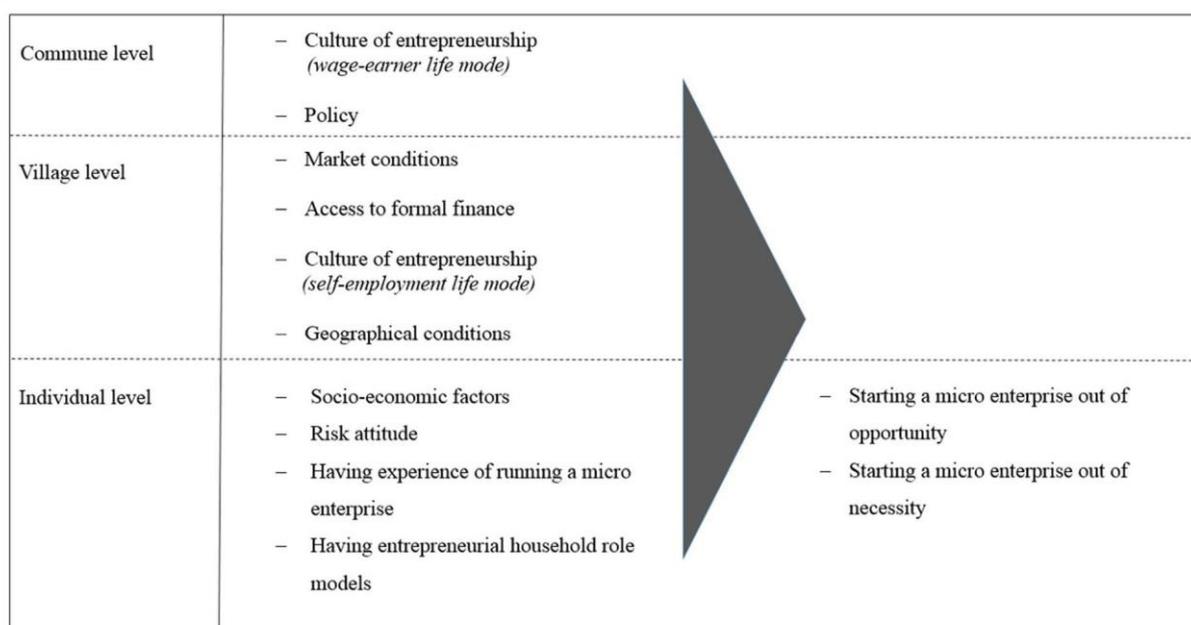
transaction costs (Felkner and Townsend 2011, Brünjes and Revilla Diez 2013a).

The domain of finance describes the availability of financial capital such as micro loans, which are seen as a crucial factor for entrepreneurship in emerging markets (Bhola et al. 2006). It is therefore reasonable to assume that good access to formal finances increases the probability of starting a business venture. Because opportunity-driven entrepreneurship requires a larger amount of start-up and operative capital, access to formal finances can be expected to have a stronger effect on opportunity-driven than on necessity-driven entrepreneurship (Bhola et al. 2006).

An important element of the domain of culture is the existence of visible success stories in the local area, which can motivate individuals to become entrepreneurs. In this respect, two different types of regional business cultures can be distinguished, namely the self-employment and the wage-earner life mode (Stam 2011). In emerging markets, the self-employment life mode can be observed especially in rural areas with a history of self-employed farmers, handicraft workers and small business owners. There, path dependency leads to more entrepreneurship because former entrepreneurs serve as role models for future entrepreneurs. Hence, a high level of self-employment in a village can be assumed to foster further entrepreneurship by providing success stories and role models outside the entrepreneur's own family and by facilitating access to key information and resources (Mueller 2006; Stam 2011). It can be assumed that this key information and these resources are shared above all at the village level, due to the geographical and social proximity. In contrast, the wage-earner life model can be found especially in communes with a long history of dominant large firms which provide adequate job opportunities. In these communes, the preference for self-employment has waned over time (Stam 2011). In this respect, a dominance of larger formally registered firms can be assumed to lower the probability of being an entrepreneur by providing opportunities for wage employment and bolstering the wage-earner life mode (Mueller 2006; Sørensen 2007).

The domain of geographical conditions is associated with the physical location of the village. Favourable geographical conditions can be expected to increase the probability of starting an enterprise as potential entrepreneurs have fewer worries about their living conditions (Felkner and Townsend 2011). At the same time, however, favourable geographical conditions may

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Source: Own illustration.

Fig. 1 Theoretical framework

reduce necessity-driven entrepreneurship due to better options to earn a living in agriculture.

The domain of policy includes both the opportunities of private leadership and government activities, e.g. tax benefits. In this context, the role of state-owned enterprises has to be taken into account in Vietnam. Although reforms of state-owned enterprises were initiated by closures, privatization and mergers as part of the transformation process (Revilla Diez 2016), the Vietnamese government still supports the state-owned enterprises by means of subsidies and trade protection (Pincus et al. 2012), which distorts competition and can hamper entrepreneurship (Jaax and Iammarino 2014).

3 Data, empirical framework and methodology

The analyses in this paper are based on three different data sets. Two of these data sets were compiled in the course of the DFG Research Unit FOR 756, named ‘Impact of shocks on the vulnerability to poverty: consequences for development of emerging Southeast Asian economies’, which has worked on issues of vulnerability to poverty in Thailand and Vietnam. The research project included a household panel survey, which was conducted in 2007, 2008, 2010, and 2013. Additionally, a survey was conducted among the village heads of 220 Vietnamese villages the

households belong to. This made it possible to gather village-specific information about infrastructure, market conditions and institutions. In Vietnam, the survey was conducted in close cooperation with the Center for Agricultural Policy (CAP), the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), and the Centre for Rural Development in Central Vietnam (CRD), subordinated to the Hue University of Agriculture and Forestry (HUAF). The questionnaires were field tested and adjusted after they had been translated into Vietnamese. In each wave, the household survey was preceded by a 1-week workshop for the enumerators, including lectures, role plays and three field visits during which the enumerators were trained how to conduct the face-to-face interviews. After the training was completed, separate research teams were formed for each province, which were supervised by project researchers. The household interviews were conducted by the enumerators, whereas the project researchers interviewed the village heads. All of the villages surveyed are located in one of three provinces in rural Vietnam, namely Ha Tinh on the north central coast, Thua Thien-Hue on the central coast and Dak Lak in the central highlands. The three case study regions were selected, as they share comparable characteristics, such as having a population density below the country’s average, being located in a high distance from the economic centres of the Southeast and the Red River Delta and being

hallmarked by a relatively large share of the population living below the national poverty line (Waibel and Hohfeld 2016). The villages belong to communes, which were selected in a heuristic procedure according to their size to ensure a representative sample. In each village, 10 households were selected randomly from all the households living in the village. The outcome was 2200 selected households, 1929 of which could be surveyed across all waves, representing an accumulated response rate of 88%. Following Hardeweg and Waibel (2009), we only included the nucleus household members in our analysis, who are defined as all persons living in the household for more than 180 days in 2010. Moreover, we excluded all individuals younger than 15 and older than 64 to focus on the working population. To avoid biases when calculating the locational effects, we excluded from our analysis all individuals that started a business outside their home village. After narrowing down the sample, a hierarchical data structure was developed in which 5317 individuals are nested in 1812 households, and these households are nested in 218 villages. The villages are in turn nested in 110 communes and these communes in 32 districts.

In addition to the data from the household panel and village survey, we also used the Vietnam Enterprise Survey of the General Statistics Office of Vietnam. This survey covers all formally registered domestic firms with more than 10 employees as well as all multinational and state-owned enterprises. An advantage of the Vietnam Enterprise Survey is that it can be aggregated on a small scale at the commune level.

3.1 Empirical framework

To operationalize the theoretical framework, we created three dichotomous-dependent variables: starting any micro enterprise between 2010 and 2013, starting a micro enterprise out of necessity between 2010 and 2013 (no = 0, yes = 1) and starting a micro enterprise out of opportunity between 2010 and 2013 (no = 0, yes = 1). The information used to create the dependent variables was collected ex post in 2013, by asking about the motivation behind starting the micro enterprise. The data used for the independent variables refer to the year 2010. The resulting time gap makes it possible to estimate the influence of the independent variables on the start-up of a micro enterprise (Tables 1, 2, 3, 4).

At the individual level, we included the individual's age and age squared in our model to take into account the underlying non-linear relationship between an

individual's age and the probability of him or her starting a micro enterprise (Bönte et al. 2009). We also controlled for the individual's education. A common way to operationalize education is to use the number of years that an individual was educated (Minot 2003). As Vietnam features complex options of tertiary education, however, the calculated number of years of education would not be reliable (World Bank 2008). We therefore split education into four categories: primary, lower secondary, upper secondary and tertiary education and analyse the effect of these educational levels compared to non-educated individuals. Tertiary education is defined here as successfully completing studies at a vocational school, college or university. We also controlled for the individuals' gender using a dichotomous variable (Wagner 2007). A value of 1 refers to a male. A further dichotomous variable was used to operationalize membership of an ethnic minority. A value of 1 refers to an individual who belongs to the Kinh, Vietnam's ethnic majority. Furthermore, we controlled for the monthly per capita income in US\$ purchasing power parity (PPP). We added another dichotomous variable to distinguish the effect of individual experience of running a micro enterprise from the entrepreneurial family role model effect. In this case, a value of 1 is related to an individual that ran a micro enterprise himself or herself in 2008 (Chlosta et al. 2012). To take into account the idea of an entrepreneurial family role model, we integrated a dichotomous variable with a value of 1 for a household that ran a micro enterprise in 2008 (Chlosta et al. 2012). We also operationalized the willingness to take risks using a variable with a range from 0 to 10, where a value of 0 is related to a household that is unwilling to take risks and a value of 10 represents a high willingness to take risks (Hardeweg et al. 2013).

At the village level, we used the number of inhabitants of the villages to analyse the effect of the market size. To operationalize the proximity to markets, we used two independent variables, namely the travel distances in minutes to the nearest market place and to the provincial capital (Brünjes and Revilla Diez 2013a). We gathered this information by asking the village heads to estimate the average travel time needed to reach the nearest market and the provincial capital. We used a dichotomous variable to take access to formal finances into account. A value of 1 represents the availability of a bank in the village. In addition, we used another dichotomous variable showing whether a village is located on a slope, which indicates less conducive conditions for

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Table 1 Independent variables—individual and household characteristics

Label	Mean	Std. dev.	Min	Max	Obs.
Gender (male = 1)	0.49	0.50	0	1	5317
Age (years)	35.30	14.33	15	64	5317
Age (years) ²	1451.05	1063.95	225	4096	5317
Primary education (yes = 1)	0.10	0.30	0	1	5317
Lower secondary education (yes = 1)	0.46	0.50	0	1	5317
Upper secondary education (yes = 1)	0.14	0.35	0	1	5317
Tertiary education (yes = 1)	0.19	0.39	0	1	5317
Individual ran a micro enterprise in 2008 (yes = 1)	0.10	0.29	0	1	5317
Risk attitude of household (totally willing to take risks = 10)	4.24	2.76	0	10	5317
Belonging to the ethnic majority (majority = 1)	0.76	0.43	0	1	5317
Per capita income per month, \$US PPP	125.05	175.40	-1771.87	3915.06	5317
Household ran a micro enterprise in 2008 (yes = 1)	0.27	0.44	0	1	5317

Source: Own calculations based on DFG-FOR 756 Household Survey 2010

agriculture due to the danger of erosion (Sakurai et al. 2004). To operationalize the aspect of the entrepreneurial culture in a village, we used the share of households that ran a micro enterprise in 2008 (Mueller 2006).

At the commune level, we used the total number of formally registered enterprises, the number of enterprises with more than 300 employees as well as the number of state-owned enterprises to find instrumental variables representing the wage-earner life mode and the domain of policy (GEM 2013; Kushnir 2010).

3.2 Methodology

Multilevel analyses are used to run regression models when data are nested in some way to avoid spuriously significant results (Rabe-Hesketh and Skrondal 2008). Running standard regression models with nested data would lead to the assumption of independence of the observation being

violated due to spatial autocorrelation between individual observations that are clustered in the same higher level (Hox 2010). So far, only few empirical studies in entrepreneurship research have used multilevel regression models (for an exception, see Hundt and Sternberg 2016), although the hierarchical structure of entrepreneurship data, where individuals are always nested within higher spatial levels, suggests a multilevel approach. The hierarchical structure of our data and the research interest in estimating the statistical effects of explanatory variables at different levels on micro entrepreneurship, prompted us to choose a multilevel approach. After pre-calculating the effects of different spatial levels, the results confirmed our decision to use the village and commune levels as the upper level, as the district level shows no significant impact.

Following Rabe-Hesketh and Skrondal (2008), different approaches can be distinguished to deal with the violation of the assumption of

Table 2 Independent variables—village characteristics

Label	Mean	Std. Dev.	Min	Max	Obs.
Number of inhabitants in the village	890.06	752.93	137	5058	5317
Travel distance to the nearest market place in minutes	15.81	11.40	2	80	5317
Travel distance to the provincial capital in minutes	71.32	52.98	6	360	5317
Banking (yes = 1)	0.09	0.28	0	1	5317
Geographical position (slope = 1)	0.33	0.47	0	1	5317
Share of households running a micro enterprise in 2008	0.26	0.23	0	0.90	5317

Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and on DFG-FOR 756 Village Head Survey 2010

Table 3 Independent variables—commune characteristics

Label	Mean	Std. Dev.	Min	Max	Obs.
Number of formally registered enterprises in the commune	5.18	6.81	0	43	5317
Number of large enterprises in the commune (employees >300)	0.09	0.34	0	5	5317
Number of state-owned enterprises in the commune	0.28	0.69	0	2	5317

Source: Own calculations based on the Vietnam Enterprise Survey 2010

independence. First, hierarchically fixed effect models can be used by integrating a unique dummy variable for each higher level or by integrating explanatory variables of the higher level into the model. Second, robust standard errors can be utilized to reduce the influence of multiple cases per higher level. Third, hierarchical random effects models can also be used. Random intercept models allow the error term to differ for different higher levels, whereas random coefficient models also permit the effects of covariates to vary for different higher levels (Rabe-Hesketh and Skrondal 2008). We apply a mixed approach by successively integrating explanatory variables of higher levels into a three-level random intercept model. This allowed us to estimate whether significant differences in the level of micro entrepreneurship exist between villages or communes in general and whether these differences continue to occur after individual, village and commune characteristics have been integrated successively.

As we had to deal with dichotomous-dependent variables, it was necessary to use a logistic link function to avoid a violation of the assumption of normally distributed and homoscedastic errors (Hox 2010). Accordingly, we used three separate logistic regression models (Tables 5, 6, 7) to estimate the individual likelihood of starting any micro enterprise (vs. not starting a micro enterprise), the individual likelihood of starting a micro enterprise out of opportunity (vs. not starting a micro enterprise out of

opportunity) and the individual likelihood of starting a micro enterprise out of necessity (vs. not starting a micro enterprise out of necessity). The underlying equation of the resulting three-level binary-logistic random intercept model is:

$$\text{logit}(Y_{ijk}) = \beta_p X_{pijk} + \beta_q Z_{qjk} + \beta_r A_{rk} + \varepsilon_{ijk} + \mu_{jk} + \nu_k$$

with $\text{logit}(Y_{ijk})$ representing the logarithmic likelihood of being involved in an entrepreneurial activity for observation i in village j and commune k . Furthermore, β represents the coefficients of the explanatory variables X_{pijk} , Z_{qjk} and A_{rk} . Here, X_{pijk} represents the explanatory variables at the individual level, Z_{qjk} represents those at the village level and A_{rk} represents those at the commune level. The error terms are represented by ν_k (commune level), μ_{jk} (village level) and ε_{ijk} (individual level).

According to Hox (2010), testing for model assumptions is even more important in multilevel regressions because of their more complicated structure. Bivariate logistic regressions have the advantage of being linked with less strict assumptions. Multicollinearity is the only crucial factor to check for (Backhaus et al. 2006). A common way to check for multicollinearity is to calculate the variance inflation factors (VIFs) for the independent variables. In our analyses, the test for multicollinearity yields a mean VIF of 5.87, so multicollinearity can be rejected (O'Brien 2007).

Table 4 Dependent variables—micro entrepreneurship rates

Label	Mean	Std. Dev.	Min	Max	Obs.
Share of individuals starting any micro enterprise	0.0248	0.1556	0	1	5317
Share of individuals starting an opportunity-driven micro enterprise	0.0141	0.1179	0	1	5317
Share of individuals starting a necessity-driven micro enterprise	0.0107	0.1030	0	1	5317

Source: Own calculations based on DFG-FOR 756 Household Survey 2013

4 Results

Between 2010 and 2013, 1.41% of the individual nucleus household members aged 15 to 64 started a micro enterprise out of opportunity in their home village, while 1.07% started a micro enterprise out of necessity. Recognizing the potential success of the particular type of business was the most frequently mentioned reason for starting a micro enterprise out of opportunity, followed by having previous experience of the particular kind of business. In contrast, having insufficient income from farming was the most frequently mentioned reason for starting a micro enterprise out of necessity, followed by being unemployed.

Most of the micro enterprises created were retail businesses (20.46%), followed by agricultural services (15.15%) and wholesale businesses (14.40%). While these three types of micro enterprises were started just as frequently out of necessity as they were out of opportunity, the majority of petty traders set up their micro enterprises out of necessity, whereas rice mills were started mainly out of opportunity. Almost all newly created micro enterprises were defined as informal or household enterprises. Only 3.03% were formally registered as a sole proprietorship or a public limited company. All of these formally registered micro enterprises were started out of opportunity. Furthermore, the required initial investment was mainly financed from the entrepreneur's own savings (61.36%) or borrowed (31.82%). Only 20.46% of the new ventures employed staff in 2013. Most of them had more than 10 customers (79.55%), most of whom were consumers (89.39%) and seldom traders (8.94%). Interestingly, the customers of opportunity-driven micro enterprises (21.33%) were located significantly more often outside the entrepreneur's home district than the customers of necessity-driven micro enterprises (8.77%). Moreover, opportunity-driven micro enterprises (30.67%) purchased their inputs outside their home district more frequently than necessity-driven micro enterprises (10.53%). In addition, opportunity-driven micro enterprises exhibited a significantly larger average sales volume, at US\$2631 PPP, than necessity-driven micro enterprises, whose average sales volume was US\$1166 PPP. Opportunity-driven micro enterprises also generated a significantly higher average profit, at US\$507 PPP, than necessity-driven micro enterprises, whose average profit was US\$242 PPP.

4.1 Discussion of the random effects

In a first step, we estimated the intercept models (m0), which contain no explanatory variables and only decomposes the variance into the three independent components related to the individual, the village and the commune level (Hox 2010) separately. We then analysed the intra-cluster correlations, which indicate '(...) the proportion of (the) group level variance compared to the total variance' (Hox 2010, p. 15) and therefore the random effects using the following equations:

$$\text{Individual level } \frac{\sigma_{2i}}{(\sigma_{2i} + \sigma_{2j} + \sigma_{2k})};$$

$$\text{village level } \frac{\sigma_{2j}}{(\sigma_{2i} + \sigma_{2j} + \sigma_{2k})};$$

$$\text{commune level } \frac{\sigma_{2k}}{(\sigma_{2i} + \sigma_{2j} + \sigma_{2k})}.$$

Here, σ_{2i} describes the residual variance at the individual level, while σ_{2j} describes the residual variance at the village level and σ_{2k} that at the commune level.

Using the intra-cluster correlation yields some interesting results. First, we are able to show that 15% of the variance in the likelihood of starting a micro enterprise out of opportunity can be explained by the regional levels. This effect is even found to be relatively large compared to the findings of other empirical studies on entrepreneurship, which consistently show the individual level to be more important for entrepreneurial activities (Tamvada 2015; Hundt and Sternberg 2016). This is particularly surprising bearing in mind that the empirical analyses are based solely on data collected in rural areas, which are often regarded as relatively homogeneous. We see this result as evidence that anticipatory entrepreneurial activities differ significantly at local level, even in rural areas of emerging markets. Second, this regional effect can be split into a village-level effect of 4.1% and a commune-level effect of 10.7%. Consequently, our results reveal that factors at the commune level have a stronger effect on opportunity-driven entrepreneurship than those at the village level. It seems that even in rural areas of emerging markets, anticipatory individual economic activities, such as starting a micro enterprise out of opportunity, are integrated into a wider

Table 5 Multilevel binary-logistic regression results for starting a micro enterprise out of opportunity

	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)
Fixed effects	m0	m1	m2	m3
Individual characteristics				
Gender (male = 1)		1.0023 (0.2417)	1.0065 (0.2425)	1.0145 (0.2447)
Age (years)		1.2031** (0.0868)	1.1981** (0.0865)	1.1982** (0.0862)
Age (years) ²		0.9976*** (0.0009)	0.9976** (0.0009)	0.9976*** (0.0009)
Primary education (yes = 1)		3.1958* (2.1170)	3.2358* (2.1527)	3.2862* (2.1871)
Lower secondary education (yes = 1)		2.6978* (1.5597)	2.6990* (1.5646)	2.7802* (1.6095)
Upper secondary education (yes = 1)		0.9546 (0.4897)	1.0920 (0.5668)	1.0939 (0.5699)
Tertiary education (yes = 1)		3.3851* (2.3596)	2.8726 (2.0216)	2.9721 (2.0925)
Individual ran a micro enterprise in 2008 (yes = 1)		2.4213** (0.8728)	2.3633** (0.8515)	2.4044** (0.8692)
Risk attitude of household (totally willing to take risks = 10)		1.0637 (0.0494)	1.0713 (0.0488)	1.0755 (0.0489)
Belonging to the ethnic majority (majority = 1)		1.6812 (0.7210)	1.7551 (0.7717)	1.7118 (0.7455)
Per capita income per month, \$US PPP		1.0005 (0.0005)	1.0004 (0.0005)	1.0005 (1.0005)
Household ran a micro enterprise in 2008 (yes = 1)		1.5861 (0.5361)	1.6671 (0.6017)	1.6906 (0.6143)
Village characteristics				
Number of inhabitants in the village			0.9997 (0.0002)	0.9997 (0.0002)
Travel distance to the nearest market place in minutes			0.9627** (0.0164)	0.9619** (0.0164)
Travel distance to the provincial capital in minutes			1.0045* (0.0024)	1.0037 (0.0024)
Bank in the village (yes = 1)			1.0583 (0.4483)	1.0302 (0.4462)
Geographical position of the village (slope = 1)			1.5676 (0.4405)	1.5498 (0.4293)
Share of households in the village running a micro enterprise in 2008			0.9085 (0.6124)	0.9107 (0.5935)
Commune characteristics				
Number of formally registered enterprises in the commune				0.9534 (0.0289)
Number of large enterprises in the commune (employees >300)				0.3187* (0.1937)
Number of state-owned enterprises in the commune				1.9027** (0.5505)
Constant	0.0110*** (0.0023)	0.0001*** (0.0001)	0.0001*** (0.0001)	0.0001*** (0.0002)
Random effects				
Comm var.(_cons)	0.4129	0.4320	0.2933	0.1695
Comm > vill var.(_cons)	0.1601	0.0803	1.06e-33	7.75e-34
Model fit statistics				
Observations	5317	5317	5317	5317
ICC commune	0.1069	0.1136	0.0819	0.0490
ICC village	0.0414	0.0211	2.966e-34	2.240e-34
Prob > chi2	0.0576	0.0802	0.0871	0.2040
Deviance	782.4062	716.8266	702.4206	694.4895

The pseudo R^2 for model m3 is 0.1179. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010, and the Vietnam Enterprise Survey 2010

***Significant at 1% level ($p < 0.01$); **Significant at 5% level ($p < 0.05$), *Significant at 10% level ($p < 0.1$)

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Table 6 Multilevel binary-logistic regression results for starting a micro enterprise out of necessity

	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)
Fixed effects	m0	m1	m2	m3
Individual characteristics				
Gender (male = 1)		0.4369*** (0.1296)	0.4285*** (0.1276)	0.4255*** (0.1268)
Age (years)		1.2143** (0.0927)	1.2121** (0.0922)	1.2157** (0.0925)
Age (years) ²		0.9978** (0.0010)	0.9979** (0.0009)	0.9978** (0.0009)
Primary education (yes = 1)		1.0818 (0.7282)	1.0605 (0.7117)	1.0669 (0.7147)
Lower secondary education (yes = 1)		1.9362 (1.0166)	2.0075 (1.0521)	2.0563 (1.0730)
Upper secondary education (yes = 1)		2.2341 (2.4123)	2.3230 (2.5132)	2.3618 (2.5567)
Tertiary education (yes = 1)		0.6361 (0.7123)	0.6590 (0.7400)	0.6715 (0.7539)
Individual ran a micro enterprise in 2008 (yes = 1)		0.9259 (0.3915)	0.9150 (0.3877)	0.9173 (0.3889)
Risk attitude of household (totally willing to take risks = 10)		0.9013** (0.4752)	0.9050* (0.0483)	0.9028* (0.0484)
Belonging to the ethnic majority (majority = 1)		2.6372* (1.3142)	3.0460** (1.6093)	2.9969** (1.5869)
Per capita income per month, USD PPP		0.9986* (0.0007)	0.9985** (0.0008)	0.9987* (0.0008)
Household ran a micro enterprise in 2008 (yes = 1)		2.1265** (0.7374)	2.1583** (0.8271)	2.1396** (0.8209)
Village characteristics				
Number of inhabitants in the village			1.0002 (0.0002)	1.0002 (0.0002)
Travel distance to the nearest market place in minutes			1.0060 (0.0135)	1.0049 (0.0136)
Travel distance to the provincial capital in minutes			0.9996 (0.0031)	0.9985 (0.0033)
Bank in the village (yes = 1)			0.5182 (0.3318)	0.5993 (0.3868)
Geographical position of the village (slope = 1)			1.3876 (0.4076)	1.5261 (0.4575)
Share of households in the village running a micro enterprise in 2008			0.7246 (0.5374)	0.6998 (0.5234)
Commune characteristics				
Number of formally registered enterprises in the commune				0.9939 (0.0303)
Number of large enterprises in the commune (employees >300)				0.6998 (0.4951)
Number of state-owned enterprises in the commune				0.7562 (0.2760)
Constant	0.0108*** (0.0014)	0.0001*** (0.0002)	0.0001*** (0.0001)	0.0001*** (0.0002)
Random effects				
Comm var.(_cons)	8.26e-34	7.02e-34	2.45e-33	1.57e-33
Comm > vill var.(_cons)	8.20e-33	3.11e-32	2.48e-32	3.69e-32
Model fit statistics				
Observations	5317	5317	5317	5317
ICC commune	2.512e-34	2.133e-34	7.439e-34	4.772e-34
ICC village	2.493e-33	9.459e-33	7.524e-33	1.121e-32
Prob > chi2	1.0000	1.0000	1.0000	1.0000
Deviance	630.4467	578.2434	574.4804	571.7266

The pseudo R^2 for model m3 is 0.0931. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010, and the Vietnam Enterprise Survey 2010

***Significant at 1% level ($p < 0.01$); **Significant at 5% level ($p < 0.05$); *Significant at 10% level ($p < 0.1$)

economic system and not limited to the conditions of the village in which they are located. Third, we did not find any significant regional effect on necessity-driven entrepreneurship: almost 100% of the variance in starting a micro enterprise out of necessity can be explained by the individual level. Differences in the range of economic opportunities available in a regional environment are not important for starting a micro enterprise out of necessity. However, this finding is in line with our hypothesis, derived from the individual-opportunity-nexus introduced by Shane (2003), which assumes that differences in the availability of economic opportunities in a regional environment are more important for opportunity-driven entrepreneurship than for necessity-driven entrepreneurship.

After estimating the intercept models (m0), we subsequently integrated the individual characteristics into the models as explanatory variables (m1). We then added the village-related (m2) followed by the commune-related independent variables (m3) to the model, which caused the village-level effect on opportunity-driven entrepreneurship to disappear. However, a significant effect of 4.9% of the commune level on opportunity-driven entrepreneurship remained, irrespective of the influence of the added variables.

4.2 Discussion of the fixed effects

In the following, we discuss the estimated effects of the independent variables included in the final model (m3). Referring to Gelman and Stern (2006), we interpret the effect of an independent variable if its margin of error is not significantly higher than 10%. As this paper focus on opportunity- and necessity-driven entrepreneurship, we only present and discuss the effects on the individual likelihood of starting a micro enterprise out of opportunity and of starting a micro enterprise out of necessity. The results of the model, predicting the individual likelihood of starting any micro enterprise, can be found in the [Appendix](#).

4.2.1 Individual fixed effects

With regard to the individual characteristics, our results show that males are less likely to start a micro enterprise out of necessity than females. In contrast,

gender has no significant effect on the probability of starting a micro enterprise out of opportunity. The absence of a significant gender effect on opportunity-driven entrepreneurship can be explained by there being less systematic discrimination against women compared to other middle income countries (Klasen et al. 2015). In the context of Asian emerging markets, where women are often encouraged to seek additional income sources in times of hardship, the positive effect of being a woman on necessity-driven entrepreneurship is not surprising either (Tambunan 2009). With regard to age, we find evidence that with every additional year of age, the probability of starting a micro enterprise either out of opportunity or out of necessity increases significantly, but with diminishing marginal returns. Consequently, our empirical results confirm the inverted u-curve of the effect of age on the probability of starting a business venture (Bönte et al. 2009). The positive effect of education on opportunity-driven entrepreneurship is also confirmed by our empirical results, but only for primary and lower secondary education. Completing primary education shows the strongest effect compared to not having any education at all, followed by completing lower secondary education. The missing effect of upper secondary and tertiary education can be explained by the lack of the corresponding educational institutions in the rural areas of Vietnam. Individuals wishing to participate in upper secondary and tertiary education have to leave their home villages and move to urban areas. It can be assumed that these individuals are less likely to start a micro enterprise in their home villages because there are better entrepreneurial opportunities in the urban centres where they gained their qualifications. Contrary to our hypothesis, education does not have a significant effect on the probability of starting a business out of necessity. It seems that achieving a higher educational level does not lower the probability of starting a business out of necessity. As regards to household income, our empirical results confirm that this has a negative effect on necessity-driven entrepreneurship but cannot confirm a positive effect on opportunity-driven entrepreneurship (Mueller 2006). This could be explained by the relatively small amount of initial investment that is needed for starting even an opportunity-driven micro enterprise in Vietnam. We can also confirm the limited ability of ethnic minorities to start a micro enterprise out of necessity, which

could be put down to the continuing social exclusion of ethnic minorities in Vietnamese society (Xu 2015). Interestingly, belonging to the ethnic majority does not significantly influence the probability of starting a micro enterprise out of opportunity. In line with the literature, our empirical results prompt a positive effect of risk-taking behaviour on opportunity-driven entrepreneurship (Sepúlveda and Bonilla 2014), albeit only at the 11% level of significance. We also find that risk-taking behaviour has a negative effect on necessity-driven entrepreneurship; so, this type of entrepreneurship seems to be more common for risk-averse individuals. Our empirical results also confirm the positive effect of having personal experience of running a micro enterprise on opportunity-driven entrepreneurship. This is in line with the literature (Reynolds 1997) and can be explained by a better endowment with market-specific and business-related information and knowledge acquired while running the previous enterprise. However, experience of self-employment, represented here by having run a micro enterprise personally in 2008, has no significant effect on the probability of starting a micro enterprise out of necessity. Furthermore, our empirical results confirm the positive effect of having entrepreneurial role models within the family (Chlosta et al. 2012), but only for necessity-driven entrepreneurship. This finding is in contrast to Wagner (2005), who showed that opportunity-driven entrepreneurs are more likely to have an entrepreneurial role model in the family than necessity-driven entrepreneurs. However, it is in line with the finding by Verheul et al. (2010) that family role models have a stronger effect on necessity-driven entrepreneurship.

4.2.2 Regional fixed effects

Our results show that the village and commune characteristics analysed do not have any significant effect on the probability of starting a micro enterprise out of necessity. This result is not surprising given that the estimation of the intra-cluster correlation already negated a significant effect of the village and commune levels on necessity-driven entrepreneurship. However, we do find village and commune characteristics that have a significant effect on the probability of starting a micro enterprise out of opportunity.

Our results partly confirm the assumed positive effect of the domain of market conditions by demonstrating that the proximity to local markets has a positive effect on opportunity-driven entrepreneurship. The likelihood of starting a micro enterprise out of opportunity decreases by a factor of 0.9619 with every additional minute of travel time needed to reach the nearest local market. This can be attributed to having poorer access to additional customers, business-related services and suppliers. However, we cannot confirm the positive effect of a wide base of local customers on micro entrepreneurship that was shown by Lingelbach et al. (2005). It seems that it is more important to reach potential customers and middle men in the nearest larger market. This finding can be explained by the relatively low household incomes and the associated low demand from local consumers in rural areas. In such an environment, it is essential to be linked to the wider economy in nearby local markets (Shaw 2004). Another interesting finding is that the location of a village on a slope has a positive effect on opportunity-driven entrepreneurship, albeit only at the 11% level of significance. Individuals living in a village in such a location exhibit a 54.98% higher likelihood of starting a micro enterprise out of opportunity than individuals not living in such a location. Thus, we cannot confirm the findings of Felkner and Townsend (2011), who argue that favourable geographical conditions increase the probability of starting an enterprise.

Contrary to our hypothesis, we cannot confirm a positive effect of the domain of finances on opportunity-driven entrepreneurship. This could be explained by the fact that the mere existence of a bank in the village is not sufficient for starting a micro enterprise. What is important, is that the bank provides affordable micro loans, which is often not the case in rural Vietnam (GEM 2013). Therefore, rural households strongly rely on informal credit arrangements with neighbours, friends and relatives (Barslund and Tarp 2008), probably being more important for the ability to start a micro enterprise than the availability of formal credit institutes.

Surprisingly, the domain of the entrepreneurship culture, measured by the share of households that ran a micro enterprise in 2008, has no effect on

opportunity- or necessity-driven entrepreneurship. We also tested whether the effect of the share of households that ran a micro enterprise in 2008 becomes significant at the commune level, but this is not the case, either. It seems that the individual start-up decision is mainly influenced by an individual's own experiences and having family role models, but not by being surrounded by self-employed neighbours. We thus cannot confirm the assumed effect of the self-employment life mode introduced above (Stam 2011).

Interestingly, the number of large formally registered enterprises in a commune can be seen to have a significant negative effect on the probability of starting a micro enterprise out of opportunity, which decreases by a factor of 0.3187 with every additional formally registered enterprise. Consequently, we can confirm the assumed negative effect of the wage-earner life mode on opportunity-driven entrepreneurship (Stam 2011). This finding shows that micro entrepreneurship is more likely to evolve in regions with fewer options for wage employment (Mueller 2006).

Our empirical results show the existence of state-owned enterprises to have a positive effect on opportunity-driven entrepreneurship, which comes as a surprise. The likelihood of starting a micro enterprise out of opportunity increases by a factor of 1.9027 with every additional state-owned enterprise located in the commune. As this finding is quite unexpected, it is necessary to take a closer look at the role of state-owned enterprises for the regional economy in rural Vietnam. As they receive subsidies, state-owned enterprises can survive in communes where private firms are unable to operate profitably. In such communes, state-owned enterprises are important actors, as the enterprises themselves as well as their employees generate local demand for services, thereby providing economic opportunities for local entrepreneurs. However, these state-owned enterprises are reliant on subsidies and trade protection provided by the Vietnamese government in order to be able to survive in these rural communities (Pincus et al. 2012). If the government decides to reduce its support, the state-owned enterprises will be confronted by major challenges, which will in turn endanger the business model of the local micro enterprises.

5 Conclusion

The aim of this paper was to contribute to the discussion surrounding the hierarchical regional impact on start-up activities in rural areas of emerging markets by estimating the effects of explanatory factors at different levels (individual, village and commune) on the probability of starting different types of micro enterprise as well as by identifying independent variables that capture these effects. Our findings can be seen as a first step towards adapting the ideas of the entrepreneurial ecosystem model to the conditions of rural areas in emerging markets.

Our analyses reveal that identifying the motivation behind starting a micro enterprise is a good way to split entrepreneurship into two groups that are affected by very different factors. Opportunity-driven entrepreneurship in rural areas of emerging markets is influenced by individual factors that are used in the entrepreneurship literature to explain entrepreneurship in developed countries, such as education, experience of running an enterprise and being willing to take risks. In contrast, necessity-driven entrepreneurship is influenced by factors more commonly used in the literature on developing economies, such as being risk-averse, having a low income and being female.

Although we found evidence that the individual level is the most important level for explaining both opportunity- and necessity-driven entrepreneurship, our empirical results also indicate that factors at regional levels contribute significantly, albeit only towards explaining opportunity-driven entrepreneurship. In this respect, it is not only the village that is important but also the wider economic environment that serves as an extended market in which demand is generated, competition takes place and wage employment alternatives are offered. Opportunity-driven entrepreneurship is thus more likely to evolve in areas with access to young, risk-seeking and well-educated individuals with entrepreneurial experience. Furthermore, villages close to a local market, with less favourable geographical conditions for agricultural activities, and located in a commune with fewer options for wage employment, but with the existence of heavily subsidized state-owned enterprises have advantages with regard to local opportunity-driven entrepreneurship. It seems that opportunity-driven entrepreneurship is a transitional solution for regions that are not yet able to provide enough opportunities

for wage employment, but already exhibit good accessibility of local markets and demand. In contrast, necessity-driven entrepreneurship emerges independently of the regional characteristics.

We found that opportunity-driven entrepreneurship is context-specific and cannot evolve in all regional settings. It is essential that the regional economic environment offers entrepreneurial opportunities. In this respect, the market conditions in particular are crucial. Opportunity-driven entrepreneurship cannot evolve in very poor and remote regions due to the long distances to markets. Here, it is necessary to improve the accessibility of local markets and the quality of local infrastructure in order to foster micro entrepreneurship. In structurally weak regions, state-owned enterprises have so far created local demand that acts as an impulse for entrepreneurial activities. Nevertheless, it is questionable whether the state-owned enterprises would survive without government support in such regions. The closure of a state-owned enterprise, or its relocation after privatization, could have a strong negative impact on the local economy and consequently on the local entrepreneurs. Structural change must therefore be fostered in such a way as to improve the business climate for private sector development, allowing new micro enterprises to grow. Without a growing non-farm sector in the rural areas, opportunities for either entrepreneurs or wage labourers are too limited.

It must also be taken into account that not every individual is in a position to become an entrepreneur. In this respect, human capital seems to be a crucial individual factor that fosters opportunity-driven entrepreneurship. To avoid education-related migration to the urban centres, vocational training centres in rural areas could be enlarged. Moreover, individual experience of running a micro enterprise seems to be important. To enable also individuals with no personal experience of running a micro enterprise to start entrepreneurial activities, teaching programs, such as the 'Start and Improve your Business Program', which fosters entrepreneurial skills by teaching how to discover, assess and implement possible opportunities in the regional market, could be extended to rural areas. Currently, the teaching centres are located in the provincial capitals and are thus not accessible to individuals living in remote areas.

Finally, some limitations of this study must be mentioned. First, the data used was collected solely

in three provinces of rural Vietnam. The empirical results are therefore only representative for these case study regions and the ability to find the same findings in a different empirical setting is questionable. In addition, the estimated regional effects would probably be much larger if more provinces were included, in particular more urban and economically developed ones. Second, as it was not possible to conduct the survey annually, we have to deal with a time span of 1 to 3 years between the independent variables and the dependent variable. It may therefore not be possible to measure short-term effects on entrepreneurial activities. Third, the individual access to loan could not be included into the statistical models. This is due to the fact that even though the questionnaire includes information about the formal and informal loans that a household currently holds, it lacks the information about the principal access to formal and informal loans which a household could obtain if needed. Hence, individual access to loan was not included into the statistical models.

To enhance the knowledge about micro entrepreneurship in rural areas of emerging markets, further research should focus in more detail on the domain of finance. As local access to formal finance does not seem to be an important factor when it comes to the individual decision to start a micro enterprise, it would be interesting to examine local access to informal finance more closely. In addition, a closer look at the effect of state-owned enterprises on micro entrepreneurship in rural Vietnam is needed in order to obtain a more detailed explanation of their positive effect on opportunity-driven entrepreneurship. Furthermore, an analysis of the successes and failures of new micro enterprises could provide an opportunity to strengthen the perspective on the performance of new micro enterprises in rural emerging markets.

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Appendix

Table 7 Multilevel binary-logistic regression results for starting any micro enterprise

	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)	Odds ratio (standard error)
Fixed effects	m0	m1	m2	m3
Individual characteristics				
Gender (male = 1)		0.7000* (0.1299)	0.6973* (0.1294)	0.6980* (0.1296)
Age (years)		1.2044*** (0.0631)	1.2039*** (0.0631)	1.2081*** (0.0632)
Age (years) ²		0.9977*** (0.0007)	0.9977*** (0.0007)	0.9977*** (0.0007)
Primary education (yes = 1)		1.9633 (0.9173)	1.9036 (0.8903)	1.8834 (0.8794)
Lower secondary education (yes = 1)		2.3055** (0.8996)	2.2922** (0.8951)	2.3020** (0.8956)
Upper secondary education (yes = 1)		1.1221 (0.5112)	1.2188 (0.5578)	1.2296 (0.5632)
Tertiary education (yes = 1)		2.0297 (1.0973)	1.8503 (1.0052)	1.8736 (1.0161)
Individual ran a micro enterprise in 2008 (yes = 1)		1.6515* (0.4523)	1.6347* (0.4476)	1.6439* (0.4508)
Risk attitude of household (totally willing to take risks = 10)		0.9902 (0.0349)	0.9999 (0.0348)	1.0011 (0.0348)
Belonging to the ethnic majority (majority = 1)		1.9923** (0.6546)	2.1240** (0.7263)	2.1369** (0.7219)
Per capita income per month, \$US PPP		0.9999 (0.0005)	0.9999 (0.0005)	0.9999 (0.0005)
Household ran a micro enterprise in 2008 (yes = 1)		1.8008** (0.4437)	1.8613** (0.4938)	1.8639** (0.4962)
Village characteristics				
Number of inhabitants in the village			0.9999 (0.0002)	0.9999 (0.0002)
Travel distance to the nearest market place in minutes			0.9832 (0.0110)	0.9824* (0.0109)
Travel distance to the provincial capital in minutes			1.0030 (0.0019)	1.0020 (0.0019)
Bank in the village (yes = 1)			0.9101 (0.3145)	0.9858 (0.9858)
Geographical position of the village (slope = 1)			1.4970* (0.3159)	1.5448** (0.3201)
Share of households in the village running a micro enterprise in 2008			0.8895 (0.4565)	0.8611 (0.4278)
Commune characteristics				
Number of formally registered enterprises in the commune				0.9660 (0.0211)
Number of large enterprises in the commune (employees >300)				0.4521* (0.2082)
Number of state-owned enterprises in the commune				1.2944 (0.2880)
Constant	0.0217*** (0.0029)	0.0002*** (0.0002)	0.0002*** (0.0002)	0.0002*** (0.0002)
Random effects				
comm var.(_cons)	0.1903	0.1193	0.0845	0.0143
comm > vill var.(_cons)	0.1801	0.1618	0.1070	0.1032
Model fit statistics				
Observations	5317	5317	5317	5317
ICC commune	0.0520	0.0334	0.0243	0.0042
ICC village	0.049211	0.0453	0.0307	0.0303
Prob > chi2	0.0604	0.2214	0.4818	0.7621
Deviance	1230.7893	1139.8799	1131.8540	1124.3749

The pseudo R^2 for model m3 is 0.0902. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010, and the Vietnam Enterprise Survey 2010

***Significant at 1% level ($p < 0.01$); **Significant at 5% level ($p < 0.05$); *Significant at 10% level ($p < 0.1$)

References

- Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. *The Quarterly Journal of Economics*, 115(3), 715–753. doi:10.1162/003355300554881.
- Aldrich, H. E., & Waldinger, R. (1990). Ethnicity and entrepreneurship. *Annual Review of Sociology*, 16(1), 111–135. doi:10.1146/annurev.so.16.080190.000551.
- Asheim, B. T., & Isaksen, A. (2002). Regional innovation systems: the integration of local ‘sticky’ and global ‘ubiquitous’ knowledge. *The Journal of Technology Transfer*, 27(1), 77–86. doi:10.1023/A:1013100704794.
- Audretsch, D. B., Falck, O., Feldman, M. P., & Heblich, S. (2012). Local entrepreneurship in context. *Regional Studies*, 46(3), 379–389. doi:10.1080/00343404.2010.490209.
- Backhaus, K., Erichson, B., Plinke, W., & Weiber, R. (2006). *Multivariate Analysemethoden. Eine anwendungsorientierte Einführung*. Berlin: Springer.
- Barlund, M., & Tarp, F. (2008). Formal and informal rural credit in four provinces of Vietnam. *Journal of Development Studies*, 44(4), 485–503. doi:10.1080/00220380801980798.
- Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, 28(1), 31–56. doi:10.1191/0309132504ph469oa.
- Bhola, R., Verheul, I., Thurik, R., & Grilo, I. (2006). Explaining engagement levels of opportunity and necessity entrepreneurs. In *Working paper [H200610]*. Zoetermeer: EIM Business and Policy Research.
- Bönte, W., Falck, O., & Heblich, S. (2009). The impact of regional age structure on entrepreneurship. *Economic Geography*, 85(3), 269–287. doi:10.1111/j.1944-8287.2009.01032.x.
- Brünjes, J., & Revilla Diez, J. (2012). *Opportunity entrepreneurs—potential drivers of non-farm growth in rural Vietnam?* Marburg: Philipps University Marburg.
- Brünjes, J., & Revilla Diez, J. (2013a). Non-farm businesses in rural areas: response to crisis or exploiting opportunities? Evidence from Vietnam. In C. Tamásy & J. Revilla Diez (Eds.), *Regional resilience, economy and society. Globalising rural places (the dynamics of economic space)* (pp. 115–130). Aldershot: Ashgate.
- Brünjes, J., & Revilla Diez, J. (2013b). ‘Recession push’ and ‘prosperity pull’ entrepreneurship in a rural developing context. *Entrepreneurship & Regional Development*, 25(3–4), 251–271. doi:10.1080/08985626.2012.710267.
- Carter, N. M., Gartner, W. B., & Reynolds, P. D. (1996). Exploring start-up event sequences. *Journal of Business Venturing*, 11(3), 151–166.
- Chlosta, S., Patzelt, H., Klein, S. B., & Dormann, C. (2012). Parental role models and the decision to become self-employed: the moderating effect of personality. *Small Business Economics*, 38(1), 121–138. doi:10.1007/s11187-010-9270-y.
- Dale, A. (2015). Self-employment and entrepreneurship: notes on two problematic concepts. In R. Burrows (Ed.), *Deciphering the enterprise culture: entrepreneurship, petty capitalism and the restructuring of Britain*. New York: Routledge.
- Felkner, J. S., & Townsend, R. M. (2011). The geographic concentration of enterprise in developing countries. *The Quarterly Journal of Economics*, 126(4), 2005–2061. doi:10.1093/qje/qjr046.
- Fforde, A., & Vylder, S. (1996). *From plan to market: the economic transition in Vietnam*. Oxford: Westview Press.
- Fields, G. (2014). Self-employment and poverty in developing countries: helping the self-employed earn more for the work they do. *IZA World of Labor*, Bonn, Germany. doi:10.15185/izawol.60.
- Foxton, F., & Jones, R. (2011). *Social capital indicators review*. London: Office for National Statistics.
- Fritsch, M., & Falck, O. (2007). New business formation by industry over space and time: a multidimensional analysis. *Regional Studies*, 41(2), 157–172. doi:10.1080/00343400600928301.
- Gartner, W. B., & Carter, N. (2003). Entrepreneurial behavior and firm organizing processes. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*. New York: Springer.
- Gelman, A., & Stern, H. (2006). The difference between “significant” and “not significant” is not itself statistically significant. *The American Statistician*, 60(4), 328–331.
- GEM (Global Entrepreneurship Monitor). (2013). *Viet Nam Report 2013*. Hanoi: Viet Nam Chamber of Commerce and Industry.
- General Statistics Office of Vietnam. (2013). *Non-farm individual business establishments: current and solutions*. Hanoi: Statistical Publishing House.
- Gindling, T., and Newhouse, D. (2012). Self-employment in the developing world. The World Bank (No. 6201), Washington, DC: The World Bank. DOI: 10.1596/1813-9450-6201.
- Gries, T., & Naudé, W. (2010). Entrepreneurship and structural economic transformation. *Small Business Economics*, 34(1), 13–29. doi:10.1007/s11187-009-9192-8.
- Hardeweg, B., & Waibel, H. (2009). *Collecting data to measure vulnerability to poverty: an overview*. Hannover: Leibniz Universität Hannover.
- Hardeweg, B., Menkhoff, L., & Waibel, H. (2013). Experimentally validated survey evidence on individual risk attitudes in rural Thailand. *Economic Development and Cultural Change*, 61(4), 859–888. doi:10.1086/670378.
- Hindle, K. (2010). How community context affects entrepreneurial process: a diagnostic framework. *Entrepreneurship & Regional Development*, 22(7), 599–647. doi:10.1080/08985626.2010.522057.
- Hox, J. J. (2010). *Multilevel analysis. Techniques and applications*. New York: Routledge. doi:10.4324/9780203852279.
- Hundt, C., & Sternberg, R. (2016). Explaining new firm creation in Europe from a spatial and time perspective: a multilevel analysis based upon data of individuals, regions and countries. *Papers in Regional Science*, 95(2), 223–257. doi:10.1111/pirs.12133.
- Isenberg, D. (2011). *The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. The Babson entrepreneurship ecosystem project*. Dublin: Institute of International European Affairs.
- Jaax, A., and Iammarino, S. (2014). Enterprise reforms and sub-national patterns of development in Vietnam. In: Regional Studies Association (Ed.), Winter Conference 2014, Regional Studies Association: 86–90.
- Klasen, S., Lechtenfeld, T., & Povel, F. (2015). A feminization of vulnerability? Female headship, poverty, and vulnerability in Thailand and Vietnam. *World Development*, 71, 36–53. doi:10.1016/j.worlddev.2013.11.003.
- Krumboltz, J., Mitchell, A., & Jones, G. (1976). A social learning theory of career selection. *The Counseling Psychologist*, 6(1), 71–81. doi:10.1177/001100007600600117.

- Kushnir, K. (2010). *How do economies define micro, small and medium enterprises (MSMEs)? Companion note for the MSME country indicators*. Washington, DC: World Bank.
- Lanjouw, J. O., & Lanjouw, P. (2001). The rural non-farm sector: issues and evidence from developing countries. *Agricultural Economics*, 26(1), 1–23. doi:10.1111/j.1574-0862.2001.tb00051.x.
- Lingelbach, D. C., De La Vina, L. and Asel, P. (2005). What's distinctive about growth-oriented entrepreneurship in developing countries? *UTSA College of Business Center for Global Entrepreneurship Working Paper (No. 1)*. DOI: 10.2139/ssm.742605.
- Mason, C., and Brown, R. (2014). Entrepreneurial ecosystems and growth oriented entrepreneurship. Final Report to OECD. Paris, France: 1–38.
- Minot, N. (2003). Income diversification and poverty reduction in the northern uplands of Vietnam. *Annual Meeting of the American Agricultural Economic Association, Montreal, Canada*. doi:10.2499/0896291480.
- Moore, J. F. (1993). Predators and prey: a new ecology of competition. *Harvard Business Review*, 71(3), 75–86.
- Mueller, P. (2006). Entrepreneurship in the region: breeding ground for nascent entrepreneurs? *Small Business Economics*, 27(1), 41–58. doi:10.1007/s11187-006-6951-7.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity*, 41(5), 673–690. doi:10.1007/s11135-006-9018-6.
- Oxfam (2013). Roles of village institutions in poverty reduction in some typical ethnic minority communities of Vietnam: case studies in Dien Bien, Quang Tri, Dak Lak, and Tra Vinh provinces. Hanoi, Viet Nam.
- Pham, X. N. (2001). *Rural development in Vietnam*. Hanoi: Social Sciences Publishing House.
- Pincus, J., Anh, V. T., Nghia, P. D., Wilkinson, B., & Thanh, N. X. (2012). Structural reform for growth, equity, and national sovereignty. In *Policy discussion paper prepared for the Vietnam leadership program (VELP)*. Cambridge: Harvard Kennedy School.
- Piore, M. J., & Sabel, C. F. (1984). *The second industrial divide. Possibilities for prosperity*. New York: Basic Books. doi:10.2307/1956301.
- Rabe-Hesketh, S., & Skrondal, A. (2008). *Multilevel and longitudinal modeling using stata*. College Station: Stata Press Publication.
- Revilla Diez, J. (2016). Vietnam 30 years after Doi Moi: achievements and challenges. *Zeitschrift für Wirtschaftsgeographie*, 60(3), 121–133. doi:10.1515/zfw-2016-0035.
- Reynolds, P. D. (1997). Who starts new firms?—preliminary explorations of firms-in-gestation. *Small Business Economics*, 9(5), 449–462. doi:10.1023/A:1007935726528.
- Sakurai, K., Kawazu, H., Kono, Y., Yanagisawa, M., Le Van, T., Le Quoc, T., Dangthaisong, N., & Trinh Ngoc, C. (2004). Impact of agricultural practices on slope land soil properties of the mountainous region of northern Vietnam: a case study in bac Ha District, Lao Cai Province. *Southeast Asian Studies*, 41(4), 503–518.
- Saxenian, A. (1994). Regional advantage. In *Culture and competition in Silicon Valley and route 128*. Cambridge: Harvard University Press. doi:10.1016/S0167-2681(96)00836-0.
- Schumpeter, J. A. (1934). *The theory of economic development*. Cambridge: Harvard University Press.
- Sepúlveda, J. P., & Bonilla, C. A. (2014). The factors affecting the risk attitude in entrepreneurship: evidence from Latin America. *Applied Economics Letters*, 21(8), 573–581. doi:10.1080/13504851.2013.875104.
- Shane, S. (2003). A general theory of entrepreneurship: the individual-opportunity-nexus. *Cheltenham, UK: Edward Elgar*. doi:10.4337/9781781007990.00001.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *The Academy of Management Review*, 25(1), 217–226. doi:10.5465/AMR.2000.2791611.
- Shaw, J. (2004). Microenterprise occupation and poverty reduction in microfinance programs: evidence from Sri Lanka. *World Development*, 32(7), 1247–1264. doi:10.1016/j.worlddev.2004.01.009.
- Sohns, F., & Revilla Diez, J. (2017). Self-employment and its influence on the vulnerability to poverty of households in rural Vietnam—a panel data analysis. *Geographical Review*, 107(2), 336–359. doi:10.1111/j.1931-0846.2016.12206.x.
- Sørensen, J. B. (2007). Bureaucracy and entrepreneurship: workplace effects on entrepreneurial entry. *Administrative Science Quarterly*, 52(3), 387–412. doi:10.2189/asqu.52.3.387.
- Spigel, B. (2015). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72. doi:10.1111/etap.12167.
- Stam, E. (2011). Entrepreneurship, evolution and geography. In: *R. Boschma, and Martin, R. (eds.), The handbook of evolutionary economic geography: 139–161*. Cheltenham, UK: Edward Elgar. DOI: 10.4337/9781849806497.
- Stemberg, R. (2009). Regional dimensions of entrepreneurship. *Foundations and Trends® in Entrepreneurship*, 5(4), 211–340. doi:10.1561/03000000024.
- Tambunan, T. (2009). Women entrepreneurship in Asian developing countries: their development and main constraints. *Journal of Development and Agricultural Economics*, 1(2), 27–40.
- Tamvada, J. P. (2015). The spatial distribution of self-employment in India: evidence from semiparametric geosadditive models. *Regional Studies*, 49(2), 300–322. doi:10.1080/00343404.2013.779656.
- Van de Walle, D., and Cratty D. (2004). Is the emerging nonfarm market economy the route out of poverty in Vietnam? In: *Economics of Transition Volume 12(2): 237–274*. DOI: 10.1111/j.0967-0750.2004.00178.x.
- Verheul, I., Thurik, R., Hessels, J., and van der Zwan, P. (2010). Factors influencing the entrepreneurial engagement of opportunity and necessity entrepreneurs. In: *EIM Research Reports: 1–24*. DOI: 10.1007/s40821-016-0065-1.
- Wagner, J. (2005). “*der not gehorchend, nicht dem eignen Trieb*” – *Nascent necessity and opportunity entrepreneurs in Germany: evidence from the regional entrepreneurship monitor, IZA discussion paper (no. 1608)*. Lueneburg: University of Lueneburg.
- Wagner, J. (2007). What a difference a Y makes—female and male nascent entrepreneurship in Germany. *Small Business Economics*, 28(1), 1–21. doi:10.1007/s11187-005-0259-x.
- Waibel, H., Hohfeld, L., 2016. Poverty and nutrition: a case study of rural households in Thailand and Viet Nam. ADBI Working Paper (No. 623). Asian Development Bank Institute, Chiyoda-ku, Japan.

Westlund, H., & Bolton, R. (2003). Local social capital and entrepreneurship. *Small Business Economics*, 21(2), 77–113. doi:10.1023/A:1025024009072.

World Bank. (2008). *Vietnam: higher education and skills for growth*. Washington: World Bank.

Xu, X. G. (2015). Ethnic minorities in Vietnam: out of sight. *The Economist*, 04(04), 2015 <http://www.economist.com/news/asia/21647653-continuing-grinding-poverty-vietnams-minority-regions-liability-communist-party>.

6 Who survives over time? – A multilevel survival analysis of micro enterprises in rural Vietnam

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Abstract

Most of the empirical work conducted on entrepreneurship has so far focused on the start-up process of technologically dynamic enterprises in developed countries, while empirical studies on the determinants of enterprise survival remain scarce, particularly concerning micro enterprises located in rural areas of emerging markets. This paper attempts to address this gap in the research by using three-level proportional hazards mixed effects regressions to analyze the effects of factors at different explanatory levels (micro enterprise, village and district) on the survival probability of micro enterprises in rural Vietnam. Our analyses show that enterprise-specific characteristics dominate with regard to explaining the survival probability of such micro enterprises. Nevertheless, the spatial context also contributes significantly towards the survival probability, albeit with a smaller impact. Interestingly, the survival probabilities of opportunity-driven and necessity-driven micro enterprises are found to be influenced by similar enterprise-specific and linkage-related, but by different location-specific factors.

JEL classification: L26, M13, O18, R12

Keywords: micro enterprise survival, opportunity-driven entrepreneurship, necessity-driven entrepreneurship, rural Vietnam, multilevel survival analysis

6.1 Introduction

Since the introduction of the economic transformation (Doi Moi) towards a market economy in 1986, an increase in the number of formal enterprises has been observed in Vietnam. The accompanying structural change has led to a significant increase in the average monthly income per capita and to a substantial reduction of poverty (Revilla Diez 2016). Despite this overall positive trend, social and regional inequalities have increased over the last few decades, as economic prosperity has been concentrated mainly in the urban centres. Consequently, poverty remains a serious problem in rural areas and outmigration to the urban centres is a common response to this (Revilla Diez 2016). As empirical work has shown that micro entrepreneurship is able to reduce poverty, and increase income and consumption (Lanjouw and Lanjouw 2001, Van de Walle and Cratty 2004), policy maker hold high hopes that micro entrepreneurship has the potential to diminish social and regional inequality.

In recent years, empirical work has analyzed in depth which individual and spatial determinants influence start-up activities highlighting that entrepreneurship is driven by factors at different explanatory levels (Shane 2003, Hindle 2010, GEM 2013, Hundt and Sternberg 2016). However, studies that focus on the survival probability of micro enterprises remain scarce, as reliable information about business closures are limited. Particularly, there is a lack of empirical work focusing on the spatial variation of the survival probability of micro enterprises within rural areas of emerging markets. Previous research on the survival of micro enterprises has focused mainly on the impact of enterprise-specific characteristics, such as enterprise size, and characteristics related to the business head, such as education, risk tolerance and prior experience of running a business (Ciavarella et al. 2004, Xu and Ruef 2004, Bekele and Worku 2008), while neglecting the impact of spatial factors. However, from an economic geography perspective, spatial differences in the survival probability of micro enterprises can be assumed to exist, as locations vary in terms of access to resources, the quality of infrastructure and institutions, the degree of competition and the market potential (Shane 2003). The few studies that address the impact of spatial factors focus primarily on agglomeration effects and infrastructure (Rosenthal and Strange 2003, Vijverberg and Haughton 2002, He et al. 2015) or simply compare different types of regions (Littunen 2000) but fail to examine the impact of the underlying institutions and the importance of the hierarchical structure of geographical space.

The aim of this paper is to contribute to the discussion surrounding the multi-scalar phenomenon of the survival of micro enterprises in rural areas of emerging economies by

estimating the effects of different explanatory levels (micro enterprise, village and district) on the survival probability of micro enterprises as well as by identifying independent variables that capture these effects.

The next section introduces the conceptual framework, while the third section describes the database, the empirical framework and the methodology. Subsequently, the fourth section presents and discusses the empirical results, while the fifth section concludes the paper.

6.2 The survival of rural micro enterprises as a multi-scalar phenomenon

According to Boschma and Martin (2010), enterprise survival can be viewed from an evolutionary perspective. They claim that in a competitive market environment fitter enterprises survive, while less fit enterprises have to shut down due to selective market mechanisms. In transition markets, where entrepreneurial experiences are in their infancy and transformation processes lead to less stable economic conditions, the selective market mechanisms result in relatively high failure rates (Goreski 1995). Although the elimination of inefficient enterprises can be seen as a necessary process for regional economic progress (Boschma and Martin 2010), the closure of an enterprise can have a negative impact on the wellbeing of the business head's family by increasing their risk of falling (back) into poverty (Sohns and Revilla Diez 2017).

In Vietnam, micro enterprises are run relatively often by opportunity-driven entrepreneurs (GEM 2013) who see opportunities in the market and want to use these opportunities anticipatorily (Gindling and Newhouse 2012). Opportunity-driven entrepreneurs frequently hire non-family employees and make quite a substantial initial investment (Gottschalk et al. 2010, Brünjes and Revilla Diez 2012). The closure of such a micro enterprise can be assumed to impact negatively on the wellbeing of the entrepreneur's family as well as that of the non-family employees and, due to possible feedback effects, may also affect the regional economy in general. However, in rural Vietnam there are also micro enterprises that are run by necessity-driven entrepreneurs in order to supplement household income for a certain period of time (Gindling and Newhouse 2012). These entrepreneurs are less willing to hire non-family employees and make a smaller initial investment compared to business founders that started their business out of opportunity (Gottschalk et al. 2010, Brünjes and Revilla Diez 2012). It is not clear whether the closure of such a necessity-driven micro enterprise is to be seen as a detrimental event, especially when the entrepreneur switches to a more lucrative economic activity instead. Hence, we distinguish between opportunity-driven and necessity-driven micro enterprises when addressing the question of which factors influence the survival probability of micro enterprises in a rural emerging-market context.

According to Hodgson (1993), the survival of an enterprise is shaped not only by enterprise-specific factors, but also by the characteristics of the surrounding economic environment. Hence, all enterprises evolve due to their interaction with their regional environment and are influenced by location-specific characteristics (Moore 1993). Following these arguments, it can be assumed that the economic environment in which a micro enterprise is located as well as the linkages between the micro enterprise and the economic environment influence the survival probability of the enterprise (Storey and Wynarczyk 1996) in addition to its enterprise-specific characteristics. In this respect, factors at different spatial levels can be assumed to affect the performance of micro enterprises.

In Vietnam, regional economic prosperity differs considerably between urban and rural provinces, and between individual rural provinces (General Statistics Office of Vietnam 2017). Even within a single rural province the economic conditions differ substantially (Sohns and Revilla Diez forthcoming), in respect to the proximity to markets, the population density, or the economic structure, all of which potentially influence the performance of micro enterprises. As micro enterprises in rural Vietnam are mainly integrated into local markets, the spatial dimension used in this paper is small-scaled, referring to the village and district levels. We chose the district level, as we consider the district to be an extended job market and a broad area in which competition takes place. A rural district consists of several communes, which are the smallest administrative unit in Vietnam. A commune comprises several villages, each of which is defined as a cohesive spatial entity and is managed as an autonomous system by a village head. We chose the village level, as the village is an important social institution and unofficially regarded as the fourth tier of the administrative system in rural Vietnam (Oxfam 2013).

6.2.1 The impact of enterprise-specific factors

One well-studied enterprise-specific factor that influences the survival probability of an enterprise is its size. In principle, it is assumed that larger enterprises have a higher survival probability than smaller enterprises (Mata et al. 1995, Vijverberg and Haughton 2002). However, the work of Mead and Liedholm (1998) indicates that in emerging markets the size of an enterprise is not necessarily a guarantor for survival. Their results show that smaller enterprises are more likely to survive than larger ones. This finding may be associated with the advantage of smaller enterprises in being organized more easily and more flexibly (You 1995). Besides the enterprise size, the personal characteristics of the business head have to be taken into account. One undisputed individual factor that influences the survival of an enterprise is

the business head's education level (Bates 1990). On the one hand, it can be assumed that a more highly educated business head will be able to recognize and exploit business opportunities in the market better and therefore also to run an enterprise more successfully (Bates 1990). On the other hand, a business head with a higher level of education is also more likely to find more lucrative employment in the formal sector, which consequently could lead to the closure of the business, especially in the case of necessity-driven micro enterprises (Nafziger and Terrell 1996). The age of the business head is another well-studied enterprise-specific factor that determines the survival probability of enterprises (Storey and Wynarczyk 1996). Most of the empirical work estimates an inverted u-curve for the effect of the business head's age on the survival probability of enterprises, peaking for middle-age business heads, as they have already gathered valuable life experience, but still have enough energy to run an enterprise successfully (Storey and Wynarczyk 1996, Vijverberg and Haughton 2002). The business head's gender is also seen as an important enterprise-specific factor to explain the survival probability of an enterprise. However, the empirical studies conducted so far are not consistent with regard to the direction of the gender effect. Mead and Liedholm (1998), for instance, estimated a lower survival probability for female-headed enterprises than for male-headed enterprises. In contrast, Vijverberg and Haughton (2002) estimated a higher survival probability for female-headed enterprises compared to their male-headed counterparts. The business head's social capital is another factor that is crucial for the survival probability of his or her enterprise (Minten and Fafchamps 2001). In this respect, it can be assumed that the ongoing social exclusion of ethnic minorities in Vietnamese society (Xu 2015) could limit the social capital of their members and consequently lower the survival probability of their micro enterprises. In addition, the financial capital of the business head has to be taken into account, as greater financial assets can be used to bridge periods of business weakness (Holtz-Eakin et al. 1994).

6.2.2 The impact of linkages between micro enterprises and the local economic environment and beyond

As all enterprises evolve due to their interaction with their regional environment (Moore 1993), the linkages between micro enterprises and the local economy and beyond can impact on their survival probability. In a classic theoretical sense, these linkages can be divided into production and consumption linkages (Böhme and Thiele 2014). Consumption linkages refer to the sale of a product. Production linkages refer to the purchasing of inputs by an enterprise, known as backward linkages, and to the use of the output of an enterprise as an input in the production activities of other enterprises, known as forward linkages (Hirschmann 1958). In rural areas of

emerging markets, micro enterprises with formal forward linkages are rare (Böhme and Thiele 2014), while micro enterprises that have formal backward linkages are more common (Böhme and Thiele 2014).

When discussing the effects of linkages, the spatial dimension of these linkages has to be taken into account. In this respect, intra-regional and inter-regional linkages can be distinguished. Intra-regional linkages refer to interactions with actors within the local economy, while inter-regional linkages concern interactions with those outside the local economy. Though several studies on entrepreneurship in developed countries assume that intra-regional linkages are more important for the innovation processes of small firms than inter-regional linkages (Sternberg 1999), this assumption does not necessarily hold in the context of rural areas in emerging countries, as in peripheral areas of emerging countries a critical mass of local knowledge is rarely achieved (Bürcher et al. 2015). There, inter-regional linkages can be seen as a possible channel to broaden the business head's information basis. As this additional information can lead to a competitive advantage, we assume that inter-regional linkages might increase the survival probability of micro enterprises.

In the early discussion about enterprise linkages (Hirschmann 1958), the social dimension was neglected. However, the social dimension has since been incorporated into the theoretical discussion. In 1996, Kaufmann and Kaliberda highlighted the particular importance of social linkages between economic actors in transition economies like Vietnam. There, a lack of confidence in official actors and institutions is still persistent (Gërkhani 2004, Nguyen 2005), as the legal system is not transparent and corruption is prevalent (Revilla Diez 2016). A common hypothesis is that in such an institutional setting, enterprises strongly rely on trust-based interactions, which substitute effective market mechanisms (Guseva and Rona-Tas 2001). In such an economic environment, micro enterprises run by business heads who can rely on trust-based relationships can be assumed to have a higher survival probability than micro enterprises run by business heads without such trust-based relationships.

6.2.3 The impact of location-specific factors

Especially in the context of a transition economy like Vietnam, it is important to highlight the role of the underlying market institutions (Nguyen et al. 2013). Despite the profound macro-economic reform process, Vietnam's political system has not yet been fundamentally transformed (Revilla Diez 2016). The Communist Party continues to support the remaining state-owned enterprises by means of subsidies and easier access to major resources (Pincus et

al. 2012). This leads to distortions of competition, resulting in an ongoing discrimination against non-state actors as regards access to resources (Revilla Diez 2016). Hence, the selection process does not necessarily favour the most efficient firms, which can be assumed to have a negative impact on the performance. In this respect, the empirical work by Nguyen et al. (2013) shows that private firms grow more dynamically in regions where state-owned enterprises are less prevalent. Hence, we assume that a regional dominance of state-owned enterprises is likely to hamper the growth and consequently the survival of micro enterprises.

According to Barnett and McKendrick (2004), the regional degree of competition also explain the survival probability of enterprises. They argue that a high degree of competition can be seen as a constraint associated with a lower survival probability of inefficient enterprises. However, they also claim that a high degree of competition can be regarded as a contest leading to greater effort in continuous business adaption and thereby to a higher survival probability of enterprises in the long term (Barnett and McKendrick 2004).

Another common hypothesis is that the regional economy can have both a pro-cyclical and an anti-cyclical effect on micro enterprises. In this respect, Fortuna and Prates (1989) back the pro-cyclical hypothesis which assumes that micro enterprises benefit when the formal sector prospers, as a prospering formal sector leads to increasing incomes and also boosts demand for products and services provided by micro enterprises. In contrast, Kaufmann and Kaliberda (1996) back the anti-cyclical hypothesis which assumes that micro enterprises close down during periods when the formal sector prospers, as the entrepreneurs are then able to find wage employment in the formal sector more easily. As business heads of necessity-driven enterprises often start their enterprises only in order to smooth income until they find a more lucrative job instead, an anti-cyclical effect of a prospering formal sector on the survival probability might emerge for necessity-driven micro enterprises.

Other location-specific factors referred to as influencing business performance and consequently the survival probability of enterprises are the access to customers and markets as well as the availability of financial services (Isenberg 2011). Hence, it can be assumed that a large population positively influences the survival probability of micro enterprises, due to a wider base of potential consumers (Sleutjes 2012). However, rural villages in Vietnam are commonly characterized by low demand, as the inhabitants are still relatively poor (Le et al. 2014). In such an economic environment, proximity to larger towns is regarded as a crucial factor for reaching a broader base of wealthier customers and being connected with the wider economy (Vijverberg and Haughton 2002). In addition, it is reasonable to assume that good

access to financial services increases the survival probability of micro enterprises (Bekele and Worku 2008), as a lack of access to finance is known to be a major constraint for micro enterprises in Vietnam (GEM 2013).

Figure 6-1: Conceptual framework

	independent variables	assumed effects on the survival probability of	
		opportunity-driven micro enterprises	necessity-driven micro enterprises
location-specific factors	– dominance of state owned enterprises	↓	↓
	– regional economic development of the formal sector	↑	↓
	– access to customers and markets	↑	↑
	– access to financial services	↑	↑
	– degree of competition	↑	↓
linkage-related factors	– trust among actors	↑	↑
	– inter-regional backward linkages	↑	↑
enterprise-specific factors	– socio-economic characteristics of the business head	↑ ↓	↑ ↓
	– personal and family related shocks	↓	↓
	– size of micro enterprise	↑ ↓	↑ ↓

Source: Own illustration.

6.3 Data, empirical framework and methodology

The empirical analyses conducted in this paper are based on four different data sets. Three of them were compiled in the course of the DFG Research Unit FOR 756, named ‘Impact of shocks on the vulnerability to poverty: consequences for development of emerging Southeast Asian economies’.

The research project included a household survey, which was conducted in 2007, 2008, 2010 and 2013 in rural communes of three Vietnamese provinces, namely Ha Tinh on the north central coast, Thua Thien-Hue on the central coast and Dak Lak in the central highlands. The communes were selected in a heuristic procedure according to their size, ascertaining that every district of the case study provinces is represented in the sample. In each commune two villages were chosen and then for each village 10 households were selected randomly out of all the households located in the village. These households were interviewed in each wave to gather socioeconomic information about all household members and their economic activities using a standardized questionnaire. In 2010, a randomly selected subsample of 50% of the original households was surveyed with an additional small business questionnaire in order to gain more detailed information about their micro enterprises (Brünjes and Revilla Diez 2013). Additionally, a survey that had been conducted among the village heads of the 222 selected Vietnamese villages was used as a source of information to operationalize the location-specific factors referring to access to financial services and to customers and markets.

To gain information about the regional economic development of the formal sector and the regional dominance of state-owned enterprises, we used the annual Vietnam Enterprise Survey of the General Statistics Office of Vietnam in addition. The Vietnam Enterprise Survey covers all domestic firms that are formally registered under the Enterprise Law and have more than 10 employees, as well as all multinational and state-owned enterprises (SOEs) irrespective of their size.

By combining the data sets described, two hierarchically ordered data sets were obtained. One data set includes 177 opportunity-driven micro enterprises that are nested in 104 villages, which are in turn nested in 30 districts. The second data set contains 135 necessity-driven micro enterprises that are nested in 92 villages, which are also nested in 30 districts.

6.3.1 Empirical framework

To operationalize the conceptual framework, we checked whether the micro enterprises surveyed in 2010 still existed in 2013. We marked them as survived if they continued to exist and as failed if they no longer existed (survived=0, failed=1). To track the micro enterprises over time, we used the year in which the micro enterprise was founded and the business type. As the information used to create the independent variables refers to the year 2010, the resulting time gap allowed us to estimate the influence of the independent variables on the survival probability of these micro enterprises. To distinguish between micro enterprises that were started out of opportunity and those that were started out of necessity, we used the motivation behind starting a micro enterprise by following Brünjes and Revilla Diez (2012).

Table 6-1: Independent variables – micro enterprise and linkage characteristics

Label	mean	std. dev	min	max	obs.
number of employees	0.43	1.16	0	10	312
annual sales, USD PPP	1234.59	1611.94	0	12416.25	312
gender (male=1)	0.38	0.49	0	1	312
age (years)	44.61	12.48	19	82	312
age (years) ²	2145.45	1256.80	361	6724	312
lower secondary education or higher (yes=1)	0.81	0.39	0	1	312
belonging to the ethnic majority (majority=1)	0.94	0.25	0	1	312
per capita income per month, USD PPP	172.87	203.51	-1771.87	1547.12	312
occurrence of individual shocks (yes=1)	0.24	0.43	0	1	312
competition (yes=1)	0.62	0.49	0	1	312
trusting traders (yes=1)	0.23	0.42	0	1	312
share of inputs procured from outside the district but within the province as %	13.43	32.50	0	100	312
share of inputs procured from outside the province as %	1.60	11.59	0	100	312

Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013.

At the micro enterprise level, we operationalized the size of a micro enterprise by using the number of employees as well as the annual sales in USD PPP (Mead and Liedholm 1998, Vijverberg and Haughton 2002). Furthermore, we included the business head's age and age squared in our model to take into account the underlying non-linear relationship between an entrepreneur's age and the survival probability of his or her micro enterprise (Storey and Wynarczyk 1996). As Vietnam features complex options of tertiary education, we did not calculate the number of years that a business head was educated. Instead, we used a dichotomous variable, where a value of one represents a business head who had achieved at least a lower secondary education level. We also controlled for the business head's gender using a dichotomous variable, where a value of one refers to a male business head. To take into account that female-headed enterprises often close down due to personal failure (Mead and Liedholm 1998), we integrated the occurrence of individual shocks into our model using a dichotomous variable. To operationalize membership of an ethnic minority we also used a dichotomous variable, with a value of one referring to a business head who belongs to Vietnam's ethnic majority (Vijverberg and Haughton 2002). In addition, we controlled for the monthly per capita income in USD PPP. Although competition is theoretically seen as an attribute of the regional economy (Barnett and McKendrick 2004), we operationalized the degree of competition from a micro enterprise perspective, as the decision to put effort into continuous business adaption is made on the basis of perceived competition rather than on actual competition (Kemp and Hanemaaijer 2004). We therefore added another dichotomous variable to our model. Here, a value of one refers to a business head who perceives moderate and strong competition and a value of zero to a business head who perceives no competition.

Furthermore, all linkage-related factors were measured at the micro enterprise level. We combined the aspects of consumption linkages (Böhme and Thiele 2014) and social linkages (Kaufmann and Kaliberda 1996) by surveying how strongly traders are trusted. The possible answers were "do not trust them at all", "trust them very little", "trust them quite a lot", "trust them a lot" and "trust them entirely". We formed a dichotomous variable from these categories, where a value of one refers to the categories "trust them quite a lot", "trust them a lot" and "trust them entirely". To operationalize the spatial dimension of backward linkages (Böhme and Thiele 2014), we used the share of inputs that are procured from outside the rural district but within the province and the share of inputs that are procured from outside the province.

At the village level, we operationalized the market size by integrating the number of inhabitants in the villages into our model (Sleutjes 2012). To analyze the proximity to markets,

we used two independent variables, namely the travel distances in minutes to the next intermediate city and to the provincial capital, which also serve as a proxy for infrastructural quality (Vijverberg and Haughton 2002). In addition, we used a dichotomous variable to take access to financial services into account. A value of one refers to a bank being located in the village (Cook and Nixson 2000).

Table 6-2: Independent variables - village characteristics

Label	mean	std. dev	min	max	obs.
number of inhabitants in the village	1102.62	876.46	137	5058	312
travel distance to intermediate city in minutes	24.05	16.50	3	120	312
travel distance to provincial capital in minutes	58.27	47.29	6	360	312
banking (yes=1)	0.12	0.32	0	1	312

Source: Own calculations based on DFG-FOR 756 Village Head Survey 2010.

At the district level, we operationalized regional economic development by using the growth rates of the revenue of all formally registered firms between the years 2010 and 2013 (Fortuna and Prates 1989, Kaufmann and Kaliberda 1996). Furthermore, we used the share of formal wage workers that are employed by an SOE as a proxy for the regional socialist influence (Pincus et al. 2012).

Table 6-3: Independent variables - district characteristics

Label	mean	std. dev	min	max	obs.
share of formal wage workers employed by an SOE	0.20	0.24	0	0.81	312
growth rate of revenue in the formal sector 2010/2013	0.45	0.96	-0.75	4.00	312

Source: Own calculations based on the Vietnam Enterprise Survey 2010 and 2013.

6.3.2 Methodology

To estimate the statistical effects of explanatory variables at different levels on the survival probability of micro enterprises, we use a three-level proportional hazards mixed effects model that combines the advantages of survival regressions and multilevel regressions.

Survival analyses were initially used in biomedical research, where the length of time until the death of a subject is modelled as a function of different independent factors (Hox 2010). This methodological idea can easily be transferred to phenomena in social and economic research. Here, the survival function reports the probability of surviving beyond a specific time, while the hazard function reports the probability of the failure event occurring in a given interval (Cleves et al. 2008). Survival analyses have the advantage of providing a substitution for the normality assumption characterized by linear regressions. Moreover, survival analyses are able to deal with different observation problems such as censoring and truncation (Cleves et al. 2008).

Multi-level regression models are used for clustered data (Rabe-Hesketh and Skrondal 2008). Running standard regression models would violate the assumption of independence of the observation and produce spuriously significant results, due to spatial autocorrelation between observations that are located in the same higher hierarchical level (Hox 2010). Following Rabe-Hesketh and Skrondal (2008), one possible multi-level approach to deal with spatial autocorrelation is using hierarchical random effects models. While primarily used in social science (Paterson and Goldstein 1991, Gorard 2003), hierarchical random effects models have gained popularity in economics recently (Hundt and Sternberg 2016). Random intercept models allow the error term to differ for different higher levels. In contrast, random coefficient models also allow the effects of covariates to vary for different higher levels (Rabe-Hesketh and Skrondal 2008).

We calculated three regression models: one to estimate the effects of the independent variables on the hazard ratio of micro enterprises that were started out of necessity, and another to estimate the effects of the independent variables on the hazard ratio of micro enterprises that were started out of opportunity. The results of the model, predicting the hazard ratio of both types of micro enterprises in one single regression, can be found in the appendix. The underlying equation of the resulting three-level proportional hazards mixed effects model is:

$$\log[h_{ijk}(t)] = \log[h_0(t)] \exp(\beta_{000} + \beta_p X_{pijk} + \beta_q Z_{qjk} + \beta_r A_{rk} + \nu_{00k} + \mu_{0jk} + \varepsilon_{ijk})$$

While $\log[h_{ijk}(t)]$ represents the hazard function of observation i in village j and district k , $\log[h_0(t)]$ represents the baseline hazard function. Furthermore, β represents the coefficients of the explanatory variables X_{pijk} , Z_{pjk} and A_{rk} . Here, X_{pijk} , represents the explanatory variables at the micro enterprise level, Z_{pjk} represents those at the village level and A_{rk} those at the district level. The error terms are represented by ν_{00k} (district level), μ_{0jk} (village level) and ε_{ijk} (micro enterprise level).

One crucial model assumption to check for is the absence of multicollinearity (Backhaus et al. 2006). A common way to check for this is to calculate the variance inflation factors (VIFs) for the independent variables. In our analyses, the test for multicollinearity yields a mean VIF of 5.33 for necessity-driven micro enterprises and of 6.41 for opportunity-driven micro enterprises, so multicollinearity can be rejected even using the relatively strict upper limit of a value of 10 (O'Brien 2007).

6.4 Empirical results

From the 2010 small business survey, we were able to identify 312 micro enterprises that were run by the interviewed households and located in their home villages. By 2013, 36% of these micro enterprises had closed down. Using linear interpolation, these number would imply a 5-year survival rate of 45%. This 5-year survival rate is significantly lower than the corresponding rates estimated for enterprises in developed countries (Storey and Wyncarczyk 1996, Audretsch 1995, Littunen 2000). However, finding significantly lower survival rates in the context of an emerging market is not particularly surprising, as the economic conditions in emerging markets tend to be more turbulent (Goreski 1995). The estimated 5-year survival rate of 45% can be seen as reasonable in the context of emerging markets, as the rare empirical studies on micro enterprise survival reach similar results: Mead and Liedholm (1998) estimated a 5-year survival rate of 43% for enterprises in Zimbabwe, while Vijverberg and Haughton (2002) estimated a corresponding rate of 39% for enterprises in Vietnam in 1998. Interestingly, our data show significant spatial differences in the 5-year survival rates. At the provincial level, the relatively poor province of Ha Tinh shows the lowest 5-year survival rate (28%), followed by the cash-crop-based province of Dak Lak, with a rate of 33%. In contrast, the more well developed and economically prospering province of Thua Thien Hue exhibits the highest 5-year survival rate (51%).

In an emerging market context, large differences can be assumed to exist between micro enterprises that failed financially and those that were closed voluntarily, for instance in favour of starting another micro enterprise. Unfortunately, we have no information about the reasons for enterprise closures. However, we can track the business heads over time and identify the activity they pursue after closing their micro enterprise, due to the panel structure of the data. Interestingly, our data show that only 15.3% of the business heads left their village after closing their micro business, mainly to search for a new job or to obtain health treatment outside the village. The majority of the business heads who remained in their home village after closing their micro enterprise cultivated their own land (76.4%), were wage employed (27.0%) or ran another micro enterprise (20.2%). Although we find no significant differences between the survival rates of opportunity-driven and necessity-driven micro enterprises, we do find significant differences between the two types of micro enterprise regarding the activity pursued by the business heads after closing their micro enterprise. Cultivating their own land was more common for business heads of necessity-driven micro enterprises (82.5%) than for those of opportunity-driven micro enterprises (71.4%), as was taking up wage employment, where the figures were 35.0% and 20.4% respectively. In contrast, running another micro business was

more common for business heads of opportunity-driven micro enterprises (22.5%) than for their counterparts with necessity-driven micro enterprises (17.5%).

6.4.1 Estimation and discussion of the general spatial effects

To answer the question as to whether spatial levels in general contribute significantly to explaining the hazard ratio of micro enterprises, we calculated different intercept models (m_0), which contain no explanatory variables and decompose the variance into independent components related to the different spatial levels (Hox 2010). After pre-calculating the effects of different spatial levels, the results prompted us to use the village and district levels as the spatial levels, as the commune level shows no significant impact:

$$\log[h_{ijk}(t)] = \log[h_0(t)] \exp(\beta_{000} + \nu_{00k} + \mu_{0jk} + \varepsilon_{ijk})$$

In a second step, we calculated the intra-cluster correlations, which represent the random effects and indicate “(...) the proportion of (the) group level variance compared to the total variance” (Hox 2010:15) by using the following equations:

$$\text{Micro enterprise level } \frac{\sigma^2_i}{(\sigma^2_i + \sigma^2_j + \sigma^2_k)}; \text{ village level } \frac{\sigma^2_j}{(\sigma^2_i + \sigma^2_j + \sigma^2_k)}; \text{ district level } \frac{\sigma^2_k}{(\sigma^2_i + \sigma^2_j + \sigma^2_k)}.$$

Here, σ^2_i describes the residual variance at the micro enterprise level, while σ^2_j describes the residual variance at the village level and σ^2_k that at the district level.

Using the intra-cluster correlation yields some interesting results. *First*, we are able to show that 4% of the variance in the hazard ratio of both opportunity-driven and necessity-driven micro enterprises can be explained by the spatial levels. Although its impact appears to be relatively small, the spatial context contributes significantly towards explaining the survival probability of micro enterprises. We see this result as evidence that the hazard ratio of micro enterprises differs locally even in rural areas of emerging markets. The fact that the spatial levels are found to have only a small impact can be explained by highlighting that the empirical analyses are based on data collected solely in rural areas and it can be assumed that the hazard ratio would show higher spatial variation if more provinces, particularly more urban ones, were included in the analysis. Moreover, it is also possible that the weak regional economic conditions already hamper the opportunities for starting a micro enterprises. Consequently micro enterprises only exist in more developed regions that are relatively similar to each other. We can back this explanation by referring to earlier empirical work that is showing that 14.8%

of the variance in the likelihood of starting an opportunity-driven micro enterprise can be explained by the spatial levels (Sohns and Revilla Diez forthcoming). *Second*, we find a significant influence of the village level (4.0%) only on the hazard ratio of opportunity-driven micro enterprises. In contrast, we find a significant influence of the district level (4.2%) only on the hazard ratio of necessity-driven micro enterprises. Consequently, we conclude that the hazard ratio of opportunity-driven and necessity-driven micro enterprises is driven by different spatial levels.

In a third step, we integrated the enterprise-specific and the linkage-related factors into the models as explanatory variables (m1). This caused the village-level effect on the hazard ratio of opportunity-driven micro enterprises to disappear. In contrast, the district-level effect on the hazard ratio of necessity-driven micro enterprises continues to exist. We subsequently added the village-specific (m2) and district-specific (m3) factors to the models. This led to the disappearance of the district-level effect on the hazard ratio of necessity-driven micro enterprises.

6.4.2 Discussion of the enterprise-specific, linkage-related and location-specific effects

In the following, we discuss the statistical effects of the explanatory variables included in the final model (m3). Referring to Gelman and Stern (2006), we interpret the effect of an explanatory variable if its margin of error is not significantly higher than 10%. We start by discussing the enterprise-specific effects before examining the linkage-related and the location-specific effects.

Enterprise-specific effects

With regard to the enterprise-specific factors, our results reveal that rising annual sales are associated with a significant decrease in the hazard ratio of opportunity-driven micro enterprises. In contrast, the hazard ratio of necessity-driven micro enterprises is not found to be affected significantly by the level of annual sales. Rather, our results show that a larger workforce increases the hazard ratio of necessity-driven micro enterprises significantly. This result confirms the finding by Mead and Liedholm (1998) that smaller firms are more likely to survive than larger firms, as they can be organized more easily and flexibly (You 1995). This can be explained by the risk associated with having to pay wages to a large number of employees during periods of business hardship. This is especially problematic for necessity-driven micro enterprises, as they mainly employ family members that cannot be lay off easily.

In such cases the micro enterprise often has to be closed completely and the business head has to find another income source to support the whole family.

With regard to the characteristics of the business head, a negative effect on the hazard ratio of both opportunity-driven and necessity-driven micro enterprises was estimated for the occurrence of personal and family-related shocks, such as illness or death. Possible explanations for this finding are the treatment costs and the time involved in caring for sick family members, as well as the lack of adequate health and life insurance schemes. As expected, we find evidence that with every additional year of the business head's age the hazard ratio of both opportunity-driven and necessity-driven micro enterprises decreases significantly. Consequently, we can confirm the assumed positive effect of a business head's life experience on the survival probability of both types of micro enterprise. However, our empirical results confirm the inverted u-curve of the effect of a business head's age, representing a beneficial combination of life experience and energy, only for necessity-driven micro enterprises (Storey and Wynarczyk 1996, Vijverberg and Haughton 2002). Interestingly, the gender of the business head has no significant effect on the hazard ratio of neither opportunity-driven nor necessity-driven micro enterprises. Although Mead and Liedholm (1998) estimated a lower survival probability for female-headed enterprises compared to male-headed enterprises, the absence of a significant gender effect in our study is not so surprising, as we controlled for possible personal and family-related failure reasons, which were mentioned by Mead and Liedholm (1998). In the context of Vietnam, the absence of a significant gender effect can also be explained by less systematic discrimination against women compared to other middle income countries (Klasen et al. 2015). Contrary to our hypothesis, we do not find a significant effect of education on the survival probability of either opportunity-driven or necessity-driven micro enterprises. This result is quite interesting, as it leads us to reject the assumption that a more highly educated business head will be able to run a micro enterprise more successfully (Bates 1990). In addition, it also refutes the opposite assumption that a micro enterprise run by a more highly educated person will exhibit a lower survival probability, due to that person's higher likelihood of finding a more lucrative economic activity in the formal sector (Nafziger and Terrell 1996). However, not finding a significant effect of education on the survival of household enterprises in Vietnam is in line with the results obtained by Vijverberg and Haughton (2002). Furthermore, we do not find membership of an ethnic minority to have a significant effect on the hazard ratio of either opportunity-driven or necessity-driven micro enterprises.

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Table 6-4: Three-level proportional hazards mixed effects regression results for opportunity-driven micro enterprises

	Hazard ratio	Hazard ratio	Hazard ratio	Hazard ratio
Fixed effects	m0	m1	m2	m3
<i>Micro enterprise characteristics</i>				
number of employees		1.0079 (0.0960)	1.0395 (0.1057)	1.0436 (0.1053)
annual sales, USD PPP		0.9998* (0.0001)	0.9997* (0.0002)	0.9997* (0.0002)
gender (male=1)		0.9007 (0.2473)	0.7583 (0.2231)	0.7592 (0.2244)
age (years)		0.8799* (0.0638)	0.8578** (0.0629)	0.8577** (0.0630)
age (years) ²		1.0008 (0.0007)	1.0009 (0.0007)	1.0010 (0.0007)
lower secondary education or higher (yes=1)		0.9899 (0.4379)	0.7194 (0.3353)	0.7342 (0.3446)
belonging to the ethnic majority (majority=1)		0.7902 (0.4071)	1.2754 (0.7186)	1.3719 (0.8112)
per capita income per month, USD PPP		1.0013 (0.0008)	1.0015* (0.0009)	1.0015* (0.0009)
occurrence of individual shocks (yes=1)		1.9962** (0.6925)	2.2766** (0.8119)	2.2248* (0.7993)
competition (moderate and strong competition=1)		0.5178** (0.1512)	0.4948** (0.1428)	0.5040** (0.1467)
<i>Linkage characteristics</i>				
trusting traders (yes=1)		0.6192 (0.2263)	0.5606 (0.2079)	0.5529* (0.2052)
share of inputs procured from outside the district but within the province as %		0.9914* (0.0051)	0.9918 (0.0052)	0.9915* (0.0052)
share of inputs procured from outside the province as %		1.0168 (0.0103)	1.0225** (0.0109)	1.0222** (0.1097)
<i>Village characteristics</i>				
number of inhabitants in the village			0.9996* (0.0002)	0.9996* (0.0002)
travel distance to intermediate city in minutes			1.0053 (0.0097)	1.0067 (0.0100)
travel distance to provincial capital in minutes			1.0023 (0.0038)	1.0025 (0.0039)
bank in the village (yes=1)			0.4597* (0.2066)	0.4812* (0.2175)
<i>District characteristics</i>				
share of formal wage workers employed by an SOE				1.3693 (0.9392)
growth rate of revenue in the formal sector 2010/2013				0.9527 (0.1412)
constant	0.0059*** (0.0030)	0.2595 (0.4469)	0.5240 (0.9782)	0.4277 (0.8243)
<i>Random effects</i>				
distr var(_cons)	1.92e-34	9.87e-33	6.76e-33	2.51e-33
distr>vill var(_cons)	0.1362	4.32e-34	1.87e-32	3.49e-32
<i>Model fit statistic</i>				
Observations	177	177	177	177
ICC district	5.61e-35	3.00e-33	2.05e-33	7.65e-36
ICC village	0.0397	1.31e-34	5.68e-33	1.06e-32
Prob>chibar2	0.2437	1.0000	1.0000	1.0000
Deviance	279.4201	233.2528	227.0209	226.5623

Notes: *** significant at 1% level (p<0.01), ** significant at 5% level (p<0.05), * significant at 10% level (p<0.1). As a constant hazard rate over time cannot be expected, the Weibull distribution was used for estimating the models. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010 and the Vietnam Enterprise Survey 2010 and 2013.

Table 6-5: Three-level proportional hazards mixed effects regression results for necessity-driven micro enterprises

	Hazard ratio	Hazard ratio	Hazard ratio	Hazard ratio
Fixed effects	m0	m1	m2	m3
<i>Micro enterprise characteristics</i>				
number of employees		1.9199*** (0.3674)	1.8296*** (0.3311)	2.0120*** (0.4206)
annual sales, USD PPP		0.9996 (0.0003)	0.9997 (0.0002)	0.9996 (0.0003)
gender (male=1)		1.5876 (0.5766)	1.8448 (0.6707)	1.8174 (0.6993)
age (years)		0.7292*** (0.0541)	0.7211*** (0.0548)	0.6895*** (0.0611)
age (years) ²		1.0030*** (0.0007)	1.0031*** (0.0008)	1.0037*** (0.0009)
lower secondary education or higher (yes=1)		0.9426 (0.4509)	0.7514 (0.3489)	0.7940 (0.3858)
belonging to the ethnic majority (majority=1)		0.9034 (0.5739)	1.3855 (0.8704)	0.6927 (0.4711)
per capita income per month, USD PPP		0.9996 (0.0011)	0.9995 (0.0011)	1.0000 (0.0012)
occurrence of individual shocks (yes=1)		2.8149*** (1.0306)	2.5678*** (0.9058)	3.3367*** (1.3687)
competition (moderate and strong competition=1)		0.8575 (0.3172)	0.81118 (0.28867)	0.6946 (0.2601)
<i>Linkage characteristics</i>				
trusting traders (yes=1)		0.5446 (0.2560)	0.5651 (0.2702)	0.61185 (0.3072)
share of inputs procured from outside the district but within the province as %		0.9877* (0.0072)	0.9845 (0.0074)	0.9868* (0.0078)
share of inputs procured from outside the province as %		1.0868*** (0.0243)	1.0882*** (0.0239)	1.0856*** (0.0248)
<i>Village characteristics</i>				
number of inhabitants in the village			0.9998 (0.0003)	0.9999 (0.0003)
travel distance to intermediate city in minutes			1.0010 (0.0114)	0.9972 (0.1155)
travel distance to provincial capital in minutes			1.0080** (0.0040)	1.0109** (0.0044)
bank in the village (yes=1)			0.7030 (0.3695)	0.8118 (0.4399)
<i>District characteristics</i>				
share of formal wage workers employed by an SOE				2.2651 (1.7135)
growth rate of revenue in the formal sector 2010/2013				0.7016* (0.1421)
constant	0.0071*** (0.0037)	5.2223 (8.5347)	2.8690 (5.2494)	6.3497 (11.9680)
<i>Random effects</i>				
distr var(_cons)	0.1454	0.1159	3.47e-35	5.39e-33
distr>vill var(_cons)	7.30e-35	1.93e-34	4.51e-33	0.0870
<i>Model fit statistic</i>				
Observations	135	135	135	135
ICC district	0.0423	0.0340	1.05e-35	1.60e-33
ICC village	2.12e-35	5.66e-35	1.37e-33	0.0258
Prob>chibar2	0.1389	0.1951	1.0000	0.4131
deviance	208.2861	158.9701	152.3683	147.2875

Notes: *** significant at 1% level (p<0.01), ** significant at 5% level (p<0.05), * significant at 10% level (p<0.1). As a constant hazard rate over time cannot be expected, the Weibull distribution was used for estimating the models. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010 and the Vietnam Enterprise Survey 2010 and 2013.

Hence, we cannot confirm the assumption that the continuing social exclusion of ethnic minorities in Vietnamese society lowers the survival probability of their micro enterprises (Xu 2015). However, this finding is in line with that obtained by Vijverberg and Haughton (2002). A possible explanation for this finding is that the social exclusion of ethnic minorities in Vietnamese society may already reduce their ability to start a micro enterprise at all (Sohns and Revilla Diez forthcoming), which results in a very small share of 6% of the micro enterprises being run by a member of an ethnic minority. Moreover, our empirical results do not confirm the assumed positive effect of the per capita income (Holtz-Eakin et al. 1994) on the survival probability of neither opportunity-driven nor necessity-driven micro enterprises. Rather, we find evidence that the business head's income has a negative effect on the survival probability of opportunity-driven micro enterprises. As this effect is quite unexpected, it is necessary to take a closer look at the activities pursued by entrepreneurs subsequent to closing a micro enterprise. In the case of opportunity-driven micro enterprises, business heads who subsequently founded another micro enterprise show an above-average per capita income, while in the case of necessity-driven micro enterprises, they show a below-average per capita income.

Hence, the negative effect of the per capita income on the survival of opportunity-driven micro enterprises can be understood as a high income enabling entrepreneurs to raise the initial investment needed to start up a new micro enterprise flexibly when more lucrative business opportunities arise in the local area.

Our empirical results also show that the perception of competition significantly reduces the hazard ratio of opportunity-driven micro enterprises, but has no significant impact on the hazard ratio of necessity-driven micro enterprises. We can therefore confirm the findings of Barnett and McKendrick (2004), who argued that competition could be seen as a contest leading to greater effort in continuous business adaption of opportunity-driven micro enterprises. However, we cannot confirm that a high degree of competition can be seen as a constraint for necessity-driven micro enterprises.

Linkage-related effects

With regard to the linkage-related factors, we find evidence that a large share of inter-regional backward linkages to suppliers located outside the immediate rural area but within the province, significantly reduces the hazard ratio of both necessity-driven and opportunity-driven micro enterprises. This result can be explained by the different benefits associated with being integrated into the wider economy, such as having the advantage of access to more diversified

information. However, our results also show that a high share of inter-regional backward linkages to suppliers located outside the province significantly increases the hazard ratio of both opportunity-driven and necessity-driven micro enterprises. It seems that from a certain distance onwards the effect reverses and the benefits are outweighed by the disadvantages of increasing transaction costs.

Furthermore, our results confirm the assumption that with a higher degree of trust shown to traders the hazard ratio of opportunity-driven micro enterprises decreases. This result is in line with the findings of Kaufmann and Kaliberda (1996), who highlighted the importance of social linkages between economic actors in transition economies. Hence, we can confirm the thesis that in an institutional setting characterized by a lack of confidence in official actors and institutions, enterprises strongly rely on trust-based interactions, which substitute effective market mechanisms (Guseva and RonaTas 2001).

Location-specific effects

With regard to the location-specific factors, our results confirm the assumed positive effect of access to customers and markets on the survival probability of micro enterprises (Vijverberg and Haughton 2002, Sleutjes 2012). However, there are differences between opportunity-driven and necessity-driven micro enterprises in this respect. While the hazard ratio of opportunity-driven micro enterprises decreases significantly with a larger population, the hazard ratio of necessity-driven micro enterprises increases significantly with the travel distance to the provincial capital.

Contrary to our hypothesis, we cannot find a significant effect of the share of wage workers employed by state-owned enterprises on neither opportunity-driven nor necessity-driven micro enterprises. However, this finding does not necessarily mean that a dominance of state-owned enterprises has no impact at all on micro enterprises. The distorting effect of a dominance of state-owned enterprises might be cancelled out by a positive effect of state-owned enterprises that is often disregarded: as they receive subsidies, state-owned enterprises are able to survive in a rural economic environment in which private firms cannot operate profitably. In such areas, state-owned enterprises are of economic importance, as they and their employees generate local demand for services, thereby providing economic opportunities for local micro enterprises.

As expected, we prove that access to financial services reduces the hazard ratio of opportunity-driven micro enterprises. Unsurprisingly, we do not find access to financial services to have a significant effect on the hazard ratio of necessity-driven micro enterprises, as this type of enterprise requires less operative capital than opportunity-driven micro enterprises (Bhola et al. 2006).

In addition, our results confirm the pro-cyclical hypothesis of Fortuna and Prates (1989), who argued that micro enterprises benefit when the formal sector prospers, by showing that a higher growth rate of revenue in the formal sector significantly decreases the hazard ratio of necessity-driven micro enterprises. However, we cannot find any significant effect, neither pro-cyclical nor anti-cyclical, on the hazard ratio of opportunity-driven micro enterprises. This does not necessarily mean that a prospering formal sector does not affect opportunity-driven micro enterprises at all. It is possible that the pro-cyclical effect, which is linked to an increasing general demand (Fortuna and Prates 1989), and the anti-cyclical effect, which is associated with better job opportunities (Kaufmann and Kaliberda 1996), cancel each other out, such that the effect ultimately disappears.

6.5 Conclusions

The aim of this paper was to contribute to the discussion surrounding the multi-scalar phenomenon of the survival of micro enterprises in rural areas of emerging economies.

We found evidence that the survival rates of micro enterprises in rural Vietnam are comparable to those of micro enterprises in other emerging markets and developing countries. Moreover, we found that enterprise-specific characteristics are by far the most important factors for explaining the survival probability of both opportunity-driven and necessity-driven micro enterprises. Nevertheless, our empirical results indicate that spatial factors also contribute significantly towards explaining the survival probability of rural micro enterprises, although the impact is small. Interestingly, the survival probability of both opportunity-driven and necessity-driven micro enterprises is driven by similar micro enterprise factors, such as the age of the business head and the occurrence of individual and family-related shocks. Furthermore, both types of micro enterprise benefit from being integrated into the wider economy by having inter-regional backward linkages to suppliers located outside the immediate rural area but within the same province.

On the basis of the results above, we can answer the main question of the paper ‘Who survives over time?’ as follows: An opportunity-driven micro enterprise is more likely to

survive if it is run by a person with experience of life who is not currently facing individual or family-related hardship, if the enterprise can rely on trust-based relationships, has inter-regional production linkages and perceives competition.

Furthermore, opportunity-driven micro enterprises located in villages that provide access to customers and financial services have advantages with regard to their survival probability. In contrast, necessity-driven micro enterprises are more likely to survive over time if they do not have a large number of employees and are run by a prime-aged business head who is not currently facing individual or family-related hardship and if they have inter-regional production linkages. Moreover, necessity-driven micro enterprises that are close to the provincial capital and are located in economically prospering districts have advantages with regard to their survival probability.

From a policy point of view, strengthening the rural informal sector by promoting entrepreneurship and fostering the survival and growth of micro enterprises can be seen as important for reducing poverty and stimulating economic development. Since the micro enterprise level is by far the most important level for explaining survival probabilities, policy actions that focus on enterprise-specific and linkage-related factors can be regarded as an efficient way to foster micro enterprise survival. Individual and family-related shocks are an important cause of micro enterprise closures. Creating safety nets and insurance schemes that absorb the short-term impact of these shocks could enable entrepreneurs to bridge times of hardship without closing their micro enterprise. As the perception of competition increases the survival probability of enterprises in the long term, policy actions could also focus on enabling entrepreneurs to identify and handle competition. Aside of this, it would be necessary to create economic conditions that provide economic opportunities and enable economic actors to use them. In this respect, in particular access to customers and financial services has to be seen as crucial. Nevertheless, it should be borne in mind that in very poor and structurally weak regions it is unlikely that business opportunities will be enhanced substantially in the near future. There, the role of agriculture as a safety net for failed entrepreneurs should not be neglected.

Finally, some limitations of this study have to be mentioned. *First*, the survey only covers rural provinces, but no urban ones. The estimated spatial effects can therefore be assumed to be underestimated and are solely representative of rural areas of Vietnam. Consequently, it can be assumed that the statistical impact of the spatial levels would be more considerable if more provinces were included, in particular more urban and economically developed ones. *Second*, we have no exact information about the years in which the micro

enterprises were closed, as it was not possible to conduct the survey annually. Hence, the time lag between the explanatory variables and the dependent variable varies between different observations. A further shortcoming is that we have no information about micro enterprises that were set up and closed within the three-year period. *Third*, we have no information about the reason for enterprise closures, making it impossible to distinguish between micro enterprises that failed financially and those that were closed voluntarily.

To gain further insight into the survival of informal micro enterprises in rural areas of transition economies and to deduce detailed policy recommendations, further research will need to focus in more detail on the reasons for business closure, as this would make it possible to distinguish between micro enterprises that failed for financial reasons and those that were closed voluntarily.

6.6 Appendix

Table 6-6: Three-level proportional hazards mixed effects regression results for any micro enterprise

	Hazard ratio	Hazard ratio	Hazard ratio	Hazard ratio
Fixed effects	m0	m1	m2	m3
<i>Micro enterprise characteristics</i>				
number of employees		1.0883 (0.0807)	1.1343** (0.0859)	1.1402* (0.0853)
annual sales, USD PPP		0.9997** (0.0001)	0.9997** (0.0001)	0.9971** (0.0001)
gender (male=1)		1.0209 (0.2196)	0.9379 (0.2049)	0.9705 (0.2086)
age (years)		0.82259*** (0.0404)	0.8250*** (0.0413)	0.8260*** (0.0403)
age (years) ²		1.0016*** (0.0005)	1.0015*** (0.0005)	1.0015*** (0.0005)
lower secondary education or higher (yes=1)		0.8254 (0.2520)	0.7967 (0.2489)	0.8125 (0.2524)
belonging to the ethnic majority (majority=1)		0.7997 (0.2912)	1.0757 (0.4063)	1.0303 (0.3881)
per capita income per month, USD PPP		1.0007 (0.0007)	1.0008 (0.0006)	1.0010 (0.0006)
occurrence of individual shocks (yes=1)		1.9410*** (0.6925)	2.0217*** (0.4519)	2.0861*** (0.4667)
competition (moderate and strong competition=1)		0.6987* (0.1459)	0.6516** (0.1344)	0.6393** (0.1313)
<i>Linkage characteristics</i>				
trusting traders (yes=1)		0.5229** (0.1501)	0.5327** (0.1551)	0.5191** (0.1439)
share of inputs procured from outside the district but within the province as %		0.9911** (0.0040)	0.9916** (0.0041)	0.9912** (0.0041)
share of inputs procured from outside the province as %		1.0185** (0.0086)	1.0221** (0.0087)	1.0220** (0.0087)
<i>Village characteristics</i>				
number of inhabitants in the village			0.9998 (0.0002)	0.9998 (0.0002)
travel distance to intermediate city in minutes			1.0051 (0.0068)	1.0053 (0.0067)
travel distance to provincial capital in minutes			1.0048* (0.0027)	1.0053* (0.0027)
bank in the village (yes=1)			0.6799 (0.2200)	0.7366 (0.2382)
<i>District characteristics</i>				
share of formal wage workers employed by an SOE				1.5944 (0.6908)
growth rate of revenue in the formal sector 2010/2013				0.9229 (0.0978)
constant	0.0066*** (0.0025)	1.3276 (1.5166)	0.8999 (1.1189)	0.7576 (0.0739)
<i>Random effects</i>				
distr var(_cons)	0.0226	0.0488	0.01149	1.14e-34
distr>vill var(_cons)	0.1191	5.49e-33	6.06e-33	1.12e-30
<i>Model fit statistic</i>				
Observations	312	312	312	312
ICC district	0.0066	0.0146	0.0035	3.45e-35
ICC village	0.0347	1.645e-33	1.83e-33	3.41e-31
Prob>chibar2	0.6238	0.2316	0.4400	1.0000
Deviance	489.8369	233.2528	411.9260	409.5843

Notes: *** significant at 1% level ($p < 0.01$), ** significant at 5% level ($p < 0.05$), * significant at 10% level ($p < 0.1$). As a constant hazard rate over time cannot be expected, the Weibull distribution was used for estimating the models. Source: Own calculations based on DFG-FOR 756 Household Survey 2010 and 2013, DFG-FOR 756 Village Head Survey 2010 and the Vietnam Enterprise Survey 2010 and 2013.

6.7 References

- Audretsch, D. (1995). Innovation, survival and growth. *International Journal of Industrial Organization* 13: 441-457.
- Barnett, W. P., and D. G. McKendrick (2004). Why are some organizations more competitive than others? Evidence from a changing global market. *Administrative science quarterly* 49 (4): 535-571.
- Bates, T. (1990). Entrepreneur human capital inputs and small business longevity. *Review of Economics and Statistics* 72(4): 551- 559.
- Bekele, E., and Z. Worku (2008). Factors that affect the long-term survival of micro, small and medium enterprises in Ethiopia. *South African Journal of Economics* 76(3): 548-568.
- Bhola, R., Verheul, I., Thurik, R., and Grilo, I. (2006). Explaining engagement levels of opportunity and necessity entrepreneurs. Working Paper [H200610]. EIM Business and Policy Research, Zoetermeer, The Netherlands.
- Boschma, R., and R. Martin (2010). The aims and scope of evolutionary economic geography. *The handbook of evolutionary economic geography*: 3-39.
- Böhme, M., and R. Thiele (2014). Informal-Formal Linkages and Informal Enterprise Performance in Urban West Africa. *The European Journal of Development Research* 26(4): 473-489.
- Brünjes, J., and J. Revilla Diez (2012). Opportunity entrepreneurs - potential drivers of non-farm growth in rural Vietnam? Philipps University Marburg, Marburg, Germany.
- Brünjes, J., and J. Revilla Diez (2013). Non-farm Businesses in Rural Areas: Response to Crisis or Exploiting Opportunities? Evidence from Vietnam. C. Tamásy, and Revilla Diez, J. (Eds.), *Regional resilience, economy and society. Globalising rural places (The dynamics of economic space)*: 115-130. Ashgate, Aldershot, UK.
- Bürcher, S., Habersetzer, A., and H. Mayer (2015). Entrepreneurship in Pheripheral Regions: A Relational Perspective. CRED Research Paper No. 6. Universität Bern, Bern, Schweiz.
- Ciavarella, M. A., Buchholtz, A. K., Riordan, C. M., Gatewood, R. D., and G. S. Stokes (2004). The Big Five and venture survival: Is there a linkage? *Journal of Business Venturing* 19(4): 465-483.
- Cleves, M., Gould, W. W., Gutierrez, R. G., and Y. Marchenko (2008). An introduction to survival analysis using Stata. Stata Press, College Statio, TX.
- Cook, P., and F. Nixson (2000). Finance and small and medium-sized enterprise development. Institute for Development Policy and Management. University of Manchester, Manchester, UK.
- Fortuna, J. C., and S. Prates (1989). Informal Sector versus Informalized Labor Relations in Uruguay. In: *The Informal Economy: Studies in Advanced and Less Developed Countries*: 78-95. The Johns Hopkins University Press, London, UK.
- Gelman, A., and H. Stern (2006). The Difference Between “Significant” and “Not Significant” is not Itself Statistically Significant. *The American Statistician* 60(4): 328-331.

GEM (Global Entrepreneurship Monitor) (2013). Viet Nam Report 2013. Viet Nam Chamber of Commerce and Industry, Hanoi, Viet Nam.

General Statistics Office of Vietnam (2017). Statistics: https://www.gso.gov.vn/Default_en.aspx?tabid=766

Gërxfhani, K. (2004). The informal sector in developed and less developed countries: A literature survey. *Public Choice* 120(3): 267-300.

Gindling, T., and D. Newhouse (2012). Self-employment in the developing world. The World Bank (No. 6201), Washington, D.C.

Gorard, S. (2003). What is multilevel modelling for? *British Journal of Educational Studies* 51(1): 46-63.

Goreski, P. A. (1995). "What do we know about entry?" *International Journal of Industrial Organization* 13(4): 421-440.

Gottschalk, S., Muller, K., and M. Niefert (2010). Entry strategies, founder's human capital and start-up size. *International Journal of Entrepreneurship and Small Business* 11 (4): 403–423.

Guseva, A., and A. Rona-Tas (2001). Uncertainty, Risk and Trust: Russian and American Credit Card Markets Compared. *American Sociological Review* 66(5): 623- 646.

He, C., Guo, Q., and D. Rigby (2015). Industry Relatedness, Agglomeration Externalities and Firm Survival in China. Utrecht University, Utrecht, The Netherlands.

Hindle, K. (2010). How community context affects entrepreneurial process: A diagnostic framework. *Entrepreneurship & Regional Development* 22(7): 599-647.

Hirschmann, A. O. (1958). *The Strategy of Economic Development*. Yale University Press, New Haven, CT.

Hodgson, G. (1993). *Economics and Evolution: Bringing Life Back into Economics*. Polity Press, Cambridge, UK.

Holtz-Eakin, D., Joulfaian, D., and H. S. Rosen (1994). Sticking it out: Entrepreneurial survival and liquidity constraints. *Journal of Political Economy* 102(1): 53-75.

Hox, J. J. (2010). *Multilevel analysis. Techniques and applications*. Routledge, New York, NY.

Hundt, C., and R. Sternberg (2016). Explaining new firm creation in Europe from a spatial and time perspective: A multilevel analysis based upon data of individuals, regions and countries. *Papers in Regional Science* 95(2): 223-257.

Isenberg, D. (2011). *The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship*. The Babson Entrepreneurship Ecosystem Project. Institute of International European Affairs, Dublin, Ireland.

Kaufmann, D., and A. Kaliberda (1996). Integrating the unofficial economy into the dynamics of post-socialist economies: A framework of analysis and evidence. World Bank, Washington, DC.

- Kemp, R., and J. Hanemaaijer (2004). Perception of competition: A measurement of competition from the perspective of the firm. EIM Business and Policy Research, Zoetermeer, The Netherlands.
- Klasen, S., Lechtenfeld, T., and F. Povel (2015). A Feminization of Vulnerability? Female Headship, Poverty, and Vulnerability in Thailand and Vietnam. *World Development* 71: 36-53.
- Lanjouw, J. O., and P. Lanjouw (2001). The rural non-farm sector: issues and evidence from developing countries. *Agricultural Economics* 26 (1): 1–23.
- Le, V., Lyne, M., Ratna, N., and P. Nuthall (2014). Symptoms and causes of poverty in a rural Vietnamese commune: Does ethnicity matter? *Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS)* 115(2): 67-77.
- Littunen, H. (2000). Networks and Local Environmental Characteristics in the Survival of New Firms. *Small Business Economics* 15, 59-71.
- Mata, J., Protugal, P., and P. Guimaraes (1995). The survival of new plants: start up conditions and post-entry evolution. *International Journal of Industrial Organization* 13(4): 380-400.
- Mead, D. C., and C. Liedholm (1998). The dynamics of micro and small enterprises in developing countries. *World development* 26(1): 61-74.
- Minten, B., and M. Fafchamps (2001). Social capital and the firm: evidence from agricultural trade. *American Journal of Agricultural Economics* 83(3): 65-98.
- Moore J. F. (1993). Predators and prey: a new ecology of competition. *Harvard Business Review*. 71(3): 75–86.
- Nafziger, E. W., and D. Terrell (1996). Entrepreneurial human capital and the long-run survival of firms in India. *World Development* 24(4): 689-696.
- Nguyen, T. V. (2005). Learning to trust: A study of interfirm trust dynamics in Vietnam. *Journal of World Business* 40(2): 203-221.
- Nguyen, T. V., Le, N. T., and S. E. Bryant (2013). Sub-national institutions, firm strategies, and firm performance: A multilevel study of private manufacturing firms in Vietnam. *Journal of World Business* 48(1): 68-76.
- O'Brien, R. M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Qual Quant* 41(5): 673-690.
- Oxfam (2013). Roles of village institutions in poverty reduction in some typical ethnic minority communities of Vietnam: Case studies in Dien Bien, Quang Tri, Dak Lak, and Tra Vinh provinces. Oxfam, Hanoi, Viet Nam.
- Paterson, L., and H. Goldstein (1991). New statistical methods for analyzing social structures: An introduction to multilevel models. *British Educational Research Journal* 17(4): 387-393.
- Pincus, J., Anh, V. T., Nghia, P. D., Wilkinson, B., and N. X. Thanh (2012). Structural Reform for Growth, Equity, and National Sovereignty. Policy Discussion Paper Prepared for the Vietnam Leadership Program (VELP). Harvard Kennedy School, Cambridge, MA.

- Rabe-Hesketh, S., and A. Skrondal (2008). *Multilevel and longitudinal modeling using stata*. Stata Press Publication, College Station, TX.
- Revilla Diez, J. (2016). Vietnam 30 years after Doi Moi: achievements and challenges. *Zeitschrift für Wirtschaftsgeographie* 60(3): 121-133.
- Rosenthal, S. S., and W. C. Strange (2003). Geography, industrial organization, and agglomeration. *Review of Economics and Statistics* 85(2): 377-393.
- Shane, S. (2003). *A general theory of entrepreneurship: The individual-opportunity-nexus*. Edward Elgar, Cheltenham, UK.
- Sleutjes, B. (2012). *Neighbourhood effects on firm success and strategy*. Amsterdam University Press, Amsterdam, The Netherlands.
- Sohns, F., and J. Revilla Diez (2017). Self-Employment and Its Influence on the Vulnerability to Poverty of Households in Rural Vietnam – A Panel Data Analysis. *Geographical Review* 107(2): 336-359.
- Sohns, F., and J. Revilla Diez (forthcoming). Explaining micro entrepreneurship in rural Vietnam: A multilevel analysis. *Small Business Economics*.
- Sternberg, R. (1999). Innovative linkages and proximity: empirical results from recent surveys of small and medium sized firms in German regions. *Regional Studies* 33(6): 529-540.
- Storey, D. J., and P. Wynarczyk (1996). The survival and non-survival of micro firms in the UK. *Review of Industrial Organization* 11(2): 211-229.
- Van de Walle, D., and D. Cratty (2004). Is the emerging nonfarm market economy the route out of poverty in Vietnam? *Economics of Transition* Volume 12(2): 237–274.
- Vijverberg, W., and J. Haughton (2002). *Household Enterprises in Vietnam: Survival, Growth, and Living Standards*. Policy Research Working Paper (No. 2773). The World Bank, Washington, DC.
- Xu, X. G. (2015). Ethnic minorities in Vietnam: Out of sight. *The Economist* 04.04.2015. <http://www.economist.com/news/asia/21647653-continuing-grinding-poverty-vietnam-minority-regions-liability-communist-party>
- Xu, H., and M. Ruef (2004). The myth of the risk-tolerant entrepreneur. *Strategic Organization* 2(4): 331-355.
- You, J. I. (1995). Small firms in economic theory. *Cambridge Journal of Economics* 19(3): 441-462.

7 Concluding discussion

Everything we hear is an opinion, not a fact. Everything we see is a perspective, not the truth.

Marcus Aurelius

The aim of this dissertation was to contribute to the broader discussion surrounding the potential of micro entrepreneurial activities to reduce poverty in rural areas of Southeast Asian transition economies as well as to add further insights into the potential that rural areas within Southeast Asian transition economies possess for micro entrepreneurial activities. Particular attention was paid to the effects that participating in different types of micro entrepreneurship has on the vulnerability to poverty of rural households being located in different regional settings as well as to individual and spatial factors that determine the start-up and closure of different types of micro enterprises.

To achieve this aim, spatial factors of the Entrepreneurial Ecosystem Approach were integrated into the Sustainable Livelihood Framework. To capture the heterogeneity of micro entrepreneurial activities, necessity-driven micro entrepreneurship was distinguished from opportunity-driven micro entrepreneurship by using the motivation behind the start-up decision. The case study regions in rural Vietnam were chosen because Vietnam exhibits high rates of economic growth and success in poverty reduction, but at the same time growing regional disparities with persistent poverty in rural areas. Moreover, as Vietnam is shaped by a transformation process (Doi Moi), which has gradually shifted the economy from a planned economy to a socialist market economy, this allows to analyze micro entrepreneurship in the context of a transition economy.

In this respect, this dissertation contributes to the broader empirical, theoretical and methodological discussion about micro entrepreneurship within rural areas of Southeast Asian transition economies as follows:

First, the empirical results further underline the heterogeneity of micro entrepreneurial activities in the case study areas. From the results discussed in Chapter 6, it becomes evident that the whole range of entrepreneurial activities is present in the case study areas. These activities range from low-return activities, such as petty trading on the streets and small-scale food processing, to higher-return activities, such as operating stationary retail shops, working as mechanics, carpenters, plumbers or electricians, and running rice mills, brickyards, hotels or restaurants. The heterogeneity of micro entrepreneurial activities in the case study areas is further highlighted by the large disparities in initial investments and revenues. Despite the fact that these entrepreneurial activities are predominately carried out as informal part-time own account work, the initial investment ranges from zero to above 42,600 USD PPP, while the annual sales vary between having no sales and 12,400 USD PPP.

Second, the empirical results presented in Chapter 6 also highlight the heterogeneity of economic circumstances within the case study areas. The analyzed villages differ considerably regarding the number of inhabitants and the distance to the next market, the next intermediate town and the provincial capital. While some of the villages are small settlements with less than 500 inhabitants, other villages are relatively large with up to 5,058 inhabitants. The time required to travel to the nearest market ranges between two minutes and 80 minutes, which means that there are huge spatial differences in the access to customers. A similar pattern can be found for the distance to the next intermediate town and to the provincial capital. While some villages are located very remotely with a travel time of up to 120 minutes to the next intermediate town and 360 minutes to the provincial capital, other villages are located in close proximity to the next intermediate town (3 minutes) or even to the provincial capital (6 minutes). As a result, some communes are structurally weak and have no formally registered enterprises, while other communes are economically further developed with up to 43 formally registered enterprises. Moreover, the influence of state-owned enterprises differs considerably between the districts examined. While in some districts the influence of state-owned enterprises is very strong, with up to 81% of the formal wage workers being employed by this type of enterprise, in other districts there are no state-owned enterprises at all.

Third, this dissertation adds to the theoretical discussion about the regional influence on micro entrepreneurship by proving that the start-up and closure of micro enterprises in the case study areas do indeed have to be seen as multi-scalar phenomena driven by explanatory factors at different spatial levels (see Chapters 5 and 6). The results show that different spatial levels contribute significantly towards explaining the start-up of opportunity-driven micro enterprises.

The estimated spatial effect of 15% is even found to be comparatively large in comparison to the findings of other empirical studies on entrepreneurship, which consistently show spatial levels to be less relevant for start-up activities (TAMVADA 2015, HUNDT & STERNBERG 2016). Interestingly, not only the village and its characteristics are essential, but also the wider economic environment that serves as an extended market in which competition takes place, demand is generated and wage-employment alternatives are offered. Interesting patterns are revealed in the findings: opportunity-driven entrepreneurship seems to emerge predominantly in regions that are currently experiencing a period of transition, already exhibit good accessibility of local markets and demand, but are not yet able to provide enough opportunities for wage employment, while showing less favorable geographical conditions for agricultural activities. Remarkably, the existence of state-owned enterprises has a positive effect on opportunity-driven entrepreneurship, too. As they receive subsidies, state-owned enterprises are able to survive in a rural economic environment in which private firms cannot operate profitably and where they seem to be of economic importance by generating local demand for services, thereby providing economic opportunities for local micro enterprises (see Chapter 5). In addition, the empirical findings also indicate that factors at different spatial levels contribute significantly towards explaining the closure of micro enterprises. Nevertheless, the estimated spatial effect is found to be smaller compared to the estimated spatial effect on the start-up of micro enterprises. This finding can be explained by emphasizing that weak regional economic conditions already hamper the opportunities for starting a micro enterprise. Consequently, micro enterprises primarily exist in more advanced regions that share similar spatial characteristics. Here, not only the locational characteristics, such as missing access to customers, markets and financial services, are of relevance for the closure of a micro enterprise, but also its linkages to the wider regional economy in terms of having no inter-regional backward linkages to suppliers located outside the immediate rural area (see Chapter 6). Overall, these findings confirm the importance of the domains policy, finance, markets, and regional business culture derived from the Entrepreneurial Ecosystem Approach (ISENBERG 2011), as well as the domain geographical conditions derived from the Sustainable Livelihood Framework (DFID 1999).

Fourth, this dissertation adds to the theoretical discussion by proving that identifying the motivation behind starting a micro enterprise is a good way to split entrepreneurship into two groups, namely opportunity-driven entrepreneurship and necessity-driven entrepreneurship (see Chapters 5 and 6). In this respect, the start-up of opportunity-driven micro enterprises in the case study areas seems to be shaped by micro-economic drivers that are used in the

entrepreneurship literature to explain entrepreneurship in the Global North, such as better education, experience of running an enterprise and being willing to take risks. In contrast, the start-up of necessity-driven micro enterprises is influenced by factors more commonly used in the literature on developing economies, such as being risk-averse, having a low income and being female. Therefore, it can be concluded that theoretical aspects used for explaining entrepreneurial activities in the Global North can be transferred to opportunity-driven micro entrepreneurship in rural areas of transition economies within the Global South (see Chapter 5). Interestingly, the factors that explain business closure do not differ strongly between opportunity-driven and necessity-driven micro enterprises. Rather, the closure of both opportunity-driven and necessity-driven micro enterprises is driven by similar micro-economic factors, such as the occurrence of individual and family-related shocks, and the age of the business head, as well as by having no inter-regional backward linkages to suppliers located outside the immediate rural area. However, having no trust-based interactions with traders were solely evidenced as being of importance for the closure of opportunity-driven micro enterprises. In addition, the closure of opportunity-driven and necessity-driven micro enterprises is influenced by different location-specific factors. While opportunity-driven micro enterprises suffer from being located in villages with a small number of potential customers and without access to financial services, necessity-driven micro enterprises suffer from being located at a great distance from the provincial capital, and in an economically declining district (see Chapter 6). Moreover, the empirical results show that starting a micro enterprise increases the likelihood of poor households escaping poverty, but only if they are located in a regional economic environment characterized by proximity to markets, good infrastructural conditions, and an advanced stage of structural change. In less well developed regions, starting a micro enterprise is not sufficient to increase the probability of poor households leaving poverty. In such regions, what matters more is that micro entrepreneurship is driven by opportunity and not by necessity. However, even starting a micro enterprise out of opportunity does not guarantee a reduction of vulnerability to poverty in all regional settings. In regions that are overspecialized in cash crop production, starting a micro enterprise that is linked to the dominant cash crop cannot be seen as a successful diversification strategy, because in times of declining commodity prices this entails a high risk of business failure (see Chapter 4).

Fifth, this dissertation shows that micro entrepreneurship, whether driven by necessity or opportunity, is not sufficient to reduce the vulnerability to poverty of every type of household in the case study areas, as a household's abilities to accumulate assets play a decisive role for the ability to set up and run a micro enterprise successfully (see Chapter 4). To begin with,

individuals with low formal education, belonging to an ethnic minority and with no entrepreneurial experience will have difficulty starting a micro enterprise (see Chapter 5). In addition, business heads who are currently facing personal or family-related shocks, such as illness or death, and cannot rely on trust-based social linkages to other economic actors, will have problems running their micro enterprises successfully (see Chapter 6). As a result, disadvantaged households will find it difficult to escape from and stay out of poverty even if they choose micro entrepreneurship as a livelihood strategy (see Chapter 4).

Sixth, in addition to its empirical and theoretical contributions, this dissertation also adds to the methodical discussion surrounding the potential that multilevel regression approaches exhibit for analyzing empirical questions within the field of economic geography. It proves that multilevel approaches are useful to estimate the importance of different geographical units for explaining the variance of a dependent variable and to estimate which regional characteristics capture the regional effect, especially in cases in which different regional levels are to be analyzed simultaneously. This makes multilevel approaches suitable for analyzing economic activities, such as entrepreneurship, as context-specific, multi-scalar phenomena, which is of considerable value for future empirical research in the field of economic geography (see Chapters 5 and 6).

7.1 Policy implications

This dissertation found that the assumed positive effect of micro entrepreneurship cannot be generalized. Rather, starting a micro enterprise helps poor households to escape poverty only if they are located in an already advanced regional economic environment, as the opportunities to set up and run a micro enterprise successfully are context-specific and do not occur in all regional settings. Aside from this, the motivation behind micro entrepreneurship plays an important role regarding escaping from poverty. Consequently, policy makers should not see micro entrepreneurship as a panacea for reducing poverty in rural areas of Southeast Asian transition economies. Instead, it is very important to take the particular regional economic circumstances into account in order to develop adequate development strategies.

In this respect, encouraging opportunity-driven micro entrepreneurship can be seen as a promising development strategy for regions that are currently undergoing a catching-up process but are not yet able to provide enough opportunities for formal wage employment. Policy makers should bear in mind that in very poor and structurally weak regions, business opportunities are unlikely to be enhanced substantially in the near future. Under such regional

economic circumstances, the role of agriculture as a safety net for failed entrepreneurs should not be neglected. In addition, policy makers must also take into account that fostering micro entrepreneurial activities that are linked to a region's dominant cash crop sector cannot be seen as a sustainable development strategy, particularly in times when commodity prices on the world markets are fluctuating strongly. In the case of rural Vietnam, operating state-owned enterprises has so far seemed to help to encourage micro entrepreneurship. However, the sustainability of this exogenous development strategy is at least questionable, as the closure of a state-owned enterprise, or its relocation after privatization, could have a strong negative impact on the local economy. As access to financial services increases the survival probability of opportunity-driven micro enterprises, providing adequate credit schemes for entrepreneurial households could be a promising policy strategy for fostering the growth and survival of micro enterprises. In this respect it is essential that banks provide affordable micro-loans also for poor rural households. The work of the Vietnam Bank for Agriculture and Rural Development and the non-profit Viet Nam Bank for Social Policies, which provide subsidized credit for the rural poor, can be seen as a promising step in the right direction (LAURENCESON & NGHIEM 2005).

As micro-economic characteristics are of considerable importance for the ability to start and run micro enterprises successfully, policy strategies that focus on individual, enterprise-specific and linkage-related factors can be regarded as efficient endogenous development strategies to foster micro entrepreneurship. In this respect, policy makers must bear in mind that not every individual is in a position to become an entrepreneur and to run a micro enterprise successfully. Households with insufficient assets, for example not enough remaining savings, have a high risk of facing severe problems if their micro enterprise fails. Therefore, it should not be a political aim to push all types of households into micro entrepreneurial activities. Rather, providing realistic advice about how to identify, assess and implement possible opportunities in the regional market, how to run a micro enterprise successfully and how to build up trust-based business networks as well as about the risks involved in micro entrepreneurship in specific sectors, could be the focus of entrepreneurial teaching programs, such as the Start and Improve Your Business Program run by the Vietnamese government. Currently, the teaching centers are located in the provincial capitals of Thua Thien-Hue, Ha Tinh, and Dak Lak, which means that they are not accessible to or affordable for poor households living far from the provincial capitals. By providing local, specialized and affordable teaching programs in addition to those already in existence, the business skills of poor rural households could be fostered. Moreover, creating safety nets and insurance schemes to absorb the short-term impact

of individual shocks could enable entrepreneurs to bridge times of hardship without having to close down their micro enterprise.

Although it can be assumed that micro entrepreneurship might help to reduce regional inequality between urban and rural areas, at the same time regional inequality between individual rural areas tends to increase, as micro entrepreneurship emerges particularly in more advanced regional economic settings, leaving very poor and remote rural areas behind. The same is true of the positive effect of micro entrepreneurship on the vulnerability to poverty of households. Hence, inequality between privileged and unprivileged households tends to increase, as micro enterprises are mainly set up by households that already have good asset endowment.

7.2 Limitations and further research needs

The conceptual framework, the panel data and also the multilevel analyses used in this dissertation clearly have huge advantages for answering questions regarding the spatial impact on micro entrepreneurial activities of households in rural Vietnam. It became clear that linking the Sustainable Livelihood Framework and the Entrepreneurial Ecosystem Approach provides a great opportunity for analyzing whether micro entrepreneurial activities in rural areas of Southeast Asian transition economies are driven by similar factors to those generally used to explain entrepreneurship in the Global North, without neglecting the reality of the lives of households in rural areas of transition economies within the Global South. In addition, the strength of the panel data structure base emerged as it allows for dynamic time serial analyses of the start-up and closure of micro enterprises as well as the effect of starting a micro enterprise on the vulnerability to poverty of households. To date, no comparable survey has been conducted that provides similarly detailed panel information about changes in the livelihood strategies of households in the context of the Global South. In this respect, particularly the duration of the observation period and the sample size can be seen as unique features. Combining such detailed household data with the annual Enterprise Survey of the General Statistics Office of Vietnam increases the uniqueness of the data even further. Moreover, the value of multilevel approaches proved to be useful in order to estimate the importance of different geographical units for explaining the variance of a dependent variable and to estimate which regional characteristics capture the regional effect. Nevertheless, some limitations of the data base and the multilevel approach used in this dissertation have to be mentioned:

First, even though the questionnaires were checked meticulously, the data entry process was supervised and the data were cleaned during a long lasting and precise cleaning process, remaining errors in the data cannot be ruled out completely. Although all the researchers were trained during a kick-off workshop before the field work started, and all important information about how to interpret the survey questions was documented precisely, differences in the interpretation cannot be ruled out entirely either. Another problem of the long project duration is the possibility that different household members may have answered the survey questions in the different waves. This can result in inconsistencies in the responses due to differences in the personal knowledge about different aspects of a household's livelihood.

Second, due to the political situation in Vietnam, it is also possible that sensitive questions, particularly about the political situation and social problems, were not answered honestly. This problem occurs for the responses of the households, but even more so for the answers provided by the village heads, who often have strong links to the communist party. The problem was solved by including only non-sensitive questions in the analyses. Moreover, it has to be mentioned that working with official survey data provided by the governments of countries in the Global South, such as the Vietnam Enterprise Survey of the General Statistics Office of Vietnam, which was used for the analyses in Chapters 5 and 6, entails some risk of incompleteness and inaccuracy. However, compared to official data from other countries in the Global South, the Vietnamese Enterprise Survey seems to be relatively reliable according to the Vietnamese colleagues. In fact, having access to an annual enterprise survey in a Global South context is by no means a matter of course and can rather be seen as a huge advantage of this dissertation.

Third, it is necessary to mention that the data used in this dissertation were collected in three provinces of rural Vietnam. The empirical results presented are therefore only representative of these provinces. In addition, no precise information is available about the years in which the micro enterprises were started and closed, as it was not possible to conduct the survey annually. Hence, the time lag between the explanatory variables and the dependent variable varies between different observations. Moreover, it has to be mentioned that instrumental variables were used in order to estimate the effects of opportunity-driven and necessity-driven micro entrepreneurship on vulnerability to poverty, because direct data about opportunity-driven self-employment were only available for the last two survey waves.

Fourth, although multilevel regression approaches do indeed exhibit great potential for analyzing empirical questions within the field of economic geography, the interpretations of

surprising findings remain subjective to a certain degree. In such cases, qualitative methods should be used to identify possible explanations for unexpected findings. The resulting mixed-method approach would allow for a more detailed discussion of the statistical effects. In this respect, further research should take a closer look at the effect of state-owned enterprises in order to obtain more detailed explanations of their positive effect on opportunity-driven entrepreneurship. Moreover, a more detailed examination of access to finance is necessary. Here, future research needs to analyze informal and co-operative credit arrangements in more detail in order to gain in-depth knowledge about corporate finance in rural areas in the Global South.

Fifth, no information was gathered in the survey about why enterprises closed down, which makes it impossible to distinguish between micro enterprises that failed financially and those that were closed voluntarily, for instance in order to adapt to changing market situations by starting a more suitable micro enterprise. To gain in-depth knowledge about the evolution of micro entrepreneurial activities, further research needs to integrate a dynamic perspective into the conceptual discussion by analyzing whether entrepreneurial actors undertake such adaptation processes. In this respect, it would be even more interesting to analyze whether entrepreneurial actors gradually up-grade their entrepreneurial activities over time. Such a successive up-grading process could involve individuals initially starting their entrepreneurial path as own-account workers in low-return activities in their rural home village without being integrated into the wider economy, such as petty trading on the street. This initial step would then be followed by a successive process of discontinuing one micro entrepreneurial activity in order to switch to a more advanced and regionally integrated micro entrepreneurial activity, such as operating a retail store. Such an up-grading process can also be assumed to have a spatial dimension, as it may be accompanied by entrepreneurs relocating from their rural home village to the nearest city or even to the provincial capital. Such a dynamic perspective would be fruitful for discussion within the field of economic geography, as it makes it possible to deduce individual and regional factors that explain micro entrepreneurial up-grading and adaptation processes.

Overall, the dissertation can be used as a basis for further research that concentrates on finding similarities between entrepreneurship in the Global North and in the Global South, by analyzing micro entrepreneurship as a multi-scalar phenomenon, as well as for studies that aim to analyze entrepreneurship in the context of transition economies.

References for Chapters 1, 2, 3 and 7

Acs, Z., 2006. How is entrepreneurship good for economic growth? *Innovations* 1(1), 97-107. DOI:10.1162/itgg.2006.1.1.97.

Agergaard, J., Fold, N., Gough, K.V., 2009. Global-local interactions: socioeconomic and spatial dynamics in Vietnam's coffee frontier. *Geographical Journal* 175(2), 133-145. DOI: 10.1111/j.1475-4959.2009.00320.x.

An, L. V., 2006. Towards upland sustainable development: livelihood gains and resource management in central Vietnam. In: Tyler, S. R. (eds.), *Communities, Livelihoods and Natural Resources: Action Research and Policy Change in Asia*. International Development Research Centre, Ottawa, ON, 85-105.

Asheim, B. T., Isaksen, A., 2002. Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge. *The Journal of Technology Transfer* 27(1), 77-86. DOI: 10.1023/A:1013100704794.

Assche, K. V., Hornidge, A. K., 2015. *Rural development: knowledge and expertise in governance*. Wageningen Academic Publishers, Wageningen, The Netherlands.

Atkinson, M. M., Coleman, W. D., 1989. Strong states and weak states: Sectoral policy networks in advanced capitalist economies. *British journal of political science* 19(01), 47-67. DOI: 10.1017/S0007123400005317.

Audretsch, D. B., Falck, O., Feldman, M. P., Heblich, S., 2012. Local Entrepreneurship in Context. *Regional Studies* 46(3), 379-389. DOI: 10.1080/00343404.2010.490209.

Balisacan, A. M., Piza, S. F. A., Edillon, R. G., 2005. *Rural Poverty in Southeast Asia: Issues, Policies and Challenges*. Expert Group Meeting on Rural Development and Rural Poverty Reduction (organized by ESCAP). Bangkok, Thailand 19–20 May 2005.

Bathelt, H., Glückler, J., 2012. *Wirtschaftsgeographie*. Ulmer, Stuttgart, Germany.

Bathelt, H., Malmberg, A., Maskell, P., 2004. Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography* 28(1), 31-56. DOI: 10.1191/0309132504ph469oa.

Bertelsmann Stiftung, 2016. *Vietnam Country Report*. Bertelsmann Stiftung, Gütersloh, Germany.

Blotevogel, H. H., 1999. Zur Neubewertung der Region für Regionalentwicklung und Regionalpolitik. In: Akademie für Raumforschung und Landesplanung (eds.), *Europäische Einflüsse auf die Raum- und Regionalentwicklung am Beispiel des Naturschutzes, der Agenda 2000 und des regionalen Milieus*. ARL, Hannover, Germany, 44-60.

- Bohle, H.-G., 2008. Leben mit Risiko - Resilienze als neues Paradigma für die Risikowelten von morgen. In: Felgentreff, C., and Glade, T., (eds.), *Naturrisiken und Sozialkatastrophen*. Spektrum Akademischer Verlag, Berlin, Germany, 435–442.
- Bosma, N., Schlutzjens, V., 2011. Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe *The Annals of Regional Science* 47(3), 711-742. DOI: 10.1007/s00168-010-0375-7.
- Bürcher, S., Habersetzer, A., Mayer, H., 2015. Entrepreneurship in Peripheral Regions: A Relational Perspective. In: Mack, E. A., Qian, H. (eds.), *Geographies of Entrepreneurship*. Routledge studies in human geography. Routledge, New York, NY, 143-164.
- Brünjes, J., 2012. Non-farm wage labour and entrepreneurship in rural Vietnam. Dissertation, Georg-August-Universität Göttingen. Optimus, Göttingen, Germany.
- Brünjes, J., Schmid, D., Revilla Diez, J., Liefner, I., 2012. Participation in Different Regional Non-Farm Wage Activities: Evidence from Thailand and Vietnam. In: Klasen, S., Waible, H. (eds.), *Vulnerability to Poverty: Theory, Measurement and Determinants, with Case Studies from Thailand and Vietnam*. Palgrave Macmillan, New York, NY, 305-334.
- Brünjes, J., Revilla Diez, J., 2012. Opportunity entrepreneurs - potential drivers of non-farm growth in rural Vietnam? Philipps University Marburg, Marburg, Germany.
- Brünjes, J., Revilla Diez, J., 2013. 'Recession Push' and 'Prosperity Pull' Entrepreneurship in a Rural Developing Context. *Entrepreneurship & Regional Development* 25(3-4), 251-271. DOI: 10.1080/08985626.2012.710267.
- Byrne, D., 2001. *Complexity theory and the social sciences*. 2nd ed. Routledge, New York, NY.
- Calderon, G., Iacovone, L., Juarez, L., 2016. Opportunity versus necessity: understanding the heterogeneity of female micro-entrepreneurs. *The World Bank Economic Review* (No. 7636), Washington, DC.
- Cambridge Business English Dictionary, 2017. *Economic Development*. Cambridge University Press: <http://dictionary.cambridge.org/dictionary/english/economic-development>.
- Carter, N. M., Gartner, W. B., Reynolds P. D., 1996. Exploring start-up event sequences. *Journal of Business Venturing* 11(3), 151-166. DOI:10.4337/9781783476947.00017.
- Chlosta, S., Patzelt, H., Klein, S. B., Dormann, C., 2012. Parental role models and the decision to become self-employed: The moderating effect of personality. *Small Business Economics* 38(1), 121-138. DOI: 10.1007/s11187-010-9270-y.
- Chowdhury, R., Larson, K., Grove, M., Polsky, C., Cook, E., Onsted, J., Ogden, L., 2011. A multi-scalar approach to theorizing socio-ecological dynamics of urban residential landscapes. *Cities and the Environment (CATE)* 4(1), 1-19.
- Comanys, Y.E., McMullen, J.S., 2007. Strategic Entrepreneurs at Work: The Nature, Discovery, and Exploitation of Entrepreneurial Opportunities. *Small Business Economics* 28(4), 301-322. DOI: 10.1007/s11187-006-9034-x.

Cuffaro, N., Hallam, D., 2011. 'Land Grabbing'in Developing Countries: Foreign Investors, Regulation and Codes of Conduct. International Conference on Global Land Grabbing 6-8 April 2011. Institute of Development Studies, University of Sussex, UK.

Dale, A., 2015. Self-Employment and entrepreneurship: Notes on two problematic concepts. In: Burrows, R. (eds.), *Deciphering the Enterprise Culture: Entrepreneurship, Petty Capitalism and the Restructuring of Britain*. Routledge, New York, NY, 35-52.

Dang, H. L., 2010. Wirtschaftlicher Strukturwandel und außerlandwirtschaftliche Beschäftigung in Vietnam. *Hannoversche Geographische Arbeiten* 60. Leibnitz Universität Hannover, Hannover, Germany.

De Haas, H., 2010. Migration and development: A theoretical perspective. *International Migration Review* 44 (1), 227–264. DOI: 10.1111/j.1747-7379.2009.00804.x.

Del Casino Jr., V., 2009. *Social Geography: A critical Introduction*. Blackwell Publishing, Oxford, UK.

De Mel, S., McKenzie, D. J., Woodruff, C. M., 2008. Who are the microenterprise owners? Evidence from Sri Lanka on Tokman v. de Soto. Policy Research Working Paper (No. 4635), World Bank. DOI: 10.1596/1813-9450-4635.

Desai, S., 2011. Measuring Entrepreneurship in Developing Countries. In: Naudé, W. (eds.), *Entrepreneurship and Economic Development*. Palgrave Macmillan, Basingstoke, UK , 94-107.

De Wit, J., Sang, L. V., Chien, V. L., Hien, L. T., Hung, H. V., Tuyet, D. T. A., Bau, D. N., Hoa, Q., Tam, M. T. T., 2012. Assessing decentralised policy implementation in Vietnam: The case of land recovery and resettlement in the Vung Ang Economic Zone. *ISS Working Paper Series/General Series* 546(546), 1-55.

DFID, 1999. Sustainable Livelihoods Guidance Sheets. Department for International Development: <http://files.enonline.net/attachments/871/dfid-sustainable-livelihoods-guidance-sheet-section1.pdf>

DiPrete, T. A., Forristal, J. D., 1994. Multilevel Models – Methods and Substance. *Annual Review of Sociology* 20, 331-357. DOI: 10.1146/annurev.so.20.080194.001555

Dopfer, K., Foster, J., Potts, J., 2004. Micro-meso-macro. *Journal of Evolutionary Economics* 14(3), 263-279. DOI: 10.1007/s00191-004-0193-0.

Ellis, F., 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press, Oxford, U.K.

Essletzbichler, J., Rigby, D. L., 2010. Generalized Darwinism and evolutionary economic geography. In: Boschma, R., Martin, R. (eds.), *The handbook of evolutionary economic geography*. Edward Elgar, Cheltenham, UK, 43-61.

Eyhorn, F., 2007. Organic farming for sustainable livelihoods in developing countries?: The case of cotton in India. vdf Hochschulverlag AG, Zürich, Schweiz.

Felkner, J. S., Townsend, R. M., 2011. The Geographic Concentration of Enterprise in Developing Countries. *The Quarterly Journal of Economics* 126(4), 2005-2061. DOI: 10.1093/qje/qjr046.

- Fields, G., 2014. Self-employment and poverty in developing countries: Helping the self-employed earn more for the work they do. *IZA World of Labor* 60. DOI: 10.15185/izawol.60.
- Fritsch, M., Falck, O., 2007. New Business Formation by Industry over Space and Time: A Multidimensional Analysis. *Regional Studies* 41(2), 157-172. DOI: 10.1080/00343400600928301.
- Fox, L., 2008. *Beating the Odds: Sustaining Inclusion in Mozambique's Growing Economy*. The World Bank, Washington, D.C.
- Fox, L., Sohnesen, T. P., 2012. *Household Enterprises in Sub-Saharan Africa: Why They Matter for Growth, Jobs, and Livelihoods*. The World Bank, Washington, D.C.
- Fox, L., Sohnesen, T.P., 2013. *Household Enterprises in Mozambique: Key to Poverty Reduction but Not on the Development Agenda?* The World Bank, Washington, D.C.
- Gartner, W. B., Carter, N., 2003. Entrepreneurial behavior and firm organizing processes. In: Z. J. Acs, Audretsch D. B. (eds.), *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*. Springer, New York, NY, 99-127.
- GEM (Global Entrepreneurship Monitor), 2013. *Viet Nam Report 2013*. Viet Nam Chamber of Commerce and Industry, Hanoi, Viet Nam.
- General Statistics Office, 2006. *Non-Farm Individual Business Establishments: Current and Solutions*. Statistical Publishing House, Hanoi, Viet Nam
- General Statistics Office, 2016a. *On non-farm Individual Business Establishments: Current and Solutions*. Statistical Publishing House, Hanoi, Viet Nam.
- General Statistics Office, 2016b. *Reprot on Labour force survey Quarter 3*: https://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=18280
- General Statistics Office, 2017. *Statistics*. https://www.gso.gov.vn/Default_en.aspx?tabid=766
- Gërkhani, K., 2004. The informal sector in developed and less developed countries: A literature survey. *Public Choice* 120(3), 267-300. DOI: 10.1023/B:PUCH.0000044287.88147.5e.
- Giesselmann, M., Windzio, M., 2013. *Regressionsmodelle zur Analyse von Paneldaten (Vol. 1)*. Springer-Verlag, Wiesbaden, Germany.
- Gindling, T., Newhouse, D., 2012. Self-employment in the developing world. *The World Bank* (6201). DOI: 10.1596/1813-9450-6201.
- Goreski, P. A., 1995. "What do we know about entry?" *International Journal of Industrial Organization* 13(4), 421-440. DOI: 10.1016/0167-7187(95)00498-X.
- Gorard, S., 2003: What is multilevel modelling for? *British Journal of Educational Studies* 51(1), 46-63.
- Gottschalk, S., Muller, K., Niefert, M., 2010. Entry strategies, founder's human capital and start-up size. *International Journal of Entrepreneurship and Small Business* 11 (4), 403-423. DOI: 10.1504/IJESB.2010.036294.

- Gries, T., Naudé, W., 2010. Entrepreneurship and structural economic transformation. *Small Business Economics* 34(1), 13–29. DOI: 10.1007/s11187-009-9192-8.
- Grimm, M., Knorringa, P., Lay, J., 2012. Informal entrepreneurs in Western Africa: Constrained gazelles in the lower tier. *World Development* 40(7), 1352–1368.
- Guseva, A., Rona-Tas, A., 2001. Uncertainty, Risk and Trust: Russian and American Credit Card Markets Compared. *American Sociological Review* 66(5), 623- 646.
- Haggblade, S., Hazell, P. B. R., Reardon, T. A., 2002. Strategies for Stimulating Poverty-Alleviating Growth in the Rural Non-Farm Economy in Developing Countries. EPTD Discussion Paper (92).
- Haggblade, S., Hazell, P. B. R., Reardon, T. A., 2010. The rural Non-farm Economy: Prospects for Growth and Poverty Reduction. *World Development* 38(10), 1429-1441. DOI: 10.1016/j.worlddev.2009.06.008.
- Hindle, K., 2010. How community context affects entrepreneurial process: A diagnostic framework. *Entrepreneurship & Regional Development* 22(7), 599-647. DOI: 10.1080/08985626.2010.522057.
- Hodgson, G., 1993. *Economics and Evolution: Bringing Life Back into Economics*. Polity Press, Cambridge, UK.
- Hox, J. J., 2010. *Multilevel analysis. Techniques and applications*. Routledge, New York, NY. DOI: 10.4324/9780203852279.
- Hundt, C., Sternberg, R., 2016. Explaining new firm creation in Europe from a spatial and time perspective: A multilevel analysis based upon data of individuals, regions and countries. In: *Papers in Regional Science* 95(2), 223-257. DOI: 10.1111/pirs.12133.
- Ilona, I. P. K., Paraskevopoulos, C. J., Horváth, G., 2004. Institutional ‘legacies’ and the shaping of regional governance in Hungary. *Regional & Federal Studies* 14(3), 430-460. DOI: 10.1080/1359756042000261388.
- Isenberg, D., 2011. *The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship*. The Babson Entrepreneurship Ecosystem Project. Institute of International European Affairs, Dublin, Ireland.
- Japan Development Institute, 2010. *The Study on the Development Plan of Thakek-Vung Ang Gateway between Lao PDR and Vietnam*. Japan Development Institute, Tokyo, Japan.
- Kaufmann, D., Kaliberda, A., 1996. *Integrating the unofficial economy into the dynamics of post-socialist economies: A framework of analysis and evidence*. World Bank, Washington, DC.
- Kiiru, J. M., 2007. *Microfinance, entrepreneurship and rural development: Empirical evidence from Makueni district, Kenya*. Global Poverty Research Group (GPRG) Conference. Oxford University, Oxford, UK 18th March 2007.
- Lanjouw, P., 2007. “Does the Rural Nonfarm Economy Contribute to Poverty Reduction?” In: Haggblade, H., Reardon T. A. (eds), *Transforming the Rural Nonfarm Economy*. Johns Hopkins University Press, Baltimore, MD, 55-82.

- Lanjouw, J. O., Lanjouw ,P. 2001. The rural non-farm sector: issues and evidence from developing countries. *Agricultural Economics* 26 (1), 1–23. DOI: 10.1111/j.1574-0862.2001.tb00051.x.
- Laurenceson J., Nghiem,H. S., 2005. The Nature of NGO Microfinance in Vietnam and Stakeholder's Perceptions of Effectiveness. Discussion Paper (3). School of Economics, University of Queensland, Queensland, New Zealand.
- Leckie, G., Pillinger, R., Jenkins, J., Rasbash, J., 2010. School, family and neighbourhood: Which is most important to a child's education. *Significance* 7(2), 67-70. DOI: 10.1111/j.1740-9713-2010-00421-x.
- Lim, U., Kim, D., 2015. Toward Sustainable Economic Growth: A Spatial Panel Data Analysis of Regional Income Convergence in US BEA Economic Areas. *Sustainability* 7(8), 9943-9959. DOI:10.3390/su7089943.
- Lindskog, E., Dow, K., Axberg, G.N., Miller, F., Hancock, A., 2005. When rapid changes in environmental, social and economic conditions converge: challenges to sustainable livelihoods in Dak Lak, Vietnam. Stockholm Environment Institute (SEI).
- Lowe, P., Murdoch, J., Ward, N., 1995. Networks in rural development: beyond exogenous and endogenous models. In: Ploeg, JD van der; Dijk, G. van (eds.): *Beyond Modernisation: The impact of endogenous rural development*. Van Gorcum, Assen, The Netherlands, 87-106.
- Malesky, E., 2002. Study of Foreign Direct Investment Environment in Ha Tinh Province. dissertation, Duke University, Durham, NC.
- Martin, R., Sunley, P., 2007. Complexity thinking and evolutionary economic geography. *Journal of Economic Geography* 7(5), 573-601. DOI: 10.1093/jeg/lbm019.
- Mason, C., Brown, R., 2014. Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship. Final Report to OECD. Paris, France, 1-38.
- McGregor, A., 2008. *Southeast Asian Development*. Routledge, New York, NY.
- McMillan, J., Woodruff, C., 2002. The central role of entrepreneurs in transition economies. *The Journal of Economic Perspectives* 16(3), 153-170. DOI: 10.1257/089533002760278767.
- McNamara, K., Weiss, C., 2005. Farm Household Income and On-and-Off Farm Diversification. *Journal of Agricultural and Applied Economics* 37(1), 37-48. DOI: 10.1017/S1074070800007082.
- Mead, D. C., Liedholm, C., 1998. The dynamics of micro and small enterprises in developing countries. *World development* 26(1), 61-74. DOI: 10.1016/S0305-750X(97)10010-9.
- Mitchell, T., 2011. "Middlemen, Bargaining and Price Information: Is Knowledge Power?" London School of Economics and Political Science, London, UK.
- Mizon, G. E., 1995: A simple message for autocorrelation correctors: Don't. *Journal of Econometrics* 69 (1), 267–288. DOI: 10.1016/0304-4076(94)01671-L.
- Moore J. F., 1993. Predators and prey: a new ecology of competition. *Harvard Business Review*. 71(3), 75–86.

- Naudé, W., Santos-Paulino, A. U., McGillivray, M., 2009. Vulnerability in Developing Countries. WIDER Angle newsletter, September 2009: <https://www.wider.unu.edu/publication/vulnerability-developing-countries>
- Nayyar, D., 2013. *Catch Up: Developing Countries in the World Economy*. Oxford University Press, Oxford, UK.
- Nguyen, T. V., 2005. Learning to trust: A study of interfirm trust dynamics in Vietnam. *Journal of World Business* 40(2), 203-221. DOI: 10.1016/j.jwb.2005.02.001.
- Oxfam, 2013. *Roles of village institutions in poverty reduction in some typical ethnic minority communities of Vietnam: Case studies in Dien Bien, Quang Tri, Dak Lak, and Tra Vinh provinces*. Oxfam, Hanoi, Vietnam.
- Paterson, L., Goldstein, H., 1991. New statistical methods for analyzing social structures: An introduction to multilevel models. *British Educational Research Journal* 17(4), 387-393. DOI: 10.1080/0141192910170408.
- Pham X. N., 2001. *Rural Development in Vietnam*. Social Sciences Publishing House, Hanoi, Vietnam.
- Pincus, J., Anh, V. T., Nghia, P. D., Wilkinson, B., Thanh, N. X., 2012. *Structural Reform for Growth, Equity, and National Sovereignty*. Policy Discussion Paper Prepared for the Vietnam Leadership Program (VELP). Harvard Kennedy School, Cambridge, MA.
- Piore, M. J., Sabel, C. F., 1984. *The second industrial divide. Possibilities for prosperity*. Basic Books, New York, NY. DOI: 10.2307/1956301.
- Rabe-Hesketh, S., Skrondal, A., 2008. *Multilevel and longitudinal modeling using stata*. Stata Press Publication, College Station, TX.
- Ravallion, M., 1992. 'Poverty comparisons: a guide to concepts and measures'. *Living Standards Measurement Study (LSMS working paper (No.88))*. World Bank, Washington, DC.
- Ravallion, M., Van de Walle, D., 2008. *Land in transition: Reform and poverty in rural Vietnam*. World Bank and Palgrave Macmillan, Washington, DC.
- Ray, C., 1999. Endogenous development in the era of reflexive modernity. *Journal of rural studies* 15(3), 257-267. DOI: 10.1016/S0743-0167(98)00072-2.
- Revilla Diez, J., 2016. Vietnam 30 years after Doi Moi: achievements and challenges. *Zeitschrift für Wirtschaftsgeographie* 60(3), 121–133. DOI: 10.1515/zfw-2016-0035.
- Rogers, W. H., 1993. Regression standard errors in clustered samples. *Stata Technical Bulletin* 13(3), 19-23.
- Rogerson, P. A., 2014. *Statistical methods for geography: a student's guide*. Sage, Los Angeles, CA.
- Ronnås, P., Ramamurthy, B., 2003. Entrepreneurship in Vietnam: transformation and dynamics. *The Journal of Asian Studies* 62(2), 713-715. DOI: 10.2307/3096340.

- Schade, C., Burmeister-Lamp, K., 2009. Experiments on entrepreneurial decision making: A different lens through which to look at entrepreneurship. *Foundations and Trends in Entrepreneurship* 5(2), 81-134. DOI: 10.1561/03000000019.
- Schätzl, L., Revilla Diez, J. (Eds.). 2012. *Technological change and regional development in Europe*. Springer Science & Business Media, New York, NY.
- Schultz, C. J., Pecotich, A., 1997. Marketing and development in the transition economies of Southeast Asia: Policy explication, assessment, and implications. *Journal of Public Policy & Marketing* 16(1), 55-68.
- Schumpeter, J. A., 1934. *The theory of economic development*. Harvard University Press, Cambridge, MA.
- Scoones, I., 1998. *Sustainable Rural Livelihoods: A Framework for Analysis*. IDS Working Paper 72. IHD, Brighton, UK.
- Shane, S., 2003. *A general theory of entrepreneurship: The individual-opportunity-nexus*. Edward Elgar, Cheltenham, UK. DOI: 10.4337/9781781007990.00001.
- Shane, S., Venkataraman, S., 2000. The promise of entrepreneurship as a field of research. *The Academy of Management Review* 25(1), 217-226. DOI: 10.5465/AMR.2000.2791611.
- Shaw, J., 2004. Microenterprise Occupation and Poverty Reduction in Microfinance Programs: Evidence from Sri Lanka. *World Development* 32 (7), 1247–1264. DOI: 10.1016/j.worlddev.2004.01.009.
- Slee, B., 1994. Theoretical aspects of the study of endogenous development, In: Van der Ploeg, J. D., Long, A. (eds.), *Born from within: Practice and perspectives of endogenous rural development*. Van Gorcum, Assen, The Netherlands, 184-194.
- Song, L., 2012. *Dilemmas of China's growth in the Twenty-First Century*. ANU E Press, Canberra, Australia.
- Spigel, B., 2015. The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice* 41(1), 49-72. DOI: 10.1111/etap.12167.
- Stam, E., 2011. Entrepreneurship, Evolution and Geography. In: Boschma, R., Martin, R. (eds.), *The Handbook of Evolutionary Economic Geography*. Edward Elgar, Cheltenham, UK, 139-161.
- Stam, E., Spigel, B., 2016. *Entrepreneurial Ecosystems*. U.S.E. Discussion Paper Series 16-13. Utrecht School of Economics, Utrecht, The Netherlands.
- Storey, D. J., Wynarczyk, P., 1996. The survival and non-survival of micro firms in the UK. *Review of Industrial Organization* 11(2), 211-229. DOI: 10.1007/BF00157668.
- Stuetzer, M., Obschonka, M., Brixy, U., Sternberg, R., Cantner, U., 2014. Regional characteristics, opportunity perception and entrepreneurial activities. *Small Business Economics* 42, 221–224. DOI: 10.1007/s11187-013-9488-6.

- Tamvada, J. P., 2015. The Spatial Distribution of Self-Employment in India: Evidence from Semiparametric Geoadditive Models. *Regional Studies* 49(2), 300-322. DOI: 10.1080/00343404.2013.779656.
- Thai, M. T. T., Turkina, E., 2014. Macro-level determinants of formal entrepreneurship versus informal entrepreneurship. *Journal of Business Venturing* 29(4), 490-510. DOI: 10.1016/j.jbusvent.2013.07.005
- Torre, A., Gilly, J.-P., 2000. On the Analytical Dimension of Proximity Dynamics. *Regional Studies* 34(2), 169–180. DOI: 10.1080/00343400050006087.
- Trading Economics, 2015. Coffee 1972-2015. <http://www.tradingeconomics.com/commodity/coffee>.
- Van de Walle, D., Cratty, D., 2004. Is the emerging nonfarm market economy the route out of poverty in Vietnam? *Economics of Transition* Volume 12(2), 237–274. DOI: 10.1111/j.0967-0750.2004.00178.x.
- Vázquez-Barquero, A., 2003. *Endogenous development: Networking, innovation, institutions and cities*. Routledge, New York, NY.
- Vietnam Trade Promotion Agency, 2013a. Economic growth achievement in Thua Thien Hue. http://www.vietrade.gov.vn/en/index.php?option=com_content&view=article&id=2028:economic-growth-achievement-in-thua-thien-hue&catid=325:brief-introduction&Itemid=361
- Vietnam Trade Promotion Agency, 2013b. State of Ha Tinh Socio-Economic Development. http://www.vietrade.gov.vn/en/index.php?option=com_content&view=article&id=2066:state-of-ha-tinh-socio-economic-development-in-2006-2010-part-1&catid=325:brief-introduction&Itemid=361
- Vijverberg, W., Haughton, J., 2002. Household Enterprises in Vietnam: Survival, Growth, and Living Standards. Policy Research Working Paper (No. 2773). The World Bank, Washington, DC. DOI: 10.1596/1813-9450-2773.
- Vo, T. T., Pham, H. H., 2004. Vietnam's Recent Economic Reforms and Developments. In: Taylor H. (eds), *Social Inequality in Vietnam and the Challenges to Reform*. Institute of Southeast Asian Studies, Singapore, 63–89.
- Waibel, H., Hohfeld, L., 2016. Poverty and Nutrition: A Case Study of Rural Households in Thailand and Viet Nam. ADBI Working Paper (No. 623). Asian Development Bank Institute, Chiyoda-ku, Japan.
- Wai-Poi, M., 2013. Measuring Vulnerability to Poverty. Asia Policy Forum 2013. World Bank, Jakarta, Indonesia.
- White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48(4), 817–838.
- White, H., 1984. *Asymptotic Theory for Econometricians*. Academic Press, Orlando, FL.
- World Bank, 2003. *Participatory Poverty and Governance Assessment: Dak Lak Province*. The World Bank, Washington, DC.

World Bank, 2005. Vietnam Business: Vietnam Development Report 2006. The World Bank, Washington, DC.

World Bank, 2016. Indicators: GINI Index (World Bank estimate). <http://data.worldbank.org/indicator/SI.POV.GINI>

Xuan, T. N., 2017. About Villages in Vietnam. E-Mail message to Franziska Sohns. 03.01.2017.

Summary

Since the beginning of the economic renewal process (Doi Moi) in 1986, Vietnam has undergone a process of economic growth, which has led to a significant reduction in poverty. This positive development process, however, focuses mainly on the urban centers with Hanoi in the north and Ho Chi Minh City in the south of the country. In contrast to the urban centers, rural areas have developed less dynamically. As a result, regional disparities within the country, particularly between rural and urban regions, have increased over time. In order to reduce the growing disparities, the Vietnamese government is trying to initiate potential for regional development in rural areas. In this context, micro entrepreneurship is considered to play a significant role in the economic development of rural areas as well as in the reduction of the vulnerability to poverty of rural households. The aim of this dissertation is to empirically analyze the regional economic conditions under which participation in micro entrepreneurship reduces the vulnerability to poverty of rural households. In addition, this dissertation aims to determine the impact of spatial factors on the start-up and closure of micro enterprises. For the empirical analyses a panel data set is used, which was collected in three provinces in rural Vietnam (Dak Lak, Thua Thien-Hue, Ha Tinh) in the course of the DFG Research Unit FOR 756 from 2007 to 2013. The empirical findings show that micro entrepreneurship contributes significantly to reducing the vulnerability to poverty of rural households, but only if they are located in a regional economic environment characterized by proximity to markets, good infrastructural conditions and an advanced stage of structural change. In economically less well developed regions, micro entrepreneurship is not sufficient to reduce the vulnerability to poverty of rural households. In such regions, what matters more is that micro entrepreneurship is driven by opportunity and not by necessity. In highly agricultural and peripheral regions, micro entrepreneurship does not reduce the vulnerability to poverty of rural households, irrespective of the motivation. In addition, the empirical results show that both the start-up and the closure of micro enterprises are influenced by spatial factors to a significant degree. In this respect, local market potentials, the presence of state-owned enterprises, access to regional markets and credit institutions, as well as a prospering regional economy are important factors.

Zusammenfassung

Seit Beginn des wirtschaftlichen Erneuerungsprozesses (Doi Moi) im Jahre 1986 durchläuft Vietnam einen wirtschaftlichen Wachstumsprozess, welcher bereits zu einer signifikanten Verringerung der Armut geführt hat. Dieser positive Entwicklungsprozess konzentriert sich allerdings hauptsächlich auf die urbanen Zentren rund um Hanoi im Norden und Ho Chi Minh City im Süden des Landes. Die ländlich geprägten Regionen abseits der urbanen Zentren entwickeln sich hingegen weniger dynamisch. Folglich vergrößern sich die regionalen Disparitäten innerhalb des Landes, insbesondere zwischen ländlichen und urbanen Regionen. Um den steigenden Disparitäten entgegenzuwirken, werden von Seiten der vietnamesischen Regierung Versuche unternommen, Entwicklungspotenziale im ländlichen Raum zu initiieren. In diesem Zusammenhang wird Kleinstunternehmertum in der Literatur eine bedeutende Rolle für die wirtschaftliche Entwicklung ländlicher Räume sowie für die Reduktion des Armutsrisikos ländlicher Haushalte zugeschrieben. Das Ziel dieser Dissertation ist es empirisch zu überprüfen, unter welchen Rahmenbedingungen Kleinstunternehmertum dazu beitragen kann das Armutsrisiko ländlicher Haushalte zu reduzieren. Ein weiteres Ziel dieser Dissertation ist es räumliche Einflussfaktoren zu ermitteln welche die Unternehmensgründung und Unternehmensaufgabe beeinflussen. Für die empirischen Auswertungen findet ein Paneldatensatz Verwendung, welcher von 2007 bis 2013 im Zuge der DFG Research Unit FOR 756 in drei Provinzen im ländlichen Vietnam (Dak Lak, Thua Thien-Hue, Ha Tinh) erhoben und unter Zuhilfenahme von multivariaten Verfahren der Mehrebenenanalyse ausgewertet wurde. Die Auswertungsergebnisse zeigen, dass Gründungen von Kleinstunternehmen zur Reduktion des Armutsrisikos ländlicher Haushalte beitragen können, wenn die regionalwirtschaftlichen Rahmenbedingungen Potenziale für erfolgreiches Unternehmertum aufweisen. In wirtschaftlich weniger entwickelten Regionen hingegen spielt die Gründungsmotivation eine bedeutende Rolle. In solch einem regionalökonomischen Umfeld ist es Haushalten, die ein Kleinstunternehmen aus der Not heraus gründen, nicht möglich ihr Armutsrisiko durch Gründen von Kleinstunternehmen zu reduzieren. Unternehmensgründungen hingegen, die getätigt werden um Marktpotenzial zu nutzen, tragen signifikant zur Reduktion des Armutsrisikos ländlicher Haushalte bei. In sehr landwirtschaftlich geprägten und peripher gelegenen Regionen hingegen, können Unternehmensgründungen

unabhängig von der Gründungsmotivation nicht dabei helfen das Armutsrisiko ländlicher Haushalte zu senken. Des Weiteren zeigen die Auswertungsergebnisse, dass sowohl die Gründung als auch die Aufgabe von Kleinstunternehmen zu einem signifikanten Anteil von räumlichen Faktoren abhängig ist. Hierbei spielen das lokale Marktpotenzial, das Vorhandensein von Staatsunternehmen, der Zugang zu regionalen Märkten und Kreditinstituten sowie die regionalwirtschaftliche Entwicklung eine bedeutende Rolle.

Appendix A

All article included in this dissertation were co-authored by Javier Revilla Diez. The data analyzed are based on empirical material that was collected within the DFG Research Unit FOR 756, entitled “Impact of shocks on the vulnerability to poverty: consequences for development of emerging Southeast Asian economies” which was funded by the German Research Foundation (Deutsche Forschungsgesellschaft). I have contributed to these three articles, in the following ways:

- Revision of the standardized questionnaire for the survey conducted in 2013 by adding supplementary questions.
- Supervision of 648 household interviews and 72 village head interviews in the Vietnamese province of Thue Thien Hue in 2013 together with two other doctoral students.
- Supervision of the data entry process, using STATA.
- Data cleaning of the section about non-farm self-employment and wage-employment.
- Identification and review of literature relevant to the respective foci of the articles.
- Evaluation of possible theoretical approaches and conceptualization of the theoretical framework.
- Independent estimation of multivariate regression, using STATA.
- Solely responsibility of writing the paper’s manuscripts.
- Revision of the manuscripts under the guidance of Javier Revilla Diez for publication in the journals mentioned.

Appendix B

Ich versichere, dass ich die von mir vorgelegte Dissertation selbständig angefertigt, die benutzten Quellen und Hilfsmittel vollständig angegeben und die Stellen der Arbeit – einschließlich Tabellen, Karten und Abbildungen –, die anderen Werken im Wortlaut oder dem Sinn nach entnommen sind, in jedem Einzelfall als Entlehnung kenntlich gemacht habe; dass diese Dissertation noch keiner anderen Fakultät oder Universität zur Prüfung vorgelegen hat; dass sie – abgesehen von unten angegebenen Teilpublikationen – noch nicht veröffentlicht worden ist, sowie, dass ich eine solche Veröffentlichung vor Abschluss des Promotionsverfahrens nicht vornehmen werde. Die Bestimmungen der Promotionsordnung sind mir bekannt. Die von mir vorgelegte Dissertation ist von Prof. Dr. Javier Revilla Diez betreut worden.

Köln, den