

New Perspectives on Restructuring of Old Industrial Areas in China: A Critical Review and Research Agenda

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Abstract: The restructuring of old industrial areas has been receiving much attention in regional development studies both in industrialized and emerging economies. Although ample Chinese-speaking studies have been published on the topic, most of them suffer from paying too little attention to dynamic multi-scalar interactions between firms, institutions, policies and places, as well as a too strong focus on individual cases. They also mostly disregard internationally recognized concepts and theories in the field. Based on these internationally recognized modern concepts, this paper therefore puts forward some potential avenues for future research on the evolution of old industrial areas in China, which should overcome existing deficits in the Chinese-speaking literature. It suggests that some evolutionary economic geography concepts such as path dependence, lock-in, path creation, relatedness, as well as multi-scalar institutional and leadership approaches have useful potentials to better understand the evolutionary processes and mechanisms of old industrial areas in China.

Keywords: evolutionary economic Geography; economic restructuring; old industrial areas; research agenda; China

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1 Introduction

The economic revitalization of old industrial areas (OIAs) in China is not a new topic. Notably since 2003, this topic has been receiving much attention both from Chinese geographers, policy-makers and the media. This research theme, indeed, is largely stimulated by the national policy of 'Revitalize Northeast China' in 2003 and, more recently, by the top-down financial aid program of 'Transform Resources-exhausted Cities' since 2008. Although most studies are policy-oriented rather than process-focused, China's OIAs have been generally recognized as typical 'problem regions' which ought to be at the core of China's regional development research (Lu and Fan, 2010). On the one hand, many OIAs still suffer from long-term sluggish growth or even stagna-

tion due to ill-balanced economic and social structures inherited from the planned economy. On the other hand, these regional economies, characterized by a high degree of industrial monopolization and specificity, are vulnerable to all sorts of shocks in a transitional context, particularly when it comes to the changes of national strategies and institutions. Recently, the slowdown of China's economy and the increasing emphasis on the quality rather than quantity of economic development have put OIAs in a dilemma: how to shift from the existing resource-based, highly contaminated and state-dominated regional economies to more market-oriented, green and sustainable ones, but in the meanwhile without being harmful to local economic growth and social harmony. Moreover, since the evolutionary characteristics and trajectories of OIAs seem to differ strongly

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from the ones of coastal regions, and in a theoretical sense, doing in-depth research on OIAs can contribute to the understanding of varieties of regional development 'models' in China (Wang *et al.*, 2014; Zhang and Peck, 2014).

Although this topic is relevant in both policy and academic circles, existing research on it is weak. A main weakness is the neglect of using modern, sound and refreshing concepts to systematically analyze and explain the evolutionary nature of OIAs and, thus it fails to theorize Chinese practices and contribute to the international literature. This pitfall, indeed, is ascribed mainly to the Chinese distinct 'practice-based' characteristic of economic geographic research. That is, as some leading Chinese geographers critically reflected (Liu and Lu, 2002; Liu *et al.*, 2011), the primary target and driving force of the discipline development are to fulfill the national policy demand. As a result, many issues with regard to the restructuring of China's OIAs remain poorly understood. For instance, little research has been devoted to unveil how OIAs evolve and adapt through time in an on-going market reforming and uncertain globalizing context. Who plays what role in affecting the processes and for what purpose? And why are some OIAs more economically adaptable while others are not? These questions, in our view, are crucial to understand the uneven development of OIAs, and need to be equipped by sound concepts and perspectives. As suggested by Liu (2009), it is badly needed for geographers to (critically) adopt mainstream theories to rethink highly contextualized Chinese practices, as a useful channel to launch an intelligent 'bridge' with mainstream economic geography.

Internationally, there has been a paradigmatic shift of economic geography from orthodox neoclassical accounts to institutional, relational, evolutionary heterodox thinking (Hassink *et al.*, 2014). On the one hand, a variety of evolutionary concepts such as path dependence, lock-in, path creation and related variety, as well as new metaphors such as resilience have been used in analyzing the (re) rise and fall of OIAs in Europe and North America (Grabher, 1993; Hassink, 2010; Simmie and Martin, 2010; Fornahl *et al.*, 2012). On the other hand, several refreshing perspectives provide complementary explanations to evolutionary approaches. It is argued that the state particularly in terms of governances and polices embedded in a dynamic and multi-levelled

political economy, play a key role in changing the industrial profile of OIAs (Hudson, 2005; Dawley, 2013; Hu, 2014). Others demonstrate that integrating the role of human agency into the analyses can enrich the understanding of how micro-levelled dynamics work and how they collectively shape adaptation and adaptability (Bailey, 2010; MacNeil and Steiner, 2010). Taken together, these concepts have shown strong explanatory power to disentangle the complex evolution of OIA. However, hardly any of the above-mentioned concepts have been explicitly applied in research on Chinese OIAs, leaving a research gap that needs to be addressed.

This paper therefore will explore some potential research areas on restructuring studies on China's OIAs. It mainly focuses on which international concepts can be applied to understand the evolution and geographies of OIAs in China. On the basis of a critical literature review of both English and Chinese speaking literature, this paper suggests several potential questions and agendas for future research on the topic in China.

2 Old Industrial Areas in China: History and New Trends

China's OIAs can be regarded as natural resource-based (e.g., mining, forestry, petroleum) and heavy industrial (steel, iron, machinery and shipbuilding, *etc.*) territorial complexes, as well as regions specialized in light industries (e.g., textile), which were developed under the 1949–1976 centralist regime and gradually became economically stagnated in the course of market reforms. Differed from many Western OIAs whose fortunes are closely connected to market competition and technological dynamics, China's OIAs have been evolving in a distinctive manner. Their evolutionary trajectories seem to be more influenced by national leadership and policy dynamics (Wei, 2000; Lin 2002; Ding and Sun, 2006). The development history of OIAs in China can be divided into three major phases according to the change of national leadership, namely growth in post-1949 centralization era, stagnation in post-reform era (1979–2002), and restructuring in the 2003–2013 period (Table 1).

2.1 Emergence and growth under centralization era (1949–1976)

Since 1949, to consolidate the central leadership and the new government after the civil war, a considerable

Table 1 National changing policies and their impact on OIAs in China

Phase	Leadership era and its OIA related policies	Major impact on OIAs
Expansion & Growth	Centralization era (1949–1976): • The 1st & 2nd Five-Year Plan • The Great Leap Forward • The Third Front Construction	• Northeast became China's most industrialized region • A variety of military-specialized regions and natural resource-based cities and districts were extensively established in inland China
	Neoliberalism and radical state-owned enterprise (SOEs) reform era (1979–2002): • Rural privatization • Coastal centered policy • Radical reform on SOEs • Go West	• The rapid growth of coastal regions at the cost of the socio-economic decline of OIAs • The dramatic decrease of SOEs in market share. SOE-dominated OIAs suffered from economic stagnation and social unrest • Western OIAs started to receive central investments
Stagnation & Decline		
Revitalization & Revival	Restructuring period (2003–2013): • Revitalizing the Northeast • The Rise of central China • Transforming resource-exhausted cities	• Northeast China underwent a fast-growing under national policy-led inputs • OIAs in central China benefited from supports for industrial upgrading. • A total of 69 resource-based cities received top-down financial aids to foster regional industrial transformation.

number of military-related industries were initiated in the coastal region under a defense-centered ideology. Meanwhile, the pro-Soviet national-state also prioritized to industrialize the northern border regions, which were endowed with plentiful mineral resources. The industrialization of Northeast China, for example, was primarily empowered by *the First and Second Five-year Plan* (1953–1962), in which China as a new member of the communist alliance received numerous free investment projects (e.g., heavy, power and manufacturing) from the former Soviet Union (Zhang, 2008). Likewise, OIAs in Southwest China can be traced back to the national radical defensive policy triggered by the Sino-Soviet split, namely the *Third Front Construction* (1964–mid 1970s). In order to preserve military strengths for a potential war with the former Soviet Union, the central government undertook a large-scalar industrial transplantation, in which almost all military-related sectors, together with numerous workers in the coastal belt were mandatorily relocated to the western hinterland (Naughton, 1988). Consequently, this movement led to a large spatial expansion of heavy and mining industries, which outlined the general profile of China's OIAs (Fig. 1).

2.2 Stagnation and decline in reform era (1979–2002)

Since 1979, however, the formerly prosperous areas began to experience a painful stagnation. This can be explained by three inter-linked reasons: First, the SOE-based regional economies, where planned institutions, corporate bureaucracies and entrenched territorial input-output production systems were well preserved, presented many difficulties and even resistance to market reforms. Secondly, the marketization reform facili-

tating private and collective economies squeezed the market share of SOEs and thus negatively impacted on OIAs. Besides, the 'coastal centered' neoliberal policy broke the post-1949 egalitarianism for regional development, leading to a spatially unbalanced development (Dunford and Li, 2010). This 'benefiting some places but punishing others' policy, can be used to explain why industrial complexes in Northeast and Southwest China lost dynamics and mutated into less-favored OIAs (Wang *et al.*, 2014). Thirdly, in 1998, the government tightened up the policies on SOE privatization by introducing so-called 'modern enterprise institutions'. In a short run, firm ownership, institutions and size were variegated, redesigned and diminished, respectively (Garnaut *et al.*, 2006), which directly caused massive factory closures and economic downturn in OIAs. Although the central state became aware of the increasing development gap between the coast belt and inland OIAs and tried to bridge it by launching the 'Go West' strategy in 2000, OIAs still constrained to develop new industries.

2.3 Revitalization since restructuring period (2003–2013)

It is fair to say that the top-down neoliberalism and post-1998 radical SOE reforms relaxed the development of capitalism in coastal China. However, it is at the expense of the stagnation of OIAs. To combat this situation, the fourth generation leadership between 2003 and 2013 initiated a new ideology, namely 'Scientific Development', in order to remedy the previous policy's inappropriateness and to alleviate increasing regional disparities. In this respect, revitalizing less-favored regions was legitimately put as a core issue on the national development agenda. This can be evidenced by a series

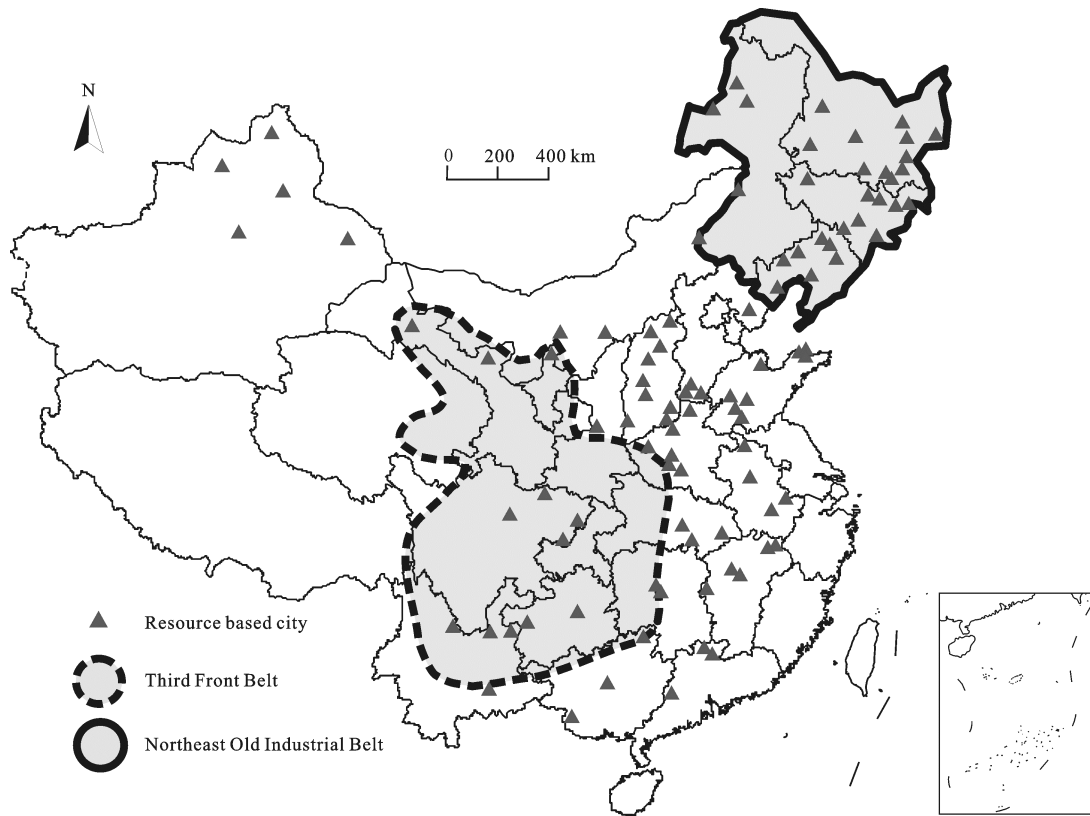


Fig. 1 Geographical distribution of China's old industrial areas

of national policy portfolios, including *'Revitalizing Northeast China'* in 2003, the *'Rise of Central China'* in 2004, and the recent *'Transforming Resource-exhausted Cities'*^① in 2008. With these strong national inputs, many OIAs seem to have regained their vigor and some have embarked on rejuvenation trajectories (Wang et al., 2014). The Economist (2012) published an article entitled 'Rustbelt revival', showing the remarkable growth of the northeast benefiting from massive state-led investments in housing and infrastructure. Similar evidence has been observed in Fuxin, a typical coal-mining region, where the central state purposively enacted a set of policy instruments that ignited local enthusiasm to develop a new growth industry, namely the wind power industry (Hu, 2014).

2.4 New development trends in new contexts (2013–now)

Although GDP in China's OIAs has been growing under

the above-described national policy inputs, it does not mean they are successfully transforming. In fact, the policy-driven economic growth model generates an illusion that covers up the weak endogenous capacities in OIAs. This can be exemplified by the recent figures on GDP growth in the first half of 2014 (NBSC, 2014), showing that many mature industry-based provinces, such as Shanxi, Hebei, Heilongjiang, Jilin, ranked in the bottom of China's provinces. The economic situation is particularly bad in the northeast, where old command-economy institutions dominate, the central-planning mentality of people persists, and young people are more likely to emigrate elsewhere for better jobs (Economist, 2015a). The recent downturn of GDP growth in OIAs is partly caused by that the so-called 'New Normal' national strategy (OECD, 2015). In this framework, new policies and regulations in pursuit of 'structural change' and 'innovation driven development model' are being en-

① According to the State Council, there are 118 resource-based cities widely distributed in China (Fig. 1). These regions have strongly contributed to national economic growth by delivering energies and raw materials. Yet recently many of them have been confronted with the increasingly depletion of natural resources. The national-state therefore initiated a set of supporting policies since 2008, in which 69 regions were qualified as *'resource-exhausted cities'* and supported with national financial aids for economic restructuring

forced. In this sense, OIAs are in a tougher position for two reasons. First, it is difficult to change the dominant, geographically and historically well conditioned 'resource and investment-led development model' in OIAs. Secondly, when it comes to reforms, local actors are exercised about the potential economic loss and social insecurity that highly matter their political future.

Of course, the new normal state context can also provide opportunities such as new incentives, institutions and preferential policies for OIAs. A set of top-down industrial policies shortly called 'amalgamation and recombination' (*jianbing chongzu in Chinese*), for example, was released since 2008. It aims at maintaining the competitiveness of OIAs in the post-crisis context through fostering the spatial restructuring by cross-regional/hierarchical mergers, agglomerations and acquisitions of SOEs. Additionally, large SOEs are incentivized to implement the so-called '*going-out*' strategy. By doing so, domestic old industries can be transplanted to other emerging economies and/or absorbing foreign technologies and natural resources, as a way to revitalize SOEs (Moody, 2013). In particular, an accelerated internationalization of Chinese SOEs can be expected under the 'One (economic) Belt, One (silk) Road' national strategy, which will be further integrated local economies of OIAs into global production networks and international markets, and thus be shaped in the future. The other way around, the global crisis has also accelerated a new round of global shift of traditional sectors from industrialized economies to China, which to some extent facilitate the integration of China's OIAs into global production networks that may lead to regional renewal (Hudson and Swandon, 2012).

To summarize, China's OIAs have three key characteristics: 1) geographically, they are mainly located in Northeast and Southwest China, and also consist of a considerable number of resource-based cities in the central China; 2) the current mature industrial space is a result of a combination of regional endowments, historical events and policy dynamics; 3) recently, OIAs seem to be increasingly affected by national state-led rescaling and economic globalization, although local actors still play a role.

3 Old Industrial Area Studies with Chinese Characteristics? A Critical Review of Literature

In our quest to elaborate on the existing understanding of the restructuring of OIAs in China, we think Chinese-speaking journals could provide important input. We therefore selected six major Chinese-speaking geography journals, namely '*Acta Geographica Sinica*', '*Scientia Geographica Sinica*', '*Progress in Geography*', '*Economic Geography*', '*Areal Research and Development*' and '*Human Geography*'. We found and critically reviewed forty-three articles in these journals which referred to 'OIA' (such as 'old industrial bases' and 'resources-exhausted cities) and 'transformation or restructuring' in title or keywords.

One research strand is oriented to explaining why OIAs in China stagnated (Li and Li, 1996; Sun and Ding, 2005; Han *et al.*, 2005). These studies mainly comprise of analyses of the constraining role of industrial-sectorial impact factors such as the power incoherence between centrally controlled SOEs and self-contented local states, the lack of regional integration, the specialization 'trap', *etc.* Other contributions have highlighted the salient role of historically inherited institutions in explaining the decline of OIAs. According to Ding and Sun (2006) the real problem of OIAs is 'not economic, but an institutional problem'. They argued that the strong resistance to change in OIAs was fundamentally ascribed to inappropriate national institutional arrangements, such as top-down controls and unfair tax policies. Xiao and Mao (2008), for instance, stressed that the stagnation of the northeast stems from the duplicate of the Soviet-style model of '*Territorial Industrial Complex*'. Despite some advantages at the beginning stage of internationalization, this model, for a long term, is not favorable and competitive in a market economy. Because the model's strong focus on the encompassing effects of territorially bounded and self-sufficient production systems has led to a prevailing social-industrial system in China. This system resulted in many rigid and harmful institutions, such as the idea of '*whatever size but being complete*'^②, and the

② It has been used to articulate the over-loaded social responsibilities of SOEs under the post-1949 centralization regime. SOEs were ordered to develop encompassing industrial complexes for self-contented local economies, characterized by the Chinese term, namely '*da er quan, xiao er quan*' or '*chang ban da ji ti*' known as 'collectively-owned factories under the control of SOEs'

'*danwei*'^③ institution. Some researchers view these institutions as a 'culture hindrance' that can have a long-term negative impact on OIAs (Wang and Xiao, 2004; Dong and Zhang, 2008). In their studies, the *danwei* institution, for example, was defined as a cognitive barrier that avoid local actors from having new career visions, as working in a *danwei* stands for a symbol of higher social status and well-being. Zhang (2006) assumed that even if this institution was removed, the feelings of the '*iron rice bowl*'^④ can be passed on from older to younger generations, which consistently play a role in undermining entrepreneurship and creativity in OIAs.

In summary, while these contributions have addressed a variety of constraining impact factors, particularly the planned institutional 'inertias' that led to the stagnation of OIAs, they are too general and lack thorough empirical evidence. Although history seems to have played an important role, it is still unclear how institutions have been embedded into place distinctive contexts, and why some regions have tended to stick stronger to old routines, networks and structures while others do less. Moreover, the studies strongly rely on a top-down, downward line of arguments, by emphasizing that it is top institutional designs that made OIAs stagnant, but little attention has been paid to upward interactive processes of certain regions with old institutions. The people in metropolitan OIAs, for instance, tend to find new jobs not limited to SOEs, as large cities can offer more diversified job opportunities. The evidence in Shenyang has shown that inner-city labor mobility between SOEs and non-SOEs can reshape people's mindset on employment and thus affect the evolution of OIAs (Dong and Zhang, 2008).

Another research line deals with policy advices for directing the near-future restructuring of OIAs in China (Zhang, 2004; Chen et al., 2006; Wang et al., 2011). Although most advices are derived from individual cases, they have pretty much in common. Most scholars claim that the restructuring of OIAs is about either the extension of existing industrial chains or the recombina-

tion of local existing assets for new options. It has been argued, for example, that single-industry regions, such as the forestry city Yichun and the petroleum city Karamay, have little room to create entirely new industries, but can facilitate neighboring sectors related to the dominant industry (Zang et al., 2006; Wang et al., 2011). Similarly, based on a case study of Huangshi's tourism industry, Zhu et al. (2002) state that new growth paths in OIAs can be fostered by exploiting and commercializing place-specific uncommitted assets. Zhang et al. (2011)'s insightful contribution, however, suggests that developing new industries or extending existing ones is contingent on localized conditions and different types of OIAs. Another common focus is given to the role of the state. Given the economic devolution to the local state, much literature regards the local state as the 'initiator' and 'driving force' for industrial change, suggesting that the local state can take effective actions to make OIAs dynamic, such as through industrial relocation, tax reduction and land commercialization, etc. (Chen et al., 2006; Mao et al., 2008). In contrast to most policy-oriented studies, one process-focused contribution illustrated how local state entrepreneurship in the Ma'anshan steel city facilitated local experimentations that significantly restructured the institutional base, which led to industrial diversification (Yin et al., 2010). Others, however, argued that the central state, rather than the local state should bear the brunt to revitalize OIAs, as its past policy failures still negatively affect today's OIAs (Ding and Sun, 2006; Xiao and Mao, 2008).

The latter research stream explicitly resonates with Liu and Lu's (2002) argument that '...Chinese economic geographers have been involved in many consulting jobs for the Chinese government'. In many studies, too much attention has been paid to analyzing general problems and drawing quick-fix policy recommendations. Despite much empirical research, the analyses mostly draw on secondary data rather than in-depth field-work-based primary data, which we consider as problematic particularly concerning the effects on the quality

③There is no strict definition of *danwei*, it generally refers to a place of employment in the context of pre-reform China, where employees were economically and socially constrained and even determined by particular institutions (Lu and Perry, 1997). Today, the *danwei* phenomenon is diminished but far from completely vanished, as SOEs still dominate particular sectors and economies

④ *Iron rice bowl* refers to a permanent position in SOEs, authorities, and universities. This ideology can have a negative impact on self-employment and entrepreneurial activities (Zhang, 2000)

of arguments. Moreover, they lack a sound conceptualization, which means drawing empirical evidence for theorization is scant, and thus hardly yield general lessons. Some scholars highlight the salient role of the state in the restructuring of OIAs, implicitly suggesting a political economy approach to rethink the evolution of OIAs in China (Ding and Sun, 2006). However, by far, these studies lack a dynamic, relational and multi-scalar account, both empirically and conceptually, and pay little attention to the restructuring processes and mechanisms of OIAs. In reality, no region evolves in a purely linear 'top-down' or 'bottom-up' way, there are always multi-agencies and multiple spatial levels involved.

To sum up, it is concluded that despite several useful contributions the existing accounts have shown some clear deficits. The existing literature well echoes Liu's (2009) critique on the nature of economic geography in China being 'policy-oriented', 'pragmatic' and 'lacking theorizing', or as Coe *et al.* (2013) have stated: '...Chinese economic geographers have tended to play the role of planners and consultants to state authorities rather than critical social scientists'. Although a variety of building blocks such as historical institutions, SOEs, state agency are highlighted; it is fair to say that nearly none of them are linked to corresponding international modern theories. The major weaknesses revolve around the limited concern on interactions between firms, institutions, policies and places, as well as for the underlying processes of key multi-scalar actors (e.g., individuals and agencies). Another explicit deficit is that too much work is based on single-case studies, with little concern for the spatial differences in the restructuring of OIAs and the underlying causes and outcomes.

4 An Introduction to Modern Concepts on Restructuring of OIAs

Based on the current state of OIA restructuring-related international literature, we identify five main, not mutually exclusive, themes with a particular focus on the concepts used in dealing with the dynamics of OIAs in Europe and North America.

The first research theme is centered on why OIAs lose dynamics and fail to grow further. Initially, some theories from economics are applied to examine the mechanism of economic decline in OIAs, such as cumulative causation, long waves, over-specialization, and

the product life cycle (Hassink and Shin, 2005). Many of these theories were developed out of criticism towards the neoclassical theory of regional development, which emphasize the equilibrium function of capitalism. Many of the problems in the OIAs seemed to be structural and were hence not solved by the invisible hand of the market economy, as has been suggested by neoclassical economists.

Secondly, later on studies started to concentrate more on the dynamics and mechanisms of the restructuring of OIAs by using the evolutionary concepts of path dependence and lock-ins. 'A path-dependent process or system is one whose outcome evolves as a consequence of the process's or system's own history' (Martin and Sunley, 2006), whereas Martin (2010) defines lock-ins as the notion that '... most fully captures the idea that the combination of historical contingency and the emergence of self-reinforcing effects, steers a technology, industry or regional economy along one 'path' rather than another'. Closely related to the discussion around path dependence and regional evolution is the issue of lock-ins hindering necessary restructuring processes in regional economies (Hassink, 2010). Lock-in situations appear because specialized industrial regions endowed with particular resources, competences and institutional structures are unable to match changing market requirements. Grabher's study (1993) on the Ruhr area, Germany, uncovered that over-specialization is highly embedded in a place-specific environment, in which local inter-firm nexus, political frameworks, and key actors' cognitive mindsets are well developed and reinforced over time that locked in a hard-to-change situation. Building upon earlier analysis on (negative) path dependence from evolutionary economics (David, 1985; Arthur, 1994), his work has inspired many researchers to take history seriously in explaining the long-run stagnation of OIAs (Boschma and Lambooy, 1999; Hassink and Shin, 2005; Hassink, 2010). Political lock-ins, in particular, as a constraining impact factor that not only hinders novelties entering into old industries but also prevents local agents to interactively learn from elsewhere (Cho and Hassink, 2009; Hudson, 2005; Hassink and Shin, 2005; Hassink, 2010). Hassink (2007), in contrast, illustrated how the textile region of Westmünsterland in Germany took advantage of weak institutional lock-ins to foster industrial renewal.

Thirdly, the concepts of path creation and industrial relatedness are used to demonstrate how (pre) existing technologies, skills, networks and institutions are transferred to contribute to the emergence of new industries in a region. Path creation gives a historical view of how path contingency and place dependence co-evolve through time to generate 'creative destruction' that brings new developmental impetus. Evidence related to path creation can be found in many OIAs across the world: the new compound materials sector emerged out of the metal industry in Styria, Austria (Tödting and Trippel, 2004), the microelectronics industry was built on the watch manufacturing in Jura of Switzerland (Maillat *et al.*, 1997), and the formation of low-carbon technologies benefited from the pollution reduction activities in the steel and iron industry in China (Cooke, 2011). More recently, newly developed concepts in the evolutionary economic geography (EEG) literature, such as related variety (Frenken *et al.*, 2007) and regional branching (Boschma and Frenken, 2011), emphasize the role of 'technological relatedness' in facilitating inter-firm/industry learning, technological spillovers and knowledge combinations that lead to innovation, job creation and diversification. Increasing evidence has shown that new industries are tended to branch from existing technologically proximate sectors (Neffke *et al.*, 2011; Boschma *et al.*, 2013).

Fourthly, EEG has recently been criticized for its narrow firm-based perspective and methodological reductionism (Martin, 2010; 2012). In a special issue in Economic Geography it is suggested to engage evolutionary thoughts into broader institutional contexts, in general, and to integrate a geographical political economy approach into EEG, in particular (MacKinnon *et al.*, 2009). Some evidence has shown that path de-locking or creation in OIAs are not just about firm-based market-driven processes, but are rather in-

fluenced by extra-local, higher-level systems and actors, such as the state, politics and policies in multi-layered and changing socio-institutional environment (Hudson, 2005; Dawley, 2014; Hu, 2015). Another complementary perspective to EEG approach is an agency view that rejects seeing firms as a whole behavioral agent but instead pays more attention to the role of human individuals or groups of individuals in the change of OIAs. By adopting the notion of place leadership, for example, MacNeill and Steiner (2010) emphasized the major influence of the Styrian Minister Herbert Paierl on the transformation of Styria in Austria. Similar evidence can be also found in Bailey *et al.* (2010)'s study, in which the original sources for industrial renewal of the West Midlands, UK and Tuscany, Italy were derived from key political leaders.

Fifthly and strongly related to some above-mentioned concepts, recent research focuses on explaining why some OIAs are able to adapt more positively and move onto new paths whereas others remain locked in decline/slow growth over time. In contrast to other research themes focusing on single cases by single approaches, this theme aims at seeking an open-ended, multi-disciplinary and pluralist approach to explore the uneven restructuring of OIAs. By introducing a comparative framework, several impact factors affecting the restructuring of OIAs are identified, such as varieties of capitalism among nations (Birch *et al.*, 2010), distinct degrees/types of political-institutional lock-ins which can lead to different regional adaptability (Hassink, 2010), and different configurations of place leadership and social capital which enable the (re)framing of (new) organizations and institutions in some OIAs but not in others (Safford, 2009; Bailey *et al.*, 2010).

Based on the critical review in Section 3 and the overview of internationally recognized concepts in this section, Table 2 outlines which modern concepts might

Table 2 Modern concepts for overcoming main research deficits

Key question	Existing deficit	Modern concept (perspective)
• What impact factors cause OIAs to stagnate or make OIAs dynamic to change?	• Focus on constraining role of history but without in-depth accounts • Lacking concern for place distinctive history and its causal mechanism with restructuring	• An evolutionary perspective • An institutional perspective • Path (place) dependence and lock-in • Relatedness and path creation
• Who plays what kind of role in restructuring OIAs in terms of new industry formation?	• Over-emphasis on role of state • Lacking multi-scalar and multi-agent views • Ignoring role of individuals such as officials, entrepreneurs and stakeholders	• A human-agency perspective • A relational and multi-scalar view • Place leadership
• Why and how do OIAs adapt differently leading to regionally uneven adaptability?	• Too many single case studies • Lacking knowledge of geographies of adaptation and adaptability	• A comparative study perspective • A geographically uneven thinking

be used to overcome the three identified research deficits. The next section will explain in more detail how exactly the modern concepts can overcome existing research deficits and what kind of research questions can be derived from linking the deficits with the modern concepts.

5 Engaging New Perspectives into Old Industrial Area Research in China: Towards a Agenda

Acknowledging the deficits of the Chinese-speaking literature as stressed in Section 3, and inspired by the modern concepts shown in Section 4, we are convinced that near-future studies on the evolution of OIAs in China need to embrace modern concepts and theories. In this section we are therefore able to map out the contours of an agenda for the study of restructuring Chinese OIAs at the interface between the two bodies of literature. In doing so, three intersections between modern concepts and the contexts of OIAs in China are proposed and some promising avenues are suggested:

First, since Chinese geographers have recognized the salient role of history, particularly concerning the institutions derived from the previous regimes that still affect many OIAs in China, the concepts of path dependence and lock-ins might be relevant, particularly when it comes to interpreting the difficulties for industrial change in an OIA (Table 2). For example, path dependence could be used to inform how previous *danwei* institutions and related organizational tissues are inherited and reproduced locally, and in what conditions old routines and habits are maintained that undermine the processes of regional diversification. A common policy advise for some OIAs to survive is to relocate existing mature sectors to elsewhere, but this can be read as an action of path extension which, from a long-term perspective, might be subject to a regional lock-in (Hu, 2015). In this sense, Grabher's (1993) lock-in concept could be useful to help to identify the intrinsic sources and types of lock-ins in a certain OIA, and to examine how local and extra-local conditions play a role in the process.

The concept of path dependence and its related notion of path creation also provides a dialectical point of view to think to what extent place-specific existing assets can be recombined or transcended into a basis for new paths

to emerge (Table 2). In fact, neither '*jiexu chanye*' (continued industries) nor '*tidai chanye*' (alternative industries) emerge from scratch; both of them draw more or less on regionally inherent assets, and are built on an existing institutional framework. A history-informed and place-based approach can allow policy-makers to see both local existing and latent assets as a source for regional change, and to help identifying which industry has the potential to grow that fits to the context. The 'relatedness' idea, for example, is promising in soundly identifying whether it makes sense to foster existing or alternative industries, and then which particular sectors have most potential to become new growth paths. Adopting these concepts is thus essential for the formulation/implementation of locally embedded policies, which reject introducing policy panaceas merely based on some 'good practices' from elsewhere.

Based on the above discussions, some questions are proposed for future research: 1) how do place-based history and planned institutions generate (or not generate) path dependence mechanisms in OIAs? 2) How do local actors read, interpret and deal with local existing industrial, institutional and network structures? 3) To what extent can the mechanism of new path creation in the Chinese context of OIAs be linked to 'related variety' and 'regional branching'? And how to make sound, grounded policies for China's OIAs by using EEG concepts?

Secondly, given the on-going impacts of changing institutional regimes and corresponding policy arrangements on OIAs in China (Section 2), and the recent criticism on the EEG framework for over-emphasizing endogenous dynamics (Section 3), we call a need to engage future research with a broader multi-scalar institutional perspective (Table 2). Two recent examples are presented as an illustration to support this need. First, Liu and Dunford (2012)'s study on the evolution of Chinese traditional medicine cluster in Tonghua moved beyond the narrow view of EEG, highlighting the key role China's macro institutional transitions played in enabling local corporate strategic behavior and cluster dynamics. It is suggested that industrial change of OIAs in the Chinese context is more likely to be influenced by macro, systematic, and collective socio-institutional forces, despite local impact factors. Secondly, Hu (2015) explored the path creation mechanism of coal-chemicals in Zaozhuang, by which he revealed that the ranking

system of SOEs in the region, which resulted in a fragmented and conflicted local political economy, prevented local coal firms starting business in the coal-chemical industry but only focusing on the old ways of doing things: mining. The new industry was largely initiated by external market-led entrepreneurial discovery process. The two examples suggest that OIAs in China tend to have been strongly affected by political-institutional impact factors and have shown a multi-scalar 'noisy' process of industrial restructuring. The role of both the local and national political economy, and the underlying power interplay among SOEs, private and public institutions from multiple scales should be placed at the core of research. This may be able to explain the contradiction with regard to the co-existence of multiple but incoherent institutions and paths, namely a region may present eagerness of maintaining old paths but simultaneously show interests in fostering alternative paths.

Therefore, the Chinese OIA context suggests taking the dynamic role of the state, policies and socio-political forces into account in addition to the firm-based perspective. In this respect, an encompassing approach that combines an institutional, relational and multi-scalar perspective can be relevant to explain the complexity of evolution in OIAs in China. There are three questions that need to be taken into analyses: 1) how do local, regional, national and global firms, stakeholders and authorities with a geographical political economy perspective change the local selection environment for new industry formation (or old industry exit) in Chinese OIAs? 2) Related to the first question and, given the fact that unfinished decentralization (such as the *tiao-kuai* administrative system and the ranking system of SOEs) is not uncommon in Chinese OIAs, how does the institutional asymmetry and fragmentation affect local efficiency and quality for renewal? Precisely, how do local state actors interact with differentiated-ranking and multi-spatially embedded entities such as private firms, SOEs, public institutions and policy agencies, in combination, to influence regional adaptability? 3) It is recommended to scrutinize the varieties of path-renewal/creation in terms of process, mechanism and outcome, through conducting cross-regional/national comparative research, so as to explore why some OIAs more focus on developing continued industries while others are interested in initiating alternative ones.

Thirdly, the role of individuals is missing in the existing literature on the evolution of OIAs in China. It is strongly suggested that future research needs to pay more attention to the role of human actors in general and local state officials in particular in the restructuring of OIAs. As Ma (2002) has convincingly stated, 'any conceptualization of local economic restructuring (in China) must humanize the state and take into consideration the role of the local leaders and their economic and political interests'. This is because in the Chinese context local government leaders are endowed with sufficient decision-making power to mobilize locally controlled natural and public resources for certain economic purposes. They are also politically encouraged to act as 'institutional entrepreneurs' seeking for regional economic growth, as long as the expected results do not come into conflict with national political and economic agendas/aims. This fuzzy boundary of states and enterprises has been apparent in the SOE-dominated OIAs, where local officials may take formal or informal positions in SOEs. We thus plea for future research to examine the role of human-based state agency, such as local state leadership in shaping the evolution of OIAs in China. Possible research questions can be: 1) how and to what extent local government leaders and their leadership plays a role in facilitating industrial change? 2) What is the causal relationship between local key elites, institutional change and the formation of new industries? 3) How do state leaders in different OIAs read the same shock, and how do they interpret and react to the changing contexts, and why they might act differently on industrial restructuring? We strongly assume that using a human agency perspective, especially the idea of place leadership can provide a better understanding of the motive and logic of micro-scalar institutionalization for regional industrial change in China's OIAs.

Finally, linking to Section 2.4, research questions should be closely situated into the latest contexts in China. Particularly, in a post-crisis era Chinese OIAs are more vulnerable and thus confront more difficulties than other types of regions in terms of economic recovery and redevelopment (Hu, 2012). We suggest that future research needs to think of the resilience of China's OIAs, attention should be paid not only on how OIAs adaptively manage short-term recovery after one-off shocks, but also on how they act to cope with long-term adaptation for sustainable development, and why they

adapt differently. One research avenue, for example, is to comparatively explore the adaptation and adaptability of different resource-exhausted cities in the face of a similar 'slow-burn' crisis, and the determinants behind this process. Regarding to the 'new normal state' context, a recent article shows that despite the implementation of strict top-down environment measures, through compelling localities to shut down heavily polluting factories, different regions may interpret these measures differently and implement them pragmatically according to their own interests (Economist, 2015b). This, indeed, mirrors a widespread bureaucratic phenomenon in China, namely '*shang you zhengce, xia you duice*' (the top has measures while the bottom has countermeasures). Therefore, another research avenue might explore why some OIAs take national policies seriously and put them into action while others not. We argue that it may be useful to apply a geographical political perspective, focusing not merely on localized conditions, but more on local-central relations and the broader changing institutional environment. Last but not least, putting China's OIA in transition into the changing global production networks, global value chains, and national/global labor mobility can also generate insightful findings.

6 Conclusions

In this paper we have made clear that ample research has been done on the restructuring OIAs in China. Doubtlessly the restructuring of OIAs in China is highly complex as it is not only affected by industrial-sectoral impact factors but also by political-institutional forces (Hu and Hassink, 2015). With the help of a critical review of Chinese-speaking articles in Chinese-speaking geography journals on this topic we have shown that the majority of papers focuses on policy-making recommendations related to the restructuring of OIAs in China. On a critical note, we identified some clear deficits, such as the limited attention paid to dynamic multi-scalar interactions between firms, institutions, policies and places, as well as a too strong focus on single cases. Most reviewed articles also disregard internationally recognized concepts and theories in the field, although much conceptual and theoretical work has been recently developed in English-speaking publications. On the basis of a review of these recently devel-

oped concepts and theories, we suggest some evolutionary economic geography concepts such as path dependence, lock-in, path creation and relatedness, as well as institutional and leadership approaches as useful concepts for a better understanding of the evolutionary processes and mechanisms of old industrial areas in China.

Using these concepts as a framework for future research on the restructuring of OIAs in China has in our view four main advantages. First, they help to overcome some of the identified deficits identified in this paper with the help of a critical literature review. Secondly, they will provide more in-depth and comprehensive explanations for the successes and failures of restructuring in different OIAs in China. Thirdly, by providing more in-depth and comprehensive explanations researchers will also be able to derive more accurate and tailor-made policy recommendations going beyond the blueprint solutions produced in many existent studies. Last but not least, using and testing these international concepts in the Chinese context helps to make clear their explanatory boundaries. It will help to advance theoretical fundamentals by reflecting on underlying weaknesses of international theories, that is, 'theorizing back' at economic geography (Yeung and Lin, 2003; Yeung, 2007). Moreover, using them helps to build more solid intellectual bridges between Chinese and international geographers (Liu, 2009).

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