REVISITING THE ENVIRONMENTAL KUZNETS CURVE: A PERSPECTIVE OF WICKED PROBLEMS

Jingling Chen, College of Business, Yangzhou University, Huayangxi Road 196, Yangzhou, Jiangsu, China, 225127, 180 12132082, chenjl@yzu.edu.cn
Rob van Tulder, Business & Social Management, Rotterdam School of Management, Erasmus University, Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands, +31 10 4081194, rtulder@rsm.nl
Tao Eric Hu, David Nazarian College of Business & Economics, California State University at Northridge, 18111 Nordhoff Street, Northridge, CA 91330-8372, 818-677-4012, eric.hu@csun.edu

ABSTRACT

This study revisits the evolving process of the EKC from the perspective of wicked problems, arguing that the shape of the pollution-growth curve is determined by the attitude transition towards pollution of societal actors .The triggering events of high strength can expedite the attitude transition to climb over the EKC turning point. We also discuss the iconic events over the threshold for different democracies. From the societal perspective, this paper contributes a theoretical analytical framework that shall bridge the knowledge gap between the EKC hypothesis and the empirical tests.

Keywords: economic growth; pollution emission; wicked problems; societal actors; attitude transition

INTRODUCTION

Since the 1960s, the environmental degradation has received considerable attention, and conflicting wide variety of mixed points of views have been rising about the nexus between economic growth and the environmental degradation. It has been controversial whether fast industrial growth is the root cause behind the deterioration of the environment, or economic growth could provide the necessary resources to tackle the problem of the environment. Among rapidly expanding empirical literature focusing on the phenomena, the hypothesis of the Environmental Kuznets Curve (EKC) has gained influential attention. Panayotou (1993), inspired by the empirical studies of Grossman& Krueger (1991), introduced the term EKC in the literature due to its resemblances to the Kuznets hypothesis of income inequalities. The study examined the cross-country dataset and found a strong causal link between pollution emission and economic growth as an inverted-U curve (see Figure 1). At the beginning phase of economic growth, a limited generation of waste can be identified due to the limited economic activity. In the course of industrialization, the amount of wastes increases along with the pace of economic growth. Later on, as the economy grows further, service industries expand, technology progresses, information diffuses, etc., all of which would rationalize the material consumption of economic life resulting in the overall reduction of environmental degradation and an improved environmental situation. The EKC hypothesis-driven research has been extensively conducted on the basis of three end-to-end viewpoints: ‘too poor to be green’ (Beckenman, 1992), ‘certain environmental problems are linked with the deficiency of

economic development' (World Development Report, 1992) and 'grow up first, clean up later' (Rock & Angel, 2007).

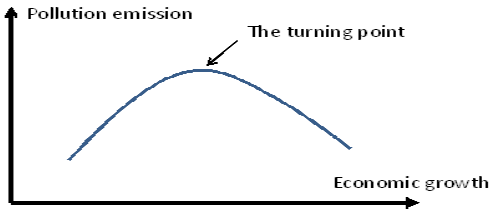

Figure1 Environmental Kuznets Curve hypothesis about pollution-growth relationship

So far, researches tend to apply econometric studies to validate the consistency of the empirical experience with the EKC hypothesis (Stern, 2004; Shahbaz et al., 2013; Al-Mulali et al., 2014; Apergis&Ozturk, 2015; Bilgili et al., 2016, etc.). The findings are so fragmented with more and more control variables included while there are always some key factors covered in the random variables. The extant methodologies and econometric techniques of the EKC studies are therefore questioned since the empirical results are very sensitive to the assumptions, specifications and functional forms (Muller-Furstenberger&Wagner, 2007; Aslanidis 2009). Till now no theoretical framework explains the empirical differences of the pollution-growth trajectories, or provides reliable ways how can achieving the EKC turning point helps maintain economic and environmental goals. This is the point this paper attempts to make.

THE WICKED NATURE OF POLLUTION

Wicked problems are closely related to a large set of social issues and a wide range of responsibility attributed (Rittel& Weber, 1973). The environmental issues are often termed 'wicked problems' by sociologists due to its innate complexity and because the wicked problems cannot be simply reduced to actionable personal goals to address (Coulton et al., 2014). Addressing these issues and identifying right reasonable solutions need the involvement and commitment of all stakeholders (Watkins& Wilber, 2015).

Van Tulder, Van Tilburg, Francken &Da Rosa (2014) proposed the approach of societal triangulation, illustrating three layers of the wickedness related to behaviors and interests of the societal stakeholders surrounding the issue (see Figure 2). The first layer is referred to as the *failure* of 'fiduciary duty' of any actor. (a) Firms, for instance, fail to invest on purification to avoid extra cost due to cross-border externality of the pollution. They create (and suffer from) 'market failure'; (b) Governments are not able or willing to formulate and/or enforce environmental laws, leading to 'governance failure' in terms of governmental incompetence in pollution supervision and policy implementation; (c) Consumers naturally prefer lower price even acknowledging the commodities are supplied by dirty production, and tend to enjoy extravagant life given income increased. But civil organizations that do not adequately organize the mutual support of citizens can provide poorly managed social (or club) goods, for instance, heavy smog in some regions of North China are produced from household heating instead of central heating.

Figure 2 Analyzing the causes of wicked problems using societal-triangulation Model

The second layer of wickedness is originally related to the unwillingness of a sector to take up *responsibilities* beyond its primary stakeholders. In a dilemma, there is also the danger of 'crowding out' when one sector takes up too much *responsibility* that the degree of wickedness rises. We describe the situation in more detail below: (a) For good reputation, firms take the initiative to report their efforts on the abatement to the public, yet they always stay on the level of superficial reports and allegations of window dressing because they want to link the 'strategy' to their business performance. Moreover, the corporate initiative can be an excuse of governmental nonfeasance and deregulation; (b) States can extend their responsibility for instances making them engaged in 'facilitating' or 'endorsing' activities. This can be done through subsidies or other indirect measures through which they influence environmental-friendly production and consumption other than through laws (mandating). But it tends to cause the deviation of corporate and social decisions from assuming their environmental responsibility to gaining more government subsidies; (c) Civic organizations take up responsibilities beyond their own community or club taking the shape of 'social enterprises', for instance, offering technic support to help the enterprises for clean production. This can be an excuse again for the governments to remove their fiduciary duty for the provision of the public goods-good living environments.

The third layer of wickedness represents the *risk* of collective actions. Pollution is far beyond individual responsibilities to address, and needs certain societal set-up establishing an appropriate level of social, economic and ecological regulations. But societal actors involved tend to be reluctant to take actions because the risk is too high without the cooperation of other actions. Moreover, managing the collaborative initiatives is quite complex because sector, organizational, disciplinary, and institutional boundaries that once seemed clear are now rapidly dissolving (Waddock, 2013). Levin, Cashore, Berstein & Auld (2012) define pollution as 'super-wicked' problems because existing governance mechanisms and policies are almost wholly inadequate to cope with it. In the end, all societal actors should take shared value creation strategies (Porter & Kramer, 2006), and systematic change approaches should be employed in terms of proactive attitude (Torugsa et al., 2013). Before that, societal actors irrationally discount the future, i.e., little consideration is given to the needs of the future, despite their centrality in the Brundtland Commission's definition of sustainability (Brundtland Commission, 1987). Next we discuss the influence of attitude transition on the trajectory of pollution-growth curve and put forward the propositions.

FOUR-PHASE ATTITUDE MODEL AND ATTITUDE TRANSITION OF SOCIETAL ACTORS

Including environmental issues, wicked problems are always related to sustainability (Waddock, 2013), towards which societal actors can hold different attitudes varying from negative to positive with a continuous spectrum in the process of economic growth. We employ a four-phase-attitude model to facilitate the research into the transition. For societal actors, the motivation for pollution may be guided by their core interests or external pressures. Actors may consider environmental protection either as a burden (liability) or as a responsibility. Thus the model distinguishes between four characteristic phases through which actors move in general in terms of attitude and behavior towards societal contributions (see Figure 3).

		Basic attitude			
Societal responsiveness		Liability		Responsibility	
	Intrinsic	Inactive		Active	
	(mixed)				Proactive
	extrinsic		Reactive		

Figure 3 Four-phase attitudes towards sustainability

Intrinsic motivation determines whether an actor deals with pollution and approaches sustainability actively or inactively. An inactive attitude is a fundamentally introverted attitude and is strongly utilitarian, leaving the majority of the responsibility with other stakeholders, as long as they do not directly affect the holder's interests. An actor with active attitude, by contrast, finds it is necessary to take responsibility for pollution, with more moral and strategic attitude to sustainability, regardless of society's response, and he is intrinsically motivated to move forward and becomes the frontrunner. The extrinsic attitude is defined as the willingness to take the first action when pollution comes to a societal problem affecting the interests of all the societal actors. A reactive actor will only respond when addressed and inform his close-related stakeholders whereas a proactive actor will take action first and initiate a strategic dialogue involving all related stakeholders of different degrees. Accordingly, the great difference between activeness and proactiveness is whether or not to be involved in strategic stakeholder dialogue (Van Tulder et al., 2004) and sincere cooperation among them.

We can see pollution emission should increase with economic growth if any of societal actors show the inactive attitude and performances. It cannot imagine the governments show ignorance to the environment degradation of dirty production and pollution-intensive consumption. At the same time, abasement activities-such as reducing emissions, waste, and depletion-require enterprises' attention inwards to its technical core, focusing on processes that stimulate technological advances and build operational efficiencies (Bansal et al., 2014), so pollution abasement is also not possible without the active participation of enterprises. Turning to the consumption side, we can see any improvement in environment quality by technological advancement or by structural changes from production side will be offset if final consumption remains pollution intensive and consequently, the whole effect may be greater environmental degradation (Wagner, 2010), thereby presenting N-shaped curve of pollution-growth relation for advanced countries (Fried& Getzner, 2003; Li et al., 2005; Gill et al., 2017).

Propositions 1: *If any of societal actors hold the inactive attitude, pollution emission will increase in the end with the economic growth, even if technologic progress can temporary benefits to improve environments, that is, the pollution-growth curve may present a wavy line but with upward tendency.*

When characterized as reactive towards pollution and sustainability, the actor has a fundamental attitude based on liability and tends to react to stakeholders. Though a step forward compared to inactive phase, the performances are always showcasing particular time and place and special occasion, avoiding a complete and honest overview and even seeking for excuses to escape responsibility. Whereas pollution and ecological sustainability encompasses the long-term strategy and viability of organizations and societies, broadly speaking, human civilization (Batie, 2000), it should engage all the societal actors in analysis and dialogue emotionally, logically and systematically (Giannachi, 2012). The starting point is an expression of faith, to become responsibility rather than liability, that is, the actor should hold the active attitude, addressing pollution and sustainability from the responsible position, based on his individual vision and level of ambition. Moreover, all societal actors should conform to be active otherwise 'crowding out' responsibility will happen and damage the interests of the active actor(s) according to the arguments above in the societal-triangulation model.

Propositions 2: *The EKC turning point cannot be expected until all the enterprises, governments and civil society hold the active attitudes towards pollution abatement, which is a necessary condition to let low emission maintainable.*

TRIGGERING EVENTS IN ATTITUDE TRANSITION

Attitude transitions can be achieved in different ways. Some can be evolutionary, others more revolutionary. The most common route is presented the inactive-reactive-active-proactive order with the pollution situation more and more serious gradually arousing the attitude transition. It is not obvious that one actor's attitude can directly switch from an inactive to an active mode, often it must move through a period in which his performance is partially reactive. And it is also rare cases the reactive attitude can skip to the proactive one, it should go through the session of initiating the responsibility. So most revolutionary transition represents accelerated evolution (c.f., Pirsch et al., 2007) rather than skips one or two phases, in which the triggering events of high strength play a critical role to prompt actors' attitude transition towards, because organizations get interested and respond to the events only when the events have happened and are found to be important (Morgeson et al., 2015). As illustrated, super wicked problems like pollution need to seek urgent responses, triggering events can be made in a particular context to expedite the attitude transition.

Propositions 3: *The triggering events of high strength can expedite the attitude transition of societal actors by enhancing drivers or weakening even eliminating barriers, so that more revolutionary transition can be expected in addressing pollution, which means the EKC turning point can be achieved earlier.*

DISCUSSION: ICONIC EVENTS OF THE EKC TURNING POINT FOR DIFFERENT DEMOCRACIES

Environment is an inclusive term encompassing both natural and human systems, and the latter refers to interconnected aggregation of economic, political, and social systems (Glavovic et al., 1997). Nowadays pluralistic democracies and centralized democracies are two important political systems addressing social, economic and environmental issues.

The school of *pluralistic democracies* stresses that an environmental program should be negotiable by involving all stakeholders, and the government function as an independent third party facilitating interactions to advance the resolution process and legalize the agreement (Amy 1987; Glasbergen 1995; van Bueren et al., 2007). The capability of balancing economic and sustainable developments can become a crucial competitive advantage for the enterprises (Hart, 1995; Judge &Douglas, 1998). The school of the *centralized democracies* such as one in China instead consider environment related issues the primary responsibility of the government and civil organization (i.e. non-government organization, NGO) only serve as helping hands for the government, rather than raise conflicts and complaints about the government performances (Ho, 2001; Child et al.,2007; China Development Brief, 2013).Yet in the process of law enforcement, lots of regulations can be bargained in and between societal actors for their self-responsibility, which displays fundamental dilemmas of legal effectiveness, especially for the collective goods (Ruigrok and van Tulder, 1995).

Propositions 5: *For pluralistic democracies, reaching an environment-oriented agreement of in economic growth is a critical sign of climbing over the EKC turning point, while, for centralized democracies, the iconic event crossing the threshold is a process from the establishment of environment-oriented policy by the government to the active implemented accordingly by all the societal actors.*

FURTHER RESEARCH

Our next work is to design a set of measurements to classify the attitude types of any stakeholder, and the qualified leaders and organizations should be picked out accurately who can head and promote the attitude transition of the other stakeholders, which should be great meaningful to achieve sustainability in all aspects.

References are available upon request from the authors.