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교육학석사 학위논문

Knowledge Transfer and Regional Evolution

– A case study of the wine industry in the
Eastern Foot of the Helan Mountain Region,
Ningxia, China –

지식 전달과 지역 진화:

중국 Ningxia 허란산동루지역의 와인 산업을 사례로

2017년 2월

서울대학교 대학원

사회교육과 지리전공

임도연

Knowledge Transfer and Regional Evolution

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Abstract

Despite its relatively long history, only recently has the Chinese wine industry started to gain popular attention globally. Notably, the Eastern Foot of the Helan Mountain Region in Ningxia Hui Autonomous Region is a rapidly developing wine producing region which had ten wineries until 2010, but now, in 2016, has more than a hundred wineries and a hundred more under construction.

The purpose of this research is to examine firm level intra, inter, and extra-regional knowledge flows in the emerging wine cluster in the Easter Foot of the Helan Mountain Region and to analyze the influence of knowledge transfer *vis-à-vis* regional co-evolution using building blocks from Evolutionary Economic Geography such as lock-in, de-locking, and the evolution of networks inclusive of institutional considerations.

More specifically, after reviewing literature related to Evolutionary Economic Geography, institutions, regional co-evolution, the wine industry, and the wine industry in the target region, this research deploys three research questions (some with multiple parts) to investigate different modes of, and impacts from, intra-, inter-, and extra-regional communication on knowledge transfer in addition to the influence of governmental (e.g. policy, infrastructure, and finance) and educational institutions on firm success and regional co-evolution.

Data were acquired from qualitative, semi-structured interviews with thirty-one wine industry employees working at twenty-six wineries of various sizes located in the targeted regional wine cluster and two government informants directly involved with the wine industry there. Interview data, gathered over the course of forty-five days of field research in China, are

augmented by participant observation.

With regard to insights gained with specific reference to the research questions, due to geographical proximity, intra-regional communication is much more frequent than inter- or extra-regional communication, and the depth of the communication content varies by mode of communication (e.g. on-line or off-line). Also, while most intra-regional communication is considered helpful for the production and sales of individual wineries, inter-regional communication impacts vary depending on whether or not firms have prior experience with, and therefore accessibility to, knowledge from foreign wine regions. Wineries with less experience abroad and with no or fewer personnel trained abroad perceive a greater impact from inter and extra-regional knowledge flows, particularly in terms of market exposure and, to a limited degree, production processes. More experienced firms, though, feel they have an imperative to develop wine with unique local characteristics even if they have access to foreign production techniques. In fact, several informants feel the need to guard against blindly importing foreign technique that may not work well in the local wine cluster.

Moreover, according to interviews with both winery workers and government officials, institutional co-evolution is shown to be a factor impacting industrial and regional development. Though perhaps counter-intuitive, trust and cooperation are evident among the regional wineries. Policy concerning financing and land use, and government initiatives to provide exposure to foreign wineries, wine experts, and regions via the promotion of domestic events, domestic wine tourism, and travel abroad are explored. Further, domestic, wine related educational programs are found to be a common glue helping to bind wineries together and facilitate knowledge transfer. While the overall impression of these measures are cumulatively

positive, some drawbacks are also referenced.

The significance of this research rests in evidence found that points to de-locking, the deployment of adaptive resilience, and the evolution of the industry *in* the region and *of* the region itself (co-evolution). Further, while the evolutionary thesis is largely found to hold true, the case study simultaneously unearths both positive and negative impacts derived from the acceptance of external knowledge on innovation, a new finding. Finally, this research addresses a call in the literature by contributing to understanding of an under-researched emerging industry cluster in a developing country, thus providing insight into industry and regional specific processes necessary for the growth and sustainability of new industries.

Keyword : Evolutionary Economic Geography, Wine industry, Knowledge Transfer, Regional co-evolution, China, *the Eastern Foot of Helan Mountain Region, Ningxia*

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1. Introduction

1.1. Research Relevance and Purpose

Alcoholic drinks have been mankind's companion dating back to even before the Agricultural Revolution in the Neolithic Era which started around 8000 B.C. (McGovern, 2009), and they have often been praised as 'the gift from God' (Vallee, 1998: p. 83). Different countries, and within them, regions, produce different kinds of alcohol, and thanks to the global expansion of trade, many people can now enjoy almost every kind of alcohol produced throughout the world where not forbidden by law. However, despite processes of globalization, certain industries depend on the geographical origin of raw materials that contribute to the characteristic and value of the final product. The wine industry is one such industry (Overton *et al.*, 2012).

Wine is in a unique category compared to other alcoholic beverages because the factor that affects the price is not the alcoholic content, but the place of origin of the grapes. In this sense, certain wine industry clusters in certain regions can gain in power and influence. Not only can already-famous regions maintain their reputation and standing in the global wine industry, but latecomer regions that are perfect places to raise grapes for viticulture can also start creating their own unique style of wine and, in turn, help their local economy to thrive (Beebe *et al.*, 2012).

Generally, countries that produce wine are often divided into "Old World", which refers to European countries such as France, Italy, and Spain, and "New World", which are non-European countries in the "new continents" such as the United States, Chile, and Australia (Cholette *et al.*, 2005). Producers in "Old World" wine regions preserve and perpetuate traditional winemaking

techniques formed over a very long time and strictly regulate wines by way of regulation systems: for example, the AOC (Appellation d'Origine Contrôlée) system in France, the QmP (Qualitätswein mit Prädikat) and QbA (Qualitätswein bestimmter Anbaugebiete) designations in Germany, and the DOCG (Denominazione di Origine Controllata e Garantita) and DOC (Denominazione di Origine Controllata) classifications in Italy (Cholette *et al.*, 2005; Meloni and Swinnen, 2013). "New World" wine makers promote and encourage experimentation and development, and stress innovation and improvement. This dichotomy has been criticized by DK Publishing (2004) and Banks and Overton (2010), but Banks and Overton (2010) still consider two axis of division valid, namely (1) small-and-medium-size versus large-scale, and (2) traditional (conserving uniqueness) versus innovative (change-oriented). The alternative division is only applied to so-called "third world" countries (Banks and Overton, 2010: p. 68).

China is one of these "third world" countries, and it is gaining attention for the rapid growth in quantity and quality of its wine production (Thorpe, 2009). Within China, the Eastern Foot of the Helan Mountain Region, in the Ningxia Hui Autonomous Region, is one of the fastest growing regions regarding the country's wine industry. Taking this as motivation, the purpose of this thesis is to investigate viticulture-related intra and extra-regional knowledge transfer processes between firms and associated extra-firm actors (e.g. government agencies and associations), and to discern any evidence of their influence on the growth of the wine industry in the Eastern Foot of the Helan Mountain area in the Ningxia Hui Autonomous Region. The theory and methodology are informed by Evolutionary Economic Geography (EEG), defined as, "...quintessentially concerned with the spatialities of economic novelty (innovations, new firms, new industries), with how the spatial structures of the

economy emerge from the micro-behaviours of economic agents (individuals, firms, institutions)” (Boschma and Martin, 2007: p. 540). Further motivation, therefore, is provided by Essletzbichler and Rigby (2007) in that the effort is to not only study the evolution of firms and the industry *in* the region, but also the evolution *of* the region itself inclusive of institutional considerations.

This region, for example, has received foreign investment from “Old World” countries such as France and Belgium, with firms establishing large, joint venture wineries. Also, one of the top three Chinese wine companies, also the oldest one, *Changyu*, has a winery chateau managed in conjunction with a consultancy operated by the Moser family, a famous wine family in Austria. Another top tier ranked company, *Greatwall (Changcheng)*, which is an affiliate of the State-owned enterprise, China National Cereals, Oils and Foodstuffs Corporation (COFCO), also has a Chateau, *Chateau Yunmo*, in the area. Additionally, there are some local brands that are big enough in the market to penetrate the local supermarkets such as *Xixiaking*, *Leirenshou*, and *Imperial Horse (Yuma)*. Moreover, small and medium sized wineries also thrive, and have produced some global award-winning fine wines.

As mentioned above, there are various kinds of wineries with varied ownership structures (e.g. local and FDI induced), so intra and extra-regional interactions may simultaneously impact the evolution of firms and the region. Analyzing processes of knowledge transfer may therefore shed light on the history of firms’ organizational routines and, correspondingly, lock-in, path-dependence or new path creation (Boschma, 2004). Also, global connections from joint ventures transferring technology and knowledge into the region may have stimulated sectoral growth in the region (Martin and Sunley, 2006) as it has transitioned to a fully functional wine region. In brief, this study will examine multi-spatial intra, inter, and extra-firm networks of knowledge

transfer to analyze the emerging wine industry region inclusive of path-dependency, de-locking, and new path creation considerations.

Implications for formal institution building, especially political institutions and educational institutions (Gertler, 2010; See Boschma and Capone, 2014 for the specific elements within institutions) and government policy (Rodríguez-Pose, 2013) will also be addressed. For example, in 2015, the China Wine Associations Alliance (CWAA) was established, connecting several wine associations scattered throughout different regions in China. Ningxia also has its own wine association, so knowledge and information flow via this association is examined. Since the establishment of every organization and association in China is subject to approval by an authorized department as set forth by Order No. 250 of the State Council of the People's Republic of China (The State Council of the People's Republic of China, 1998), CWAA and the affiliated associations are also connected to the governmental in the macro sense. This may influence the individual actors who are members of the association in the region via the effect of formal institutions such as organizations or regulations, and via spontaneously formed, and possibly maintained, formal and informal institutions such as trust and personal relationships.

1.2. Thesis Outline

The remainder of this thesis is organized as follows. The following chapter, chapter 2 (Literature Review), provides a review of (1) literature about EEG and the importance of knowledge transfer, (2) the evolutionary perspective and institutions, (3) geographical aspects of the wine industry, and (4) the regional background of the target research area. Next, chapter 3 (Case Study: Empirical Research) presents (1) the research questions (RQs) for the case study, (2)

methods used for data acquisition, (3) demonstrative results associated with the RQs, and (4) a summary and discussion generated from the results. Lastly, the thesis ends with chapter 4 (Conclusion), which provides a brief summary, limitations to the study, and implications for future research.

2. Literature Review

2.1. Evolutionary Economic Geography

2.1.1. Past Debates in Evolutionary Economic Geography

EEG is derived from evolutionary economics. One of the first attempts to adopt evolutionary thinking in economic geography was provided by Boschma and Lambooy (1999). They tried to explain differences between regions based on their dynamic ability and capacity for economic adjustment and subsequent knowledge retention, introducing key concepts from evolutionary economics such as (firm level) routines, path-dependence, selection, and chance. These concepts also became the key components of later EEG theorizing as evidenced in major publications (Boschma and Frenken, 2006b; Martin and Sunley, 2006; Essletzbichler and Rigby, 2007; Coe, 2010; Hassink, 2010b; Hassink *et al.*, 2014) and the Handbook on EEG (The Handbook of Evolutionary Economic Geography, 2010). Each of these concepts will be explained in this review of the literature.

Although these authors agree to some extent on terminologies, they do not totally agree on the range of applications for, and vision of, EEG. Coe (2010), for example, distinguishes between two different paths for EEG found in a special issue of the journal, *Economic Geography* (2009). One path is a distinctive and self-contained EEG, which is contrasted to a political economy approach and Institutional Economic Geography (IEG) approach, and the other path is an open, pluralist view of EEG that embraces many concepts such as path-dependence and lock-in that, in turn, can be connected to other theories deployed in economic geography.

A notable work setting EEG apart from other existing approaches (e.g. IEG

and neoclassical economic geography) is provided by Boschma and Frenken (2006b). They postulate that EEG is a third approach rather than a subordinate form of other theories. They stress the importance of organizational routines as the core concept underpinning EEG theorizing, and argue that the evolution of a region or cluster is not deterministic, but rather is a function of the heterogeneous routines of each firm and the networks that bind firms together. During the process of diffusing routines across space, the spontaneous co-evolution of institutions, perceived as having limited influence on the evolution of firms, is also needed. Although the article successfully distinguishes EEG from other theories of economic geography, its precepts are often criticized for minimizing the roles of institutions and power in processes of regional economic change (Yeung, 2005; Hassink *et al.*, 2014). It has also been suggested that EEG may be unnecessary, and some authors have argued instead for a Geographical Political Economy (GPE) approach that encompasses evolution – or, “...evolution in economic geography rather than evolutionary economic geography” (MacKinnon *et al.*, 2009: p. 145).

To address these limitations, recent additions to the literature adopt a pluralistic perspective which would be closer to the latter view of the categorizations put forth by Coe (2010), and highlight the necessity of looking more closely at institutions (Boschma and Capone, 2014; Hassink *et al.*, 2014). Hassink *et al.* (2014), for example, suggest using ‘engaged pluralism’ to integrate EEG with aspects of IEG and Relational Economic Geography (REG) to overcome the shortcomings of EEG, and to expand the usage of it. According to them, by deploying engaged pluralism, interconnections with other neighboring theories will provide much more fruitful explanations to evolutionary aspects of economic geography. Because EEG is mainly focused on the firm level, for example, multi-scalar institutional structures are easily

overlooked, merely existing as a co-evolving mechanism. Also, since EEG overlooks power relations between firms and agents (Hassink *et al.*, 2014), integrating these other considerations can complement EEG and reduce and perceived limitations that come from using it. Unlike EEG, IEG and REG both consider institutions central when analyzing a region; therefore, using this aspect of both theories, motivated by engaged pluralism, makes possible the analysis of the evolution of both firms and regions.

Meanwhile, while Boschma and Capone (2014) do not refer directly to IEG, they nonetheless later use specified institutions to explain differences in evolutionary trajectories between countries. They argue (p. 3) that there are specific institutional capabilities of a country that are concerned with product specialization (e.g. specific technological knowledge, product-specific regulations, intra-industrial tacit rules), and “general-purpose [institutional] capabilities [of a country] that are relevant for all products” (Boschma and Capone, 2014: p. 3) (e.g. educational system, national ethical norms, power distance, culture). Thus, different institutions formed in different countries could affect the process of diversification by either reinforcing path-dependency or allowing firms to break from it.

Attempts to use other approaches with the inclusion of an evolutionary perspective have been ongoing, ushering in a debate between EEG and other neighboring theories in economic geography. One such debate rose between EEG and REG. These two theories together comprise the third hottest area in the social sciences as gauged by Thomson Reuter’s Essential Science Indicators (Coe, 2010), meaning they are recognized in the same realm. Bathelt and Glückler (2003) apply evolutionary thinking in REG, examining the concept of co-evolution of organizations and technologies at the territorial level. They build upon Storper’s (1997: p. 26) ‘holy trinity’ (technologies-organizations-

territories), acknowledging the dynamic nature of the socio-institutional relations of firms and value chains, along with the evolution of informal institutions into formal institutions. Also, they admit that an, “...evolutionary approach helps to understand how the nature and extent of interaction changes over time according to ongoing experience between those organizations involved in innovation” (p. 136). Although REG has its own shortcomings, such as disregarding the limitations of institutional influence in different regions and overemphasizing relationships per se rather than considering (emergent) power (Yeung, 2005), relationships are indeed an important factor to consider when exploring path dependency.

EEG, REG and IEG, therefore, are regarded as neighboring theories (Hassink *et al.*, 2014), and they could be used in conjunction to analyze the same subjects with common concepts. However, as their terminologies are different, the theories vary from one another, and their foci, following through, are not the same. Therefore, to understand path dependence and path creation for firms in a region or cluster, EEG is selected as an appropriate framework to use in the present study. Also, GPE views institutions from the “top-down”, whereas EEG looks from organizational routines to the regional influence on them, and includes institutions, forming a “bottom-up” point of view. To understand networks of firm knowledge transfer and institutional impacts on them, EEG, again, is chosen as the theory to apply in the present research because 1) it tracks down the path-dependency of each firm that in turn leads to industrial development and regional co-evolution (Boschma and Lambooy, 1999), and 2) it helps identify the selection and evolutionary processes of a new sector in a region by exploring firm-based organizational routines (Boschma and Frenken, 2006b). Firm considerations, in short, are necessary and the central scale of analysis for understanding actual knowledge transfer and

spillover in a firm-level context (Howells, 2002). The present research utilizes this type of ‘bottom-up’ analysis relying predominantly on firm-level data.

2.1.2. Lock-in, De-Locking and Knowledge Transfer: Why resilience matters

‘Lock-in’, defined as, “...the process whereby an economy—say a regional economy—becomes ‘locked into’ a particular trajectory of economic development through the operation of self-reinforcing localised increasing returns effects” (Simmie and Martin, 2010: p. 31), has often been cited in literature concerning EEG, and is mainly paired with path dependency (Boschma and Lambooy, 1999; Boschma and Frenken, 2006b; Martin and Sunley, 2006; Hassink, 2010b; Boschma, 2015). Path dependency itself is an evolutionary notion (Boschma and Lambooy, 1999). The main characteristic of this process or system is ‘non-ergodicity’, defined as “...one whose outcome evolves as a consequence of the process’s or system’s own history” (Martin and Sunley, 2006: p. 399). As firms in one region experience success in terms of innovation, they will adjust their routines and keep the stableness of the factor of their success. Because the returns increase, they stick to the pre-existing path. Technological ‘lock-in’, however, happens at this time, when the corresponding technology follows the prior trajectory regardless of the possibility, or necessity, to change it (Martin and Sunley, 2006). Also, firms, routines, and institutions are fixed to certain circumstances, shaping “institutional hysteresis”, which is, “...the tendency for formal and informal institutions, social arrangements and cultural forms to be self-reproducing over time, in part through the very systems of socio-economic action they engender and serve to support and stabilize” (Table 1 in Martin and Sunley, 2006: p. 400).

Over time, the industrial environment may change and the prior

stableness that contributed to initial success may no longer be valid. However, it is difficult for a region to get back on the track of innovation because it is difficult for firms to take on the risk of doing something different. And since institutions are regarded as slow to induce change, they may become stagnant, staying in the same situation as before, and, again, locking firms into a non-innovative trajectory. This is seen as a negative 'lock-in' (Boschma and Lambooy, 1999; Boschma, 2004; Martin and Sunley, 2006; Boschma, 2015). Although not all 'lock-in' is negative, and the path to a negative 'lock-in' may not be the only path that a region can take, 'lock-in' is usually used as a negative term (Coe, 2010: p. 4).

In this respect, 'lock-in' is a state that should be avoided and, if experienced, escaped. Martin and Sunley (2006: p. 420) suggest means for 'de-locking' a region. They state five solutions to 'de-locking' a region: indigenous path creation based upon the exploitation of new technological paradigms; heterogeneity among agents, technologies, institutions and social networks which fosters variety and innovation; transplantation through the importation and diffusion of new technologies, firms or industries; diversification into related industrial areas; and upgrading of a region's industrial base. The regional particularities and place-specific histories may affect the 'de-locking' process either positively or negatively. The present research considers the impact of knowledge transfer on path dependency and adjustments to organizational routines and associated innovative activity (product and process), and, simultaneously, the impact of institutional change (or lack thereof) on lock-in and de-locking discussed thus far.

In EEG, these notions carry a theoretical premise that regions can dynamically change, thus destructing former paths that lead to stagnation. This is important because, first, it implies that 'lock-in' is not a designated

equilibrium state, but is fluid and can be changed through time. Second, in contrast to arguments that ‘chance’, ‘historical accident’, or ‘Windows of Opportunity’ (Boschma and Lambooy, 1999) create new paths, EEG should view path-taking as a dynamic and open process, thus recognizing path creation as a process accompanied by ‘layering’, ‘conversion’, and ‘recombination’ (Martin, 2010: pp. 14-15). ‘Layering’ means that an institution changes gradually by adding new ‘layers’ of rules. Since the layers are only small changes, evolution could be seen as path-taking. However, even though the original structure of an institution is not demolished, the continuous accumulation of changes increases the proportion of new processes in the evolving institution, eventually changing the fundamental nature of the institution. Meanwhile, ‘conversion’ occurs in two ways: one way concerns overlapping ‘layering’, because the ‘layers’ of new rules could convert the direction of an institution, shape its reorientation, or remove old rules. The other way occurs as reorientation or readjustment of the old rules of the institution happen without any addition due to external pressures or developments. Lastly, ‘recombination’ comes from a ‘recombinant path-dependence model’ in historical sociology and political science, which explains path-dependency *vis-à-vis* the recombination of existing social and institutional resources. This implies that although a certain region at a certain time may look stagnant, it may actually be going through a dynamic process. This is one reason that it is hoped that the ‘snapshot’ type approach deployed in the present study may still provide insight into past developments and future trajectories of both the industry and the region under investigation.

The process of ‘de-locking’ is connected to the notion of regional resilience. Generally, resilience refers to, “...the ability of an entity or system to ‘recover from and position elastically’ following a disturbance or disruption of some

kind” (Simmie and Martin, 2010: p. 28), but from an evolutionary perspective, resilience may also be seen as, “...an ongoing process rather than a recovery to a (pre-existing or new) stable equilibrium state” (p. 31). As Martin (2012: p. 5) concisely classified, there are three types of resilience. First, the most frequently used one is ‘engineering resilience’, which by way of definition is closest to the one discussed in the physical sciences. This type mainly concerns the resistance of a system to ‘rebound’ to its pre-shock state, and it is thus applied to the equilibrium concept in economics. The economy is preconditioned to be self-recoverable from a shock, and therefore shares strong similarity with the ‘plucking model’ (See Martin, 2012: p. 6), a scenario that has no consideration of the impact of a shock on the regional or local economic structure and the capacity of future resilience. Second, ‘ecological resilience’, found in ecological science concerning the ‘elasticity threshold’ of a system, is tied to the hysteresis (change) concept to explain the change of growth paths in a regional or local economy. If the recession exceeds the range of the elasticity threshold, the economy can no longer maintain the growth trend of its pre-shock state even after recovery. Therefore, the economy could be worse or better off than in the pre-shock state (See Simmie and Martin, 2010: p. 29). The last type of resilience is ‘adaptive resilience’, which focuses on the adaptive capacity of a region. In this third concept of resilience, structure is important for maintaining growth, and since structure consists of firms, organizations, and institutions, they should co-evolve in order for a region to become resilient. This is criticized by Hassink (2010b) as following equilibrium-oriented thinking, but EEG does not maintain a stance that denies equilibrium; rather it argues that since the regional economy is dynamic, equilibrium is also fluid as mentioned above. Therefore, this research examines the co-evolution of firms, organizations, and institutions in order to understand the adaptive resilience

of the region, showing the dynamic features of the region over the course of time.

In this sense, since EEG argues that resilience, especially ‘adaptive resilience’, accompanies structural change in a region, the process of structural change and knowledge spillovers should be examined. This is found in Neffke *et al.* (2011) who address the relation of branching-out to related variety of industries and regional economic growth. As Frenken *et al.* (2007) also argue, while Jacobs’s externalities (Jacobs, 1970) contribute to the study of the influence of a large variety of sectors on economic growth, the positive influence mostly comes from related variety since the new industries that emerge from a region should be related to the old industries in order to absorb the existing labor force, but different enough to receive extra-regional knowledge effectively. That is, “...cognitive proximity between the extraregional knowledge and the knowledge base of the region should be neither too small—avoiding lock-in in learning processes—nor too large—enabling the absorption of the extraregional knowledge” (Boschma and Iammarino, 2009: p. 295). Thus, exploring the existence of related variety can explain some aspects of knowledge spillover in the region, which directly ties in with economic growth.

In addition to related variety, the spin-off process is an important mechanism to investigate knowledge spillovers in EEG and to the concept of resilience (Boschma and Lambooy, 1999; Boschma, 2004; Boschma and Frenken, 2006b). Spin-offs (or spin-outs) are produced from companies and universities, and are defined as “...entrants founded by employees of firms in the same industry” by Klepper and Sleeper (2005: p. 1291). In general, the more successful the parent firm is, the more spin-offs it will create, and the more successful the spin-offs will be (Klepper and Sleeper, 2005). This is because spin-off firms inherit their organizational routines, technology, and knowledge

(especially tacit knowledge which is represented by know-how) from the parent company, which enables them to easily adjust to the industrial and regional environment (Agarwal *et al.*, 2004; Klepper and Sleeper, 2005). Also, studies argue that the spin-off companies always locate near the parent company, which creates agglomerations (Klepper, 2007). Thus, the spin-off process can contribute to explaining the abundant knowledge transfer, continuous expansion and the regional path-dependency in an industry cluster. The present research considers these possibilities.

Since innovation and path creation are important in regional resilience, knowledge networks and knowledge transfer are also important. As Boschma (2015: p. 739) states, “The internal structure of knowledge networks in a region, as well as their openness to the outside world, matter for regional resilience, because they impact on the sensitivity of regions to shocks.....but also on the capacity of regions to develop new growth paths.” Prior to a ‘knowledge’ network, a network itself needs to be considered in the study of regional evolution and resilience. Changes in a region, for example, are not solely due to exogenous influences on intra- or inter-regional networks, but also due to endogenous evolution in the network (Glückler, 2007). According to Glückler (2007), the evolution of a network’s trajectory accompanies three processes, which are selection, retention and variation. These concepts have mutually reinforcing effects on one another because when firms create networks with other firms or organizations, they first need to select firms to be in a relationship under constraints of time and cost. During the selection process, they are more prone to follow a past trajectory, and this could cause firms to establish much stronger relationships with existing firms. On the other hand, they could form new relationships with novel firms when the prior network was unsatisfactory. This leads to variation, which allows firms to follow a new

trajectory and build bridges to external nodes. When firms seek new relationships in the network, geographical proximity should also be considered given a need for face-to-face communication regardless of the type of their knowledge base (Asheim *et al.*, 2007). Variation could happen both endogenously and exogenously if viewed through a multiple scale perspective, but it likewise affects the diversification of relationships and networks. In the end, these processes of network evolution could enact changes to the region in which the networks are based, and, correspondingly affect regional resilience. In the present study, these three network creating processes will be explored through answers from in-depth interviews.

Knowledge networks are different from other networks such as business networks, trade networks or transportation networks, since they have more of an impact on innovation. Knowledge networks not only transfer codified knowledge, but also tacit knowledge, which is not easily transferred and often relies mainly on face-to-face contact (Gertler, 2003b; Storper and Venables, 2004) forming the aforementioned path-dependent characteristics. Since the acquiring, control, and sharing of tacit knowledge are the most important factors in any innovation process (Amin, 2003; Gertler, 2003a), inter- or intra-firm knowledge transfer can influence the competitive advantages of firms (Argote and Ingram, 2000), which ties directly to the development of an industry cluster. Therefore, examining the transfer of tacit knowledge is important for analyzing both regional evolution and innovation in a given industry. Knowledge transfer connected to better industrial performance is not only the case in the manufacturing and service sectors, but it is also applicable to the primary sector (Isaac *et al.*, 2007; Reichardt *et al.*, 2009). The previous literature thus provides the necessary link to analysis of knowledge transfer in the agribusiness industry.

Also, analyzing knowledge networks in a region or cluster is crucial to finding the degree of resilience. There are empirical studies deploying explanatory interviews or tracing technological relatedness to investigate the role and hierarchy of actors in this process (Giuliani, 2010a; 2010b; 2011; Neffke *et al.*, 2011). However, little research has been done on the actual perception of the usefulness of these networks or the mode of interaction. This could provide realistic commentary on the impact of knowledge transfer on regional resilience; even less research has been done that considers the impact of institutions on these knowledge networks, which is a clear impetus for the present research.

2.1.3. The Role of Government and Policy in EEG

As knowledge networks expand to the extra-regional scale, the exploration of the role of government and policies that influence possible growth paths is crucial for understanding processes of knowledge spillover (Coenen *et al.*, 2016). Firms, the main object of analysis in EEG, have to obey the rules and policies of the corresponding government, which often refers to the '(national) state'. The 'state', meaning both the space and subject itself, is a container of an environment including infrastructure, institutions and regulations (Brenner, 2004), and at the same time, is an actor that interacts with other actors such as firms, individuals, and regions at multiple scales. This characteristic makes the state a rather important subject to analyze when exploring regional growth using EEG.

Some scholars recognize the role of government and policy in EEG, and highlight it in their research. For instance, Boschma (2004) distinguishes between liberal and coordinated market economies. Although the differences are acknowledged at the national rather than the regional scale, it is the

government which decides the trajectory of the economy via policies. In turn, these can change various kinds of institutions impacting such things as labor mobility and finance. This is also shown by Asheim and Coenen (2006), who state that the more an economy leans towards a coordinated market, the more private and public actors will be related, and the more the role of the state is emphasized. Both articles argue that in a coordinated market economy, because of the support of long-term finance and reduced mobility of labor, incremental innovation, which is created by specialization of firms and labor skills, is more apt to be generated. By contrast, in a liberal market economy, radical innovation is more apt to be generated, in part through fierce R&D competition. These are fairly generalized descriptions.

In the case of China, where the case region is located, Zhang and Peck (2016) compare contradicting arguments from previous literature about whether the Chinese economy is a liberal market economy or a coordinated market economy. They propose an alternative perspective, seeing China as a country of 'variegated capitalism' at the sub-national scale. Nonetheless, in the present research, the economy typified by the case region, especially when it comes to the case industry, can be assumed to be coordinated as the development of the industry is led by strong intervention of the government as described in the following sections. Taking this a step further, value is added because analyses of the influence of governmental policy on the region, and the perception of actors regarding associated political institutions, allow nuanced insight into actual knowledge spillover processes, for example lock-in (or de-locking), and pathway creation.

Two other policy implications can be seen in Boschma and Frenken (2006a). First, they adapt the two types of regional innovation policy categorized by Boschma (2005: p. 263), namely 'localized policy making' and

‘structural policy making’. Boschma and Frenken (2006a: p. 17) re-approach these concepts in terms of ‘evolutionary’ and ‘revolutionary’ policy (see Table 1).

Table 1 Two Types of Regional Innovation Policy

Boschma (2005)	Localized policy making	Structural policy making
Boschma and Frenken (2006a)	Evolutionary type of policy	Revolutionary type of policy
Targeted location	Location-specific policy	Generic policy (diversity)
Degrees of change in institutions	Fine-tuning	Restructuring of institutional framework
Managing connectivity	Strengthening existing connectivity	Stimulating new connections
Managing lock-in	Reducing risk of regional lock-in	Avoiding early lock-ins
Advantages	Benefiting from specialization	Stimulating diversity
Degrees of freedom	Few degrees of freedom	More degrees of freedom (more options)
Degrees of uncertainty	Less uncertainty	More uncertainty (experimentation)

Source: Adapted from Boschma (2005); Boschma and Frenken (2006a)

Despite of the different vocabularies that are used to divide the two types of policy, both divisions sufficiently describe the policies. Evolutionary policy focuses on incremental change in every sector within the region, and revolutionary policy focuses on radical change in structure. Both policies are designed to manage lock-in and develop the regional economy, but in different ways. According to Martin (2010), in the process of slow, incremental path

change and creation, rules are added to what can be described as the evolutionary type of policy stated above, but as this process continues over time, small changes will accumulate along with fundamental changes to institutions. Likewise, as evolutionary policies are enacted one after another, soon the whole structure may change, thus leading to an accumulation of modifications that may, in turn create revolutionary type policies. Observing evolutionary or revolutionary policies or changes from one to another in the targeted region can indicate how the regional government is putting forth effort to handle lock-in or engage in de-locking.

Second, the influence of policies on the infrastructure of a region is another role of government to consider. This influence is not only limited to physical infrastructure such as transportation, electricity, and telecommunication, but can also be applied to social infrastructure such as industry networks and related variety. The policies determine how and to what degree these infrastructures will be constructed, and the subsequent environment formed is considered important to firms possibly seeking to enter the region (Boschma, 2004; Boschma and Frenken, 2006a).

Boschma (2004) also states that policy-makers are likely to go through a process of trial-and-error, which leads to the eventual adoption of effective localized policy. This is in accordance with evolutionary policy (Boschma and Frenken, 2006a). In this process, in order to decrease uncertainty, they are apt to imitate the policies of successful regions. However, the author claims that since successful regions for any given industry consist of place-specific environments, policy-makers should not simply benchmark successful regions with different situations and institutional environments. In other words, there should be some tailoring to meet specific local conditions. Also, while policy can change regional environments to some extent, regional competitiveness is

not fully derived from these environments, and thus, “the effectiveness of policy-making remains uncertain and rather unpredictable” (Boschma, 2004: p. 1012). The tacit nature of distinct knowledge bases makes knowledge and technology thriving in a particular region extremely hard to be transferred to other regions. This is partially explained by the embedded nature of institutions.

Nonetheless, Dawley *et al.* (2015) argue that the institutional environment is molded by policies, and policies are important at multiple scales. At the national scale, they suggest that the state influences the market opportunities that create new paths in regions by horizontal and vertical policies. An industry in a region, for example, may be strengthened or decline according to the orientation of political parties. Also, path creation can be indirectly formed with the support of other actors at smaller scales. At the regional scale, policies can directly foster new industries that create new paths for the region, or, to the contrary, fail to utilize the assets that the region has and step toward negative lock-in. This multi-scale approach concerning the roles and the influence of government and policy on the evolution of a region has important implications for the study of the co-evolution of institutions and the industry in the present study. In brief, I attempt to ascertain the extent to which policy is evolutionary or revolutionary, and whether it is effective or unpredictable (Boschma, 2004).

2.2. Institutions and Evolutionary Paths

Because EEG argues that the co-evolution of institutions is necessary for regional economic innovation and evolution (Boschma and Frenken, 2006b; Simmie and Martin, 2010; Martin, 2012; Hassink *et al.*, 2014), detailed evolutionary paths should be analyzed. Essletzbichler and Rigby (2007) emphasize this trend when categorizing works concerning EEG, stating that

institutions take up a large portion of discussions in economic geography. Institutions are defined and used in many ways (Rodríguez-Pose, 2013), but in the present study, they will be defined as ‘enduring systems of socially ingrained rules’ (Hodgson, 2007: p. 331) to cover both formal institutions and informal institutions. In addition to the formal political institutions and economic institutions represented by laws and regulations, and the educational institutions suggested in the introduction, this research also focuses on informal institutions, especially social organizations such as networks and mutual trust.

According to Boschma and Capone (2014), the degree of democracy, does not have significant correlation with economic growth, but can operate as an explanatory factor. Also, economic institutional factors such as economic openness to trade, the investment environment, property rights, and educational institutions, specifically higher education related institutions (Boschma and Capone, 2014) are influenced by government institutions which “...play a fundamental role for regional innovation” (Rodríguez-Pose and Di Cataldo, 2015: p. 685). Rodríguez-Pose and Di Cataldo (2015) categorize the components of government institutions, represented by the Quality of Government (QoG) index, into four parts: government efficiency, rule of law, government accountability, and control of corruption. Especially for the periphery countries, QoG was highly influential to the knowledge production structure, and there was a threshold for the effect of QoG on innovation. Although the same components are not measured qualitatively in the present study, the assessment of effectiveness by actual firms regarding regulations (e.g. government institutions) will be introduced to analyze the co-evolution of institutions in the region.

Meanwhile, Hassink (2010a) argues that not only regional co-evolution,

but also regional lock-ins occur by way of economic-structural and political-institutional impact factors, and they can only be resolved by adjustment or renewal. This is similar to the evolutionary and revolutionary policies referenced in Table 1. Because adjustment and renewal are processes of change that impact firm behavior, institutional resistance is considered to influence the way firms decide how to act. The impact factors are multi-scalar, influencing firms from various angles. Thus, the present study observes institutions from multi-angles, considering abundant viewpoints to analyze the influence of institutions on both firms and the region.

Similarly, the ‘adaptive resilience’ concept mentioned in the former section considers institutions as one of the factors composing the structure of a regional economy and its path-dependency, which may lead to positive or negative regional lock-in. For instance, Boschma (2015) states that institutions influence interactions between actors, and determine the path a regional economy will take under situations of resilience after a shock. Moreover, because institutions co-evolve with industries, “...regions may become victim of institutional lock-in” (p. 741) in the case of strong institutional resistance, or in contrast have ‘institutional plasticity’, or a, “...range of options for new paths within the dominant institutional framework” (p. 742). Therefore, it is important to study changes to institutions, or lack thereof, to determine whether the region is being subjected to avoidable institutional lock-in.

Literature concerning IEG also highlights the importance of institutions in regional development. Rodríguez-Pose (2013: p. 1038), for example, emphasizes the role of informal institutions in regional economic growth by stating that institutions can “...smooth the process of knowledge and innovation transfer within and across regions and improve conditions for the development of economic activity”, and argues that both formal and informal institutions

impact the 'adaptive efficiency' and 'learning capacity' of a region (p. 1039). Again, this may be directly tied to institutions governing higher education and R&D facilities. Gertler (2010) notes that institutions impact the evolutionary trajectory of economies at multi-scales, but are under-researched. Thus, each institution has to be scrutinized for its evolution, and this should be assessed *vis-à-vis* "...both endogenous political and economic dynamics as well as exogenous shocks" (p. 6). He also suggests that IEG should involve individual actors and firm-level organizations in analysis. Following this discourse, this study provides a glimpse into a combination of dynamic interactions between individual actors and firms, and the influence of institutions and corresponding evolutionary paths potentially created.

2.3. The Wine Industry

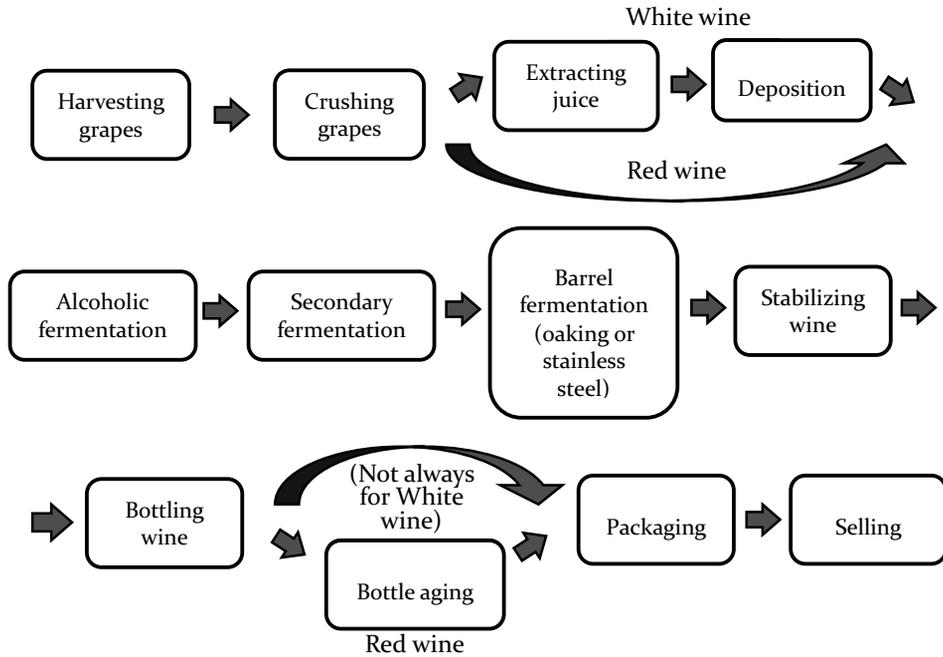


Figure 1 The Process of Winemaking and the Actors Involved in Each Stage

Because of modernization, mechanization and the science behind modern viticulture, winemaking, that is, vinting, follows a rather complicated process (see Figure 1) and involves numerous actors. The procedures are largely separated into four stages: harvest, crushing, fermentation, and bottling (Thomas, 2008), but there are multiple detailed steps within those stages. First, the grapes, the fundamental ingredient, should be harvested either by handpicking or by tractor by the farmers who actually work in the vineyards. Even before this stage, even before planting the vines, enologists and viticulturists should discuss the precise characteristics of the grape they want to make from the vine they are planning to plant. Based on this decision, the vineyards are cared for, maintaining strict control of soil, nutrition, and sunlight. Some wineries go so far as to adopt weather forecasting systems to

maximize cultivation. After months of management, the grapes are examined to determine whether or not they are ripe enough to be harvested, a task performed by the viticulturists, often accompanied by the use of measuring instruments.

Right after the grapes are harvested, they are carried to the crushing machine. In this stage, the enologists have to control in detail the amount of pressure put on the grapes. Both red and white wine go through the process of crushing. The process does not differ based on the types and varieties of grape, but rather depending on whether or not fermenting will take place together with the skin and seed (Castiñeira *et al.*, 2004: p. 2954). When vinting white wine, the juice is extracted from the skin with a juice extractor machine, after which it is poured into a tank and allowed to settle down for a while to let the sediment accumulate in the bottom of the tank. Vinting red wine does not require these steps. Then, the juice with (i.e. red wine) or without (i.e. white wine) the skins and seeds is put into fermentation tanks. The tanks should be thermostatic, meaning that they should automatically control the temperature to a certain degree. Additional care should be put into the fermentation equipment, such as keeping it clean and making sure the machines do not malfunction. Enologists participate in this whole process, conducting every step and stage in great detail.

During alcohol fermentation, which turns sugar and other carbohydrates into alcohol, and secondary fermentation, also called malolactic fermentation, which changes malic acid into lactic acid, chemists often run reaction tests of the samples of fluid which soon will become wine. Then, the wine is sent for further fermentation. Red wine needs to be fermented in an oak barrel which adds the taste of tannin, but since oak barrels are expensive, table wines often pass this stage and move right to stainless steel tanks to which cheap oak chips

are added. Otherwise, if the wine is a quality wine, it is stored in an oak barrel. These options are ones that the enologists should decide, but because costs should be considered, other managers or accountants are involved in the process as well as the enologists.

After fermentation, the wine is ready to be bottled. The bottling process is mostly done by machine. The bottle is first washed because of the importance of hygiene and the prevention of possible contamination caused by microorganisms. Some wineries are mechanized from the start of bottling to the end of packaging, which is right before selling. Other wineries are partly mechanized, for example, only during the bottling stage, and other processes such as labeling and packaging are done by hand. In these stages, not only should the enologists supervise the hygiene and fermentation state of the wine, but the accountant and general managers also have to calculate the cost of bottles and machines in order to avoid facing a deficit. When the wine is aged enough in the bottle (not necessary for white wine), it is moved to stores to be ready for sale.

As described above, these complex processes involve diverse actors. As such, winemaking knowledge and technology may transfer through social and knowledge networks. Thus, various kinds of actors in various positions are scrutinized in the research to provide more detailed understanding of the evolution of firms, networks, and the region.

2.3.1. The Wine Industry and EEG

There are several articles that have used an EEG framework to analyze the wine industry. Most of the work has been done by Giuliani (2010a; 2010b; 2011), and case studies have primarily been done on Chilean wine clusters. One of these studies (Giuliani, 2010a) compared a Chilean wine cluster to an Italian wine

cluster. These studies invariably focus on the growth processes associated with emerging clusters in developing countries, closely investigating technological gatekeepers, network dynamics, and differences between the kinds of networks deployed during winemaking.

As mentioned previously, Boschma and Frenken (2006b) propose that EEG is a distinct approach differing from neoclassical and institutional approaches. Unlike the two preceding 'turns' in economic geography, the evolutionary approach regards routines as important for path creation, and these routines, "...can be understood as organizational skills, which cannot be reduced to the sum of individual skills" (Boschma and Frenken, 2006b: p. 277). Because the price of wine is not solely decided by production costs, and because the place of production is not fixed by cost competitiveness alone, EEG could contribute to explaining the transformation of routines, or the influence of a change in routines, present in a wine industry cluster that, in turn, leads the cluster or region to success.

Although the agricultural (or agribusiness) industry is not the same as other industries in the secondary sector, innovation still follows a Schumpeterian cycle of products which EEG views as having a periodic path of innovation (Papageorgiou *et al.*, 2011). Via processes of technological innovation, and by significantly improving the quality of inputs (grapes, in this case) and product quality, clusters or regions engaged in these sectors may have routines that contribute to development and success on the one hand, while continuously requiring new ones to compete locally and globally on the other. In this process, external information, knowledge, and technology may be required, increasing the need for knowledge spillovers and transfers from extra-regional actors and global pipelines (See Giuliani, 2007).

Also, the agriculture sector has a different locational calculus compared to

the manufacturing sector due to the required adequacy of climate and soil composition. Thus, agricultural clusters may in part be formed based on the natural conditions of certain regions. Nevertheless, clusters dealing with secondary sector activity derived from agricultural products such as the wine industry should not be seen as a result of mere regional absolute advantage; rather, results are a complex mix of nature and more sophisticated conditions such as the acquisition of the right technology, knowledge and adequate regulations to produce the product (Napton *et al.*, 1993). Especially for wine, as mentioned earlier, the value is determined by the geographical origin and the characteristics of the grape (*terroir*), but as wine market preference has shifted from quantity to quality, technology and knowledge associated with raising better grapes and vinting tastier wine is needed, making the wine industry a considerably knowledge-intensive industry (Giuliani, 2011). Therefore, inter-firm knowledge transfer becomes important in the development and innovation of each firm, and, by extension, the regional cluster.

2.3.2. Globalization and the Chinese Wine Industry

1) “Old World” and “New World” Strategies Intertwined with Globalization

Like other industry sectors, the wine industry has been subject to globalization processes dating back to the Industrial Revolution when mass production began to thrive and long-distance transportation became more widely available (Hussain *et al.*, 2008). Wine is consumed across the globe and is traded in forms of bottled or bulk wine (Overton *et al.*, 2012). The global division of labor is deployed in the wine industry: wineries can vint wine far from vineyards, and, mirroring Weberian logic, well-fermented liquor can be bottled in the importing country in order to save transportation and manufacturing costs

(Jenster and Cheng, 2008). While the world total production of wine stagnated from 257.1 million hectoliters (hℓ) in 2002 to 268 million hℓ in 2007 and 258.2 million hℓ in 2012, total exports of wine have increased globally, from 67.8 million hℓ in 2002 to 88.7 million hℓ in 2007, and to 103.8 million hℓ in 2012 (OIV, 2016), diversifying the price of wines from as cheap as a couple of US dollars to as expensive as infinity (Banks and Overton, 2010).

The expansion of globalization ushered in the success of “New World” countries, represented by the United States, Chile, and South Africa. Cusmano *et al.* (2011) analyzed how these “emerging countries” have caught up to the traditional “Old World” countries and have been showing increasing trade performance thanks to three factors: first, they modernized from the mid-80s, making large-scale production of equal quality wine possible, and second, they received continuously increasing amounts of foreign direct investment (FDI) except South Africa. These authors especially emphasize the linkage between university and industry (p. 33), arguing for the significance of sustainable and practical research and the education environment formed via collaboration. Also, the authors argue that because of competition from thriving emerging countries, the “Old World” countries have changed to targeting niche markets focusing on premium wines and highly-educated consumers. The “New World” countries, by way of contrast, have standardized the taste of wine by large-scale production and seek ever expanding internationalization.

These marketing strategies, however, are not completely dichotomous. Campbell and Guibert (2006) confirm that while countries in the “New World” started their massive export efforts with a wide gap between production and consumption, the volume of consumption has grown year by year, and producers seek improvement in quality by adopting high-technology. This, in turn, has resulted in a widening range of wine quality. In addition to the effort

of suppliers to capture market share, the demand side has also contributed to the prosperity of “New World” wines. Wine consumption trends have changed from loyalty to traditional regions to experimentation, and due to the growth of consumer income, quality wine from diverse places is gaining in interest. Indeed, given the fierce marketing of wine from the “New World” countries, even the preference of costumers for quality wine has gradually shifted toward “New World” wines (Gordon, 2005; adapted from Campbell and Guibert, 2006).

Of course, the “Old World” countries have also sought opportunities to adapt to globalization processes in many different ways. Although a large portion of production is still concentrated in small and medium sized wineries in small scaled regions, in France, some large corporations launched some global brands and simultaneously invested in wine producing regions in “New World” countries such as Napa valley in United States (Cholette *et al.*, 2005). Wineries in Italy are also mostly small sized companies, but somewhat different than their French counterparts. While Italian wine companies also go abroad to establish ventures, foreign-based companies occupy Italian wine regions more than Italian wine companies go abroad (Hussain *et al.*, 2008: p. 35). According to Cholette *et al.* (2005: pp. 7-8), Spain and Germany have been exporting largely traditional wines, and have remained strong exporters. Especially in Germany, the production ratio of red wine increased along with an increase in consumption, which seems to be a product of an external economy. Furthermore, they criticize the regulations of the “Old World” countries, arguing that, “...the primary threat... [is] ...the inability of the appellation system [, the governmental regulation system,] to appeal to what is becoming a global way of understanding wines” (Cholette *et al.*, 2005: p. 6).

Hussain *et al.* (2008) also point out the weak competitive advantage of the wine industry in “Old World” countries compared to the “New World”

countries. The authors state that through globalization, the competitive advantage of each country has changed. In their study, of four “Old World” and five “New World” countries, all of the “New World” countries were found to have strong or moderate competitive advantage, while only half of the “Old World” countries analyzed could be characterized as having moderate competitive advantage. According to the matrix they present (see p. 41), the weakness of the “Old World” countries derives from two elements: first, a larger portion of firms are small and medium-sized in the “Old World” countries, which makes it difficult to benefit from economies of scale, and second, most of the regions in “Old World” countries have traditions dating back at least a hundred years, resulting in inflexibility to change and less expected potential from investment. The suggestions they make in order to develop competitive advantage mostly revolve around governmental policies. Other than considering the needs of consumers and collecting market information, they recommend that governments create programs to subsidize exports and negotiate with foreign governments about both tariff and non-tariff trade barriers. This argument coincides with Hassink (2010a) aforementioned proposition, which is the need for adjustment of political institutions such as government policies to avoid regional lock-in.

As similarly as the globalization of the wine industry has followed ordinary processes of globalization for other industries, it also has some unique characteristics since it is partly subject to conspicuous consumption (e.g. quality wines that are worth collecting at any price by aficionados). Moreover, as mentioned in the introduction, the brand power of a given region influences the value of the wine. In this context, both global and local scales are important in understanding the wine industry as a whole, while, conversely, the wine industry uses the gap between scales to advertise their product and meet the

tastes of costumers (Overton *et al.*, 2012). Especially, this ‘place of origin’, also known as ‘*terroir*’, is important for the product value, which, in turn, determines the market price; stressing it prevails in the middle and upper level wines. Because ‘*terroir*’, rather than Weberian forces, impacts the price and demand, a global division of labor created by chasing the cheapest wages and resources hardly occurs in the global wine industry (Overton *et al.*, 2012). Arguing this self-contradiction in the globalization of the wine industry, these authors also state that different aspects of the growth of the wine industry are seen in different countries. In Australia, for example, production increased significantly as the global demand for wine rose, whereas in China, credit for the expansion of wine production is mainly given to the growth in domestic demand (Overton *et al.*, 2012: p. 278).

Because the strategies and processes, and therefore the pathways, that the “New World” countries and the “Old World” countries took were different, the aforementioned globalization of the wine industry should be considered in order to examine the path trajectory that China, in this case at the Eastern Foot of the Helan Mountain Region in Ningxia, is taking. Specifically, the evolution of paths may be sought and this may have implications for the extra-regional influence of industrial evolution. Also, firm size and institutional aspects such as regulations, in addition to FDI as described above, may differ. Although China is often classified as a “New World” or periphery region due to its history (Legrand *et al.*, 2011; Overton *et al.*, 2012), it cannot be classified by the dichotomy characterizing other places (Jenster and Cheng, 2008; Banks and Overton, 2010). Despite the argument that there are no two regions that can succeed by applying the same rules and policy, a region tends to absorb new knowledge, information, and policies by frontrunners (Boschma, 2004). Therefore, whether China is adapting the institutions of the “New World” or

the “Old World”, or even a mixture of both, can indicate the evolution of pathways in the Eastern Foot of the Helan Mountain Region, further impetus for the present study.

2) Reading the Chinese Wine Industry through the Context of Globalization

While the potential of the Chinese market stemming from rapid economic growth and changes in *consumption* preferences from tea to red wine will influence global demand and international markets (Hussain *et al.*, 2008; Banks and Overton, 2010; Legrand *et al.*, 2011), actual wine *production* in China is also a notable factor in the globalization of the wine industry. Thorpe (2009) illustrates both consumption and production in the Chinese wine industry in the context of globalization. Both production and consumption world totals declined until the 90s, but through the rearrangement of volume from each producing region and the steady growth of consumption in emerging markets, these two indexes have begun to increase gradually. Despite vertical and horizontal integration, the global wine industry is still fragmented. However, in the case of China, the production of wine has increased rapidly along with the improvement in quality with the help of foreign investors (Thorpe, 2009). Also, the demand for quality has grown, providing producers with the impetus to upgrade quality. Nonetheless, this huge potential market is expanding with only slight increases in imports and a small niche for both inward and outward FDI activity.

Inward FDI in the wine sector in China started right after the Chinese Economic Reform (*gaigekaiifang*) in the 80s when *Remy Martin* created the joint venture, *Dynasty (Wangchao) Winery*, in Tianjin. The wine industry existed before the Economic Reform, led by a now more than 120-year-old (established

in 1892) company, *Changyu*, but the quality and characteristic of those wines were quite different from Western style wines. After the Economic Reform, adoption of new wine techniques were pioneered by the leading authority in the Chinese wine industry, Mr *Guo Qi-chang*, and aided by a large amount of foreign investment (Jenster and Cheng, 2008). This coincided with the encouragement of the Chinese government to produce and consume wine made with fruit, rather than *Baijiu* (a Chinese white spirit made with sorghum, otherwise known as *Kaoliang*) based on grain. Both the quantity and the quality of domestic wine started to grow quickly in response to rising domestic demand (See Figure 2).

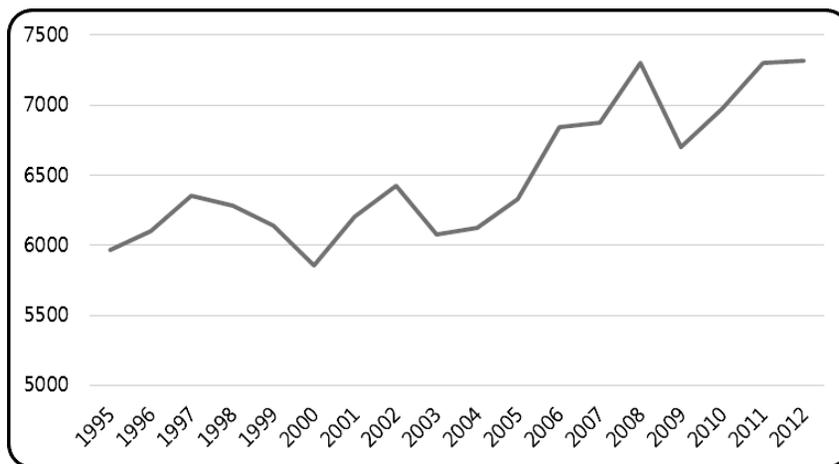


Figure 2 Wine Consumption Volume in China 1995-2012 (hℓ) (OIV, 2016)

Production increased steadily and almost doubled in 17 years, from 7000 hℓ in 1995 to as much as 13,511hℓ in 2012 (See Figure 3). Meanwhile, import volume also rose from 222 hℓ in 1995 to 4684 hℓ in 2012, jumping straight from 2235 hℓ in 2009 to 3482 in 2010, then to 4393 hℓ in 2011 (See also Figure 3). Until the 90s, the wineries kept blending foreign bulk wines to their wines, but as the demand for quality and imports of wine rose, they had no

choice but to improve the quality of their own wines through more joint ventures and hiring foreign winemakers (Legrand *et al.*, 2011). This trend has continued, and private foreign investment in the Chinese wine industry is increasing (Zhang and Cao, 2014) proving the potential for production and market expansion.

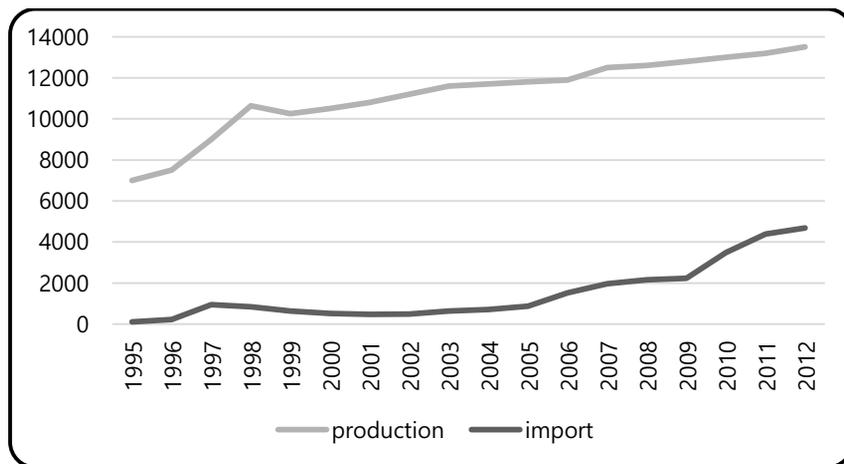


Figure 3 Wine Production and Import Volume in China 1995-2012 (hl)
(OIV, 2016)

As for market share, only four companies account for more than 50% of all domestic production (Jenster and Cheng, 2008; Li *et al.*, 2009a), namely *Changyu*, *Greatwall*, *Dynasty*, and *Grand Dragon (Weilong)*. *Changyu* and *Greatwall* have wineries and vineyards throughout the country, allowing the pursuit of diversity of varieties and *terroir*, while *Grand Dragon* takes a differentiation path and aggressively advertises itself as the “founder of organic wine”, which is one of the niche markets in China (Grand Dragon, 2016). If expanded up to top ten wineries, the production portion increases to more than 60%. Other small and medium sized wineries are scattered across the country. There are ten big wine producing provinces (Jenster and Cheng, 2008; Zhang and Cao, 2014) with, “...five leading provinces ...[contributing] more than two

thirds of the total grape production in the country” (Mitry *et al.*, 2009: p. 21), namely Shandong, Hebei, Tianjin, Jilin, and Henan province, accounting for 87.44% of the total production in 2007 (Li *et al.*, 2009a: p. 343). Ningxia Hui Autonomous Region ranked sixth in 2007, but is considered the region with the most potential given the development of the largest wine grape vineyard within China (Zhang and Cao, 2014). This provides clear impetus for the selection of this region as a focus of inquiry for the present research.

2.4 Regional Background: Ningxia and the Eastern Foot of the Helan Mountain Region

2.4.1. Ningxia Hui Autonomous Region

The Ningxia Hui Autonomous Region is one of several provincial-level administrative divisions and is located in the northwest part of China. It shares its administrative boundaries with the Inner Mongolia Autonomous Region to the north, Shaanxi Province to the east, and Gansu Province to the west and south (See Figure 4). The total surface area of Ningxia is 66399.73km² (Statistical Bureau of Ningxia Hui Autonomous Region and Ningxia Survey Office of National Bureau of Statistics, 2014), which accounts for about 0.69% of total Chinese territory, and it is the smallest of the five Autonomous Regions. There are five prefecture-level cities in Ningxia, namely Yinchuan, Shizuishan, Wuzhong, Guyuan, and Zhongwei. The capital of the Autonomous Region is Yinchuan, which is the biggest city in Ningxia in terms of economic size and population (Statistical Bureau of Ningxia Hui Autonomous Region and Ningxia Survey Office of National Bureau of Statistics, 2014). At the same time, it is considered a third-tier city within the country. The region has a continental temperate climate with an arid steppe and desert area (Ho, 2000). The Helan Mountain stretches from north to south along the northwest boundary shared

with Inner Mongolia. The Yellow River flows across Ningxia and the northern area of Ningxia, forming a short natural boundary with Inner Mongolia.

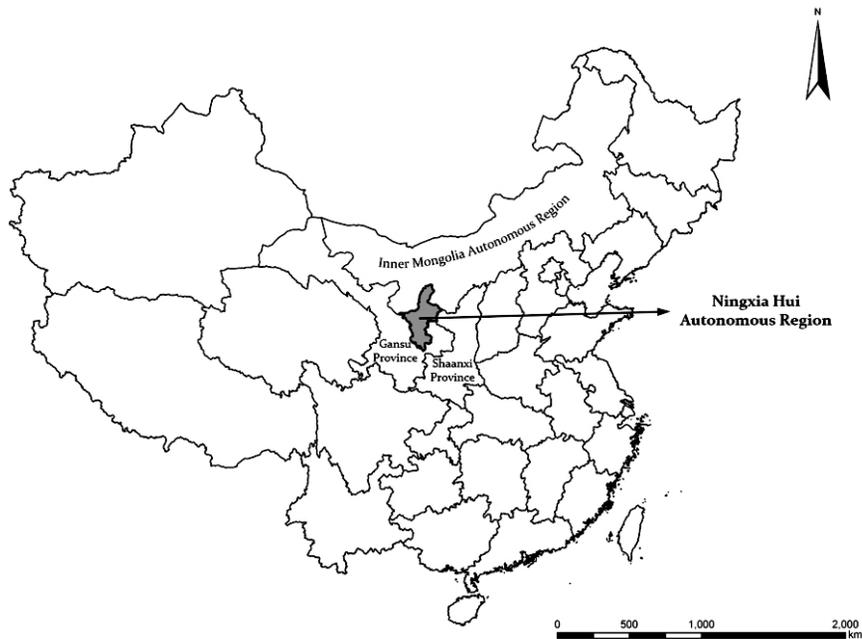


Figure 4 Geographical Location of Ningxia Hui Autonomous Region
Source: Author created map using ArcGIS

The residential population of Ningxia Hui Autonomous Region was 6,541,938 in 2013, which accounts for 0.48% of the total population in China. As one of the five Autonomous Regions, more than 30% of the population has *Hui* ethnicity (derived from the word *Huijiao* meaning 'Islam' in Chinese (Chung, 2007)). More specifically, 35.6% of the whole population of Ningxia, which is 2,328,975, had *Hui* ethnicity in 2013 (Statistical Bureau of Ningxia Hui Autonomous Region and Ningxia Survey Office of National Bureau of Statistics, 2014). Nonetheless, the percent of *Hui* ethnicity varies from 24.06% in Yinchuan up to 52.61% in Wuzhong, which is the second largest economic city in Ningxia. According to the National Bureau of Statistics of the People's

Republic of China (2015), the *Hui* ethnicity is second largest ethnic minority in China after the *Zhuang* ethnicity.

Although the Regional GDP (RGDP) per capita was only 74% of the national average in 2006 (Li and Sai, 2009), it rose to 91% of the national average by 2013, achieving RMB 39,421 (approximately USD 5,800) per person. The industry structure has shifted to a high concentration in the secondary and tertiary industries, with the composition of 26.7%, 45.6%, and 27.8% in the order of primary, secondary and tertiary industries in 1980, to 8.7%, 49.3%, and 42.0% in 2013. The balance varies by city; for example, the secondary industry in Yinchuan comprised 53.4% of the total in 2013, and 54.3% in Wuzhong. In Guyuan, by contrast, it was as low as 26.1%, merely 1.5% higher than activity in the primary sector. Meanwhile, the RGDP had risen in all county-level administrative divisions by 2013 compared to the preceding year (Statistical Bureau of Ningxia Hui Autonomous Region and Ningxia Survey Office of National Bureau of Statistics, 2014).

Despite the decreasing contribution of the primary sector to total RGDP, the proportion of vineyard area to total orchard area and the productivity of vineyards have been recently increasing explosively. Although the area of grape orchards only increased from 530 hectares (ha) in 1985 to 7,750 ha in 20 years, and comprised only 6.36% of total orchard area in 1985 and 15.96% in 2005, the area had almost quadrupled by 2010, reaching 28,720 ha in only five years. It had increased to 34,000 ha by 2014 (National Bureau of Statistics of the People's Republic of China, 2016), taking up 24.69% of total orchard area, and had slightly decreased to roughly 32,427 ha (486,400 mu in original content) by 2015 (Statistical Bureau of Ningxia Hui Autonomous Region, 2016). The productivity of grapes has also increased from 1.51ton (t) per ha (t/ha) in 1985 to 6.66 t/ha in 2015 in spite of low levels of mechanization (Li *et al.*, 2009b; Yang and Yang,

2015).

As it is the first 'Inland Opening-up Pilot Economic Zone' in China (The State Council of the People's Republic of China, 2012: Guo Han [2012] No. 130; 2013: Guo Ban Han [2013] No.89), Ningxia has been designated a strategic region for China's 'Great Western Development'. It is slotted to become a bridge between the West and China, and between the Arabic countries and China, due to the geographical location of the Autonomous Region and the concentration of the *Hui* ethnicity group (National Development and Reform Commission of the People's Republic of China, 2012: Fa Kai Xi Bu [2012] No. 2970). In addition, the plan also contains strategies for implementing pilot areas for specialty plants such as wine grapes, and for constructing the 'Eastern Foot of Helan Mountain 1 million mu Grape Corridor'. This plan is also to strengthen collaboration with other regions and countries regarding the development of technology for modern agriculture, dry farming, facility agriculture, and irrigation. This implies an effort by the central government to reinforce the region and to develop and foster the wine industry. Additional policies and government announcements specifically concerning the wine industry of the Eastern Foot of the Helan Mountain Region are introduced in the following subsection.

2.4.2. The Wine Industry in the Eastern Foot of the Helan Mountain Region

Though it may seem surprising for this industry to flourish in an area with a Muslim population since Muslims are forbidden to drink alcohol according to their Quran, this region has recently become the fastest developing wine region in China (Li, 2009), and has produced some quality wines that have achieved good results in international wine contests. Starting with winning the

International Trophy for Red Bordeaux Varietal over £10 by Helanqingxue Winery with its *Jiabeilan Grand Reserve 2009* in the Decanter World Wine Awards in 2011 (Decanter, 2016), Ningxia wines have gained brand awareness, and in 2016, they received six gold medals out of eight in total at the 23rd Concours Mondial de Bruxelles (Concours Mondial, 2016), which is a world-renowned international wine competition. Emanating from success at these events, Ningxia has gained popularity among wine experts.

International wine contests and expos are also held in Ningxia. In 2012, the “*Ningxia Winemakers Challenge*” (NWC), a two-year project, was launched for the first time (Ningxia Wine Guide, 2015). Winemakers from around the world could freely join the project, and seven winemakers competed to receive a cash prize of RMB 190,000 (approximately USD 29,000, EUR 26,000, and KRW 34,200,000). The International Federation of Vine and Wine of Helan Mountain’s East Foothill was organized on May 30th, 2013, in order to promote the development of viticulture in the region. With the federation’s organization, the second competition began in September, 2015. From 140 applications gathered, 60 were chosen as finalists; finally 48 winemakers from 18 nations were chosen. These nations included France, Spain and Italy, which all have a strong tradition of wine making, along with the United States, South Africa, New Zealand and Australia, which are some powerful emergent wine producing countries. Some newly emerging wine countries such as India were also represented. Since the rules of the challenge pair foreign winemakers with local wineries in the Eastern Foot of the Helan Mountain area, and stipulate that wine should be produced from locally grown grapes (see Figure 5), it is a good opportunity for local wineries to receive external knowledge and technology transfer.



**Figure 5 Vineyard in the Eastern Foot of Helan Mountain Region
(Aug. 8, 2016, by author)**

Additionally, the Eastern Foot of Helan Mountain International Wine Expo is held annually. In 2014 and 2015, the Expo joined together with the NWC. The award for the 2012 NWC was granted as part of the program for the 2014 Expo, and in 2015, the NWC encouraged winemakers to participate in the Expo. Not only did the Expo make an effort to invite more winemakers, but it also invited international merchants, businesspeople, President Monika Christmann of the Organisation Internationale de la Vigne et du Vin (OIV - International Organization of Vine and Wine) and other wine experts and related scholars from Germany, Israel, and Georgia to hold various programs (Fan, 2015).

The government has also concentrated on fostering the wine industry by implementing policies. It was proposed in the “Certain Opinion from the State Council Regarding Taking One Step Further to Promote Economic and Societal Development of Ningxia” (The State Council of the People's Republic of China,

2008: Guo Fa [2008] No. 29) that the northern irrigated area of Ningxia should concentrate on goji berries, beef and lamb, milk cows, greenhouse vegetable, and wine grapes. For the protection of the brand name from other similar products, “wine in Helan mountain east region (*Helanshandongluputaojiu* in Chinese)” has been established as a geographical indication (Figure 6) for products (The State Administration of Quality Supervision-Inspection and Quarantine, 2008).



**Figure 6 Geographical indication attached on a wine bottle
(Aug. 8, 2016, by author)**

Also, in 2015, the Administration of Development of the Grape and Flower Industry of Ningxia under the Ningxia Hui Autonomous Region Government changed its name to the Administration of Development of the Grape Industry of Ningxia (General Office of the People's Government of Ningxia Hui Autonomous Region, 2015), specializing its organization on viticulture. This administrative department is linked with the aforementioned International

Federation of Vine and Wine of the Helan Mountain's East Foothill.

The Eastern Foot of the Helan Mountain Region is the first region to adopt a government level regulation system for wineries (Wu, 2014), which is very similar to the regulation system operated in the "Old World" countries. Its implementation was made by "The Grand Cru Classes Assessment of Helan Mountain's East Foothill" (General Office of the People's Government of Ningxia Hui Autonomous Region, 2016) which first began in 2014, assessing ten wineries as fifth class cru (the lowest class), with an amendment in 2016. The assessment is done every two years on all of the wineries that are in the Eastern Foot of the Helan Mountain Region, and after a winery is promoted to the highest class, first class cru, it will be assessed every ten years. On October 28th, 2016, five of the ten previous fifth class cru wineries were promoted to fourth class cru wineries, and eleven new wineries were selected as fifth class cru (Anonymous, 2016). There are a total of nine assessment criteria: 1) appearance of the vineyard and purity of varieties, 2) the quality (and quantity) of grapes, 3) scores from blind tasting, 4) status of award, 5) guided prices from experts, 6) sales per year, 7) status of certification related to eco-friendly production, 8) disposition of technicians, and 9) winery and relevant accessorial conditions (General Office of the People's Government of Ningxia Hui Autonomous Region, 2016: pp. 7-9). Interaction with foreign wineries or wine-related people or organizations is important for gaining high scores in each criterion. Especially for criteria impacting status of awards and certifications for eco-friendly production, for example, higher scores are given to international awards or international organic certification. Also, in order to achieve a high score in the 'disposition of technicians' criterion, wineries must have guidance from experts inside and outside China who are recognized by the International Federation of Vine and Wine of Helan Mountain's East Foothill.

The regional government has also adopted a 'small wineries, big wine region' (*xiaojiuzhuang, dachanqu* in Chinese) model for its comprehensive industry plan. This model is in contrast to 'big wineries, no wine region' (*dajiuchang, wuchanqu* in Chinese), which other Chinese wine regions have taken for the direction of their development (Administration of Development of Grape Industry of Ningxia and Ningxia Viticulture and Enology Research Institute, 2016). Li and Wang (2010) support this model by arguing that the wine industry in China has developed from table wine made by big wineries. In order to move forward to the next stage of development, as the economic standards of Chinese have risen, and as demand for wine tourism and high quality wine has increased, more chateaus should be constructed to form sustainable clusters powered by small-sized wineries in excellent wine regions (see Figure 7 for winery clusters). This is in line with the model presented above.

From the facts outlined thus far, it is not difficult to surmise that knowledge transfer is not only a goal of the regional government, but that it is likely to happen between local wineries, and between local and non-Chinese wineries. If knowledge and technology transfer happen, innovation that can lead to new path creation and that can strengthen the potential for regional resilience is possible. In the following section, the last section of this chapter, a summary of the literature review will be introduced with the implication for the empirical case study of this thesis.

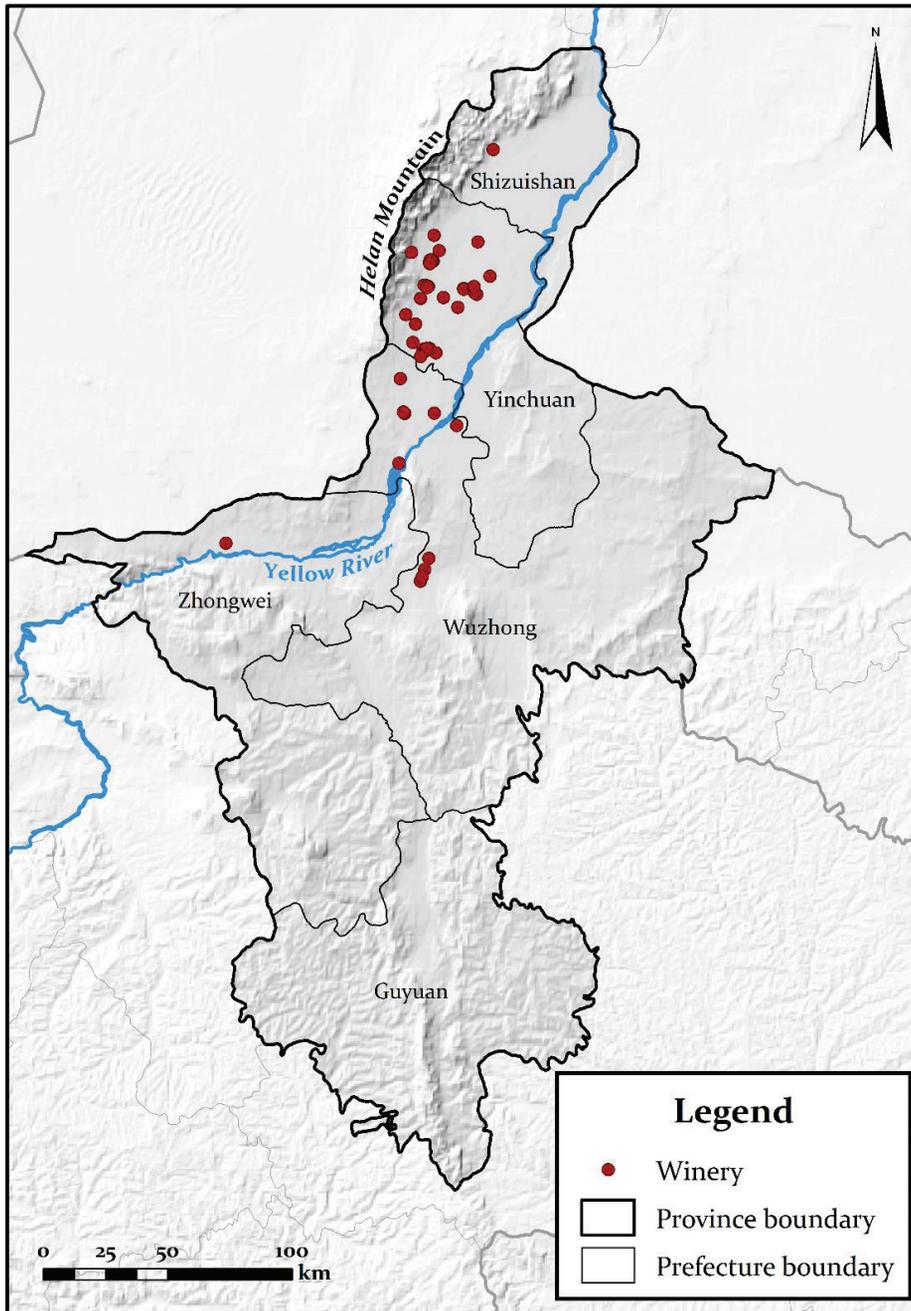


Figure 7 Wineries clustered in each sub-region of the Eastern Foot of Helan Mountain, Ningxia

Source: Author created map using ArcGIS, data collected from Administration of Development of Grape Industry of Ningxia and Ningxia Viticulture and Enology Research Institute (2016)

2.5. Summary and Implication for the Thesis

In this chapter, literature capturing the importance of knowledge transfer in regional development and the evolution of institutions and regions was reviewed largely in four parts: EEG, institutions and the evolutionary approach, industry background, and regional background.

The first section of the literature review established the basis of EEG and corresponding theory that support the key aims of the study. Because the discourse regarding EEG is relatively young, theoretical debates about the extent and characteristics of EEG were explored. The importance of knowledge networks and knowledge transfer, which are key subjects of the analysis, are augmented by specific aspects of EEG such as lock-in, de-locking, and regional resilience. Also, the role of government policy in explaining the evolution of a region using EEG was described.

Following this, the second section addressed how institutions are theorized in the evolutionary approach, especially the co-evolution of institutions and regions. Potential lock-in experienced by a region given the influence of institutions was discussed, as was the potential for regions to increase their chances for resilience by deploying de-locking measures. Also, the impact of institutions on regional development was emphasized in the connected literature concerning IEG.

In the third section, the wine industry was described, starting from the process of vinting wine. Although the wine industry includes interaction with multiple production sectors such as the cork and bottle industry, and other industries such as tourism and trade, the process of winemaking itself involves many actors and technological innovations as well. This research narrows the extent of targeted firm-level informants to actors that are directly involved with the wineries and wine making.

Lastly, the final section introduced the regional background of the Ningxia Hui Autonomous Region and the Eastern Foot of Helan Mountain Region, providing general information about the administrative division and the current status of the wine cluster. In this section, the groundwork was laid to ascertain the importance of policy and associated institutional impacts on the development of the cluster under study.

In the following chapter, the research questions (RQ) and case study are presented. This chapter will identify aspects of knowledge transfer occurring intra- and extra-regionally, and analyze the co-evolution of the institutions that have had a great impact on the evolution of both the industry and the region. In order to accomplish this, the research questions devised to flush out these possibilities are introduced. Firstly, the mode and the degree of intra-, inter-, and extra-regional knowledge transfer are investigated. As Glückler (2007) stresses the equal importance of both endogenous and exogenous networks in the economic development of a region, the frequency of each kind of knowledge transfer is examined to compare the quantitative impact of these transfers, and the mode of knowledge transfer is explored to reveal reasons why the frequency of intra- extra-regional knowledge transfer may differ.

Also, firm perceptions of the actual impact of these knowledge transfers on the wineries are scrutinized. From these perceptions, efforts for regional de-locking, intertwined with the evolution of each entity, are analyzed according to the five solutions for de-locking introduced by Martin and Sunley (2006) mentioned previously. In addition, the intra-regional diffusion of external knowledge highlighted by Giuliani (2011) is considered through the responses of informants.

Finally, government policy and the co-evolution of institutions are analyzed for evidence of regional resilience. Since institutions, especially

government institutions, have a crucial effect on whether a region possess resilience or potentially fall victim to lock-in, careful examination of possible co-evolution of political and educational institutions augmenting regional economic development and potential resilience is conducted.

While previous studies have concentrated on the effectiveness of knowledge transfer, they have not shed light on diversified communication methods that may vary depending on the subject of interaction. The importance of face-to-face communication has been underlined in various literature (Gertler, 2003b; Storper and Venables, 2004; Asheim *et al.*, 2007). As well as revealing the importance of face-to-face contact, this case study also compares other communication modes, especially online telecommunication, to face-to-face communication.

Moreover, by conducting in-depth interviews with those who receive a direct impact from government policies and regulations, the study seeks to distinguish the degree of actual influence and the trajectory of governmental actions. This, it is hoped, will have implications for policy makers seeking to promote further development in this region or others.

3. Case Study Comprising the Research

This chapter introduces a case study focused on knowledge transfer between actors in the wine industry cluster and regional evolution in the Eastern Foot of Helan Mountain, Ningxia Hui Autonomous Region. It presents (1) three research questions based on the previous literature review, (2) methodology, methods used for the data acquisition, and data (3) analyses of results from the collected data, and (4) a summary discussion.

3.1. Research Questions

To examine knowledge transfer and its impact on the wine industry cluster in the Eastern Foot of the Helan Mountain area, this study deploys three research questions (RQs) based on the EEG literature review. RQ₁ and RQ₃ are split into two sub RQs, and the second into three.

RQ₁ investigates the frequency of firm interaction (intra- and extra-regional) and knowledge networks that might convey unknown information or technology that can help the wineries to improve their product or process innovation.

RQ₁(a) How, and how much, do wineries in the Eastern Foot of Helan Mountain interact with other local firms intra-regionally to address product and process innovation?

RQ₁(b) How, and how much, do wineries in the Eastern Foot of Helan Mountain area interact with foreign firms or workers in related professions to address product and process innovation?

The method and frequency of interactions (both RQ₁(a) and RQ(b)) are explored through in-depth semi-structured interviews and participation observation. The methods are largely divided into online and offline

communication for purposes of comparison, and the subject of the interactions are divided into inter-regional (with wine regions within China) and extra-regional (with wine regions in foreign countries) in RQ₁(b).

RQ₂ explores the perception of the degree of usefulness of actual interaction with actors (intra- and extra-regionally) that wineries in the region have and the extent to which they share information intra-regionally.

RQ₂(a) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with other firms and organizations intra-regionally on their economic growth?

RQ₂(b) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with foreign firms, workers in related professions, and organizations on their economic growth?

RQ₂(c) Do wineries in the Eastern Foot of Helan Mountain area that interact with foreign firms or workers in related profession share the information or knowledge acquired from them with other domestic firms intra-regionally? If so, how?

In order to examine the perception of actors regarding the impact of interaction (RQ₂(a) and RQ₂(b)), questions that involved the effect of communication on sales and production were asked. To investigate whether external knowledge is diffused intra-regionally (RQ₂(c)), answers from both information providing firms (wineries) and receiving firms (wineries) are examined to provide sufficient breadth of understanding.

RQ₃ seeks to clarify the influence of governmental regulations and policies (institutions) on the growth of the wine industry in the region (e.g. path dependency, de-locking, and path creation).

RQ₃(a) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of government policy?

RQ3(b) How are formal institutions such as governmental regulations co-evolving with the firms and the region?

To examine firm perceptions of the impact of governmental institutions (RQ3(a)), questions asked of the informants directly deal with the influence of government policies on the winery and the region. Since some wineries requested to answer off the record, only responses from the informants who did not ask to be off the record are used. RQ3(b) is analyzed in conjunction with results from previous RQs, through supported by additional interview responses. Participation observation is used to augment the semi-structured interviews.

3.2. Methodology, Data Acquisition, and Data

This research is guided by a qualitative methodology. While qualitative research in the social sciences is often considered complementary to quantitative research, it is none-the-less considered the most appropriate method for research into under-researched subjects, or research about which the researcher does not know what results may be drawn (Luker, 2008). This is not different from the view of qualitative research in the study of Human Geography, which includes Economic Geography. Winchester (2005: p. 5) states, for example, that qualitative research in Human Geography revolves around 'societal structures' or 'individual experiences'. Because this study focuses on the dynamic networks of firms, necessarily meaning between individuals, and the co-evolution of networks, institutions, and a region through the subjective perception of individual actors, qualitative research methods can help to scrutinize this under-researched geographical area.

Interviews are known as an "...excellent method of gaining access to information about events, opinions, and experiences" (Dunn, 2005: p. 80), and

are used to complement information acquired from other research methods and to explore detailed, complex, and diverse information (Dunn, 2005). Also, since interviews, especially unstructured or semi-structured interviews, are conducted to allow informants to answer rather freely about their personal experiences and to “capture informants’ view of life” (Dunn, 2005: p. 103), subjective perceptions are easier identified than when deploying other methodologies such as surveying or operating statistical analyses. Therefore, interviews are chosen as the method to examine complicated and subjective intra- and extra-regional knowledge transfer.

Since it involves, indeed depends upon, face-to-face contact more than other data acquisition methods such as surveying, the place where the interview is conducted should be considered thoroughly (McDowell, 2010). Interviews were performed mostly at work sites at wineries, but some interviews were conducted in individual offices or at a café nearby. This not only helped to ease the informants’ minds, but it also provided more opportunities to conduct participatory observations. As most winery workers offered a tour around the winery, the current status of each winery was experienced more vividly. All interviews were conducted in Chinese. The researcher is fluent in Chinese and is credentialed to teach Chinese in Korea.

3.2.1. Semi-structured Interviews

In-depth interviews were constructed as semi-structured interviews, targeting people working in wineries such as middle managers or those in higher positions, working as enologists, general managers, and sales managers. Though every effort was made to engage with middle and higher level employees, time constraints and contact information restrictions inevitably meant that some informants had lower positions. Still, these informants proved

to have professional knowledge about the industry and the winery, or provided new perspective concerning the wine industry cluster. Winery owners were also interviewed to provide deeper understanding of the current situation of the wine industry in the region and to acquire more precise information on each winery. Also, government officers were targeted. These interviewees were asked a different set of questions to compare the perception of government regarding the impact of political institutions with the perception of winery workers who are directly influenced by government policy.

Since this research methodology includes human subjects, this research was reviewed and approved by the Institutional Review Board (IRB) of Seoul National University (SNU) with IRB number 1607/003-006. Upon commencing interviews, the informants were given IRB informed consent, including full information about the research such as the purpose, subject, procedure, duration, risks and benefits, disadvantages from withdrawal or non-participation, and assurances of confidentiality. Interviewing is a rather complicated process since the contact itself can harm the informants, or the answers to a question can be a potential danger to the informants (Phillips and Johns, 2012). Fortunately, since the targeted informants were not weak in a social context within the wine industry, it was easier to ask questions straightforward. Nonetheless, because of their relationships with the government and the potential impact that they might receive from participating in interviews, issues that might negatively impact them were carefully asked and are delicately interpreted in this thesis.

3.2.2. Participant Observation

In addition to semi-structured interviews, a degree of participatory observation was performed simultaneously to augment the case study. This type of

observation is mainly conducted by social and cultural geographers (Kearns, 2005), and it can also be useful in this case study because it can provide insight into the characteristics of the region and other entities involved in the wine industry.

45 days of fieldwork in the Ningxia Hui Autonomous Region complemented this part of the study. In China, fieldwork is important *vis-à-vis* industrial statistical analysis for three reasons: 'the possibility of finding much more subtle information that cannot be interpreted through statistical data'; 'the possibility of finding a gap between political regulations and the actual form and enforcement of it'; and 'the possible emergence of new conceptualizations or theoretical implications' (Yeo, 2010: pp. 150-152). In fact, since the statistical data that the Chinese government provides do not have small scale data that is needed for the analysis of this research, fieldwork was crucial for the case study.

Because, as previously mentioned, interviews took place primarily at wineries, I had opportunities to interact with not only the informants, but also other workers in the winery, or, in some cases, the guests that were visiting the winery as well. From Gold's (1958: adapted from Kearns, 2005: p. 196) categorization of possible researcher roles, I was more than a 'complete observer' and more of an 'observer-as-participant' who interacts with the subject of study. Since the Eastern Foot of the Helan Mountain Region is an emerging wine region seeking to promote itself to diverse places, as a young graduate student from a neighboring country, I was mostly welcomed by the people working in the wine industry in the region. Although my stay in the region was too short to devote myself completely to the region, the welcoming atmosphere allowed me to have more opportunity to build social networks, and to understand daily life and experiences more deeply than would have been

possible by merely conducting interviews.

3.2.3. Data

According to the Administration of Development of Grape Industry of Ningxia and Ningxia Viticulture and Enology Research Institute (2016), there are a total of 85 established wineries, and 99 wineries that are under construction in 2015. Interviews were conducted with 31 informants working in 26 different wineries. Also, two government officials agreed to be interviewed. Due to confidentiality concerns, their personal information is not revealed in this thesis. The informants working in wineries can be divided into three groups according to their professional fields. Informants with two or more positions were put in the category that can best describe the bulk of their work responsibilities. To protect the confidentiality of the informants, instead of exact ages, age groups (e.g. 20s, 30s, 40s, 50s, 60s) are listed to show the diversification of workers in the industry cluster.

Table 2 List of Interview Participants (Sex, Age group)

Code number	Higher executives and winery owners	Production related	Sales and marketing related
1	Male, 30s	Male, 20s	Female, 20s
2	Male, 50s	Female, 20s	Male, 30s
3	Male, 40s	Male, 20s	Male, 20s
4	Female, 30s	Male, 20s	Female, 20s
5	Male, 50s	Female, 40s	Female, 20s
6	Female, 60s	Male, 40s	Male, 20s
7	Male, 20s	Female, 20s	Female, 20s
8	Male, 50s	Male, 30s	
9	Male, 40s	Male, 30s	
10	Female, 40s	Male, 20s	
11	Female, 40s	Male, 30s	
12		Male, 40s	
13		Male, 30s	

In the category of higher executives and winery owners, informants that are winery owners or those with the position of general manager or higher are included. Production related positions include winemakers and other production manager positions. For sales and marketing related positions, there were two workers and one intern; these and several other informants provided some valuable insight into aspects connected to educational institutions.

Informants were asked whether or not they received higher education and, if they had, the major they studied. Of the 31 informants, 17 responded that their major was viticulture related. Figure 8 is a graph presenting the number of informants in each age group for each educational status. The largest group is comprised of informants with a Bachelor’s degree. Because more than 40 percent of informants were in their 20s, those possessing a Bachelor’s degree outnumber those possessing a Master’s degree. In addition, all of the informants with their Master’s degree studied in France. The importance of this fact will be addressed in the results section.

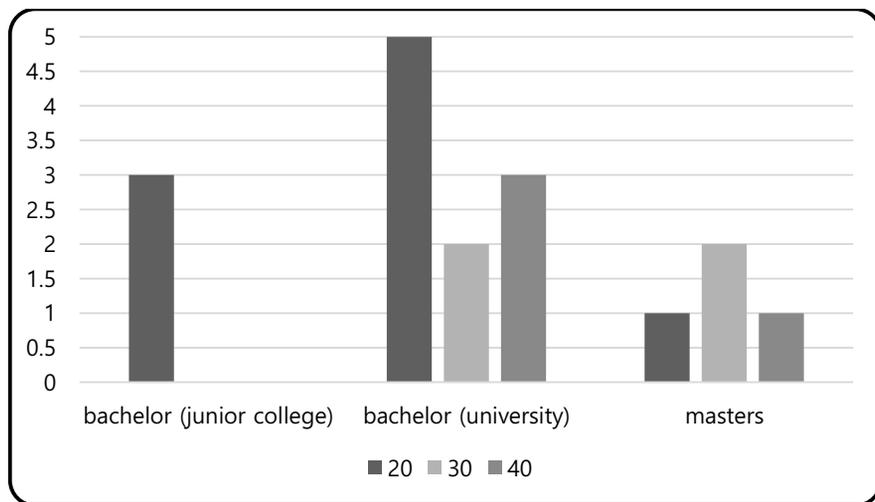


Figure 8 Number of Informants in Each Age Group According to Education Status (n=17)
Source: Compiled from author’s fieldwork

The wineries at which the informants work vary by establishment year,

number of employees, and type of firm (e.g. privately held or SOE), thus providing abundant information on the wine industry and the region from diverse perspectives. Figures 8, 9, and 10 visualize the number of wineries by each variable.

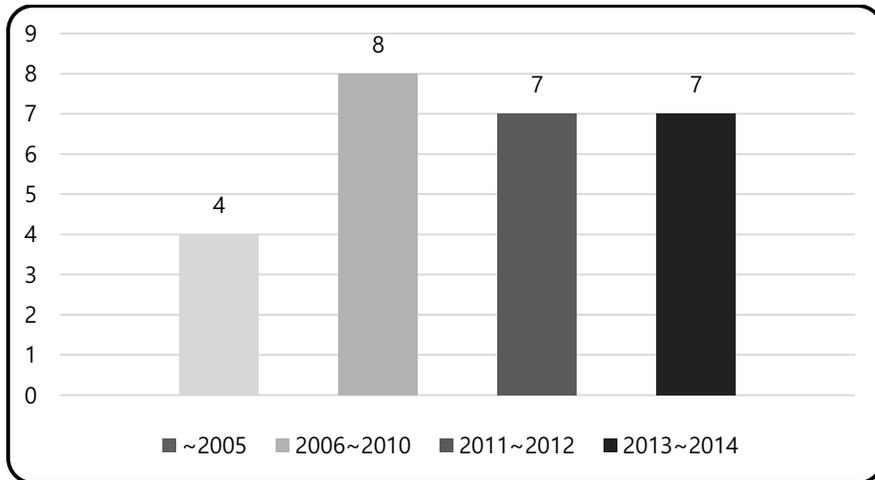


Figure 9 Wineries by Year of Establishment
Source: Compiled from author's fieldwork

From Figure 9, the emergence of the wine industry can be inferred. More than half of the interviewed wineries were established after 2011, which includes wineries that have not completed their construction. This phenomenon is delved into more specifically in the analysis of the results.

The number of workers (Figure 10) were divided into three groups following the categories designed by Giuliani (2010c). She divided the wineries in Chile into small (1~9 workers), medium (10~99 workers), and large (over 100 workers) entities. The aforementioned phrase, 'small wineries, big region', created by the government has apparently influenced the size of firms in the region, at least insofar as the wineries interviewed would suggest.

Due to limited access and permission, I was unable to interview workers in foreign-invested wineries; there are multi-national corporations such as Moët & Chandon and Pernod Ricard in the region (Fu, 2015). Except for foreign-

invested wineries, the form of ownership is divided into three categories (see Figure 11). The most common is private-owned wineries, which accounts for 58% of the total.

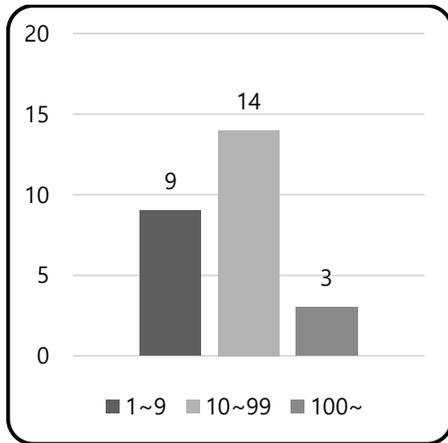


Figure 10 Number of Workers in the Winery
Source: Compiled from author's fieldwork

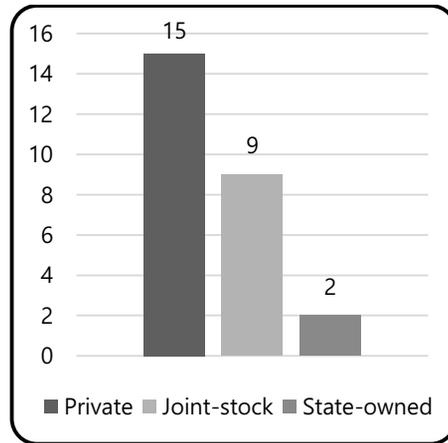


Figure 11 Form of Ownership
Source: Compiled from author's fieldwork

Not all of the wineries in the Eastern Foot of the Helan Mountain area have completed construction of their chateaus. Though under construction, wineries that are already established, but that have incomplete chateaus are still assumed to have interaction with other firms. Therefore, four interviewees from four different such wineries participated in interviews. These interviews provided insight into the process of acquiring knowledge and technology on their process of establishment, which helps to explain why the wine industry in Eastern Foot of the Helan Mountain Region is developing at an enormous speed. Also, the questions are designed to examine whether these wineries are spin-offs or new actors, an important consideration in EEG (Boschma, 2004). Data gleaned from in depth interviews with informants support analyses vital to approaching RQ1 through RQ3. Since actors were expected to vary by position

and firm size, semi-structured (with an interview guide) interviews were augmented by unstructured, flexible response opportunities depending on the interviewee (See Dunn, 2005). This resulted in differing amounts of time per interview, varying from less than twenty minutes up to more than one hour.

As mentioned previously, the Administration of Development of Grape Industry has been established as a subdivision of the government of the Ningxia Hui Autonomous Region. This organization is in charge of numerous events held in Ningxia that are related to the wine industry and manages policies concerned with it. Therefore, conducting in depth interviews with officials working in the administration was helpful for answering RQ3. Also, it provided some implications pertaining to the organization of the interactions (intra and extra-regionally), providing additional insight (compare and contrast) into the interviews conducted with the winery personnel in conjunction with RQ1 and RQ2.

The interview questions prepared for the semi-structured interviews are as follows:

(1) Basic information collected:

Informant: Sex, age, position of work
Winery: name, location, number of employees, establishment year, form of ownership

The following question was asked to acquire detailed information not directly related to any of the RQs per say, but crucial to developing an understanding of the evolution of wineries and the region, the overall target of the research effort. It is designed to acquire descriptive information on companies (wineries) in the wine industry cluster and to flush out possible differences pertaining to knowledge transfer. Also, it helps to trace the path-

dependency and the existence of related variety of the wineries (Martin, 2010; Hassink, 2010). Related variety could be found in a grape or wine related industry (i.e. wine retailing, wine importing), viticulture, or tourism.

- “Were you always a winery, or were you a different type of company before? If different, why the change? If always a winery, what has changed over the past 5 years? Over the past 10 years? If different, what was planted in the orchard (or farm) before?”

(2) Several questions are related to RQ1(a) (How, and how much, do wineries in the Eastern Foot of the Helan Mountain area interact with other local firms intra-regionally to address product and process innovation?) and RQ2(a) (How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with other firms and organizations intra-regionally on their economic growth?):

The following questions were asked to examine the strength of intra-regional linkages between firms. These linkages have the possibility of contributing to regional lock-in and resilience (Boschma, 2015), and may affect knowledge spillover within a region. The questions were designed to trace inter-firm and intra-regional knowledge flows. Also, they were designed to ascertain the usefulness of knowledge externalities intra-regionally, for example, to gauge the possible impacts of ‘buzz’ and ‘F2F’ on winery activity (Asheim *et al.*, 2007).

- “In what ways do you communicate with other people working in the wineries in the Eastern Foot of Helan Mountain?”
- “How often do you communicate with them and for about how long per communication?”
- “What are your communications usually about?”
- “Do these communications impact how you do business or where you source or sell? Or your production process? If so, how?”

(3) Other questions are related to RQ₁(b) (How, and how much, do wineries in the Eastern Foot of Helan Mountain area interact with foreign firms or workers in related professions to address product and process innovation?) and RQ₂(b) (How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with foreign firms, workers in related professions, and organizations on their economic growth?):

The questions are designed to examine possible knowledge spillovers from outside of the region, and to observe possible global pipelines (Bathelt *et al.*, 2004) and the degree of related variety. Also, these questions help to investigate whether there has been any change to firm-level routines and paths (Boschma, 2004) considering inter-regional knowledge networks, and to estimate the degree of usefulness of these inter-regional knowledge networks. This could also contribute to ‘de-locking’ mechanisms as outlined by Martin and Sunley (2006).

- “Do you communicate with other people working *in Chinese* wineries *outside* the Eastern Foot of Helan Mountain?”
- “Do you communicate with other people working *in Foreign* wineries abroad?”
- “How do you communicate with them? How often do you communicate with them and for how long per communication?” (asked for both inter- and extra-regional communication)
- “What are the nationalities of people who you communicate with? Has the variety of nationalities changed over the years?” (only to those who have extra-regional communication)
- “What are your communications usually about?”
- “Do these communications impact how you do business or where you source or sell? Or your production? If so, how? Is your firm successful in ‘absorbing’ knowledge from foreign wineries?”

(4) Another set of questions are related to RQ3(a) (How do wineries in the Eastern Foot of Helan Mountain area perceive the impact of government policy?):

To compare the perceptions of the government to those held by wineries, questions are asked to both types of informants. Nevertheless, the questions asked of each are necessarily slightly different.

- 1) To the winery workers
 - “What influence do you think the policies and opinions of the local government have on the company (or winery) at which you are working? With specific regard to what part?”
- 2) To the government officials

- “Was this region always a wine intensive region? If not, what were the reasons for the change?”
- “What policies does the local government have in place for the wine industry of the Eastern Foot of the Helan Mountain area?”
- “How important do you feel it is for local wineries to interact with international wineries? Are you doing anything to facilitate these relationships?”

Responses to the questions above are the main source of the research material. Having these questions as a base, more information was acquired through deepened question and answer sessions during the interviews depending on the interviewee. Also, participant observation, described in the following section, complements the gap between answers to the interview questions and the actual situation as directly seen.

Based on the qualitative research methods and data mentioned thus far, the next section introduces the results of the case study analysis.

3.3. Results and Discussion

This section presents results from the analyses of data acquired through in-depth interviews, participation observation, and descriptive statistics. The analyses are complemented by some exact respondent excerpts, photos, and graphs, and reinforced with the literature reviewed previously. The results are presented in the order of the RQs.

RQ₁(a) How, and how much, do wineries in the Eastern Foot of the Helan Mountain area interact with other local firms intra-regionally to address product and process innovation?

The intra-regional communication in an industry cluster can cause endogenous changes and evolution in the cluster (Glückler, 2007) and geographical proximity is needed, at least temporarily, in order to create conditions for not only codified knowledge and information transfer, but also tacit knowledge transfer (Torre and Rallet, 2005; Glückler, 2007). There are several ways that communication takes place intra-regionally between wineries in the Eastern Foot of the Helan Mountain Region. Every informant interviewed addressed the importance of both online and offline communications for their interaction. Although online communication is often regarded as the same as internet communication, in this research it will include telecommunication that is conducted by electronic device such as phone calls. Offline communication is basically face-to-face communication, but will include all other communications that are not included in the definition of online communication. These two types of communication are different in their characteristics, and thus presented separately.

(1) Online communication

There are largely two types of online communication. The most frequently used online communication is a group online chat room in WeChat (*Weixin* in Chinese), which is a Social Network Service (SNS) application program that can be installed in electronic devices such as smartphones and computers. Because of the easily-accessible characteristic of SNS, all the informants answered that the frequency of communication using WeChat is at least once a day, thus making it the most frequently used mode of communication. The content shared with it has a wide range that varies from extremely informal subjects such as daily small talk, to formal notices announcing awards won by each

winery, to announcements of vineyards for sale.

WeChat has various functions. In addition to ordinary chatting that serves a function similar to short messaging services, users can create multi-participant chatrooms. Also, the SNS app provides a platform called 'Moments', where users can upload their status with photos or share URL links with their 'friends' in the application. Most of the informants said they use group chatrooms open to only the wine industry workers in the Eastern Foot of the Helan Mountain region. Two informants offered:

"We have a WeChat group chatroom, and we chat in there for a lot of time. We are all graduates from the same year, we are all scattered across the Eastern Foot of the Helan Mountain Region."

- Sales and marketing related worker 5 (female, 20s)

"Sometimes, we also send messages, for example, via WeChat, and ask some questions of each other [...] we have a group chat room, and everyone asks questions in the room, and communicates with each other. A lot of information is shared in the group chat room."

- Production related worker 10 (male, 20s)

Nevertheless, 'Moments' also functions as a public space to advertise their products, share current news of the industry, announce government policies, or to simply post events in their daily lives. According to one informant (sales and marketing related worker 3, male, 20s), WeChat is usually used for social life whereas QQ (another SNS application program used by Chinese) is used for office work and businesses. Apparently, intra-regional communication in the region is not only performed to build knowledge networks, but also social

networks. This socialization process is expected to increase the strength of relationships and the probability of gaining tacit and ‘metaphorical knowledge’ (Storper and Venables, 2004: p. 357). According to Inkpen and Tsang (2005), there are largely two types of social capital: structural and cognitive. Because the Eastern Foot of the Helan Mountain Region is a form of an industrial cluster, the social capital represented is closest to the social capital embedded in industrial district types of networks.

These social networks can be also referred to as *guanxi*, a Chinese word indicating the relationship between entities or the ‘social practice’ of building the relationship (Chen *et al.*, 2013). *Guanxi* is considered to be one of the essential factors for analyzing the Chinese economy and industry, and Chen *et al.* (2013) state that it is prevalent in weak institutional or volatile industrial environments. Although the wine industry in the Eastern Foot of Helan Mountain Region is getting enormous institutional support, described in the following analyses, its strong social networks, or *guanxi*, are considered to be derived from the novelty of the industry in the region and its associated institutional context. Thus, the current case implies that knowledge networks and social networks are intertwined.

Another frequently used form of communication is telephone calls. This mode is used mainly during the harvesting and crushing season after October. Although the harvesting season is a busy season for the workers, technologies related to production are applied during this process; therefore, they inquire about the technology or exchange opinions with each other. Also, since the wineries use machines frequently at this time, the exchange of information about repairing or operating machines occurs. One respondent mentioned:

“If we have something, for example, that needs communication right away,

we directly call, and say, for example, “Hey, we have this technology that we are having trouble with,” and just directly (use phone calls to) communicate the problem and get a solution.”

- Production related worker 5 (female, 40s)

According to the informants, because they work in different places, online communication devices are used more often than meeting people face-to-face. While online communication devices are used every day, face-to-face communication cannot be done as frequently due to the lack of time. However, as each communication mode is different, with differing time and rationale for use, several points can be addressed. This is specified in the following section.

(2) Offline communication

In the harvesting season, offline communications such as face-to-face interaction also occurs frequently. The informants responded that although they consistently use phone calls during this season, they also visit wineries more often.

“In harvesting seasons, normally we just drop by, taste other’s wine, and share our wine with others.”

- Production related worker 11 (male, 30s)

This is because some problems or conversations can be dealt with via phone calls, but subjects that need to be addressed in person are solved by going to other wineries. Notably, in order to obtain information about how other wineries handle each stage of the production process, informants directly perform on-site visits and scrutinize actual sites. According to an informant

(production related worker 13, male, 30s), during the fermentation season, which is after the crushing season, these visits occur continuously, and communication revolves around subjects such as what methods are being used during fermentation, what kind of sub-ingredients are used, or any new technology being integrated into the process. Therefore, this type of interaction is geared toward achieving process technology that can be utilized over the longer term rather than 'quick fixes' dealt with via phone as described previously.

Therefore, communication for knowledge acquisition is primarily conducted in the harvest season when the knowledge is needed and used immediately and when this knowledge can be applied going forward. This reinforces Gertler (2003b) and Asheim *et al.* (2007), who point out that tacit knowledge is difficult to transfer because of its deep contextual-embeddedness and that is best transmitted by face-to-face interaction. Again, the type of knowledge transferred through face-to-face contact is qualitatively different from that transferred via other ways of interactions such as phone calls mentioned above.

Meanwhile, face-to-face contact occurs regardless of season. Social networks are strengthened through private gatherings. They often gather in small groups for meals and engage in small talk, or have private wine tasting with their own wines. During this interaction, not only information regarding enology or other wine industry related knowledge are passed, but also current news and gossip are transferred through the social network.

“If we have gatherings, we can communicate more. [...] If there is enough time, then we can talk more thoroughly. For example, we talk about things such as some relationships within the wineries, and some gossip transferred between

wineries. [...] after all, if the conversation deepens, there should be things mentioned about the inside stories of the industry, gossip, and to investigate some deeper problems.”

- Production related worker 9 (male, 30s)

These are important for regional innovation because even gossip or rumors transferred within an industry group can create buzz, which is crucial for the workers to build trust and to grasp the current situation and wider trends in the industry (Asheim *et al.*, 2007). As these gatherings are based on participant social networks, the informants responded that they tend to selectively gather with those in their age groups.

“The young people communicate each other a lot. My purpose is to provide for myself after retirement, so I just deal with some problems within my house. Speaking of those social activities, I participate less. It is all for the young people.”

- Higher executive/winery owner group 6 (female, 60s)

“Of course, there is less communication among people with age differences.”

- Production related worker 9 (male, 30s)

Another occasion that the informants commonly mentioned is participating in the events that the government organizes (see Figures 12 and 13 for examples). Workers in the wine industry are invited to every forum and expo hosted and organized by the Administration of Development of Grape Industry each month. The participants often gain opportunities to meet foreign wine industry celebrities.

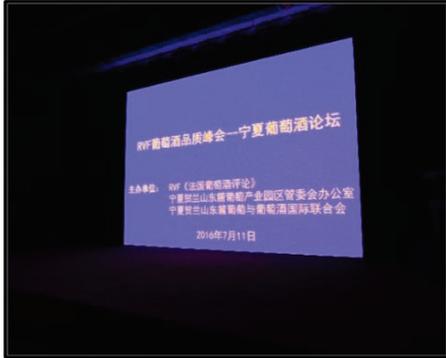


Figure 12 RVF Wine Summit (Jul. 11, 2016, by author)



Figure 13 International Wine Educators' Forum (Jul. 12, 2016, by author)

Opportunities for communication with people from other wineries are created during the break times between the sessions (Figure 14).



Figure 14 People gathering during the break time (Jul. 12, 2016, by author)

In these informal gatherings, they often communicate with the wine industry workers with whom they are most familiar, but new people may be introduced to the group. Moreover, people from less famous wineries acquaint others with their locations, products, and operations.

“We taste each other’s wine, and ask each other the location of the winery, because there are many new wineries, and I do not know any of them.”

- Higher executive/winery owner group 10 (female, 40s)

Through these activities, wineries can not only communicate intra-regionally, but they can also gain extra-regional perspectives and acquire new technologies or information. In the following, these extra-regional interactions are dealt with, separating inter-regional communication within China from extra-regional communications with foreign entities.

RQ1(b) How, and how much, do wineries in the Eastern Foot of the Helan Mountain area interact with foreign firms or workers in related professions to address product and process innovation?

Extra-regional communication can often be a boon to innovation (Giuliani, 2007). Wineries and winery workers in the Eastern Foot of the Helan Mountain Region in Ningxia also engage in this kind of communication. However, interview results indicate that communication frequency differs significantly between wineries, especially where extra-regional communication with foreign wineries or workers in related professions is concerned. The results also suggest that inter- and extra-regional communication can also be divided into online and offline communication.

(a) Inter-regional interaction

(1) Online communication

Online communication is deployed more than offline communication

when interacting with inter- and extra-regional entities. This has to do with geographical proximity; since offline communication is more costly, and therefore scarcer in frequency, online communication is substituted relatively actively. Nevertheless, intra-regional online communication is more frequent than inter- or extra-regional online communication. This coincides with the geographical proximity that is emphasized by Asheim *et al.* (2007), even complementing their argument by acknowledging the effect of geographical proximity *and* communities of practice in online communication. Each wine region experiences different climates, conditions, and challenges, which largely account for this amount of localized interaction.

Still, the frequency for SNS communication is flexible due to the characteristics explained previously. Personal contacts are made through WeChat, but more informants than not responded that they have group chatrooms to maintain alliances with entities such as the China Wine Associations.

“We also have WeChat group chatrooms [...] we are all together, and all the wine regions [in China] are in there.”

- Higher executive/winery owner group 5 (male, 50s)

However, SNS as a tool of communication was mentioned by all the informants to be used less to engage in intra-regional interaction with *specific* intent. One informant answered that although they use online devices for contact, the content is very simple.

“Sometimes I use WeChat, and make some simple communication, but this does not have any depth. It is because I like to talk face-to-face, and I cannot

communicate clearly on phones.”

- Production related worker 13 (male, 30s)

Phone calls are another kind of online communication. Since SNS makes it difficult to get immediate feedback, phone calls, as alluded to previously, are preferred in situations that require immediate answers such as solving technical or operational problems. In one case, because wineries in other regions are too far away, one informant (higher executive/winery owner group 7, male, 20s) said he uses parcel services to send wines to extra-regional wineries to allow them to taste their wines and provide timely feedback.

(2) Offline communication

There are primarily three categories where offline face-to-face communication is deployed: national fairs and conferences, private visits, and government-led events. Six out of thirty one informants responded that offline communication is conducted at fairs and conferences organized by alliances or associations. The most mentioned event was the China Food & Drinks Fair (*Tangjiuhui* in Chinese, which is an abbreviation for *Quanguotangjiushangpinjiaoyihui*), which three informants mentioned. Since this conference is a national-scale conference, people working in the food and beverage industry, especially alcoholic beverage industries such as wine, spirits, and Chinese liquor, all participate in the conference. According to the informants, production related workers are most apt to participate in other conferences.

Private visits were cited the most frequently for effective inter-regional communication. The regions that wineries have interaction with are namely Xinjiang Uyghur Autonomous Region, Shandong (or Jiaodong, represented by

Yantai City) Province, Hebei Province, Beijing, Gansu Province, and Shanxi, which are included in the ten big wine regions of China (Zhang and Cao, 2014). The most frequently mentioned region was Shandong, where the wine industry started more than a hundred year ago after the establishment of Yantai Changyu Pioneer Wine Co., Ltd. in 1892. This was the first wine company in China, and it has wineries in eight different regions inside and outside of China. Xinjiang and Hebei followed after Shandong; Xinjiang has the largest vineyard in China (Li *et al.*, 2009a), and Hebei is also a relatively old wine region in China.

Because agriculture is sensitive to weather and seasonal changes, visits are mostly done during the off-seasons. The frequency of visits to other regions varies from informant to informant, from as few as once a year to as many as three or four times a year. Also, the frequency may vary from year to year due to fluctuating situations by winery. As one informant ventured:

“[Frequency of extra-regional communication] is not regular. Sometimes it is once a year, when everyone is together participating in exhibitions, and sometimes it is twice a year, maybe sometimes no communication in a year. This depends on the situation of the winery.”

- Higher executive/winery owner 11 (female, 40s)

People from other regions visit the Eastern Foot of the Helan Mountain Region more frequently than informants visit other regions. One informant (production related worker 5, female, 40s) responded that since the winery at which she is working influences other wineries in China and globally, visitors from other wineries and in wine related professions come every day from June to August, and sometimes there is more than one visit a day. This implies the market power of the Eastern Foot of the Helan Mountain Region is growing,

which is further augmented by the consistent winning of international awards and the resulting reputation for excellence.

However, some informants responded that there are few interactions between wineries, and that most inter-regional communication is done via personal contact with phone calls and SNS. The roots of these personal networks vary by career or educational trajectories. Informants originally from, or who had studied or worked in, other wine regions in China, answered that they often contact their friends who work in the wine industry of the region they are from. Example responses include:

“I am from another wine region in China, and I mainly studied in that region. So for me, I have more understanding of that region. Because I have some classmates that work in that place, and some do sales, and some do production related work, I have regular communication [with them].”

- Production related worker 4 (male, 20s)

“I worked in Shandong for three years [...] he always paid attention to my wine, and tasted it. We have worked together [in Shandong]. He was the consultant of the company I worked for.”

- Higher executive/winery owner 10 (female, 40s)

Path-dependency is reflected in this result. As Martin and Sunley (2006) relate, success of a firm or an actor leads routines being standardized and to continuation of a path. For workers in the region, they are likely to establish routines and to follow the path they have perceived as successful.

For production related workers, alumni meetings were cited as one of the most frequent modes of inter-regional interactions. The College of Enology at

Northwest Agriculture and Forestry University, established in 1995, which succeeded the Junior College of Viticulture and Winemaking, founded in 1985 (Northwest Agriculture and Forestry University, 2016), is the first college established in Asia specializing in enology and viticulture research and education. According to one informant (higher executive/winery owner group 3, male, 40s), over 60% of the workers in the wine industry throughout China have graduated from this college. Therefore, their alumni meetings are also a great source of knowledge transfer related to the wine industry.

These results show that educational institutions can influence the extent of knowledge transfer between actors in the wine industry, not only in the Eastern Foot of the Helan Mountain Region, but also throughout China. This implies the importance of organizational proximity as cited by Torre and Rallet (2005), and also shows the importance of buzz and social networks when furthering knowledge networks and knowledge acquisition (Asheim *et al.* (2007).

The form of enterprise also affects offline communication. Two of the wineries at which informants work are subsidiary companies of national-scale firms; thus, their inter-regional communication leans toward interaction with other subsidiary wineries in other regions. As one informant suggested:

“We have interaction for experimental marketing, and a company meeting - that is, all the wineries [under the parent company] came to our winery and had a conference, so this counts as an interaction, doesn’t it? [Wineries that are not in the same parent company] also have interaction, but these interactions don’t happen (with us) as much.”

- Sales and marketing related worker 3 (male, 20s), 4 (female, 20s)

Although firms like this have rather stunted relationships with other wineries in other regions, their larger firm size means they can rely on intra-firm, inter-regional sources of knowledge to create new paths or to avoid lock-in. Also, since they already have a certain amount of brand reputation nationwide, their market power is much bigger than small and medium-sized wineries in the same region.

(b) Extra-regional interaction

(1) Online communication

Aspects of online communication with extra-regional entities appear similar to inter-regional interaction, but communication constraints are bigger as even telephone calls are limited due to the high cost of roaming and international calls. Therefore, informants mainly use SNS for online extra-regional interaction. One informant (production related worker 13, male, 30s) responded that he even uses Facebook, which is officially blocked in China, for interacting with foreign wine industry related workers.

Informants who responded that they personally communicate with foreign entities through SNS all studied or have worked abroad except one informant who answered that he maintains contact via a fellow graduate studying abroad. This is because interaction through SNS is mainly done with closer acquaintances. Moreover, informants who studied abroad mostly majored in enology related studies, so they have acquaintances within foreign wineries and have private communication with them. In contrast, informants who have not studied abroad did not mention online communication, irrespective of age or educational background. This tangentially supports results found by Gress (2015). The author found that Chinese solar companies with management educated internationally tend to have geographically further

reaching buyer and supplier networks. In the present cases, roots of path-dependency can be found in this process of online communication. This is important for exploring the evolutionary path of the region and the industry as individual knowledge transfer operates at multiple scales and “[interact with institutions]...to help create particular evolutionary trajectories over time” (Gertler, 2010: p. 2).

(2) Offline communication

Offline communication for extra-regional interaction can also be divided into four categories, but these differ from those in inter-regional interaction categories. Extra-regional interaction is concentrated on field trips during the slack season organized by government divisions, visits to and from other foreign wine regions, secondary effects from hiring foreign workers, the presence of workers with experience overseas, or experience co-working with foreign winemakers from NWC, and other activities such as forums and expos held in the region that the government organizes. These categories are each related to one or more aforementioned de-locking solutions proposed by Martin and Sunley (2006).

The field trip abroad is organized by the Administration of Development of Grape Industry. According to an informant working in the Administration, they first conduct a survey to ascertain the number of applicants wishing to participate in a field trip, and then divide the applicants into two teams depending on the period in which they want to go. One field trip is from November to December and another one is from February to March, both of which are slack seasons for farming. The dates for these field trips are different from the dates slotted for visits to other Chinese wine regions, which are conducted from May to September.

Visiting foreign wineries is not limited to only field trips. Some informants answered that they go abroad for communication approximately once a year. Most of the informants who responded that they visit foreign wineries have experience studying or working abroad. This, again, indicates that path-dependency from knowledge transfer exists, thus supporting the selection process of a network trajectory proposed by Glückler (2007) in that a gap of communication pathways is formed between the people that have gone abroad before and the people who have not. However, even as wineries gradually become accustomed to taking field trips with the government, they also try to send workers abroad on their own. Part of the reason for this, as one respondent ventured, has to do with funding:

“Years ago, the government paid the money for those winery owners to go around to [foreign wineries]. From a couple of years ago, the government no longer funded, but we already had acquired a habit of [going abroad] in this industry circle, so we go on our own every year.”

- Production related worker 11 (male, 30s)

Meanwhile, visits *from* foreign wineries are qualitatively different compared to the experience of visiting foreign wineries. Since foreigners usually visit the region as a whole, they tend to visit several wineries, not just a single winery. Nonetheless, because the Eastern Foot of the Helan Mountain Region is a fairly new wine region, visitors from foreign countries tend to tour around famous wineries which have won big international awards, or large scale wineries with enough financial resources to promote themselves to other countries. Therefore, communication with these wineries and foreign wineries, or with foreign wine industry related people, happens more frequently than it

does for smaller wineries and the wineries that do not have international awards. In fact, the wineries that are less well known, or wineries that have no workers who studied abroad, hardly had any communication with foreign wineries, even answering that all communication they have with foreigners are interactions with the winemaker specifically assigned to their wineries for the NWC.

“There are no communications [with foreign wineries]. We only have communication with the Australian winemaker whom we are acquainted with from the NWC last year.”

- Sales and marketing related worker 2 (male, 30s)

This indicates the lack of a link from intra-regional networks to inter- or extra-regional networks. More specifically, this is in accord with the notion of ‘retention’ (Glückler (2007: p. 624). As only wineries that already have communications and networks with other inter- or extra-regional wineries receive more corresponding opportunities for communication, a gap in the frequency of inter- and extra-regional interaction increases based on firm size and experience, which, in turn, may lead to polarization of communication in the region as a whole.

Still, the NWC program may help to minimize such effects, at least to some extent. In addition to the informant input previously provided, other informants also mentioned their collaboration with a winemaker participating in the NWC. Thirteen wineries out of the twenty-six are participating in now, or have participated in, the NWC. These wineries answered that the winemakers participating in the NWC do not stay in the region for a long time, but when they do come, they come to specified vineyards where they can

interact face-to-face to check the status of grapes and the wine being made. Because of the rules of the contest, the winemakers need to come to the region at least one more time other than the opening ceremony and the vinting season. Thus, the communication with the winemakers is not necessarily a one-time event, but a regular activity. In addition to meeting face-to-face, they also communicate with the winemakers via email. These regular interactions can 'transplant' new or advanced technology or information from outside of the region, and such 'layering' of knowledge can result in the evolution of a path (Martin, 2010). These extra-regional knowledge spillovers can create innovation that prevents negative hysteretic impacts in regional resilience.

Moreover, foreign workers, or workers that have experience working abroad, also have secondary effects on extra-regional communication. For instance, one informant responded that because their winemaking consultant works in various places, he is well informed of the situation abroad. By working with him, the winery can gain a substantial amount of information.

“Our winemaking consultant [...] has much contact with the international wineries or technological circles, so much of the information we get is from him. [...] we have to know what outside markets are like, how other people are developing, and take some of this good experience and fill up the shortage of our winery to make an upgrade in our level.”

- Production related worker 7 (female, 20s)

Another informant (higher executive/winery owner group 7, male, 20s) also responded that since the winery has employed winemakers from France and the United States since 2015, they have served as a platform for effective communication extra-regionally.

Forums and expos organized by the government were also cited as a source of extra-regional communication. This was already addressed above *vis-à-vis* intra-regional interaction during break times, but during regular sessions invited wine experts from foreign countries give talks or seminars on topics concerning wine. Through these activities, wineries can gain knowledge about other wine regions in the world or ideas for the development of their wineries.

Similar to the inter-regional interaction, wineries that are subsidiary companies of national-scale firms also deploy other means of offline communication with extra-regional entities. Because the companies also have subsidiary and joint-venture wineries in other parts of the world, for example, Italy, France, and Chile, they have more opportunities to communicate with foreign wineries by visiting those wineries.

“For us, we are a big company. We have [wineries] in every wine region. So this makes it more comfortable [to communicate]. With the foreign wineries, we have two wineries, one in Chile, and one in France, and they are all subsidiary companies. Twice or three times we’ve sent people to study there.”

- Sales and marketing related worker 3 (male, 20s), 4 (female, 20s)

Overall, unlike intra-regional communication, inter- and extra-regional interaction are more apt to display differences by wineries regarding the frequency and quality of communication. This implies potential differences in evolutionary pathways for each winery since differing numbers and qualities of networks exist. Local buzz and knowledge transfer, for example, affects innovation processes at the firm level and resilience at the regional level as mentioned previously (Bathelt *et al.*, 2004; Boschma, 2015). In the following, RQ₂ delves into the perception of wineries regarding the impact of intra, inter

and extra-regional interaction.

RQ2(a) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with other firms and organizations intra-regionally on their economic growth?

In conjunction with RQ1(a), the perception regarding the impact of intra-regional interaction on each winery is explored in this RQ. First, from 26 wineries, none of the informants responded that intra-regional communication has a negative effect on their operations. On the contrary, nineteen wineries answered that communication has a positive effect on the winery, and seven wineries answered there is a slightly positive or no effect from intra-regional communication. Two of the informants who did not perceive an impact from interactions said they think more interactions intra-regionally are needed.

“[Interactions inside the region] have no effect. [...] but I think [facility interaction in] the region is not doing enough. The wineries are still exclusive to each other. What they do is for themselves. So I hope that everyone will communicate more [...] for facilities, I think we need more interaction.”

- Higher executive/winery owner group 6 (female, 60s)

“There are very little [intra-regional] communications, because everyone is very busy. Also, I think we need to interact more.”

- Higher executive/winery owner group 10 (female, 40s)

Although modes of communication can be divided into online and offline,

the actual content does not differ significantly; the only notable exception concerned phone calls in urgent situations requiring immediate feedback. Still, the content varied by the professional field of the informant. The most frequently shared information revolves around technology and sales. Informants who answered that they share sales and marketing information were mostly sales and marketing related workers. They responded that since the region is tied together by a common geographical identity and that they share the same market, sales strategies and marketing methods used by other wineries, and information about how costumers perceive local wines, can be helpful for their own sales.

Technology content during interaction was mostly mentioned by production related workers. This is because workers in this field directly deal with problems concerning technology. However, since workers in the region already know most of the techniques that other wineries perform on their wines, information transfer concentrates on details or additional processing challenges in the immediate sense rather than on new technologies.

The flavor of wine or evaluating wine are other popular topics. According to one informant (sales and marketing related worker 5, female, 20s), talking about wine itself is often used as an icebreaking topic. Especially after the harvesting and vinting season, people from different wineries gather and taste each other's wines, or they visit other wineries to taste their wines.

“Normally the time we interact is the harvesting season; when the wine is finished, I mean when the fermentation is quite finished, we go around to other wineries, and [say] “How is your wine this year? Let me have a sip,” and they come here and [say] “How is your wine this year? Let me have a sip,” and in this situation the interaction is somewhat more common.”

- Production related worker 5 (female, 40s)

By exchanging thoughts about wines from different wineries with other people, informants can compare their wines with other wineries and know about potential market advantages and disadvantages for any given wine. Through this process, they can understand the position of their wine and take appropriate measures.

“There is impact indeed. It is because during these interactions, we can more successfully acknowledge and position our products to consumers, and understand more clearly about how the wine industry is developing.”

- Higher executive/winery owner group 9 (male, 40s)

Not only do the informants perceive intra-regional interaction as helpful, but they also perceive their relations with other people in other wineries as rather close. Informants were proud about this strong bond between wineries in the same region, and a few informants mentioned this relationship as an advantage of locating in the region.

“If it is other regions or regions in other countries, there would not be a sense of belonging like in here. This comes from not only home, but when talking with friends and people [in the wine industry], we always want to promote this region outside, and see it as a long-term plan. [...] Having a group of people that is this enthusiastic, that all want to accomplish this goal, I think working with this people is very meaningful.”

- Production related worker 13 (male, 30s)

“I think the best advantage is learning from each other. [...] we, people within this wine cluster are very good. Regardless of '90 hou', '80 hou', or '70 hou'^①, they all take great care of our winery. If they have something, they will all teach you. I think this is the best advantage.”

- Higher executive/winery owner group 7 (male, 20s)

Since knowledge spillovers increase with the intensity of the local exchange of ideas and information (Feldman, 1994: adapted from Howells, 2002), these examples indicate there is an enormous knowledge spillover induced intra-regionally which increases the possibility of innovation and regional growth. Or, put in another way, there is an extensive potential for re-combination via the use of existing social resources (Martin, 2010).

As workers and firms in the same region target the same market, this phenomenon seems ironic. However, a response from one informant implies that strong social networks are a result of the multi-scalar competition for sales.

“I think everyone’s relation is still very harmonious. Although everyone is a competitor of everyone else, this is indeed correct, but this kind of conscientiously competing relationships is to say, only if we hold each other’s hands and make this piece of cake bigger, then every winery will win. I think it is like this.”

- Production related worker 5 (female, 40s)

From the previous literature review, geographical origin is crucial during the evaluation of the value of a wine, and this territorialization of a wine region

^① '90 hou' means the people born in 1990s, and '80 hou' and '70 hou' are correspondingly people born in the 80s and the 70s.

becomes a sort of brand power (Charters and Michaux, 2014). However, the Eastern Foot of the Helan Mountain Region is not a mature wine region where the geographical origin itself can manifest high-quality brand power. Therefore, the strong network building between the workers and wineries in the region should be seen as an effort to increase organizational proximity and to form 'territorial cohesion' (Charters and Michaux, 2014: p. 3) that can contribute largely to the wine sales of the region by establishing a strong overall brand awareness. The region may therefore increase its competitiveness compared to other wine regions nationally and globally. The next section describes the perception of wineries regarding inter- and extra-regional interactions.

RQ2(b) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of interactions with foreign firms, workers in related professions, and organizations on their economic growth?

As geographical and organizational proximity differs intra-regionally and inter- or extra-regionally, the content of the interaction also shows divergence (Figure 15). In addition, although inter-regional and extra-regional interaction is considered different in terms of modes of communication, the informants did not distinguish between their content and perception *vis-à-vis* impact on performance. While content that is crucial to production, such as technology, cultivation, and vinting equipment, or content concerning the sustainability of the winery, such as sales and the value of wine, were mentioned inter- and extra-regionally as well as intra-regionally, content that workers or wineries intra-regionally are already familiar with, such as price, history of the development of the region, and the current situation are also shared inter- and extra-regionally. Moreover, other content such as wine tourism and

management, or simple gossip are also addressed during the interactions.

Regarding the perception of the impact of these inter- and extra-regional interactions, fourteen out of twenty six wineries answered it is helpful in some ways, two wineries answered there is only a small helpful effect on the winery, and nine wineries responded that there is no helpful effect. One winery did not respond as to whether they perceive any effect from inter- and extra-regional interaction. In short, the number of wineries that perceive the interaction as helpful varied by intra-, and inter-/extra-regional scale (see Figure 16).

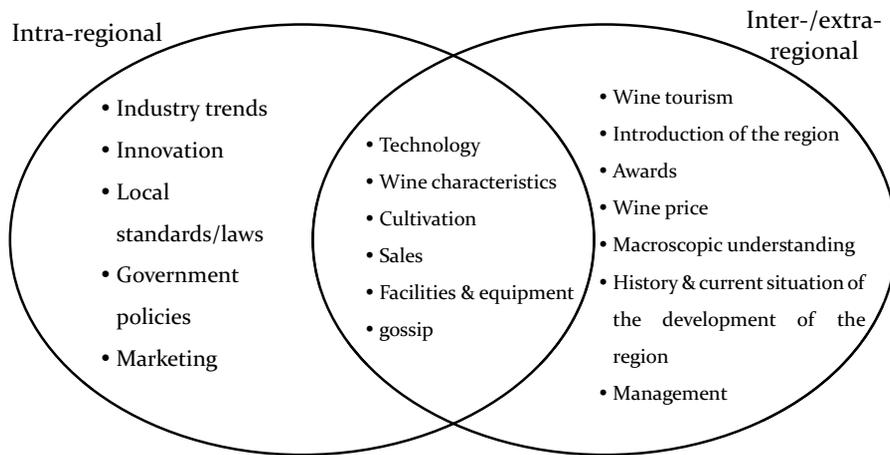


Figure 15 The Content of Intra- and Inter-/Extra-regional Interaction
Source: Author's research

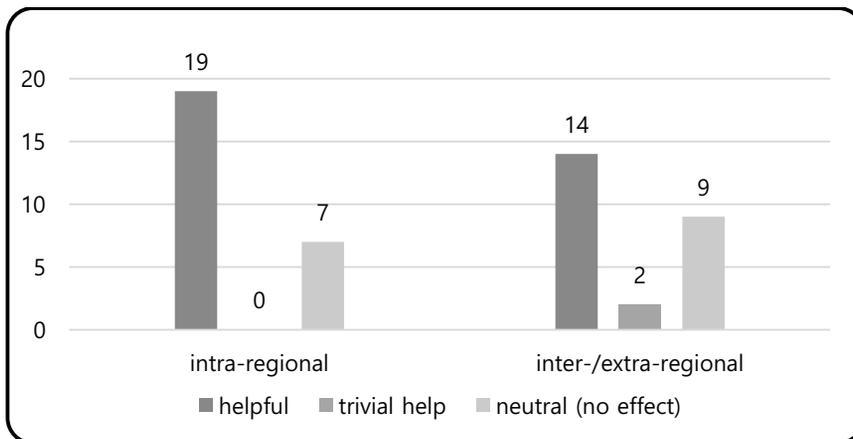


Figure 16 The Perception of Impacts of Interaction on Wineries
Source: Author's data

In inter- and extra-regional interaction, the most frequently shared and the most helpful content concerned production related information, including that related to technology and equipment. From the fourteen wineries that perceived inter- and extra-regional interaction helpful, nine wineries responded that these interactions affect their technology, cultivation and vinting. Unlike the effect from intra-regional interaction, informants perceived production related knowledge helpful because wine regions in other countries have more advanced technology than the Eastern Foot of the Helan Mountain Region, thus absorbing these technologies can contribute to their own innovation and development.

“First is to broaden the horizon. What you see (abroad) is different, and at the same time you can also learn good stuff. [...] mostly if you go abroad, is to learn. The one purpose is to learn. We go to the United States to learn something, to Europe, and we go to France to learn something, to Italy to learn something, and so on.”

- Higher executive/winery owner group 2 (male, 50s)

“Speaking of foreign countries, we mainly gain some technologies concerning vinting, for example, fermentation, or mixing. Also, [we gain knowledge of] managing oak barrels and all things concerning production. They are all mature in all aspects in this field, and the effect is enormous.”

- Production related worker 8 (male, 30s)

However, reckless adoption of technology was also criticized by informants who answered that there is not much impact from inter- or extra-regional interaction on the region. They responded that since the vinting

process is the same in every region, the technology in Ningxia is already good enough. Also, because every region has different *terrior*, production methods should vary in order to successfully vint wine and create distinctive characteristics in the wine.

“But I cannot just copy [the technologies]; it still depends on the situation on-site, and then I need to change its method.”

- Production related worker 4 (male, 20s)

“[Communication with foreigners] does not have much effect. This is because our purpose is not always to copy others. The most important thing for us now is to create wine that has regional characteristics. [I want to make it like] if you drink it then you can say that it is from China, from the Eastern Foot of the Helan Mountain Region, and doing this thing is not something that you can succeed from copying others.”

- Higher executive/winery owner group 5 (male, 50s)

From the perspective of not being willing to receive external knowledge and sticking to prior knowledge applications, it might be seen as a potential lock-in situation (Martin and Sunley, 2006). However, as far as the argument of Boschma (2004) is concerned, that benchmarked regional policy is not always successful, because the value of wine, as mentioned previously, is determined by its geographical origin which is directly related to the reputation and the power of the territorial brand (Charters and Michaux, 2014), refusing to copy wines of other regions, therefore putting effort to create their own brand characteristics can ironically be a path-creating, or de-locking process of the region.

Moreover, an example of a negative effect from adapting foreign production methods was mentioned. Because the local regional climate is different from that in foreign wine regions, applying the same cultivation method as France harmed the grapevines.

“Let’s see a very simple example. Two years ago, many people from France came back with their degrees, and thought that those French renown wineries cut off the leaves from the vine around grapes about twenty days before harvesting for ventilation and light transmission, and the color of grapes will become better. But in Ningxia we do not do it like that; or we do not need to do it like that. [...] So those who followed foreign wineries had their grapes damaged in the end.”

- Higher executive/winery owner group 3 (male, 40s)

Meanwhile, although sales information is also shared during inter- and extra-regional interactions, it is not a popular subject. Most informants responded that inter- and extra-regional interaction hardly had any effect on their sales, largely because their target markets differ from wineries in other wine regions. Only one informant (higher executive/winery owner group 9, male, 40s) answered that these interactions are helpful to the winery. The disparity between the perception of impacts of knowledge transfer regarding technology and sales again supports Boschma’s (2004) argument that benchmarking the innovation process of a successful region does not always lead to success in another region.

Another factor the informants perceived as helpful for the development and success of their wineries is outward oriented advertisement of the region. This is not a consequence of a single content shared, but rather of the

interaction itself. This effect is especially well shown when foreigners visit the region. There is transfer of information about the history and current status of the wine industry in the region - visitors can experience the atmosphere and the environment of the region firsthand, they can explore the production process, and they can experience the level of wines produced in the region through winery tours and wine tastings. In this way, wineries may expect a ripple effect as the visitors spread compliments about the region, and, correspondingly, increase the brand power of the region.

“I think wine in Ningxia has this appeal. That is, many people come and they like this place more and more. So they are like seeds, spreading out, and let other people see this region, and say, ‘Hey, there is a shining star, you should go there and look for it.’ If a bunch of people react like this, they will happily help this region and try their best to promote this region. Actually, I think you are one of these seeds!”

- Production related worker 10 (male, 20s)

“Our winery has become famous with a viral effect, and actually it is all like this. This is to say, if you give someone a beautiful feeling and impression, he or she will hope to transfer this beautiful thing to more people, and they will hope that, ‘Hey, next time you come here, you should visit here and see.’”

- Production related worker 5 (female, 40s)

Some informants responded that they can learn lessons from other regions through inter- and extra-regional interaction. Because the Eastern Foot of the Helan Mountain Region is a relatively young wine region, they may have problems in the future that other frontrunners have already encountered. By

acquiring knowledges via inter- and extra-regional communication, they can learn the reasons other wine regions succeeded or failed, and set plans to not follow the negative trajectories and create other paths, a process that can be likened to adaptive resilience (Martin, 2010). Two informants specifically mentioned such a phenomenon:

“Of course there are effects. One is technological, and another is that the path that other old regions took will be the problems that this region will encounter in the future. The wineries in this region are mostly new, and actually the problems are starting to be revealed.”

- Production related worker 9 (male, 30s)

“When we go abroad, we can see other wineries’ pros and cons. We can also see the problems of wineries that are ten or twenty years old and can avoid these problems from the start of our winery. If we see some new winery and see something they are doing good, we can also learn from it.”

- Production related worker 11 (male, 30s)

As Boschma (2015) extends the notion of regional resilience from simple efforts to avoid path-dependency to a more long-term concept of increasing the ability to create new paths through adaptation (the ability to shut down ideas and prevent negative path-dependency) and adaptability (the ability to open up and absorb novel ideas), the actions that wineries are taking in the Eastern Foot of the Helan Mountain can also be interpreted as a deliberate control of adaptation and adaptability.

While results of interviews in conjunction with RQ₁(b) showed that the frequency of inter-and extra-regional communication varied by the

experiences of the wineries and individual informants, the influence of communications with wineries outside the region was revealed to have a negative correlation with frequency, and the content of interaction was also different. While wineries with a high frequency of communication with foreign wineries or with workers who studied abroad answered that they are not much influenced by communication with foreign wineries, wineries with a low frequency of communication with foreign wineries answer that communication with foreign wineries has a huge impact on their production technology and work processes. Also, for the former wineries, the main influential communication content concerned introducing the Eastern Foot of the Helan Mountain Region and the wineries in the region, in addition to feedback from tasting various wines. For the latter wineries, the main motivation was acquiring advanced technology and improving work processes. This result indicates that the current development situation varies by wineries, and the wineries that are less successful try to escape 'lock-in' by 'transplantation' of new technologies from outside (Martin and Sunley, 2006: p. 422). Also, since the content of inter- and extra-regional interaction with globally renowned wineries is focused on advertising the region, these wineries can be seen as the engine houses of increasing regional value. Moreover, combined with results pertaining to intra-regional interaction, which showed that sharing information about technology was helpful regardless of their global prominence, it can be deduced that the wineries need different sources of information and knowledge from each other in order to develop.

Extra-regional communication evolved to be more diversified over time. Up to two or three years ago, visitors were mostly people from the "Old world" countries such as France, Germany and Italy, but diversification of visiting foreigners has gradually expanded to include people from the "New world"

countries such as the United States, Australia, and Chile. Also, the countries that wineries originally interacted with were mainly the wine producing countries mentioned above, but this, too, has expanded to more diverse countries such as Malaysia, Singapore, Argentina, Israel, and Korea. Some of these countries are wine producing countries, but others are primarily wine consuming countries. One informant (production related worker 5, female, 40s) mentioned that one factor impacting diversification of the region is the international wine contest awards that the region has won. According to the informant, because the region had started to catch global attention with the 2011 Decanter Awards, and since *Decanter* is a magazine originated from the United Kingdom, the region became famous in Europe and North America first, and then as the time went on, its reputation spread to other countries.

RQ2(c) Do wineries in the Eastern Foot of the Helan Mountain area that interact with foreign firms or workers in related profession share the information or knowledge acquired from them with other domestic firms intra-regionally? If so, how?

According to Giuliani (2011), technological gatekeepers are important for bringing extra-regional technology to the region for new innovation and to avoid technological lock-ins, and firms that do not have networks with technological gatekeepers are at risk of exiting the industry. In the case of the Eastern Foot of the Helan Mountain, evidence concerning intra-regional transfer of external knowledge is provided.

Wineries in the region that responded that they help transfer knowledge from inter- or extra-regional interaction to other wineries in the region - in other words, who play the role of gatekeeper in the region, are the old ones. This

is partly because there are only a few wineries in the region that are more than 10 years old, and since these wineries are the pioneers of the wine industry in the region, they have more global pipelines than the newly established wineries. Moreover, and as also previously discussed, they have more opportunity to create new extra-regional networks because of their renown. Therefore, other, often newer wineries visit these well-known wineries to seek knowledge. One respondent summed up this scenario by offering:

“Especially, many people visit our winery because formerly there were only a few wineries. So they all come to our winery, and of course these new wineries have newer construction and more advanced facilities. We came along the path much earlier, so we gained experience and took a detour sometime; the path they are taking is all shortcuts.”

- Production related worker 5 (female, 40s)

Scale, too, is important. Multi-scalar power relationships can also be seen in the process of intra-regional transfer of externally acquired knowledge in terms of a relationship with lock-in and de-locking (Martin and Sunley, 2006) and the mutual influence of multiple scales of institutions (Gertler, 2010; Dawley *et al.*, 2015). Although the region is geographically bounded, for example, the government subdivides the region into five groups, or sub-regions: Yinchuan, Yongning, Qingtongxia, Hongsipu, and others including Shizuishan and Zhongwei, and knowledge may be transferred inside the sub-region. One informant inclined that since the winery at which he is working is the oldest and the biggest winery in the sub-region, they receive more foreign visitors than other neighboring wineries, and that they then transfer the knowledge acquired from these visits to other wineries in the same sub-region through

sub-regional meetings. More specifically, he said:

“Our sub-region also supports this industry. [...] We formed an alliance, and I am the vice president there. As a vice president, I proceed over meetings for everyone in the sub-region. And also I report the problems that come up in meetings to the government when we have communication.”

- Higher executive/winery owner group 3 (male, 40s)

In these examples, knowledge that can shape new evolutionary trajectories is shared within sub-regions and throughout the region as a whole. Therefore, the region is constantly trying to avoid lock-in and can renew their paths by ‘layering’ the information continuously (Martin, 2010).

Not only does knowledge transfer happen between old and new wineries, but facilities in wineries that are well-financed are also lent for use to other wineries. For instance, because there are certain government regulations that require major inputs of capital (e.g. machinery) in the winery, small-sized wineries with only small amounts of financing available have trouble meeting all the requirements. One informant (sales and marketing related worker 2, male, 30s) hinted, for example, that one of the regulations is to build a mandatory chemical laboratory, but it is difficult for small wineries to build a full laboratory with all the equipment they need and to hire a chemist full time because chemical experiments are conducted only a few times a year. However, a wealthy owner has a winery nearby that has fully equipped facilities and a full-time chemist. Thus, small wineries in the vicinity like the winery at which the informant is working conduct basic experiments in their own laboratory, but operate mandatory complex experiments in borrowed facilities at the winery that has all the equipment. This example clearly shows that ‘emergent power’

in relations between actors (firms, or wineries in this case) is crucial to our understanding of networks and firm capabilities as suggested by Yeung (2005).

In addition to this type of firm-firm external knowledge transfer intra-regionally, there are other cases that introduce the possibility of external knowledge transfer to other wineries. When wineries in the region receive visitors from outside the region, they tend to introduce other familiar wineries to the visitors. Because visitors are willing to take tours around multiple wineries, they ask the workers in the winery that they first visit to introduce other wineries. Over the course of this process, the wineries share knowledge from these inter- and extra-regional interactions with one another. Again, this is indicative of emergent power relationships.

“When [people from outside Ningxia] come, I take them and go around to the wineries, and we communicate with each other. For example, I had two foreigners yesterday and went around to the wineries, and had some interaction with them - tasted wine, and discussed.”

- Production related worker 10 (male, 20s)

In the next section, divided into two sub RQs, the influence and evolution of government policies and other institutions regarding the wine industry in the Eastern Foot of the Helan Mountain Region are analyzed.

RQ₃(a) How do wineries in the Eastern Foot of the Helan Mountain area perceive the impact of government policy?

As described in the previous chapter, the Administration of Development of Grape Industry of Ningxia is a subdivision of the Ningxia Hui Autonomous

Region Government, and it specifically runs policies concerning the viticulture industry.

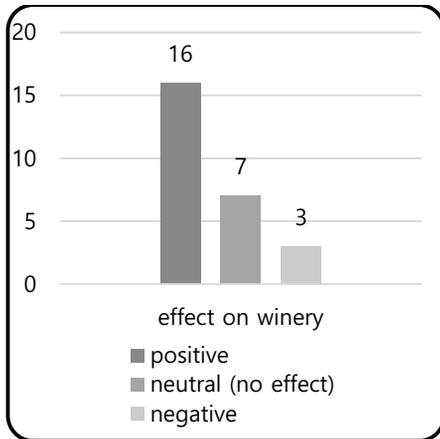


Figure 17 Effect of Policy on Wineries
Source: Author's data

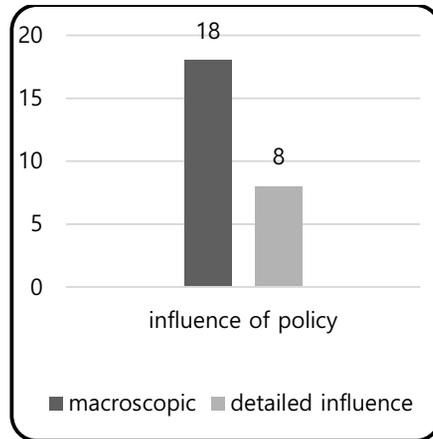


Figure 18 Policy Impacts and Scale
Source: Author's data

Asked about the impact of the policies, eighteen informants responded that they have macro effects on the region, while only eight informants answered that the policies also have detailed, micro influences on the winery. This indicates that policy impacts do not manifest merely at the firm level, but that they are more macro-oriented. Indeed, more than half of all informants responded that policies have a positive effect on the winery (see Figures 17 and 18).

There are largely two ways the government influences wineries: subsidization and government organized activities. First, the government mainly supports the wine industry through policies, and these policies are inclined to subsidization. The subsidy is applied at every stage of the value chain of the wine industry, such as a subsidy for purchasing vineyards and one for buying farming machines, in addition to support for electricity and water usage, establishing retail specialty stores, and supplemental awards for

international awards obtained. According to an informant (production related worker 1, male, 20s), since policies are involved in every stage of the process, they can affect the quality of wine (e.g. better land, better equipment). The policies are also diversified. For instance, there are policies to reduce the amount of money that wineries have to pay the government, for example policies that support wineries through tax reduction or even complete tax relief. Some informants responded that the effect of policies is the greatest regarding financial policies. One informant touched upon policy *vis-à-vis* the Chinese 'coordinated' government mentioned in the review of the literature.

“Policy regarding reducing or relieving taxes are the most influential. It is the things dealing with money (that matter). [...] Also, there are policies regarding land. This is because Chinese land is not privatized, but nationalized. So the policies regarding land and money are the most important.”

- Production related worker 13 (male, 30s)

Concerning supplementary prizes for international awards, the government pays the wineries a certain amount of money should they win an award. Also, wineries select ten best vineyards and award prizes, and these pecuniary rewards are helpful to wineries.

Some wineries perceive that they receive more influence than other wineries. According to one informant, since the winery at which he is working is located in a designated area that the government constructed, it is more clustered with other wineries, and therefore they enjoy more benefits from infrastructure such as water, electricity, internet, and natural gas. Again, this speaks to the coordinated nature and the particularity of the Chinese economy, unlike other countries with liberal market economy where subsidization of

land and infrastructure can be considered as an illegitimacy.

“Because [the designated zone] is one unified plan, and is implementing an industry all together, it is better (for us) than the wineries that are scattered. For example, irrigation and natural gas [...] if we have to do something like this, because we have more than fifty companies there, problems like putting natural gas in are very easy to solve.”

- Production related worker 9 (male, 30s)

The Grand Cru assessment, enacted by regulation, also influences the wineries in a large sense. Because appellation systems similar to the Grand Cru are widespread in the “Old World” countries, it is easy to be introduced to other countries (see Stephens, 2014), and visitors from other countries can easily compare the wineries according to accepted classes. The wineries that are assessed to be a fifth class cru are largely satisfied with the assessment criteria and are proud of it.

“This winery, currently speaking, is also one of the ten fifth cru class wineries of the Eastern Foot of the Helan Mountain. [...] in Ningxia, there are now officially more than 90 wineries. So as one of the ten cru class wineries, this means that we have a position and influence in the region.”

- Higher executive/winery owner group 2 (male, 50s)

Figure 19 shows how foreign visitors leave good tidings for success on wine barrels at potentially prestigious wineries.

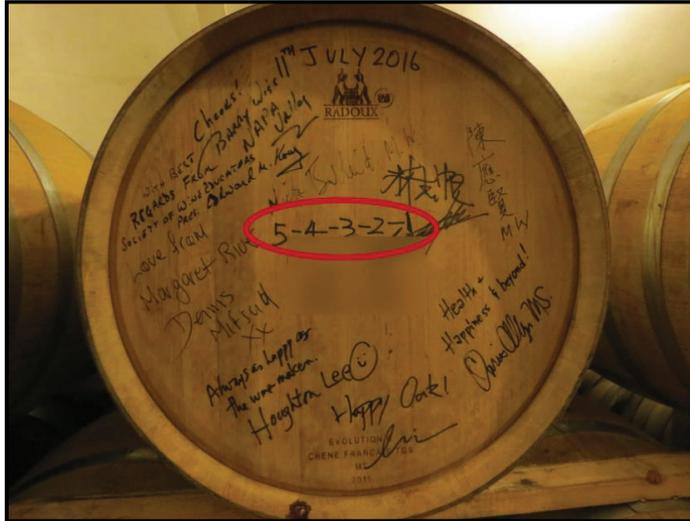


Figure 19 Wishes for Promotion to Grand Cru from Foreign Visitors on an Oak Barrel
 (Note: Winery brand blurred for confidentiality) (Aug. 3rd, 2016, by author)

However, these types of support also have limitations. According to the informants, policies made by government are criticized for being mostly macro oriented and abstract. Although they have various policies for subsidies, the standards or qualifications needed in order to benefit from the policies are too high or excessively limiting, or generally applied theoretically but empirically restricted to certain parts of the region.

“[Policies] are still okay. [...]but there is not much effect on us[...] the policies they are promoting now are more concerned with other wineries, because they are only constructed recently, like one to two, three to four years ago, and all is yet to be known...they are all confused. We are a big company, and we have already walked these paths way before.”

- Production related worker 8 (male, 30s)

Therefore, although policies are not necessarily meant to be region-

specific, the result of the *application* of the policies *can be* region-specific; in other words, 'evolutionary' in that they are seeking to create something new (Boschma and Frenken, 2006a).

The requirements of the government were also pointed out. For example, one of the preconditions of Grand Cru assessment is that the winery has to have tourist friendly infrastructure, which many wineries do not have; they are thus restricted from making application. This lends credence to Yeung's (2005) suggestion that power and emergent power be considered when analyzing lock-in and pathways. Another informant inclined:

"The Five cru class assessment has some inclination [toward one direction]. They are inclined to the wineries that have reception capacities, so only wineries that do tourism can apply for the cru class assessment system. This means that the government is pushing the direction of development of wineries toward wine tourism. But the core of a winery should be the quality of your wine. So this direction guidance is lopsided."

- Higher executive/winery owner group 10 (female, 40s)

Also, one informant (higher executive/winery owner group 11, female, 40s) criticized that even if the government policy goes in the wrong direction, it is mostly irreversible since governments are unwilling to accept that they are wrong. Even if they accept fault, policies are very likely to follow the past trajectory. As a government officer admitted, "Plans cannot be faster than changes," (*jihuabunengbibianhuakuai*; an old saying in Chinese) thus the policies and government-led initiatives cannot satisfy the growing demand for high quality by the wineries. This supports the limits of institutions and the possibility of regional policies inducing the region into negative lock-in that

Dawley *et al.* (2015) suggest, and also shows that while a government may try to set 'evolutionary' or even 'revolutionary' policies (Boschma and Frenken, 2006a: p. 17), the pace of change and evolution taking place within a region may be too fast to be effectively led by policies.

The government also supports the wine industry via the organization of forums and expos mentioned previously, and by putting together group field trips to other developed wine regions. While the former activities mainly focus on inviting foreign wine industry celebrities to the region and asking them for their opinion or thoughts about the region, the latter activity, as aforementioned, receives applicants from winery workers in the region, divides them by group, and sends them to famous wine regions in foreign countries. These activities vary by their location, and because tacit knowledge for innovation is transferred more easily by 'being there' (Gertler, 2003b), they tend to create different types of knowledge transfer opportunities. This, in turn, makes the range of transferred knowledge more diversified. Through these activities, workers in the Eastern Foot of the Helan Mountain Region can also improve their extra-regional communication networks with foreign wineries and winery workers.

Nevertheless, although the purpose of forum, expos and group field trips are meaningful, they are criticized for having little impact on actual winery development. Two respondents were somewhat critical of both process and content, stating:

“Actually, I think this expo and things are for self-entertainment. The region has a problem now, and it is that they like this self-entertainment. [...] In the end, I find that every time the Eastern Foot of the Helan Mountain organizes an activity, the same people coming and going, and that they're just playing with

their own groups. Actually, this has no significance for promoting and selling the wines.”

- Production related worker 13 (male, 30s)

“We also have participated in some international forums. [...] but personally speaking, I think it is only a perfunctory understanding [...] Speaking of conference, you do not have much time for learning more detailed things. So to me, I think these conferences and international forums have limits concerning any effect.”

- Sales and marketing related worker 2 (male, 30s)

Regardless of the perception of the usefulness of policies mentioned above, most wineries agreed on the fact that government policy and regulation have a crucial impact on the region and the wineries in terms of driving development and the legal infrastructure that wineries must accept. When asked about the advantage of the region, twelve informants answered that the support of the government is the best in this region compared to other regions in China. This response was the second most commonly mentioned reason, right after the excellence of natural conditions. Regarding legalities, one informant (sales and marketing related worker 5, female, 20s) responded that although the government is supporting the wine industry via subsidies, since politics and the economy are inseparable, if the government opposes something, it will also affect the wineries. From these results, Boschma's (2004) argument that the trajectory of the economy of a region is potentially formed by government through policies is validated.

In the next section, the results from previous RQs are brought together to analyze whether co-evolution of institutions exists, and, if so, how it is

occurring.

RQ3(b) How are formal institutions such as governmental regulations co-evolving with the firms and the region?

According to Schamp (2010), co-evolution can be different from the notion of evolution. As the notion of evolution in this thesis is applied to the trajectory or process of change in organizational routines, or to the development of a sector rather than the system itself, co-evolution is the evolution of formal and informal institutions simultaneously with the evolution of firm routines and the region. Some parts of the answer to RQ3(b) were already stated in previous RQs. For example, the wine industry is developing with the support of, and aggressive advertisement by, the government, so there is an interrelation between the wine industry and the institutions of the region (e.g. policy, legal infrastructure, financial assistance). Also, informal institutions such as trust between actors and social networks have evolved as formal institutions affiliated with organizations and associations have evolved to complement them.

As aforementioned, 85 wineries are established and 99 wineries are under construction as of 2015. This is in accordance with the Twelfth Five-year Plan (from 2011 to 2015), which is the economic plan of China that is renewed every five years. There are multi-scalar considerations here. One such example is that there is a central plan by the central government of China, and there are also regional plans created by local governments. According to the Twelfth Five-year Plan of the central government (The State Council of the People's Republic of China, 2011), the development of Western China is strongly encouraged, especially by fostering characteristic agriculture and tourism. Also, the

modernization of agriculture is recommended, to include both the adjustment of strategy regarding agriculture in China in addition to technological innovation for agriculture.

These are clearly reflected in the local Twelfth Five-year plan of Ningxia (The Ningxia Hui Autonomous Region Brokerage and Information Committee, 2013) as well, which highlighted an increase in production for the wine industry in the eleventh five-year plan (2006-2010), and emphasized the rapid development of the wine industry to foster the primary sector. The result of these plans materializes in the government document regarding the Eastern Foot of the Helan Mountain (Ningxia Eastern Foot of Helan Mountain Grape Industry Zone Administrative Board, 2016), which reports statistics concerning production, tourism and the development of the wine industry. Also, the report lists the plan for 2016, which is the starting year of the Thirteenth Five-year Plan of China: while retaining the motto 'small wineries, big region', it is planning to increase the number of wineries up to 300. As three wineries interviewed were spin-offs from other wineries, and five wineries benefited from related variety in affiliated sectors such as wine retail, tree nurseries, wine import, and tourism, knowledge spillover can be seen as an ongoing process in the region. This makes it possible for the region to accomplish the plan.

Because the wine industry in this region is a newly growing industry, changing from 2011 in earnest according to the government officer informant, nine informants responded that the biggest change to their wineries was afforestation. Most vineyards that wineries owned were previously wasteland, and only grapes could grow in the area. One high ranking informant noted:

"This land was formerly a farm, but it was generally a wasteland, because places that are appropriate for planting grapes are not appropriate for planting

grains or other fruits, because it is all gravel.”

- Higher executive/winery owner group 4 (female, 30s)

As the informant suggested, one reason for the enthusiastic support of the government is the possibility to plant grapes in these wastelands and the appropriateness of the climate for grapes to grow in good quantity and quality. This implies that co-evolution is indeed taking place, meaning the evolution of institutions has been accompanied with the growth of the wine industry. This interrelation has formed synergy that benefits the development of the industry. Actually, some informants specifically responded that the owner of the company (winery) chose to operate a winery because of the viticulture-friendly policies of the government.

“When we were planning to establish here, it was originally planned to be a baijiu distillery [...] but in 2013, Ningxia was putting a lot of effort into promoting the wine industry, and fortunately the president of the company had interest in wine.”

- Production related worker 11 (male, 30s)

“When we received the land here, I finished gathering the starting capital for it, and then started to seek something to invest in. At that time, I had a friend in the government and also saw the industrial policy, and then ascertained to invest [in the wine industry].”

- Higher executive/winery owner group 8 (male, 50s)

Also, tourism is a factor impacting co-evolution. Seven out of thirty one informants answered that wine tourism has been evolving for last five years.

Since the government is establishing specific policies for wine tourism, the wineries that are receiving tourists can gain support from the government and increase their profit as the tourism industry is a higher-valued industry than simply selling products.

Although institutions are slower to change than the industry environment, they are trying to keep pace with the demand of the wineries. On August 10th, 2016, the Ningxia wine official flagship store (see Figure 20), organized by the Ningxia Eastern Foot of Helan Mountain Grape Industry Zone Administrative Board, went on-line in Tmall (famous by another name, *Taobao*), the biggest online shopping website in China run by the Alibaba Group. Although a retail platform offline has not been established, the government is putting effort into the expansion of wine industry sales in the Eastern Foot of the Helan Mountain Region, and is strongly supporting increased brand recognition.



Figure 20 Homepage of the Flagship Store in Tmall (retrieved from <https://nxptj.world.tmall.com/index.htm?spm=a312a.7700824.w5002-15379657685.2.7vpogU>)

Not only have government policy and regulations co-evolved, but the

educational institution in the region has also shown co-evolution with the development of the wine industry. In 2013, the Wine School of Ningxia University, a college level education facility established to train and produce viticulture specialists for the regional wine industry, opened. According to the school homepage (Wine School of Ningxia University, 2016), the school is the only internationalized wine college in China. In fact, according to one informant (sales and marketing related worker 7, female, 20s), although there are not as of yet any graduates, the future is promising. The Wine School of Ningxia University offers student exchange programs to wine regions in France, the United States, New Zealand, and South Africa, and there are also lectures by industry experts from famous wine countries such as Italy.

Also, Ningxia Technical College of Desertification Prevention changed its whole curriculum to be more focused on viticulture and viniculture, renaming itself Ningxia Technical College of Wine and Desertification Prevention in 2015 (Ningxia Technical College of Wine and Desertification Prevention, 2014). Since the program at a technical college lasts for three years, and the purpose of the college is to train workers for specific industries and sectors, there are many young workers who have graduated from this college who work for the wine industry in the Eastern Foot of the Helan Mountain Region. As higher education is an important factor for regional innovation (Boschma and Capone, 2014), these diverse courses of higher education can foster technological innovation and provide a major source of human resources for the region and the industry.

To sum up, government policy and educational institutions are co-evolving with the wine industry in the Eastern Foot of Helan Mountain Region, and the region itself can be seen as evolving through these interrelated factors.

3.4. Summary and Discussion

This chapter explored the wine industry in the Eastern Foot of the Helan Mountain Region, Ningxia, specifically knowledge transfer between actors in the industry and its influence on regional path development, and the co-evolution of firms and institutions. First, it investigated the methods used to communicate intra-, inter-, and extra-regionally, and the frequency for each interaction. While online communications take place at a higher frequency than offline communications in all interactions, intra-regional interaction via device or face-to-face was more frequent than inter- or extra-regional interaction.

Second, the perception of wineries regarding the effect of each interaction on the winery was examined. None of the interactions had a negative effect on the development of wineries in terms of production or sales. Nonetheless, the intensity of the impacts varied by the wineries, especially for inter- and extra-regional interactions. Results suggested the influence is stronger on wineries that have less natural contact with extra-regional entities. Intra-regional diffusion of external knowledge, however, does take place to some extent, which lends credence to the existence of regional knowledge spillovers.

Third, the perception of governmental institutions such as regulations and policy, and the co-evolution of formal institutions with regional and industrial evolution was scrutinized. More than 60 percent of the informants responded that the impact of the government policies is positive on the growth of the winery. However, a few limitations such as policies applied to a limited extent of wineries, or activities being too superficial, were pointed out. Still, regional evolution and the co-evolution of institutions are present as positive support from governmental institutions on the winery diversified and became more detailed (e.g. land use, tax abatement, financial support), and educational

institutions are expected to heighten the quality and standards of the wine industry in the region.

As aforementioned, there is no dearth of literature highlighting the importance of knowledge transfer in the process of innovation, which, in turn, plays a crucial role in regional evolution and path-creation to avoid regional lock-in. However, as Giuliani (2010b) criticizes, research on emerging countries has only recently just begun, and the process of a region moving from emerging to sustainable status is under-researched. This case study on an emerging wine industry in an under-developed region can shed light on just such a regional co-evolution in an emerging industry in a developing country.

Observation helps to round out these findings. Although the industry is not yet fully matured, the workers engaged in the wine industry are unceasingly putting forth their best effort to not only generate profit for their individual winery, but also to develop brand awareness and power for the whole wine industry in the Eastern Foot of Helan Mountain. Institutions indeed play a major role and impact the capacity for regional resilience in this regard. However, it is the organizational routines of firms and individual actors who actually put the innovative ideas into practice, and allow the industry to thrive in the end.

4. Conclusion

Deploying three multi-part RQs, this research focused on knowledge transfer intertwined with regional evolution and institutional co-evolution in the wine industry of the Eastern Foot of the Helan Mountain Region, Ningxia, China. It started with a literature review related to the research topic, which included sections on EEG, institutional evolution and regional resilience, the wine industry, and the regional background of the research area.

The third chapter presented different aspects of knowledge transfer occurring intra, inter, and extra-regionally, categorizing them by the subject of interaction and modes of communication. It was found that the frequency of knowledge transfer was higher in online communication than offline communication, and for intra-regional interaction rather than inter- or extra-regional interaction. Moreover, while perceptions of intra-regional and inter- or extra-regional interaction were different, intra-regional interaction affected actual sales and marketing more, whereas inter- and extra-regional interaction largely affected technological innovation. Because wineries that have related foreign entities or workers that studied or worked abroad already acquired advanced technology, the impact of extra-regional interaction was largest for wineries that had less natural interaction with those subjects. Finally, the influence of government regulations and policies were mostly seen as positive, but informants perceived the effects as macroscopic rather than having specific impacts at the local level. Still, from these results, the co-evolution of institutions were perceived as generally effective for the evolution of industry and the region, particularly in terms of education, land use, financial support, and tax abatement.

Taken as a whole, this study largely supports previous research into the

importance of knowledge transfer for regional and industrial evolution. More specifically, as this industry emerges in a developing country, the transplantation of new technologies, firms, and personnel proposed by Martin and Sunley (2006), or the five de-locking mechanisms, were uncovered in the case study analysis and found to be important. Also, results partly aligns with Glückler's (2007) argument that endogenous as well as exogenous network evolution impact regional change. Results showed the simultaneous influence of tacit and codified knowledge transfer from intra-regional knowledge spillovers between the wineries along with the effect of extra-regional inputs of innovative knowledge obtained through global pipelines and distributed via gatekeepers locally.

Despite this support given to the de-locking and knowledge transfer processes concerning innovation, the case study is not in perfect harmony with previous theorization and research findings. In contrast to the arguments that technological lock-in is apt to create path dependence in a region that leads to negative lock-in (Martin and Sunley, 2006; Martin, 2010) and arguments that gatekeepers that absorb extra-regional knowledge and diffuse it intra-regionally can help the region to avoid lock-in (Giuliani, 2011; Boschma, 2015), some informants responded that extra-regional knowledge is not always helpful and that they are therefore putting in more effort at the individual firm level and within the region at large to create unique characteristics in their wines. This insight speaks to the possibility that lock-in is not a one-size-fits all phenomenon, and that it may very well vary by industry or region.

While this study has limitations such as being a 'snapshot' analysis, it also has implications for future research. As mentioned in the beginning of the thesis, the 'snapshot' analysis provided by this study can provide insight into the factors an industry, a wine industry in this case, should satisfy in order to

grow to 'sustainable' from simply 'emerging'. More specifically, as the questions designed for the interviews included direct questions regarding the evolution of wineries and the region, the informants signaled the perception - some supportive, some critical, of the wineries and the workers concerning policy over time. These perceptions may help to guide future policy endeavors in the region.

One significant limitation is that although the fieldwork continued for more than six weeks, it was rather a short time to actually probe the industry and investigate it in a more profound way. Also, as the season during which interviews were conducted was the slack season, I could not actually have the opportunity to observe the vinting process. Nevertheless, thanks to this timing, the informants were less hurried and more comfortable with being interviewed. As an 'observer-as-participant', I could communicate online with my own WeChat and Moment, forming a ubiquitous network for participant observation and ongoing social interactions.

As an old Chinese quote from Sun Tzu goes, also quoted by one informant, "Know your enemy and know yourself, and you can fight a hundred battles without disaster." Through knowledge transfers from various actors across multiple scales, the workers and the firms in the Eastern Foot of Helan Mountain are persevering in their effort to innovate for the success of their wineries and for the region, and, taking it a step further, are preparing for competition with Old and New World countries. Therefore, this thesis ends with the hope that it can help to inform future research into this vibrant region, and to be a good source for comparison between this and other wine regions globally.

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국문초록

지식 전달과 지역 진화

중국 닝샤 허란산둥루지역의 와인 산업을 사례로

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중국의 와인 산업은 상대적으로 긴 역사에도 불구하고 최근에서야 세계적으로 주목을 받기 시작했다. 특히, 닝샤후이족자치구에 위치한 허란산둥루지역은 급속히 발전하는 와인 생산 지역이다. 2010년까지만 해도 이 지역 내의 와이너리는 10개에 불과했으나, 2016년 현재 100 여 개로 증가하였고, 100 여 개의 와이너리가 추가적으로 건설 중에 있다.

본 연구의 목적은 허란산둥루지역이라는 신흥 와인 클러스터 내의 지역 내, 지역 간 그리고 지역 외 지식 흐름을 기업 단위에서 관찰하고, 지역적 공진화(co-evolution)에 대한 지식 전달의 영향을 진화경제지리학의 주요 구성 요소인 잠금(lock-in) 현상, 탈잠금(de-locking), 그리고 제도적 고려를 포함한 네트워크의 진화를 통해 분석하는 것이다.

구체적으로, 본 연구는 우선 진화경제지리학, 제도, 지역적 공진화, 와인 산업, 그리고 대상 지역에서의 와인 산업과 관련된 문헌 연구를 진행하고, 이를 통해 세 가지 연구 질문을 도출한다. 질문들은 지식 전달에 대한 지역 내, 지역 간, 그리고 지역 외 의사소통의 수단 및 영향, 그리고 정부 제도(정책, 기간 시설, 금융 등)와 교육 제도가 기업의 성공과 지역적 공진화에 미치는 영향을 조사하기 위해 설계되었다.

또한, 실증적 자료는 반구조화된 인터뷰를 통해 취득하였으며, 규모가 상이한 26개 와이너리에 종사하는 31명의 직원과 와인 산업과 직접적으로 연관되어 있는 두 명의 공무원을 대상으로 하였다. 인터뷰 자료는 중국에서의 45일의 현지조사로 병행한 참여관찰로 보충하였다.

연구 질문에 대한 답은 다음과 같다. 우선, 지리적 접근성으로 인해 지역 내 의사소통의 빈도가 지역 간 혹은 지역 외 의사소통보다 훨씬 높았으며, 그 내용의 깊이는 의사소통의 수단에 따라 차이를 보였다. 또한, 지역 내 의사소통은 각 와이너리의 생산과 판매에 도움을 준 반면, 지역 간 혹은 지역 외 의사소통은 각 와이너리의 이전 경험 혹은 접근성에 따라 다른 결과를 보였다. 해외 경험이 적거나, 해외에서 교육받은 직원이 없거나 적은

와이너리들은 지역 간 그리고 지역 외 지식 흐름에 더 큰 영향을 받았으며, 특히 시장에 대한 노출과 생산 절차에 대해 영향을 받았다. 한편, 좀 더 경험이 있는 와이너리들은 해외 생산 기술에 접근성이 있음에도 지역의 고유한 개성을 개발해야 한다는 필요성을 느꼈다. 실제로 몇몇 응답자들은 지역의 와인 클러스터에 적합하지 않을 수 있는 해외 기술을 맹목적으로 들여오는 것에 대해 경계하였다.

제도적 공진화가 산업 그리고 지역 발전에 영향을 미치는 요소라는 것 또한 와인 산업 종사자들과 공무원들의 인터뷰에서 나타났다. 와이너리들이 서로 경쟁 상대라는 점에서 직관에 어긋나는 것처럼 보일 수 있으나, 신뢰와 협동 또한 와이너리들 사이에서 뚜렷이 나타났다. 금융과 토지 사용에 대한 정책들과 정부 주도의 국내 활동, 와이너리 투어, 해외 와이너리 투어 등도 언급되었다. 한편 국내의 와인 관련 교육과정들은 와이너리들을 결속하는 접착제 기능을 하며, 지식 전달을 촉진하는 것으로 나타났다. 이러한 일련의 활동과 조치에 대한 와이너리들의 의견은 전반적으로는 긍정적이었으나, 한계점 또한 언급되었다.

본 연구의 가치는 다음과 같다. 우선 지역적 탈잠금과 적응탄력성 (adaptive resilience)에 대한 실증적 근거를 마련하였으며, 지역적 진화와 공진화가 동시에 존재한다는 것을 밝혔다. 또한, 본 연구의 결과가 진화론적 관점에 대한 기존 문헌들의 주장과 대체로 일치하였으나, 외부 지식 흡수에 대한 긍정적 그리고 부정적인 영향이 동시에 나타났다는 새로운 점을 발견하였다. 마지막으로, 본 연구는 충분히 연구되지 않은, 개발도상국의 신흥 산업 클러스터에 대한 이해를 증진하는 데 기여하였으며, 이를 통해 신흥 산업의 성장과 지속가능성에 필요한 구체적인 산업적·지역적 과정에 대한 통찰력을 제공하였다.

주요어: 진화경제지리학, 와인 산업, 지식 전달, 지역적 공진화, 중국, 닝샤 허란 산둥루지역

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中文摘要

知识转移与地区演化——以中国宁夏贺兰山东麓产区的葡萄酒产业为例

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虽然中国葡萄酒酿造的历史悠久，但是它最近才获得了世界的关注。尤其，宁夏回族自治区的贺兰山东麓产区是一个急速发展的产区；它从2010年的十家酒庄增长到2016年一百多家，而且还有一百多家在建立中。

本研究的目的在于测定贺兰山东麓葡萄酒产区内企业层面的产区内、产区之间和产区以外的知识流，而通过演化经济地理学的主要理论分析其知识转移的影响力与地区共演化。更进一步阐述，本研究利用演化经济地理、制度、地区共演化、葡萄酒产业与贺兰山东麓产区的葡萄酒产业的先行研究做出三道研究问题，探索产区内、产区之间和产区以外的不同交流方法及其影响，以及政府与教育制度对企业成功和地区共演化的影响。数据与资料主要获得于定性、半结构化访谈，并辅以现地调查中参与者观察。

本研究结果如下：因为距离差别，产区内交流比产区之间或产区以外交流更频繁，而交流深度根据交流方法不同而有差别。产区内交流被认为对各个酒庄的生产与销售有影响。与其他产区交流的经验越少，其交流的影响力，尤其在生产方面，越大。根据对酒庄工作者与公务员进行的访谈，制度上的共演化是影响产业与地区发展的因素之一。互相信赖和协力在产区内酒庄之间非常明显。政策对产区的影响方面，以及对产区的影响力也在本研究里探讨。

本研究的重要性首先在于对演化经济地理学上的锁定和解锁理论、适应性弹性和地区共演化进行了实证研究。其次，虽然演化经济地理的理论大部分准确，本案例在分析的同时提出反论，即外部知识对创新的负面影响。最后，本研究描述了发展中国家的新兴产业集群，对研究新兴产业的转型与可持续发展的必要因素提供洞察力，做出贡献。

关键词：演化经济地理，葡萄酒产业，知识转移，地区共演化，中国，宁夏贺兰山东麓产区

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