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Papers

R. Nilakantan; D. Iyengar	Beyond Size: The Rise in Power of the Transaction Sector in Post-Liberalization India	3
P. Roy; M. Motiani; P. Prakash Dewani	Are we set for Electric Cars? Questioning the Environmental Readiness of India	21
M. Lukovics; B. Zuti	New Functions of Universities in Century XXI Towards “Fourth Generation” Universities	33
L. Bergnach; A. Pocecco	The Identitarian Re-Interpretation of Italians from Istria	49
K. Zaman; I. A. Shah; I. Naseem	Estimating Working Poverty in Pakistan Evidence from National, Rural and Urban Population	69
Wei Zhao	Is R&D Upgrading China from Imitation to Innovation? An Institutional Analysis of Absorptive Capacity	79

Junior Research Working Papers

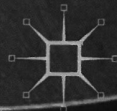
Lu Yi	A Strategy to Overcome Great Pressure for Graduates Employment in China (Reprint from Journal Global Policy and Governance, Vol. 3 N. 1)	109
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STABILITY WITHOUT STATEHOOD

**Lessons from Europe's History
before the Sovereign State**

PETER HALDÉN



Beyond Size: The Rise in Power of the Transaction Sector in India Post-Liberalization

Rahul Nilakantan • Deepak Iyengar

Abstract The macro literature on transaction costs has hitherto focused only on the input side while assessing the importance of the transaction sector. This ignores the nature of services provided by the sector to facilitate exchange in the economy. We use the tools of Social Network Analysis as well as Indian Input-Output tables to examine the magnitude, direction (both input as well as output), and network structure of the pattern of resource exchanges between the transaction sector and the rest of the Indian economy in the post-liberalization era. We find that although resource use by the transaction sector is increasing over time, the sector is relatively isolated from the rest of the economy on the input side, indicating a lack of importance from a network perspective. In contrast, the transaction sector is highly integrated with the rest of the economy on the output side. Further, there is a high level of dependence of other sectors on the transaction sector to conduct resource exchanges. Increasing network density is accompanied by a simultaneous decentralization of the economy, supported by the rise in importance of the transaction sector on the output side.

Keywords Transaction sector - Liberalization - Social network analysis

JEL Classification C67 - D23 - D57 - E01

1. Introduction

Wallis & North (1986, pg.95) observed that transaction costs i.e. the costs of making exchanges have assumed an important role in explaining the structure of market and non-market forms of economic organization. They made the first attempt to quantify transaction costs at the macroeconomic level by focusing on the sum of resources used by economic actors associated primarily with making exchanges i.e. transacting.

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This sum of resources is their estimate of the transaction sector in the economy. In doing so, they shed light on a hitherto unexamined aspect of structural transformation in the US economy i.e. the steady increase in transaction costs over time, as measured by the increase in the size of the transaction sector as a proportion of GDP. The growing size of the transaction sector as a proportion of GDP can be explained in terms of the greater division of labor that accompanies economic development, giving rise to more exchange and hence requiring more resources to be spent on transacting (Wang 2007). Further, during the development process, hitherto non-market transactions start occurring through the market, thus reinforcing the need for greater resources to be spent on transacting (Chobanov & Egbert 2007).

Although the methodology of Wallis & North (WN hereafter) did not go unchallenged (see Davis 1986 for a critique), their seminal paper was followed by a burgeoning literature that has measured the size of the transaction sector at the macroeconomic level for different countries over different periods of time (see Wang 2007 for a survey). In all the countries analyzed, the size of the transaction sector as a proportion of GDP was found to be large and increasing over time, reflecting an increase in transaction costs over time (see Table 1).

Table 1 Some estimates of the size of the transaction sector

Paper	Country	Start year	Fraction of GDP	End year	Fraction of GDP
Wallis & North (1986)	USA	1870	25%	1970	54%
Dollery & Leong (1998)	Australia	1911	32%	1991	60%
Ghertman (1998)	USA	1960	55%	1990	62%
	Japan	1960	40%	1990	56%
	Germany	1960	38%	1990	52%
	France	1960	34%	1990	63%
Dagnino-Pastore & Farina (1999)	Argentina	1930	25%	1990	35%
Chobanov & Egbert (2007)	Bulgaria	1997	37%	2003	53%

Note: Adapted from Datta et al 2011

WN and the subsequent literature measured the importance of the transaction sector in the economy by looking at its size in terms of resources used by the sector. However, this approach looks only at the input side, ignoring the services provided by the transaction sector to the rest of the economy to facilitate exchange in the economy. Given the role of the transaction sector as a facilitator of exchange, any measure of importance of the sector must take simultaneous cognizance of both the input side as well as the output side. We argue that a comprehensive measure of importance of the transaction sector should examine both the magnitude and direction (both input as well as output) of its resource exchanges, as well as the position occupied by it in the network structure of the economy.

Social Network Analysis (SNA) provides such a comprehensive approach to assessing

importance in terms of “power” of the sector, where power is measured using the SNA concepts of centrality, betweenness, and closeness (see for example Borgatti & Everett 1992; Borgatti & Foster 2003; Brass 1992; Brass & Burkhardt 1993; Iyengar et al 2012). The centrality of the transaction sector measures the number and strength of direct ties (resource exchanges) between this and the rest of the economy. Betweenness is a measure of the extent to which the rest of the economy depends on the transaction sector to conduct exchanges by virtue of its intermediation of the commodity exchanges in the rest of the economy. Closeness is a measure of the strength of indirect ties between the transaction sector and the rest of the economy (Brass 1992).

By focusing simultaneously on magnitude, direction (both input use as well as output supply), and network structure of the pattern of resource exchanges between sectors, the SNA conceptualization of importance of a sector in terms of power confers two benefits. First, it allows us to see whether the results of WN and their followers on the importance of the transaction sector are robust to an alternate conceptualization of importance. Second, it allows us to get at the fundamental issue of how the manner in which the transaction sector performs its primary function of facilitating exchange in the economy, affects both itself and the economy as a whole. The latter issue has hitherto been ignored in the literature, but is important to explore if we are to understand how the structure of market and non-market forms of economic organizations evolve in an attempt to minimize transaction costs (which the literature has already shown to be large and increasing through time). To these ends, we apply the tools of SNA to Input-Output tables (I-O tables hereafter) for post-liberalization India to examine (1) resource use as well as resource supply patterns for the transaction sector, (2) the direction and magnitude of both direct and indirect linkages between the transaction sector and the rest of the economy, and (3) the network structure of the economy as well as the position in the network occupied by the transaction sector.

We focus on post-liberalization India for our analysis. Prior to the 1970s, the Indian economy was one of the most heavily regulated and protected economies in the world, characterized by the infamous “license-permit-quota raj” and with a substantial informal sector (Kotwal et al 2011). This regime had four pillars of control, all of which were substantially eased in the 1991 reforms: (1) tariff and non-tariff barriers to imports, (2) restrictions on both domestic and foreign private investment, (3) state control of banking and insurance, and (4) public sector monopolies (Kotwal et al 2011). With the retreat of the state from the commanding heights of the economy and increased scope for private sector participation in the economy, the post-liberalization period was accompanied by increased marketization and formalization of transactions, the concomitant increased division of labor and specialization, and increased integration with the rest of the world. This period therefore provides an ideal testing ground for an analysis of how the manner in which the transaction sector performs its primary function of facilitating exchange in the economy, affects both itself and the economy at large.

We find that although resource use in the transaction sector is increasing over time, the sector is relatively isolated from the rest of the economy on the input side, indicating a lack of importance from a network perspective on the input side. In contrast, the

transaction sector is highly integrated with the rest of the economy on the output side. Thus, results of WN and their followers on the importance of the transaction sector are robust to an alternate conceptualization of importance, although importance is now on the output side, not the input side as originally conceived by WN.

Further, there is a high level of dependence of other sectors on the transaction sector to conduct resource exchanges. Increasing network density of the economy as a whole is accompanied by a simultaneous decentralization of the economy, supported by the rise in importance of the transaction sector on the output side. Thus, the manner in which the transaction sector performs its primary function of facilitating exchange in the economy, affects both itself and the economy at large. The rest of the paper is organized as follows. SNA concepts of power and their application to the transaction sector are reviewed in Section 2. Section 3 describes the data and discusses the results, and Section 4 concludes.

2. SNA and the transaction sector

The concept of power was first enunciated by Emerson (1962). Emerson describes power as the ability of a person (actor) to control or exert influence on others. Emerson also clarifies that power is a property of a social relation rather than an attribute of an actor. In effect, this means that in order to measure power, we would have to look into the overall network structure to gauge the relative powers of the various actors making up the network.

SNA is useful to measure power in the context of a network as a whole, given that there are relationships and interdependence between actors in the network (Borgatti & Foster 2003; Brass 1984; Casciaro & Piskorski 2005; Pfeffer 1981). Central actors are more powerful than peripheral actors in a network due to their higher levels of access to information and resources (Casciaro & Piskorski 2005). In an organization context for example, centrality of employees was found to be positively associated with power (Brass 1984, 1985; Burkhardt & Brass 1990; Fombrun 1983, 1986).

SNA associates centrality with three different aspects of power: alternatives, access, and control (Brass and Burkhardt 1993). An actor with more opportunities and alternatives for information and resources has more power in the network. Degree centrality measures alternatives by the number of actors who connect directly with the focal actor. An actor with greater access to the network i.e. better able to reach other actors or more reachable by other actors, has more power. Closeness centrality measures access by summing the lengths of the shortest paths from a focal actor to all other actors in a network, thus accounting for both direct and indirect links between actors (Brass 1984; Freeman 1979; Freeman et al 1980). Control refers to the ability of an actor to facilitate or prevent exchanges between other actors. Betweenness centrality measures control by computing “the extent to which a focal person falls between pairs of other persons on the shortest path connecting the pairs.” (Brass and Burkhardt 1993, pg. 446) Degree and closeness centrality can be analyzed separately for incoming and outgoing links between actors. An independent analysis of incoming and outgoing connections helps test whether these connections are equal or not in terms of the three aspects of

power.

An I-O table is a representation of an economy as a matrix of commodity flows between industries. It shows inter-industry transactions in value terms at factor cost. We use commodity by industry I-O tables, where the columns represent the industries and the rows represent the groups of commodities which are the principal products of the corresponding industries. Rows depict supply of commodities to the different industries for intermediate consumption and final use. Columns depict commodity inputs of raw materials and services that have resulted in the outputs of the particular industries¹ (CSO 1997). An I-O table therefore provides a network representation of an economy, where industries are actors, and ties between actors are resource exchanges between industries. Strength of a tie between two industries is measured by the value added by the inputting industry to the receiving industry (Iyengar et al 2011). Value added by one industry to another is given by v_{ij} , where v_i is value added by industry i to industry n , o_{ij} is output from industry i to industry n , i_{ij} is input used by industry i from industry j .

Following the literature, we consider the following industries to comprise the transaction sector: Communication, Trade, Banking, Insurance, and Other Services². The degree centrality of the transaction sector can be measured by the number and strength of direct ties between this and the rest of the economy. The greater the extent of division of labor and specialization in the economy, the greater will be the number of industries that will have need of transaction services, and the greater will be the need of transaction services by any given industry. This will necessitate an increase in the number and strength of ties between transaction sector and the rest of the economy, thus increasing the degree centrality of the transaction sector. We measure degree centrality following Freeman (1979) as d_i where v_{ij} is the value added by the output of the producing industry i when sold to the consuming industry j .

Closeness is a measure of the strength of indirect ties between the transaction sector and the rest of the economy. An indirect tie exists if there is a commodity exchange between the transaction sector and another industry via a third industry. Closeness centrality is measured by c_i , where d_{ij} is the geodesic distance between the focal industry i and all other industries j . Closeness centrality thus helps check whether an actor is central only in a particular neighborhood of the network or is central to the network as a whole (Borgatti & Li 2009). The nature of the services provided by the transaction sector implies that as division of labor and specialization increases in the economy, the sector will become more central to the economy as a whole rather than only to some subset of the economy, thus implying increasing closeness centrality of the transaction sector.

Betweenness is a measure of the extent to which other industries depend on the transaction sector to conduct exchanges. As the transaction sector facilitates exchanges between different industries, commodity exchanges between different industries must

1 For further information on construction of I-O tables in India, see CSO's website at http://mospi.nic.in/Mospi_New/site/inner.aspx?status=2&menu_id=92.

2 Other Services includes public administration, business services, computer and related activities, legal services, real estate activities, information and broadcasting, renting of machinery and equipment, recreation and entertainment, and other communication, social and personal services.

necessarily be accompanied by the simultaneous purchase of transaction services by these industries from the transaction sector. The transaction sector therefore occupies a position “between” other industries because of its intermediation of the commodity exchanges between these industries. Thus, the greater the extent of division of labor and specialization, the greater is the betweenness of the transaction sector. Betweenness centrality is measured as $\frac{1}{(n-1)(n-2)} \sum_{i \neq k \neq j} \frac{1}{d_{ik} + d_{kj} - d_{ij}}$, where d_{ik} is the geodesic distance between actors i and j passing through focal actor k , and d_{ij} is geodesic distance between actors i and j .

3. Data and results

This study limits its focus to the commodity exchange relationships within the Indian economy during the post-liberalization period. The main source of data are the I-O tables for the years 1993-94, 1998-99, 2003-04, and 2006-07, compiled by the Central Statistical Organization (CSO) of the Government of India. These are the only tables available for the post-liberalization period. The specific industries used in the analysis are given in Table A1 in the Appendix.

The I-O tables from 1993-94 through 2006-07 give us fourteen years’ worth of data for the post-liberalization period. As new sectors emerged in the Indian economy during this period, it became necessary to aggregate / disaggregate industries so that all I-O tables used were of identical size i.e. 111x111. Also, all prices were adjusted for inflation using Nation Master’s GDP deflator index, so as to make them consistent with 1999-2000 price levels. We used the UCINET 6 (Borgatti et al 2002) software program, a popular SNA tool, to compute the various power metrics reported below.

Recall that the main issues this paper deals with are: (1) resource use as well as resource supply patterns for the transaction sector, (2) the direction and magnitude of both direct and indirect linkages between the transaction sector and the rest of the economy, and (3) the network structure of the economy as well as the position in the network occupied by the transaction sector. We first discuss resource use patterns, using the notion of degree centrality. Table 2 shows the ranks of the constituent industries of the transaction sector³ in weighted and unweighted indegree centrality, and Figure 1 depicts the corresponding raw scores. Weighted measures of centrality use quantum of value addition between industries. Unweighted measures of centrality replace quantum of value addition with an indicator variable taking the value 1 if value addition occurs between industries and 0 otherwise. Thus, weighted indegree centrality figure for each industry shows the resource use by that industry. Unweighted indegree centrality figure for each industry shows the number of other industries from which the particular industry has drawn resources.

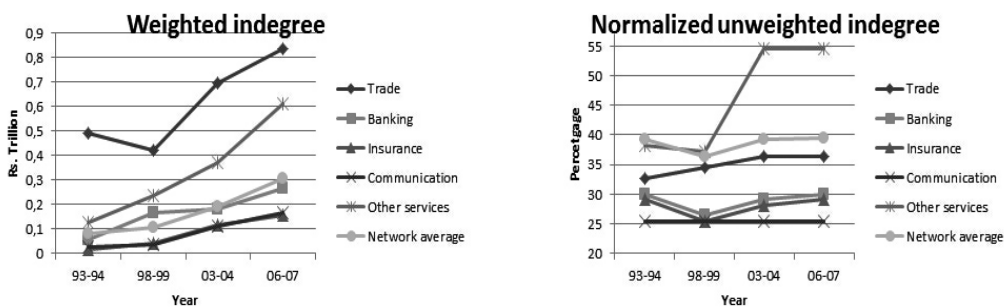
Table 2 Transaction sector weighted and unweighted indegree centrality ranks

³ Recall that the transaction sector includes Communication, Trade, Banking, Insurance, and Other Services.

Sector	Weighted indegree centrality ranks				Unweighted indegree centrality ranks			
	1993-94	1998-99	2003-04	2006-07	1993-94	1998-99	2003-04	2006-07
Trade	3	4	7	8	80	71	68	69
Banking	47	19	35	36	82	83	84	83
Insurance	84	58	48	51	83	84	85	85
Other Services	21	12	12	11	69	61	14	14

Figure 1 Indegree centrality of the transaction sector

Note that the Trade, Banking, and the Other Services industries have always been in the



top half of the weighted indegree centrality rankings, and also have centrality values higher than the network average (see Figure 1), while the Communication and Insurance industries began in the bottom half of the rankings, but entered the top half by 2003-04 (see Figure 1). Further, all constituent industries of the transaction sector except Trade have experienced significant increases in their weighted indegree centrality rankings from 1993-94 to 2006-07 (see Figure 1). Thus, resource use in the transaction sector is both relatively large (since most constituent industries appear in the top half of the rankings) as well as increasing over time, thus appearing to reinforce the findings of WN and their followers regarding the importance of the transaction sector insofar as resource use is considered. However, we will show that from a network perspective, the transaction sector is relatively isolated from the rest of the economy, and thus less important on the input side. Recall that the unweighted indegree centrality figure for each industry shows the number of other industries from which it has drawn resources. Note that in contrast to the weighted degree centrality results, the ranks of all constituent industries of the transaction sector except Other Services have always been in the bottom half of the unweighted indegree centrality rankings, and also have centrality values lower than the network average (see Figure 1). This implies that although the transaction sector may use a relatively large amount of resources, it does so from a relatively small

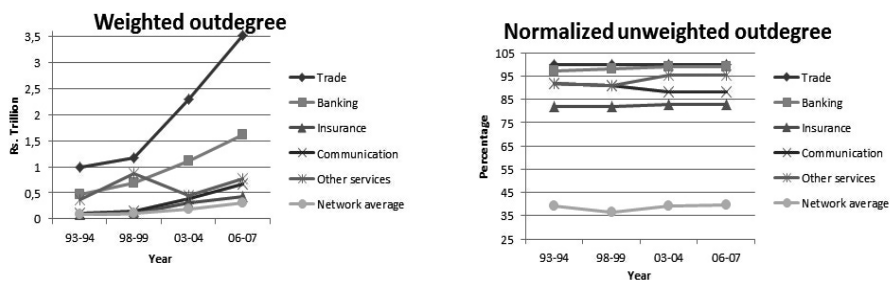
number of industries. Therefore, from a network perspective, the transaction sector appears to have relatively low power on the input side since it has fewer alternative ways to satisfy its resource needs (Wasserman & Faust 1994). Further, the sector⁴ does not appear to be central to the network since its constituent industries do not have access to many other industries, and consequently are unable to leverage more of the collective resources of the network (Borgatti et al 2002), indicating a relative isolation from the rest of the economy. The role of the transaction sector is to facilitate transactions in the economy, which can be done only if the sector supplies its transaction services to the rest of the economy. Therefore, we argue that the importance of the transaction sector should not be evaluated based on input side measurements, as has been done by WN and their followers, but rather on the basis of the nature and quantity of services the sector supplies to the rest of the economy i.e. on the output side. The SNA approach allows us to do this by examining the power of the transaction sector in terms of resource supply to the rest of the economy. Table 3 shows the ranks of the transaction sector in weighted and unweighted outdegree centrality, and Figure 2 depicts the corresponding raw scores. The weighted outdegree centrality figure for each constituent industry of the transaction sector shows the resource supply to the rest of the economy by that sector. Note that all constituent industries have continuously been in the top half of the weighted outdegree centrality rankings since 1993-94, and also have centrality values higher than the network average (see Figure 2). It is clear from Table 3 that resource supply from the transaction sector is relatively large compared to that of other industries of the economy. Clearly, the transaction sector plays a relatively more prominent role in resource supply than in resource use, since rankings are higher across the board in weighted outdegree centrality than in weighted indegree centrality.

Table 3 Transaction sector weighted and unweighted outdegree centrality ranks

Sector	Weighted outdegree centrality ranks				Unweighted outdegree centrality ranks			
	1993-94	1998-99	2003-04	2006-07	1993-94	1998-99	2003-04	2006-07
Trade	1	1	1	1	1	1	1	1
Banking	4	5	5	5	4	4	4	4
Insurance	28	31	15	21	16	16	14	14
Communication	23	21	13	12	7	8	12	12
Other Services	6	2	10	11	7	8	7	7

Figure 2 Outdegree centrality of the transaction sector

⁴ Note however, that the Other Services sector has dramatically increased in power from 2003-04 onwards. Recall that Other Services sector includes real estate, information & broadcasting, and recreation & entertainment; all of which grew rapidly in the post-liberalization era (see Footnote 5).



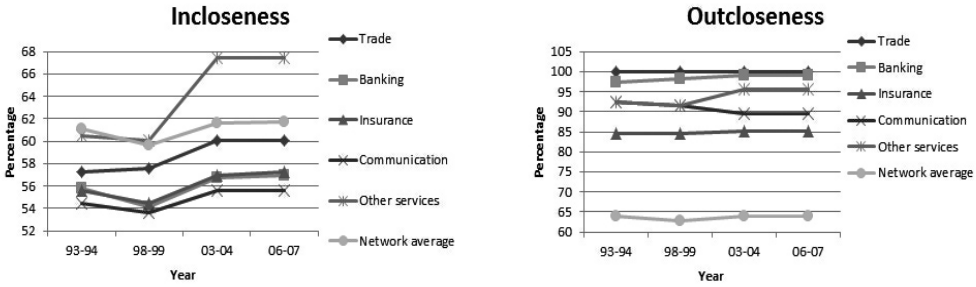
The unweighted outdegree centrality figure for each industry shows the number of other industries to which it supplies resources. Note that unlike in the case of indegree centrality, the ranks of the constituent industries of the transaction sector are high, and not significantly different for weighted and unweighted outdegree centrality. This means that, not only does the transaction sector supply a relatively large amount of resources to the rest of the economy, it does so to a relatively large number of other industries. Therefore, the transaction sector appears to have relatively more power and appears to be more central to the network on the output side than on the input side.

Table 4 shows the ranks of the constituent industries of the transaction sector in normalized incloseness and normalized outcloseness centrality, and Figure 3 depicts the corresponding raw scores. Recall that closeness centrality takes into account the indirect ties of an industry to all other industries in the economy. This is useful since it can identify situations where one industry might be connected directly to a large number of other industries i.e. high degree centrality, but those other industries are relatively disconnected from the network as a whole. In this case, the particular industry could be isolated in the context of the economy as a whole i.e. low closeness centrality (Borgatti & Li 2009). Higher ranks of closeness centrality indicate relatively higher levels of integration with the rest of the economy.

Table 4 Transaction sector incloseness and outcloseness centrality ranks

Sector	Incloseness centrality ranks				Outcloseness centrality ranks			
	1993-94	1998-99	2003-04	2006-07	1993-94	1998-99	2003-04	2006-07
Trade	82	75	69	70	1	1	1	1
Banking	83	94	92	87	4	4	4	4
Communication	91	97	96	98	7	8	12	12
Other Services	71	56	17	17	7	8	7	7

Figure 3 Closeness centrality of the transaction sector

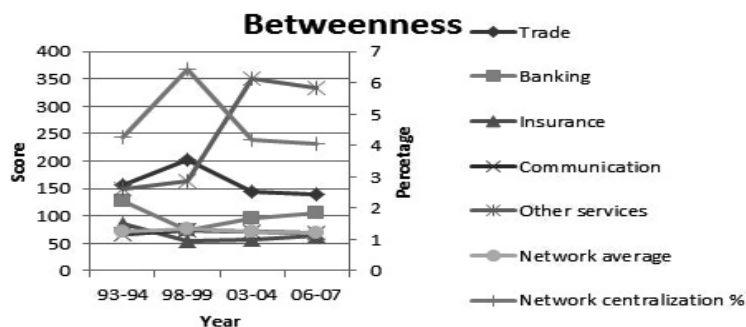


Note that the constituent industries of the transaction sector have relatively low incloseness centrality ranks, and also have centrality values lower than the network average, (see Figure 3), indicating that they are relatively isolated from the rest of the economy on the resource use side. However, the exact opposite is true on the resource supply side. This reinforces our earlier degree centrality results (see Tables 2 and 3) that the transaction sector appears to have relatively less power and appears to be less central to the network on the input side, while the opposite is true on the output side. Therefore, the true importance of the transaction sector, both from a resource as well as form a network perspective, must arise, and therefore be demonstrated primarily on the output side. Table 5 shows the betweenness centrality ranks of the constituent industries of the transaction sector, and Figure 4 shows the corresponding raw scores. Higher betweenness centrality implies a higher probability that a particular industry lies along the resource transfer chain connecting any two other industries. The function of transaction sector is to facilitate transactions between all sectors of the economy – therefore, the constituent industries of this sector should be more likely to occupy a position along the resource transfer chain connecting any two other industries, and therefore have relatively high betweenness centrality. As expected, all constituent industries of the transaction sector appear in the top half of the betweenness centrality rankings, and also have centrality values higher than the network average⁵ (see Figure 4), indicating the high dependence of other industries of the economy on the transaction sector to facilitate exchange.

Table 5 Transaction sector betweenness centrality ranks

Sector	Betweenness centrality ranks			
	1993-94	1998-99	2003-04	2006-07
Trade	16	13	17	17
Banking	20	31	30	26
Insurance	31	40	43	43
Communication	38	32	38	40
Other Services	18	16	2	2

⁵ Except the Insurance sector.

Figure 4 Betweenness centrality of the transaction sector

Note the spectacular improvement in the betweenness centrality ranking of the Other Services industry over the period 1993-94 to 2006-07. This period was marked by the rapid growth of the Real Estate, Information & Broadcasting, and Recreation & Entertainment sectors, all of which are constituents of the Other Services industry⁶. Not only was the Other Services industry already strongly connected with the rest of the economy on the resource supply side (see Table 3), they rapidly added links to the rest of the economy on the input use side (see Table 2) – therefore, its betweenness centrality increased dramatically. Finally, we discuss the evolution of the network structure of the Indian economy in the post-liberalization era, in terms of changes in the economy's network density. Network density is the ratio of the number of pairs of industries that exchange resources to the total number of pairs of industries in the economy. Higher network density implies that a greater fraction of possible resource exchanges between industries are being realized. We find that network density of the Indian economy has changed significantly (at the 10% level) for each year for which data is available from 1993-94 through 2006-07. In particular, network density has increased continuously from 1998-99 to 2006-07 (see Table 6).

Table 6 Network density of the Indian economy

Year	Network density
1993-94	0.39
1998-99	0.36
2003-04	0.39
2006-07	0.40

Although network density increased from 1998-99 to 2006-07, network centralization

⁶ We test for the presence of an unknown structural break in the series of Net Domestic Product (NDP) at constant 2004-05 prices for the sector Real Estate, Ownership of Dwellings and Business Services, using the average of the generated F statistics ala Andrews and Ploberger (1994). We find one structural break in the series at 1991, with faster growth of sectoral NDP post break (the average value of F is 73.38 and the Hansen (1997) approximate asymptotic p value of the test is less than 2.2e-16 (all calculations done using strucchange package in R). Data for this analysis was drawn from Ministry of Statistics and Programme Implementation of Government of India (results available on request).

has decreased over the same period (see Figure 4). This means that the Indian economy has become more decentralized even though the number of resource exchange links between industries has increased. The rise of the transaction sector has therefore facilitated more and deeper resource exchanges between industries of the economy, while at the same time permitting greater decentralization of the economy; which is precisely what we would expect given the nature of the services provided by the transaction sector.

4. Summary and conclusion

We used the tools of Social Network Analysis as well as Indian Input-Output tables to examine the magnitude, direction (both input as well as output), and network structure of the pattern of resource exchanges between the transaction and other sectors of the economy. This allowed us to see whether the results of the macro literature in transaction costs on the importance of the transaction sector are robust to an alternate conceptualization of importance. Further, it allows us to get at the fundamental issue of how the manner in which the transaction sector performs its primary function of facilitating exchange in the economy, affects both itself and the economy at large. We find that on the input side, resource use in the transaction sector is both relatively large as well as increasing over time (as measured by weighted degree centrality), thus appearing to reinforce the findings of the macro literature on transaction costs regarding the importance of the transaction sector. However, the sector scores low on unweighted degree centrality and closeness centrality on the input side, indicating relatively few direct and relatively weak indirect ties with, and hence relative isolation from, the rest of the economy. Therefore, the transaction sector cannot be considered important from a network perspective if we consider just the input side. We argue however that importance of the transaction sector should not be evaluated on the input side but from the nature and quantity of services it supplies to the rest of the economy i.e. on the output side. We find that resource supply from the sector is relatively large (as measured by weighted degree centrality). The sector also scores high on unweighted degree centrality and closeness centrality on the output side, indicating many direct and relatively strong indirect ties with, and hence a high level of integration with the rest of the economy. Therefore, the true importance of the transaction sector, both from a resource as well as a network perspective, must arise primarily on the output side. Thus, results of WN and their followers on the importance of the transaction sector are robust to an alternate conceptualization of importance, although importance is now on the output side, not the input side as originally conceived by WN.

Examining the input and output sides simultaneously, the transaction sector scores high on betweenness centrality, indicating that the rest of the economy depends heavily on the transaction sector to conduct exchanges. The strong impact of the rise of this sector on the economy is borne out by the fact that although network density of the economy increased from 1998-99 through 2006-07, network centralization decreased over the same period. Thus, the rise in importance of the transaction sector facilitated

more and deeper resource exchanges between all industries of the economy, while at the same time permitting greater decentralization of the economy. Thus, the manner in which the transaction sector performs its primary function of facilitating exchange in the economy, affects both itself and the economy as a whole.

It would be interesting to see whether this pattern of post-liberalization increase in network density with simultaneous decentralization of the economy, supported by the rise of the transaction sector, is experienced in other transition economies. If so, this would constitute a hitherto unexamined structural transformation of the economy during the transition process, i.e. a particular kind of transformation in the economy's network structure.

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Appendix

Table A1 List of sectors in the I-O tables

No.	Sector	Transaction Sector?	No.	Sector	Transaction Sector?
1	Paddy	No	57	Plastic products	No
2	Wheat	No	58	Petroleum products	No
3	Jowar	No	59	Coal tar products	No
4	Bajra	No	60	Inorganic heavy chemicals	No
5	Maize	No	61	Organic heavy chemicals	No

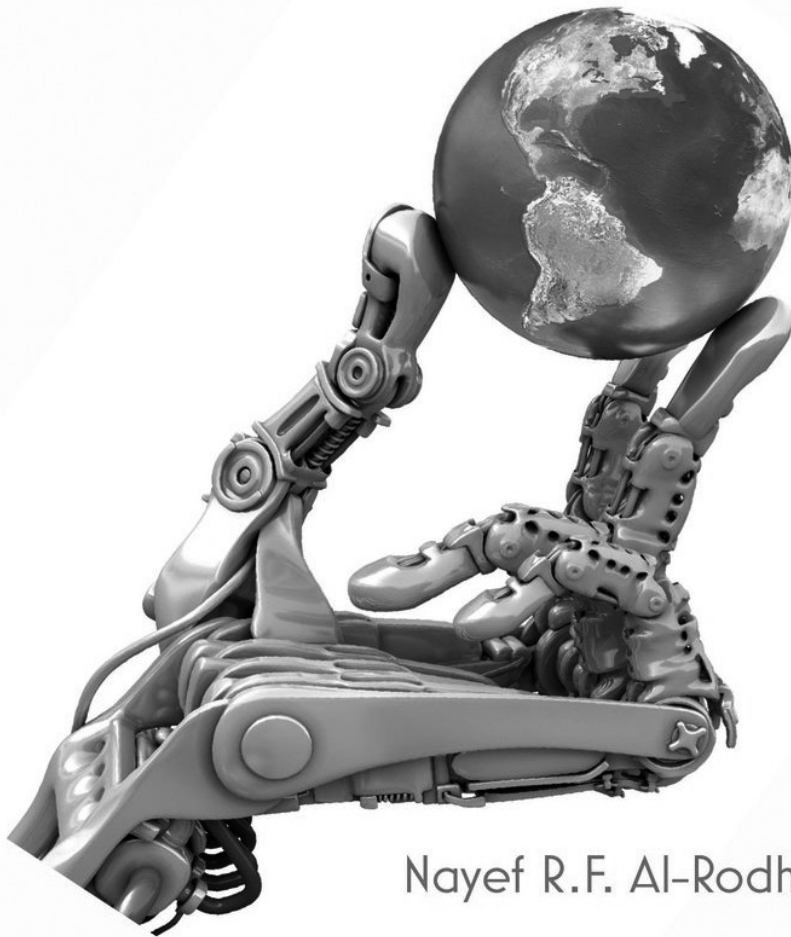
No.	Sector	Transaction Sector?	No.	Sector	Transaction Sector?
7	Pulses	No	63	Pesticides	No
8	Sugarcane	No	64	Paints, varnishes and lacquers	No
9	Groundnut	No	65	Drugs and medicines	No
10	Jute	No	66	Soaps, cosmetics & glycerin	No
11	Cotton	No	67	Synthetic fibers, resin	No
12	Tea	No	68	Other chemicals	No
13	Coffee	No	69	Structural clay products	No
14	Rubber	No	70	Cement	No
15	Coconut	No	71	Other non-metallic mineral prods.	No
16	Tobacco	No	72	Iron, steel and ferro alloys	No
17	Other crops	No	73	Iron and steel casting & forging	No
18	Milk and milk products	No	74	Iron and steel foundries	No
19	Animal services(agricultural)	No	75	Non-ferrous basic metals	No
20	Other livestock products	No	76	Hand tools, hardware	No
21	Forestry and logging	No	77	Miscellaneous metal products	No
22	Fishing	No	78	Tractors and agri. implements	No
23	Coal and lignite	No	79	Industrial machinery(F & T)	No
24	Crude petroleum, natural gas	No	80	Industrial machinery(others)	No
25	Iron ore	No	81	Machine tools	No
26	Manganese ore	No	82	Other non-electrical machinery	No

No.	Sector	Transaction Sector?	No.	Sector	Transaction Sector?
27	Bauxite	No	83	Electrical industrial Machinery	No
28	Copper ore	No	84	Electrical wires & cables	No
29	Other metallic minerals	No	85	Batteries	No
30	Lime stone	No	86	Electrical appliances	No
31	Mica	No	87	Communication equipment	No
32	Other non-metallic minerals	No	88	Other electrical Machinery	No
33	Sugar	No	89	Electronic equipment(incl.TV)	No
34	Khandsari, boora	No	90	Ships and boats	No
35	Hydrogenated oil(vanaspati)	No	91	Rail equipment	No
36	Edible oils other than vanaspati	No	92	Motor vehicles	No
37	Tea and coffee processing	No	93	Motor cycles and scooters	No
38	Miscellaneous food products	No	94	Bicycles, cycle-rickshaw	No
39	Beverages	No	95	Other transport equipment	No
40	Tobacco products	No	96	Watches and clocks	No
41	Khadi, cotton textiles(handlooms)	No	97	Miscellaneous manufacturing	No
42	Cotton textiles	No	98	Construction	No
43	Woolen textiles	No	99	Electricity	No
44	Silk textiles	No	100	Water supply	No
45	Art silk, synthetic fiber textiles	No	101	Railway transport services	No
46	Jute, hemp, mesta textiles	No	102	Other transport services	No
47	Carpet weaving	No	103	Storage and warehousing	No
48	Readymade garments	No	104	Communication	Yes

No.	Sector	Transaction Sector?	No.	Sector	Transaction Sector?
49	Miscellaneous textile products	No	105	Trade	Yes
50	Furniture and fixtures-wooden	No	106	Hotels and restaurants	No
51	Wood and wood products	No	107	Banking	Yes
52	Paper, paper prods. & newsprint	No	108	Insurance	Yes
53	Printing and publishing	No	109	Education and research	No
54	Leather footwear	No	110	Medical and health	No
55	Leather and leather products	No	111	Other services	Yes
56	Rubber products	No			

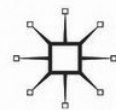
The Politics of Emerging Strategic Technologies

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Are we set for Electric Cars?

Questioning the Environmental Readiness of India

Pinaki Roy • Manoj Motiani • Prem Prakash Dewani

Abstract Electric Vehicles (EVs) have been proposed as a means to reduce the greenhouse emissions from the transportation sector. Despite the obvious benefits of zero tail pipe emissions, EVs have a wide variety of environmental effects which must be taken into calculation before a verdict can be passed on their effectiveness. The systems used to generate and run these EVs also play a part in determining the effect that they have on the environment and the market in which they are introduced. Studies, however, show that despite the emissions due to the electricity produced to run the EVs are still less than those due to burning fuel in Internal Combustion Engine (ICE) vehicles. These studies use a Well-to-Wheel equation to determine the efficiency of each vehicle type. We argue that this method is over optimistic, provides only a general analysis, and is inadequate to answer questions about environmental feasibility for different energy source mixes used in different countries. We perform a country specific analysis for India. Additionally we provide a forecast, according to four hypothetical energy scenarios, as to when it would be environmentally feasible for India to introduce EVs into the market. We find that EVs can be used as a means to reduce greenhouse gasses only after the year 2035 in the energy scenario where carbon prices have begun to strongly effect energy decisions.

Keywords Electric Vehicle - Greenhouse Emission

JEL Classification 032 - 033 - R48 - D12 - H23

Introduction

Emissions due to vehicles have been a growing concern for quite some time. In such

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discussions Electric Vehicles (EVs) are often put forward as a solution as they can replace the Internal Combustion Engine (ICEs) based vehicles with a zero-emission substitute. However, this claim of EVs, to provide zero-emission transport, has been questioned by the view that they are instead “elsewhere-emission” vehicles since the power to run them is generated through power-plants using coal, natural gas etc. which has substantial emissions (Gribben, 1996; Moriguchi & Terazono, 2000). This has been supported by a study in China (Huo, Zhang, Wang, Streets, & He, 2010) which finds that EVs are more polluting or have more emissions than the standard ICEs if the two are compared on a emissions per distance basis, making them environmentally in-feasible i.e. not better off than ICEs in reducing or limiting environmental emissions. There are also studies which have challenged the “elsewhere-emission” notion as a myth (Eberhard & Tarpenning, 2006). They use a “Well-to-Wheel” equation to prove that EVs and other hybrid versions of electric vehicles are more efficient and less polluting than ICEs. This approach, however, is overly optimistic as it assumes that the fuels will be burnt efficiently to produce the energy which will then drive the vehicles. In reality, fuels are not burnt efficiently and the emissions made per kWh of electricity produced varies from country to country due to the different mixes of electricity sources (polluting and non-polluting sources) and different technologies of harnessing them. The analysis then becomes a more country and technology specific analysis. It has been demonstrated that electricity from a grid with higher proportion of renewable sources of energy are a proper source for EVs if they are to be a better option than conventional vehicles (CVs) in terms of greenhouse gas (GHG) emissions.

In the present study we perform this analysis for India to answer the question “Is India ready for Electric Cars?”. As far as readiness for Electric Cars is concerned, one has to look at other factors beyond environmental feasibility as well such as, charging infrastructure, policy issues, market readiness etc. We restrict our analysis and discussion to the environmental feasibility alone. We look at the energy mix (percentage of different sources of energy) used by India and approximate the amount of emissions released per unit of energy produced. Combining these numbers with the average distance covered the EVs we compare the emissions per distance covered for both EVs and ICEs. Our analysis also includes four futuristic scenarios, as forecasted by (Shukla & Chaturvedi, 2012), to suggest the year and scenario when EVs will become environmentally feasible for the Indian context. We find that EVs become environmentally feasible only after the year 2035 and that too only in the scenario that carbon prices take effect and reduce the prices renewable energy sources and technology compared to non-renewable energy sources and technology. The following paper is organized as follows. We first present some background on EVs and their effect on the environment, followed by the Well-to-Wheel approach and comparison to the approach we use. Subsequent sections present the numerical analysis followed by discussion and conclusion.

Background

Given the growing interest in introducing EVs in the market it becomes important to ask whether the Indian market and environmental economy is prepared for it. Apart

from the possible acceptance (or rejection) of the consumers, the environmental aspects must also be critically reviewed. We must ask, “Given the state of affairs, do Electric Vehicles (EVs) pose a possible solution to the environmental emissions problem that India faces?” Zero tail pipe emissions might be an attractive feature of EVs but the indirect emissions caused by them through electricity production might actually be more damaging than the emissions released by conventional combustion engine vehicles (Huo et al., 2010). The deciding factor will be the proportion of renewable sources of energy used for electricity production and the possible trends in the future (Aguirre, Eisenhardt, Lim, & Nelson, 2012; Chan, 2002; Hacker & Harthan, 2009; Huo et al., 2010). A higher proportion of renewables reduces the emissions released per kWh produced. We first present the manner in which energy source composition plays a part in determining the change in emissions status due to EV introduction. Next, we use four scenario projections to show when such an introduction will work towards reducing emissions. Before we begin with the said analysis we look at the Well-to-wheel equation and compare our approach to it.

The Well-to-Wheel Equation

The Well-to-Wheel equation takes into calculation the carbon content of the fuel and assumes perfect combustion to convert the carbon content to CO₂ (Eberhard & Tarpenning, 2006). Using this equation the following is used:

$$W2W = \eta W2V * \eta V2W$$

Where:

$\eta W2V$ is the well-to-vehicle performance measured in %

$\eta V2W$ is the vehicle-to-wheel performance measure in km/kWh

There are a number of studies which use this equation (Stefano, Manzolini, & Iglesia, 2009) and find that EVs are more efficient than ICEs. The main drawback of this method, and possibly the reason for the conclusion they reach, is that they assume perfect combustion. Given the different grades of technologies used by different countries, the amount of energy extracted from the fuel and the emissions made will vary from technology to technology and therefore country to country. This is the reason why the W2W equation cannot be used as a measure to decide whether a country (or a system using a particular energy source of technology) will have the same environmental feasibility as another country when applying EVs as a measure to reduce environmental emissions from automobiles. Countries not only have different mixes of energy sources but also differ in the technology they use to burn these fuels, making it imperative to bring these factors into our calculations. Our approach looks at empirical data collected from the power stations as to the amounts of emissions they produce, interact it with the current energy mix of the country and then calculate the amount of emissions produced per kWh. This makes the calculation more country specific and gives a more accurate picture of the situation.

Our Approach: An Energy-mix Specific Analysis

With the onset of smart grids, there is no longer a reason to separately analyze the different grids of India. Smart grids are able to integrate the different grids together and thus a single analysis for the whole country is sufficient. We first calculate the average grams of CO₂ produced per kWh for a given mix of energy sources using the following equation:

$$\text{Co2 (gms)/kWh} = \sum_{i=1}^n M_i \cdot f_i$$

Where:

f_i is the approximate CO₂ (in gms) emitted by the *i*th fuel calculated from empirical records.

M_i is the percentage share of the *i*th fuel has in the energy mix of the system.

Tables 1 and 2 present the basic calculations involved in this process.

Table 1 CO₂ emissions from different technologies

	g/kWh ⁴
Coal	2093
Gas	473.5
Oil	627
Nuclear	0
Biomass	582
Hydro	0
Wind	0
Solar	0

Table 2 Average usage of vehicle form

Vehicle type	Passenger avg.	kWh/100Km	CO ₂ /100Km
Electric Bike ⁵	1.5	1.4	
Scooter/Bike ⁶	1.5		3666.67
Hybrid car	2.5	5.9 + fuel	
Car	2.5		6400
Bus	50		2550
BEV	2	10.47	

⁵ From (Cherry, Weinert, & Xinmiao, 2009); ⁶ Data for average usage of cars, busses, and hybrid from (Helms, Pehnt, Lambrecht, & Liebich, 2010)

Forecasting the future

Given the low penetration of electricity in India, there will be a continued increase in the demand for energy generation in the coming few decades. The rising concerns for

carbon emission cuts has forced the governing bodies to re-think the manner in which future energy requirements have to be met. Coal has been the predominant source of power generation in India. Though available in larger quantities in India, it is a highly pollution fuel. Other alternatives such as hydro, solar, wind and nuclear, have only seen marginal growth in terms of percentage of total energy source composition (Shukla, Dhar, & Mahapatra, 2008). Low carbon and clean energy policies have been suggested as a means to remedy the situation. There has been an increased effort to bolster the solar and nuclear power generation technology adoption and implementation. Other technologies which can aid in this pursuit are emission reduction systems such as Carbon Capture and Storage (CCS) (Shukla et al., 2008). This technology, albeit expensive, can have a tremendous effect on reducing global and regional carbon emissions. In the paper titled "Low carbon and clean energy scenarios for India: Analysis of targets approach" (Shukla & Chaturvedi, 2012), four future scenarios are projected, each emphasizing on a different source of reduction of emissions. The four scenarios are:

- Business As Usual (BAU) Scenario with no carbon price or electricity targets (BAU-noT with reference nuclear cost)
- BAU Scenario with no carbon price or electricity targets but increased nuclear cost (BAU-noT with increased nuclear cost)
- Carbon Price Scenario with exogenously specified carbon price trajectory but no electricity targets (CP-noT with reference nuclear cost)
- Carbon Price Scenario with exogenously specified carbon price trajectory and increased nuclear cost (CP-noT with increased nuclear cost)

Each of these scenarios gives a different picture of changing energy source compositions over the years from 2005 to 2095. We borrow the different percentage compositions of energy sources from these projections to demonstrate the performance of different EVs vis-à-vis conventional vehicles. Before we proceed with these projections a brief introduction and explanation of these scenarios is necessary.

BAU scenario with and without increased nuclear cost. BAU- Business as Usual approach assumes an average GDP of 8% in the short run and 5% in the long run. In this scenario different renewable energy targets will only be achieved through subsidy push. Coal will continue to take the highest share in the country. Nuclear technology, solar technology and other more expensive technologies are to enter into the market very late. Carbon price scenario with and without increased nuclear costs. This scenario assumes an automatic shift towards low carbon emission technologies and energy sources. Since there is a carbon price effect on this scenario, renewable energies will see a much early entry into the market and will see a higher share in the energy source pie.

In both the cases the sensitivity to nuclear prices makes a difference. In the 'increased nuclear cost' scenarios the discounted lifetime costs of implementing stronger nuclear safety mechanisms, which is assumed to be 50% of non-energy related nuclear cost, increases the cost of adopting nuclear technologies and thus pushes down the percentage share of nuclear electricity generation. The following are the different percentage compositions of energy sources in the four different scenarios: Figure 1a, Figure 1b, Figure 1c and Figure 1d

Figure 1a BAU-noT with reference nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

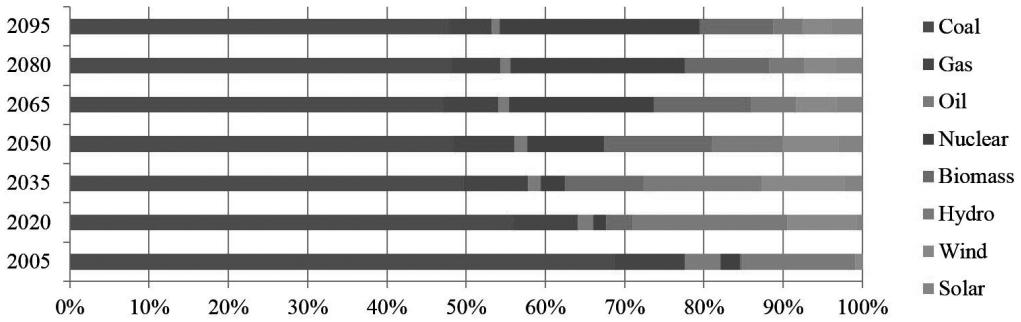


Figure 1b BAU-noT with increased nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

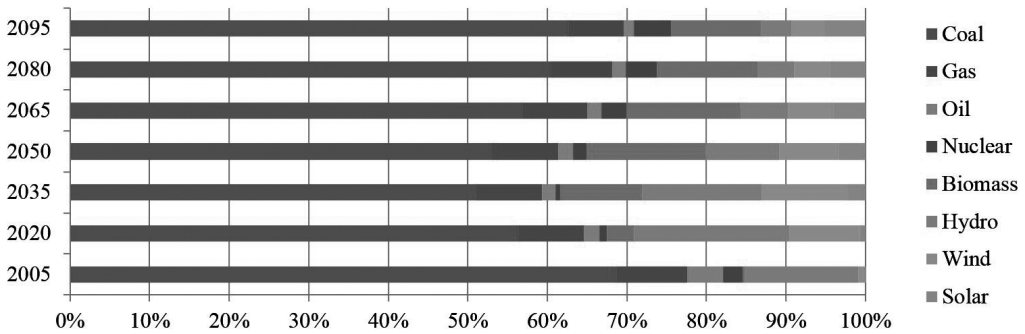


Figure 1c CP-noT with reference nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

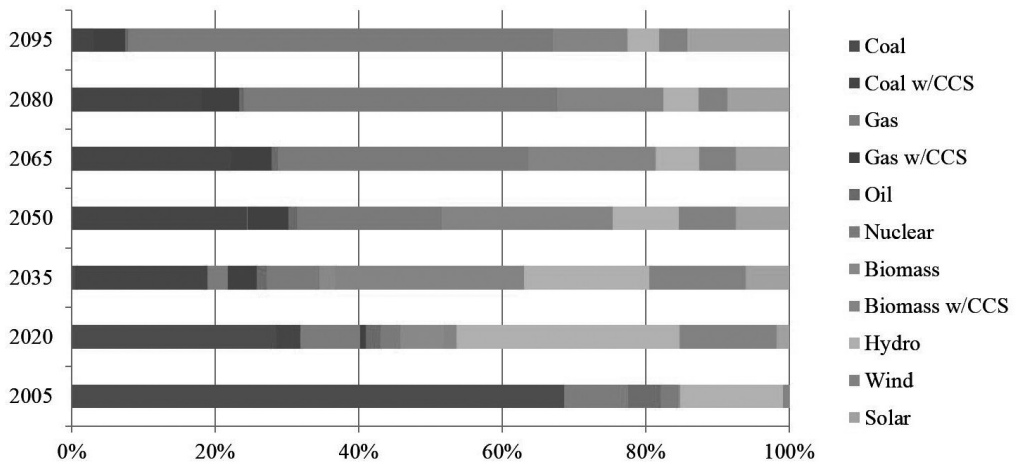
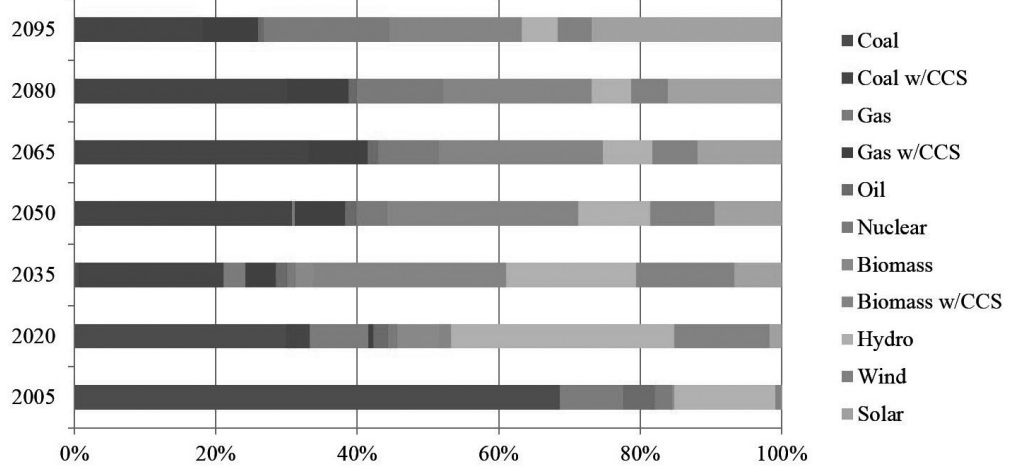


Figure 1d CP-noT with increased nuclear cost (Adopted from Shukla and Chaturvedi, 2012)



The Figures 1a to 1d show the four scenarios and the different energy mix expected in the years to come within each scenario. As can be expected the latter two Figures show a decrease in the percentage of non-renewable energy sources. The reason for this is that the scenarios describe a situation where carbon prices have taken hold and made renewable sources more accessible. This is expected to change the emissions mix and environmental feasibility of EVs as shown in the subsequent sections.

Numerical Analysis

According to these percentage compositions the ‘per kWh’ emissions from EVs will change over the years. It gives us an opportunity to judge at which year and in which scenario we can safely replace conventional combustion engine vehicles with EVs.

The Figures 2a, 2b, 2c and 2d show the CO₂/100 Kms for the different vehicles over the years for the four different scenarios. According to these percentage compositions the ‘per kWh’ emissions from EVs will change over the years. It gives us an opportunity to judge at which year and in which scenario we can safely replace conventional combustion engine vehicles with EVs.

Figure 2a BAU -not with reference nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

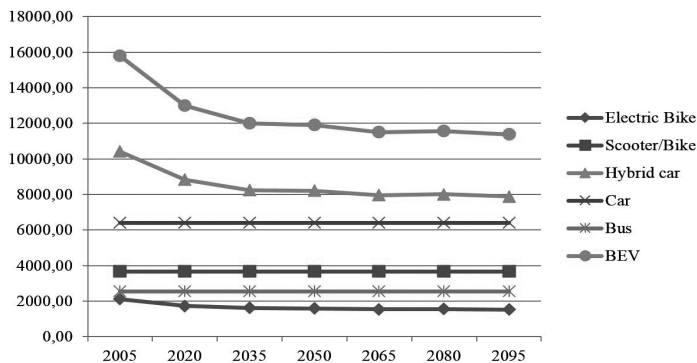


Figure 2b BAU -not with increased nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

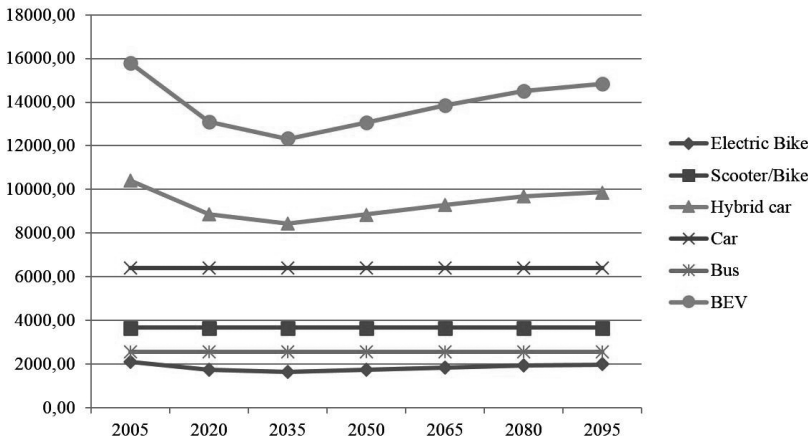


Figure 2c CP-noT with reference nuclear cost (Adopted from Shukla and Chaturvedi, 2012)

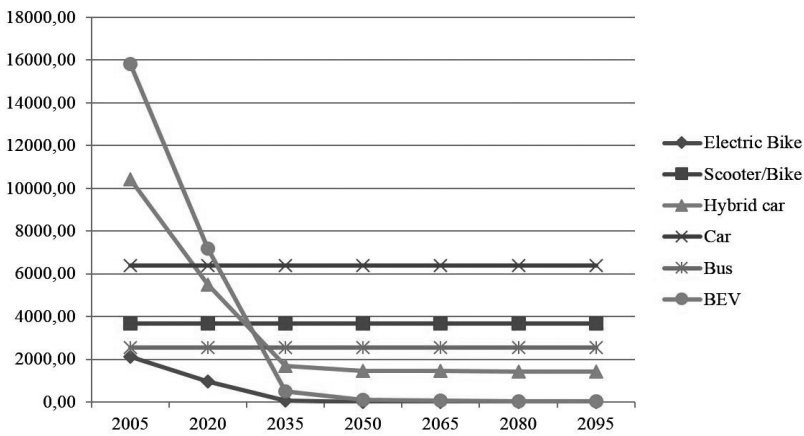
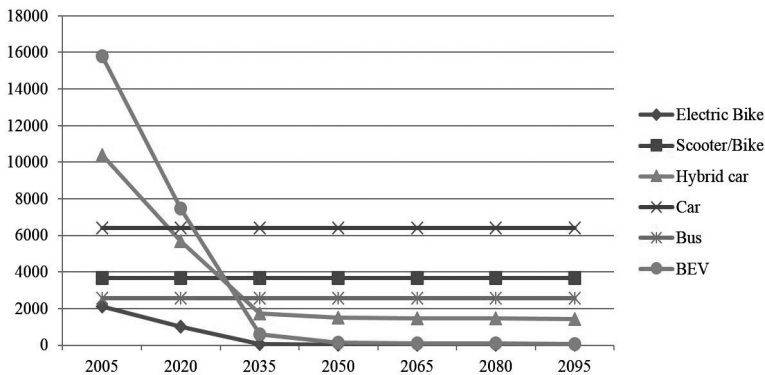


Figure 2d CP-noT with increased nuclear cost (Adopted from Shukla and Chaturvedi, 2012)



As can be seen from Figures 2a to 2d, it is clear that the scenario changes drastically for the latter two cases. When Carbon prices take effect the prices of renewable sources and technologies become cheaper, as compared to non-renewable energy sources and technologies, and therefore more accessible. This changes the amount of emission produced per kWh and therefore the emissions per distance covered for the EVs. Thus, after 2035 it is expected that the energy mix will change sufficiently to make EVs more environmentally feasible than ICEs. An interesting observation is that in all four scenarios and throughout the predicted time period electric bikes show as a viable option. This is also supported by the fact that they are immensely popular in China which has a similar (coal intensive) energy mix usage as India, and similar population density. It goes on to show that even if the energy mix is a problem for four wheeled EVs, two wheeled electric bikes are an environmentally feasible option and the Indian system is read for their introduction.

To summarize, the graphs show the per-passenger CO₂ emitted per 100 Km by each type of vehicle. It suggests that Electric bikes are already a better alternative than most of the vehicles and remains so in the coming years. They have proven to a successful alternative to public transport such as busses. The analysis is sound since it compares the per person emission thus taking into account the higher carrying capacities of busses. Therefore we argue that:

Proposition 1: From the CO₂ emissions point of view India is environmentally ready for introduction of Electric bikes.

Battery operated vehicles (BEVs) and Hybrid Electric Vehicles (HEVs) on the other hand are shown as more polluting through the projection period in the first two scenarios. This suggests that even though energy source compositions changing for the better, more renewables, the change will not be enough to make BEVs and HEVs a better option, pollution wise, compared to the conventional vehicles. Scenario 2 actually shows an upward swing due to increase in nuclear energy costs and therefore a lesser proportion of this non-greenhouse producing source. Therefore we argue that:

Proposition 2: BEVs and HEVs will not be well suited as greenhouse emission reducing options as long as carbon prices do not play a large role in the energy economics of the country.

The analysis changes in the latter two scenarios. Due to a carbon-price scenario the fuel prices for greenhouse producing options increase and make other renewable sources cheaper. This condition pushes the projection towards a higher proportion of renewable energy sources and therefore decreases the CO₂ emissions per kWh. As is clear from Figure 2c and 2d (Carbon prices scenario) running BEVs and HEVs becomes more environmental around the year 2035. The change might appear in the preceding years but the model definitively speaks for 2035. It also shows that BEVs will be more non-polluting efficient than the HEVs. Therefore, we argue that:

Proposition 3: In case of carbon prices playing a larger role in energy economics of India BEVs will emerge as the dominant greenhouse reducing options among, Electric Bikes, HEVs and BEVs.

The above analysis is done only on the basis of CO₂. Since the proportions of emissions for other greenhouse gasses such as NO_x, SO₂ etc. are not very different for the different vehicle types; the analysis for these gasses is expected to give almost the same results.

Conclusion

To conclude we first reiterate the main findings of the study. We find that the present energy source mix used by the Indian power sector does not support the use of EVs as an environmentally feasible option. We still need to reach a position where the energy mix will provide a cleaner power output, which in turn will be a better substitute for the fossil fuels we burn in our automobiles. Another interesting finding from the study is that this condition only occurs in the latter two scenarios: CP-noT with reference nuclear cost and CP-noT with increased nuclear cost. It suggests that if Carbon prices do not come into effect, it might never be feasible to introduce EVs into the Indian system. This statement appears too bold and we suggest caution when stating it ourselves, but the analysis points towards this direction. What can be safely inferred is that unless carbon prices take effect and cleaner fuels become more viable, introducing EVs will continue to be a difficult prospect.

We make quite an audacious attempt by estimating the future of EVs in India for the next hundred years, and we could not have done this without making some rather hard assumptions. These assumptions in themselves limit the generalization of our results and give reason to be circumspect of our conclusions. For one, we assume that the technology will not improve over the years. This can be challenged. Technological improvements over the years might make EV technology more advanced and quicken the time required for them to become equivalent or better substitutes of the ICEs. However, ICE technology is also expected to improve so they will compete for being the better alternative. Thus, we assume that these two factors will more or less cancel each other out. Another challenge can be that both renewable and non-renewable source technology will change over the years. For this we depend on the predictions, assumptions and controls adopted by (Shukla & Chaturvedi, 2012). We also make large approximations; average values for different power sources were averages over different power plants and over many years. We however feel they will not shake our results to any significant degree. Another limitation is that the data for vehicles was taken from multiple sources. Since we did not have data for average distance covered per unit fuel, or CO₂ per km for all the vehicles in the India context, we borrow heavily from other studies dealing with this issue. This can again affect the results but again we suspect it would not do so to a significant degree.

We hope that future studies are able to overcome some of these difficulties. Also, our study was restricted to only CO₂. Future studies can look at other green-house gases as well.

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New Functions of Universities in Century XXI

Towards “Fourth Generation” Universities

Miklós Lukovics • Bence Zuti

Abstract Nowadays, many successful examples prove that universities have a significant role in the enhancement of different regions. The competitiveness of regions is affected and altered by globalization and other background processes that serve as arrangers of regional structure and for this reason they deserve attention. The modern economic development demands that due to the increased engagement towards the society and economy, the traditional activities of the universities should be diversified.

To be able to optimally exploit their potential regarding economic development, the presence of an outstanding educational culture it is necessary but not sufficient. It is also necessary to maintain high standards in quality regarding research activities and to promote the utilization of results in the local economy. Beyond the well-known typology of the first, second and third generation of universities that describe the above mentioned processes, the concept of the „fourth generation” of universities emerged in international literature that depicts interesting facts that are worth considering regarding the economic development activities of universities. The goal of this study is to review and systematize the active and passive activities of universities that enhance the competitiveness of a given region.

We process the available ideas regarding the presence of „fourth generation” universities and we attempt to integrate these into the scientifically accounted framework of university generations.

Keywords Universities - Economic development - Diamond-model
Higher education

JEL Classification I20 - I23 - I25 - R10

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1. Introduction

Several international examples prove that successful universities have a significant role in improving the competitiveness of their region and in many cases they are active participants in local endeavours focusing on economic development. To achieve appreciable results in economic development, the high standards in education are necessary but not sufficient requirements (first generation of universities). The presence of quality research is also required (second generation of universities). The third important aspect is the utilization of the scientific results originated from the university by the local actors (third generation of universities). Through this the competitiveness of local enterprises can be improved that could induce the competitiveness of the region. We can ask, who should mark the main strategic aims of each region where universities are active participants within economic and social networks?

Nowadays the competitiveness of regions is affected by globalization and other background processes that serve as rearrangers of regional structures and for this reason they deserve constant attention. In the global competition, immaterial assets like knowledge or social capital become key aspects, and engines of economic development. In regional studies, knowledge is identified as a crucial factor of regional development. Knowledge became the main asset of production, it is considered as a new engine of economic development, hereby the role of knowledge, innovation, technology and learning is necessary to be reconsidered. This can also be derived by the fact that the presence of innovation fundamentally determines the competitiveness of regions and continuous innovation is required to obtain competitive edge (Lengyel, 2000).

Innovation is present in many ways in differently developed regions, so it is important to emphasize that specific regions need to apply specific strategies of economic development (Lengyel 2003). Consequently the competitiveness of developed countries derives from their ability to create and utilize knowledge (Grosz and Rechnitzer, 2005). Universities have a significant role in shaping these processes, as their education and research activities are expanded with the fostering of economic and social development (Etzkowitz, 2002; Wright et al. 2008; Wissema, 2009). In this study, after considering these challenges, we would like to answer what the universities can do (by representing active or passive behavior) for the purpose of enhancing regional competitiveness?

To answer this question, first we must analyse the framework of the local embedment of universities. Afterwards we synthesize the potential effects of universities on economic development from the input and output side. The analysis of the universities' socioeconomic environment will take place within a novel concept of the „Fourth Generation” of universities augmented with the Diamond model of modern universities. In the end we attempt to summarize the success factors of universities that can contribute to the optimization of local potential for the purpose of enhancing competitiveness.

2. The Local Embedment of Universities

The commitment with local economy has an even emphasized role regarding the operation of modern universities, as new needs emerge from the aspects of economy and

society. Several changes in economy, finance and society lead to the fact that universities initiated to explore their environment in a broader, novel approach, and they also engaged in local embedment, the enhancement of innovation activities and cooperation with local actors. The existence of these universities is a result of an adaptive process. Adaptivity is key element in this aspect, as several measures can take place on national or even regional levels, where the presence of conformity is crucial (Clark, 1998). The „entrepreneurial” university of Clark (2001) is different from „traditional” universities, as the latter cannot secede from the habitual practises that are carved into stone, as the former endeavours to constantly renew their activities and to follow a certain contemporary approaches. Besides the entrepreneurial university can be considered as an insitution with strong will for expoloration and firm identity. The basis of the entrepreneurial university is a management-oriented leadership and the exploitation of market characteristics.

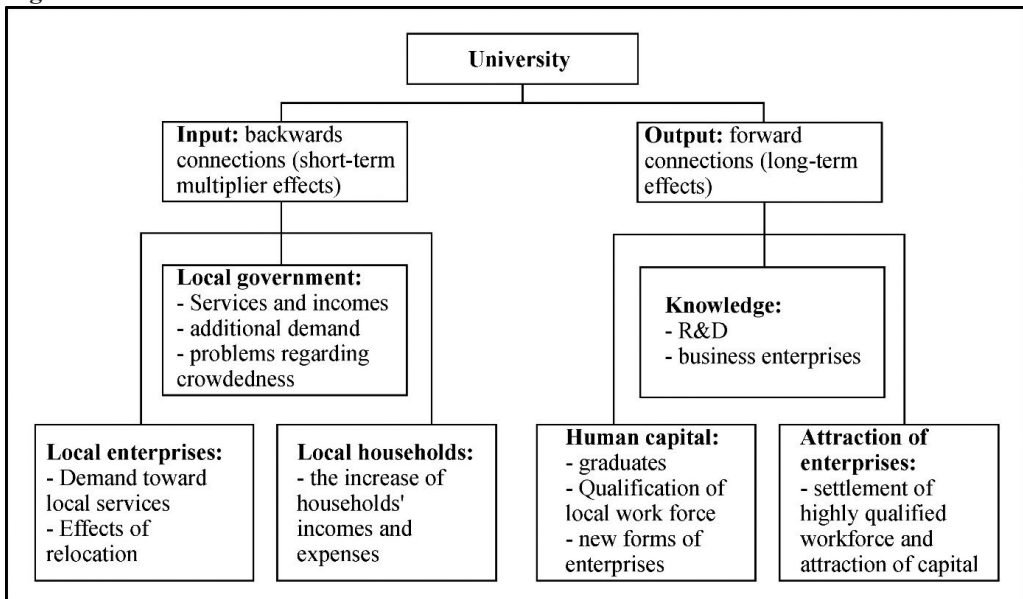
In parallel, Chatterton and Goddard (2000) write about regionally engaged universities. The authors locate this type of universities within learning regions. In these regions, the process of learning and the dynamic approach of planning have a significant role (Holbrook and Wolfe, 2002). The learning regions differ from regions where the fordist perspective is dominant, as the basis of competitiveness are not environmental resources and labour, but the creation of knowledge and continuous development. Here the presence of formal and informal networks is dominant (Florida, 1995, 533). Kitagawa (2005) also points out that the previously mentioned formal and informal factors are relevant in case of economic development, however this can only be successful, if knowledge transfer is clean and effective. Regionally engaged universities tend to connect their first, second and third mission activities to the local government, thus creating added value. Nowadays, some universities are locally embedded, however they compete globally for the claim of the best resources.

It does not matter which type of university we examine, their endeavours can be clearly expressed, their operational framework can be given. The purpose is to avoid that higher education institutions should exist isolated from the local economy, besides it is also important that research results should be utilizable by the local economy. In the long term, universities should contribute to the development processes of local communities (Benneworth and Dawley, 2005; Arbo and Benneworth, 2007). According to Goddard and Puukka (2008, 19), higher education institutions can contribute to economic development through four dimensions. First, universities can assist in the creation of new sectors, or the formation of existing ones. Besides they can have a role in enhancing the willingness to create enterprises. Second, they can attract global firms towards the region with the existing infrastructure, highly qualified workforce and strong socioeconomic networks. In this case can also see that besides the local commitment, a global competition for the resources and capital takes place. Third, they can manage to diversify the business sector, and can aim to develop the quality of provided services. Fourth, they are able to connect to processes of dominant sectors of the region through counselling or other activities.

3. Effects of Universities on Economic Development

The effects of universities on economy can be categorized in two groups (Lengyel, 2008). These are short-term input effects and long-term output effects (Figure 1). Universities spend a significant amount of money to maintain and operate its own buildings. These services are ordered from local enterprises. The students, professors and research associates also spend some part of their earnings locally. The presence of the university urges local services and this increases the income of governments and generates demand towards public services.

Figure 1 Local economic effects of universities



Source: Lengyel (2008)

The short-term effects of the university (input side) affect the demand of local enterprises, the income and expenses of local households and the services and income of local governments. Thanks to universities, young and highly qualified graduates appear on the labor market. The local workforce is able to easily start new enterprises due to the recently acquired skills and abilities, thus institutes of education increase the appeal towards entrepreneurship. The freshly graduated workforce can attract enterprises from outside the region which leads to the establishment of new workplaces. The professors and researches of the university practice significant R&D activities (Lengyel, 2008). The long-term effects of universities (output side) can affect the qualification of human capital, the attraction of foreign capital and workforce into the proximity of the university and the number of enterprises based on university research. The input factors can be considered as triggers of secondary regional multiplier effects of the economic base model, as they vivify demand regarding local services. However this demand

does not generate substantive economic growth and barely creates new workplaces. The output factors trigger primary multiplier effects. New companies could come into existence that can create new workplaces in the region and are able to acquire income from outside the region.

The goal of Goldstein and Renault (2004) was to measure the contribution of universities to regional development and to attempt to separate the economic effects of universities' functions. The analysis targeted 312 metropolitan statistical areas of the USA from periods 1969-1986 and 1988-1998. The main unit of regional economic development is the annual average income per capita. To eliminate macroeconomic changes the average earnings of each area has been divided by the average earning of the USA in the same year and made as a percentile value. The dependent variable was composed of indices the difference of two following years.

The regional presence of universities is measured by four different variables. The first variable demonstrates if there are any universities in the region that are among the 50 best research universities in the proper period. The second variable demonstrates the sum of research expenditures of the region's universities. The third variable demonstrates the number of annual degrees given by all institutions of higher education of the region. The fourth variable demonstrates the patents owned by universities in a certain region. The authors defined control variables that help to explain the occurring changes in economic welfare of the region. These were the type of region representing the employment (small, medium, large), the geographical position of the region (Northeast, Central West, South, and West), the economic structure (processing industry, services), the accessibility (large, medium or small airport), entrepreneurial activities (incomes, patents) and the average earnings of a certain base year.

As a result of the research, the conclusion is that (Goldstein and Renault, 2004): The research universities significantly contribute to economic development in the second period. Between the two periods the Bayh-Dole Act that was accepted in 1980 started to have an effect so universities had the opportunity to possess intellectual ownership regarding their public funded research results. The research and development activities stimulate the economy more intensely patenting or license activities. Though patents are closer to economic utilization, the research and development expenditures have a far more significant effect. As the aggregated knowledge reaches economy through several channels, the R&D expenditures have effects through informal channels too. There is a negative connection regarding the labor market of graduates, as it represented certain fullness in the latter period. The more the number of graduates, the less the income, which is imputable to the fact that graduates bring down each other's opportunities, so the wages decrease. The only regional type where the presence of research universities is demonstrable is the micro-region, as the universities act as substitutes for urban agglomeration and they ensure several external effects. Bajmócy, Lukovics and Vas have applied the methodology of Goldstein and Renault to Hungarian micro-regions. They determined that the conclusions of Goldstein and Renault cannot be proven regarding Hungarian micro-regions and the innovational effects of universities in Hungary are insignificant (Bajmócy et al. 2009).

The universities and research facilities can significantly affect the development and competitive edge of a region directly and indirectly, besides it is often pointed out that the educational and research activities of the university can only be effectively optimized when their results are utilized by the economy, hence they can enhance economy (Bajmócy, 2006). According to Wissema (2009) nowadays the second big transition of universities takes place, which trend to the formation of so-called third generation universities (Table 1). In this phase, universities not only create professionals (first generation universities), professionals and scientists (second generation universities), but professionals, scientists and entrepreneurs at the same time (third generation universities).

Table 1 Some characteristics of the first, second and third generations of universities

Aspect	First generation universities	Second generation universities	Third generation universities
Goal	Education	Education and research	Education, research and utilization of knowledge
Role	Protection of truth	The cognition of nature	Creation of added value
Output	Professionals	Professionals and scientists	Professionals, scientists and entrepreneurs
Language	Latin	National	English
Management	Chancellor	Part-time scientists	Professional management

Source: Own construction based on Wissema (2009)

We can state that the enhancement of the competitiveness of a region can be expected from third generation universities, as this is where not only education and research are significant but the utilization of knowledge is also crucial. As a result the connection between industry and universities deepens, so there is an opportunity of the local utilization of knowledge created in universities, which enhances the competitiveness of the region through the enhancement of the competitiveness of enterprises (Vilmányi, 2011). Third mission activities are only meaningful, if the given university is successfully embedded in the local economy (Benneworth and Sanderson, 2009).

4. Economic and Social Environment of Universities

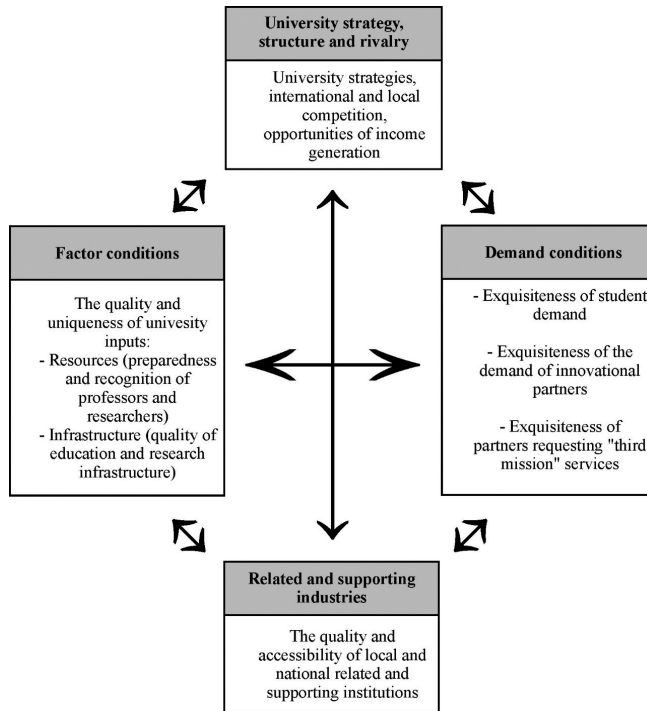
With the emerging of knowledge-based society the appraisalment of human resources took place, as the competitiveness of economies largely depend on the quantitative and qualitative characteristics of human resources available. The education of these people is affected by universities, and these institutions have an increasing significance in

developed economies. At a regional level it is typical that networks around universities are positively revalued. The main concept of the classic Triple Helix (recently Quadruple Helix) is that in a given region, the actors of the academy-industry-government triangle keep their dominant activities, but overlapping activities also come into existence (Etzkowitz and Leydesdorff, 2000; Etzkowitz, 2002; Lengyel B., 2004; Etzkowitz, 2008).

Concepts that the Triple Helix can be extended are getting more widespread. This means a possible expansion with a fourth or even a fifth spiral. The literature defines the media, arts and civil sphere as the fourth (Quadruple Helix), and environmental, sustainability and nature-focused aspects as the fifth (Quintuple Helix) spiral within the innovational and knowledge-creation processes (Carayannis and Campbell, 2012; Carayannis and Campbell, 2014). The importance of knowledge transfer is always emphasized regarding the Triple Helix model, however the university has an important function from regional, socioeconomic aspects as well (Gibb et al. 2013). The social aspects are intensified in the Quadruple Helix model (Carayannis–Rakhmatullin 2014). Besides creating workplaces, the attraction of capital is also possible, and universities can also be intermediaries when it comes to communication with government institutions (Imreh-Tóth and Lukovics, 2014). Universities need to build strong relationships with the actors of the economy, government institutions and local society. This is necessary, as the collaboration of concerned actors is an inevitable factor of development (Lengyel, 2004). Based on the connection between the university and the business sphere, the knowledge created in the university becomes accessible and utilizable.

This can contribute to the competitiveness of enterprises, and also the competitiveness of the region (Lukovics, 2010). Nowadays, more and more universities want to participate in this procedure of enhancing development processes with the assistance of networks. The next step of this logic is the systematization of universities’ economic and social environment. The Diamond model of Porter can be an adequate framework that systematizes the microeconomic business environment of enterprises (Lengyel, 2000b). The determinants of the original Diamond model can be translated in the context of universities, so we are able to define the factors that can contribute to the long term competitiveness of universities, assuming an international environment of competition (Figure 2). The determinants can be filled with new content.

In connection with factor conditions the human resources and infrastructure have the greatest significance. Here we can highlight the importance of both hard and soft elements. Here those factors are located that serve as a foundation of the competitiveness of universities. If professors are more qualified and if the infrastructure is more modern, the universities can accomplish a better position on the virtual global rankings of universities.

Figure 2 The diamond model of modern universities

Source: Own construction

Among factor conditions, mainly first and second generation university functions can be found, however regarding research infrastructure the “Third Generation” of universities also appears, as successful universities create economically utilizable results based on modern infrastructure and the preparedness of researchers. Demand conditions mean demand for all factors that serve as an output of the university. The sophisticated local demand motivates the universities from aspects of education, research and third mission. These are necessary but not sufficient requirements of internationally recognized competitiveness. In accordance with the input side it is important that highly qualified graduates with sophisticated knowledge should appear on the labor market on the output side. Demand conditions determine both quantity (critical mass of students) and quality (correspondence with students’ needs) dimensions. It is also important to be able to attract the best national and foreign students. At this point we must emphasize the economic development functions of universities that can manifest in different forms. In developed regions universities can be active participants in economic processes, they are integral parts of local economy. We assume that here the economic structure of developed regions is evolved and the university is involved in this structure with its educational, research and third mission activities as well, thus participating in local economy. In less developed regions universities face the challenge of undeveloped structure of local economy. In these cases the additional function of universities

should be the proactive initiation of enhancing local economy. Related and supporting industries determine partners that can contribute to the success of universities directly or indirectly. Universities tend to have strong relations with the business sector and other universities or research facilities. In connection with university structure and rivalry it is fundamental that institutional documents should be written reckoning the characteristics of the local area, as this is a crucial element of success.

5. Fourth Generation” Universities

In the Diamond model of modern universities, certain functions appeared that goes beyond the classic interpretation of third generation university activities. The concept of „Fourth Generation” universities appears in the international literature, however there is no scientific consensus yet regarding the exact definition. This concept refers to the fact that nowadays the modern universities have to face global competition and they have to be able to proactively influence the socioeconomic processes of the region where they are located in. These processes and effects can contribute to the competitiveness of the region through complex direct and indirect systems on a diverse scale when it comes to regions with various levels of development. „Fourth Generation” university functions may give us an answer, how universities can proactively affect local economic development in less developed regions. We can point out that the name „Fourth Generation” may appear misleading if our expectation is that here the elevation of the „Third Generation” universities to a whole new level will occur. Regarding „Fourth Generation” universities the dominance of the academic actor of the Triple Helix model is dominant (Imreh-Tóth and Lukovics, 2014).

There is no scientific consensus yet regarding the topic or the definition, however the logical approach of this concept may advance our thinking regarding university-focused economic development. The study of Pawlowski (2009) can be considered thought-provoking. The author analyses the effect of „Fourth Generation” universities regarding local development. He introduces a Polish university, namely the WSB-NLU, based in Nowy Sacz in the NUTS2 region of Małopolskie, where the GDP per capita rate is 56% of the EU28 (Eurostat, 2014). He concluded that the most distinguishing factor of these universities is proactivity. With this the purpose of the higher education institution is to be able to crucially affect the transitions of local economy and society, considering the needs of knowledge-based society. The logic of „Fourth Generation” universities is broader than „Third Generation” universities from the aspect of the potential effect that they can trigger in local economy and society. „Fourth Generation” universities actively shape their socioeconomic environment. In connection with the effect of „Fourth Generation” universities we must emphasize the importance of responsible innovation. This is a function that we can clearly identify with a characteristic of „Fourth Generation” universities. It is true that R&D activities and innovation promises a dynamic leap in development, however we must concern ethical and unpredictable effects as risks as well (von Schomberg, 2013; Sutcliffe, 2013). The avoidance of these effects is only possible after they have already appeared, however, intervention at this time may seem late and expensive. As a preventive answer to this challenge, the topic of Responsible Research

and Innovation (RRI) was developed. The theory of RRI attempts to answer, how can we responsibly get involved in R&D and innovational activities so they can be socially accepted, democratic and contributes to innovational purposes regarding society (Owen et al. 2012; von Schomberg, 2013; Sutcliffe, 2013). Considering these points, this can emerge as a function of „Fourth Generation” universities. RRI is currently a significant topic around the world that even affects the innovational policy of the European Union more and more (EC, 2013a; EC, 2013b). In this concept, the escalation of the strategic approach and the innovative, flexible organisational culture also have a crucial role. Nowadays the effective and strategic planning of the future is an ever present condition. The universities of less developed regions must convert towards a proactive thinking, as due to the changes in resource-absorption circumstances they need to broaden their profile with activities that can create profit from government (national and EU tenders), entrepreneurial (utilization of patents) or social (cultural activities) dimensions. Towards achieving success, universities should abandon stiff organizational structures. The essentiality of „Fourth Generation” universities can be seized with the strategic approach as we are in an era where economy, society, globalizational processes and information technology are especially important. Nowadays universities need to position themselves more accurately on local, regional/national and global levels. The creation of excellent workforce, the utilization of innovational results and the participation in networks are crucial factors. The Triple Helix connections can catalize favourable processes, so collaborations become numerous. Following the logic of Wissema, we can bring the categorization to a whole new level (Table 2).

Table 2 Some characteristics of the first, second, third and fourth generations” of universities

Aspect	First generation universities	Second generation universities	Third generation universities	„Fourth Generation” universities
Goal	Education	Education and research	Education, research and utilization of knowledge	Education, research utilization of knowledge and proactive economic development
Role	Protection of truth	The cognition of nature	Creation of added value	Creation of strategic aims, and the role of the engine in local economy
Output	Professionals	Professionals and scientists	Professionals, scientists and entrepreneurs	Professionals, scientists, entrepreneurs and competitive local economy

Aspect	First generation universities	Second generation universities	Third generation universities	„Fourth Generation” universities
Language	Latin	National	English	Multilingual (national and english)
Management	Chancellor	Part-time scientists	Professional management	Professional management and local experts

Source: Own construction based on Wissema (2009)

Besides education, research and the utilization of knowledge, proactive, future-oriented economic development is also a goal regarding „Fourth Generation” universities. In this model the university is both the catalyst and engine of economy, it has a great role in highlighting strategic aims. It also creates and forms the community of experts, researchers and entrepreneurs. The multilingual operation here becomes necessary as a result of international cooperations and networks. The professional management is responsible for important strategic and operative activities. Here the role of locally experienced and informed economic development experts is emphasized.

6. Characteristics and Elements of a Successful „Fourth Generation” University

As a result of analyzing the competitive role, the potential economic development effects and the economic-social environment of universities we can create the virtual model of successful fourth generation universities. The characteristics of successful universities can be determined, as the contemporary global higher education rankings have their own criteria and methodology regarding successful universities from the aspect of education and research. The success factors in connection with third mission can also be determined through the analysis of university strategies.

Based on this logic, we made an empiric research to analyse the success factors of internationally acknowledged universities. In the first phase of the secondary research we analysed the methodology, indicators and criteria of 6 international higher education rankings. Considering that these ranking are based on first and second mission activities, the exploration of success factors regarding third mission is impossible. We unraveled the solution for this challenge in the second phase of our secondary research. Here we analysed the activities and strategy of a total of 22 successful universities. Based on the results of this research and the previously mentioned university concepts, we attempt to systematize the success factors of „Fourth Generation” universities. The foundation of the model is composed by the determinants of the diamond model of universities. This basically determines the effective operation of the university (e. g. the profitability of financial resources, highly educated human capital and infrastructure). The two pillars represent the traditional activities of education-research and third-fourth mission. In these pillars the most important success components are represented, that contribute to the efficient operation of the university if integrated properly. The education-research

pillar and third mission pillar both consist of certain components, which were determined through a secondary research (we used 59 variables) and later on they were summarized then contracted. It is important to point out that the location of these components within the pillars is not hierarchic.

The first component of the education-research pillar is internationalism/mobility. When discussing mobility we can talk about student and research associate dimensions. With internationalization a “Fourth Generation” university has to support mobility of students. The possession of a wide system of networks is necessary to ensure opportunities and mobility programs for students with adequate financial sponsorship. Openness regarding foreign students is also important. These aspects must predominate when it comes to welcoming acclaimed researchers and professors. The criteria of internationalism can be highlighted within the higher education rankings so it is important to mark it as a success factor.

The second component of the education-research pillar is education. This consists of the educational portfolio that describes the available BA/BSc, MA/MSc and PhD programmes and vocational trainings. The education as success factor concentrates on qualitative dimensions as well.

The third component of the pillar is research. Besides education, research is one of the universities’ fundamental activities. Here the presence of internationally acknowledged publications, conference attendances, and academic fame also has a significant role. Here we only include research activities that are not offered as services to external institutions. It is important to highlight that modern “Fourth Generation” universities need to focus on the utilization of innovational results besides high-quality RRI. University commitment is crucial when it comes to protecting the future. This activity may become the most important function of “Fourth Generation” universities despite that this is a success factor that cannot be derived from higher education rankings.

The first component of the third mission pillar is transfers. We can distinguish knowledge transfer and technology transfer. The approach of knowledge transfer trends towards tacit, while technology transfer trends to codified knowledge and the flow of information.

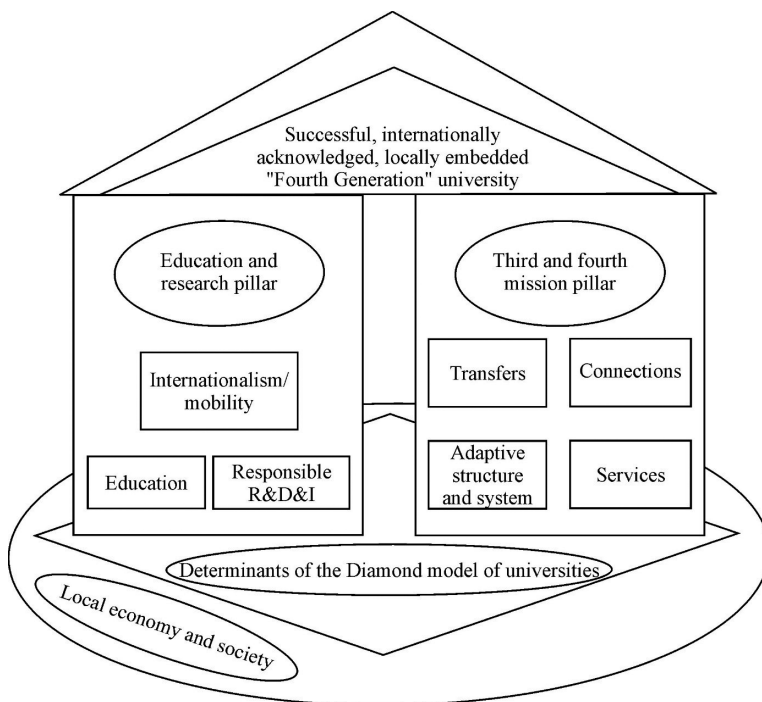
The second component of the pillar is connections. We can discuss both internal and external connections. Internal connections on national level mean connections of university-industry-government (Triple Helix model), while external conditions are determined as international networking activities from the aspect of the university-industry-government. It can be advantageous if they manage to connect with business actors and local organizations. In this case the induction of significant economic effects emerges as a primary goal. In case of a “Fourth Generation” university it is important that network connections, innovational collaborations have significant and economically utilizable results that can answer current challenges. In a continuously changing world, constant innovation, new ideas and solutions are crucial factors of success. Through excellent research the university can foster the enterprises of a given region.

The third component of the pillar is the adaptive structure and system. This can be defined as a flexible organizational structure that considers planning, organizing, directing

and monitoring in a way that recognizes the most efficient operation opportunities in the local area. This includes reaction to local labour market needs and research needs of local economy and the formation of economic aims. The adaptive structure and system can be defined as a management-focused leadership that proactively builds upon the exploitation of local capabilities and operates within an innovative, flexible organizational structure.

The fourth component of the third mission pillar is services. As a result, universities can widen their basis of income, besides it can contribute to the development of local economy, moreover it can support and improve enterprises with activities like certain economic and entrepreneurial services and R&D activities presented to external companies. As a result, we can create the virtual model of modern universities (Figure 3).

Figure 3 The virtual model of an internationally successful university that supplies the needs of local economy and society



Source: Own construction

The top element of the virtual model is the strategic goal of the university, namely the achievement of international acknowledgement, local embedment within the framework of fourth generation universities. The vision of modern universities is the attainment and maintenance of national and global welfare through the successful adaptation of this framework. The concept of a successful, locally integrated fourth generation university gives an answer to the question „What?“, however the question „How?“ remains open.

This can be solved and answered by adapting the ultimate strategic goal considering the characteristics of the local economy and society, namely we reconfigure the added value of universities regarding the attributes of the local area.

7. Conclusions

In this study we reviewed and systematized the active and passive activities that can enhance the competitiveness of a certain region. We conceived the potential effects of universities on economic development that can be connected to input-output and short or long term factors. After this we analyzed the socio-economic environment of universities. We detailed an interesting concept, namely „Fourth Generation” universities and we attempted to install this framework into the structure of university generations. We outlined the diamond model of modern universities and introduced a virtual university model consisting of success factors that mainly affect the competitiveness of the given region. The indirect purpose of our study was to form a basis for further research, thus the analysis of „Fourth Generation” universities – the confirmation or the denial of their existence – can be continued. As we emphasised in our study, the naming and topic of „Fourth Generation” universities cannot be considered scientifically proven, this can mainly be a focus on the academic element of the Triple Helix model, as in this case the university can necessarily be a dominant actor regarding local economic development. The question is, are the functions of „Fourth Generation” universities adequate as novums for a transition in generations? It is true that the „leaps” between the first-second, and second-third generations was more dominant, as we mentioned in our study previously. From this aspect it is imaginable that we should speak of a 3.5 generation of universities. Can another huge transition come into existence, as we experienced beforehand? If yes, what functions will this concern? If universities expand their activities with new functions, can we name this institution a classical university, or should we consider these as „hybrid” institutions after this that adapted due to the changed social/economic/environmental needs and challenges of a region? Questions like this can be proposed regarding this topic, however we are sure that the discussed logic of „Fourth Generation” universities can advance our concepts and thinking in connection with university-oriented economic development, especially in less developed regions.

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The Identitarian Re-Interpretations of Italians from Istria

Laura Bergnach • Antonella Pocecco¹

Abstract This article investigates the dynamics of the *Istrian peoples'* identitarian process². The two social groups of “who remained” and “who left” - historical consequences of the Istrian-Dalmatian exodus - are the object of our analysis. The underlying theme focuses to the evolution of identity, according to two different contexts, Istrian territorial roots and territorial dispersion. The reasoning steps, critical thinking and the deepening of analysis develop around the concept of Italian-ness, proceeding with complementary approaches. The first thanks to an elaboration of the collective memory and of the collective identity, going to re-interpret the findings from two studies about *those who left* and *those who remained*; the second one, with a perspective reconstruction by the examination of the secondary sources, of texts by writers and of several informal interviews. We have been led to see the changes that affect the identity of the individuals, or the groups, concerned and to wonder about the nature of the sense of continuity with which these changes are experienced. The result, in particular, allows for invalidating the idea of the identitarian definition rooted in a nostalgic memory of the lost homeland, in the case of dispersed *Istrian peoples*; while in the *Italians who remained*, the idea of an unproblematic experience of the commonality, groupness and cohesion in redefining boundary crossing and the development of networks in the new national configuration(s).

Keywords Cultural roots - Collective and diasporic identity - Ethno-national homeland
Sense of belonging

ERC Classification SH2_1 - SH2_2

¹ Although the authors consider this article the result of a shared work, the responsibility of single paragraphs should be attributed as follows: to Laura Bergnach Introduction, paragraphs 1.2, 2.2, 4; while to Antonella Pocecco, paragraphs 1.1, 2.1, 3 and Concluding remarks.

² Viscovich uses the formula *Istrian peoples* to indicate the “Istrian, Kvarner and Dalmatian people”. This on the consideration that “the people of Istria” and “the Italians who left (the exiled) and those who remained” are concepts quite strong and binding (in the first case) and ethnological (in the latter case) that do not help to define, what happened after the WWII and the collapse of communism (1995: 49). Here we use the terms *Istrian peoples*, *Italians from Istria*, *Italians who remained* and *who left*, *Istrian, Dalmatian* and *Kvarner people*, holding them instrumentally interchangeable (Viscovich, 1995: 49).

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Introduction

The transition societies *laying beyond the Berlin Wall* have opened an acute debate inside historical and social scientific analysts on the progressive emergence of ethno-national communities or ethnic definition of the nation based on belonging to the people and on language, culture, and shared origins.

The process of dissolution of the Eastern European Bloc has evolved with the construction of new political nations, based on the loyalty of the people, we might say, to their cultural nations. The difference between the past and the future forced most people to redefine their life projects, giving way to the degeneration of ethnic “nationality” towards the *critical myths* (borrowing Berardinelli’s vocabulary, 1993). The same *myths* are in fact reinterpreted by extrapolating what it can be useful and functional for contingent purposes and for alternative hegemony, in this way they encourage the emphasis on the past in a compensatory function. In many cases, this has resulted in what one might call “nationalist rhetoric”, in particular when actors were seeking to transform mere categories into unitary groups, forcing an “ideology of conservation” (to borrow Pecchinenda’s words, 1999) and a “sacralisation of identity”.

The transition was played in terms of pluralistic openings (democracy) connected to the identitarian tension and territorial differentiation (construction of new nation-states). In doing so, Eastern Europe has crossed Western Europe in a particular phase, when the last one was involved in a supranational project, the European Union. This process is outlined in terms of economical global player, having a vision of global interrelated, transnational and intercultural society, and for that rejecting a possible sovereign entity. Given that Europe is the birthplace of the nation-state, we argue that also societies “from Western side of the Wall” seem somehow like *societies in transition*. The new configuration, based on a transnational model, is experiencing the overcoming of the modern nation-state sovereignty ideal (post-national conception), opening an era of interdependence and institutional policy of the European historical nation-states. This process is confronted with the re-emergence of identities in each country, a phenomenon that is reinforced by the increasingly importance of regional institutions. The so-called multicultural Europe – relying on the redefinition of the relationships between multiple cultural affiliations and political organization – seems the result, of this post-national conception (Bergnach 2012).

It is not by chance that a “public and private ‘identity talk’ is widely current” (Brubaker and Cooper, 2000: 25). Besides the specific European evolution, the complex contemporary Western societies and the fundamental changes in the social world produce, in fact, increasing interstitial forms, drawing out the proliferation of self-understandings and the identitarian question. “What becomes problematic and what the term ‘identity’ trying to grasp is changing of ways in which the individual in Western societies relates itself to the institutions, norms, social belongings”, as Sciolla put it (2010: 22; our translation)¹. To live next to each other requires reworking modalities of coexistence

¹ The social changes in Western societies are mentioned briefly in some conceptual categories, such as *social centred system*, *mediated social relationships*, processes of *de-institutionalization*. The concept of *social centred system* refers to the dislocation of the social cohesion created organically. This condition

(with the other, for the other, against each other, to borrow Simmel's vocabulary), because in a context characterized by the postmodern explosion of searching the cultural roots and the authenticity. This *pluralistic coexistence* is susceptible of leading to a *higher freedom*, but it has to deal with the "tensions between contradictory values, equality and diversity, political unity and the right to one's own authenticity" (to use Schnapper's words, 2002: 7). One could then argue that it requires a daily construction, efforts and sacrifices, overall commitment, a form of *trust*, which is particularly relevant in the social world of the high modernity, made of *mechanisms for undocking*, following Giddens (1999).

This article traces the redefinition of the self-understandings of the *Italians from Istria*, marked by the disruptive force of the historical events. We develop our reflections reinterpreting the findings derived from the studies² on the *Italians who left*³ and on *those who remained* in Istria and Dalmatia after the Second World War; in addition, through a consideration based on the review of secondary sources (necessarily partial and selective), on texts by writers⁴, and on informal interviews. We have been led to

greatly expands the possibilities of choice and freedom of the individual, strengthening *mediated social relations*, while uncertainty of the social environment favours, according to Gehlen (1967), the evolution of the *de-institutionalization processes* (for more explanation on these three conceptual categories, see Sciolla, 2000, pp. 18-27).

2 The two studies were conducted in the Institute of International Sociology (ISIG, Gorizia, Italy). The research on the exiled people took place between 2001 and 2002 years, and it has concerned four principal topics (the exodus, the memory of the homeland, the transmission of the diasporic culture, the projects for the future), using different methodological tools: a questionnaire (a sample of 790 members of ANVGD), in-depth interview and focus groups. Furthermore, the investigation took place in two stages, involving the main communities of exiles in Italy (Milan, Genoa, Turin, Rome, Venice, Gorizia, Udine and Trieste) (413 subjects) and then the exiles emigrated to Argentina (Buenos Aires, La Plata, Zarate, Quilmar) (218 subjects) and Canada (Toronto, Chatham, Windsor, London) (159 subjects) [see Gasparini, Del Zotto, Pocecco, 2008 (eds.); Pocecco, 2011]. The survey on Italian community in Istria / Kvarner, was conducted between 1992 and 1993 years on a statistical sample of 1.500 subjects. The main areas of research included ethnic belonging, perception of ethnic borders, criteria of ethnic identification, the feeling and awareness of belonging to the Italian group and organizations, the daily use of Italian language, information sources, participation to the political change and process of new States and democracy building (see Bergnach, Radin, 1994; Bergnach, 1995a).

3 According to Bordes-Benayoun and Schnapper, exodus means a collective movement of large number of people under the pressure of events with significant spin on the history of concerned peoples and territories. In this sense, the concept also includes "being part of the same people", although geographically scattered, on the basis of a singular historical destiny (2008, 38). The case of Istrian peoples still represents an extremely sensitive debate, an ideological and political battleground, capable of deploying institutional effects (the inclusion of this page in the school textbooks, the issue of abandoned properties, the label of stateless persons or Yugoslav citizens by which are identified the individuals emigrated abroad, the often unfair re-writing of Istrian-Dalmatian history...). The exodus from Istria, Dalmatia and Kvarner has been publicly recognized only in the last decade in Italy. See, for example, the so-called "Day of Remembrance" to remember the turning point that struck Istria, Fiume and Dalmatia during the last phase of the Second World War.

4 We refer here in particular to the narrative works, short stories and essays of C. Magris (1991, *Un altro mare*, Garzanti, Milano); A.M. Mori and N. Milani (1998, *Bora*, Frassinelli, Milano); P. Rumiz (1994, *Vento di terra*, Ote-Mgs Press, Trieste); F. Tomizza (1967, *Trilogia Istriana*, Mondadori, Milano). Moreover essays and studies that have brought to Italian public attention the issue of the exodus, as G. Crainz (2005, *Il dolore e l'esilio. L'Istria e le memorie divise d'Europa*, Donzelli, Roma); G. Oliva (2005, *Profughi*, Mon-

see the changes that affect the identity of the individuals, or the concerned groups, and to wonder about the nature of the sense of continuity with which these changes are experienced⁵. The reflections we researched in the written materials and the questions posed to the different social actors have been finalized to evidence pitfalls, which should have been avoided in the identitarian process in the consequence of *Istrian traumatic event* or *Istrian turning point*, the phenomenon that broke links in the chain of generations⁶. We must suitably clarify that here we do not aim to contribute to the ongoing debate on exodus⁷, instead we focus on the links of belonging of Italian Istrian peoples. The point addresses to the development of an analytical path, which should be sensitive to the varying ways in which actors, and also public narratives and discourses, attribute meaning and significance to the relational mode of identification.

1. Interpretive Requirements

In order to analytically define the concept of identity in terms of its dynamic, we proceed specifying the sense in which collective memory participates to the process of identity formation, its role in shaping the identity of the subject (both individual and collective). The identity must rely, in fact, on its most important resource: the memory. Furthermore, we intend to agree on the importance of social action in maintaining commonality, connectedness and cohesion.

Interaction between Individual and Collective Memory

There is analogy between the way in which the identity of individual is connected to

dadori, Milano); A. Petacco (1999, *L'esodo. La tragedia negata degli italiani d'Istria, Dalmazia e Venezia Giulia*, Mondadori, Milano) and R. Pupo (2005), *Istria: le persecuzioni, le foibe, l'esilio*, Rizzoli, Milano). In addition, the so-called "literature of the exodus" [E. Bettiza (1999, *Esilio*, Mondadori, Milano); G. Semacchi, C. Benussi and M. Petronio (2003 *Parole lontane. L'Istria nella sua storia e nel nostalgico ricordo di autori esuli*, Ibiskos, Firenze); P. Tarticchio (2001, *Nascinguerra*, Baldini e Castoldi, Milano) and G. Zelco (1993, *Vento di terra perduta: una storia istriana*, ItaloSvevo, Trieste)] or other essays more focused on Italian community [Radin F., Radossi G. (eds.) (2001, *La comunità dei rimasti*, Garmond, Zagreb)].

5 The guiding criteria in selecting the information sources has been that of a first-hand knowledge the *Istrian-Dalmatian case*. The informal interviews involved various social actors, such as academics, professionals, politicians, cultural operators, public and opinion leaders and economic operators [in this latter case, we refer also to the survey on the Italian entrepreneurs of Istria (see Bergnach et al., 2001)].

6 The links in the chain of generations, from experiential event, full of symbols and meanings and of sufferings have been broken; the exodus turns into a plague of the past, to be taboo (Milani 1995: 73).

7 It should be considered the commitment of scientific and research activities in the field of historical or ethnographic studies and humanities-related policy issues of the exodus. This effort, however, does not go hand in hand with the production of systematic studies in the social sciences and sociological domain. Here the category of *Istrian exodus* is being imported from other disciplines, particularly the historical and political ones. But the Istrian exodus takes so on a rather elusive use, as if the historical-political meaning would be adequate, without requiring further specifications. We consider that this constitutes an obstacle to a more precise analysis and to a sort of emancipation from the local / national dimension of it, which deserves to be projected in a more wider perspective, like, for example, the multiplicity of studies that concerns other diasporas. However, it should be noted, as recognised by some authors, that there is not yet a sociological theory of the diaspora in the true sense of the term, or that it is a relatively recent concept in the social sciences (see, for example, Bordes-Benayoun and Schnapper 2006, 2008; Brubaker 2005; Hettlage 2012).

the memory and the one with whom it connects to the collective identity (of a group, a community, etc.). Identity and memory are the fundamental means of defining the experiential frame of individuals, significantly linking past and present thanks to a common sharing, on the basis of a temporally broader representation. In this sense, the re-interpretation of the past stands for the oriented use of some aspects of collective events, implying a set of complex mechanisms as the celebrative ritualism, the sacralisation of some episodes, etc. In other words, to analyse perceptions and narratives, to reconstruct the individual paths by which the collective memory of the event is formed, primarily explains how a group “rearranges” the past on the base of a shared narrative (Pocecco 2012). Following Halbwachs (1997), it is in society that people normally acquire recall, recognize, and locate their memories. The individual’s memory puts, intuitively, the subject in a steady relationship with his past, with his memories, even providing him references and interpretative tools for everyday experience. This symbolic reference to the past also promotes a continuous, critical and sometimes irrational reconstruction of a collective memory and of its shared representations: using a sort of “presentist approach”, collective memory consists in the re-composition of the past in the light of the present, in the sense that its social constructions are influenced by the needs of the present.

Halbwachs also stressed that it is impossible for individuals to remember in a coherent and persistent way outside of their group contexts. The group provides materials for memory and pushes to recall particular events and forget others; it may even produce memories of events not directly experienced. So, the individual’s memory is never entirely isolated or closed: “A man, to evoke his own past, often needs to appeal to the memories of others. He utilizes reference points that exist outside of him, and that are set by the society. Moreover, the functioning of individual memory is not possible without these instruments which are the words and ideas that the individual has not invented, and he borrows from his environment” (Halbwachs, 1997: 98; our translation). Consequently, the interaction between individual memory (or, as Halbwachs calls it, the *internal one*) and collective memory (the *external one*) is a multifaceted process: both feed on symbols, constructions, representations, testimonies, “signs” or “traces”, present in one or other. The collective memory is not the simple sum of several individual memories: every single memory is significant like a mosaic tessera - every piece, despite its infinitesimal size in relation to the whole, remains essential. In this sense, every memorial story-telling may precise the contours of an event or better define some aspects or add new ones. The internal memory offers to the subject the support of experience; the external one provides common representations shared with the other members of the group. Both are, however, “techniques” which allow the presentification of what no longer exists, creating a temporality that would be otherwise impossible. If in the case of the internal memory the presentification remains a purely subjective and voluntary act, in the external one it encourages a common feeling of belonging and a symbolic brotherhood, on which is based the cohesion of the group and the opportunity to recall events of immediate intelligibility to every member. The common feeling of belonging inspires the definition of an individual’s identity, and realizes the conscious

membership to the in-group. It assumes peculiar effectiveness in the case of a diasporic identity⁸. This because the recalling to a real or imagined homeland - the “homeland orientation” as Brubaker (2005) calls it - constitutes one of the cores of the external memory, often implying the demand of public recognition, and facilitates the mutual recognition within the in-group, perceived as community of dispersed people. In this sense, collective memory is never something irreversibly given, or a stable framework, but it is susceptible to fluctuations and different emphases. The mechanisms and representations of collective memory cannot be reduced in traces of the past, because it is surely “presence of the past”, but also “use of the past to the present”. With this in mind, one of the purposes is to reflect on the memory as “an actor of history”, its use and its users, its role and its effects, even contradictory.

This becomes particularly relevant in a time when “[...] we are witnesses and participants in a general trend of turning away from stable, ‘hard’ history in favour of changeable, ‘soft’ memory (ethnic, social, group, class, race, gender, personal and alien) and a new cultural phenomenon which [...] bears the ugly name of musealisation” (Ugresic 1998: 221-222). In the postmodern world the debate is focused on the “cult of the memory”, on “the era of commemoration”, on a “hyper-memorial era”, in order to emphasize an almost obsessive desire of making numerous historical events an occasion of ritualism and celebratory formulas (Lipotevsky 2004).

1.2 The Identitarian Process

Identity has undergone a rapid and continuous diffusion, coming to be extensively used in the media, in the journalistic lexicon, and in everyday life and talk. As the term has proliferated, its meaning has been stretched, opening a risk of devaluation of

⁸ The term of “diaspora” has undergone rapid and continuous diffusion in the last decade. Therefore, its utilisation as a category of analysis has not always gone hand in hand with the theoretical and conceptual deepening. As it is been underlined by some analysts, the evolution of the term is favoured by the migration processes in the context of globalization and in the framing of issues of particular identities, delimiting the concept to the Armstrong’s idea of applying the term *diaspora* to all ethnic communities without a territorial base in a national society. So, the term often made a general or allusive purpose, as if the word had a clear and obvious meaning not to require further specification. Borrowing Brubaker words its meaning *has been stretched* (2005). The author, in his reviewing of the changing meanings of “diaspora”, sheds light on neglected aspects, suggesting to speak of diasporic idioms, stances, projects, practices, claims: “As idiom, stance, and claim, the diaspora is a way of formulating the identities and loyalties of a population” (*ibidem*, 12). As it emerges in the literature on diasporic phenomenon and on the term diaspora as analytical concept, to which here we have made reference (Bordes-Benayoun and Schnapper 2006, 2008; Brubaker 2005; Hettlage 2012), we must distinguish between a larger and a stricter semantic domain. It should be noted in fact that a larger semantic domain links the concept of diaspora to the “dispersed people”, according to the Connor’s known definition (*segment of people living outside the homeland*); while a strictly one didn’t consider that it is possible to speak of the diasporization of every more or less dispersed population (for example Safran, 1991 Tölölyan, 1996, Cohen, 1997, Sheffer, 2003). Speaking of diaspora, in the latter case, means to consider it as a distinctive “community”, being characterized by active solidarity as well as by relatively dense social relations that cut across state boundaries and links members into a “transnational community”, so delineating social exchanges, and the existence of objective relations. French sociologists Bordes-Benayoun and Schnapper, starting from the second approach, describe the diasporic condition in term of implying consciousness and will.

the meanings of the term in conceptual space. Not for chance Brubaker and Cooper tilted their article “Beyond ‘identity’ ” suggesting that “ ‘Identity’ is a key term in the vernacular idiom of contemporary politics, and social analysis must take account of this fact” (2000: 1-6)⁹.

We know from the literature that the uses of the identity move between strong conceptions (when understood in a hard sense) and weak ones (when understood in a soft sense). The strong understandings of identity preserve the common-sense meaning, emphasising the sameness over time or across persons. The weak one, by contrast, break with the hard and also with everyday meanings of the term, being focused on qualifiers of identity as unstable, malleable, fluid, contingent, fragmented, constructed, negotiated, and so on (for example, the constructivist approach). The word “identity” is semantically inseparable from the idea of permanence. Implying sameness or difference across time or persons, it refers to a stable structure in which the individuals or the groups are identified. Closely related to this meaning is the everyday sense of “identity”, which in fact strongly suggests at least some self-sameness over time, some persistence, something that remains identical.

What is problematic is the relationship between functions of identity and social and relational roots in which identity is performed. Raising some more general questions related to overcoming the surrendering of the word identity using other terms, less ambiguous, as, for example, identification (Brubaker and Cooper, *ibidem*), we could say that speaking of identity means to speak of stability / instability, opening / closing *conditions*. The collective identity, which is not external and coercive with respect to the individuals, helps to define the boundaries of a group through the construction of symbols, and in meantime it interacts with the expectations of individuals identifying with the group. “Strong notions of collective identity imply strong notions of group boundedness and homogeneity. They imply high degree of groupness, an “identity” or sameness among
 9 “For a variety of reasons, the term identity proved highly resonance in the 1960s, diffusing quickly across disciplinary and national boundaries, establishing itself in the journalistic as well as the academic lexicon, and permeating the language of social and political practice as well as that of social and political analysis”. Identity moved from being a technical term of philosophy and psychoanalysis to a key term throughout the human and social sciences, and the works of Erikson on “identity crisis” and “communal cultures” constitute important steps in the paths of diffusion. But “what do scholars mean when they talk about ‘identity?’” (Brubaker and Cooper, 2000: 3; 6). As underlined by Brubaker and Cooper, which have explored the work on “identity”, the social-analytical meanings and uses of identity has opened an interesting ambivalence in the literature, because oscillating from hard and soft conceptions, or better from essentialist argumentation and constructivist qualifiers. In their inventory of the uses of “identity” the authors has revealed not only great heterogeneity, but also a significant antithetic positions “that highlight fundamental or abiding sameness and stances that expressly reject notions of basic sameness”. That are between a strong or hard conceptions of identity, on the one hand, and a weak or soft conceptions, on the other. As underlined by the authors, the strong conceptions of identity preserve the common-sense meaning of the term - the emphasis on sameness over time or across persons. We must observe that it continues to inform important strands of the literature on gender, race, ethnicity, and nationalism. The weak or soft understandings of identity, breaking with the first meaning of the term, by contrast underline that identity is multiple, unstable, fragmented, and so on (2000, 10-14). In the context of our work, we will refer moreover also to the state of the art of sociological studies conducted on identity by Sciolla (1983). A useful upgrade and enrichment of the anthology may be found in a more recent contribution of the mentioned author dedicated to the multi-dimensional conception of identity (2010).

group members, a sharp distinctiveness from non-members, a clear boundary between inside and outside” (Brubaker and Cooper *ibidem*: 10).

But links are subjected to the stress of the free choice, which is due to the relevance attributed by the subject in a certain context and at a certain time to a certain level of identification rather than to another. In order to assess his own interest and calculate his own costs and benefits, the individual (the group) must assume *continuity over time* (the persistence), which is impossible without the intersubjective recognition. Individuals / groups need to nourish external recognition of authenticity, on the basis of the delimitation of the community itself, and the importance that assumes this delimitation on the level of communication and associative relationships-trust (Duchesne, Frogner 2002).

As argued by some authors, one of the features that might distinguishes the sociological approach in the study of identity is precisely to avoid referring to any substantialist and foundationalist understandings of identity. In particular in consideration of significant changes of contemporary Western societies, as the marked process of individuation: trying to adapt to the needs of the century, to the social complexity and to the increasing number of cultural models that guide choices, today the Western individual “let’s go to the waves of contingency” (Mongardini, 2011:102; our translation). If the identity is thought in terms of essences, the problem of “borders and continuity” appears insoluble, because it is faced with the fundamental change in the social world and the uncertainty of the social environment (Melucci 2000a: 120-123; 2000b: 30-37).

The identity is not an undifferentiated unity, having social and relational roots, and in this sense it calls attention to complex paths. It is composed by some elements, as the permanence and continuity over time, the unity and unicity (delimitation) and the relationship between subjects that allows them to recognize each other, configuring the intersubjective recognition.

In this sense, it seems useful to think the identity not as a stable entity, an undifferentiated unity, but rather through the functions, which consent individuals and groups to define themselves and realise their self-understanding in term of affinity and affiliation, of commonality, connection and cohesion, of peculiar stories. On the one hand, individual identity implies and entails differences (compared to others), highlighting the subjective aspect of the distinction and identification. We can contemplate the attitude of being part of a collectivity as being perceived *objectively* its own part (distinction), and the disposition of being member of the community based on the *subjective will* to be part of it (equality). In this sense, distinction and equality give to the self-understandings a procedural nature: individuals organise and construct boundaries of the community where they belong; they understand distinctive markers and concepts within a social context, recognizing them in a way that “rationally” orders and organizes them through the social frame. On the other hand, societal integration implies “equality” with others, through which a social actor assumes the objective belonging to a community, recognizing all dimensions that transcend the single individual.

The ability to stand out from the others must be recognized by the others, in order to find the permanence and continuity over time; moreover, the unity and uniqueness allow

to recognize similarities and differences from the others and to distinguish one group from another.

2. Between Acceptance and Denial of the “National Suicide”

After the trauma, *Istrian peoples* - “those who undergo actual displacement together with those who suffer interior displacement, losing their homeland without ever physically moving” (Ballinger 2003: 2) - were forced to set up a path of acceptance of the burden of the past. That is to recognize indirectly each other’s “choices and responsibilities”, respecting and valuing the different experiences of the *loss* (the brutal *loss* of the entire family, the *loss* of the only world that is known, the *loss* of the *homeland*, of the affective micro-cosmos, of nation, the *loss* of great ideals).

2.1 The Dual Nature of Exodus from Native Country

The collective memory of the exodus - as uninterrupted reconstruction of the past – cannot be considered only a full-fledged history-memory (as conceptualized by Nora), but rather a part of the history, in our case of the Italian nation-memory, living the same contradictions. As underlined by Nora, “With the following of the society in place and instead of the nation, the legitimation by using the past, then by using the history, has given way to the legitimation by the future. The past, one can only know it and respect it, and the nation, one can serve it; the future, one has to prepare it. The three terms have regained their autonomy” (1984: XXV; our translation). The operational concept of collective memory used in this analysis moves from the assumptions previously discussed, highlighting how it does not always coincide with the history, nor with the historical truth, and it is subject to continuous revisions both by individuals and by communities. As a result, the collective memory never corresponds to a unitary and crystallized construct, framed in the dimensions of the imaginary and of the symbolic, revealing itself from time to time diffuse, multiple, masqueraded, mutilated, manipulated. Moreover the collective memory of the exodus is not an “appeased memory”: it finds the identity of individuals who self-perceive Italians, “Giuliani”, Europeans, citizens of the world, but primarily - like an inalienable genetic heritage - “exiles”: *people who have experienced the exodus*. The exodus, as *breaking-event*, precisely reveals in the departure from own land the dual nature: material and relational breaking-event¹⁰. In the collective memory of exodus, the two dimensions cannot be separated, on the contrary they are irreducible aspects of a unique narrative. Perhaps, the only discriminating factor is if the individual has been forcefully divided from his family or not, but it only produces a sort of “hierarchy of suffering”, a purely statistical quantification of a diasporic dimension. The breaking-event of exodus has not been realized *ipso facto*, the warning signs (that preceded and caused it) sink in concretely and psychologically unsustainable situations

¹⁰ The first refers to the loss of the material elements of an existence (house, property, work tools, etc.), everything which concurs to define the socio-economic status of the individual and his integration into the local community. The second makes reference to the affective micro-cosmos (family, relatives, friends, etc.) of the subject, which accomplishes the daily existence with meetings, mutual exchanges, sharing of anniversaries and celebrations, etc.

for individuals. Such situations are connected to the scheme “we” and “they”, which defines a situation of anxiety and deprivation of liberty, as well as a denial of a different cultural identity. From the will to defend their own cultural identity arises the feeling of the exiles to be foreigners in their own land, well made explicit by the words of an exile emigrated to Canada: “My desire to leave my land has been primarily due to the fact that I was an Italian” (quoted in Pocecco 2008: 127). The denial of own identity in the native land is stressed by the analysis of who has re-worked the experience of exodus: “The risk for a refugee - immigrant [the exile emigrated abroad] who wishes to speak both for himself and for others is to dig too deeply into himself, revealing anxieties and existential hardships impacted by personal factors and a very individual story, and then to attribute these anxieties and these discomforts to the other exiles. (...) But it can also happen the opposite, he remains isolated in his own solitude, and that it is being unable to believe that others can feel what he feels” (Antonelli 2002: 5; our translation).

This reflection is relevant for two reasons. On one hand, it fully explains the desolation and the feeling of emptiness that the individual memory of those moments still evokes and, therefore, the trauma of a denied identity, existentially and not only symbolically denied, and, as such, cause of a radical choice - leave own land. On the other hand, it shows a clear consciousness about the possible “unsaid” that deprives and sterilizes the same internal memory, making impossible its integration in the external one. That is an extremely contradictory play of forces, whose fluctuations may have an immediate impact on the transmission of the memory or on the oblivion of the past.

In such a context, the role of the temporal dimension of memory becomes central, because it ensures the maintaining a certain degree of biographical or communitarian integration connecting the present experiences and the past choices, and projecting the signification of the latest in the future.

2.2 Overcoming Denationalization and Assimilation

The ideological cosmopolitanism claims to be an integrative norm and a regulation of existence. As “obliged ideal”, it pervades every definition of the Other, swallowing it in undifferentiated acceptance. The regime of the *new Yugoslavia*¹¹ recognized

¹¹ The Kvarner and Istrian-Dalmatian community crumbled with the advent of “Tito’s Yugoslavia” (or “Second Yugoslavia”) as a result of the annexation of the Italian territories to Yugoslavia after the WWII and the massive exodus. The “Tito’s Yugoslavia” was a State entity that inherited all the unresolved problems from the “first Yugoslavia”: “the Slavic nations of the South” were demanding political independence from the Hapsburg empire on the basis of so called ‘the Yugoslav idea’, in which there were contradictory justifications. On one hand, this meant a voluntary union and the recognition of a specific national individuality, on the other it denoted a project of the unitary state, hegemonic (“big state”) (Rizman 1994: 101). This ambiguity did not spare the “Second, or Tito’s, Yugoslavia”. In other words, the selfish attitude is confirmed in all communities, even if from the emphasis it seems that some of them are characterized more aggressive than others: each of the communities projected into the *shared contract* own aspirations and peculiar interests. The Second Yugoslavia has configured *constituent peoples*, which means *constituent* element of social relations. The federal constitutions of the republics and autonomous provinces, have distinguished between nation and nationality: pointing out with the first term “nation” the “dominant” national group in a single republic, while with the second term “nationality” (community culture) the minority ethnic groups. This on the basis of national belonging, which was not been determined by the bond of citizenship, intended

the ethno-national groups through a formal institutionalization and codification of ethnic and national categories, however, subordinating the ethnic and ethno-national loyalty to the “class ideology” (principle of horizontal solidarity as opposed to the primary solidarity). Ethno-national belonging has not been determined by the bond of citizenship, and this has not generated an extended form of consensus. Borrowing Brubaker and Cooper, “it does not entail that these categories will have a significant role in framing perception, orienting action, or shaping self-understanding in everyday life” (*ibidem*: 27). Some individuals brought a pragmatic behaviour and actively acceptance of the political project perceived as the higher moral project - in this case, imagining a possible future and therefore conforming to the “cosmopolitan political project” based on the internationalist principle of universalism that characterized the first phase of the *Second (or Tito’s) Yugoslavia*. But others brought a defensive behaviour or a passive adaptation, structured around the denial of “putative national identity”. This because of the difficulty transcending not only the concept of persons and families rooted in the local context and homeland, but also all feelings that explain attachment and devotion to own native country. The Italian nation-memory, in term of values and feelings, which the community was forced to “remove”, was relegated to the private sphere: to live the adverse fortune has produced in some cases a sort of *internal exile*¹². This in particular when the reading of the *loss* of the identity of the people, of the *homeland*, of the nation have been interpreted from ‘outsiders’ as “nationalist behaviour”, and when the policy guidelines aimed at the denationalization and deculturation of the group were particularly effective¹³. The *Special Italians*¹⁴ were obliged to deal with the past political legacy associated to the regime of the fascist period, the “painful” political past with which they linked its own fate. Ending up to configure the Italian destiny as a damn: the exodus, from experiential event, full of symbols and meanings and of suffering, turns into a plague of the past, to be taboo. The memory of the negative historical events becomes oblivion, reflexive information, not metabolized, at best confined to a “loud silence”: the oxymoron “loud silence” makes the idea that the appearance of oblivion is repeated, but it seems largely fictitious.

The Italian community developed later aspirations (second phase of Tito’s Yugoslavia) for a more equitable recognition by expressing the willingness to tackle the effects of the past. Moreover, they displayed that they wanted to seize the opportunities related to the establishment of territorial units and consequent attribution of subjectivity to the ethnic groups¹⁵, through the commitment to defend cultural particularity. All

as a specifically political practice (Bergnach, Komac 1995).

12 What we know “[...] of our ‘internal exile’, guaranteed solely by the home space?”, as Milani asks herself (1998: 11).

13 “Too [...] we have been denied: a slice of identity, a certain size of local culture [...]” (Bogliun Debeliuh 1992, “Ripartire da Brioni”, *Panorama*, XLI, 18, pp. 11-12; our translation).

14 “[...] individuals in whose deepest selves strange fusions have developed between what they were and what they have become in the place where they born, something like a sweeping redistribution of molecules into unforeseen geometries” (Milani, 1998: 11).

15 The new government recognized all groups, without distinction. As regard the territorial aspect related to ethnicity, it established republics and autonomous regions, according to the administrative boundaries built in relation to the model of territorial aggregation of the year 1918, with a territorial adjustment, of course,

of that gives form to the *area of equality*, within which mutual recognition of equal belonging allows to reject or to cover judgments of an own inferiority (borrowing Pizzorno's vocabulary, 2007: 316), gradually transforming it into a social microcosm, which fulfilled daily life with connectedness and cohesion. The continuity is articulated, we might say, in a succession of adaptive behaviours and flows almost to be independent from those that preceded it, before the historic "earthquake" that rocked and "fractured" Italian community¹⁶.

3. Between Oblivion and Diasporic identity

Adopting the idea of Candau's symbolized genealogy (the reference to a founded story), we tried to stress the dynamics of the collective memory of the exodus through three generations of exiles, in order to find the *uniqueness of the family story*, the *perception of the breaking-event* and the *strength of the collective memory* (Candau 2002).

The uniqueness of the family story: the different meaning given to a family story fits in a larger narrative dimension (the collective dimension of exodus from Istria, Dalmatia and Fiume), characterised by a heuristic specificity. The concept of "family story" has been crucial in defining the transmission of breaking event from the first generation (who has directly experienced the event) to the second (who has / has not directly experienced the event) and to the third (who has experienced the event through the family narratives). The language has proved to be an interesting factor, because in the third generation of exiled migrated abroad, the linguistic competence in Italian appears largely overcome by the knowledge and the use of the dialect of the place of origin of parents or grandparents. This datum may be undoubtedly considered an evident sign of the capability of the collective memory of making present the past in everyday life. It should be also noted that, in the free responses of the third generation resident abroad, it is recurrent the concept of "our land" (and not "land of my parents" or "land of my grandparents") and the use of the term "homeland". Even discussed by many scholars, the recalling to the homeland appears relevant in the case of the diasporic identity, generated by the Istrian exodus, for the correct assessment of the significance of collective memory in the construction of identity. So, the third generation seems at the same time nourishing a strong sense of belonging to the society in which lives and claiming the recognition of own identitarian roots. *The perception of the breaking-*

where the new annexations required it (i.e. the creation of the Republic of Macedonia and the autonomous provinces of Kosovo and Vojvodina).

¹⁶ The Italian community, which does not aspire to be a simple folk group, is equipped with a complex sub-organizational system. The community of Italians is articulated in organizations, institutions and associations (schools, theatres, publishing, research centres, etc.) emerged with the aim of satisfying the legitimate demands of the Italian minority. These bodies meet cultural, economic and political aspirations, offering the blossoming possibilities to be united in an organized community. They help to revive the traditions, to increase the opportunities for sociality. Today the Italian community is divided between two new European State entities, constituting in both realities an autochthonous ethnic group, recognized on the basis of possession of minority status at the time of birth of the two new national entities. As regards the protection of minorities, the general principles of law were formulated in the Constitutions of the Republic of Croatia and Slovenia. In the case of Croatia, the question was further regulated through legislation of a constitutional rank.

event: this perception, emerging both at the individual level than at the collective one, expresses the objective dimension of exodus (the sharing of a diasporic identity) and the subjective one (the diversified processes of internalization of individual's experience). If the founder *epos* (the exodus) remains the focus, its emphasis changes in the three generations. That is, a detailed memory (present in the first generation), a greater retrospect rationality of who has lived (but given the young age, was not able to fully understand its signification) or has not lived the breaking-event (the second generation), a sort of universalizing interpretation of the vicissitudes of own family (the third generation). Oversimplifying, one might be tempted to say that for the first generation of the exiles the breaking-event occurred "yesterday", because constantly present in everyday experience, able to re-emerge in form of explanation of the sense of its own existence in different situations. For the second generation, the exodus has taken place the "day before yesterday", since it is a recalled past consciously (and more or less painfully), internalized in terms of progressive emotional distance or even of conscious removal. Furthermore, for the second generation, in the case there is not direct experience, the evocative power of the exodus exclusively depends on the willingness / unwillingness of the first generation to talk about it that is to create a narrative. Emblematic in this regard are the testimonies of some of the respondents who clearly talk about a sort of shame about their condition as "children of exiles", self-perception mainly due to the silence of their parents. This "shame" has at first caused a real removal of a distinctive trait of own identity, often re-addressed in a later phase of the life. So, it could be argued that the second generation of exiles is a sort of "Generation of orphans" [as Siebert writes about the German generations after the Second World War (1997: 115)].

The strength of the collective memory: this label alludes to the power of the collective memory opposite to the oblivion (in the cases of a strong / weak transmission of the family narratives or a relevant / limited importance given to the breaking-event) through the three different generations. A scheme proposed by Augé (1998: 76 et seq.) has been relevant to describe the different phases of transmission or non-transmission of this collective memory. He highlights one of the characteristic phenomena of our time: the constant sedimentation of the memory and its formalization accompanied by the incessant action of oblivion, understood as *return*, *suspension* and *beginning*. The *return* is conceptualized as regain of the lost time forgetting the present - and the immediate past with which the latter tends to identify itself - to restore the continuity with the most ancient past, deleting the "composed past" in favour of a "simple past"; the *suspension* as the rediscovering of the present, temporarily releasing it from the past and the future and, more precisely, forgetting the future in order to identify it with the return of the past; the *beginning* (or *re-beginning*) is the discovery of the future, forgetting the past, creating the conditions for a revival which, by definition, opens every possible future, without privileging any.

An existence closed in its own individual dimensions cannot structure itself: it needs a collective dimension. The claim of the collective memory is given as a "strong datum" in the social configuration, since "[...] allows each one to situate himself in the course of time" (Bensoussan 1998: 12; our translation).

The need to be rooted in the past, to define an ideal continuity with “what was” is therefore a pressing need as irrepressible, dictated both by the desire to maintain a common symbolic and shared background, and by the capability to tap into it (to *evoke*) if and when the opportunity arises. This just becomes relevant in the case of the exodus from Istria, Dalmatia and Kvarner, because from it, existential trajectories are drawn, in a continuous and fragile balance between “what it was” (and it could have been), and “what is”, in the awareness of being part of a dispersed people.

If for the third generation the exodus is an event that happened in “a day in the past”, this implies the consequent disappearance of the distinction between internal memory (remember what one has experienced) and family memory (what is transmitted): it is a representation constructed by the individual thanks to the narratives of the previous generations. The third generation also seems to pick up the threads of the collective memory, proving interest, curiosity, eager to learn and understand. The memory that the first and second generation have clouded or relegated in the background of its own existence, re-becomes the context for young people, the searching of own roots takes on new meanings, helping them to define own identity.

In this third generation, the “emotional shock wave” (the experienced sufferings, abuses and indifferences) appears less intensive due to time elapsed from the breaking-event, so that “be of Istrian / Dalmatian origins” does not in itself imply grudges or closures, but becomes a source of identitarian pride. In this sense, the collective memory of the exodus takes a “transversal” existential dimension [as Benussi wrote (2003: 122), “The category of exile has become transversal, it has lost the historical specificity becoming existential”].

4. Italians *who Remained*: The Will and Social Action in Preserving Particular Commonalities, Connections and Stories

Having analysed the concept of identity, we seek now to illustrate the identitarian process of Italian community. For the purposes of exploring the sense of belonging concerning Italians who remained, it has been considered useful the scheme proposed by Sciolla (1983, 2010), referring to the three analytical dimensions or theoretical components within which to place the different aspects that characterize the phenomenon of identity. The author identifies a *locative* dimension, through which the individual is placed in a “symbolic” playing field, a ground where it defines and marks the boundaries, which are more or less mobile, for delimiting the “territories of the self”. With the locational requisite, the individual develops a sense of belonging and attachment to the group, a mind-set of being part of a community. Through the *integrative* dimension, the individual may set up (develop) an interpretative framework that links present, past and future experiences in the unit of a “biography”. The integrative function offers a temporal consistency, which is important for the identity. As the author explains, the same dimensions and functions that define individual identity refer also to the collective identity. But in the case of collective identity, the locative dimension is represented by territorial and symbolic borders and by members that here are included; the integrative dimension, by institutional officers and leaders of the group. The last dimension, the

selective one (or dimension of active orientation) allows the individual, once defined the boundaries, to order own preferences, to choose some alternatives and discard or postpone others, through the elaboration of the history and collective memory, as well communication models, both intergenerational and intra-generational. The sense of action concerns selective and interpretive aspects within a field defined by the coherence: the participation in a collective action might, when the favourable conditions are ensured, strengthen the identity of the individual (stabilization mechanisms of preferences). More the collective actor is involved in expansion events, which individuals do not directly control, the more it should define the purpose of long-term goal, creating strong ties based on mutual trust and transparency of decisions. In this way, the 'orientative' action makes sense only if the group owns decision-making centres and executive bodies. Moving from assumptions mentioned here above, we highlight and describe the social factors and the interactive dynamics that underlie the genesis and maintenance of the collective identity in the Italian community.

Location and boundaries. The relationship between collective identity and territory is narrowing. The human space, according to the words of the Italian anthropologist Altan (1994), is the container of cultural symbols and history, place of social interactions, socio-spatial context in which to exercise collective identity. The familiar *oikos* and the Istrian land are symbolic resources of a founding ethos of Italian community, placing itself inside of a space with sense and meaning. The We-identity, which is recognition in terms of equality with others, therefore social ties, it develops and strengthens through the preservation of the distinctive signs (language, cultural heritage, etc.) being characters of the historical and cultural community. One of the strength criteria of the self-understanding is made up by local *istrio-veneto* language, which is followed as a strong sign of differentiation and identification. Moreover, due to Italian language and Italian culture, it is being perceived and lived as vehicle of a mentality, a way of thinking and a symbolic heritage.

Internal consistency. A school system that includes the teaching of the Italian language ensures the transmission of own language and, through it, the possibility of preserving the cultural peculiarity. Besides that, the information systems, cultural activities, common celebratory rituals and memorials, and so on, constitute the sense of continuity, offering an active support for strengthening collective memory and the permanence during the time. The sense of continuity and permanence in time, and the processes of individuation ensure in the case of integrative dimension the internal consistency of the group. The experience and perception of time through the historical memory based on elaboration of myths, symbols and traditions, satisfies the aspiration for a specificity, giving meaning, legitimacy and sense of continuity. Moreover, the Italian culture is taken into account by "Others", being closer to the Western world, to which the new countries refer in the research and development of a pluralistic and democratic model: a reversal of the phenomena of denationalization and assimilation of the group known in the past, we can say. Seen as prestigious, the Italian culture reinforces, by induction, both the feeling of ethnic pride, which has effect on the maintenance of cultural identity, and the recognition and respect of Others: being the bearers of a culture valued by the Others and having an "ethnic homeland" as Italy, it constitutes a source of pride and dignity.

Choosing with pragmatic coherence. The collective identity is nourished by orientative action in the integration and preservation process of cultural distinctiveness. Organizations and institutions of the minority not only meet the desires and personal needs, but it also allows defending the position that, because of certain socially shared values, they cover in the system of social relations. The answer to the expectations of cultural, economic and social requirements, in fact, contributes to enhance the entire social microcosm of the minority, so as to make quite blurred the distinction between ethnic communities and ethnic institution, setting up some overlapping between the belonging to the ethnic group and the membership to the specific organization of ethnic communities. This has concurred to connect experiences and perspectives in a meaningful set, to coordinate the reasons (symbolic and temporal integration of the experience) and to obtain an external recognition. Its long-term continuity is preserved by the intersubjective recognition, but not against ‘the Others’: Italian community live the differences identifying itself through the “Istrian-ness”, a sort of *negotiated cultural strategy*¹⁷, giving a sense of belonging to a unity of style, a way of being and thinking, a relationship model between different groups, capable to stimulate a pluri-ethnic dimension of collective identity¹⁸.

The contribution of the Italian group in promoting the evolution of the culture of living together and raising ethical behaviour in the mutual respect and tolerance generates a deep self-esteem (positive self-consideration) and a significant external admiration (positive hetero-consideration), favouring the evolution of cohesive capacity and internal solidarity. Besides that, an inclusive propensity that evokes, in an apparently paradoxical way, the universalistic vocation, rather than the particularity. In the light of the data emerged, different aspects characterize the sameness, clarifying the forms of identification in the production of the sense of belonging represented in term of the boundaries, of the consistence and of the active orientation. The familiar *oikos* and the Istrian land are symbolic resources of founding ethos of a “good society”, inspired by the universal habits, tolerance and individual freedom; in other words, progress to a context of “broadened cultural horizons”, being able to reconcile the *particular* and the *universal*. While, internal consistency, regarding the need to connect the past and present experiences to the future prospects in a meaningful set, is implying regulation and management of differences, offering a configuration perceived to be consistent, reinforced by actively adopting communitarian stance and committing to the Italian community project.

Concluding Remarks

The “Who We are” is intertwined with the questioning about the continuity and discontinuity in the *Italians of diaspora* and with the organizing different and new systems of relations as framework of possibilities in the *Italian community of remained*.

17 “[...] Individuals link among them natural and original relations, concretely personal and non-institutional, born from an organic and inseparable desire, from a transcultural approach based on a ‘mutual glance’ [...]. It is a daily world of life evolving on ancient loins and because of a “new birth”, followed by the change in the way of thinking, caused by the changed numeric relationship of co-presence in the territory between the Slavic and the Italian world [...]” (Milani 1995: 68; our translation).

18 See Šuran (1995).

The analysis about the Italians of diaspora has produced evidence that there is a precise identification in the “common destiny of the exiles”. The reference to a homeland has been preserved over time (like *loss of the native land*), but mingling with new existential experiences, it became in the new generations the reference to the *land of the origin*; a sort of response to the need to maintain the identitarian roots in a “post-national” and “multicultural” world. Not excluding the importance of the associative networks, it should be emphasized that the collective memory of the exodus has been mainly kept thanks to the family narratives. It is in the action of story-telling that the exiles “build” their identity (*identitarian process*), at the same time demanding at the public level the acknowledge of their symbolic and cultural background (*recognition process*), namely being identified and recognized as those who lived the experience of the exodus.

But the process of generational replacing reveals its remarkable importance. Each generation, in fact, develops a collective memory based on two main components (Cavalli, 1996: 52): the historical experience [“i.e. modalities of participation and presence in the constellation of problems, situations, conflicts, projects that characterize the period in which it makes its entry onto the public stage” (*ibid.*)], and the resources received from the past generations. Three phases clearly emerge in the re-processing the significance of the exile: the *return* peculiarly connotes the first generation of exiles, in terms of existential practices revealing continuity with the “life of before”. The *suspension* characterizes the identitarian tensions of the second generation (both in terms of denial of own identitarian origins that, in the case of individuals living abroad, of a pluri-belonging). The *beginning* (or *re-beginning*) refers to the third generation, aware of its own identity and clearly oriented to its “re-investment”.

The involvement of third generation seems to bring out a sort of recognizing the “weight” of the tragic event. It emerges here the call to the “consciousness of the past”, which refers Pecchinenda. In his reflections on the meaning of memory the author highlights how young people often express the need to acquire “a sense of continuity in which the present value reverts only one of the stages of a single and indivisible process, which is understandable only in terms of both the past and the future” (1999: 151; our translation). So, the problem occurs in the failed sharing of a common memory among generations, which corresponds to a loss or a denial of the identitarian markers in the exiles.

In the group of “who remained” the minority institutions are central, constituting an indispensable point for the understanding of collective identity in terms of the processes of integration and social life. As combination of membership and communitarian loyalty, they evolve in a defined space, able of giving meaning to the community on the basis of the delimitation of the community itself and of the importance that the latter assumes in terms of communication and associative-trustable relationships. The different aspects that characterize the phenomenon of identity suggests moments and phases, as we have seen, of development of identity, clarifying the forms of identification in the production of the “sense of belonging” represented in term of boundaries, of consistency and of orientative actions. The exchange systems are highly socialized. There is a link between identitarian process and socio-organizational factors, especially and increasingly with

the associative ones, however, subject to the specific nature and to the variety in the institutional structures (that are different organizational systems; see for example the fall of the communist system and the emergence of new nation-states).

Through a sort of “selective reconstruction”, a way of processing the memory (borrowing a concept from Cavalli, 2005, 217), the Italians who remained were searching for the meaning of Italian-ness in a cultural horizon, looming through a distant process of civilization (the universal man, the concept of person, abstract thinking, the basics of legal formalism, the concept of freedom, democracy, etc.), and becoming hope in the context marked by the Balkan conflicts. To the Italian community, in the process of social interaction, have been recognized those traits and characteristics that, the same community has recognized as “own”. This process highlights the central importance of the recognition from others¹⁹. As it has been emphasized in the literature on memory, what is being remembered, selected and partly rebuilt, it is not just the product of conscious activity of individuals, but it needs to find the recognition of the others. This partially explains also the presence of an overlap between Italian-ness and Istrian-ness. In this sense, the identitarian revival of the Italian minority group is connected not so much to a form of opportunism (convenience behaviour), as to a great aspiration based on *mutual glance*.

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Estimating Working Poverty in Pakistan Evidence from National, Rural and Urban Population

Khalid Zaman • Iqtidar Ali Shah • Imran Naseem

Abstract The aim of this paper is to estimate the population of working poor in the labour market in Pakistan. This study covered two different poverty ratios at two different times i.e., \$1.25 per day from 1987-2005 and official national poverty line at 2350 calorie per adult equivalent per day from 1979-2006 respectively. The main finding suggests that there are around 1.618 million working poor during 2004-05. These figures imply that around 3.7 percent of the employed persons in the Pakistan are currently living on less than \$1.25 per day. Similarly, around 1.631 million working poor (3.4 percent of working population) in the Pakistan are living below the official national poverty line i.e., Rs. 945.45 per month in 2005-06. In rural Pakistan, there is an estimated 0.957 million working poor, with lower and upper estimates of 0.812 million and 1.102 million respectively. These figures imply that around 4.7 percent of total working poor in the rural Pakistan are currently living on less than 2,450 calories per equivalent per day. In urban Pakistan, there are an estimated 0.673 million working poor with lower and upper estimates of 0.613 million and 0.730 million respectively. These figures imply that around 2.5 percent of total working poor in the urban Pakistan are currently living on less than 2,150 calories per equivalent per day. Government should focus on working poor estimates and introduce reform packages for the working poor in Pakistan.

Keywords Poverty - Working Poverty - Employment - Labor Force Participation Rate - Pakistan

JEL Classification I32

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1. Introduction

Poverty is one of the main social problems and it is multidimensional concept. The present economic situation worldwide has generated a relatively new social category known as the 'working poor', i.e. even with job relinquishing below poverty line. In simple words working poor do not earn enough to look after minimum basic needs of their families. ILO (2002) defined working poor as the proportion of employed persons living below the poverty line.

The phenomena of working poor are not only limited to developing or underdeveloped countries but also an issue of developed world including Canada, USA and many European countries. In 1998, nine million Americans worked sometime during the year (of nine million, two million worked full-time and year-round) but fell below the official poverty level (Kim, 1999). According to ILO (2009a); the share of working poor (according to new poverty estimates of USD 1.25 a day) in total employment is estimated at 20.6 per cent in the world in 2007, Central and Eastern Europe 5.1 percent, South Asia 47.1 percent, Middle East 9.0 percent and Sub-Saharan Africa 58.3 percent. There is limited information and research work related to working poor. However, recently more attention has been given to the working poor category of poverty worldwide. Majid (2001) found only a slight decrease in the number of working poor around the world between 1986 and 1997, whereas his estimates indicated an increase in the lowest income countries. Berger and Harasty (2002) expanded this research and estimated world and regional working poverty for the years 1990 and 1998, as well as future trend and estimates until 2010. Their designed model estimated output growth required to match targeted reductions in global working poor. While examining growth requirements for reducing working poverty, Kapsos (2004) found an estimated 535 million working people with less than a dollar per day worldwide and 1.38 billion working people with less than less than \$2 per day. More shockingly Global Employment Trends (GET, 2010) reported dramatic increase in unemployment, working poor, and vulnerable employment, owing to the global economic crisis. The report indicated global 18 to 30 million unemployment in 2009 from 2007 and threatening to be more than 50 million if the situation continued to deteriorate. The multidimensional nature of wellbeing is now the well accepted approach in frontier research on poverty, inequality and policy analysis (Maasoumi and Yalonzky, 2012). Naschold (2012) employed a semi parametric panel data estimator to examine poverty dynamics in three villages in rural semi-arid India. The findings indicate prevalent structural immobility in this region suggesting a structural poverty trap, while all households face static asset holdings, higher castes, larger landholders, and more educated households are significantly at low risk. In the other study, Naschold (2013, p. 936) conclude that,

“Identifying household-level welfare dynamics and associated dynamic poverty trap thresholds can have important implications for the targeting of poverty reduction policies [...] Households in rural Pakistan and Ethiopia seem to be stuck in a static, structural-type poverty trap facing an expected level of long-term well-being that places them squarely in poverty”.

Saqib and Arif (2012) researched to measure time poverty among gender, occupational groups, industries, regions, and income levels by Time Use Survey (TUS) 2007 for Pakistan. They found 14% incidence of time poverty. Women were more time poor than men whether or not employed. Workers in certain professions and industries were more time poor as compared to other workers. Giesbert and Schindler (2012) explore welfare dynamics among households in rural Mozambique by using household panel data to test whether an asset-based poverty trap exists in rural Mozambique. The findings indicate that households in rural Mozambique are collectively trapped in generalized underdevelopment. Food-insecure households who have better access to income-generating opportunities and who can afford drawing on unproductive assets are able to sustain their productive asset base in the short term.

McKernan et al. (2012) investigated the ability of a poor to accumulate assets and his findings, contrary to common assumption, showed they could. Hence asset building subsidies that target low income families can be helpful in providing them more financial security. Bhorat and Westhuizen (2013) analyzed shifts in non-income welfare in South Africa between 1993 and 2004 and found a significant decrease in the headcount asset poverty rates across a range of covariates. This significant asset inequality decrease was in the stark contrast of results based on consumption data. While estimating multidimensional poverty among women in 14 Sub-Saharan African countries, Batana (2013) found important differences in poverty among the countries of the sample. Geographical dimensions indicated that rural areas were significantly poorer than urban ones and that a lack of schooling was, in general, the highest contributor to poverty.

As Hess (1994) pointed out a cruel irony of individuals (and families) fulfilling societal expectations to be employed and self-supporting were struggling for being economically viable. This challenges the dominant concepts of the long-term unemployed and of work avoidance. Emerging qualitative evidence suggests that the contemporary experience of unemployment is characterized by ‘churning’, which involves moving in and out of low-paid, short-term jobs, and on and off welfare benefits (Harkins and Egan, 2013).

The main objective of this paper is to estimate working poor in Pakistan as no profile of working poor is available. The more specific objectives are:

- To estimate the number of working poor below \$ 1.25 per day.
 - To estimate share of working poor at national, rural and urban Pakistan in total employment.
 - To estimate low and high estimates of working poor.
 - To analyze the trends of share of working poor at national, urban and rural Pakistan.
- The paper is organized as follows: after introduction which is provided in Section 1 above, Methodological framework is explained in Section 2. The estimation and interpretation of results is mentioned in Section 3. Section 4 concludes the paper.

2. Data Source and Methodological Framework

To construct the working poverty estimates (total counts and shares in employment), the following data were used:

- Poverty rates come from the World Bank's POVCAL Net (2008) and use reference lines of \$1.25 per day in 2005 Purchasing Power Parity (PPP) terms. The years for the poverty figures range from 1987 to 2005. The study also uses annual observations for the period of 1979-2006 at rural, urban and Pakistan (national) level. The data is obtained from various issues of Economic Survey of Pakistan and World Bank Development Indicators, 2009. The rural, urban and national poverty levels are estimated based on an official poverty line of 2,450; 2,150 and 2,350 calories per adult equivalent per day.
- Employment figures are taken from the Labour Force Survey of Pakistan 2008-09 and Economic Survey of Pakistan 2009-10.

The ILO in collaboration with the WB, is currently working on a national household survey to produce estimates of the working poor. The ILO calculates upper and lower bound estimates of the working poor. Upper bound estimates are calculated using the equation:

$$\text{Working poor} = \text{poverty rate} * \text{population} \quad (1)$$

Where, population is equal to the population aged 15 and above. The lower bound estimate of the working poor is calculated using the equation:

$$\text{Working poor} = \text{poverty rate} * \text{total employment} \quad (2)$$

The key assumption behind using total employed rather than labor force in the lower bound estimate is that labor force contains number of employed and unemployed people while we assessing the working poverty, therefore, there is no need to find the impact of unemployed while we calculating working poverty. This supposition necessitates every poor individual of any country without social safety to work in order to maintain a subsistence level of living (ILO, 2009b). In absence of reliable empirical data, these two estimates of the working poor provide reasonable assumption to believe that the true size of the working poor population may fall within the range given by those two bounds. The same methodology of ILO (2009b) for estimating upper and lower bound working poverty are employed in this paper.

3. Estimation and Discussion

3.1. Trends in Working Poverty on \$ 1.25 per day

Table 1 highlights the numbers of \$1.25 working poor over time. It included both the lower and upper estimates for providing an average estimate of the level and trend in working poverty over time. This simple average is used to calculate the approximate share of the working poor in total employment.

Table 1 Estimates of Working Poverty on \$ 1.25 (1987-2005)

Year	Total Employment ('000s)*	\$ 1.25 Poverty Estimates**	Working Poor Low Estimates ('000s)*** \$ 1.25	Working Poor High Estimates ('000s)*** \$ 1.25 Working Poor Average Estimates ('000s)***	Share of \$ 1.25	Working Poor in Employment***
1987	28,703	66.4%	3389	3520	3454	12.0%
1990	28,774	64.7%	3300	3798	3549	12.3%
1992	29,934	23.8%	1193	1473	1333	4.4%
1996	33,473	48.1%	2455	3339	2897	8.6%
1998	36,942	29.1%	1481	2153	1817	4.9%
2001	38,124	35.8%	1829	2910	2369	6.2%
2005	42,916	22.6%	1197	2040	1618	3.7%

* Economic Survey of Pakistan, various issues.

** Calculated by POVCAL Net.

*** Calculated by the authors.

World had an estimated 1.618 million working poor (\$1.25/day) in 2004-05 with 1.197 million and 2.040 million as lower and upper estimates. These figures implied around 3.7% of the employed persons in the Pakistan were living on less than \$1.25 per day.

3.2. Trends in Working Poverty on National Poverty Line

Table 2 indicates an estimated 1.438 million working poor on national poverty line in 1997, with 1.281 million and 1.595 million as lower and upper estimates respectively, implying around 6.1% of employed workforce living below the national poverty line. Similarly, the latest available estimates (2006) on national poverty line of Rs. 945.45 per day, indicate an estimated 1.631 million working poor on national poverty line. Lower and upper estimates stand on 1.204 million and 2.058 million respectively, implying around 3.4% of the employed workforce in Pakistan were living below than the Rs. 945.45 per day.

Table 2 Working Poverty Estimates at National Level (1979-2006)

Year	Total Employment ('000s)*	National Poverty Estimates*	National - Working Poor Low Estimates ('000s)**	National -Working Poor High Estimates ('000s)**	National -Working Poor Average Estimates ('000s)**	Share of National Working Poor in Employment**
1979	23,618	30.6%	1281	1595	1438	6.1%
1985	26,961	24.5%	1234	1253	1243	4.6%
1986	27,033	21.2%	1083	1096	1089	4.0%
1987	28,703	18.6%	951	987	969	3.3%
1988	28,995	17.35	883	1040	961	3.3%
1991	28,681	22.1%	1127	1297	1212	4.2%
1993	30,534	22.65	1133	1399	1266	4.1%
1994	31,288	25.0%	1275	1909	1592	5.1%
1997	34,597	21.8%	1111	1512	1311	3.7%
1999	37,296	30.6%	1560	2780	2170	5.8%
2002	38,882	34.5%	1759	2799	2279	5.8%
2005	42,916	23.9%	1266	2159	1712	3.9%
2006	46,952	22.3%	1204	2058	1631	3.4%

* Economic Survey of Pakistan, various issues. ** Calculated by the authors.

Figure 1 represents the comparison between the share of \$ 1.25 working poverty and share of national working poverty.

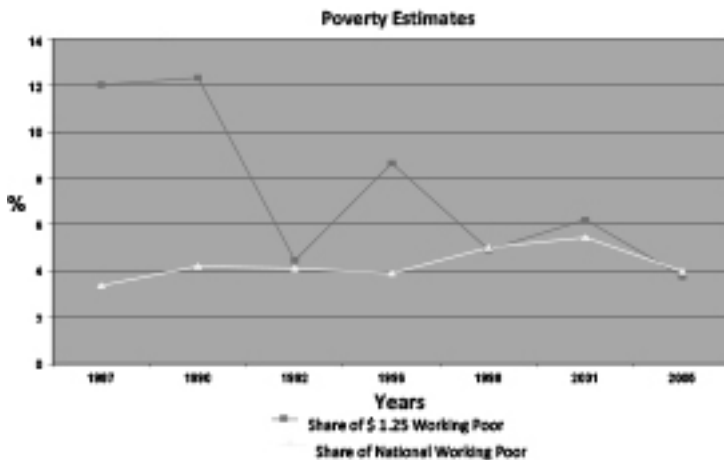
Figure 1 Comparison between shares of \$ 1.25 Working Poverty Vs Share of National Working

Figure 1 shows fluctuations in both results particularly in 1987-1990 and then 1993-1997. The reasons are taking the two different poverty lines size which taken by two different agencies i.e., World Bank and Planning Commission of Pakistan. However, during 2005 both results show approximate results.

3.3. Trends in Working Poverty at Rural and Urban Pakistan

Table 3 indicates an estimated 0.958 million working poor, with lower and upper estimates of 0.812 million and 1.102 million respectively in 2005-06, implying around 4.7 % of the workforce in the rural Pakistan as living on less than 2,450 calories per adult equivalent per day.

Table 3 Working Poverty Estimates at Rural Level (1979-2006)

Year	Rural Employment ('000s)*	Rural Poverty Estimates*	Rural - Working Poor Low Estimates ('000s)**	Rural - Working Poor High Estimates ('000s)**	Rural - Working Poor Average Estimates ('000s)**	Share of Rural Working Poor in Employment**
1979	12,517	27.7%	1157	1440	1298	10.3%
1985	13,750	24.1%	1210	1229	1219	8.8%
1986	14,597	20.7%	1057	1070	1063	7.2%
1987	14,064	18.1%	925	960	942	6.7%
1988	14,787	18.2%	894	930	912	6.1%
1991	13,480	23.4%	1196	1377	1286	9.5%
1993	14,656	27.4%	1370	1691	1530	10.4%
1994	15,644	27.8%	1421	1435	1428	9.1%
1997	15,222	25.9%	1324	1802	1563	10.2%
1999	17,529	34.7%	1769	2059	1914	10.9%
2002	16,330	39.3%	2004	3188	2596	15.8%
2005	18,453	28.1%	1489	2539	2014	10.95
2006	20,189	27.0%	812	1102	957	4.7%

* Economic Survey of Pakistan, various issues.

** Calculated by the authors.

Similarly, Table 4 indicates an estimated 0.673 million working poor, with lower and upper estimates of 0.616 million and 0.730 million respectively for 2005-6, implying around 2.5 % of the workforce in the urban Pakistan as living on less than 2,150 calories per adult equivalent per day.

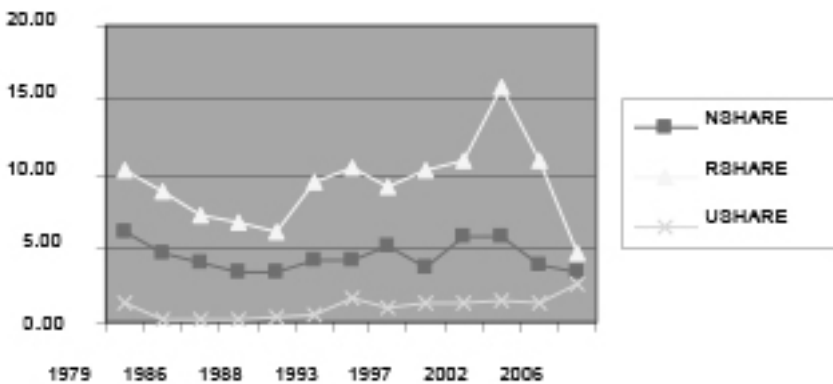
Table 4 Working Poverty Estimates at Urban Pakistan (1979-2006)

Year	Urban Employment ('000s)*	Urban Poverty Estimates*	Urban - Working Poor Low Estimates ('000s)**	Urban - Working Poor High Estimates ('000s)**	Urban - Working Poor Average Estimates ('000s)**	Share of Urban Working Poor**
1979	11,100	25.9%	80	200	140	1.26%
1985	13,210	21.1%	8	40	24	0.18%
1986	12,435	19.3%	15	37	26	0.20%
1987	14,638	16.8%	19	35	27	0.18%
1988	14,207	14.9%	39	59	49	0.34%
1991	15,,200	18.6%	47	101	74	0.48%
1993	15,877	17.7%	149	379	264	1.66%
1994	15,644	13.5%	71	257	164	1.04%
1997	19,374	12.4%	168	336	252	1.30%
1999	19,766	20.9%	202	318	260	1.31%
2002	22,551	22.7%	246	388	317	1.40%
2005	24,462	14.9%	201	403	302	1.23%
2006	26,762	13.1%	616	730	673	2.51%

* Economic Survey of Pakistan, various issues.

** Calculated by the authors.

Figure 2 shows a share of working poor at national, urban and rural Pakistan during the years 1979-2006.

Figure 2 Share of Working Poor at National, Urban and Rural Pakistan (1979-2006)

4. CONCLUSION

This paper estimates the working poor in rural, urban and national level. The ILO's methodology is adopted for estimating working poor who work but live under the poverty status. Almost 3.7 percent employed persons are living below the income of \$ 1.25 per day (2004-05). While 3.4 percent employed persons are living below an average 2,350 calories per adult equivalent per day during 2005-06 according to Pakistan's official poverty consumption data. In rural Pakistan, during 2005-06, almost 4.7 percent employed persons are spending their lives below the minimum consumption level of 2,450 calories per adult equivalent per day. While in Urban Pakistan, this share of employed persons is dropped to 2.5 percent in 2005-06.

Though this study refrains from policy recommendations dynamic challenges of Pakistan's working poor, it definitely feels the need for further research. Furthermore, this study primarily focuses on estimating the working poor and shares on different levels such as rural, urban, and national. Given the vitality of income from employment for the extreme poor, findings of the study reveal substantial likelihood of mitigating poverty in line with the MDGs.

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Is R&D Upgrading China from Imitation to Innovation?

An Institutional Analysis of Absorptive Capacity

Wei Zhao

Abstract

With its massive investment in R&D, China is generally believed to be getting out from the stage of little in-house R&D, building up more R&D capability quickly, and will gradually become powerful in its own in-house R&D so as to remain globally competitive with its own technology. This paper evaluates China's innovation capability at the firm level, with consideration of the overall situation of R&D activities carried out by firms in China. It is true that many Chinese local firms have jumped from the OEM stage to ODM stage, and many private and State-owned firms begin to have heavy R&D investment as well. But these product design and R&D activities seem to stagnate at a halfway level. Also some high-end R&D efforts seem to be shrinking. Though most Chinese firms, through a long period of process of technological learning and capability accumulation, finally begin to invest in R&D and carry out relevant projects, the quality of R&D activities is not so well achieved. The low quality of R&D investment of Chinese firms is due to the absence of absorptive capacity, i.e., the high quality external linkages established around Chinese firms, which in turn impedes the efficiency and effectiveness of in-house R&D projects. Such an absence of absorptive capacity or efficient innovation linkages has its institutional reason in the Chinese context. Chinese policy makers shall deepen their perspective on the so-called national innovation system, discover and tackle the real linkage problems which are depressing China's innovation capacity right now.

Keywords R&D investment - China - absorptive capacity - innovation - institution

JEL Classification 030 - 031 - 034

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1. Introduction

Macro statistic data shows that China has recently made huge progress in science and technology development. Its number of patents, number of publications, and ratio of R&D expense over GDP are all impressive. Its gross domestic expenditure on R & D jumped from 1% of GDP in 2000 to 1.75% of GDP in 2010. Amount invested in R & D multiplied by 6.6 between 2000 and 2010 (reaching 700 billion Yuan). There are 3.1 million people working in R & D in 2010. It ranked number 1 in terms of patents registrations: 526,412 applications were filed in China with an increase of 41.3% in 2012. Since the reform of 1979, China has its S&T policy focusing on science and technology as premier force of production, and enacting the nation through science and education. From late 1990s, the Chinese government implemented a series of policies to build an “innovative nation”, under the strategy of “indigenous innovation”. According to the Chinese official definition, indigenous innovation includes original innovation, integrated innovation, and innovation based on introduction, assimilation, and absorption of foreign technology.

There is no doubt that from the end of 20th century China is becoming a world giant in R&D, but does the country will naturally weigh the same in innovation soon? On one hand, the success experience from East Asian economies, such as Japan, South Korea, and Singapore seems to give a “yes” answer. Innovation depends on the translating and commercializing of inventions (patents and publications are most obvious forms) into new products by firms. The firms in all these economies have made intensive investment in in-house R&D or other R&D equivalent activities for creating new products and services in market, then rapidly moved their whole economies up to innovation ladder. South Korea is even ranked as the most innovative country in the world in 2013. On the other hand, firms from Taiwan and Hong Kong developed active and closed interactions among their networks of firms, instead of increasing dramatically their formal R&D investment. Yet these “dragon” economies have been also approaching the innovation-driven stage. R&D for their innovation capabilities seems not to be a necessity. This paradoxical view of R&D is due to the fact that usually people substitute “innovation” simply and directly by “R&D” in assuming a country’s scientific and technological capabilities become sufficient conditions of its innovation capacity. However, more detailed analysis shows that R&D is just one of many inputs in the complicated process of innovation; and scientific and technological capabilities need to be integrated into a country’s production system to make firms innovative, especially for those in a more or less globalized competitive market. From a national economic development perspective, R&D itself is hardly to be said as a purpose, but rather a means which can lead the country to a new growth model. What finally counts for a country is the economic growth driven by its competitive firms as a result. If it is important to know the state of art of China’s R&D activities as an “input” and its patents and publications as “potential sources”, it should be even more important to detect the dynamic and innovation capacities of Chinese firms as an “output” of these efforts.

Thus this paper discusses how China's R&D investment with its State capitalist style is influencing its move from imitation to innovation. After reviewing some literature and defining the key concepts such as absorptive capacity in Part 2, Part 3 gives a qualitative analysis of R&D investment of China. First, China's innovation & technology policy since economic reform and opening are described in order to provide an institutional framework, with emphasis on the recent efforts and policies on R&D investment as driving force of overall industrial upgrading. The Chinese State has a full intervention at national and local levels in the domain of science and technology development to a variety of enterprises (developing endogenous projects, assimilating foreign tech transfer, as well as inserting in global value chain, etc), especially through its State-owned enterprises (SOE). Then statistics and stylized cases are used to evaluate the nature and characteristics of firms' innovation capacity. This part reveals that the development of innovation capacity of Chinese firms through increasing R&D investment is blocked by the weakened formation of "absorptive capacity" and external linkages outside firms' organizational boundaries. And the lack of such absorptive capacity is not due to the incompleteness of Chinese national innovation system, but the specific institutional setups in the Chinese context: the so-called Chinese capitalism is characterized by the conjunction of an opportunist State and a networked society which together exclude institutionalized trust among firms and organizations. Therefore the quality of innovation linkages impacts negatively on R&D capacity deepening of Chinese firms. Based on this observation, Part 4 identifies some potential targets for China's innovation policy makers and Part 5 summarizes the main findings from a broader point of view.

2. Literature Review: Detailing the Upgrading from Imitation to Innovation

At macro level, the perspective of national innovation system (NIS) focuses on interactive institutional arrangement upon which firms develop their innovation capabilities. The institutional aspect occupies most of the OECD reports. Indeed, within this enumerative vision of institutional system, the micro-dynamics underlying technological development and interaction between economic and technical actors disappear. Technological capability is translated into national plan set out by official innovation policy. A country is supposed to gain innovation capability through completing a national institutional structure composed by various functions, such as provision of R&D results, formation of new product markets, articulation of new product quality requirements, creating and changing organizations, networking through markets and other mechanisms, creating and changing institutions, incubating entrepreneurial activities, financing of innovation processes, and provision of consultancy services (C. Edquist, 1997). If innovation capacity emerges through only the building of such a system, China should have already reached the level since the country had finished the whole picture of NIS with these pieces of institutions many years ago. Nevertheless, as Kline and Rosenberg (1986) rightly pointed out, innovation is a complicated linked-chain process of activities from research to market need detection, invention & design, development, engineering, production, distribution, and market commercialization, etc. The successful process is determined by many critical linkages across these activities in the economy, such as linkages among

the internal activities of firms at different stages of innovation development, among scientific activities and industrial invention & design, among firms' market detection activities and society's research activities, among a society's research activities and internal development activities of firms, and finally among distributing & consuming activities and firms' market searching activities, etc.. Therefore, a country's innovation capacity shall not be evaluated at simply aggregate level with statistical indicators or official policy announcement, but at a more down-to-earth firm level which reflects often the unofficial but realistic behavior and quality of linkage building by innovation actors within the country.

Even at the firm level, there exist two different opinions about how firms in catch-up economies (latecomer firms) can advance from imitation to innovation. One can be called "sustaining perspective" and is represented by the works of A. Amsden and M. Hobday. Amsden (Amsden, A. 1989; Amsden, A. H. and W-w. Chu 2003) pointed that technological learning at shop-floor of firms is the original driving force of such an upgrading. She detailed the three aspects of technological learning as speed of learning (how rapidly foreign technology is borrowed, which depends on investment rate of firm, investing in foreign design, and arrangement of technology acquisition or transfer), scale of learning (whether foreign technology is utilized at the appropriate scale, which depends on how fast the market is growing and whether firm is producing at an appropriate scale), and efficiency of learning (how efficiently foreign technology is employed, which depends on firm's experience related to cumulative production and the effects of learning-by-doing on firm). Very much in line with Amsden, Hobday (1994; 1995) shows how electronics companies in the four dragons of East Asia link their technological learning to export markets; specifically, subcontracting and original equipment manufacturing (OEM) mechanisms acted as a training school for latecomers, enabling them to overcome entry barriers and to assimilate manufacturing and design technology. In contrast with R&D and design-led strategies, latecomer firms began with incremental improvements to manufacturing processes which led on to minor product innovations. Since the development of technological capabilities during catch-up is a learning process, firms' internal development and design capabilities grow as it moves between successive stages from OEM to ODM (original design manufacturing) and OBM (original brand manufacturing), but there is no role for research. On the basis of the East Asian experience, the sustaining perspective asserts that successful latecomer firms may go through a kind of 'reverse product cycle.' They begin with simple assembly processes but gradually and systematically accumulate the capability to modify, design and build their own new product and process technologies progressively. Customers play a major part in this cycle, which proceeds through successively higher value-added forms of production.

The other opinion about imitation to innovation can be termed as "disruptive perspective". Through the case of a Mexican company Vitro, the largest glass company in the world after Owen-Illinois, Gabriela Dutrénit (2000; 2004) argues that there is no simple linear progression from the early stage of accumulation of the minimum levels of innovative capability to the management of knowledge as a strategic asset and

the deployment of core capabilities. On the contrary, the transition process is complex and while latecomer firms make that transition, they have to build deeper and broader specialized knowledge and develop new ways of strategic integration. The innovation capability can be reached only through a specific kind of "spontaneous" actions rather than a succession of different stages of formation of technological capabilities. In using South Korea's transition from imitation to innovation, Linsu Kim (1997; 1998) argues that cumulative learning of firms takes place through learning-by-doing, but discontinuous learning takes place in crisis. Effective learning firms (such as Hyundai) construct a crisis (by setting ambitious targets) intentionally to develop organizational systems and manage their processes to make the crises truly creative. Although creative imitation (producing knockoffs and clones) through reverse-engineering is still important, it is the continuous increase in in-house R&D investment that plays the key role in leap from coping imitation to indigenous innovation. He suggests that latecomer firms shall intensify dramatically their formal R&D activities to engage in independent product innovation and participate actively in global alliances.

More empirical studies support the disruptive perspective in concluding that explicit investment in endogenous and formal R&D activities of latecomer firms always matters, particularly when local firms intend to jump to upper level in the value chain. Li (2011) shows that investment by Chinese firms in foreign technology alone does not enhance innovation in domestic firms, unless it is coupled with own in-house R&D. In fact, R&D not only generates new knowledge but contributes to the firm's absorptive capacity. According to Cohen and Levinthal (1989; 1990), absorptive capacity is the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities. Absorptive capacity may be a byproduct of R&D investment or manufacturing or through training. Generally, it depends on the firm's own R&D. In big firms, specific R&D projects will often be triggered by practice (problems with a product, new user needs, problems with producing) but almost immediately attempts will be made going through its earlier work as well as looking for insights that can be drawn from outside sources. Therefore, absorptive capacity will in return condition the success and sustainability of its innovative activity, or R&D in the narrow sense. Because a firm's absorptive capacity influences the effects of appropriability and technological opportunity conditions on its R&D spending, it becomes the essential condition of R&D deepening.

The continuous reinforcement and development of absorptive capacity itself also needs appropriate conditions external to the firm. These external conditions are mainly the nature of linkages and interactions that the firm establishes with potential knowledge sources. Vertical linkages are interactions in terms of new product development with suppliers, buyers, end-users, channel members, and down-stream manufacturing customers, while horizontal links are collaborations with other companies, industrial research laboratories, public research institutes, universities, technical consulting firms, and even competitors amongst others. Together, the vertical and horizontal linkages are often termed as ecosystem of innovation of "world" of innovation. Though vertical linkages can be vital for elementary technological learning, horizontal linkages offer

more opportunities for firms to gain access to complementary knowledge that tends to lead to more innovations. Vertical and horizontal linkages together can be termed as ecosystem or “world” of innovation (Arvanitis, R., D. Villavicencio, and W. Zhao, 2014). Shu (2003) uses examples of Taiwanese IT firms to show that these OEM/ODM manufacturers receive product specifications from their customers such as IBM, Dell and HP in terms of design, manufacturing and delivery of finished products, but their intensive horizontal linkages and interactions with other Taiwanese firms and public research institutions within the network were so important that it substituted partially the formal internal R&D activities. In fact, the horizontal linkage with other Taiwanese firms was found to be the most significant contributor to both the technical and marketing knowledge for commercial ends.

More precisely, the development of such absorptive capacity depends on the easiness and quality of linkage building. For firms, external linkages should be neither too difficult, nor too easy to establish. A survey about the South Korean automobile industry (Kim, 1997) found that compared with wholly-owned firms, joint venture firms were lag behind in terms of developing absorptive capacity, due to their easier access to technical knowledge from foreign partners. On the contrary, having no quick access to foreign technology, Hyundai Motor Company had to accumulate more prior knowledge, invest more resources in R & D resources, and adopt a more aggressive attitude towards knowledge learning and acquisition. As a result, Hyundai developed a stronger capacity of technology absorption and R&D than joint-ventures.

For upgrading to innovation, of particular importance is the quality, i.e., form and nature of these external linkages (Furman, J. L., M. E. Porter, and S. Stern, 2001). Absorptive capacity building needs sustained interactions that go beyond arm’s length market transactions and that involve more than the information about prices and volumes. These include what Lundvall (1988; 1992) called as user-producer interactions, i.e., direct cooperation and exchange of qualitative information based on mutual trust and codes of communication in relationship. Storper (1997) called these different types of linkages and interactions “conventions” and identified five forms: (a) inter-firm “hard” transactions, as in buyer-seller relations that involve market imperfections; (b) inter-firm “soft” transactions, as in the sharing or diffusion of non-traded information about the environment or about learning; (c) hard and soft intra-firm relations, as the bases for the functioning of large firms which are “internally externalized” ; (d) interactions in factor markets, especially labour markets, which involve skills that are not entirely substitutable on an inter-industry or inter-regional basis, i.e. where there are industry- or region-specific dimensions to workers skills; and (e) economy-formal institution relationships, where universities, governments, industry associations and firms are only able to communicate and coordinate their interactions by using channels with a strong relational-conventional content. Callon, Larédo and Mustar (1995) put them together under the concept of “socio-technical network”, which contains two elements: a) Form of coordination: acquisitions, purchasing, through licensing and contractual agreements, and inter-organizational relationships, including R&D consortia, alliances, and joint-ventures. b) Content of interaction: it may be written documents (scientific

articles, reports, patents ...), embedded skills (researchers , engineers from one firm to another ...), more or less developed technical objects (prototypes , machines, products for final consumption ...), money (cooperation agreements between a research center and company , financial loans, paying customer of a good or service ...), and informal orders or exchanges (hierarchy and trust) .

Ultimately, laws, regulations, social rules and norms, technical standards and cultural habits constitute the institutional context within which firms and organizations interact. Such institutions may foster or hinder the interactive learning and linkage essential for absorptive capacity, R&D, and upgrading to innovation. Here institutions include not only the more formal laws and regulations, judicial decisions, and enforcement of contracts, but also the less formal norms, commercial conventions, and preconscious cognitive and ideational elements that are embedded in culture and widely accepted in a society (North, 1990). In fact, commonly held commercial norms and cultural conventions as informal institutions themselves often are the linkages and used to replace formal contracts, and a variety of legitimizing activities to secure the firm's position in the market. As all these institutions, interactive linkages, firms' absorptive capacity, R&D investment, and national innovation capacity co-evolve over time, they constitute the fundamental dynamic nature of the whole economy at a macro level (Nelson, 2008). The following analysis of China's situation is very much in line with this logic of institutional environment – external linkages – absorptive capacity – R&D deepening of firm.

3. Analyzing R&D Investment of China: Institution, Policy and Firm

3.1 The structure of R&D investment in China

Even China had no official statistics of industrial R&D before the year of 2000, the country's national R&D policy can always be described as a "Big Push" approach. Chinese government is capable of mobilizing massively all kinds of resources to invest in R&D activities. China has now the world's biggest number of professional R&D staff (3.2 million people) and its annual R&D budget has already been number 3 in the world since 2010. Potentially, the country has a stock of 51 million scientific and technical persons as human resources to get involved in R&D and the aggregate R&D expenditure was even accelerated after 2005 with an average growth rate over 20%. During 2000 and 2012, China's R&D intensity (ratio of R&D expense over GDP) jumped from 1% of 2000 to 1.97% of 2012 (see Table 1). In 2012, the country's R&D budget reached 1024 billion RMB Yuan, of which 74% was expended by enterprises. Its output value of high-tech industrial production has exceeded 1 trillion Yuan and counted more than 30% of its total export. The overall average annual growth rate for R&D expenditure of large and medium-sized enterprises has been more than 25% since 2006.

Table 1 China's national R&D Expenditure (2006-2012)

	2006	2007	2008	2009	2010	2011	2012
R&D Expenditure (Billion RMB Yuan)	300.31	371.02	461.6	580.21	706.26	868.7	1024
Ratio to GDP (%)	1.42	1.49	1.54	1.7	1.76	1.84	1.97

Source: National Bureau of Statistics and Ministry of Science and Technology (ed.), China Statistical Yearbook of Science and Technology (Beijing: China Statistics Press, various years).

Policy measures were implemented concretely over the country, often with fixed quantitative goals to achieve. For example, between 1997 and 2007 patent subsidies were introduced in 27 provinces to stimulate the usage of intellectual property rights and boost provincial and national patent statistics. The result was tremendous growth of patent applications. In 2010, China recorded 363,329 patent applications and 1,423,545 scientific publications with an average citation count of 6.21 times for the Chinese international publications (about 14.84 million papers), lower than the world average count of 10.71 times for international publications. Chinese industrial enterprises applied 266,000 patents, 10.2 times more of the patent application in 2000. The applications included 92,000 invention patents, 11.6 times more of invention patent applications in 2000. In 2012, patent applications reached 526,412, an annual increase of 41.3%, and made China number one in terms of patent volumes, although patenting in China has only a small impact on productivity growth and the problem of quality of research and its commercial relevance still exists.

However, with the expansion of R&D activities, China's R&D quality is problematic. For example, in most of the high-tech sectors, China's R&D intensity is lagging behind the major players in the world. In the aircraft and spacecraft industry, the R&D intensity just reached half of those in Germany, France and the United Kingdom. China's focus in R&D activities mainly concentrates on applied research and especially experimental development. Experimental development expenditure over total R&D spending increased from 68% in 1995 to 87% in 2008. In 2009, this ratio decreased to 82.75% and remained at 83.5% in 2011. The fact that most R&D expense was used in the experimental development showed that R&D activities in China mainly concentrated in the latter-end of R&D. Meanwhile, the expense of fundamental research in total R&D expense stayed at the level of 4.7% after 2009, even its absolute amount increased steadily after that year. Basic research might not have immediate commercial success, but is often essential for progress and constitutes the foundation for innovative products. China's spending on basic research as a percentage of the GDP is ten times lower than basic research expenditures in the United States. The weak fundamental research capability in China is reflected by the fact that China's patents and scientific papers per population are maintained on a low level compared to developed countries and also quality issues remain, though the quantity of scientific articles and patent applications are increasing

rapidly. Regarding the famous growth of Chinese patents in recent years, the share of “invention” patents over total registered domestic patents fluctuated. It climbed up at 25.9% in 2004 and fallen to 22.7% in 2008, then jumped up to 34.8% in 2010. Besides, the Chinese patent explosion is driven by a small group of companies in the information and communication technology equipment industry.

Another characteristic of China’s R&D is the nature of activity. In 2009, 50.7% of national R&D budget was spent for developing brand new product, 30.3% for increasing product functionalities and improving quality, 6% for energy using reduction, 3.3% for improving labor productivity, 2.7% for pollution reduction, 2% for technical theorem research, and 1.7% for raw material using reduction. Roughly speaking, 80% of Chinese R&D budget was allocated for product innovation and 15% for process innovation, and 5% for long-term non-commercial development. Chinese R&D projects preferred much the short-term economic returns.

The major financial source of China’s R&D activities is government’s fiscal budget. In 2010 and 2011, the government fiscal source of R&D was 411.4 billion Yuan and 490.2 billion Yuan, representing respectively 58% and 48% of the national R&D expenditure. The shares of R&D expenditure by enterprises, government-owned institutes and public universities in national expenditure remain around 75%, 15% and 8% respectively, which indicates the current institutional structure of R&D activities. Chinese academic circle is made up of its 3900 research institutes, university laboratories, and national key laboratories (there are 220, mostly from universities). They are related, even intermingled with firms and work for corporate R & D in the form of research contracts. In 2012, this type of contract carries a total amount of over 600 billion Yuan in China. Regarding enterprises, in 2009, there were 36387 industrial enterprises which carried out 194,000 R&D projects. This number of enterprises having R&D was only 8.5% of total number of enterprises in China. Within these firms having R&D activities, 12434 were middle and large sized enterprises, representing 30.5% of total middle and large sized enterprises. All these R&D projects by enterprises spent 377.6 billion Yuan of which 85% were spent by middle and large sized enterprises. Averagely, enterprises in China spent 0.7% of their sales on R&D if they do, while middle and large sized enterprises spent 0.96% of their sales on R&D if they do. Among the enterprises having R&D activities, 4.8% were State-owned enterprises (1737) while they have 17.1% of industrial R&D budget (64.46 billion Yuan); 72.6% were non-State-owned enterprises (26418) while they have 56.5% of industrial R&D budget (213.44 billion Yuan); 22.6% were foreign invested enterprises, including investment from Hong Kong, Macau and Taiwan (8232), while they have 26.2% of industrial R&D budget (99.68 billion Yuan). A glance at the top Chinese companies in terms of R&D investment will show that most of them are State-owned enterprises who often get involved in national mega R&D projects, and the very few private companies are those whose names begin to be known in international market, such as Huawei, ZTE, Lenovo and BYD. These namely superstar private enterprises also participate in national R&D projects and undertake projects of new product development and technological studies (see Table 2).

Table 2 Top 20 Chinese Companies in R&D Investment (The 2012 EU Industrial R&D Investment Scoreboard)

	Company	World Rank	R&D Expenditure (Million Euros)	R&D Intensity (%)
1	Huawei	41	2906.5	18.6
2	PetroChina	68	1622.0	0.7
3	ZTE	99	1129.8	10.7
4	China Railway Construction	106	1039.2	1.9
5	SAIC Motor	151	702.3	1.4
6	China Railway	157	655.6	1.2
7	China Petroleum & Chemicals	169	596.4	0.2
8	Dongfeng Motor	223	424.3	2.6
9	CSR China	251	363.2	3.7
10	Lenovo	259	347.7	1.5
11	BYD	277	326.3	5.7
12	HBIS	299	298.5	1.9
13	China Communications Construction	310	283.8	0.8
14	Metallurgical of China	316	275.1	1.0
15	China CNR	323	267.7	2.5
16	Chongqing Changan Motor	392	197.6	6.4
17	Shanghai Electric	435	173.0	2.1
18	Dongfang Electric	494	147.3	2.8
19	Huyau Automotive	560	129.3	2.0
20	Great Wall Technology	643	107.7	0.9

Source: European Commission 2012.

The disproportionately high percentage of R&D budget for State-owned enterprises in China raises the question about the role of privately-owned Chinese domestic enterprises in technology development. Although China's privately-owned enterprises are expanding rapidly and in terms of absolute amount of R&D expenditure they are bigger than the State-owned enterprises, they are still lagging behind their State-owned counterparts in terms of R&D investment intensity. This is due to institutional constraints in China such as limited access to finance for non-State-owned enterprises and government preference of grants to State-owned enterprises.

3.2 Chinese State capitalism and institutional foundation of R&D

Macro statistics illustrates the extremely important role of Chinese government in leading and organizing R&D activities. Science and technology has been the cornerstone of China's development strategy since the 1980s, with a heavy initial emphasis on public funding of projects and investment in infrastructure. The structure of China's national R&D system has evolved from a central-planning model in which industrial R&D centers are located in ministries and organized by product. This structure separated and prevented interactions among scientific research and industrial application of R&D results. Since the mid-1980s government has encouraged closer integration among R&D institutes and science parks through investment in R&D clusters, and mergers of R&D institutes into enterprise groups (some such as Huawei, Datang and Lenovo subsequently evolved into major IT enterprises). As a result of such policies and China's openness to foreign direct investment, technology market transactions increased, as did in-house R&D. Outsourcing of science and technology from universities and research institutes to various types of domestic enterprises and to international enterprises expanded. Even in 1985 China has begun to reorganize its research and development (R&D) structure through reducing the numbers, downsizing the scales, and directing to lucrative purpose of its R&D institutions. During all the 1990s, the government encouraged the creation of all sorts of technological poles and industrial parks in the coastal provinces, then the scientific incubators and economic and technological development zones in major urban areas. The State financed and established national and local –level laboratories in all disciplines across the whole country. It controlled often directly the most important research laboratories, universities, and technical centers, as well as maintained in its arms the strategic and military sectors. Combined with national industrial policy, the Chinese government searched to build up “national champions” in terms of technology and research capability, often State-owned enterprises, but also some selected non-State enterprises, such as the Chinese giant companies in telecommunication industry, in petrochemical industry, and in transportation industry, etc. Since 1999, in adopting the concepts and frameworks of national innovation approach, China's national science and technology was transformed into innovation policy and the investment in R&D activities was greatly accelerated.

This “big push” of China's R&D expenditure since 2006 is in fact the result of the continuing investment efforts and R&D system reform of Chinese government. The same year, Chinese government announced a national “Mid to Long Term Science and Technology Development Plan, 2006-2020” with the following goals by 2020:

1. R&D input should achieve 900 billion Yuan
2. R&D/GDP ratio should achieve 2.5%
3. To build an “Innovative Nation”
4. High R&D input (annual increase rate of 10%)
5. High contribution of S&T to economy (more than 70%)
6. Indigenous innovation capability (reduce the reliance on foreign technologies from 60% to 30% in terms of licenses fees)

7. High S&T output like patents

Shortly after the announcement of the Plan, 99 supporting policies were presented which define concrete action plans to implement the strategy. Each supporting policy is under the responsibility of one lead government institution. Main priority is given to the development of technologies on energy conservation, water resources, environment protection, biotechnology, space and aviation, on the mastering of core technologies, on the comprehension of intellectual property in the manufacturing sector and on the strengthening of basic and strategic research. Alongside the identification of priority fields for future research activities in detail, the plan also defines 16 key projects (megaprojects), for example sending a Chinese astronaut to the moon or developing the next generation of large planes. In 2010, the Chinese government specified seven sectors as strategic emerging industries and reemphasized R&D investment in these sectors: (1) energy efficiency and environmental protection, (2) next generation IT, (3) biotechnology, (4) high-end equipment manufacturing, (5) new energy, (6) new materials and (7) new energy automotive.

Since 2006 China's innovation policy is labeled by the term "indigenous innovation". The Plan stated that it could be achieved through various approaches (including innovation through originally creating newness, innovation through creatively integrating technologies, and innovation through renewing imported and assimilated technologies), but the chosen term "indigenous" implies also some intentions of the Chinese government underlying its innovation strategy. First, "indigenous" implies "independent" and "self-determined" development of certain sectors identified as strategic through organizational coordination and heavy State investment in science and research activities of universities, institutes and State-owned enterprises. The implementation of such kind of science policy essentially divides technological R&D from industry production, with universities and research institutes actively engaged in downstream industrial projects and enterprises focusing on fulfilling assigned producing quota. Compared to developed countries where firms are a major source of innovation, the extensive involvement of public research in industry R&D in China constitutes an important character of its national innovation projects. As a result, the process of research-invention interactions in China is often unidirectional, with the knowledge flowing from university to industry.

But "indigenous" has another implication. It means also that the innovation should be original, not copied, and constitute intellectual property rights owned by Chinese organizations, especially Chinese enterprises. This concern reflects the facts that till now most of the so-called innovations in China are imitated from foreign technologies. In fact, during the 1990s till 2005, the Chinese technology strategy in practice can be summarized as "market in exchange of technology". Automobile industry is a typical case of this State strategy. In 1984, when China granted foreign auto manufacturers market access, it imposed foreign companies to form joint ventures with Chinese local partners, often State-owned enterprises designated by the authorities or to obtain their consent. China knew its car makers were behind the curve on precision manufacturing,

so it hoped that the State-owned car producers could learn through contact with foreign partners to bolster domestic technology expertise, and gradually take ownership of the learnt technologies. Similar obligations of technology transfer were also imposed to heavy equipment vendors. As the country invested in acquiring aerial fleets, thermal and nuclear power stations and modern rail network, the State always required forming joint-ventures in order to have access to the most advanced technologies. Yet the Chinese car companies find it tough to improve their quality, in part because they lag on in-house research and development spending. Most Chinese companies just think several years out with their R&D spending and try to compete with international companies that are already doing R&D 20 to 25 years out. Chinese JV partners spent less on nurturing innovative engineering and design. Instead of creating a car from scratch, which would allow them to claim half the patent rights, Chinese JV partners will take existing foreign vehicle blueprints, make a few changes and call it a new JV auto: GM and SAIC's first JV car, Baojun 630, is built on the old Buick Excelle, while Dongfeng and Nissan's first Venucia vehicle is fashioned after Tiida. Chinese JV car companies want to gain quickly consumers' confidence through their reliance on foreign tech for quality. The government wants to see the domestic capabilities in car industry, but many of the Chinese companies are just happy on successful foreign joint ventures to contribute to their profitability.

To change this situation, the Chinese government translated the implementation of this "indigenous" innovation strategy into a series of mega-industrial projects with ambitious "techno-nationalist" goals and public funding: High-speed railway; big commercial aircraft C919; new generation of nuclear enter; wind power energy, etc. are all examples. In history, Chinese government had habit and experience in organizing and implementing national mega-projects. During the period of 1978 to 1985, it organized and implemented 108 sectional science and technology projects. Since 1986, it launched 3 basic national R&D projects and 2 supplementary projects. The 3 basic projects are: 863 Programme, Tackling Programme, and 973 Programme; and the 2 supplementary projects are: Torch Programme and Spark Programme. Since 2000, Chinese government realized that its R&D projects aiming at scientific "big bangs" or leaps need to be connected to the country's production system and extended to downstream activities of industrial chain. Therefore, 12 National Specific Programmes of Significant Technologies were established. Comparing with former S&T projects emphasizing research and science activities, these projects of national significant technologies directly contained industrialization and commercialization of R&D results. They emphasize the participation of enterprises in order to implement the activities of design, development, production, and commercialization. Enterprises should not only participate, but also behave as project leaders. Covering very different technological fields, the 12 national projects gave priority to the market formation of national R&D outcomes. The Chinese high speed train is in fact one of the fruits of these national projects of significant technologies. Encouraged by the success of these projects, the Chinese government decided in 2006 to establish another 16 national projects of significant technologies to be implemented till 2020. The new projects correspond in

fact to the 16 strategic industrial sectors with technological importance, in which 3 are in military fields, identified by the 2006 national innovation strategic plan.

By now, China's new generation of techno-nationalist mega projects have achieved to mobilize the country's resources at a very exceptional speed and scale to integrate science and technology in industrial production. Nevertheless, beyond the apparent effectiveness, they have some hidden problems and limits. The implementation and organization of such projects depend almost completely on the technocratic administration structures of Chinese government and State-owned enterprises. National innovation policy is now elaborated through 3 central ministries: National Commission of Reform & Development, Ministry of Science & Technology, and Ministry of Finance. The formation and execution of projects need coordination among more ministries and involvement of local governments. Powerful ministries such as Commission of Reform & Development, Ministry of Industry and Information, departments of Ministry of Science & Technology are all chasing big projects with allocation of big budget. The continuous R&D investment has promoted the emergence of a stabilized class of technocrats with their interests related to China's R&D system. Traditionally, Ministry of Science & Technology has more influence on the direction of national R&D projects. It has tendency to emphasize the scientific and technological aspects of projects and public institutes and universities become naturally main undertakers of the projects. Thus national innovation objective is easily translated into academic research activities. Within the closed circle, the technocrats establish their own criteria of project. The S&T technocrats transplant directly the government's performance evaluation system to R&D system, using quantitative methodology, setting up complicated indicators and executing strict paper-work auditing over researchers in laboratories. Time and energy of researchers are used to deal with administration. Besides, the class of technocrats itself is a big spender of R&D budget. For example, in 2009, 83.91% of total R&D expenditure was for ordinary administrative expense such as traveling, meeting, buying stationary, etc. (486.88 billion Yuan), which is five times more than expense on assets. It was only in the end of 1990s, after some policy reports done by international organizations (IDRC, World Bank, OECD, etc.) and the diffusion of national innovation system approach in Chinese academia, that some top leaders recognized that the majority of inventions recorded as patents were never introduced on a commercial basis and most of successful innovations were initiated as the result of perceived market needs. So the former projects driven by scientific or technical breakthroughs were redirected to have linkages with industrial production and market commercialization, but mainly in State-owned enterprises.

China's national mega R&D projects also inherit the legacy of its centrally planned economic system. Plan fails to recognize the importance of non high-technology, incremental innovation, driven by market competitive forces that is widespread among non State-owned enterprises. Through tailored government policies and assured funding, national R&D projects become vertically integrated enterprises by linking public institutes' research and State-owned enterprises' production. The industrialization of R&D outcomes is normally found in a domestic monopolistic market or with

government as final purchaser, such as transportation, telecommunication infrastructure, aircraft, energy, petroleum, etc., so that risks and costs of projects can be internalized by government itself. But wider linkages with other domestic non-State enterprises and international markets are not established. Because science, research, and technological activities are vertically linked to industrial development, production and distribution within the government projects, China can quickly catch up the targeted technological fields once the industrial-technical system is well identified. Thus this kind of projects is especially suitable to the development of technical complex product systems, which require much interactions between central activities along the innovation linked chain and a society's research activities and knowledge base. However, the Chinese technological catch-up through these projects happens only in the existing techno-economic paradigm such as high-speed train and nuclear power station. Even with an initial preference to high-tech content, China's mega projects have not created any new-to-the-world techno-economic paradigm, but replicated the existing ones through developing its own technological capabilities. It should be mentioned that much of these technological capabilities were also originally obtained by learning from foreign partners, of which the establishment of numerous Sino-foreign joint-ventures within the framework of China's grand airplane projects is a proof. In fact, China's national R&D projects represent a transition from a "process driven by scientific and technical breakthroughs" to a state of combing the "process of essential development activities" with the "process of research and knowledge exploitation". According to the conceptual framework of Kline & Rosenberg (1986), China's national R&D projects will help effectively develop science and technology capabilities in the upstream of the innovation chain.

3.3 Institutional conditions of absorptive capacity by Chinese firms

The experience of East Asian newly industrialized economies especially that of Japan and South Korea, has suggested that the key of enterprise' jumping from the stage of imitation to stage of innovation is intensified in-house research and development (R&D) activities, even though R&D activities can be very costly and their results are uncertain. Taking the Japanese companies as examples, in fact, their continuous investment in reverse engineering is a special form of R&D efforts. Reverse engineering involves taking apart something (a mechanical device, electronic component, computer program, or biological, chemical, or organic matter) and analyzing its workings in detail to make a new device or program that does the same thing without using or simply duplicating the original. Through reverse engineering, Japanese enterprises often added new functions or features to imported products and tailored them to fit local demand. This process needs deep understanding of the technological and scientific logic of the product and system, and often leads to formal R&D. From the 1950s to the 1970s, China also used reverse engineering to try to acquire technology. However, because of the State-owned companies, there was less incentive to invest in R&D. The government did say that there was a need for reverse engineering, but reverse engineering failed to become the popular or dominant way to develop indigenous technologies. Since then, the potential bridge between in-house R&D and foreign technology transfer and importation has been

broken within the Chinese enterprises. The lack of attention to R&D efforts led Chinese enterprises to import new technology or products from advanced economies or rely on joint venture partners to provide new technologies. As a result, technology imports still play an important role in China and the share of expenditure on technology importation is still high. Compared to Japanese and South Korean enterprises, during long time Chinese enterprises spent little money on assimilating the imported technology. The allocation of resources for assimilation has been increased in recent years.

As early as in 1997, the Chinese government was already well aware that the key of making China an indigenous innovation machine was to upgrade the capacities of its enterprise sectors. But it was until recently that it recognized that it was especially the non-State and private sectors that remained a weakest part in the national innovation system. A quick look on the list of most R&D intensive enterprises in China will demonstrate that most of them are State-owned enterprises in the non-competitive market. Since then, policies of favorable tax policies and various other fiscal incentives are elaborated to increase investment in in-house R&D and enhance the innovation capabilities in the enterprise sector. In the beginning of 2013, the central government called on companies to make greater efforts to upgrade and innovate. By 2015, the government would help enterprises establish their “technological innovation system” which combines the functions of research, development and production. To do this, the government will directly set up R&D utilities for industrial sectors, support small and medium enterprises, train more qualified talents, and improve financial policies. The government also required other public institutions, such as universities and technical centers, to cooperate with enterprise sectors, which are not only State-owned sectors, but also include the non-State and private sectors. Government also encourages all kinds of enterprises to participate in the development of the “strategic emerging industries” identified since 2010, including energy saving and environmental protection, new generation of information technology, biology, high-end equipment manufacturing, new energy, and new energy vehicles. These sectors traditionally reserved only to State R&D investment now solicit more private participation. With all these policy supports, will the Chinese enterprises invest more in indigenous R-D, get away from simple imitation, and develop technological capability of innovation?

For most of Chinese non-State-owned manufacturers, they have traditionally had a manufacturing-led focus on reapplying existing business models to deliver products for fast-growing markets. Furthermore, their success depends on local resources—for example, lower-cost labor, inexpensive land, and access to capital or intellectual property—that are difficult to replicate elsewhere. The main sources of technologies are from technology importation. If there is R&D in these enterprises, its main content is in fact absorption and assimilation of imported technologies. And even the investment on technology absorption through internal R&D is very low. For instance, for a long period of time the expenditure for assimilation and absorption in Chinese textile industry was below 1.5% of the machine and equipment importation expenditure. The innovation process in these enterprises, if there is one, is based on the linear chain activities from design to development to industrialization, without much investment in formal R&D,

without much links to the country's research activities, and without multiple feedbacks from distribution and market detection. For example, in consumer electronics sector, China purchases 33 percent of the world's chips (\$100 billion worth), using them both in products sold domestically and in exports. But most of the Chinese industry competes in commoditized areas such as chip assembly and testing, and Chinese semiconductor companies hold 4% or less of the most prized segments of the global value chain in chip design and manufacturing. Chinese enterprises have exerted little influence on semiconductor design, technology standards, or chip selection for major product categories such as mobile phones, laptop computers, and LCD televisions. Most decisions about design and functionality come from global champions and reflect the preferences of consumers in Europe, Japan, and the United States. Local enterprises' R&D projects tend to be derivative—refining products developed in Japan and South Korea instead of developing fundamentally new products (Shanzhai products). Innovation based on careful study of consumer preferences is rare, especially when the consumers are outside of China. Chinese companies still place too much focus on expanding market share with just-good-enough products instead of creating markets with totally new products. In most cases, the skills and capabilities of these companies are oriented toward the domestic market which is so large, so even if they want to expand globally, they face high hurdles. Most of Chinese private entrepreneurs are uncomfortable doing business outside their own geography and language.

After 2000, the investment of R&D by Chinese enterprises exceeded 60% of the country's total R&D spending and increased rapidly. Some sectors experienced intensive development of R&D. For example, the top 100 domestic electronics and information enterprises spent on average about 3% of annual sales revenue on R&D, with telecom equipment manufacturers Huawei Technologies, Datang Telecommunications and Zhongxing Telecommunications (ZTE) leading the way, each devoting above 10% of the sales revenue to R&D. Nationwide, of the more than 10 million medium- and small-sized firms in electronics and information sector, 150,000 allocate more than 5% of sales to technological development. Although R&D expenditures, patent applications and high-tech exports have markedly risen, the overall technological capabilities of Chinese enterprises remain poor. Impressive absolute R&D expenditure growth fails to reveal the quality and efficiency of R&D investment of Chinese enterprises. In 2011, only 11.5% of all industrial enterprises carried out R&D activities, in which only 30.5% of large and medium – sized enterprises were active in R&D. The R&D intensity (R&D expenditure over sales revenue) was 0.71% for all industrial enterprises, and averagely 0.96% for large and medium – sized enterprises, much lower than the average 3-5% in developed countries, even though it has been increasing steadily since 2000 (see Table 3). It should be mentioned that R&D activities were very rampant in the State-owned sector. Although they had 14.6% of enterprise R&D budget, the State-owned enterprises counted 81% of total number of enterprises having R&D and 66% of national R&D personnel.

Table 3 Technology-Related Expenditure of Chinese Large and Medium – Sized Enterprises (RMB 100 million, 2004-2011)

	2004	2005	2006	2007	2008	2009	2010	2011
R&D Expenditure	954.4	1250.3	1630.2	2112.5	2681.3	3210.2	4015.4	5031
Technology Renovation	2590	2792.9	3019.6	3650.9	4167.7	3671.4	4293.7	4292.1
Technology Importation	367.9	296.8	320.4	452.5	440.4	394.6	449.0	449.4
Adaptation and Assimilation of Imported Technology	54.0	69.4	81.9	106.6	106.5	163.8	202.2	201.4
Purchase of Domestic Technology	69.9	83.4	87.4	129.6	166.2	174.7	220.5	222.1
R&D Expenditure / Sales Revenue (%)	0.71	0.76	0.77	0.81	0.84	0.96	0.93	0.96

Source: National Bureau of Statistics and Ministry of Science and Technology (ed.), China Statistical Yearbook of Science and Technology (Beijing: China Statistics Press, various years).

The limit of R&D deepening of Chinese enterprises is also reflected by the investment structure and outcome efficiency of R&D. The share of basic and applied research expenditure over total R&D spending is always small. It declined from 32% in 1995 to 17% in 2008, to 17.3% in 2009 and 2010, to 16.5% in 2011. The shares of fundamental research, applied research, experiment and development were respectively 0.1%, 2%, and 97.9% for the industrial enterprise sector. During 2000 and 2009, the R&D intensity of Chinese enterprises increased from 0.71% to 0.96%, while its ratio of new product over sales revenue increased from 11.1% to 12.1%, with less amplification effect. The share of “invention” patents over total domestic patents registered was 30.4% in 2000, dropped to 25.9% in 2004 and 22.7% in 2008. Encouraged by the government policy, the share of “invention” patents dramatically jumped up to 34.8% in 2009, but fell back to 27.3% in 2011. It is estimated that enterprises have now a share of 25% of patent applications in China. Even the most patented enterprises preferred to produce patents of utility new models and external design rather than “invention” patents. A check on the top 20 enterprises which registered biggest number of patents in 2011 shows that only 5 of them had more “invention” patents than other forms of patents (On the list they were: ZTE as number 1; Huawei as number 2; Hongfujin as number 5; China Chip International as number 17; and Hangzhou Huasan as number 18). Chinese R&D stagnated in bringing more auxiliary improvements based on design instead of

coming out with product innovation based on core technology development. Except that several enterprises progress with strong integration capability from R&D to marketing, most of Chinese enterprises begin to invest in R&D but quickly find difficult to deepen their R&D fields, to increase the efficiency of projects, and to upgrade the quality of outcomes. They are stuck in the halfway of imitation to innovation. A survey in 2012 in the Pearl River Delta region (Guangdong Province) of 1201 industrial enterprises shows that 44% of these enterprises set up new R&D utilities after 2008 as a response to crisis, but still 55% of enterprises reported that their current R&D activities contained imitation of foreign technologies.

Since more than 10 years, the Chinese government has strengthened the patent law and legal protection of technologies to give bigger incentive to enterprises to innovate. On the other side, Chinese enterprises responded to government policies by increasing dramatically R&D investment and application of all forms of patents, as demonstrated by macro statistics. But why there is little sign of R&D deepening and why Chinese enterprises have tendency to continue their trajectory of imitation instead of indigenous innovation? The answer may lie in the fact that enterprises in China in general only have low levels of “absorptive capacity” for R&D. The absorptive capacity is, as defined earlier, a specific way that enterprise carries out its R&D activities. When an enterprise begins its in-house R&D projects and at the same time makes continuous effort to identify, assimilate, and exploit knowledge from outside knowledge such as basic research findings, instead of keeping every effort inward without external interaction, the enterprise is said to have “absorptive capacity”. This open-door strategy of doing R&D will in return induce more R&D spending on future options, thus condition the success of on-going R&D projects. Otherwise, despite the domestic knowledge production at universities and research institutes, enterprises will fall short in absorbing this knowledge and its own in-house R&D will be lack of dynamic inputs. If innovation is an aircraft, indigenous R&D capability and absorptive capacities are like two wings. Missing either of them will make the aircraft unworkable.

Although Chinese enterprises begin to invest more in R&D, they tend to do it by closing the door, i.e., to cooperate less with other organizations. A survey research of 42 enterprises in the region of Central China in 2010 shows that the new ideas of R&D projects were mainly from three sources: first the end-users, then the enterprise itself, then the competitors. Suppliers, universities and research institutions were all of low importance as technology sources searched by enterprises (Liqin Ren, Deming Zeng, and Koos Krabbendam, 2010). The 2012 survey of 1201 enterprises in the Pearl River Delta region of Guangdong Province in the South China also demonstrates that compared with efforts of upgrading the in-house independent R&D capabilities (effort value of 6.17 of 10), enterprises made much less efforts to cooperate with universities, research institutes and other companies in R&D (effort value of 3.26 of 10). This survey also reveals that for the enterprises in the Pearl River Delta region, independent R&D and cooperation with customers who were generally foreign companies as clients constitute major sources of R&D projects. Only less than 14% of enterprises searched R&D sources through cooperation with universities and research institutes. Less than

10% of enterprises participated in joint R&D projects with other enterprises, universities and research institutes. In terms of searching and absorbing external knowledge for the R&D projects, Chinese enterprises are like isolated islands standing alone in the ocean of science and technology. Without nurture from this ocean, its R&D propensity will eventually fade away.

Table 4 Technology sources of R&D projects of enterprises in the Pearl River Delta (Guangdong)

Technological sources of R&D projects	Frequencies		Percentage (%)		Total number of enterprises giving responses
	No	Yes	No	Yes	
Independent R&D	368	808	31.29	68.71	1176
Cooperation with colleges and universities	987	148	86.96	13.04	1135
Cooperation with professional research institutes	985	149	86.86	13.14	1134
Cooperation with customers	428	735	36.80	63.20	1163
Cooperation with other enterprises	806	340	70.33	29.67	1146
Participation of multi-party R&D cooperation with other enterprises, colleges and universities, and research institutes	1032	102	91.01	8.99	1134
Purchase of technology patents and equipment	892	243	78.59	21.41	1135
Imitation of others' technology (without possessing private patent or purchasing others' patent)	970	164	85.54	14.46	1134

Source: Qiu, H., W. Zhao, et. al. 2012.

The development of absorptive capacity in enterprises depends on two things: enterprises' own efforts and orientations of R&D projects and external conditions which permit enterprises to establish various linkages with other organizations. A Chinese national survey of R&D resources in 2009 reported that in terms of R&D project expenditure, 69.4% of enterprise projects were accomplished by enterprises themselves independently, 10.3% of enterprise projects were accomplished by enterprises in cooperation with domestic universities, 5.6% of enterprise projects were accomplished by enterprises in cooperation with domestic research institutes, 4.5% of enterprise projects were accomplished by enterprises in cooperation with other domestic enterprises, 3.8% of enterprise projects were accomplished by enterprises in cooperation with foreign organizations, and 6.4% of enterprise projects were accomplished in cooperation with other organizations. From the perspective of industrial enterprises, since 2009, both private and State-owned enterprises decreased their expenditure part of external R&D projects in cooperation with universities, public institutes, and other enterprises. In private sector, the external R&D expense share decreased from 5.5% in 2009 to 4.7% in 2010; in State-owned sector, the share of external R&D decreased from 8.6% in 2009 to 7.3% in 2010. Chinese enterprises are not good in developing external cooperation in R&D, which is a sign of their weak absorptive capacity, but is also the cause of the low quality output of R&D projects with a "closed" management style. In 2011, there were 81615 projects of cooperation among enterprises, universities and research institutes. Though 30% of the project budgets were spent on external R&D cooperation, the Chinese enterprises didn't appreciate very much the role of these domestic R&D partners in developing innovation, especially domestic universities and research institutes. The 2012 Pearl River Delta survey shows that the 1201 enterprises gave a lower evaluation of the service provided by universities and research institutes in their innovation (average value of 4.77 of 9) than the evaluation of the service provided by public technology platforms of local government (average value of 4.87 of 9) and cooperation provided by other local enterprises (average value of 5.2 of 9). Regarding the frequency of contacts and level of trust with a series of other organizations in local environment, enterprises showed the second lowest level of trust to domestic universities and research institutes, and had fewer contacts with them than with other organizations.

Table 5 Assessment of external linkages by enterprises in the Pearl River Delta (Guangdong)

Type of organizations	Average contact frequency (evaluation scores between 1-9)	Average level of trust (evaluation scores between 1-9)
Competitors in the same industry	4.80	4.82
Local suppliers, supporting vendors and subcontractors	6.89	6.43

Type of organizations	Average contact frequency (evaluation scores between 1-9)	Average level of trust (evaluation scores between 1-9)
Local distributors, domestic traders and retailers	5.50	5.54
Overseas customers	5.81	5.93
Local governmental departments	6.07	6.71
Industry associations and chambers of commerce	5.55	6.18
Local centers of technological innovation	4.17	5.07
Domestic universities and research institutes	3.62	4.87
Local education, training and recruitment services organizations	5.12	5.52
Local financial services organizations	6.04	6.39
Local management consulting and information services organizations	5.01	5.53
Related local organizations to solve labor dispute	5.12	6.16
Mass media	3.22	4.66
Local exhibition and marketing organizations	4.62	5.39

Source: Qiu, H., W. Zhao, et. al. 2012.

In fact, Chinese enterprises lack interest in engaging domestic universities and research institutes with respect to R&D efforts. There was almost 16% of enterprise R&D budget spent on joint projects with universities and institutes in 2009 because either the projects were organized by government, if the enterprises were State-owned or the participant enterprises would get money from the State, if they were non-State enterprises. But the aversion of enterprises to universities and research institutes is also due to the situation of these science and technology organizations themselves. For the big R&D projects financed and coordinated by the government, State-owned enterprises and universities and research institutes which are also State-owned are under the same roof and obliged to cooperate for innovation. Besides this kind of imposed linkage, local Chinese universities and research institutes, except as suppliers of engineers, have contributed very little to R&D activities of enterprises, especially the non-State and private enterprises. The reforms in the science and technology system since the mid-

1980s have to some extent activated the enthusiasm of researchers in these institutions, but enterprises found soon that the coordination with universities and research institutes was even more difficult than negotiation with other enterprises. The academic mode of production is undermined and replaced by a profit-oriented mode of behaviour, where pecuniary incentives become more important. These science and technology organizations aggressively searched for profits and tried to maximize every single piece of their knowledge when they saw enterprises having potential to acquire technology from them.

The deeply-rooted problems of separation between R&D and the economy, and of organizational rigidity between enterprises and S&T institutions, have thus been overlapped by the new problem of marketization of research and industry cooperation. Such a problem may be due to the very unique Chinese model of capitalism in which the State itself behaves like a special interest group with lucrative objective in a market place, competing with other non-State groups for resources by elaborating all kinds of rules in favor of itself. If within the State-sector enterprises have to cultivate vertical relationships with bureaucrats and politicians for subsidies and other favors, outside the State-sector the Chinese society is like a pure laissez-faire market where non-State enterprises have to rely on traditionally inherited personalized trust and networks (the famous Guanxi) to establish links with research institutions, financiers, partners, suppliers and customers in transforming knowledge, capital, products and talent for innovation (Gilboy, 2004). The selfish State leaves beyond its own controlled system a free market absent of reliable legal framework that can be used to enforce contracts. If the Chinese State capitalism has greatly promoted the country's catch-up through coordinating the interactions between its production system with the national research and knowledge system, the remaining part of Guanxi capitalism in China finds it difficult for innovation to weave efficient linkages among organizations based on institutionalized trust.

4. Policy Implication: Exploiting Efficient Linkages of Innovation

To the Chinese government, how to mobilize the non-State sectors to develop more dynamic linkages with the State-owned sector of science, technology and knowledge seems still to be a big challenge. If the government is capable of making efficient and rapid technological catch-up in the domestic, monopolistic, and infrastructure sectors (artificial satellite, high-speed railway, grand airplane, nuclear station, etc.) through its research-based mega projects in mobilizing maximum financial, knowledge and organizational resources, it seems not so skillful in promoting further R&D investment and activity of non-State-owned enterprises in competitive markets (consumer electronics, automobiles, machine tools, food processing, textiles, fast moving consumer products, etc.). Whereas in these sectors, Chinese enterprises have accumulated enormous technological capabilities of manufacturing and distribution and the general technological level seems to be approaching the world frontier. But it is this distance of "last 100 yards" that constitutes the most difficult part of catching-up. The challenge in this sector is uniquely difficult because of the complexity of science-based design and engineering-based manufacturing. To create innovative outcomes, Chinese

enterprises need to combine their operational excellence with high level research of science and technology, often under the form of formal and well planned R&D projects. Thus, contrary to the common feeling, Chinese enterprises in the mature, traditional and labor-intensive sectors still have a long way ahead of them to catch-up the world's technology and innovation frontier; even they are taking most of the market share in these fields. Chinese government shall support these indigenous firms in establishing more linkages other than those with customers, especially with domestic and foreign research institutions.

As a matter of fact, some Chinese domestic firms have been good in establishing strong linkages with customers, including both domestic consumers and foreign companies as clients. To adequately match customer needs from different regions, urban and rural users, and income levels, household appliance producer Haier offers over 400 refrigerator models in China. Haier developed a dual-use washing machine that can be used to wash vegetables in addition to clothes. This was driven by "listening" to the "abnormal" users of their products. Thus, Haier's innovation capacity is creating more product models to match different market needs rather than being technology-intensive. Lenovo, the Chinese company which bought the PC business of IBM in 2004, started by selling foreign computers such as AST, HP and IBM in Chinese market, while losing money in their own PC business till 1993. The boss Liu Chuanzhi then made Yang Yuanqing as the GM of its own PC production. Yang, as a top salesman in Lenovo Company, learnt from selling foreign brands such as HP that the key in Chinese market was to create a nation-wide network of sales agents. He fired all but 18 of the one hundred sales people in Lenovo. Then he reformed Lenovo's operation and asked the engineers to cut product costs in half. He purchased components in bulk from Samsung, used Intel and AMD CPU to cut price. He substituted heavy but cheap steel sheets for plastic computer cases. He even imitated the local small PC boutiques in assembling components to customerize PC products. By this strategy of imitation based on lowest price and customerization, Lenovo rose as number 1 in the Chinese PC market in 1997 and has kept this position till today. Huawei, the leading telecommunication company established in 1987, first started as a distributor of the HAX switch produced by a Hong Kong company. Huawei's first product of its own was the C&C08 switcher with 2,000 lines, and the customer was a small city in Zhejiang, a market neglected by the multinationals. In 1993, Huawei launched their C&C08 switchers with 10,000 lines, which were sold very well in rural areas. Ren Zhengfei, the boss of Huawei, always said that the user and customer are the source of innovation for Huawei. Later, Huawei set up a lot of joint laboratories with Texas Instruments (TI), Motorola, et cetera, and a joint venture with 3COM, thereby outsourcing more its technology from foreign companies buying than buying technology from university and research institutes.

As Huawei, some leading Chinese firms also have begun to expand in global market and search for developing indigenous innovative products abroad. By acquisition of foreign firms and R&D facilities and the establishment of R&D and design labs in technologically advanced countries, these enterprises hope to benefit from spillovers abroad. Through M&A or joint R&D, they expect to monitor new development trends

and transfer new technology to China, and thus speed up inverse technology transfer and promote domestic upgrading. In 2010, 188 Chinese outbound M&A transactions worth 38 billion USD took place which is a 30% increase compared to 2009. Chinese M&A targets are widespread globally with one focus on the United States, but also on the European Union, Asia, Africa and developing countries with strong R&D infrastructure such as India. For example, Haier's global network consists of R&D, manufacturing, supply chain, marketing, and service. It has 15 industry zones, 30 oversea plants and manufacturing sites, 8 oversea R&D centers, and 58,800 sales offices. But the international R&D outsourcing of Chinese enterprises has its own constraints. The first is the investment destination of other developing countries, especially South Asian economies (Vietnam, Cambodia, and Laos), Middle, Russia and Africa. These markets cannot provide powerful information and technology inputs to high-level R&D projects. Chinese enterprises have little habit of making dynamic linkages with a variety of institutions in the environment and found it even harder in a foreign context. For the acquired R&D laboratories and competences, Chinese enterprises also have difficulty in finding pertinent organization to carry out inverse technology transfer. Thus in most cases, the overseas R&D activities of internationalized Chinese enterprises are mainly concerned of local product adaptation to consumer preference, collecting foreign technology and standard information for the home base, and assisting commodity manufacturing and marketing in the host country.

Other potential linkages of innovation can be found in exogenous firms in China. Chinese government has always policies to attract significant R&D activities of foreign companies. While previously most FDI was used for green-field investments or acquisitions in production and distribution facilities, today an increasing portion of foreign investments flows into the development of R&D facilities. China's universities graduate more than 10,000 science PhDs each year, and increasing numbers of Chinese scientists working overseas are returning home. Multinational firms are now to take advantage of these abundant supplies of low-cost skilled researchers in Beijing and Shanghai. The percentage of R&D expenditure of foreign-funded projects stays constant at around 27%. A large portion of foreign spending on R&D is concentrated in a few regional clusters in China namely Shanghai and Beijing. However increasing R&D investments in other provinces (Guangdong, Jiangsu, and Tianjin City) create a close link to the concentration of MNC investments in production capacities. The number of foreign R&D centers in China increased drastically from around 50 in 2000 to approximately 1,100 at the end of 2007, 1,200 at the end of 2009, and 3,300 at the end of 2012. 346 of the Fortune 500 companies have established R&D facilities in China. Many multinationals established in China one of their main centers of global R & D, which is the case of Microsoft and SAP (IT), Alcatel Lucent (telecommunications), BASF (chemicals), Novartis (pharmaceuticals), Matsushita, Sanyo (electrical equipment), and PSA (automobile), etc.

The strategic focus of foreign R&D activities has evolved during the years of rapid investment growth. The initial motivations of establishing R&D centers in China were to innovate by commercialization, as opposed to constant research, perfecting

development, and critical designs which are controlled by multinational R&D headquarters. Multinational companies were to put a new product or service into the Chinese market quickly and improve its performance through subsequent generations. It was common for products to launch in a fraction of the time that it would take in more developed markets. While the quality of these early versions may be variable, subsequent ones improve rapidly. This approach of R&D is to focus on local product development in partnership with downstream players such as domestic manufacturing suppliers. This strategy helps multinationals meet local-technology requirements, but above all do research and applied development is close to the biggest market in the world. This kind of R&D projects in fact reinforces the multiple feedback process with the innovation chain. It helps multinationals have capabilities of domestic-market knowledge or relationships needed to apply R&D results effectively to adapt to Chinese domestic needs. The general idea is to be closer to Chinese customers and the network of institutions and universities from which multinationals source talent. The latest Buick GL8 minivan introduced in Chinese market is a good example. General Motor quickly developed the model through capability built in China, in using a combination of on-the-job mentoring, coaching, and expert assistance from overseas, as well as a very structured development process from their global team. The GL8 was an old GM architecture that no one else wanted, but it has turned into an unbelievably good-looking and highly desirable car in China.

Normally foreign R&D centers had the functions of technology monitoring and corporate R&D representation. But with the strong competition for talent, resources, and markets between foreign and domestic enterprises, foreign companies began to launch indigenous R&D centers with Chinese universities and institutes and to focus these facilities on developing technologies for unproven but promising next-generation domestic markets. There are even a few examples that some multinational companies developed through local R&D new models and incorporated some of the features they could transfer to other markets. Multinationals that participate in such ventures align themselves with China's goals while they have concerns about protecting intellectual property rights (IPR). Most of the foreign R&D labs in China are independent wholly foreign owned for better protection of intellectual property rights. These labs do not apply for patents to avoid disclosure of the technology know-how. Foreign R&D centers are reported to have limited interest in sharing knowledge with domestic firms and R&D labs. On the other side, since 2006 China has issued a variety of policies which allow Chinese companies to apply non-inventive patents (utility model patents, design patents) and impede foreign products from the Chinese market by compulsory testing, certification and standard requirements. The Chinese government even created a bigger web of interrelated policies by issuing requirements for the disclosure of foreign proprietary technologies. For example, China enacted an "Anti-Monopoly Law" in 2008 which exempts monopolies in sectors which are dominated by State-owned enterprises and in sectors where monopolies are deliberate by the state as they are critical to the Chinese economy. Chinese government also supports the "indigenous" innovation projects. To be eligible for the indigenous innovation catalogue (including computers

and application equipment, telecom products, modern office equipment, software, new energy equipment and high-efficiency energy-saving products) to participate in public procurement, the product must, among other criteria, have full ownership of IP in China and have a trademark that is owned by a Chinese company registered in China. Chinese government seeks to use transferred IP and manufacturing methods to create its own champions that can compete with global countries around the world, not just in the local market. All these measures raise the concerns about the intellectual property rights of foreign R&D in China and impede the more aggressive investment decisions. Whether the foreign R&D activities are climbing from the focus on market feedback process to adding new process of more research and knowledge mobilization is now an open question. One thing for sure is that the majority of foreign R&D centers are not conducting indigenous technology R&D yet and the innovation capacity is rather in the downstream along the linked-chain process.

5. Conclusion

Some scholars such as William Baumol (2002) asserted that innovation as the capitalist growth engine was possible thanks to the free market mechanism, the laissez-faire competition and the body of rules guaranteeing private properties; while others see the State capitalism as compatible with creativity and innovation. China complies with neither. With the recent industrial upgrading strategy based on more R&D, China is positioning itself as a follower and adopted a pragmatic strategy in terms of increasing investment quantity of R&D to serve the restructuring of its industries. Contrary to the classic Schumpeterian entrepreneurial capitalism characterized by “creative destruction”, its so-called State capitalism impedes the country’s development of innovation capacity, though it accelerated enormously the technological catch-up process and industrial structural upgrading. With huge R&D investment, Chinese capitalism dynamics is still characterized by “imitative construction”. Its rapid R&D quantitative expansion overwhelmed the quality improvement of R&D.

When market mechanism on an arm’s length basis is no longer reliable, enterprises and organizations prefer to internalize their transactions instead of linking outside. Until now, most of Chinese enterprises rely on their linkages with customers or clients in the market as the main source of innovation, in the absence of dynamic linkages with research and knowledge institutions. The feedback loops from distribution activities and market demands become the most important inputs of the innovation process from market detection, to product design, and to development. Large quantity of small and medium sized enterprises count on American, Korean, European and Japanese enterprises as foreign clients to teach them how to employ technologies. The leading big companies adopt the strategy based on market-oriented product diversification and technology outsourcing (buying innovations of others) as their primary approach of innovation. The technology may come from anywhere, although most of the core, proprietary technology comes from the USA, Japan, Europe and Korea. The most famous Chinese multinationals such as Huawei, Lenovo and Haier grew up not because of their strong capabilities in in-house technology development, but thanks to their ability to survive

market competition by understanding and responding to specific market needs. Put in another way, their success is not based on the technological capability of innovation promoted by the State, but on the emerging Chinese and global market opportunities. As these big three, many other big Chinese enterprises entered into the market first as distributors and sellers, not inventors or innovators in technology. This spirit of commercial trader is kept even in the following stages of enterprise development. During the last 10 years, numerous emerging Chinese enterprises such as Chery Automobile and Bird Mobile-phone announced that they made radical innovations but simply by buying various foreign developed technologies and putting them in a product shell designed for the Chinese or other under developed markets.

Now, the Chinese enterprises have got so used to the competitive and transaction-nature relations in market that they don't know what other kinds of linkage that they can have with other organizations in the economy. For example, the very popular form of organizing R&D activities through strategic alliance finds very few cases in the Chinese industry. When there is something like innovation network in China, it is always the relationship of competition which prevails over cooperation and communication among network participants. On the other side, Chinese economy has been rich of organizations of different natures, different levels, and different locations. It has well established universities and institutes, a variety of intermediate organizations, newly created science and technology parks and incubators, well financed State-owned enterprises with their R&D centers, accumulated FDI with their R&D facilities, emerging Chinese big companies with their overseas R&D hubs, and a large amount of private enterprises with regional public technology centers set up by local authorities. To make China a Schumpeterian innovation machine, the big challenge to the Chinese government is whether it can overcome its long traditional "paternalism over the State sector" in innovation policy and find an institutional substitute to correct the market failure effect in innovation capacity building of all Chinese enterprises. With almost everything has been done to promote innovation in China, it may still leave the dynamic linkages outside enterprises for R&D cooperation to be built.

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A Strategy to Overcome Great Pressure for Graduates Employment in China

Lu Yi

Abstract The great employment pressure on Chinese graduates is rooted in a variety of factors: the imbalances of supply and demand in the labor market, problems of unreasonable setting in the curriculum system leading to structural unemployment, as well as graduate's wishes regarding jobs. It is necessary for the government and universities to innovate the systems of the enrollment, curriculum and employment, in order to solve graduates' employment difficulties.

Keywords Employment - Economic system – Graduates - Curriculum reform
Innovation

The fast increase of popularization of higher education in China brings a great employment pressure for graduates. Since this problem is becoming more serious year by year, it has attracted a lot of attention from the Central Committee of the Party and the state council. The central government has introduced a number of policies to promote the employment of graduates. On November 29, 2013 the Ministry of education published a document on its website¹. In that document, it pointed out that the party's eighteenth plenary session clearly put forward the slogans "improve the promotion of employment and entrepreneurship mechanism" to upgrade and to focus on college graduates of the youth employment", and set a comprehensive plan for job opportunities for graduates. At present, the employment pressure on ordinary university graduates and structural contradictions are still prominent, and the employment situation is complicated and grim. In order to carry out the spirit of the party's eighteenth plenary session fully, we should deepen the reform. In addition, college graduates employment is a system engineering. Since there are not only the government's factors that affect the employment of graduates, but also some other even more important factors, such as psychological factors of graduates and their parents, huge gaps between textbooks, practice and teaching standards. So it is not scientific

¹ Document of the Ministry of Education. From the website: <http://www.moe.edu.cn/>

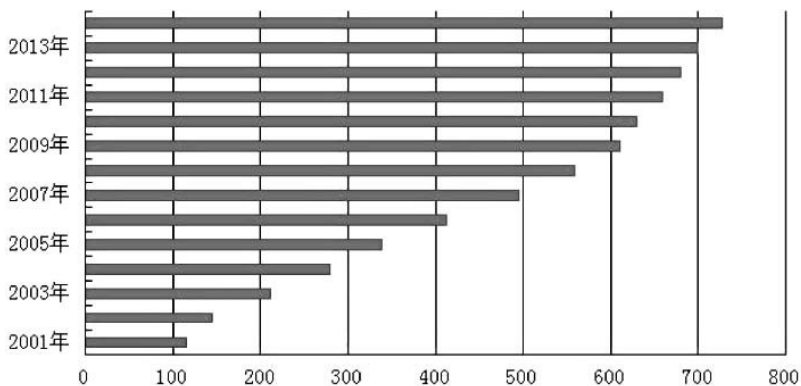
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to think that we might solve the employment problem only through government's policies. The Ministry of education should pay more attention to the unemployment rate of graduates. Colleges should improve the professional curriculums adapting them to the society, and the government should carry out a policy strengthening students' employment motivation. However, to promote the employment of university students, we need the help from government, society, colleges and students². Currently, there are three major difficulties for the employment of Chinese college graduates: the first one is the supply of graduates in excess compared to demand; the second one is the unreasonable setting in the curriculum system that leads to structural contradictions between supply and social demand; the third is a part of the graduates who would rather stay unemployed than accept the non-ideal job. These three employment predicaments need innovation in terms of recruitment, training and employment, in order to overcome the current employment problems.

1. Lower enrollment to university could solve the contradiction of too many graduates for real valuable job opportunities

The development scale, structure and speed of the higher education must adapt to the development of economic and social needs, which is the guarantee for the continuous development and health of higher education. At present, China's employee market is characterized by a situation where complete disequilibrium and structural imbalances exist at the same time. Thus the employment problem is very severe. On the one hand, the basic pattern of the oversupply of labor will not disappear in the future, labor supply exceeds by far the labor demand produced by economic growth, which leads to an unemployment disequilibrium in total. On the other hand, in the process of reforming the economic system and the adjustment of industrial structures, workers' quality and skills cannot meet the needs of the society, which leads to the emergence of a large number of jobs vacancy.

Figure 1 Number of college graduates in 2001-2014. (From website: China Education Online³)



² Liu Yan, Li Shumin. The college students' employment structural contradictions analysis [J]. Taiyuan. Journal of <University of science and technology: Social Science Edition>2008(2):27.

³ China Education Online: http://career.eol.cn/kuai_xun_4343/20131210/t20131210_1050496.shtml

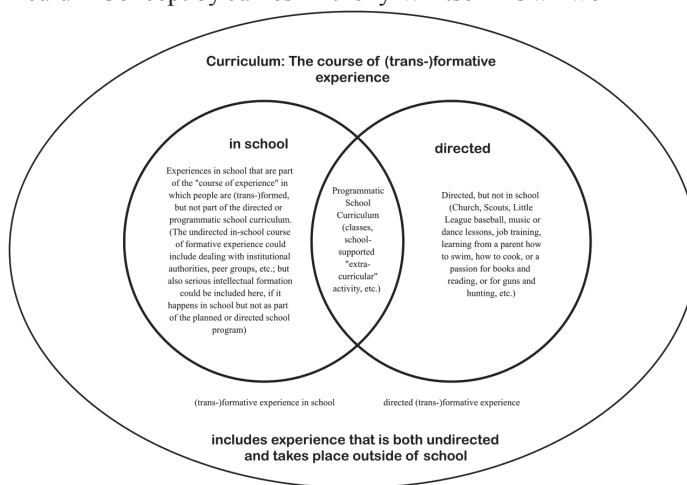
There is a shortage of skilled labor in many areas and enterprises, which is called structural unemployment, leading to the rise of the natural unemployment rate. After 15 years of Chinese higher education expansion, in 2014, the total number of higher education graduates reached 7.270.000, hitting an all-time high, with a relative ranking far exceeding the demand of developed Society.

According to the forecast, during the “Twelfth Five Year Plan” period, the average annual supply of urban labor force is about 25.000.000 people, while the average annual urban vacancies can provide only about 12.000.000 jobs. Hence, the annual unemployment is about 13.000.000. According to the high, middle, low level of talents with structure about 1:3:6 in, suitable senior and intermediate positions for university graduates are only 4.800.000 a year, so the employment gap is about 2.000.000⁴. Therefore, solutions to solve the excess of supply of college graduates are based on two points: one is to speed up economic development in order to increase employment opportunities; the second is to reduce the scale of enrollment in universities in order to reduce the supply of College graduates. As far as the Ministry of education is concerned, it should reduce the scale of enrollment of universities and improve the quality of higher education.

2. Guidance of the reform in curriculums solve the structural contradiction of employment

A structural contradiction exists between the supply of College graduates and actual social demand. It is necessary for the Government to bring out new policy timely to guide and upgrade this situation.

Figure 2 Curriculum Concept by James Anthony Whitson - Own work



Note: "Curriculum Vitae" means "the curriculum of (a) life" -- not just those threads of life experience that are planned and happen as part of programs within schools.

4 "The 4 one stone arouses 1000 billow enrollment and employment rate linked hot lead" [EB/OL]. [2012-06-19]. From website: <http://edu.people.com.cn/h/2011/1209/c227696-1417397299.html>.

The Ministry of education's compulsory administrative interference is not desirable, because this is not only against the autonomy of universities, but also against the rules in the development of education. Education, including higher education, has the characteristics of long period, lack of benefits in the short term, which leads to changes of the need of profession. Therefore, we should not determine the professional training goal of the future in terms of three years of professional demand.

The Ministry of education, responsible for coordination of the development of education, needs to deal with three kinds relationship: 1. between the present and the future demand; 2. long-term and short-term professions; 3. elite and mass education. These three aspects represent the rules of development of the college education.

1. The need for the present and future

The Ministry of education needs to coordinate closely with the strategy of the national development, invite experts in the preparation of personnel training mode matching with the cultural and national development strategy. Encourage colleges to apply for special talents learning and training mode (with its own characteristics and advantages of discipline culture experiment project), setting up special funds and appropriate incentives. Integration of existing high school education resources should promote the adjustment of professional background conditions for talent training, avoiding the situation where teachers and teaching resources remain in the traditional professional scheme, and guiding the university resources to respond to the current and future needs.

2. The long-term and short-term professions

Then Ministry of education needs to adjust the present policies and introduce an event limited to support. In general, long-term profession is related to the premise and the foundation of short-term profession's development, so it cannot be forbidden. The excess kind of long-term profession and the waste of resources should be adjusted; the long-term profession with inferior discipline power should be conducted with recruitment limitation, need long-term professional control to limit the supply, and solve the structural contradictions in talent supply and demand. For the specialties which were originally scarce but now in excess of the demand, the Ministry of education should apply a policy of enrollment restriction, trying to guide the integration of resources, to set up a fan of major options, to cultivate new talents, leading development into the social labour environment.

3. The treatment of elite education and mass education

The Ministry of education can set the "985 Project" of first-class universities, as elite educational institutions, focusing on training quality and scientific research level power to protect and supervise personnel training mode and reducing the commitment to support the "inflationary" higher education trends. Instead of making efforts in basic science, the focus would be oriented on applied, a innovative research and basic disciplinary theories, to training promising talents, who have both ability and real attitudes. At

the same time, there is the need to expand the scale of training and pay attention to the growing knowledge of talents. Mass education institutions should be based on specialized knowledge and on the teaching for occupation knowledge skills, cultivating application-oriented and practical technical talents. Different universities should be in different locations coordinating their developments through appropriate choices. All these policies imply different standard strategies by the Ministry of education, through the evaluation of personnel training quality reflecting, advantages and characteristics, kind and levels of training, guiding the different talents, caring of the social division of labor required, reducing the present too deep homogeneity of the Graduate Education and supply and demand and the implication of the structural contradictions.

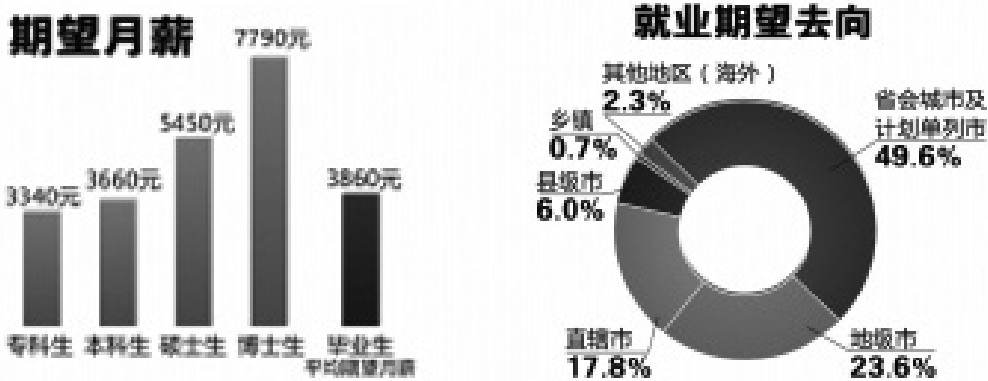
3. Improvement of the employment policy strengthen the positive employment intention of graduates

The graduates who would rather stay unemployed instead of accepting a job which does not meet their expectations is an important factor to influence the employment market. The vice director of Chinese talent market in the south canal appointment Wang Shihua pointed out: “not for the wages that are not high enough, not for the places far away from their home, not for the post which don’t have files, not for the unpleasant name of posts.”⁵ These “four refuses” is a reflection of the college graduates employment expectations. There is a time when the employment post is helpless to social mobility. Graduates who are full of high expectations do not choose their jobs at random, but continue to seek the posts which can change their social status. However, the popularization of high education makes a large part of learning result in the situation where children of upper middle class families who have low scores can also enter the university and obtain a high education diploma too. What’s more, they will use their social capital from the family to get salary and good jobs. Despite the high quality of lower middle class children having the same high education diploma, it is difficult for them to find work even in the industry and sector due to the lack of strong social capital support. The effects of the economic phenomenon that bad money drives out the good⁶ happens also in high education with regard to the employment market. This not only lets down the students who were born in poor areas, but also spreads quickly to the family with the same class, let the parents and the children of poor families develop negative thoughts of education as useless. Education is not helpful – in itself – to change students future and their family’s fate; even traditional universities might lead to more poor students condition and overall social poverty. This shows how the higher education mechanism to promote changes in the social pyramid may turn out to have failed, with the consolidation of social status phenomena becoming more and more obvious. This will be harmful for the sustainable development of the Chinese harmonious society construction and of both economy and society.

5 [America] Pete Blau inequality and heterogeneity of [M]. Chinese Social Science Publishing House, 1977

6 Gresham’s law is an economic principle that states: “When a government overvalues one type of money and undervalues another, the undervalued money will leave the country or disappear from circulation into hoards, while the overvalued money will flood into circulation.” It is commonly stated as: “Bad money drives out good”.

Figure 3 Expected salary and expected employment location of Beijing's graduates in 2014. From Jinghua electronic newspaper (2014-05-28)



Source: http://epaper.jinghua.cn/html/2014-05/28/content_92501.htm

“For a society that wants to progress, we must have some way to humble origin and intellect people to replace those of noble rich birth but having poor talent and even less learning capabilities”. The competition mechanism of survival of the fittest can⁷ make the society more prosperous, but the competition is not to rely on congenital factors but self induced factors. At present, the higher education and social mobility dysfunction leads to full of dreams and expectations of school graduates reluctant to employment. To solve it, the Ministry of education should publish relevant policy, to improve the recruitment system, steering capability standard recruitment system from diploma, leading to employment paradigm, to eliminate the interference of paradigm by social capital on employment outcomes, to let the graduates with the knowledge and expertise results such as self induced factors become an important basis for employment and the recovery of social mobility. In short, the great employment pressure on graduates facing today result from the contradiction of enrollment, training and employment in China. In order to fundamentally solve the employment problems of graduates, the key lies in the policy innovation with comprehensive systems thinking of government and universities. It should not only from one aspect, making overall plan for a fundamental transformation.

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⁷ Zhou Zuoyu, education, social stratification and social mobility [J]. Journal of Beijing Normal University: Social Science Edition, 2001 (5): 86-87.

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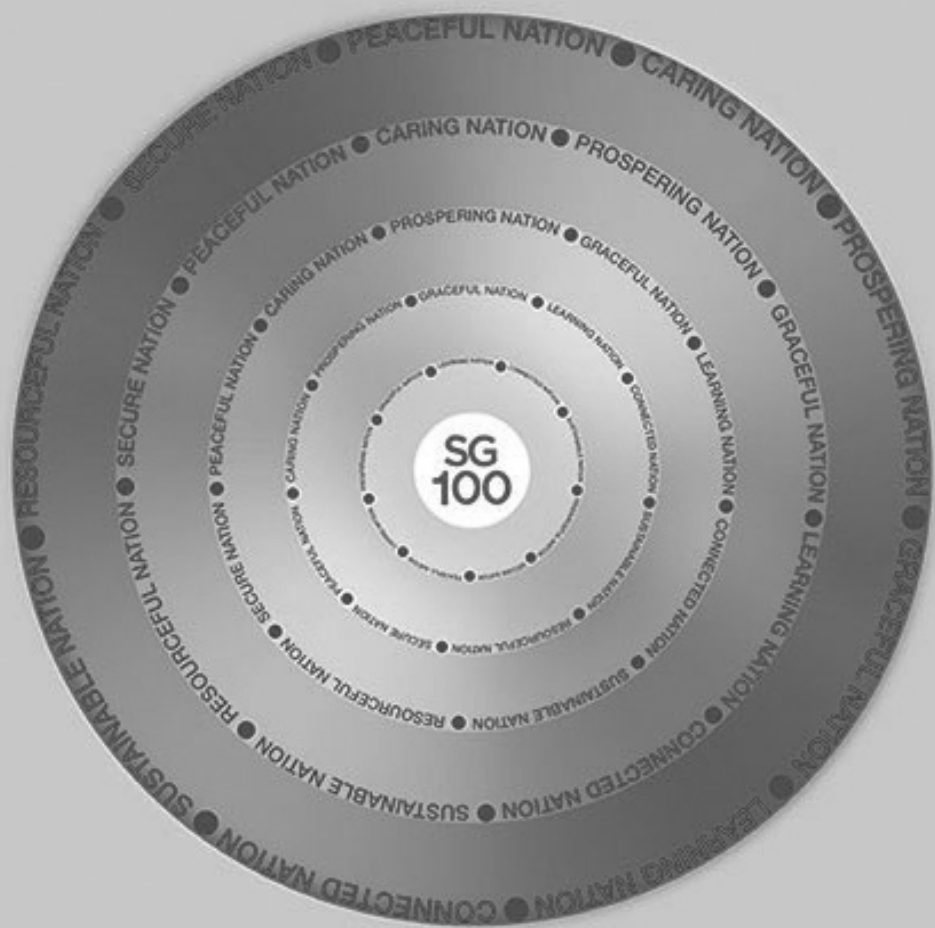
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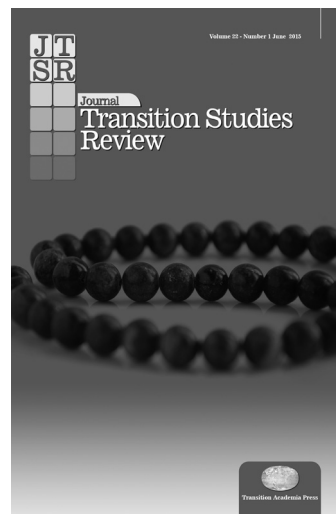


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Aims and scope

Transition Studies Research Network was founded in 2002 as CEEUN-Central Eastern European University Cooperation, with the aim to connect a group of experts and university faculty in a program of cooperation devoted to research programs and specialized international postgraduate and doctoral courses. The Network has grown fast and soon after the scientific “voice” was established with the Journal Transition Studies Review, published initially by the CEEUN, then by Egea - Bocconi University Press, and finally by Springer Wien-New York.

At the beginning, JTSR was focusing on transition in Central and Southeast Europe, interpreting CEEUN purely as a European network. Soon afterwards, the EU enlargement was achieved extending the aims and scope to differentiated forms of partnership with Russia, Ukraine, Caucasus, the Black Sea and Caspian Seas, Mediterranean regions and Near East. Today this approach has dramatically changed following a serious violation of the international laws and agreements by the Russian backed insurgency and later invasion of Crimea and Eastern Ukraine. Today we are facing the most severe crisis of security and confidence between European Union countries and Russia since the Second World War and the reunification of Germany. The future is unpredictable and certainly nothing will return to be as before in the relations with Russia.

CEEUN was launched in Vienna and its first meeting took place at the Institution that was founded by Friedrich August von Hayek and Ludwig von Mises, two great thinkers and economists: the Austrian Institute for Economic Research. Now the scenario is completely different. From 2005 on, a worldwide regional approach looking to Asia, Latin America, Eurasia and Great Middle East has been implemented.

TSN-Transition Studies Research Network has inherited from the previous CEEUN the “aims and scope” which were recently integrated. In the last ten years Transition Studies Research Network has progressively involved more than 400 internationally well known members and 95 university departments, institutes and research centers and is engaged in many areas and programs.

The scientific interests and fields covered are: Europe and the World, future approach to EU enlargement, global governance economic, financial and policy framework and impact, where the focus would be mainly on growth theories, innovation and human capital, cultural and intellectual heritage, main advanced industrial sectors technologies, investments, international affairs, foreign policy choices and security, monetary policy and main currency areas, banking and insurance, development and area studies, social policies, environment and climate, culture and society, juridical and law studies, regional approach to global governance, peculiarities and critical challenges.

The future transition to an open economy and institutional reforms, political and strategic issues and challenges, governance, European, Mediterranean, Asia-Pacific, Middle Eastern, Latin America and Africa perspectives are key topics of this high ranking journal.

Transatlantic and Asia-Pacific relations, security and international order represent, together with applied regional studies, another cornerstone of the Network’s activity and of Transition Studies Review’s contents as well as of three other Journals covering specific aspects and regions: the Journal of Global Policy and Governance; the Journal of East Asia in World Affairs, in cooperation with Asian universities and the Journal of Welfare Policy and Management at Udine University. The Network is deeply committed to a wide range of transition issues related to quantitative modeling and tools to analyzing and researching economic, financial, strategic studies, social, cultural, environmental, juridical main issues.

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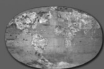
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