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Editorial Preface by the Editor-in-Chief

As with so many developments in the economy, the role played by individual countries in the world economy exhibits considerable cyclicality. Of course, in this case, the length of the cycles should be measured in centuries rather than years. Until the end of the 18th century, approximately half of global GDP was generated by Asian economies (especially by China and India). After this, the Industrial Revolution and later the technological progress of the 20th century led to the primacy of first Europe then the United States of America. The past decades saw the unprecedented growth of the Chinese economy, which may induce further changes in the development of the spheres of economic influence. In recent decades, the People's Republic of China (from now on sometimes referred to as China) has become one of the major players in the global economy. The subtle shifts of the Chinese economy play a central role in the development of commodity prices and exercise a significant influence over the growth prospects of developed countries as well as the global financial market sentiment.

Moreover, China has been growing dynamically for decades now, following a model that diverged substantially in several regards from the one recommended by mainstream economists. Meanwhile, of course, the People's Republic of China has also changed completely: primarily from an economic and financial perspective, but these changes also entailed new trends such as urbanisation, during which large cities full of skyscrapers cropped up, practically out of thin air. The everyday life, habits and clothes of the Chinese population are vastly different from those a couple of decades ago, not to mention the period of the Cultural Revolution.

As the economy gained prominence, almost all think tanks have started considering it a priority to understand and continuously and comprehensively analyse the characteristics of the Chinese economy, society and financial markets. The current special issue of the Financial and Economic Review has undertaken to do precisely this.

In our publication, we show what today's China is like, and attempt to solve the mystery of what China has achieved and whether it will be able to break loose permanently from the status of moderately developed countries. A large proportion of the articles can envisage the further rapid progress of the economy. We touch upon Chinese monetary policy, financial supervision, the mobile payment system, the outward direct investment and the change in the global role of the Chinese currency, the renminbi.

We hope that the topics and issues mentioned in the studies encourage further thinking in the Hungarian professional public, which may spark professional discussions facilitating the development of the Hungarian economy.

Barnabás Virág

Chinese Power Structure and Its Transformation in Comparative Perspective

Mária Csanádi

This paper introduces the general and specific straits of the structure, operation and transformation of party-states, with special focus on China. These traits may be revealed in the power network that evolved from the dependency and interest promotion relationships among actors in the party, the state and the economy during the decision-making process. The network provides the dynamic context of economic, political and state decisions while also serves as a comparative framework for different party-states and their transformation. This framework allows the author to both categorize and confront with each other the several theoretical approaches regarding the Chinese economic and political system.

Journal of Economic Literature (JEL) Classification: P1, P2, P3, P5

Keywords: variety of capitalism, party-state system, network, power distribution, China, comparative model

1. Introduction

There are multiple and divergent concepts sought to define a comprehensive analytical framework of the Chinese economic development and transformation. The differences in these concepts emerge in their approach of defining the authoritarian regime: predatory, socialist, developmental, neoliberal, entrepreneurial, power-elite; the kind of capitalism: state capitalism, emerging system, hybrid system; and its sub-national varieties: variegated, polymorph, fragmented, entrepreneurial, competitive.[1]

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[1] For example: *Szamosszegi and Kyle 2011; Bolesta 2012; Breslin, 1996; Oi 1995; Walsh 2008; Zhang and Peck 2014; Hermann-Pillath and Feng 2004; Naughton 2008; Duckett 1998; Heep 2014; Ong 2012; Lee 2014; McNally 2008; Nee 2007; Rutley 2012; Peck and Zhang 2012; Naughton 1996; Huang 1990; Howell 2006.*

One idea brings most of the multiple interpretations to common grounds: the authoritarian rule and the economic subfield is explicitly or tacitly considered a variety of a capitalist system. Owing to unanimous platform but varied focus, researchers are inclined to compare China not only with the European post-socialist systems, but also with developed capitalist systems, or with formerly authoritarian Asian capitalist regimes. Some of the enumerated concepts, however are either systemically opposed to or do not directly match those of capitalism, such as socialist market economy, state-socialism, post-communism. Thus, the puzzle becomes even more complex: is the Chinese system capitalist or communist? Is the Chinese system in the process of transformation or should be viewed as post-communist? How can these opposing concepts be verified?

The goal of this paper is to solve the puzzle by introducing a comprehensive interpretation of the general characteristics of the structure and dynamics of party-state systems and the specifics of the Chinese structure and transformation. This interpretation puts the above opposing approaches on common grounds. In the following sections a comparative party-state model will be introduced demonstrating the complexity of party-state systems, both during operation and transformation.[2]

2. The framework of comparison: the Interactive Party-State (IPS) model

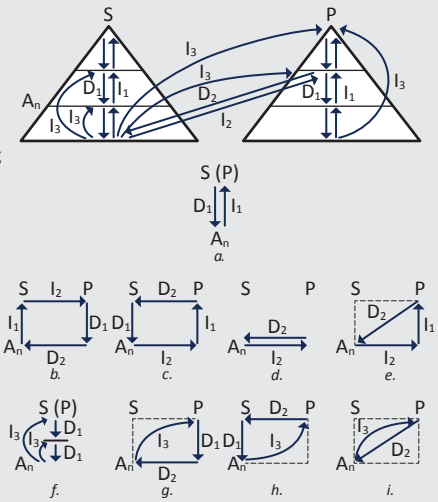
The basis of comparison is the power network that evolved historically, represented by the Interactive Party-State (IPS) model (*Csanádi 2016*). The IPS model is a bottom-up construction that comprises the self-similarities and differences of party states as outcomes of the structural characteristics of power distribution. In terms of both dependency and interest promotion, there are strongly intertwined relationships among decision-makers in the party, the state, and the economy. This leads to a specific process of decision-making, which is responsible for the emergence of systemic power networks (*Figure 1*).

[2] Owing to the very complexity of party-state systems, the multiplicity of their structural systemic specifics, the influence of the individual structural features of the concrete national and/or subnational level unit, as well as its longer-term geopolitical- and actual international conditions, the author limits herself to describe the general and specific properties of the system as well as its dynamics of self-reproduction and transformation. Though the model stresses that individual power distributions in party-states strongly influence the sequence, speed, and conditions of transformation and thus, the characteristics of outcomes, it does not forecast possible blueprints of outcomes of the process. Due to the complexity and cumulated uncertainty of a transformation process (*Bunce and Csanádi 1993*), the different interaction of the same facts could allow even opposite outcomes. Therefore, based on the logic of the model, forecasting any concrete life-span of the system or outcome of system transformation – considering the Chinese structure, its unprecedented transformation elsewhere and its cumulated uncertainties – would lack foundations.

Figure 1
Main elements of the party-state network and paths of dependency and interest promotion (a-i)

1. Closed channels
2. Unidirectional but multithreaded dependencies
3. Direct connection between the party and non-party decision-makers – sensitivity to each other's decision
4. Atomized actors (weak horizontal connections)
5. The possibility of multi-threaded interest promotion
6. Structural inequalities in the field of dependency, interest promotion and resistance through interlinking threads (D_2; I_2) and feedbacks (I_3)
7. The bargaining capacity and the formal positions do not match
8. Bargaining capacities of different strength will determine the distribution of power in the network

S – State (non-party) hierarchy;
P – Party hierarchy;
A_n – Decision-makers (actors) at the n^{th} level of the structure;
D_1 – Direction of intra-hierarchy dependence;
D_2 – Direction of cross-hierarchy dependence;
I_1 – Path of intra-hierarchy interest promotion;
I_2 – Path of cross-hierarchy interest promotion;
I_3 – Direction of feedbacks.



Source: Authors' compillation.

Main elements of the party-state network are as follows: (1) The party hierarchy, which monopolizes the political sub-sphere. (2) The state hierarchy, which monopolizes the economic sub-sphere and, therefore, the extraction and distribution of resources. (3) Interlinking dependency lines, which origin in the party hierarchy as its instruments of power that reach out to structures of positions, activities, organizations and individuals in non-party hierarchies. (4) Short-cuts (structural feedbacks) in the decision-making process integrating those privileged, within both party and state hierarchies as well as across state and party hierarchies.

The possible connections between these network elements follow some simple principles (see *Figure 1*). Interlinking dependency lines can originate only in the party hierarchy, since they are the power instruments of the Party (e.g. the nomenklatura system). In turn, feedbacks between the two hierarchies can origin only in non-party hierarchies, because the loop of feedback is formed by interlinking dependency lines that originate in the party hierarchy (*Csanádi 2016*).

Due to these principles of connection, the operation of the network also follows certain specific rules. Since each actor commands dependency lines originating in its own hierarchy, while only actors in party hierarchy command dependency lines interlinking all other actors, the dependencies, the promotion of interests, and the extraction and distribution of resources are, either directly or indirectly, politically monopolized. Specifics of the elements, the connecting and operating principles of this network will bring about politically rational economic interest and behavior of

actors (*Csanádi 2006*). These latter arise on the one hand, in the politically rational selective distribution and extraction of resources and in privileges biased towards large state owned economic units that are cumulatively integrated into the network during the decision-making process; on the other hand, politically rational economic behavior and interests predominate in the drive for growth, hoarding resources and accumulating connections (feedbacks).

In this network actors are simultaneously holders of and embraced by dependency lines, thus incorporating the functions of distributor and extractor of resources and those of pleader in one single entity. Accordingly, actors in the network have capacity to extract, attract, and distribute resources, and resist to or benefit from state and party interventions. We call these capacities together as constraints of self-reproduction within the network. However, the extent of these constraints are not uniform: they differ according actors' different capacities to attract, extract, distribute resources and resist intervention as a result of actors' bargaining position within the network. The better the bargaining position the softer are the constraints of self-reproduction, the worse the bargaining position the harder are the constraints of self-reproduction. Actors strive to soften their constraints through politically rational economic behavior within the network.

Consequently, state intervention and role of the state in party-state systems cannot be simplified to the activity of an authoritarian and paternalistic regime and its bureaucracy (*Kornai 1994*) despite the fact that the state monopolized the state-owned economy and thereby the extraction and distribution of resources. Owing to elements, principles of connection and operation, the instruments of power of the Party permeate non-party institutions,[3] Within those, interlinking lines reach out to positions, organizations, activities and individual party members. Consequently, both indirectly through the monopolizing state and by directly reaching out to positional, activity and organizational structure and individuals in the non-party sphere, the Party politically monopolizes the state-owned economy and thereby the resource extraction and distribution. Thus the state and its actors' behavior and motivation during the process of decision-making should be interpreted in the context of the party-state network.

The main elements, the main connecting and operating principles of this network, the politically rational interests and behavior, as well as its consequences on selective resource distribution according to bargaining capacities are self-similar (*Csanádi 2016*). In other words, these fundamental characteristics will not differ over time and space (i.e. in different regions and countries or even units at the same sub-national level) and levels of aggregation (national and sub-national levels).

[3] These are for example, state-owned or state controlled enterprises, schools, cultural or health-care units, the army, the police, the trade union, the different level authorities and their organizations, including central government and government hights, the Parliament, the state council etc.

Despite these self-similarities, however, major elements might have various configurations, which result in a vast variety of structural characteristics of power distribution over various party states. Differences in the distribution of power depend *on several structural factors*: the combination of the level of strictness within party and state hierarchies (e.g. compulsory or indirect planning); how centralized the origins of interlinking lines in the party hierarchy are; to what sub-fields they reach out, how dense they are and "deep" they go in non-party hierarchy; how centralized the extraction and distribution of resources along the state hierarchy is; from which level the structural feedbacks within and between hierarchies originate; to what level these feedbacks reach in party and/or state hierarchies; and what is the extent of actors' integration into the network reflected by the location and accumulation of structural feedbacks. The different combination of these structural factors will be responsible for the differences of power distribution among various party states combined with individual specifics (e.g. size, geopolitical location, economic development, cultural traditions etc.) (*Csanádi, 1997*, *2006*).

These varieties may be grouped in three characteristically different patterns of power distribution: these are the Self-exploiting, Self-disintegrating and Self-withdrawing patterns. Each pattern is characterized by the different combination of three main pattern-forming elements and may have countless varieties within it while keeping the main pattern characteristics. These are (1) the level of centralization of the interlinking lines that origin in the party hierarchy, (2) the level of centralization of the extraction and distribution of resources in the state hierarchy, and (3) the density and strength of feedbacks within or across the hierarchies.

These characteristics will determine the pattern-conforming distribution of power and thereby actors' capacities to extract, attract, and distribute resources, and resist to or benefit from state and party interventions within the power network. For the *self-exploiting* pattern, the origins of interlinking lines within the party hierarchy as well as the extraction and distribution of resources within the state hierarchy are centralized, while feedbacks in the network are weak or scarce. This pattern prevailed in the Soviet Union during Stalin, in the 1950s in Eastern Europe and China, and until the revolution in 1991 in Romania and to date in North Korea. This pattern of party-state system is usually called as classical or communist system (*Bolesta 2012*) that operates with compulsory planning and forced resource allocation. In the *self-disintegrating* pattern interlinking lines in the party hierarchy are relatively decentralized, while the extraction and distribution of resources in the state hierarchy is centralized, and feedbacks are strong. In this pattern decentralizing reforms within the network are the main means of resource extraction and distribution. In the *self-withdrawing* pattern the origins of interlinking lines within the party hierarchy as well as the extraction and distribution of resources in the

state hierarchy are relatively decentralized and feedbacks are strong. In this pattern instruments of resource extraction and distribution are combined, decentralizing reforms within the network and resource creating reforms outside of it (*Naughton 1996*).

The distribution of power within the different patterns may change: variations within the pattern may occur in time, space and aggregation levels. Moreover, distribution of power may also shift patterns, and all patterns may transform into another system. Transformations are pattern-conforming (in detail see *Csanádi 2006, 2016*). In the following section the specifics of the Chinese pattern will be described along its evolution from one pattern to the other combined with the gradual system transformation. Transformation will be interpreted as a two-fold process (1) the retreat of the network from monopolized sub-spheres and (2) the expansion of the field outside of the network.

3. The development of the network structure in China

By the end of the 1950s a version of Self-exploiting (centralized) pattern of power distribution evolved in China that due to several drastic decentralization campaigns initiated by Mao during the „Great Leap Forward" and the Cultural Revolution repeatedly partially and temporary collapsed, and finally by the second half of the 1970s regenerated in a decentralized pattern. The decentralized nature of the Chinese power network means the subordination of state owned enterprises to the discretion of different level government organizations first carried out repeatedly during the Mao era. Administratively, the lower the rank of the government level, the smaller the size and importance of the subordinated SOEs to these governments. By the time Deng Xiao Ping took power this pattern has stabilized: a relatively decentralized resource extraction and distribution, relatively decentralized interlinking lines from the party hierarchy that overlapped positional, activity and organizational structure and individuals in non-party fields and strong feedbacks reaching to higher levels of the party and state hierarchy.[4] Thus, during this historical process the Chinese system changed from a variety of self-exploiting pattern to a variety of self-withdrawing pattern.

Also instruments of resource extraction and distribution gradually adapted to the new pattern. Adaptation was necessary as forced resource redeployment implemented during the period of the centralized pattern did not work due to the increased resisting capacity of actors in the decentralized pattern (*Csanádi 2011*).

[4] For example, managers of large state owned enterprises are members of the Central Committee of the CCP, and over 50 SOE top managers (party secretary, CEO and chairman of the board are in the nomenklatura responsibility of the Central Organization Department reviewed and approved by the Standing Committee of the Politburo http://www.uscc.gov/sites/default/files/Research/10_26_11_CapitalTradeSOEStudy.pdf p. 75.

From the early mid-1980s, decentralizing (resource revealing) reforms within the party-state network were introduced both in agriculture and industry. In agriculture, decentralizing reforms delegated expanded decision-making rights for rural households. The scope and quantity of compulsory production for state procurement was narrowed, higher prices in state procurement were applied. Decentralization in agriculture was pre-empted from the end of 1970s by the partial retreat of the network: communes were dissolved, household responsibility system was introduced, and interlinking lines formerly attached to communes were left in limbo or transferred to formal collectives. Also dual-track pricing was implemented to sell over-the-plan products for market prices, thereby expanding the field outside the network. Similar process took place in industry by mid 1980s in the form of the dual-track pricing.

Decentralization of decisions accelerated as SOEs and sub-national government authorities gained formerly centralized discretions that were accompanied by the larger jurisdiction of sub-national party authorities. Consequently, decentralization of decisions and resources in the specific Chinese pattern further increased local decision-making power, resource attracting, extracting and distribution capacities as well as resisting capacities to higher level intervention reflected in the institutional and decision-making structure. The process of decentralization of power distribution within the network – with some exceptions (e.g. 1994 resource centralizing tax reforms) – continued throughout the decades that further strengthened the decentralized character of the Chinese power network. Decentralized power distribution, institutional responsibilities and respective management of economic development are reflected also in the share of central and local investments in fixed assets despite various revenue centralizing efforts since mid1990s. According to *Szamosszegi and Kyle* (*2011, p. 33, Figure IV-1*), in 2009, investments in fixed assets undertaken, overseen and permitted by sub-national governments was overwhelming in all sectors, including manufacturing (95 per cent), real-estate (98 per cent), construction (92 per cent), mining (68 per cent) and different services (between 99 and 48 per cent).

The increased local bargaining and resisting capacities in turn, occasionally increased the frequency of hardening reproduction constraints of the whole network when resources to distribute ran out (*Csanádi 2005*). Central reactions to tensions culminated in the Tiannanmen Square protests and its bloody clamp down in 1989. This provoked economic restrictions and political centralization efforts and thereby the temporary expansion of the network until 1991. But centralizing efforts soon failed, the economy slowed down critically hardening reproduction constraints of the Chinese power network. From 1992 onwards, parallel with the process of further decentralization, the relative and absolute retreat of the network gained speed, gradually expanding the economic sub-sphere outside the network. Thus

decentralizing reforms within the specific power distribution strongly contributed to the acceleration of the retreat of the network by forcing the government to seek for new resources to distribute by leaping out of the network. The decentralization of resources, decision-making capacities and new instruments of resource extraction and distribution within the network, however, did not change the self-similar characteristics of party-state systems. For example, the distribution of resources at all levels remained politically rational.

4. The Chinese transformation, a pattern-dependent variety of the transforming party-states

The process of decentralization, the frequency of hitting hardening reproduction constraints and the frequency of reforms are interrelated. The increased decentralization of decisions within the network further redistributed the power towards local levels and lead to increased resisting capacity to central intervention driving the system towards growing frequency of hardening reproduction constrains. This forced the escalation of pattern-specific instruments of self-reproduction from outside the network and thereby the gradual expansion of the market sphere. This process underlies that it is the Chinese pattern of power distribution and dynamics that provides the structural background of the „Chinese style" reforms and transformation. Its characteristics: the gradual, decentralizing reforms within the decentralized network and the gradual reforms outside the network expanding the market sphere, reflect a process of economic transformation first, under authoritarian rule accompanied by macro-economic growth.[5] During this process, party legitimacy prevailed as resources extracted from the expanding private sphere could be redistributed within the network allowing its reproduction along the self-similar distributional priorities.

As we have already mentioned, the process of absolute retreat of the network begun in the agriculture at the end of the 1970s, dissolving communes and creating household responsibility system. This move went parallel with the decentralization of decisions within the network in the industry in order to bring decisions to the level of real economy. This process was labelled enterprise and manager responsibility system regarding production, marketing, investment decisions, expansion plans, and staff, that also provided profit retention opportunities. Parallel to decentralization within the network competitive capital, manpower and organizations strip of – empty – the network to join the expanding market sphere. At the same time alternative capital, actors and interests enter the network as owners in joint ventures, shareholders, members in Peoples' Parliament or in

[5] Chinese pattern of power distribution and transformation specifics differ from that of its former European counterparts'. These patterns transform either first politically rather than economically or through abrupt collapse of the network and parallel transformation of all subfields (see in detail *Csanádi 2006, 2016*).

inter-ministerial committees that provided new sources of the self-reproduction of the network. This process, owing to the infiltration of alternative decisions, interests, organizations, while providing resources, formally and informally weakens the influence of the party on the economy through the network. Parallel to decentralization, the emptying and weakening of the network, also former distributive functions were withdrawn from lower levels allowing enterprises greater freedom in deciding about investments up to a certain volume. These moves of absolute retreat were intensified from the mid 1990s when the network has been increasingly cut through privatization, close-downs and bankruptcy of first TVEs (township and village enterprises) and later state-owned enterprises, leaving the direct interlinking and hierarchical lines in limbo. Opposite efforts may be perceived simultaneously by the Party to expand its formal and informal influence on the private sphere through private or collective enterprises founded by local party executives, or by succeeding to form party cells in non-public enterprises, involving there 3,5 million party members (*Thornton 2012*) and integrate powerful private interests into different segments and levels of the network.

The relative retreat of the network through the higher speed of expansion of the sphere outside the network may be illustrated by the market field that began to expand when the dual-track pricing regulations were introduced both in agriculture and industry that allowed producers to sell their over-the plan agricultural and industrial products on market prices. Besides dual track system, further expansion of the market was allowed by „opening up" (*Weingast 1995*; *Walder 1995*; *Naughton 1996*). This move attracted resources from the global economy in the form of FDI in green field investments outside the network or in economic units embraced by the network. New private enterprises (both domestic and foreign) were allowed to be set up, the number of special economic zones were increased and investment-friendly laws were implemented that attracted foreign capital. Further expansion was boosted by those who transferred capital, organization and skills and manpower from the network to the private sphere and by those SOEs and collective units who were privatized. All of these activities stimulated the fast growth of rural to urban migration absorbed by the expanding competitive sphere.

5. Adaptation to external shocks in the transforming Chinese pattern

Pressures during operation and during transformation will influence the advancement or retreat of state functions and the implementation of monetary or fiscal means (*Yu 2010*). However, shock induced by the crisis activates state interventions, interventions activate the decision-making network, the network in turn, activates the system characteristics of resource distribution and intensifíy the structural motivation of economic units for growth and thereby for repetitive investment overheating. Owing to self-similar characteristics of the network,

overheating is present in time, space and different aggregation levels, during the self-reproduction and the transformation of the network.

Owing to strong resisting capacity to interventions within its network, China's party-state pattern is highly sensitive to hardening external and internal constraints both in case of their alternative or simultaneous occurrence and length of prevalence. Empirical research results reveal that despite China's substantial transformation towards a market economy, the occasional need for increased state intervention has mobilized the general characteristics of the party-state system at all aggregation levels temporary increasing the expansion of the network also to different extent at sub-national levels according to pattern and individual specifics.

The stimulus package introduced in 2008 was the direct adaptive consequence of an external shock caused by the global crisis and the subsequent government reaction in the form of intensified state intervention that mobilized economic actors. In fact, state intervention opened up new chances for selective resource distribution in the form of central, local budgetary and bank resources in the western and central regions, in the construction sector, and in some sectors of manufacturing with preference given to large-size and state-owned enterprises and cumulatively integrated enterprises in the decision-making processes through the network (*Csanádi and Liu 2012*). Newly opening chances similarly mobilized the politically rational economic behavior of actors to hoard resources and invest. This phenomenon took shape during the implementation of a stimulus package after 2008. The locus of increasing activity in both the geographical space and the hierarchy of aggregation levels was determined by the specifics of decentralized Chinese party-state system and the decentralized distribution of responsibilities and chances to extract and allocate resources. Input requirements of the privileged construction sector mobilized enterprises in manufacturing that contributed to the investment overheating, excess capacity, non-performing loans, local indebtedness and slower GDP growth. The structural impact of the stimulus package empirically supports the fact that owing to the political rationality of economic behavior in the system, market-conforming "personnel policy" incentives and decentralization of fiscal decisions within the network will be "translated" to politically rational rather than efficiency oriented behavior while promoting economic growth as expected by *Knight* (*2012*) based on the concept of developmental state.

Concluding this section: systemic characteristics of the party-state together with their Chinese specifics resulted in the transitory expansion or slowing retreat of the network owing to investment overheating and steadily growing local indebtedness through large and state-owned enterprises and local governments and the transitory slow-down of market expansion. The features of China's transforming economy further amplified this process, since the increased demand for inputs on the side of enterprises which state intervention privileged due to its systemic priorities, also

mobilized actors in the private sphere according to privileged sectors, regions and the ownership and scale of enterprises. Thus, overheating amplified while network expansion proved to be transitory (*Csanádi 2013*; *Yu 2010*).

Based on the above, we may also conclude that the transformation dynamics is not a linear process on national or local levels: speed and conditions of transformation are constantly in move due to the changing dynamics of the retreating network and emerging market sphere, the changing dynamics of internal and external pressures and their interaction.

6. Conclusions

The aim of the study was to define the main system characteristics of the emerging Chinese market, the structural characteristics of the „Chinese style" as well as the state's behavior in the context of those characteristics. Based on the implemented comparative analytical model supported by empirical research we argue that the Chinese system and its specifics should not be pressed into the present standards of varieties of capitalism. China's social system is communist, described with a politically monopolized power network between actors in the party, the state and the economy, with its self-similar elements, principles of connection and operation in time, space and levels of aggregation. Rather than being a developmental state, the Chinese party-state is a structural variety of the patterns of power distribution characterized by decentralized power network with pattern-conforming instruments of resource extraction and distribution: resource creating reforms outside the network and decentralizing reforms within the network. Chinese system's pattern-conforming operation simultaneously leads to specific sequence, speed and conditions of system transformation. The sequence is: economic transformation first, as the network is retreating first from the economic subfield while the market field outside the network is expanding. The speed of the transformation process is gradual, while conditions of economic transformation and thereby the emerging market are defined by an authoritarian regime and accompanied by macroeconomic growth that preserves party legitimacy. Thus, the Chinese communist system should be compared to – but not identified with – other present or former transforming party-state systems with similar or different patterns of power distribution.

At the same time, the transforming Chinese communist system and the transformed post-socialist systems are not comparable on common systemic grounds. Moreover, China is not an outlier capitalist system, neither is a socialist market economy in itself, or a developmental state without the communist system characteristics described by the Interactive Party-State model. Instead, it is one of the well embedded patterns of the communist power network in a period of system transformation. State's role and expanding or shrinking market at any level and

time should be interpreted in strong interaction with the dynamics of the retreating or expanding network and those of domestic and external pressures. Therefore, the role and behavior of the state at central and local levels in China should also be interpreted in the context of the transforming politically monopolized decentralized power network, and its dynamics – both at „normal" times and at crisis situations. Economic functions, actions, organizations and behavior of the central and local governments should be analyzed embedded in the power network. Similar contextual approach should be used to analyze behavior of groups, organizations, or individual actors.

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The Dilemmas of China's Shift in Growth Trajectory and Economic Governance

Miklós Losoncz

The slowdown in China's GDP growth in recent years suggests the exhaustion of the driving forces of extensive economic growth and signals a need to switch to an intensive growth trajectory. In order to successfully orchestrate this shift, a reform of the economy's operation is necessary, including a change in economic policy objectives in order to avoid the middle income trap. This paper analyses the changing role of the sources of economic growth and the main features of the change in the growth trajectory in the post-2010 period, and their relationships with economic governance based on the relevant domestic and international literature and statistical data, without entering into specific details. According to the author's hypothesis, the Chinese government is prioritising the conflicting objectives of economic rationality and socio-political stability at the expense of the former.

Journal of Economic Literature (JEL) codes: O53, F60

Keywords: China, growth trajectory, change in economic model, structural reforms, liberalisation, foreign trade policy, middle income trap

1. Introduction

This paper discusses the development trends in Chinese economic growth in the post-2010 period. Its *starting point* is the slowdown in China's economic growth after 2007, stemming from changes in the global environment and domestic economic conditions, which is attributed to the exhaustion of the factors and driving forces of the extensive economic growth. The *importance of the topic* is based on the significant impact, both past and future, of the slowdown in Chinese economic growth on the development trends of the global economy.

The *objective of this paper* is to analyse the process, the sources and the driving forces of the shift to an intensive economic growth trajectory, its economic, economic policy and social factors, and the associated economic policy and political dilemmas. *The first hypothesis of the paper* is that in order to successfully manage

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the change in the growth trajectory, a radical transformation and even reform of economic governance (the economic policy targets, the ways and means and institutions of achieving such targets, as well as the operational environment of the economy) is needed, which requires great circumspection. *Its second hypothesis* is that the Chinese government will resolve the target conflict between economic rationality and socio-political stability associated with the change in the growth trajectory at the expense of the former. This bottleneck may slow the change in the growth trajectory. According to *the third hypothesis*, by implementing a shift in the growth trajectory building on the reform of economic governance, China may avoid the middle income trap implying that – although it will grow at a slower pace than in the past – the country will continue converging towards advanced economies.

The research *methodology of this paper* combines literature review and the analysis of statistical figures. Accordingly, it was based on a critical discussion of relevant domestic and international literary sources and the analysis of the available statistical data on the Chinese economy. While a large number of literary sources deal with the Chinese economy and Chinese politics, only a limited supply of official statistical data is available, and the reliability of the statistical data is often questionable. In addition to Chinese statistics, this paper uses data published by international organisations (World Bank, IMF, OECD).

2. Challenges facing the Chinese economy and economic policy

The *main challenge* facing the Chinese economy and economic policy has been the systematic slowdown in the growth rate of GDP since 2007 and its consequences. In order to interpret the phenomenon, it is worth looking briefly at economic history antecedents. Regarding the longer-term trends, China's GDP (gross domestic product) expanded by nearly 10 per cent on average per year between 1978 and 2011, that is over a period of 33 years.[1] Only Japan produced a similar performance in global economic history, exhibiting GDP growth of 9.3 per cent on average per year between 1950 and 1973. However, this dynamic growth lasted only 23 years *(Angang 2015)*.

However, China's GDP growth rate has been slowing continuously over the past 10 years. The 14.2 per cent rate in 2007, the highest in the 2000s, decelerated to 6.6 per cent by 2016, according to preliminary data.[2] The European Commission's short-term forecast expects further slowdown with growth rates of 6.2 per cent in 2017

[1] Many experts, including *Wildau (2015:8)* and *Holz – Wu (2015:8)* contest the credibility of official Chinese statistical data that overstate the country's economic performance. The Keqiang index measures national economic performance by electricity consumption, railway cargo volumes and loans disbursed by banks. In this paper, this methodological issue is not dealt with, and the data published by the IMF and the World Bank are considered.

[2] If no other source is indicated, the figures in the text are taken from the table included at the end of this paper.

and of 6 per cent in 2018. The figures for 2016 and 2017 coincide with the IMF's forecast. Within the aforementioned period, the global financial and economic crisis played a pivotal short-term role in the slowdown, resulting in a 4.4-percentage point decline on average between 2008 and 2011, to 9.8 per cent. In China, the impact of the crisis was not a recession as in the majority of advanced economies, but the deceleration of GDP growth coupled with a decline in exports, imports and inflows of foreign direct investments. The risk of economic and political destabilisation also emerged for a brief period.

The negative impacts of the global financial and economic crisis on China were offset by a multi-year economic stimulus scheme introduced in November 2008, amounting to 11 per cent of GDP in 2009, which was completed in 2010 *(Wong 2011)*. Two thirds of the funding within the scheme was directed to infrastructure projects, and financial sources were channelled to other segments of the economy. Funds were increased in 2009, and huge amounts of government loans supported the attainment of the set objectives *(Csanádi 2014:116–117)*. The global financial and economic crisis triggered remarkable changes in the economic system and, in part, in the political system *(Csanádi et al. 2009)*.

As the impacts of the economic stimulus programme petered out and in conjunction with other factors, the economic growth rate has been continuously slowing since 2011. Not even the low world market price of crude oil, which is a positive external factor for China, could curb this trend in 2015 and 2016. In the last three decades, dynamic GDP growth was a key legitimising factor of the socio-political system in China. The slowdown in economic growth has weakened this legitimising factor. At the same time, it cannot be ignored that China's more subdued GDP growth rates are still remarkable by international standards. Although India has taken the lead in recent years, China is still one of the fastest-growing major countries in the world.

The more than three decades of dynamic growth raised GDP per capita from USD 312 in 1982 to USD 5,582 in 2011 at exchange rate parity and USD 10,384 at purchasing power parity, and to USD 8,140 and USD 14,175, respectively, in 2015 according to preliminary data. Thus, China advanced to the group of middle income countries according to the World Bank's September 2016 classification.

The slowdown in growth can be considered a temporary phenomenon, arguing that it was triggered by the last global financial and economic crisis, and the rate of GDP growth will automatically return to a (higher) longer-term trend following adjustment to new global conditions after a few years of more modest performance. However, the vast majority of literary resources interpret the deceleration of China's growth as a lasting phenomenon. The most common explanation is linked to what is referred to as the *middle income trap*. In simplified terms, this concept describes the phenomenon based on empirical evidence and proven by scientific studies

in which countries formerly exhibiting dynamic growth stagnate once they reach a middle income level and are incapable of catching up to the group of high-income countries.[3] It is much easier to achieve a medium level of economic development from a lower one than to a high level from a medium level.

The middle income trap stems from the exhaustion of the earlier main sources and driving forces of economic growth. This means that when more industrialised emerging countries reach a certain level of economic development, they find themselves in a unique *competitiveness trap.* Due to relatively high labour costs as a result of dynamic economic growth, under given economic policy priorities, their traditional, mostly labour intensive industries with modest value added content (at the lower end of the global value chain) lose their competitive advantages against low-cost emerging countries, whereas their technology and knowledge intensive industries with high value added content are not competitive with those of advanced industrial countries.

There is no precise, universally accepted definition of the middle income trap *(Aiyar et al. 2013; Larson et al. 2016)*. Without a comprehensive discussion of the topic, it can be mentioned that according to one part of the relevant literary sources, a country's economy is growing in relative terms, but not at a rate sufficient to catch up with advanced economies in terms of GDP per capita. The other part of the literature perceives the middle income trap in absolute terms, defining it as slow GDP growth, even close to stagnation. The question is how to escape the middle income trap. The general response is to increase productivity and total factor productivity.[4]

In China, the rate of economic growth of nearly 10 per cent between 1978 and 2001 encountered internal constraints in and of itself. According to preliminary data, *the volume of China's GDP* approached USD 11 trillion in 2015. Raising this volume by 10 per cent is much more difficult than lifting GDP valued at USD 5 trillion by the same rate. The increment of a 5 per cent rise in China's GDP equals to USD 550 billion, and this is approximately the same as that of a 10 per cent rise of USD 5 trillion (also USD 500 billion).

Moreover, GDP growth rates of around 10 per cent cannot be sustained in the present external environment and in the prevailing production and expenditure structure as well as with driving forces. Industry and construction are dominant

[3] According to the experts of the World Bank, only 13 countries managed to converge to the group of advanced economies between 1960 and 2008. The calculations of Angus Madison (cited by: *Wheatley 2016*) pointed out that over the past 100 years, 41 countries have achieved GDP per capita of USD 7,000. After reaching this turning point, 31 of them saw their rate of economic growth fall by 2.8 percentage points relative to the growth rate of the decade preceding the turning point.

[4] Total factor productivity (TFP) measures the efficiency of the utilisation of labour and capital: it is the percentage change in output that is not linked to changes in the volume of capital or labour input. Its significance increases when the quantity of labour available for economic development does not rise.

in the production structure, and the expenditure structure is characterised by the outstandingly high share of investments, exports in general and those of manufacturing in particular as well as net exports by international standards. GDP growth relied heavily on loans provided by state-owned banks. Economic growth was accompanied by significant real economic and financial imbalances. As the *extensive economic growth trajectory* based on the expansion of investments, construction and mostly manufacturing exports with low value added content *lost steam*, a shift was set on the agenda to a *knowledge, research and technology intensive growth trajectory* that is less capital-intensive, characterised by growing domestic consumption, the increase of the service sector, research and development and innovation, and the expansion of manufacturing industries with higher value added content, implying an upward shift in the global value chain. The next part of this paper presents the main features of the shift in the growth trajectory.

3. Slow change in the growth trajectory

The slowdown in the rate of GDP growth recorded after 2010 is closely linked to *changes in the sectoral structure of China's GDP.* Although the s*hare of industry* decreased from 46 per cent in 2010 to 41 per cent in 2015, China still qualifies as an *over-industrialised country* not only among advanced, but also among the numerous developing and emerging countries as well. As an illustration of this point: industry (excluding construction) accounted for 19 per cent of GDP in the EU in 2013. By international standards, *agriculture* also accounts for a high share in the gross domestic product, at 9 per cent. *The expansion of the service sector* demonstrates some early results of the shift to a new growth trajectory. The sector accounted for 51 per cent of GDP in 2015, compared to 46 per cent in 2010. Substantial development took place in wholesale and retail trade, finances and the real estate sector, whereas more moderate progress characterised IT services, domestic transports, and the entertainment industry.

Despite the changes that occurred after 2010, the breakdown of China's GDP by main sectors is not consistent with global economic trends that have unfolded in the past two decades. They include on the one hand the "tercialisation" of manufacturing implying that manufacturing uses more and more services as the inputs and service content of its output are also increasing. On the other hand, economic activities are increasingly organised along value chains where production is not the most profitable, rather than in the traditional industrial sectors. An important part of China's manufacturing sector is concentrated on the last component of the international value chain, i.e., on assembling. For this very reason, its service content is low. All of this points to low profitability by international standards.

For a long time, investments played a key role in the sources of economic growth, and even nowadays this role is significant. The negative impacts of the latest global economic crisis were offset by the increase in the share of investments in GDP. This was considered abnormal by the majority of experts. Although their share relative to GDP fell from 47 per cent in 2010 to 44 per cent in 2016 according to preliminary data, this is still extremely high not only in itself, but by international standards as well, and exceeds the corresponding figures of Asian developing countries by 10 percentage points and was more than double the EU average of 20 per cent in 2015 and much higher than the 25 per cent global average.

The relevant literature labels the consequences of this phenomenon overinvestment, the huge costs of which are borne by the households. Over the past years, the contribution of an additional unit of investment to GDP growth was gradually declining. In other words: rising growth in investments was needed to reach the same GDP growth rate, which is unsustainable in itself in the longer run.[5] From another point of view, this suggests the low efficiency of and unfavourable return on investments. An investment ratio lower by 10 percentage points (of around 35 per cent) of GDP would be in line with the fundamentals of the Chinese economy. This ratio would be a point of return to the "normal" level without jeopardising economic growth and macroeconomic stability *(Lee et al. 2012:22)*. Thus, it is no coincidence that due to overinvestment China's economic growth was capital intensive, resulting in substantial excess industrial production and export capacities, especially in the heavy industry and construction and in China's traditional light industry export sectors.

In the increase in investments, the public sector played a key role primarily through the investment activity of local governments. The majority of the investments were implemented from loans granted by state-owned banks. This is highlighted by the fact that the domestic debt of non-financial enterprises relative to GDP increased from 97 per cent in 2010 to 127 per cent in 2015. The increase in the ratio of loans granted by the financial sector relative to GDP from 143 per cent to 170 per cent between 2010 and 2015 also indicated that economic growth was sensitive to external funding. The indebtedness of local governments and overheated investments could be attributed to a great extent to the decision-making mechanisms originating in the general features and the individual Chinese characteristics of the power structure of the one-party state *(Csanádi 2012).*

Foreign direct investment (FDI) played a key role in the establishment of modern industries including high-tech ones. In 2010 and 2015, the inflow of net direct foreign investments relative to GDP amounted to 4 per cent and 2.3 per cent, respectively. Research, development and innovation is determining the switch-over

[5] For more detail, see: *Lee et al. (2012:22).*

to a knowledge, research and technology-intensive economic growth trajectory. Between 2010 and 2014, research and development expenditures increased from 2.2 per cent to 2.5 per cent of GDP. Despite this increase, the ratio still lags behind the 3–4 per cent figure of technologically advanced countries. However, the lag is more pronounced on the output side, such as international patents and trademark registrations. The share of high-tech goods in manufactured exports dropped marginally from 28 per cent in 2010 to 25 per cent in 2014. Catching up was fast in higher education; the gross enrolment ratio increased from 24 per cent in 2010 to 39 per cent in 2014. This still lags considerably behind the ratios of around 70–75 per cent average of the advanced economies.

Domestic savings provide the main source of investment. Not coincidently, the ratio of gross savings to GDP moved in the same direction as the investment ratio: it shrank from 52 per cent in 2010 to 48 per cent in 2014 and according to preliminary data, it dropped to 46 per cent in 2016. This is still an outstanding figure by international standards: the world average was 26 per cent in 2015, in the US net savings excluding depreciation was around 6 per cent on average over the last three decades of the 20th century. The difference between the savings ratio and the investment ratio financed the general government deficit and was invested abroad rather than in the national economy as indicated by the current account surplus. In other words: the excessive private and public consumption of other countries were funded by the savings of Chinese households. The permanent current account surplus led to an increase in foreign exchange reserves: China has the highest foreign exchange reserves in the world.

The attitude and the mentality of the population, i.e. thrift as social value undoubtedly played a key role in the high savings ratio. However, a coercive force stronger than the motive of prudence was that the welfare state in Western-European terms did not develop in China. This means that there is no universal social insurance, including pension and healthcare and unemployment benefits. Chinese people may typically access to pension payment through private pension funds. Only general practitioner medical care is free of charge, any additional healthcare service must be covered individually.[6] Mandatory primary education is free, but higher level education is not (*Bokros 2015*). Over the past years, social insurance changed due to the privatisation of state-owned enterprises and the restructuring of the ones that remained in state ownership. This is because state-owned enterprises previously also fulfilled social insurance functions (in terms of healthcare and pension), which disappeared at the privatised companies, and weakened in the reorganised and rationalised state-owned enterprises. Along with the weakness of the social security system, the unfavourable demographic trends,

[6] Between 2010 and 2014 private healthcare expenses relative to GDP increased from 2.2 per cent to 2.5 per cent, whereas public healthcare spending rose from 2.7 per cent to 3.1 per cent.

such as the decrease and the aging of the population play a key role in the high savings ratio and restrain a decrease in this ratio.

Household consumption relative to GDP grew marginally from 35 per cent in 2010 to only 36 per cent in 2013 and thus did not keep pace with the surge in the service sector. The Chinese consumption ratio amounts to half the level of the US. The theory of Arthur Lewis provides one possible explanation for this *(Lewis 1955)*. According to this theory, at a low level of economic development a narrow modern sector and a large traditional sector exist simultaneously. The latter sector is characterised by the oversupply of labour force. Because involving additional labour force into the economy is not restricted, the decreasing rate of return does not appear in industrial and construction investments. But the huge labour force surplus keeps the rate of wage increase at a low level even when the economy itself is expanding dynamically. According to *Paul Krugman (2013)*, with the lack of labour force surplus, the Chinese economy reached the so-called Lewis point. This means that as wages increase, employed persons start to enjoy the fruits of economic growth while the Chinese economy still needs to be balanced; that is, due to the decreasing rate of return, household consumption should take over the role of investments in terms of the sources of economic growth. According to international experiences, an economic growth trajectory based on the expansion of consumption enables lower GDP growth rates than the other trajectory relying on the expansion of investments. This is because, in the latter case, the impact of the investment multiplier supporting growth should be taken into account, amongst other things.

Growing employment may contribute, *ceteris paribus*, to increased consumption at the level of the national economy. As far as labour force supply is concerned, the rate of increase in China's population has slowed down over the past 10-15 years: the country's population was 1.34 billion in 2010 and 1.38 billion in 2014 (in 1979, it was only 964 million). According to demographic forecasts, China's population will reach its peak around 2030 at 1.45 billion, followed by stagnation. The ratio of the working age population (the 16-59 age group) to the total population started to decline in 2012, with a likely fall from 66 per cent in 2015 to 57 per cent in 2030, which may necessitate an increase in retirement age. This suggests the start of the depletion of systemic reserves under the current framework conditions. Consequently, population growth will only moderately contribute to the expansion of labour force potential in the near future, whereas later on, it will not contribute to it at all. Any quality and quantity improvement can only be expected from the movement of rural, mainly agricultural workforce to the cities. Workers can be more efficiently used in the industrial and service sectors of cities where jobs are available than in rural areas where agriculture is characterised by a generally high level of hidden unemployment. The fact that the degree of urbanisation (the ratio

of the urban population relative to the total one) rose from 49 per cent in 2010 to 56 per cent in 2015, and even though many major Chinese cities are becoming unbearably crowded, this ratio still falls short of the 60 per cent average prevailing in emerging countries indicating the opportunities in this field. At the same time, the spread of robotisation and rationalisation in industry may impose demand-side restrictions on the potential for increasing employment (one half of the world's robots are located in China).

These demographic and labour market trends have also somewhat offset economic growth compulsions. In the past, one of the Chinese government's postulates was that 6 per cent GDP growth per annum was necessary for the economy to absorb the new labour force appearing in the labour market every year, in other words to avoid a rise in unemployment. This argument is becoming irrelevant in the face of deteriorating demographic trends. Successive Chinese governments have always considered the low unemployment rate (the official figure was 4.1 per cent between 2010 and 2016) as a cornerstone of social stability, and have preferred it to many other economic policy objectives.

A shrinking labour supply in both relative and absolute terms necessarily leads to *rising wages*, and this may theoretically lay the foundations for an increase in private consumption. In China, there is no general minimum wage, and several levels are defined in the individual regions. The monthly minimum wage in Shanghai rose from CNY 690 in 2006 to CNY 1,120 in 2010 and CNY 2,020 in 2015, representing a threefold increase compared to 2006 and 80 per cent growth relative to 2010, far higher in real terms than the rise in productivity. It can be rightly assumed that as a consequence of the minimum wage hike, wages also grew in higher categories.[7] The 73 per cent total wage growth at the level of the national economy that took place between 2010 and 2015 is consistent with these trends. However, there are significant geographic differences behind this average. In China's more developed regions and major cities (Shanghai, etc.) wages are far higher than the national average.

The wage developments surveyed above led to *the erosion of China's international wage advantages.*[8] This trend can only be outlined in the absence of consistent statistics enabling international comparison, because limited international

[7] In China, the minimum wage is set at around 30 per cent of the average wage despite the fact that it should be between 40 and 60 per cent according to national guidelines. The International Labour Organization benchmark is 40 per cent of the average wage *(Wong 2016)*.

[8] More accurate conclusions can be drawn regarding the competitive advantages and disadvantages of various countries from the international comparisons of labour costs containing taxes and contributions rather than from wages alone.

comparisons are available for minimum wages.[9] On this basis, a minimum wage in USD totalling USD 1,927 per annum in China as of 12 November 2016 was higher than that of Pakistan (USD 1,518), Mexico (USD 1,438), Vietnam (USD 1,327), the Philippines (USD 1,240), Indonesia (USD 986), India (USD 778) and Bangladesh (USD 231).

Although the level of wages alone does not express competitiveness, merely looking at productivity and assuming relatively minor differences in productivity between the countries listed above and China, it can be reasonably supposed that cheap labour is no longer a competitive advantage vis-à-vis a great number of emerging countries (and is disappearing vis-à-vis others) in industries with low value added content. Over the past few years, China's main comparative advantage must have been its relative abundance of capital, rather than its cheap labour.

The *new development trends of the global economy* also impose significant constraints on the extensive economic growth trajectory. According to the data of the IMF, the 4.2 per cent average growth rate of global aggregate GDP between 1998 and 2007 will decelerate to 3.2 per cent between 2008 and 2017, and the rate of increase of world trade from 6.8 per cent to 2.9 per cent over the same periods *(IMF 2016b:228 and 242)*. With waning external demand, the growth rate of China's exports of goods and services has been slowing since 2008, highlighting the weakening of the economy's export-driven nature. To a large extent, this external factor accounts for the decline in the growth rate of Chinese exports of goods and services between 2014 (27 per cent) and 2016 (2 per cent). It should be noted that it is *net exports,* in other words the difference between exports and imports of goods and services that matters in terms of GDP growth, rather than just exports. Increasing net exports are also held back by external constraints. This is because the majority of the countries in the world economy expected recovery from the last financial and economic crisis and the reduction of external vulnerability by enhancing the foreign trade balance surpluses, and strived to act accordingly.

Without going into details, *environmental pollution* is both an internal and an external limiting factor of economic growth. It is an internal factor since the rising economic and social costs of environmental pollution eat up an increasingly large share of the increment of GDP every year. It is an external factor as well, since if the earlier growth trajectory is maintained, China cannot fulfil its obligations undertaken

[9] Minimum wages. http://www.wageindicator.org/main/salary/minimum-wage Downloaded: 22 November 2016. The comparison of the various countries is limited for several reasons. First, not every country has a minimum wage, so countries with no such threshold should be left out of the comparison. Second, minimum wages included in the comparisons do not necessarily apply to the same period. Finally, the conversion of the minimum wage to USD may also introduce distortion through the exchange rates applied. However, these limiting factors probably do not have a huge distorting impact on the international comparisons.

in 2014 to reduce emissions. Rising *income inequalities* and *widespread corruption* are also internal constraints to GDP growth.

The shift in China's growth trajectory as a result of the gradual exhaustion of the traditional factors and driving forces of economic growth took place in part spontaneously, following the least resistance from time to time, and in part under the influence of economic governance. The following section analyses the impact of economic policy in general and economic reforms in particular on the shift in China's growth trajectory.

4. Shift in the growth trajectory and economic governance

The foundations for the shift in the growth trajectory were laid down by the 12th Five-Year Plan for the 2011-2015 period. The 18th Party Congress also addressed the issue in 2012, and some of its issues had already been added to the agenda earlier. The targets and quantified projections of the 12th Five-Year Plan give reason to assume that the Chinese leadership considered the exhaustion of the driving forces of extensive economic growth and the shift to a different, more balanced growth trajectory (*SCPRC 2011*). The planned 7 per cent average annual GDP growth rate indicated that the Chinese leadership acknowledged the slowdown in economic growth, the gradual depletion of the sources and driving forces of the former growth trajectory and obviously responded in time to the internal and external challenges facing the economy. In Chinese terminology, the slower economic growth rate is labelled the "new normal one". The government aimed to attain sustainable growth by increasing research and development expenditures,[10] by promoting the development of industries necessary to climb higher in international value chains and by extending higher education.[11]

The targets include several components that will not only enable the shift in the growth trajectory, but contribute to social stability as well. They include the creation of more than 45 million jobs over five years in urban regions (obviously mainly by the expansion of the service sector), an increase in the urbanisation rate, stabilisation of the registered urban unemployment rate at below 5 per cent, an increase in the number of those involved in the urban basic state pension scheme from 257 million to 357 million, the preservation of price stability (defined as an inflation rate less than 4 per cent), the reduction of social inequalities, and the extension of the average life expectancy by one year. In addition, with a view to bolstering development and moving upward in the global value chain, the plan aimed at developing the following seven priority areas: new (alternative) energy, energy

[10] On the input side, research and development expenditures are to be increased to 2.2 per cent of GDP, and on the output side, the objective is to have 3.3 registered patents for every 10,000 inhabitants.
[11] One interesting fact is that there were 7 million students enrolled in Chinese universities in 2016.

conservation and environmental protection, biotechnology (pharmaceuticals and medical devices), new materials, new information technologies, the manufacturing of top quality brand-name products, and the production of vehicles using clean energy.

The comprehensive report published by the World Bank and the Development Research Center of the State Council, People's Republic of China, entitled *China 2030* (*Building a Modern, Harmonious, and Creative High-Income Society)* was a significant contribution to the theoretical and economic policy foundation of the shift in the growth trajectory *(World Bank 2013)*. The paper, which refers to and relies on the 12th Five-Year Plan as its starting point, attempts to answer the question whether China can remain one of the fastest-growing economies in the world, despite the slowdown in its economic growth rate, and whether rapid GDP growth can be maintained without triggering major disruptions in the global economy, in the natural environment and in the domestic social fabric. The 12th Five-Year Plan focused on objectives and paid relatively little attention to the tools necessary for achieving them. In contrast to this, the *China 2030* study addressed the tools and methods of implementation. The executive summary of the *China 2030* report contained more than 60 recommendations, which – according to the expectations of the authors – will contribute to the realisation of the longer-term objectives.

The 13th Five-Year Plan for the 2016-2020 period[12] partly continues and partly amends the objectives of the previous five-year plan. The economic growth target was modified: the plan projects a 6.5 per cent average annual GDP growth rate. Earlier, a rate of GDP growth of less than 6 per cent was considered recession in China, and this perception may be an explanation for this forecast figure. In the wake of the global financial and economic crisis, the slowdown in growth in 2008-2009 and the resulting rise in unemployment exacerbated social tensions dramatically in terms of mass demonstrations, amongst other things. Some experts think that with the slowdown of GDP growth increasing tensions and more frequent, numerous and radical mass demonstrations are probable in the future *(Csanádi et al. 2009:819)*.

A further objective of the 13th Five-Year Plan is an increase in productivity of 6.5 per cent on average per year, and this is also a key element of the shift in the growth trajectory. A new element compared to the previous five-year plan is that target figures and indicators were set for internet density, environmental protection, education and social issues *(UCBC 2015).*

[12] No English translation can be found on the internet. Among Chinese sources, the following one contains one of the broadest presentations: *National People's Congress of China (2016)*.

The targets for manufacturing in the 13th Five-Year Plan are included in the "Made in China 2025" document,[13] which was approved in July 2015. This paper can be qualified as a comprehensive industry modernisation strategy governed by the state and implemented under state supervision that constitutes the continuation of the official document entitled "Strategic Emerging Industries" released in 2010. Both studies incorporated relevant international experiences and analogies. *Two OECD studies* were published to provide inputs for elaborating the 13th Five-Year Plan *(OECD 2015a; OECD 2015b).*[14] The first study focuses on economic policy, while the other focuses on the priorities of inclusive economic growth. The former contains 19 recommendations, the latter 21.

China's five-year plans and industry modernisation strategies are not the same as the earlier "classical" centralised Soviet type socialist five-year plans with target figures expressed in quantities (tonnes, etc.) rather than in terms of money: the current five-year plans are strategic plans managed and executed by the government. The similarity to the old plans is the top-down rather than the bottom-up approach. This can be explained by the size of the country, its historical heritage, the idiosyncrasies of its institutional system and the challenges facing economic policy, although there are still too many quantified targets that characterised classical Soviet type socialist central planning. The sophistication of the tools necessary for implementation is not proportionate to the over-dimensioned set of targets. This economic policy may be suitable for addressing a great number of macroeconomic challenges, under given circumstances to promote inventions aimed at achieving new research results embodied in patents, but it is insufficient to stimulate market-based innovations and their diffusion in the economy. The weakness of China's industrial strategies is that they are short of consistent concepts for streamlining industry in general and manufacturing in particular, and for reducing surplus capacities in production and exports. The promotion of small and medium-sized enterprises receives minor attention.

The plans emphasise economic growth and ignore financial equilibrium or ascribe minor importance to it. There is a conflict between the two objectives; economic growth can easily lead to a deterioration in financial equilibrium, whereas the restoration of financial equilibrium may curb GDP growth. Of course, the plans may implicitly, rather than explicitly, aim at economic growth while maintaining financial equilibrium. The plans include policies with various objectives, but fail to address functional cooperation between the different areas and institutions.

[13] *China State Council (2015)* – The report was inspired by Germany's Industry 4.0 plan, which was first discussed in 2011 and adopted in 2013. The German concept is centred on the development of intelligent manufacturing through the incorporation of information technology into production. This bolsters the integration of small and medium-sized enterprises into global production and innovation networks.

[14] Due to its huge economic weight and the impact of its development trends on the global economy, international organisations continuously monitor China's economy, and offer various recommendations to orient its economic policy.

Nevertheless, the Chinese leadership has not given up on the implementation of broader market reforms. The World Bank's 2015 annual update on China identified 27 reform measures approved in 2014 and 2015 *(World Bank 2015:20)*. A specific approach qualified as *authoritarian adaptation* involving the reform of specific policies is one of the reasons behind the success of China's economic governance that substituted fundamental institutional changes *(Youwei 2015:2)*. According to this concept, the reform of policies has reached the limits of its opportunities, as there is no more room for authoritarian adaptation in the current framework. The following section argues that this is not necessarily true.

The interest demonstrated by *international organisations* in China is understandable, because due to its size, the development trends in the Chinese economy have a fundamental impact on the global economy. The rest of the world is interested in China's smooth shift of growth trajectory. One common feature of the reports published by international organisations is the technocratic approach to economic and social issues based on dominant mainstream economic theories, principles and conclusions that can be applied in mature market economies. The recommendations either completely ignore the social and political implications and consequences, and the limits of implementation, or do not discuss them deeply enough.

The recommendations of international organisations do not take into consideration the limits of economic policy, i.e. the fact that the government is unable to exert influence on certain segments of the economy and has indirect impact on most fields. Although the recommendations are structured according to various criteria such as changing economic policies in a changing world, the creation of better framework conditions for an economy based on a stronger and better functioning market, or the transformation of the state to reform the changing economic model *(OECD 2015b:7)*, but the measures targeting the transformation of individual features of the system i.e. the adjustment of the rules and measures (in terms of quantitates and proportions) are not or not always separated conceptually from the essential and qualitative revision of the individual elements as well as the whole structure of the current system's logic.[15] It is small comfort that the two factors cannot always be distinguished clearly in practice. Finally, the dilemma cannot be ignored that reforms often cause economic downturn or deceleration of GDP growth in the short run, and thereby exacerbate the middle income trap. As a consequence of this, analysts not belonging to international organisations have questioned whether China is capable of avoiding the middle income trap. In the section below some of the main challenges facing the Chinese economy and the responses of economic policy are discussed.

[15] Lajos Bokros refers to the former as parametric reforms and to the latter as paradigmatic reforms.

In an effort to *slacken or stop the ageing of the population,* the Chinese government has eased its one-child family model introduced in 1979. Nevertheless, this measure will lead to an increase in labour supply over the long run, in a period when China's GDP is likely to grow at a slower rate than in the previous years. The further easing of the *hukou registration system*[16] or even its abolition as a more radical move, which would constitute an essential reform measure, would improve the lives of 270 million people (migrant workers) and is essential for promoting urbanisation. The hukou system impedes the flow of labour force from villages to cities by prohibiting access to public services in cities for migrants, and providing free education for their children and free medical care in their villages. According to plans, easing of the hukou system would result in the improvement of the status of 45 per cent of migrant workers by the year 2020. This would also have a positive impact on entrepreneurial and, in the broader sense, innovation activity. It is an empirical fact that in the 1980s, most innovative market experiments were initiated in provincial areas rather than in coastal cities. With the gradual easing of the hukou system, a large number of people open to enterprise, business start-ups and innovation in the broad sense would flow from agriculture into less crowded, medium or smaller-sized cities by Chinese standards that offer better chances of making a living compared to large metropolises such as Beijing or Shanghai *(Ma 2016)*. The example of South Korea can be cited as an analogy, where agricultural reform accomplished in the 1960s produced similar positive results. The reform of the hukou system is necessary that its stakeholders of uncertain status (referred to as internal migrants) are sources of permanent social tensions due in part to the system's features and in part due to the temporary or long-term unemployment they face.

However, the transformation of the system and allowing access to social security services irrespective of geographic location assumes radical structural reforms, including that of the state pension system, and the extension of the public education and healthcare system that is free of charge or at least financially accessible to citizens. Besides reinforcing social stability, this would alleviate households' saving compulsion, thereby indirectly encouraging private consumption (also supported by rising wages), and in a broader sense, the shift in growth trajectory.

There is also an *external constraint* to the reduction in savings*, independent of Chinese economic policy*: the differences in the current account balances of the various regions and countries of the world, in other words the fact that the current account balances of certain regions or countries exhibit significant surpluses, whereas others run huge deficits. The Chinese surplus, which corresponds to the investment of domestic savings abroad can be reduced without any negative domestic economic consequences (such as a recession) if the rest of the world decreases its deficit. Although global imbalances have eased in recent years, they

[16] For a more in-depth analysis, see: *Székely-Doby (2014)* and *Jordán (1998)*.

have not declined to an extent that would allow a substantial decrease in China's current account surplus and thus its saving rate.

The question is how quickly will the social norms of consumption change in China, how much influence does the government have over this and whether the shift to the new growth trajectory could take place without a major economic downturn. The share of household debt in GDP has risen in recent years. If a part of the debt increment ended up in consumption loans, it may imply that households partially financed their consumption or its growth increment by credit.

Cutting agricultural subsidies in an effort to abandon the concept of agricultural self-sufficiency and the *liberalisation* of agricultural prices, possibly supplemented with a reduction in the barriers to imports would bolster the flow of labour force from agriculture to cities and into the service sector. Simultaneously, the streamlining of industry is also rendering a large quantity of labour unnecessary, and a solution must be found to employ this labour.[17]

Chinese economic policy tends to restrain the reduction of excess capacities in construction, industry in general and the production of construction materials in particular as well as in exports by *external economic policy measures.* The "One Belt, One Road" international infrastructure development programme aims not only at decreasing the sales costs of Chinese goods (mainly manufactured ones) in international markets, thereby improving their international competitiveness: an additional objective is to generate business for surplus capacities in construction and the building material industry and to promote the exports of traditional Chinese light industry goods. The cost calculations forming the basis of the project are not known. It can be assumed that external expansion is less costly than capacity reduction if externalities are also taken into account, and it does not create social tension such as mass redundancies. Several elements of China's external economic policy have been applied to enable the utilisation of excess construction and industrial capacities and the exports of manufactured goods. They include the official foreign lending policy, which reflects rational economic priorities compared to the earlier political preferences. The creation of the Asian Infrastructure Investment Bank has made it possible to raise external financial sources to fund international infrastructure projects carried out with the participation of Chinese companies.

Progress in urbanisation also means that urban housing and transport infrastructure must be created for 20 million people every year. This may hold back the streamlining of construction that has been inflated in the period of dynamic GDP growth. Transformation of the sector's structure is also necessary, with greater

[17] Industry executives plan to lay off 1.8 million people in the steel industry and coal mining *(Wong 2016).*

emphasis on home construction. Progress in urbanisation thus creates tensions in other areas and restrains the transformation of the macroeconomic structure. It is also unclear whether the labour force flowing into urbanised districts can be employed, and if so, how efficiently in areas particularly essential for the shift in growth trajectory. Moreover, it is uncertain whether this labour force has the necessary qualifications to be employed in the new environment.

The funding needed for the structural reforms promoting the shift in growth trajectory (state pension and healthcare, education, etc.) also lays burden on *general government expenditures.* Although there is some room for increase of the redistribution ratio (general government expenditures officially accounted for 25 per cent of GDP in 2010 and 28 per cent in 2016), the question is to what extent the government is able and willing to lift revenues, and which level of deficit and gross government debt increase it is willing to tolerate (the former was officially 3 per cent of GDP in 2016). China's general government statistics differ from international standards, and there are many items that do not appear in the budget, particularly those belonging to local governments. According to the IMF, if extra-budgetary items were included, the general government deficit would amount to 10 per cent of GDP since 2009, and government debt to 60 per cent *(IMF 2016a:22–23)*. In light of these figures, the fiscal room of manoeuvre is far tighter.

In principle, the financial sources necessary to fund the shift in growth trajectory can be generated by *transforming the structure of general government expenditures.* In the competition for budgetary funding, large infrastructure projects are likely to be held back; in addition, some of them served prestige purposes in the past, rather than purely economic ones. The return on several infrastructure projects over their entire lifespan is questionable. Reducing the indebtedness of local governments may also create additional funding potential.

As far as extra-budgetary funding is concerned, the Chinese government intends to involve more private capital in the form of public-private partnership (PPP) schemes to implement economically well-founded infrastructure projects. The social security fund may be allowed and encouraged to purchase municipal government bonds. The sovereign wealth fund of the government managing assets valued at USD 600 billion, is also a potential source of financing. Greater reliance on FDI in relation to the streamlining, overhaul and technological and structural modernisation of manufacturing is also an option, but has been largely ignored or neglected in official documents.

Increasing *military expenditures*, which currently total 2 per cent of GDP, may decelerate the reduction of industry and – to a smaller extent – construction, particularly if the lion's share of these expenditures are used for the procurement of technology-intensive weapons and other military equipment from domestic sources,

and may stimulate technological development, if modern weapons and weapon systems are developed. It can be assumed that such economic considerations may also be among the motives for increasing China's military capabilities in addition to international political ambitions.

In the unique model of the Chinese market economy, market mechanisms do not always fully prevail. This is indicated by the fact that there are many *state-owned banks and state-owned enterprises* with great national economic significance by international standards. Over the past three decades, with the rise of the private sector, privatisation, bankruptcies and streamlining of state-owned enterprises,[18] the *weight of fully or partly state-owned companies* has decreased and at present they account for just 5 per cent of all firms, but 17 per cent of employees in cities, 22 per cent of industry revenues, 38 per cent of industry assets, as well as an elevated share of equity market capitalisation.[19] Excess capacities are mainly concentrated in heavy industry (coal mining, steel, shipbuilding, heavy machinery) where most state-owned enterprises are making losses.

According to the official view, state-owned enterprises are exposed to internal and external competition as a result of the reforms accomplished in the past decades, and operate under strict market conditions. By contrast, independent analysts and the executives of foreign-owned companies believe that Chinese state-owned enterprises receive various preferences and privileges (monopoly positions, direct subsidies, preferential financing, exemption from competition rules, preferential treatment in public procurement, exclusive market access, etc.). The preferential treatment of state-owned enterprises creates competitive disadvantages for private companies, distorts competition in the market and stifles innovation.

The debt of the corporate sector relative to GDP was 97 per cent in 2011 and 170 per cent in 2015. The bulk of this was accumulated by state-owned enterprises with a high proportion of non-performing, i.e. bad debt. Extensive government lending aimed at alleviating the impact of the latest global financial and economic crisis played a pivotal role in the accumulation of debt and continued after the crisis. The possibility of bailouts by the government fuels free-rider behaviour and moral hazards, representing substantial obstacles to the shift in growth trajectory.

Radical reform in terms of enforcing state-owned enterprises to operate under market conditions and on a market basis is impeded by the fear of mass bankruptcies and the consequences thereof (reduced output, layoffs); consequently such reform is unlikely to occur.[20] However, maintaining the current status quo

[18] *Csanádi et al. (2009)* discuss the transformation dilemma in detail.
[19] Capitalisation: the number of shares multiplied by their market price.
[20] In the context of market reforms, some 40 million people were laid off from state-owned enterprises in the 1990s *(Pelkmans et al. 2016:46).*

carries the risk of further indebtedness and is unsustainable over the long run. With the recent consolidation of large state-owned enterprises, justified by the savings generated by economies-of-scale effects and the elimination of competition between state-owned enterprise groups, the situation has worsened, rather than improved. Privatisation is not on the agenda, mainly for ideological reasons, and mixed ownership, i.e. minority private ownership does not resolve efficiency or other problems. Corruption permeates the sector. Reform initiatives would soon come up against the resistance of stakeholders of the state-owned enterprise sector.

One of the major challenges to Chinese economic policy in the shift in growth trajectory is how to *increase the significance of research, development and innovation,* which is essential for moving up in the global value chain. The Chinese innovation system is geographically concentrated in a few metropolises resulting in large gaps among regions. One unique contradiction is that – although research in general and invention in particular aiming at achieving new scientific results can be stimulated significantly by the tools and institutions of strategic planning (by ensuring adequate financial, human and other resources, etc.) – the Chinese economy performs better in the field of development. In its own right, the increase in R&D expenditures does not necessarily contribute to GDP growth. Successful innovations require an economic environment where economic participants can operate and assume risks building from bottom to top, independently of administrative constraints, flexibly and with free mutual communication in terms of exchanging and developing ideas. An essential element of this environment is the institutionalisation of the protection of intellectual property from competitors, which is an important precondition for achieving returns on research and development. Both the institutionalisation of the protection of intellectual property and the enforcement of the relevant legal rules remains highly underdeveloped in China. Other impeding factors are the preference of excessive data protection, which limits communication both within and between organisations *(Pencea – Bâlgâr 2016:45–46)*.

There may be significant reserves in the field of promoting *entrepreneurship* based on a bottom-up approach, which is a broader area than R&D&I. The time required to set up a business increased from 20.9 days in 2010 to 34.1 days in 2013, and 28.9 days in 2016, according to the Doing Business database of the World Bank, and these are extremely high levels relative to advanced economies.

The shift in growth trajectory is also hindered by high *indebtedness*, which is a legacy of the fiscal and credit expansion to offset the recession in 2008. China's total outstanding debt (corporate sector, households and public sector) has quadrupled since 2007 and is currently estimated at 280 per cent of GDP, exceeding the corresponding figures of both Germany and the US. Total outstanding debt is unsustainable, but there is no apparent solution on how to reduce it without

severe negative side effects. The issue is exacerbated by what is referred to as the *shadow banking system.* This consists of non-bank financial intermediaries that sell financial products directly to market participants. Due to the lack of competencies, supervisory authorities do not reach them although this would be necessary, since they sell many risky products and are closely intertwined with the official banking system. The shadow banking system is estimated to amount to 80 per cent of GDP, significantly inflating the credit market bubble that may be the leading risk factor for the Chinese economy *(Moodys 2016)*.

In the decades that followed 1978, the development of the *financial sector* failed to keep pace with the buoyant growth of the real economy either in horizontal or in vertical terms, and the financial intermediation system still reflects the realities and requirements of the investment-oriented growth model. In the absence of other possibilities, households were allowed to and could invest their savings in financial instruments with low yields. For a long time, bank deposits were the only investment opportunity. Interest rate were kept artificially low by administrative measures as well. This scheme also contributed significantly to channelling economic and social resources into investments.

The Chinese system of financial intermediation is still underdeveloped compared to the needs of the real economic sector and households. For lack of more sophisticated domestic investment opportunities (e.g. the market for government securities issued by the central government is barely larger than the UK market, despite the substantial difference in the size of the two countries' GDP), and limited possibilities of purchasing foreign financial instruments, the lion's share of household savings was invested in riskier instruments such as real estate and shares, resulting in the overvaluation of both sectors. This applies less to the housing market than to shares, because this market also involves actual physical demand in addition to speculative demand, in part due to demographic reasons. The macroeconomic significance of the housing market is associated with the fact that a large portion of loans are backed by real estate collateral, and therefore it plays a more significant role in economic growth. The size of the Chinese stock market (a large part of which consists of state-owned enterprises or companies with state involvement) is equal to that of Switzerland. The stock market rally was propelled by speculation. Contrary to the concerns of many Western experts, the low capitalisation by international standards (amounting to one third of GDP compared to 100 per cent in advanced market economies) and the burst of the stock market bubble will probably not jeopardise financial stability and the real economy. Nevertheless, Chinese authorities rushed to mitigate the impact of the bursting stock market bubble in July and August 2015 (for fear of potential negative political consequences) by applying non-market conform administrative measures

(banning the short-selling of securities, massive stock purchases in large part from public funds in order to curb price falls, etc.).

With the help of the *exchange rate regime,* the Chinese government has kept the yuan undervalued vis-à-vis the US dollar and in certain periods, against a currency basket for a long time. Although in 2015 measures were taken to reinforce market elements in the Chinese exchange rate regime, including those recommended by the IMF, and to upgrade the international role of the Chinese currency, liberalisation of the exchange rate regime has yet to be accomplished. *Appreciation of the yuan* would be consistent with the requirements of the new growth trajectory, which could also contribute to the more effective allocation of resources in line with the reform of the Chinese financial intermediation system and would promote upward movement on the technological pyramid and in the global value chains. Nevertheless, under the current circumstances and for reasons that cannot be discussed in depth here, liberalisation of the exchange rate regime would lead to a depreciation of the yuan; and this is not in the interest of any other country and could lead to an extreme scenario of competitive devaluations.

According to relevant forecasts, despite the slowdown in GDP growth, *China appears to be able to avoid the middle income trap successfully in both absolute and relative terms.* Obviously, a recession cannot be ruled out with full certainty, but the likelihood of this is currently negligible, and relevant medium-term forecasts do not expect this scenario. Instead, the main risk factor is that the slowdown in economic growth will be stronger than expected, not least due to the bursting of the credit market bubble. According to the baseline scenario presented in the medium-term forecast of the World Bank, China's average annual GDP growth rate is likely to amount to 7 per cent between 2015 and 2020, 6 per cent between 2020 and 2025 and 4.9 per cent between 2025 and 2030 *(World Bank 2015:22)*. Although not the highest, these figures will most likely exceed the projected growth rate of the global economy and will be far higher than the growth rates of the developed countries. As a result, China will continue catching up to the advanced economies, albeit at a slower rate than between 1978 and 2011, and reaching the volume of US GDP seems to be a realistic possibility after 2030.

In the *reform scenario of the World Bank*, China's average annual GDP growth rate in the aforementioned periods is projected to be 0.1-0.2 percentage points higher compared to the baseline one *(World Bank 2015:22)*. Over a longer horizon, this is a significant improvement. The impact of reforms is pointed out in the improvement of total factor productivity, the annual average rate of growth of which is forecast to be 0.3-0.4 percentage points higher than in the baseline scenario and will more than offset the decline in the contribution of capital to economic growth (labour as a source of growth is the same in both scenarios, i.e. the factors feeding the increase and decrease in labour supply will probably extinguish each other in the forecasting

horizon). Therefore, according to the forecasts, the contribution of market reforms – often a fetish in the Western literature on China – to the acceleration of GDP growth is expected to be rather modest. The real significance of the reforms is that they support the shift in growth trajectory and the transition to a more effective growth path of better quality by improving total factor productivity.

The shift in China's growth trajectory is a highly complex process with contradictions whose quantification by economic models is difficult. First, in most cases, economic policy decisions affecting certain fields also have an impact on other ones in terms of unintended side effects. Second, economic policy measures may also influence each other and could be closely correlated, resulting in what is referred to as multicollinearity. As a result, certain measures may not only accelerate, but also weaken the pace of the shift in growth trajectory. Finally, subsequent economic policy decisions that are not currently known may alter not only the pace but also the direction of the shift in growth trajectory. Forecasters treat this issue by incorporating into their projection only known and planned measures which are likely to be implemented. Using the concepts of technical sciences, China's shift in growth trajectory forms a nonlinear system that cannot be quantified by economic concepts and tools, or can only be done so with great uncertainty. This is one of the reasons for the qualitative nature of this analysis.

5. Summary and conclusions

In the four years after 2007, which more or less coincided with the global financial and economic crisis, *inter alia* under the influence of the changed global economic environment, the traditional sources and driving forces of the extensive economic growth trajectory based on the expansion of investments, industry and construction output and manufactured exports were exhausted in China. This manifested itself in the deceleration of the rate of GDP growth. The period between 2010 and 2016 saw a shift to a *knowledge, research and technology-intensive growth trajectory* based on the increase of private domestic consumption and services, research and development and innovation, and the development and spread of higher value added industries in manufacturing and the upward move in global value chains. The process is still at the beginning and will last over a longer period, and its end-results are not guaranteed.

The shift in growth trajectory started *partly spontaneously,* relying on the autonomous development of the economy, sometimes following the path of least resistance, *and partly under the impact of economic policy and socio-economic reform measures.* The conceptual basis of the economic policy and economic reforms were based on the 12th and the 13th Five-Year Plan and the related strategic documents as well as the analyses published by the World Bank, the IMF

and the OECD. The reports of the international organisations are associated with the concerns of the leaders of advanced economies, the risks and uncertainties regarding the global consequences of a shift in China's growth trajectory. The overhaul and restructuring of economic policy objectives and the identification of new ones consistent with the requirements of the shift in growth trajectory are included in the Chinese strategic planning documents prepared in a top-to-bottom approach. The requirements and the recommendations for their implementation elaborated in a bottom-up approach were presented in the reports of international organisations. Despite the experiences accumulated in a small number of successful countries, there is no recipe for implementing a shift in growth trajectory. Due to the specific features of the Chinese economy, international experiences can only be applied carefully and with reservations. Top-to-bottom economic governance includes the risk of excessive centralisation and may hold back the bottom-up growth energies and initiatives of economic participants.

In promoting the shift in growth trajectory, economic policy faces conflicting objectives, contradictions and internal and external limiting factors. It needs to meet a great number of contradicting requirements and find a satisfactory balance among them. They include the most essential conflicting objective of choosing between economic rationality and socio-political stability, in other words, economic rationality can be enforced at the expense of socio-political stability and vice versa. Reducing the share of industry in GDP through rationalisation, improving productivity, restraining investments, abolishing the prohibitions imposed on village populations concerning the choice of residence, the liberalisation of agricultural prices and the stimulation of urbanisation in an effort to shore up the service sector, curbing the ageing of the population, and exposing state-owned enterprises to genuine external and internal competition certainly lead to mass bankruptcies of firms and the rise of excessive labour supply and unemployment in the short run, with the result of weakening social and political stability. Fears of these factors and the mitigation of the associated risks by softening reforms is likely to decelerate the pace of the shift in China's growth trajectory.

The major constraint to promoting *research, development and innovation* is the economic policy based on top-to-bottom planning and strong direct interventions by the government. There is presumably room for decentralised, bottom-up incentives, but only to a limited extent. Without this, it is improbable that a greater liberalisation of the economy would automatically stimulate innovation. The situation is different in the *promotion of entrepreneurship,* where cutting red tape and introducing positive incentives could release substantial social energies.

The shift to a growth trajectory based on rising consumption is conditional on the reduction of *household savings.* Attempts to establish a welfare state (health, unemployment and pension insurance, free education) similar to the Western

European model based on public funding serve this objective. However, the reduction of private savings is restricted on the one hand by global factors, i.e. the huge differences between the current account balances of various countries and regions. Moreover, the saving and consumption habits of households also change at a slow pace, and government intervention does not promise rapid change in the realm of consumption growth.

China's economic policy also attempted to mitigate the conflicting objectives associated with the shift in growth trajectory by shifting certain emphases. It has used external economic policy to ease the shift in growth trajectory. With huge investments in infrastructure in a great number of beneficiary countries, the "One Belt, One Road" international project enables the utilisation of excess capacities in Chinese construction, reduces the sales costs of Chinese exports and thereby promotes the exports of both traditional and new Chinese manufactured goods. Similar functions are attached to China's official aid policy. The development of the military industry may also decelerate the contraction of industry and under certain circumstances contribute to its technological and structural modernisation.

Another challenge is how to raise the *financial resources* necessary for the shift in growth trajectory. Regarding the actual size and the balance of the general government, the financial room for manoeuvre is limited, particularly compared to the tasks at hand. Financing constraints could be alleviated by restricting the excessive borrowing of local governments, the more wide-spread use of PPP schemes, stronger reliance on the sovereign wealth fund and FDI.

Since the opening to the global economy that started in 1978, *the reform of economic governance has been permanent* in China. However, the reform process has not been linear or free of readjustments of smaller or greater size. It has been characterised by gradualism, rather than quick and radical changes. This has received relatively little attention in the relevant international literature because mainstream economic experts appreciate only the economic policy and other measures that bring China closer to the Western type model through reforms, whereas the shift in growth trajectory may also be stimulated by other types of tools, other ways and means. Although fundamental institutional changes are needed, there are still reserves in the realm of policy reforms.

According to medium and long-term forecasts, China may be able to avoid the middle income trap in both absolute and relative terms, in other words, it may continue its catching up with developed economies, albeit at a slower pace than between 1978 and 2011. The process will involve significant negative risks and uncertainties. The main instrument of the transition to a new, higher-quality growth trajectory includes the more efficient utilisation of the available resources, which will stem from the improvement of total factor productivity. Market reforms will

play a minor role in economic governance compared to other measures such as the overhaul and the restructuring of economic policy objectives and the tools and institutions.

The greatest challenge facing Chinese economic governance is that the shift to the new growth trajectory should be managed in a specific way. Since economic growth is a key legitimising factor of the political system, the shift to the new growth trajectory should lead to the smallest possible deceleration in the rate of GDP growth in order to avoid the disruption of social equilibria. This depends on global trends as well. Due to China's position in the global economy and its impact on global economic trends, every country open to the global economy is interested in China's relatively smooth transition to the new growth trajectory, and supporting the process — with criticism, if necessary — is a global interest.

Annex

Table 1
Figures on China's economy

	2010	2011	2012	2013	2014	2015	2016*
GDP volume at constant prices (USD trillion)	6.06	7.52	8.57	9.63	10.55	11.18	11.39
Population (billion persons)	1.34	1.35	1.35	1.36	1.37	1.37	1.38
Urban population as a per cent of total population	49.2	50.6	51.9	53.2	54.4	55.6	
GDP per capita at constant prices (USD)	4,523	5,582	6,329	7,080	7,718	8,140	8,260
Percentage change of GDP at constant prices over the previous year	10.6	9.5	7.9	7.8	7.3	6.9	6.6
Sectoral breakdown of GDP (total = 100%)							
Agriculture (%)	9.6	9.5	9.5	9.4	9.2	9.0	
Industry (%)	46.2	46.1	45.0	43.7	42.7	40.5	
Services (%)	44.2	44.3	45.5	46.9	48.1	50.5	
Volume of exports of goods and services (% of GDP)	26.5	26.4	25.7	24.8	23.9	22.4	
Volume of imports of goods and services (% of GDP)	22.9	24.4	23.0	22.3	21.2	18.8	
Balance of exports and imports (% of GDP)	3.6	2.0	2.7	2.5	2.7	3.6	
Foreign trade balance (% of GDP)		3.0	3.6	3.7	4.1	5.1	5.1
Investments (% of GDP)	47.3	47.2	47.3	47.7	46.2	45.0	43.9
Gross savings (% of GDP)	51.8	49.8	49.7	48.8	49.3	47.9	46.0
Difference between gross savings and investments (% of GDP)	4.5	2.7	2.4	1.1	3.1	3.0	2.3
Percentage change in the volume of exports of goods and services (annual)	26.6	14.6	5.9	8.8	6.9	1.8	1.9
High-tech goods in per cent of manufacturing exports	27.5	25.8	26.3	27.0	25.4		

Table 1
Figures on China's economy

	2010	2011	2012	2013	2014	2015	2016*
Percentage change in the volume of imports of goods and services (annual)	19.9	17.7	6.6	10.6	8.7	0.6	3.9
R&D expenditures (% of GDP)	1.7	1.8	1.9	2.0	2.0		
Gross enrolment rate in higher education (%)	23.9	24.9	27.2	30.2	39.4		
Percentage change in nominal wages over the preceding year		16.7	14.0	12.9	10.0	9.9	9.0
Monthly minimum wage (CNY)	1,120	1,280	1,450	1,620	1,820	2,020	
Household disposable income (% of GDP)		58.3	59.4	60.0	60.7	62.2	63.2
Household savings in per cent of disposable income		41.0	40.8	38.5	37.9	37.4	36.9
Household debt (% of GDP)		27.8	29.6	33.0	35.3	38.4	41.8
Domestic debt of non-financial enterprises (% of GDP)		97.0	104.7	108.9	112.8	120.0	127.4
Time requirement for starting a business (days)	20.9	20.9	20.9	18.2	34.4	31.1	28.9
Total domestic loans of the financial sector (% of GDP)	143.6	142.1	150.8	157.6	169.4	169.6	
Unemployment rate (%)	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Percentage change of the consumer price index (annual)	3.3	5.4	2.6	2.6	2.0	1.4	2.1
Percentage change in housing prices over the preceding year (nominal)		5.7	8.7	7.7	1.4	9.1	8.9
General government (% of GDP)							
Revenues	24.6	26.9	27.7	27.7	28.0	28.6	27.7
Expenditures	24.0	27.0	28.4	28.5	28.9	31.3	30.7
Balance	0.6	–0.1	–0.7	–0.8	–0.9	–2.7	–3.0
Gross government debt (% of GDP)	33.1	33.1	34.0	36.9	39.8	42.9	46.3
Private healthcare expenditures (% of GDP)	2.2	2.2	2.3	2.4	2.5		
Public healthcare expenditures (% of GDP)	2.7	2.8	2.9	3.0	3.1		
Current account balance (USD billion)	237.8	136.1	215.3	148.2	277.4	330.6	270.8
Current account deficit (% of GDP)	3.9	1.8	2.5	1.5	2.6	3.0	2.4
Military expenditures (% of GDP)	1.9	1.8	1.9	1.9	1.9	2.0	
Net FDI inflow (USD billion)	243.7	280.1	241.2	291.0	268.1	249.9	
Net FDI inflow (% of GDP)	4.0	3.7	2.9	3.1	2.6	2.3	
Net official development grant and aid (USD billion)	645	–608	–193	–672	–960		
Gross official foreign currency reserve (USD billion)		3,256	3,388	3,880	3,899	3,406	3,181

*Note: * The figures for 2016 are the preliminary data of the IMF.*
Source: IMF database http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/weoselser.aspx?c=924&t=1
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China – Rebalancing and Sustainable Convergence

Géza Rippel

The People's Republic of China has experienced buoyant economic growth in the past decades, managing a remarkable convergence to advanced economies. The growth rate of GDP slowed down significantly after the outbreak of the global crisis, due to both cyclical and structural factors. Serious imbalances inherited from the pre-crisis growth model have emerged, challenging the sustainability of rapid economic convergence. In the 'new normal', China has been rebalancing its economy by emphasising household consumption, although the importance of the private sector needs to be further strengthened. To avoid the middle-income trap, China must raise productivity driven by domestic innovation, higher value added production and a more flexible financial system. Shifting to a more balanced and sustainable growth path requires the reduction of present imbalances, such as the remarkable regional disparities and the weaknesses of the Chinese financial system. This study highlights the criteria for successful convergence using the conclusions of convergence theory and the experiences of East Asian countries.

Journal of Economic Literature (JEL) codes: O1, O47, O53

Keywords: China, economic convergence, middle-income trap, aggregate productivity, economic structure

1. Introduction

In previous decades, China was characterised by rapid economic growth, which was primarily explained, *inter alia*, by the size of the country, its access to raw materials and its unique history. The opening of the Chinese economy in the late 1970s increased its ability to attract foreign capital and to deepen the links to global value chains. Economic growth rate picked up remarkably in parallel with the Open Door policy, especially after the WTO accession in 2001. Exports increased by nearly 20 percent on average between the WTO accession and the outbreak of the global crisis, which was more than three times the average of world trade. Services gained relative importance compared to the Mao era, and the increase in productivity also positively affected economic performance.

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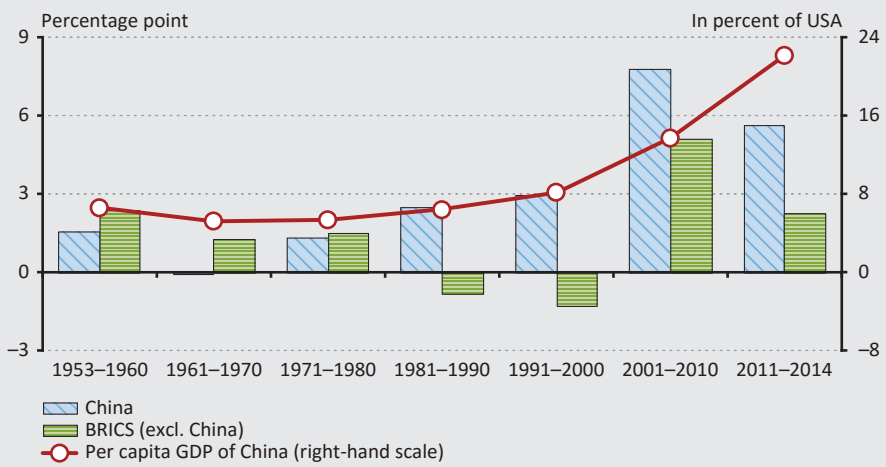
China's gross domestic product expanded at a rate of nearly 8 percent on average over the last two decades (over 9 percent from 2001 to 2010), fuelling global trade and economic growth. Other large emerging economies such as Brazil, Russia, India and South Africa (BRICS countries) also grew rapidly in recent decades, outperforming advanced economies. On average, China's GDP increased 4.5 percentage points faster than US GDP since 1978, and 6.7 percentage points faster since 2001 (*Figure 1*).

In assessing rapid growth from the perspective of economic development, the most widely used indicator is per capita gross domestic product at purchasing power parity (PPP), rather than GDP measures. China's outstanding GDP growth in past decades also resulted in a remarkable development in terms of GDP per capita. China's development level was nearly 5 percent of the USA in 1978, which increased notably in recent years to reach 24 percent in 2014.

Figure 1
Additional GDP growth and GDP per capita compared to USA



Note: Data for the Russian Federation is available from 1990.
Source: Penn World Table 9.0.

While China's GDP per capita still significantly lags behind the USA and other advanced economies, the robust growth in recent decades nonetheless bears out the relevance of this analysis. Rapid economic growth was not inclusive in the period covered, resulting in increasing imbalances and challenges to further economic development. Various sectors of the economy have been affected in different ways, distorting the structure of incomes and productivity. Since the outbreak of the crisis, China has faced a slowdown in its GDP growth rate, which can both be linked to cyclical and structural factors.

In order to sustain rapid convergence, China has had to change its growth model. The Chinese economy has been transitioning towards a 'new normal', although further progress is needed to evolve onto a more balanced economic growth path. China is one of the world's largest economies, therefore the effects of recent rebalancing may impact global economic performance as well. This study highlights the conditions for sustainable economic convergence along the 'new normal' and points out areas which are still in need of development. The assessment of China's rapid growth in past decades and the recent slowdown should reflect the findings of convergence theory and the transition of economic structure as well.

2. Economic convergence – theory and empirical evidence

In line with the country's outstanding economic performance, Chinese GDP per capita approached the development level of advanced economies. The characteristics of convergence and statements of economic theory are indispensable in assessing China's performance in the long run. This section focuses on convergence theory and the empirical evidence for economic catching-up, primarily to summarise the common characteristics of successful examples and to highlight the conditions which should be met.

2.1. Overview of economic convergence theory

Economic convergence is a phenomenon spanning several decades and is mostly described and analysed by long-term economic relationships and steady states of equilibrium. According to the findings of neoclassical models, the same GDP per capita is achieved in the long run by countries featuring identical fundamentals (preferences, production technology and economic policy). This kind of ignorance of the initial level of development is referred to as conditional convergence. In addition, absolute convergence involves cases characterised by countries with different initial levels of development achieving the same per capita GDP, irrespective of fundamentals (*Galor 1996*).

The conclusion of *Solow* (*1956*) and *Ramsey* (*1928*) is conditional convergence, while on the other hand several articles question the assertions of neoclassical convergence theory (*Durlauf et al. 2006; Bernard – Durlauf 1996*). Convergence clubs are referred to when countries with similar fundamentals converge towards different GDP levels as a function of their initial development level. Belonging to the same club means that economies converge towards a similar income level independent of their fundamentals, which on the other hand makes it possible for initially similar countries to follow very different growth paths in the long run. Convergence clubs are successfully identified in empirical literature, although the probability of similar economies following significantly different growth trajectories is quite low.

While the findings of convergence theory do help us to better understand a country's economic performance, China's rapid growth is difficult to interpret using basic convergence theory models. These models handle convergence as a uniform process, but countries – especially emerging economies – experience different economic and political systems and growth periods. On the other hand, only a small number of convergence clubs are identified in the literature, and therefore heterogeneity within these country groups can be relatively high.

2.2. Empirical evidence and criteria of successful economic convergence

Convergence theory offers only basic assumptions and trends regarding the convergence of a country, therefore analysing the empirical evidence and success stories of newly industrialised East Asian countries may provide additional information on the conditions of long-term convergence. To assess the phases of economic convergence, the literature usually refers to income groups. *Felipe et al.* (*2012*) defined the following income groups using *World Bank* (*2015*) income classification and the *Maddison* (*2010*) database, based on GDP per capita:

- Low-income: 0–1,999 (1990 USD in PPP)
- Lower-middle-income: 2,000–7,249
- Upper-middle-income: 7,250–11,749
- High-income: 11,750 or above

According to the authors, the number of low-income economies has decreased since 1950, in line with the expanding group of high-income countries, especially between the late 1960s and 1980 and the late 1980s and 2010. The first period is often referred to as the 'Golden Age' (*Maddison 1982*) and is characterised by remarkable productivity growth. The latter period covers the economic boom of East Asian countries.

Based on the World Bank definition, China has already reached upper-middle-income status – along with Brazil and South Africa from the group of BRICS countries. Over the past nearly half century, relatively few countries have managed to reach high-income status. According to *OECD* (*2014*), 13 of the 101 middle-income countries managed to achieve high-income status relative to 1960, while *Felipe et al.* (*2012*) highlights that only 32 countries (26 percent of sample) were described as high-income economies in 2010. Periods characterised by dynamic economic growth occurred in several countries, but these rapid growth periods were usually brief. Rapid convergence over a sustained period was only observed in a relatively small proportion of countries.

The rise from middle-income to high-income status was typically observable in East Asian countries in the past decades. Hong Kong, Japan, the Republic of Korea, Singapore and Taiwan outperformed the annual GDP growth of the United States by

4.3 percentage points on average during the periods characterised by exceptional economic growth (*Table 1*). Looking at the East Asian cases, successful convergence from middle to high development requires a robust growth period spanning 30–35 years. By the end of the covered periods, fast growing East Asian countries joined the group of most developed countries based on GDP per capita, and some of them (Singapore, Hong Kong) surpassed the United States as well.

Table 1
Features of growth in successfully converging countries

Country	Start of period	End of period	Average growth (%)	Relative development to USA at the start of the period (%)	Relative development to USA at the end of the period (%)	Time span of fast growth (years)	Yearly average convergence to USA (percentage points)
Hong Kong	1960	2011	5.2	22	106	51	3.2
Japan	1950	1995	5.8	18	85	45	3.6
Republic of Korea	1981	2007	6.9	18	59	26	4.8
Singapore	1986	2007	7.2	47	134	21	5.2
Taiwan	1969	1997	6.7	20	70	28	4.7
Average			6.4	25	91	34	4.3

Note: GDP per capita in PPP terms.
Source: Penn World Table 9.0.

According to *Rohwer* (*1995*), the rapid growth stemmed mainly from four factors in East Asian countries. The quantity of labour rose rapidly, driven by the labour flow from agriculture and long working hours, while the quality of labour force also improved through effective educational policies. During the early phases of development, East Asian economies were characterised by high investment rates due to the strong investment in physical capital – machinery and tools. Productivity has also been a key driver of growth over the past 60 years.

Although the data suggest exceptional growth among the above-mentioned economies, there is a debate about the East Asian growth miracle in the literature. The developer state school stresses the role of state measures as the basic pillar of growth, while the neoclassical school explains it with market liberalisation (free market pricing and limited state presence). State-led development policy was conducted in all of Asia's converging countries, albeit with country-specific differences.

Looking at the rate of economic growth, the length of the growth period and annual average convergence to the USA, China has made an excellent progress in the last decades. However, the country is classified as a middle-income economy, as its

GDP per capita only amounted to around 24 percent of USA. The main challenge for China is to maintain its high growth rate and continue the rapid convergence to advanced economies. As a result, the country may achieve high-income status in the future.

2.3. Growth slowdown and the middle-income trap

The recent slowdown in the growth rate of Chinese GDP may raise questions about the long-term convergence path. According to *IMF* (*2016*) and *OECD* (*2016b*), China is projected to grow at a rate of slightly over 6 percent in the coming years, which is considerably lower than the average growth rate of over 10 percent from 2001 to 2007. The slowdown can be linked to cyclical and structural factors as well, of which the latter may be linked to the phenomena of growth traps.

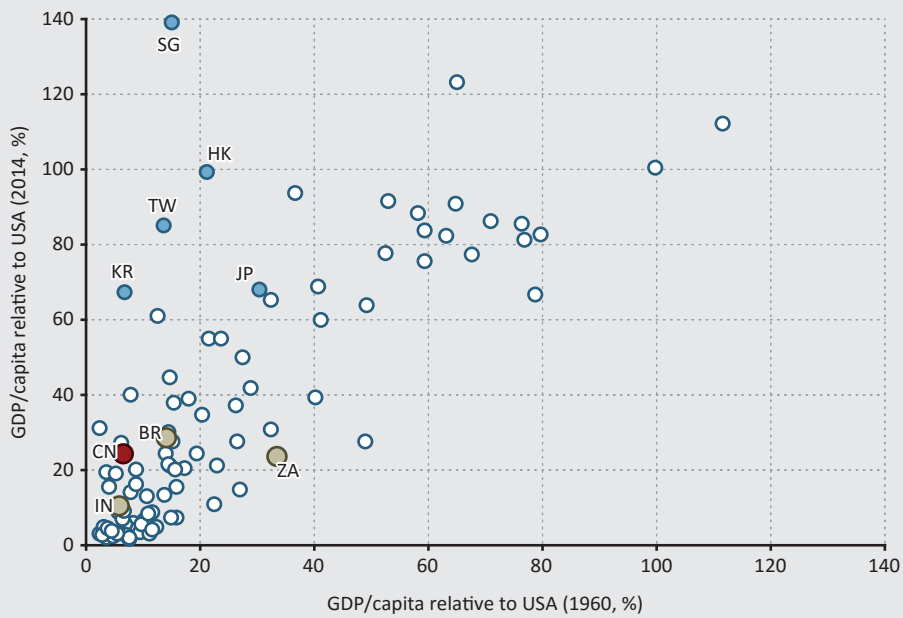
The substantial slowdown in economic growth prior to reaching high-income status can be referred to as the middle-income trap. Papers investigating the phenomena are usually descriptive and seek to identify the components contributing to the slowdown in convergence at a certain development level. Adverse demographic trends, unsustainably high investment rate and financial instabilities increase the probability of falling into the trap, while the accumulation of human capital and the share of high-value services decrease this probability (*Eichengreen et al. 2012, 2013*). *Aiyar et al.* (*2013*) and *Agenor – Canuto* (*2012*) highlight the importance of infrastructure and the institutional environment such as ownership, regulatory environment and labour market frictions.

The concept of the middle-income trap can also be linked to changes in economic structure. During the structural transformation process, less advanced economies first experience an increase in the share of industry to the detriment of agricultural production, followed by a shift towards service sector (*Kuznets 1966*). Although industrialisation entails significant growth potential in early stages of development, an increase in productivity is indispensable to achieve high-income status. Empirical evidence shows that countries which have established high value added production and service sectors raised their growth potential remarkably. Fostering domestic innovation also contributes to economic growth through the positive externalities stemming from knowledge networks. Highly qualified labour, well-developed institutions, and economic and economic policy stability are all prerequisites for economic development.

Fast growing East Asian economies represent a unique group based on their outstanding economic performance in the past decades. China has also significantly raised its GDP per capita since 1960 (*Figure 2*), although still lags behind the development level of advanced economies. The recent economic slowdown may be linked to growth traps, if structural factors (not balanced economic growth,

distortions in the financial system, political uncertainties) do not improve – despite the obvious impact of cyclical factors in line with the global crisis. To avoid a further slowdown in GDP growth rate, China needs to achieve strong economic performance, in parallel with structural reforms to boost productivity.

Figure 2
Changes in GDP per capita between 1960 and 2014



Note: SG=Singapore, HK=Hong Kong, TW=Taiwan, KR= Republic of Korea, JP=Japan, CN=China, BR=Brazil, IN=India, ZA=South Africa.
Source: Penn World Table 9.0.

While the main purpose of the middle-income trap theory is to explain sudden slowdowns in the rate of economic growth, critiques have also been showing up in the literature. The estimations of *Eichengreen et al.* (*2013*) have a high standard error of income threshold, and furthermore the vast majority of sudden slowdowns can be linked to economic crises such as the oil crises of the 1970s or the 1998 Asian crisis. *Pritchett and Summers* (*2014*) explain that estimations confirming the middle-income trap only found a tendency for mean reversion, i.e. periods of fast convergence are inevitably followed by growth slowdowns.

3. Challenges of sustainable convergence in China

Despite China's outstanding economic performance in past decades, GDP growth has slowed down significantly recently. Still, economists are optimistic that China can continue its rapid convergence, even though the rate of growth may be lower in the coming decades (*Lin 2011, Perkins – Rawski 2008*). China has surpassed the growth performance of its peers since 1991. The differential was almost 10 percentage points in the 1990s, and even in recent years it has still been around 5 percentage points (*WEF 2015*). The recent slowdown in the Chinese economy can be linked to cyclical factors stemming primarily from the global crisis – such as declining investments and weak trade – along with structural factors as well. This study mainly emphasises structural factors, addressing convergence theory and country-specific issues.

The rapid growth in recent decades has resulted in a remarkable economic convergence on the one hand, but on the other hand it has also generated significant imbalances. Regional disparities (coast-inland, urban-rural), not inclusive growth, over-dependence on external demand and an inflexible political system have all played a significant role in relation to increasing imbalances.

In 2014, Xi Jinping indicated that China is entering a 'new normal' (*Xuequan 2014*). The phrase has often been used by Western literature and media to emphasise the change in economic conditions after the outbreak of the global crisis. In the case of China, the 'new normal' refers to a more moderate, but sustainable growth path in the medium term compared to pre-crisis trends. Sustainable convergence can be defined as a long-term catch-up process without building up imbalances. This section examines the recent developments in economic structure, factors of production, productivity and competitiveness, and emphasises specific issues regarding existing imbalances.

3.1. Recent rebalancing of the Chinese economy

3.1.1. Structure of the economy

From a historical perspective, the Chinese economy has experienced some key turning points since the decline of Imperial China. In 1949, Mao Zedong proclaimed the People's Republic of China, initiating a period characterised by collectivisation, planned economy, rapid industrialisation and stagnating living standards. The GDP share of industry increased from 8 percent to 30 percent between 1952 and 1978, while China was isolated from the booming world economy (*Maddison 2007*).

Economic reforms initiated by Deng Xiaoping from 1978 led to the increasing openness of China and its integration into the world economy – especially after joining the WTO in 2001. Decentralised trade decisions along with the massive

devaluation of the yuan boosted Chinese external trade and contributed to the remarkable GDP growth. According to *Maddison* (*2007*), the construction sector increased on average by over 11 percent between 1978 and 1995, compared to 7.2 percent in the Mao era. In line with the opening up of the economy, the performance of the service sector also started to increase significantly in the 1980s.

Impressive growth seen in the past – mainly driven by investments, low wages and urbanisation – has slowed down recently and the pre-crisis growth model has become less sustainable. Returns on investments have declined and weaker global growth has provided diminishing opportunities for exports. As the level of economic development increased notably in past decades, gains from technological convergence also started to diminish. Technological advances have become more costly through replacing imitation by domestic innovation.

Under the 'new normal', China has shown clear signs of economic rebalancing (*Huang 2012*). To maintain rapid economic convergence and to avoid the middle-income-trap, the Chinese economy needs to shift towards a more balanced economic structure. The pre-crisis growth model was primarily based on outstanding export performance driven by industrial production and the undervalued yuan.

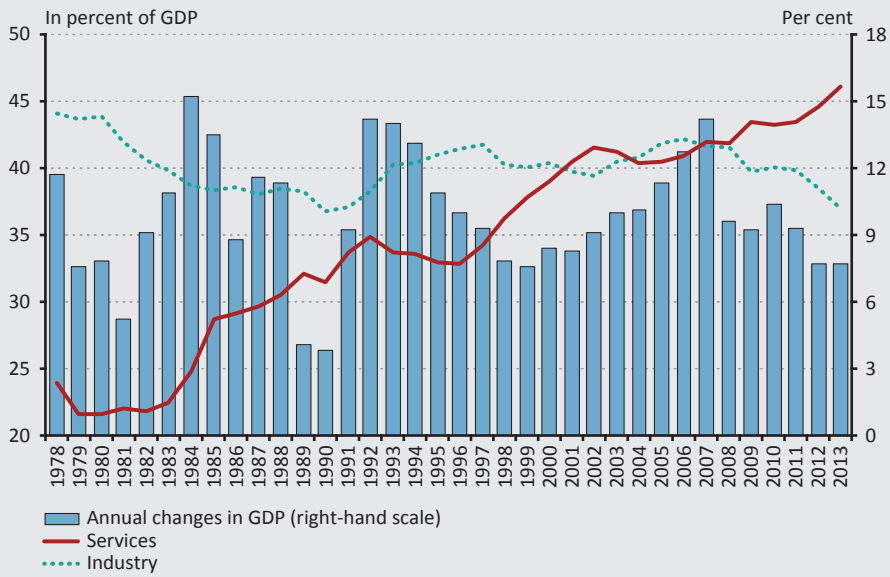
The massive surplus on the current account stemming from the exceptional trade dynamics started to fade in the past years. While gains from export-driven growth have been hampered by the sharp slowdown in external demand since the outbreak of the crisis, two main factors may be able to mitigate the impact of the external demand channel: a sophisticated export product structure and the low value added content of Chinese exports (*Dorrucci et al. 2013*).

High-tech exports account for a high share in the Chinese export structure. This share is considerably higher than that of Japan and EU and is primarily related to the IT sector and electrical machinery. China has climbed up the quality ladder rapidly in the last few decades, although the quality of exports is still below that of most advanced economies. The importance of high-tech products stems from imported technologies of multinational companies through global value chains, therefore the domestic value added of Chinese exports is relatively low (*Koopman et al. 2010*). On the one hand, this means that the value added creating capability of the export sector is low, but on the other hand, GDP is less affected by export volatility and fluctuations in external demand.

While cyclical factors (deteriorating external demand) have hampered Chinese economic performance recently, the subdued growth performance may be linked more intricately to structural factors. The growing importance of services instead of industrial production (*Figure 3*) points to the rebalancing economic structure.

The GDP share of services has doubled since the start of Open Door policy, while the relative importance of industry has decreased sharply since the outbreak of the crisis.

Figure 3
Economic transition of the Chinese economy



Source: China National Bureau of Statistics.

Shifting towards a more domestic-driven economy may provide a more sustainable – but slower – growth path by decreasing dependency of foreign demand and technology. To avoid falling into a growth trap, China should also increase the share of high value added services in its exports and boost domestic value added content mainly by increasing domestic innovation capacities and strengthening suppliers.

Rebalancing the economy may occur primarily through the promotion of private consumption and investments. Initiatives have been launched to raise household incomes and consumption, while also reducing precautionary savings. In line with the growing economic importance of the services sector, private consumption has been increasing recently. According to China National Bureau of Statistics, final consumption has risen continuously since 2010, accounting for 51.4 percent of GDP in 2014.

Huang et al. (*2013*) argues that Chinese consumption is grossly underestimated in official statistics due to underreported residential spending, consumption covered

by institutional spending and methodological issues as well. Averaging proxies for consumption (consumption-related, retail sales growth and service sales growth), a rapid increase can be identified in the estimated share of consumption since 2008. The underestimation of household consumption is also confirmed by *Li – Xu* (*2012*).

Despite the recent increase in household consumption and the issues of underestimation, its share is still low compared to advanced economies. The shift towards domestic consumption requires a remarkable increase in household incomes. To cover the cost of healthcare, education, and preparation for old age, households claim to focus on their savings. In addition, the migrant workforce cannot access the services in their new cities and is forced to save to cover those expenses. Along with savings trends and strict and inflexible regulation regarding migration, a real estate bubble is also a risk in parallel with the increased lending after the large-scale stimulus programme during the crisis (*Williams 2013*).

Growth model under the 'new normal' should rely more on household consumption, therefore policies supporting household income and access to basic public services are necessary to maintain sustainable and stable economic performance. Measures have already been taken regarding the expansion of the social safety net (pension, healthcare and education), and social housing and agricultural subsidies. Income inequality should also be addressed in addition to the reform of income tax, which would allow the widening of the tax base (*Dorrucci et al. 2013*).

In parallel with increasing private consumption, private investments should also be raised to guide the economy to a more balanced structure. To promote sustainable growth through domestic demand components, two major issues should be addressed under the 'new normal': the unsustainably high investment rate and the efficiency of allocation.

China has witnessed brisk investment activity in recent years, primarily supported by inflows of FDI and the policy stimulus of 2008–2010. The investment-to-GDP ratio has been exceeding 45 percent recently, which is remarkably high compared to investment rates in advanced economies. Maintaining high investment rate is necessary to reach middle-income status through the shift from labour-intensive to a more capital-intensive production. In the recent development phase of the country, there is still room to maintain a high investment rate and keep accumulating capital, even though an unsustainably high investment-to-GDP ratio may accelerate the build-up of imbalances and provide lower returns on capital. Persistently and unsustainably high investments rates may increase the possibility of falling into a growth trap (*Eichengreen et al. 2013*), therefore China should focus on issues such as the structure of investments and the efficiency of allocation.

To avoid the middle-income trap, the private sector needs to be more emphasised in terms of economic performance. The role of private companies – especially SMEs – must be increased and competition should be strengthened. According to *Cai* (*2015*), SOEs have been highly protected (government guarantees, risk-free soft budget constraints) and less dependent on competitive markets. In line with the more rigorous financial constraints of SMEs, the investment activity and productivity of private sector firms have been subdued. To increase the performance of private sector firms, China should promote innovation and let companies chose their own management methods and technological routes.

Private corporations have been allowed to compete in certain sectors since 1992 and their relevance in economic performance has been increasing. The role of state-owned enterprises and the private sector is analysed by *Brandt et al.* (*2016*), which emphasises the role of firm entry to unfold productivity differences. They found that the fast convergence of the private sector in the period from 1995 to 2004 is primarily linked to the reduction of entry barriers. Ease of doing business and the significance of private firms may play a crucial role in the coming years, contributing to the productivity growth needed to maintain economic growth under the 'new model'.

The efficient allocation of investments in China has been challenged by the literature, which can mainly be explained by the role of state-owned enterprises and the targets of government investment projects. *Dollar – Wei* (*2007*) found that the investments of SOEs provide lower marginal returns on capital compared to private companies. Dismantling obstacles faced by private sector firms would increase their investments and innovation capacities, and thus lift productivity and economic growth. The increasing activity of the private sector is important for maintaining a sustainable growth path in the future.

3.1.2. Factors of production

In parallel with the shift in economic structure, the utilisation of production inputs (labour, capital) is a key aspect for sustainable convergence. To avoid the middle-income trap, China must maintain sustainably high potential GDP growth supported by the required quantity and quality of labour and capital. Distortions in factor markets provide incentives to certain entities and obstruct decision-making based on supply and demand conditions. The appropriate quality and quantity of inputs, in addition to the matching of demand and supply, would be the foundation of a sustainable growth model.

Huang et al. (*2013*) highlights the importance of changes in factor markets – especially the labour market – as key factors driving the transition to a more balanced economic structure. The transformation of labour market in emerging countries is characterised by the flow of labour from agriculture to higher

productivity manufacturing in the early phases of development. As surplus rural labour narrows, the marginal products of labour in agricultural and manufacturing converge. Increasing wages in agriculture put upward pressure on manufacturing wages through the diminishing surplus of rural migrant labour. The reallocation of labour force – the transition from surplus to shortage – is often referred to as the Lewis turning point (*Ranis 2004*).

While labour market transition in emerging markets can usually be described through the Lewis turning point, it is highly controversial whether China has already reached it. On the one hand, *Zhang et al.* (*2010*) suggests that the turning point was already reached in 2003 or is now approaching (*Cai – Wang 2008*), while on the other hand *Minami – Ma* (*2009*) claim that Lewis turning point may still be far away. The labour market has shown signs of supply shortage in recent years, although empirical evidence suggests that China still has sufficient pool of rural labour (*Dorrucci et al. 2013*).

The implication of Lewis turning point is that on the one hand rising wages may dampen economic growth through the loss in profits, and on the other hand it shifts income redistribution from corporations to households (*Huang – Cai 2010*). The importance of consumption increased in line with growing household income, which could provide a more balanced structure for Chinese growth in the future. While labour market transition has contributed significantly to economic performance, further steps are needed to be able to address distortions.

The household registration system (hukou) limits labour mobility and makes it difficult to narrow regional disparities. Setting the prices of energy by the government along with direct controls on lending and offering discounted land-use fees to investors also depress input costs. Labour costs were typically low in China in recent decades, contributing to rapid economic convergence and a redistribution of income from households to corporations (*Huang et al. 2013*). Due to the decline in surplus rural labour and the easing of labour market restrictions, wage dynamics may accelerate, balancing household incomes and corporate profits.

The buoyant growth of the Chinese economy in past decades can be attributed to capital accumulation, primarily through the channel of the demographic dividend (*Fang – Yang 2013*). The increase in the working age population provided an adequate amount of labour supply, supporting the decline in the dependence ratio, which helped to maintain a high savings rate. High savings of economic actors are typically the condition of capital formation, while the surplus supply of labour prevented the return on capital from diminishing in China. As a result of the increase in the proportion of working age population to the total population (*Bloom and*

Williamson 1998, Williamson 1998), investments – especially in heavy industry – contributed remarkably to GDP growth in the past decades.

According to *Fang – Yang* (*2013*), the working age population peaked in 2010 and is expected to decrease in the coming years, limiting the outlook for potential GDP growth through the quantity of labour and the diminishing return on capital as well. The 'new normal' may bring lower GDP growth rates, although the rebalancing of the economy may help provide a sustainable convergence path via a more balanced allocation of labour and capital.

The outstanding inflow of foreign direct investments supported by the performance of some sectors – especially construction and heavy industry – led to a massive increase in capital formation in the previous decades. While China has traditionally overinvested in these sectors, the country's capital stock per capita still lags notably behind the level of the USA (*Batson – Zhang 2011*), which suggests that it still has room for capital accumulation. To increase the gains from capital accumulation, China has to increase the investment activity of the private sector – especially SMEs. More efficient allocation of capital and the increasing importance of private sector corporations may lead to a more balanced convergence path.

3.1.3. Productivity and competitiveness

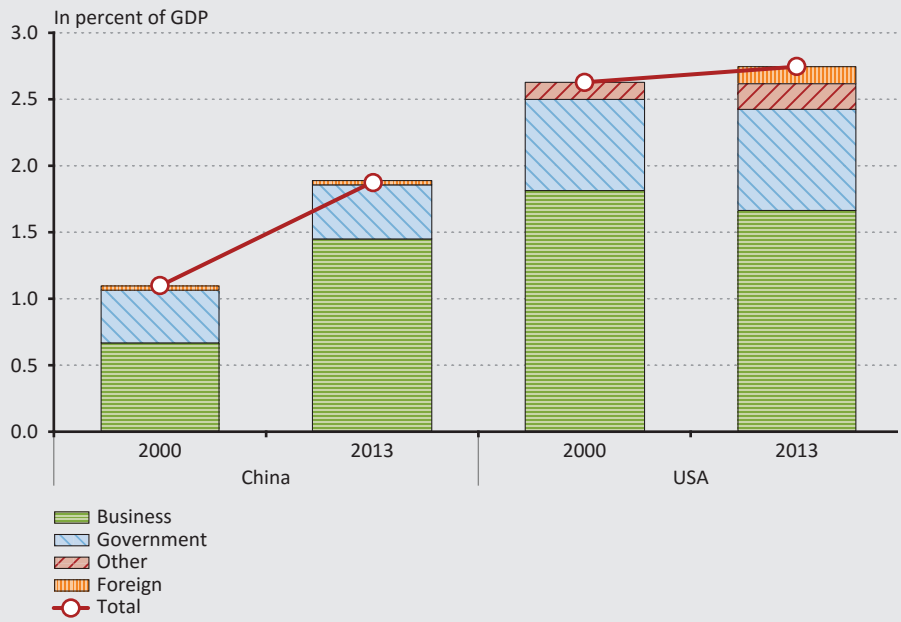
Reaching middle-income status may be driven by factor utilisation and characterised by the restructuring of economic sectors (*Agenor – Canuto 2012*). Rapid economic convergence during this phase of development is supported by cheap labour and the imitation of foreign technology (*Perez-Sebastian 2007*). Additional economic growth may peter out as real wage dynamics start picking up as surplus labour force shrinks. Entering high-income status and avoiding the middle-income trap is only feasible by increasing productivity.

The growth rate of Chinese potential GDP has been slowing since the global crisis, explained not only by the fading demographic dividend, but by subdued productivity growth as well (*OECD 2016a*). Both the level of productivity and its changes allow for conclusions about economic convergence (*OECD 2014).* The importance of high value added sectors is closely linked to the level of productivity, while its growth rate directly influences GDP. China must foster domestic innovation and move up the value chain to increase productivity growth.

Supporting R&D activities is necessary to increase the domestic innovation capacities of a country. China has remarkably increased its R&D expenditures in recent decades, approaching nearly 2 percent of its GDP in 2013 (*Figure 4*). Despite the outstanding growth in previous years, the country still lags behind the USA

and other advanced economies. Building up domestic innovation capacities and fostering research activities may increase productivity and stimulate economic performance through higher wages in the involved sectors and through the positive externalities stemming from knowledge networks. The strengthening of domestic innovation is typically explained by the R&D activities of the business sector and cooperation between corporations, universities and the government. R&D activities have increased in the Chinese business sector, lifting the productivity of the private sector.

Figure 4
R&D expenditure by source of funds



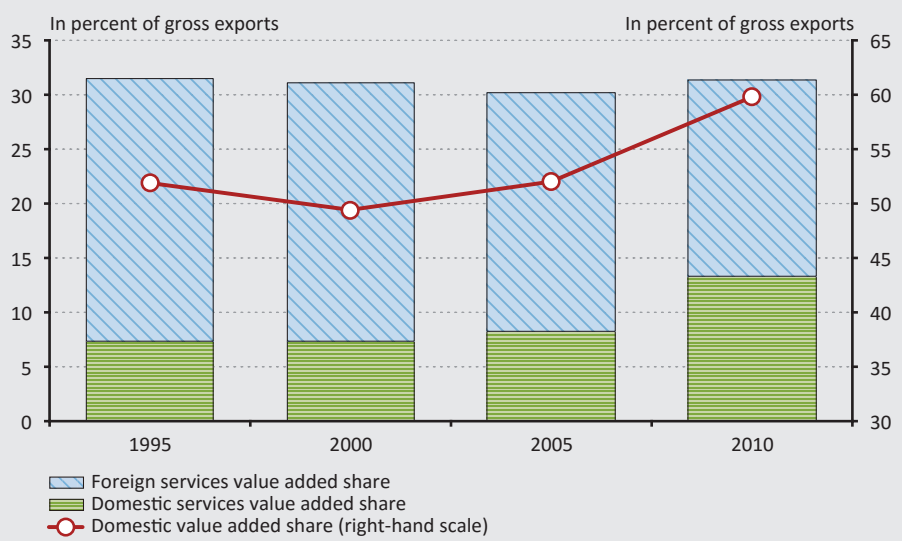
Source: OECD.

Achieving a more technology-intensive production structure, China must strengthen its digital infrastructure. Transformation towards a higher value added production is typically based on the penetration of communication networks and the extent of information and communication technologies of a country. The technological readiness of SMEs needs to be raised by increasing broadband internet coverage and the adaptation of developed corporation structures. In parallel with their progression, Chinese SMEs can participate to a larger extent in global value chains, lifting their productivity.

Shifting towards a higher value added production may be achievable by moving up the value chain (*Koopman et al. 2014*). The relationship of global value chains and value added can be described by a U-shaped curve (*Baldwin 2012*), with high value added activities presented in the beginning and the end of the curve. Value added creating capability is remarkably higher in the first phase of the value chain through R&D and design activities. In the middle of the curve, production and logistics are characterised by lower value added content and are usually guided by cost-effectiveness. At the end of the value chain, services linked to the final product or sales and marketing activities raise value added notably.

Advanced economies usually take part in the beginning and at the end of the value chain (*Ye et al. 2015*) typically through innovation, branding and high value added services. In addition to boosting innovation and R&D, China must increase the importance of its service sector to avoid the middle-income trap and to approach high value added production. China has been a global leader in high-tech exports, although the contribution to gross value added is marginal, linked to high import content of exports and production. The contribution of domestic capacities has increased in the last decades, although it explained only 59.8 percent of manufacturing exports in 2010 (*Figure 5*), lagging remarkably behind the over 80 percent shares of advanced economies such as the USA or Japan. The importance of the domestic services sector has also remained significantly low in China. Despite the near doubling of domestic services value added share in manufacturing exports from 1995 to 2010, its level of 13.3 percent is only the half of the USA and Japan.

Figure 5
Domestic and services value added share of manufacturing exports



Source: OECD-WTO.

While shifting to more services-based production is important to avoid the middle-income trap, 'premature deindustrialisation' may hinder growth potential in emerging countries in this phase of development (*Rodrik 2016*). The decreasing economic importance of industry can be linked to the imported deindustrialisation of advanced economies, weak advocacy and less competitive products of emerging economies in world trade. As a result, China must improve the competitiveness of its industrial sector in parallel with the growing importance of services.

China has recognised the needs and key development areas to improve the competitiveness of its production and announced the so-called 'Made in China 2025' initiative in 2015. The project's aim is to increase the quality of industrial production through innovation, network integration and sustainability. Transformation of production structure is intended to be achieved by the shift to innovative key industries such as robotics, new generation ICT and the space industry.

The ability to innovate and the shift in economic structure are fundamentally determined by the transformation of the labour market. In line with the increasing GDP share of services and rising R&D activities, the need for a skilled labour force also increases. Computer and mathematical skills will appreciate in parallel with the shift to higher value added production, while low-skilled labour will become increasingly automated. Education must respond to the shift in skills by the number of higher education graduates and the growing readiness in ICT and computing skills. To increase productivity through the accumulation of human capital, the quality and readiness of Chinese labour force has to emerge.

Despite the recent efforts of the government, future productivity gains may have to come through more market-oriented reforms (*WEF 2015*). China ranks 28th out of 140 economies in the Global Competitiveness Index, primarily lagging behind advanced economies in technological readiness, higher education and training, innovation and institutions. The report points to the structural weaknesses of the financial sector such as non-performing loans, the domination of large state-owned banks and the access to finance. In addition to access to finance, insufficient capacity to innovate, inefficient government bureaucracy and the inadequate supply of infrastructure also hinders doing business in China.

Shifting to a higher value added production may help avoiding the middle-income trap, although productivity and competitiveness must be raised in China primarily by supporting domestic innovation and higher education, while imbalances in the financial sector need to be remedied and the efficiency of government bureaucracy must be raised.

3.2. Existing imbalances

To sustain continuous economic convergence in the long run, the serious imbalances inherited from the earlier growth model need to be remedied. For instance, income inequality increased between rural and urban residents, workers and capital owners in the last decades (*Garnaut et al. 2013*). While the economic performance of Central and Western regions has been catching up recently, supported by increasing productivity through agricultural policy and rapid raises in agricultural prices (*Huang et al. 2013*), disparities between the different provinces are still remarkable. GDP per capita is considerably higher in Eastern provinces, highlighting the outstanding dependency on coastal regions.

In contrast to previous decades, inland regions have been growing faster than coastal areas. Despite the uncertainties regarding inequality measures, the Gini-coefficient is still high – although it has been decreasing since 2008 pointing to a reduction of imbalances. According to *Li* (*2013*), the development of agriculture was essential during the transformation period, impacting rural-urban disparities. China needs to make effort to tackle imbalances through reforms regarding land ownership and enhancing productivity.

Weaknesses have been highlighted regarding the Chinese financial sector. While abundant and cheap credit supported economic growth in previous decades, the financing of low-return investments and the misallocation of capital has resulted in serious imbalances. Distortions in the financial system can be linked to the interest rate ceiling and implicit guarantees, as the two most important factors regarding the inefficient allocation of capital (*Anzoategui et al. 2015*). While the deposit interest rate ceiling was officially removed in October 2015, further steps must be taken to remove the inequalities regarding the access to credit of SOEs and private sector firms. Implicit guarantees can be defined as certain borrowers enjoying privileged access to credit, therefore distorting lending decisions and preferring SOEs. Removing implicit guarantees would support the efficient allocation of capital and economic growth in line with the exit of low-productivity companies.

Hasan – Zhu (*2016*) emphasises the growing impacts from politics on the decision-making of companies. The speed of adjustment to the targeted capital structure may serve as a proxy for financial flexibility. Stronger political connection may lead to a higher speed of adjustment due to the lower cost of capital and possible bailout, while non-optimal decisions and state influence may lead to lower speed of adjustment. Financial stability and lending growth are also influenced by confidence in banks. According to *Fungáčová – Weill* (*2016*), the Chinese have one of the highest levels of trust in banks. They found that several sociodemographic factors may play an important role, but better access to information is not significant.

Rural location and membership in the Communist Party are negatively associated with trust in banks. Facilitating financial flexibility is indispensable to foster the performance of the private sector through the better access to capital and to lift productivity growth.

4. Conclusions

The People's Republic of China has been rapidly converging to advanced economies in recent decades supported by outstanding economic growth. While the increase in GDP per capita has been remarkable, serious imbalances have also built up, stemming primarily from unbalanced economic growth, distortions in the financial system, and inflexible regulation and government policies. Remedying these imbalances would be necessary to maintain sustainable economic growth in China, especially after the slowdown in growth after the outbreak of the global crisis. The 'new normal' may bring further challenges, but it is set to sustain convergence by shifting towards household consumption, boosting productivity and achieving higher value added production, in parallel with narrowing inequalities. Growth theory and empirical evidence show that supporting domestic innovation and higher education, promoting institutional environment, market liberalisation and facilitating financial flexibility are also conditions for avoiding the middle-income trap and sustaining economic convergence.

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Could China Be the Winner of the Next Industrial Revolution?

Lilla Sarolta Balogh

This paper attempts to give a comprehensive picture of China's current position and prospects for growth in the next industrial revolution, assessing whether the country can emerge as one of the "global winners" of the coming transformation. We provide an overview based on a review of the literature on the main driving megatrends of the so-called Fourth Industrial Revolution and present the most important socioeconomic implications affecting China. We progress by analysing China's current economic situation and growth prospects, reviewing secondary data. We find that to ensure a positive grow path, there is a need to enhance productivity via innovation, and we thus evaluate the innovative capacities of Chinese industry. We conclude that China is already a world leader in various industries based on consumer-focused, efficiency-driven innovation, and while Chinese players have not attained global competitiveness yet in engineering and science-based industries, if the country can follow its current path of development in promoting R&D, with no major systemic disturbances, it is only a matter of time before Chinese players will also emerge as world leaders in high-tech sectors.

Journal of Economic Literature (JEL) classification: F18, I23, L16, O00, O30

Keywords: sustainable growth, education and research, fourth industrial revolution, innovation, China

1. Introduction

China is at a crossroads, but this time it is not about taking the right or the wrong path, but rather about connecting roads in the coming industrial revolution. We are witnessing the dawn of a new era that will fundamentally change the way we live, work and progress together as a society, and the individuals, communities and nations who are able to embrace this change will be the ones to prosper, as has been the case throughout history. The technological revolution is accompanied by a set of broader socioeconomic, geopolitical and demographic developments, impacting all regions of the world and all aspects of our lives. China is facing the winds of change, passing through a challenging transition from decades of

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unparalleled economic progress and social development to a recent slow-down and weakening prospects of future growth. In this paper, we would like to assess whether China can position itself in this global transformation, building on its unique economic and social characteristics, to come out as one of the winners of the next industrial revolution.

We begin with an overview of the main trends of the next industrial revolution, to demonstrate the gravity and expected impact of the coming transformation. We also present the most important socioeconomic implications of the fourth industrial revolution, with special emphasis on megatrends directly influencing China. We move on to inspecting China's current economic situation and give a short explanation of some of the underlying conditions of the recent economic slowdown, with special emphasis on the declining contribution of multifactor productivity to GDP growth.

Once we have established that – in order to ensure a positive grow path for China – there is a need to enhance productivity via innovation, we progress by inspecting the different sectors of the Chinese economy and evaluating their success in leveraging innovation. We find that many Chinese players in consumer-focused, efficiency-driven innovation-based industries are already world leaders in their respective sectors, while in industries founded on engineering and science-based innovation, the picture is rather mixed. We further our investigation by exploring possible reasons for the lower levels of competitiveness of Chinese companies operating in science and engineering-based industries and by assessing whether China's efforts in research and development (R&D) are up to global standards. We conclude that China is already one of the world's leading powers in terms of R&D expenditure and related institutional support, and if the country can keep following the same path of development, supporting innovation and tackling challenges in the regulatory processes, intellectual property protection and human resource development, the emergence of Chinese firms as world leaders in sectors driven by science and engineering-based innovation is only a matter of time, and its velocity is mostly dependant on the societal uptake of a culture of innovation, provided that there are no major systemic crisis radically affecting the current economic development of the country.

2. What is the next or fourth industrial revolution?

The term 'fourth industrial revolution' became widely known at the Hannover Fair in 2011 (*Eckart 2016*) referring to the *Industry 4.0* or *Industrie 4.0* strategic initiative of the German government as part of the country's *High-Tech Strategy 2020*, to establish itself as an integrated industry leader and market provider. The *Industry 4.0* programme put forward a plan to redesign manufacturing and production

processes, which would move from a centralised to a decentralised model, where ICT-based systems and networks could independently exchange information (M2M)[1] to more efficiently manage production processes[2]. As communicated by the European Commission (EC), the term *Fourth Industrial Revolution* refers to technologies and concepts of value chain organisation, as the EC is setting a path to digitise European industry. As stated by the Commissioner for Digital Economy and Society, Guenther Oettinger: "*Digital is transforming European industry. It's changing the way we produce cars or chemicals, and how banks deliver financial services. Our challenge is to turn the Fourth Industrial revolution to our advantage, to reap opportunities it brings,*" (*EC 2016*).

In a broader context, the Industry 4.0 programme also has implications for the competitiveness of the economy and nations at large, as it is based on the goal of maintaining technological leadership in industrial production and R&D (*Eckart 2016*). This broader understanding of Industry 4.0 or the Fourth Industrial Revolution brings us closer to the theme of wide socioeconomic transformation engendered by the digital age, a topic which many world leaders, politicians and industry experts have been referring to in recent years.

Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, argues that "*We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society,"* (*Schwab 2016*).

The notion of a paradigm shift has also been put forward by economist Jeremy Rifkin, the bestselling author of several books on the impact of scientific and technological changes and lecturer at the University of Pennsylvania. In his most recent book (*Rifkin 2015*), he goes as far as anticipating the emergence of a new economic model "*in the twilight of the capitalist era",* that is *"better suited to organize a society in which more and more goods and services are nearly free*" (*Rifkin 2015:11*). As the title of his book "Zero Marginal Cost Society" suggests, he predicts that due to the advances in technology and the *internet of things (IOT)*, or the *internet of all things*, the communications, transportation and energy industries will change to an extent that will most likely bring down the marginal cost of production to a near zero level in the not-too-far future and trigger a paradigm

[1] Maschine-zu-Maschine or Machine-to-Machine.
[2] Kagermann, H. – Wolf-Dieter, L. (2011): Industrie 4.0: Mit dem Internet der Dinge auf dem Weg zur 4. industriellen Revolution, VDI Nachrichten. http://www.vdi-nachrichten.com/Technik-Gesellschaft/Industrie-40-Mit-Internet-Dinge-Weg-4-industriellen-Revolution. Downloaded: 14 August 2016.

shift in our existing socioeconomic models (*Rifkin 2015:18*). The question remains as to which technological advances have the power to change the processes of manufacturing and production with such magnitude that it would have a deep, systemic impact on the economy and society at large.

The term Industrial Revolution was introduced by French economist and political activist Auguste Blanqui in 1837 (*O'Brien et al. 1993*), to highlight some parallels between the economic and social changes arising from the transition to industries with power-driven machinery in the late 18th and early 19th century Britain, and the sudden redistribution of political power in contemporary France. As in France the transition of the political system has been named a "revolution", the changes in Britain, that could be seen as equally fundamental, created an *industrial revolution* (ibid.). The term became widely publicised with the book by British economic historian, Arnold Toynbee, first published in 1884, entitled "The industrial Revolution" (*Toynbee 1884*). Toynbee, however, focused more on the changes in the control of production and the distribution of wealth, rather than the revolutionary nature of the transition itself (ibid.). As John Komlos, Emeritus at the Chair of Economic History at the Ludwig-Maximilians University of Munich, pointed out, the apparent contradiction between the evolutionary nature of economic development and the discontinuity in the growth rate of output per capita during the industrial revolution can be resolved by viewing the industrial revolution not as a structural break, but as an integral part of the economic experience of the previous millennia (*Komlos 1989*).

From the creation of the first mechanical loom in 1784, we can distinguish four waves of industrial revolution. The first industrial revolution at the end of the 18th century was characterised by the use of water and steam power to industrialise mechanical production, the second industrial revolution at the beginning of the 20th century combined the use of electric energy and new production methods, such as the introduction of the conveyor belt to support mass production, while the third industrial revolution automated production through the use of digital technologies and computing power (*Bloem et al. 2014*).

Whether the current transformation can be considered the fourth industrial revolution or simply an acceleration of third industrial revolution and the digital conversion started in the 1960s is still up to debate. Walt Whitman Rostow, American economist and political theorist, was already talking about the concept of the fourth industrial revolution, in the 1980s. In his view, the fourth industrial revolution is characterised by industries based on revolutionary technologies that

are just moving from invention to innovation and that share the following four traits[3]:

- They are so encompassing that no one country can dominate them completely.
- They are linked to the areas of the basic sciences that also are undergoing revolutionary changes.
- They are immediately transferable to rapidly industrialising nations.
- They are key to leapfrogging for basic industries.

Klaus Schwab, in his recent book, the *Fourth Industrial Revolution* (*Schwab 2016:3*), argues that indeed we are witnessing a revolution, which "*entails nothing less than a transformation of humankind*" (*Schwab 2016:1*). Schwab bases his assumption on the velocity, breadth and depth and systems impact of the changes, that derive from the combination and interplay of different megatrends (*Schwab 2016:3*). He identifies the drivers of technological change based on three such megatrends: physical, digital and biological (*Schwab 2016:14–21*). The physical manifestations of the technological changes are primarily linked to the debut of autonomous vehicles, 3D printing (additive customised manufacturing), advanced robotics and the use of new materials, such as self-healing and self-cleaning smart-materials, metals with memory or ceramics that convert pressure into energy.

The collection of data using sensors, cloud computing, big data analytics and the application of artificial intelligence and machine learning links the physical side of technological advancements to the digital, making the Internet of Things transformative across all industries. The digital manifestation of the fourth industrial revolution is also the basis for technology-enabled platforms which connect individuals and institutions in new ways, such as blockchain (a digitally distributed ledger mostly known from Bitcoin) and the platforms of the on-demand or sharing economy, such as AirBnb or Uber (ibid.).

The societal effects of these technologies are apparent. As Tom Goodwin wrote in his famous TechCrunch article in 2015: "*Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate. Something interesting is happening,*" (*Goodwin 2015*). More than just "interesting", the biological megatrends of the fourth industrial revolution are turning into reality innovations that would have seemed plausible only in the realm of science fiction only a couple of decades ago: cheap genetic sequencing and synthetic biology will revolutionise not only the

[3] Rostow, W. W.: The Fourth Industrial Revolution and American Society: Some reflection on the Past for the Future. In: Furino, A. (Ed.): Cooperation and Competition in the Global Economy: Issues and Strategies, Cambridge, Mass.: Ballinger, 1988, pp. 172–181. (*Kozmetsky et al. 2004*)

healthcare and life sciences industry but also agriculture and the production of biofuels (*Schwab 2016:14–21*).

3. Socioeconomic implications of the fourth industrial revolution

The implications of the next industrial revolution for businesses, governments, media, civil society organisations and the people themselves are just as wide-ranging and complex as the breadth and depth and systemic nature of the underlying megatrends. The implications range from practical to ethical considerations, monetary to societal consequences. The fourth industrial revolution could improve the lives of billions of people around the world, but at the same time generate some grave challenges and risks, that must be mitigated in order to ensure inclusive growth.

One of the most apparent effects of the next industrial revolution will be the profound impact of disruptive changes on business models and the employment landscape (*WEF 2016*). We have already experienced major dislocations in labour markets over past decades with production and workplaces shifting to low-cost manufacturing locations in developing countries from more advanced economies[4]. Nowadays, as production is becoming more and more automated through the use of intelligent machines, the advantage related to low-cost human labour supply is declining. This means that a share of jobs is becoming obsolete or is increasingly re-shored to its original location, causing a shift that has a negative effect on labour-intensive-production based economies. As is the case for China as well, the comparative advantage from cheap labour based manufacturing will not serve sustainable development, and moving up the value-chain will become necessary to maintain long-term competitiveness.

According to the "Future of Jobs Report" (*WEF 2016*) of the World Economic Forum, the labour market transformation is expected to result in heightened productivity levels and widening skills gaps, displacing jobs to a considerably larger extent than creating new ones. About two thirds of disrupted job families will be in routine white collar office functions, which raises the need for governments, businesses and individuals to anticipate changes and prepare for the skills requirements of the future. By one estimation, 65 per cent of children entering primary school today will ultimately end up working in completely new job types that don't yet exist (ibid.), which underpins the importance of education systems embracing technological advancements to effectively contribute to social development.

[4] Wladawsky-Berger, I. (2016): Preparing for the Fourth Industrial Revolution. The Wall Street Journal Online. Februar 26. http://blogs.wsj.com/cio/2016/02/26/preparing-for-the-fourth-industrial-revolution. Downloaded: 15 August 2016.

One often cited example regarding the returns to scale and labour intensity of production compares Detroit of 1990 with Silicon Valley of 2014 (*Schwab 2016:10*). About two decades ago, the three biggest companies in Detroit, a traditional industrial centre, had a total market capitalisation of USD 36 billion, revenues of USD 250 billion and 1.2 million workers. In 2014, the three biggest companies in Silicon Valley had a market capitalisation of USD 1.09 trillion, generated roughly the same revenues (USD 247 billion), but with about one tenth of the number of employees (around 137,000).

The changing patterns of manufacturing, as discussed above, will disrupt the labour market, but will subsequently also open up previously unknown opportunities for companies to foster efficiencies and improve product and service offering, which is expected to boost consumption in a more sustainable manner. Companies will be able to enrich customer experience through digital technologies, enhance products via the use of sensors, data analytics and connectivity, bring more collaborative innovations, involve start-ups and research institutes in their design process and invent organisational forms which can better serve and suit a knowledge-based society (*WEF 2016*).

Sustainability is a key theme of the next industrial revolution, since the improvement of energy efficiencies and increasing reliance on green technologies and renewables in production may not only deliver a productivity boost to nations that are heavily reliant on the consumption of fossil fuels, such as China, but may also enhance global resource security and mitigate risks related to climate change. Of course, the creation of a green infrastructure requires high levels of initial investment from governments and companies, but can yield significant returns in terms of direct and also indirect effects.

At a broader level, the fourth industrial revolution and the embeddedness of the internet in all aspects of our lives will most probably enhance and accelerate existing socioeconomic trends, such as the growing level of inequality (*OECD 2011*). More than one half of the world's population has no internet access and almost twenty per cent of the world's population lack access to electricity (Schwab 2016:8). If the diffusion of innovation is not governed adequately, the "digital divide" will continue to widen between nations, communities and individuals, resulting in uneven trajectories of development, especially in countries that already experience significant regional divides, such as China. As stated in an OECD report (*OECD 2007a*), much of the rise in living standards is due to innovation since the First Industrial Revolution, and innovative performance is central to competitiveness and national progress. It still holds true today, maybe more than ever, that the extent to which society can embrace technological innovation will be a major determinant of future progress (*Schwab 2016:8*).

Finally, there are a number of other implications of the fourth industrial revolution, such as the shifting relative power between governments and citizens, questions involving the protection of privacy and information security or the ethical use of artificial intelligence and biological engineering just to mention a few, which are equally significant and would be worthy of investigation, which however cannot form part of this paper, as its primary scope is limited to factors related to sustainable economic development and competitiveness.

4. China at a crossroads

China is entering the turbulent times of this coming industrial revolution after experiencing a long and unparalleled period of economic development in the last thirty years. Since the start of the *Reform & Opening up* programme introduced by the Communist Party in 1978, the country has posted an average yearly GDP growth rate of close ten per cent until recent years, raising the per capita GDP more than 50-fold, from USD 155 in 1978 to USD 7,920 in 2015, lifting 800 million people out of poverty and accounting for more than three quarters of global poverty reduction between 1990 and 2005 (*Eckart 2016*). It is however worth mentioning that this development has been driven mainly by the eastern coastal regions, creating an imbalance with the rural inlands of the country.

As often referred to, the last couple of years have seen a slowing down of the Chinese economic growth, with a declining year-on-year GDP growth rate since 2010, totalling 7.3 per cent in 2014 and 6.9 per cent in 2015 respectively, according to the statistics of the World Bank[5]. Although these numbers are still well above the world average for annual GDP growth (2.6 per cent in 2014 and 2.5 per cent in 2015), they do show a declining trend which may be related to both external factors, as well as to internal structural problems. There has been a decline in the construction industry and manufacturing output, two of the most important drivers of the Chinese economy, but it has been suggested that the contribution of total factor productivity to growth, which has been on the rise since 1978, has become difficult to sustain in recent years (*Xu 2011*). The contribution of multifactor productivity to GDP growth has fallen from nearly 50 per cent between 1990 to 2000, to about 30 per cent in the past five years (*MGI 2015*), hindering GDP growth.

As described by the Solow-model of economic development, the three main drivers of long-term economic growth are population growth or labour, capital accumulation and increases in productivity (*Uppenberg 2009*). Mainly due to China's birth control campaigns and the introduction of the one-child policy, the country's population growth has slowed down notably since the 1970s, gradually affecting

[5] http://data.worldbank.org/.

the size of the labour force, which can no longer drive economic growth. More pressingly, high levels of gross capital formation as a percentage of GDP (almost around 50 per cent) may not be sustainable with the level of total debt having quadrupled from USD 7 trillion in 2007 to USD 28 trillion in 2014, thus amounting to more than 280 per cent of the country's GDP as of today (*Dobbs et al. 2015*). Finally, as China is catching up in technology with the world leaders, it is approaching the innovation frontier, where productivity cannot be further increased by relying exclusively on FDI and technology transfers, and there is a need to generate domestic innovation. There is an imperative to move from an investment-led model to a productivity-based one, to further drive development (*Eckart 2016*).

According to one estimate (*MGI 2015*), in order for China to reach its average annual GDP growth target of 5.5 to 6.5 per cent for the next 5 years, multifactor productivity growth will need to contribute as much as 35 to 50 per cent of total GDP growth, or two to three percentage points per year. Therefore, without labour force expansion and investments to fuel growth, China will have to rely heavily on its innovative capacity to improve productivity. A study led by Jonathan Woetzel (*MGI 2016*), a partner at McKinsey & Co. China, published in June 2016, advocates the case for China to transition to an economic model centred around growth grounded in productivity, to regain economic dynamism and potentially deliver an additional USD 5.6 trillion of GDP expansion by 2030.

According to the study's findings, by seizing five major opportunities to boost productivity, the country could combat slowing growth, deteriorating capital productivity and falling corporate returns, and thus achieve sustained economic progress. The authors of the study warn that delaying the restructuring of the Chinese economy could become expensive, as the ratio of non-performing loans could reach 15 per cent in 2019, from today's official figure of 1.7 per cent. According to their calculations, every year following the current path of development could increase the costs of dealing with bad debts by USD 300 billion to USD 450 billion, potentially causing a substantial slowdown, if not a systemic banking crisis, that could obstruct economic progress.

The five major opportunities for China to move toward a productivity-based economic growth model identified in the study (ibid.) are the following: increasing consumption by better serving middle-class consumers; enabling new business processes through digitisation; moving up the value chain through innovation, especially in R&D-intensive sectors; improving business operations through lean techniques and higher energy efficiency; strengthening competitiveness by deepening global connections, potentially raising productivity.

At least three opportunities of the five identified above are directly related to China's capability to innovate, such as the digitisation of business processes, moving-up the

value chain, or increasing efficiency through lean techniques. The remaining two – better serving middle-class consumers and strengthening global competitiveness – also have important indirect connections to improving productivity by deploying knowledge and using new technologies.

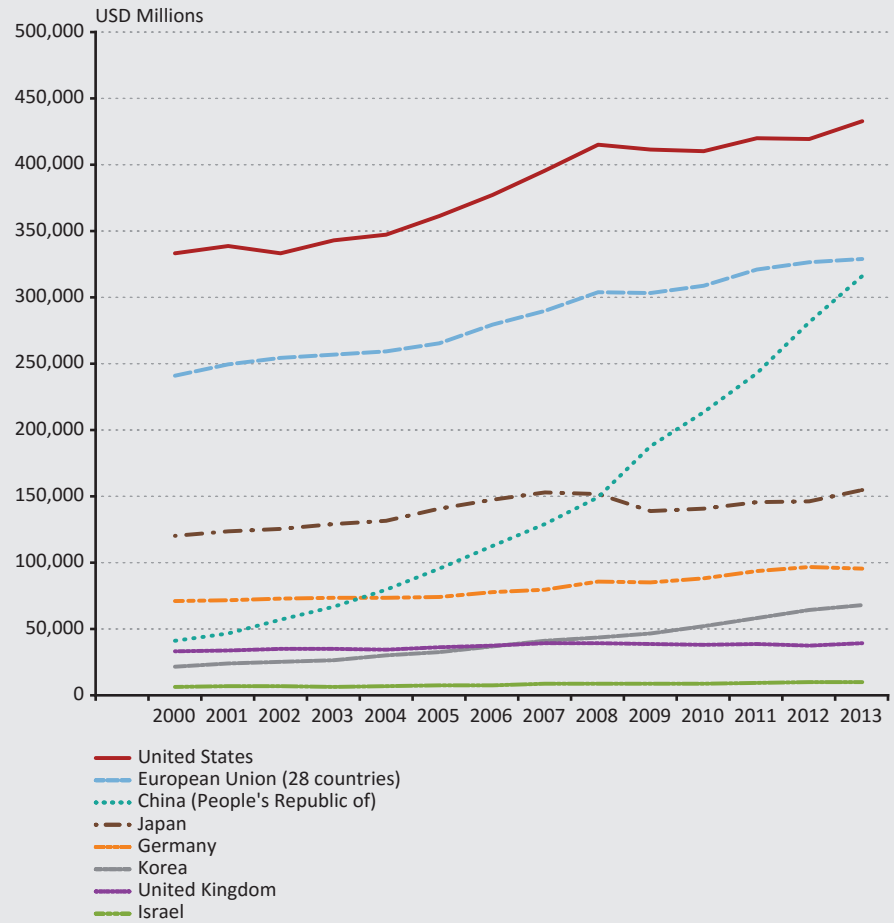
5. The innovative capacity of the Chinese economy

The capability to innovate and to successfully market innovations will be a critical determinant of the competitiveness of nations for the coming decades, as stated by an OECD report (*OECD 2007a*) as well. According to the study, there is a growing awareness among policymakers regarding the impact of innovative activities on long-term economic progress and prosperity. Since advances in new technologies enabled new forms of competition and opened up new markets for the creation and delivery of innovative products, there has been a broad increase in R&D efforts in a number of economies, outside the OECD area as well, and a universal realisation that co-ordinated, coherent, "whole-of-government" approach is required to ensure the central role of innovation in the economy. These trends indicated by the OECD very much coincide with China's ambitions and policies to boost the innovativeness of the economy, but the question remains as to what extent quantifiable indicators of supporting innovation via policies and investments actually translate into measurable impact and tangible results.

China is already a world leader in the promotion of innovation based on numbers. The country has a yearly expenditure of more than USD 300 billion on research, slowly but steadily catching-up behind the United States. It turns out almost 30,000 PhDs in science and engineering per year and leads the world in patent applications with almost a million patents filed in 2014 (*WIPO 2015*). However, Chinese companies commercialising innovations and competing in global markets do not always reflect the potential for success implied by the levels investment and the promotion of R&D in the country.

A 2008 study (*Altenburg et al. 2008*) analysing China's and India's transition from production-based to innovation-based economies sheds light on some of the major difficulties involved in assessing the innovative capabilities of the two countries. The authors claim that indicators of innovative capabilities tend to focus on the input side, and therefore it becomes increasingly difficult to assess whether the gap between effort and achievement is due to the normal maturation time for innovations, or whether it should be explained by inefficiencies in the emerging innovation system. In an attempt to come to an overall judgement, the authors concluded that separate analysis of specific industrial sectors is needed in order to evaluate innovation performance, since analysis based on overall indicators yields poor results (ibid.).

Figure 1
Gross domestic expenditure on R&D
(USD million)



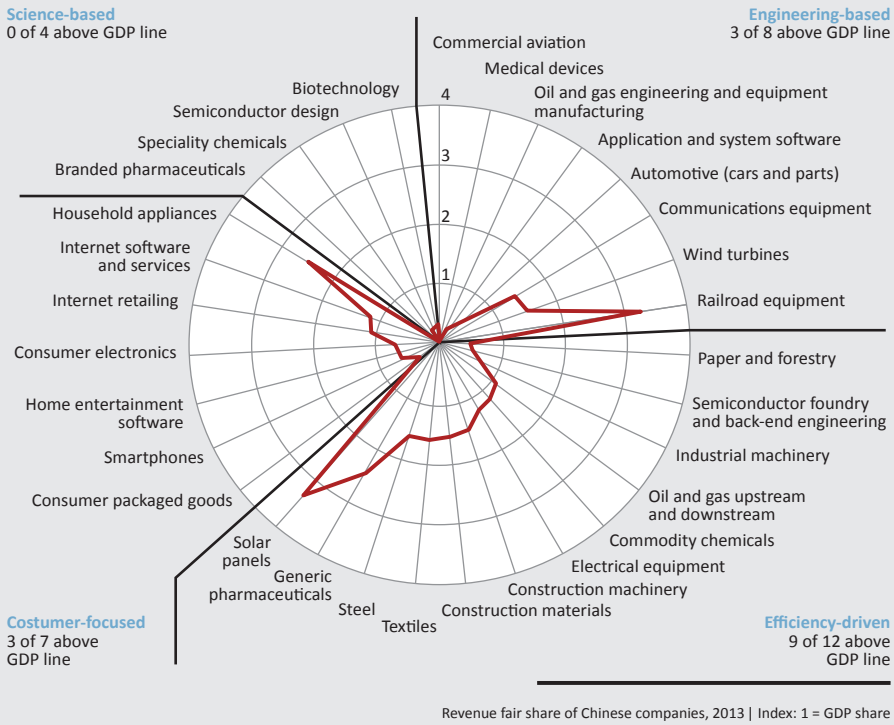
Source: OECD.

In assessing the innovative capabilities of the electronics industry in China, the authors found that China's success in building the world's biggest electronics production hub for global markets is strongly associated with foreign direct investment (FDI), as showcased by the examples of Huawei Technologies, Lenovo, and the Haier Group. Regarding the automotive industry, the other industrial sector investigated in the study, they concluded that although domestic innovation still lags behind that of leading nations, the path of development has been remarkable, as China became the fourth largest producer in the automobile industry worldwide, from having no relevant production capacities only twenty years ago. They also

suggest that, with national programmes targeting cutting-edge innovations in fields such as the development of hybrid cars and hydrogen fuel cells, global leaders might increasingly shift their automotive engineering R&D activities to China as an off-shore destination. By examining the industry-specific examples both in China and India, the authors concluded that in all cases reviewed, the two countries have managed to significantly narrow the technological gap, and even though they have not yet seriously challenged global technological leaders, the prospects for catching up remain firm, as long as they manage to mitigate certain economic and political risks (ibid.).

A study conducted last year by the McKinsey Global Institute (MGI) followed a very similar logic in assessing the innovativeness of China's economy. To evaluate innovation performance, the authors developed a framework which analyses industries by their "innovation archetype", rather than using national level metrics, in order to obtain a better understanding on the role and level of innovation by sectors. The four archetypes of industry innovation identified in the study are: *customer-focused, efficiency-driven, engineering-based, and science-based*. To

Figure 2
Ratio of China's share in the global revenue pool to its share of global GDP



Source: MGI 2015, pp. 5.

measure China's success in each of these dimensions, the authors compared the revenue of Chinese players in certain industries in relation to their expected share of global sales, based on China's share of Global GDP (*MGI 2015*).

As revealed by the share of Chinese companies in the global revenue pool, China has become a leading innovator mostly in industries which grew on the basis of serving domestic demand, while in the more challenging types of innovation, such as branded pharmaceuticals, biotechnology or the automotive industry China has yet to become globally competitive. The authors used a multifactor productivity approach in the analysis, inspecting growth that derives from factors of production excluding labour and capital investment, to establish a proxy that would signal the macroeconomic impact of innovation defined broadly, including productivity gains both from pushing the innovation frontier and from knowledge transfers or technological catch-up.

Looking at the overall results of the analysis, it becomes clear that Chinese companies are more successful in archetype industries in which they were able to take advantage of certain characteristics unique to the Chinese economy, such as the size of the customer basis, the extensive manufacturing ecosystem or favourable local government regulations, which helped accelerate innovation by creating local demand. As seen in the figure, Chinese companies are doing particularly well globally in industries based on *customer-focused innovation*, where they have captured more than their expected share of global sales as compared to China's share of global GDP, in three out of seven sectors analysed.

The Chinese experience in customer-focused innovation originates primarily from the appliance manufacturing sector, where Chinese companies started serving the growing consuming middle class of the rapidly urbanising nation, offering white goods at a comparable quality level but considerable price discount compared to global competitors. Continuously meeting consumer expectations has led to the emergence of companies such as Xiaomi, smartphone and electronics producer, following a ?cheaper but better? strategy vis-à-vis global competition (*MGI 2015*). Tapping into the massive consumer base poorly served by the traditional Chinese retail, services and media sector also made it possible for companies such as Tencent, Alibaba, Baidu or NetEase to grow from the grassroots and become some of the world's largest internet companies by market capitalisation[6].

The Internet Plus action plan announced by Premier Li Keqiang in March 2015, at the 12th National People's Congress (*The State Council of The People's Republic of China 2015*), is aimed at further promoting the application of internet technologies

[6] Market capitalization of the biggest internet companies worldwide as of May 2016 (in billion U.S. dollars). http://www.statista.com/statistics/277483/market-value-of-the-largest-internet-companies-worldwide/. Downloaded: 4 September 2016.

in conventional industries, nurturing business development by improving broadband access and e-commerce in rural areas. Overall, high customer expectations and domestic competition in consumer-focused innovation-based industries in China are likely to continue pushing Chinese companies to compete more fiercely at home and to further expand also internationally, utilising their acquired knowledge in the global arena, particularly in emerging markets.

As for *efficiency-driven industries*, the sheer size of the Chinese workforce and the modern supply-chain infrastructure concentrated in industrial zones specialised in flexible manufacturing and mass production provides an unrivalled environment for process innovation. The China effect on global innovation report (*MGI 2015*) finds that, in efficiency-driven industries China achieved more than its GDP-based share of global revenues in 9 out of 12 sectors analysed. The role of government policy interventions is accentuated in some of the sectors analysed, where intentionally boosted local demand has driven supply and subsequently also efficiencies in production. This is the case for the production of solar panels, where China has become such a strong player over the years that it captured more than half of the revenues globally.

With growing competition from South-East Asian nations as off-shoring destinations for cheap-production, China is now projecting the move to the next-generation manufacturing model, by upgrading its existing ecosystem. The *Made in China 2025* initiative, drafted by the Ministry of Industry and Information Technology (MIIT) over two and a half years, with input from 150 experts from the China Academy of Engineering (*Kennedy 2015*), is aimed at comprehensively upgrading Chinese industry, also by fostering collaboration with the German government's 'Industry 4.0' programme (*Yang 2016*). The *Made in China 2025* programme focuses on the transformation of Chinese manufacturing, based on innovation-driven, "quality over quantity" and green technologies production. The goals put forward by the programme include raising the domestic content of core components and materials to 40 per cent by 2020 and 70 per cent by 2025, and supporting the creation of manufacturing innovation centres (15 centres by 2020 and 40 by 2025) (*Kennedy 2015*). The core of the plan is built around developing cutting-edge technologies, accumulating intellectual property and leveraging access to the Chinese market in exchange for foreign technologies (ibid.). Aside from the far reaching technological goals, it also promotes the development of traditional industries and a modern services sector, letting market mechanisms play a more prominent role in its deployment. If China is able to execute its plan to upgrade its manufacturing capacities in a digital ecosystem, serving global customers with a massive supplier base, rapid and flexible manufacturing and modern logistics, it could become the virtual manufacturing powerhouse for companies and even individual consumers

around the world, by some estimates expanding its GDP growth potential in manufacturing by 10 to 20 per cent through to 2025 (*MGI 2015*).

While China is already a world leader in several industries based on *consumer-focused* and *efficiency-driven innovation*, so far the country has achieved mixed results in *engineering*- and *science-based innovation* (*MGI 2015*). While China has realised a superior share of global revenues related to its share of the global GDP in businesses such as railroad equipment, wind power and telecommunications (also largely influenced by favourable government policies), in other sectors, such as commercial aviation or the automotive industry, it has not yet benefited from the knowledge transfer in production to the extent to be able to develop globally competitive products and services. In the science-based archetype industries analysed in the report (such as branded pharmaceuticals, biotechnology, semiconductor design and specialty chemicals), the picture is even more consistent, with the total global revenue shares of Chinese companies operating in these sectors ranging only around 1 to 3 per cent (ibid.).

6. Is China ready to create breakthrough innovation?

China's commitment to move to the forefront of global innovation is even more apparent now, as President Xi Jinping has highlighted science-based innovation in the government's 13th Five-Year Plan (*NPCC 2016*), as one of the core points on the national agenda. However, the promotion of science and technology is not a recent direction in Chinese economic development policy. As described by Steve Blank, consultant and guest lecturer on entrepreneurship at U.C. Berkeley and Stanford University, China already started its series of science and technology programmes in five areas (support of basic research, high technology R&D, technology innovation and commercialisation, construction of scientific research infrastructure, and development of human resources in science and technology) in the 1980s. In parallel with the initiative, for the last 25 years, expenditure on R&D as percentage of GDP has almost quadrupled, reaching more than 2 per cent in 2013, according to OECD statistics.

The history of the Chinese National Innovation System is characterised by a tendency of gradual alterations from a largely state-regulated model, to a hybrid, relatively market oriented one. The State Science and Technology Leading Group (STLG) was established in 1981, as the highest body for the direction of the science and technology system in China, as per the modernisation initiative of Deng Xiaoping. By forming a supra-ministerial body, the leadership wished to bring scientific development under the Premier's direct control, where policy would be set at the highest level possible, coordinating between ministries and provinces. The group was later reorganised, under the name State Leading Group of Science and

Technology (SLGST), with Premier Li Peng as its head, building "socialist science and technology" with Chinese characteristics (*Dolla 2015*).

Parallel to the STLG and SLGST, the State Science and Technology Commission (SSTC) was re-established in 1977, after the shut-down during the Cultural Revolution, with the aim of securing a separate (although coordinated) status for scientific research and technological development in the central economic planning. The STC managed the operational network, implementing policy and monitoring activities and resources, at the national and provincial levels. The STC later on transformed into the Ministry of Science and Technology (MOST), the leading organ of Chinese science and technology institutions operating today (ibid.).

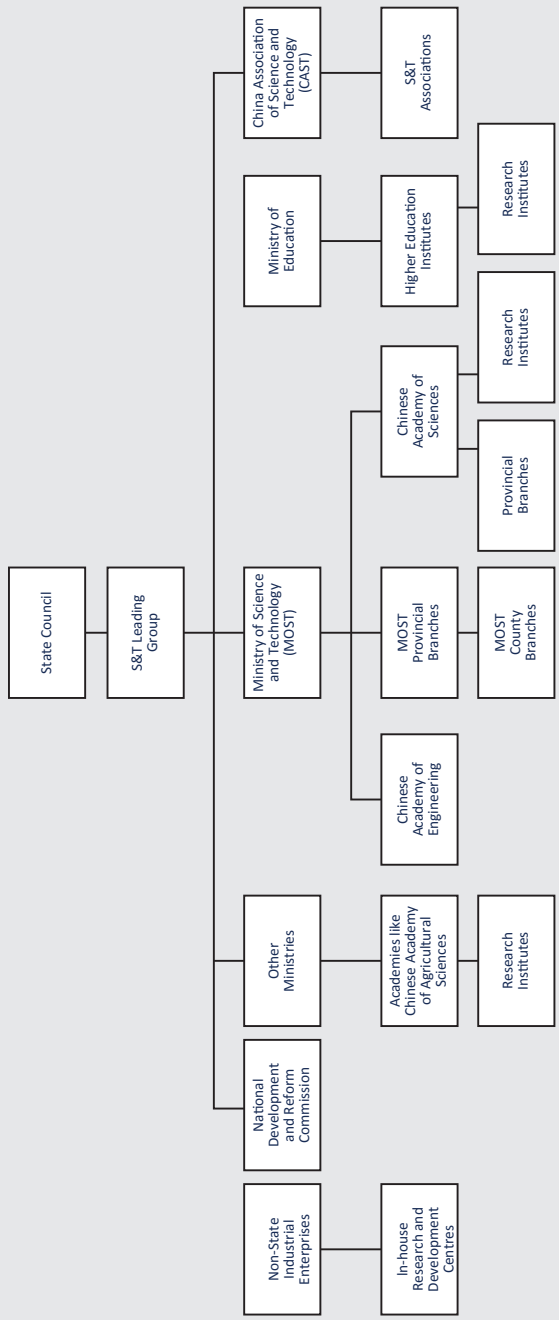
Within the network of organisations, it is worth mentioning two significant entities in the Chinese science and technology landscape: the Chinese Academy of Sciences (CAS), operating research institutes throughout the country, and the China Association of Science and Technology (CAST), a professional association involved mainly in consultation, bringing together scientists and administrators, as an umbrella organisation at the national, provincial prefectural and municipal levels. As for the state funding of research activities, the National Natural Science Foundation (NSFC) is the largest agency for the support of basic and application-oriented research in natural sciences (ibid.).

Along with the transformation of some of the entities in the Chinese National Innovation System, the entire institutional framework has undergone fundamental changes over the last 25 years. The business sector has become the leader in R&D performance, from having a share of less than 40 per cent at the beginning of the 1990s. The share of public research institutes in R&D has declined by almost one half, while the stake of higher-education institutions remained mostly even. Enhancing the innovation capability of the business sector has been a deliberate and challenging undertaking, involving the "mechanical" conversion of public research institutes into business entities (*OECD 2007b*).

Although state influence remains strong, the overall Chinese science and technology landscape today displays a hybrid system, in which government, business enterprises and academia coexist not too differently than they do in other parts of the world. If we look at the sources of R&D funding by sector, based on the data of the UNESCO Institute for Statistics[7], we find that ten years ago about 70 per cent of funding originated from business enterprises, 20 per cent from the government and 10 per cent from universities. Today this ratio is around 75 per cent, 15 per cent and 10 per cent respectively, showing a similar pattern to Western countries and underlining the growing market orientation of R&D activities.

[7] http://data.uis.unesco.org/.

Figure 3
Organisational structure of the Science and Technology system in China



Source: Dolla 2015, pp. 170.

It is now widely accepted that universities and public research institutes have played a pivotal role in the development of many high-tech regions in the world (*Gregersen et al. 2000*), and contributed to the advancement of technological capabilities. It is worth mentioning that most R&D-intensive firms in China have usually emerged from the public research sector, such as Legend, the predecessor of Lenovo, which was established in an institute of the CAS. Today these innovative firms are investing in R&D abroad and are facilitating the technological catch-up process, by channelling knowledge back to China (*OECD 2007b*).

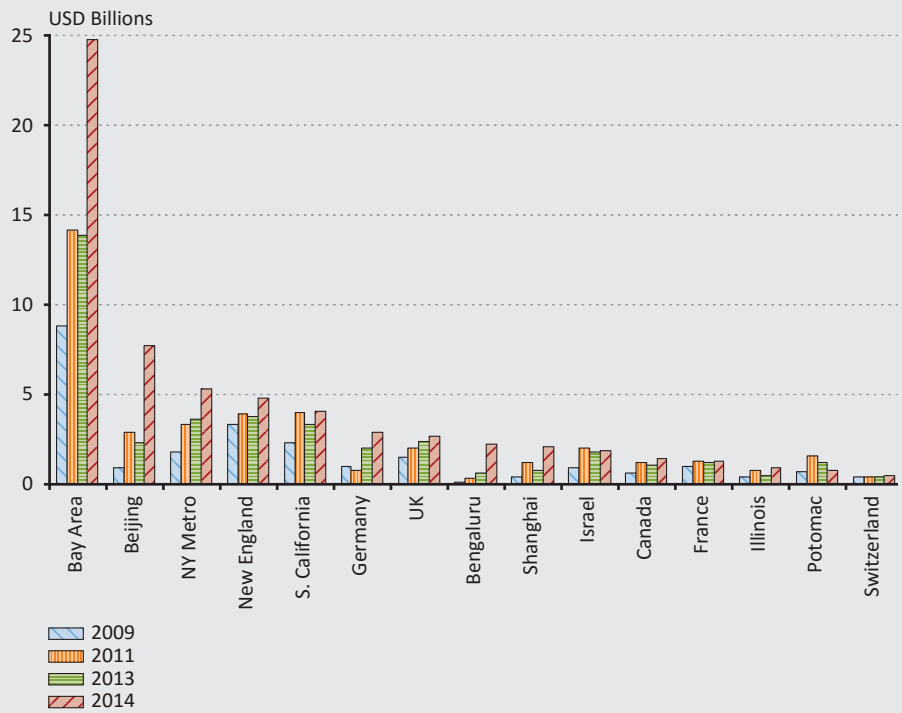
Perhaps one of the most interesting areas in Chinese science and innovation policy is the structured support for small technology-based firms. The majority of these centrally planned science and technology support programmes have been driven by the by Ministry of Science and Technology (MOST) and the National Natural Science Foundation (NSFC). One prime example is the Torch Programme, arguably one of the most successful entrepreneurial programmes in the world, which is managed relatively independently from central planning (*Blank 2013*). The Torch Programme has four pillars: Innovation Clusters, Technology Business Incubators (TBIs), Seed Funding (Innofund) and Venture Guiding Fund, providing a comprehensive support ecosystem for high-tech companies and start-ups, in order to help them develop and bring innovations to the market (ibid.).

As seen also through the Torch Programme, the Chinese state has made substantial investment in the development of science parks and incubators. While many small technology-based firms remain dependent on public support from some level of government, or as tenants of science and technology parks, we can also witness the emergence of purely market-based innovative networks of small firms in some regions such as Zhejiang, Jiangsu and Guangdong, creating a cluster effect (*OECD 2007b*). As reported by the National Bureau of Statistics of China (NBSC) in 2013, the regional cluster effect is highlighted, as the R&D expenditure of industrial enterprises in the top three regions (Jiangsu, Guangdong and Shandong) accounted for more than 40 per cent of the total (*NBSC 2014*).

As Michael Porter described in his epoch-marking article, “Clusters and the New Economics of Competition” (*Porter 1998*), the economic map of the world is dominated by clusters, “critical masses- in one place- of unusual competitive success in particular fields”, that “affect competitiveness within countries as well as across national borders”. The impact of clusters on competitiveness derives from the fact that, clusters are characterised by their capability to generate breakthrough innovations that can create new industrial domains and redesign value chains (*Ferrary et al. 2009*). Therefore, clusters can be crucial components in the creation and dissemination of innovation in the economy.

As stated by researchers at Stanford University (*Ferrary et al. 2009*), the competitive advantage of an innovative cluster is based on its capability to nurture the founding of start-ups developing breakthrough technologies. Silicon Valley is the most famous innovation cluster in the world, home to the semiconductor, computer software, and related electronics industries (*Citi GPS 2016*), attracting the largest amount of venture capital (VC) investment, having reached almost USD 25 billion in 2014 (ibid.). What is not so widely known is that currently the second largest amount of VC investment goes to the city of Beijing, which has increased its VC investment share from USD 0.9 billion in 2009 to a remarkable USD 7.7 billion in 2014 (ibid.).

Figure 4
VC investment in different regions
(USD billion)



Source: Ernst&Young and Citi Research (Citi GPS 2016:8).

The role of venture capital in supporting smaller technology companies in China is important, since the largely state-owned banking system, mostly provides loans to bigger corporations, especially stated-owned enterprises (SOEs) (*OECD 2007b*). Therefore, the source of financing for small enterprises can either stem from government funds, through the previously mentioned programmes, or from private

investors. Further examining the role of venture capital in promoting innovation, researchers at Stanford University found that venture capitalists are a major (and underestimated) source of robustness of the innovation network. The authors applied complex network theory to analyse the innovative capability of the Silicon Valley, viewing the economy as a complex network, defining entrepreneurship and innovation as a result of interactions of numerous economic agents. According to their findings, VC-s contribute to the innovation system not only through financing and selecting start-ups, but also by enhancing collective learning, embedding social ties within the network and signalling levels of risk (*Ferrary et al. 2009*).

Similarly to the case of science and technology support programmes, VC investments have also come a long way in China: in the first wave of start-up funding in the 1990s, 85 per cent of start-up funds of new technology companies in Beijing originated from the research centre or university where they had been created. The second wave of technology investors were Chinese banks, mostly providing financing through the Torch Programme. Science and Technology Industrial Parks were the third source of support for new ventures, also through Torch Technology Business Incubators, licensed by the local governments (*Blank 2013*). Today, there are more than 1,000 Private Equity and Venture Capital firms operating in China, taking advantage of the introduction of the "Renminbi (RMB) funds", that can invest with fewer restrictions regarding industries, less regulatory oversight and better access to listing a portfolio company. RMB funds can be set up both via domestic funds (fully owned by Chinese investors) or foreign-invested funds (partially or fully owned by non-Chinese investors) (ibid.).

According to a report published by Ernst&Young on Chinese venture capital in 2015 (*Ernst&Young 2015*), the top five investors by number of deals carried out were mostly North American firms, completing almost 300 deals during the year. Beside private sector investors, as communicated by Bloomberg magazine, the Chinese government has decided to bolster innovation and reduce dependence on heavy industry by raising more than USD 200 billion in 2015 for government-backed venture funds, an amount unprecedented worldwide. The 780 funds nationwide that receive financing for investment from this amount should help promote the surge in entrepreneurship in the country, according to the government's plans (*Oster et al. 2016*). Although the efficiency and possible negative side effects of this initiative are yet to be experienced, the scale of investment shows a level of commitment from the government, that makes this experiment unique globally.

While the initiative is supposed to spur entrepreneurship throughout the country, the centre of the Chinese start-up ecosystem remains in Zhongguancun in the Haidian District of Beijing. This technological cluster is primarily focused on the Technology, Media and Telecommunications (TMT) segment, with about half of

the investment deals going into the internet businesses. The area brings together start-ups and global technology leaders as Nokia, Motorola, Sony Ericsson, Microsoft, IBM, Sun, Oracle or Google, and is located close to some of China's best universities such as the Peking University, Tsinghua University, the University of Science and Technology of Beijing and the Beijing Institute of Technology, creating ideal conditions for innovation to flourish (ibid.). Although there is no exact recipe for creating a truly innovative economy, all of the factors mentioned above, such as the solid institutional framework, attractive research systems, accessible financing and technical support to entrepreneurs and businesses, are some good proxies for describing the density and quality of relationships existing within the innovation system, and they can serve as a starting point to also examine missing competencies that could enhance the overall robustness of the system.

7. Factors delaying the global rise of the Chinese high-tech sector

With about one hundred National High-tech Industrial Zones (*MOST 2010*) and numerous technology specific clusters such as Donghu, Wuhan (optoelectronics), Zhangjiang, Shanghai (integrated circuits and pharmaceuticals), Tianjin (biotech and new energy), Shenzhen (telecommunications) and Zhongshan (medical devices and electronics) (*Blank 2013*) operating in the country with extensive R&D expenditure, accounting for 34 per cent of all corporate R&D expenditure in 2010 (*MOST 2010*), the question remains why China is seemingly lagging behind on engineering and science-based innovation-driven industries, despite all the efforts of both the government and the private sector to develop high-tech industries.

Some researchers (*MGI 2015*) argue that this kind of scientific work simply needs longer times to pay off, since high-tech industries such as pharmaceuticals often require periods of 10 to 20 years of development and testing before launching a product on the market, therefore it is only a matter of time before China's R&D efforts translate into globally competitive innovative output in terms of marketable products and increased revenue streams. Notwithstanding the previous observation, they also find that slow regulatory processes, questions about intellectual property protection and inefficient allocation of government research funds could also play a role as underlying factors, delaying success. Other studies have also identified the central challenges facing China as the strengthening of intellectual property rights protection, along with the construction of innovative cultures and incentive systems, and the development of human resources (*Xie et al. 2008*). Another possible explanation that has been proposed is that the Chinese market is so large that many domestic companies have little incentive to expand abroad, as certain local advantages are difficult to replicate elsewhere, together with the familiarity of the domestic environment (*McKinsey 2012*).

Some authors (*Altenburg et al. 2008*) make an opposing argument, suggesting that the combination of size and fast growth makes a difference in the case of China, and that it will most probably facilitate leapfrog development. According to their explanation, since capital accumulation is possible on a much larger scale, it enables the country to keep investing heavily in R&D, buy embodied technology even in the form of acquiring entire firms and hire leading international scientists and managers on an unprecedented scale. Furthermore, by leveraging its purchasing and political power, China can make deals that give access to its market only in return for access to technology, making it plausible for the country to leapfrog certain steps of the technological development process.

Aside from the time factor, another underlying reason could be that the application of advances in technology, entrepreneurship and innovative approaches – resulting in the creation and delivery of goods and services – is strongly related to the diffusion of knowledge and technology in society, which could be influenced by cultural factors. An OECD study (*OECD 1996*) that explores the network characteristic of the knowledge-based economy has recommended the substitution of the traditional linear model of innovation for a new model centred around the flows and relationships between industry, government and academia that better characterise the development of science and technology in society. Within this system, knowledge distribution power holds crucial importance, and R&D efforts are just the first indicators to map the diffusion of knowledge and innovation in the economy. In this view, investment in R&D is just as important as investment in education, in talent development and in developing managerial skills to successfully utilise innovation.

It has been observed, that the *social technologies* of innovation, embodied in norms and values, organisational forms, incentive systems and public policies, are harder to acquire than the physical ones (*Altenburg et al. 2008*). Studies have examined the role of culture in firms' propensity to innovate, and they found that autonomous, risk-taking, innovative, competitively aggressive and proactive entrepreneurs and firms depend strongly on their cultural foundation. In short, countries with specific cultural tendencies engender a strong orientation to entrepreneurship, hence experiencing more global competitiveness in the long run (*Lee et al. 2000*). Economic reforms and policies of opening up have reshaped the value system in China, but Chinese culture can be described as more collective and with higher uncertainty avoidance compared to Western countries (*Fan 2000*), which suggests that instilling a culture of risk taking and promoting cross-company collaboration could probably enhance Chinese firms' innovative capacity and overall competitiveness (*McKinsey 2012*). Related to social values, beliefs and norms, it is a common misconception that countries operating in a democratic political system, should by definition become more successful economically. In an analysis conducted

in 115 countries (*Fagerberg et al. 2007*), the authors found that the character of the political system is not closely correlated with levels of economic development; therefore, there is no evidence to conclude that the insufficient or deferred results of the innovation system of the Chinese economy can be directly related to the nature of the Chinese political system.

Instilling a culture of innovation is strongly related to the build-up of entrepreneurial capabilities and the development of professional and personal networks. It has been observed (*Altenburg et al. 2008*), that strong professional and personal networks that have developed between the new innovative regions in China and India and the old innovative regions in the United States, have helped the mobility of technically skilled entrepreneurs, engineers and scientists, mostly of Indian and Chinese origin. These professionals, with substantial research and work experience in the United States, applied their skills in their country of origin, creating an effect of "brain circulation" between China, India, Korea and Taiwan (ibid.).

The Chinese government has recognised the need to support the build-up of entrepreneurial capabilities and improve the diffusion of innovation by enhancing talent. The government recently launched the *National Medium- and Long-term Talent Development Plan* (*2010–2020*) and the *Thousand Talents Plan* (*Wang 2010*), both aimed at nurturing domestic talent, as well as recruiting talent from abroad, to supply the economy with "rencai", or educated and skilled individuals (ibid.). The development of domestic talent, the inflow of foreign talent, and the stream of "sea turtles", Chinese who have studied or worked abroad returning home (*Blank 2013*), is already slowly changing the Chinese talent pool and will most probably have a transformative effect on Chinese society and economy in terms of entrepreneurial spirit and creative thinking, which may be the missing piece in the puzzle to convert the last bits of R&D ambition into tangible results.

Finally, China's ambition to make its R&D activity "go global" is opening new horizons not only for the country itself, but also for the rest of the world, which is witnessing China emerge as a major source of global foreign investment in R&D operations. Chinese companies have been setting up laboratories and research centres around the globe at a record pace over the past few years, as reported by the Financial Times[8], and announced the opening of nine new overseas R&D centres in 2016 alone, with an estimated capital expenditure over USD 220 million. With research giants such as Huawei expanding their R&D operations abroad, China became the world's largest greenfield foreign direct investor, for the first time overtaking even the United States (*Dettoni 2016*). These efforts to increase innovation capabilities could aid Chinese development not only internally, but also externally, by making

[8] Dettoni, J. (2016): *Chinese R&D goes global*. Financial Times Online. https://www.ft.com/content/ded25056-6f64-11e6-9ac1-1055824ca907. Downloaded: 4 September 2016.

China attractive for multinational corporations as a destination for R&D and other knowledge-intensive services, creating a virtuous circle of technological catch-up (*Altenburg et al. 2008*).

8. Summary

Change is coming, whether we are prepared for it or not, and our ability to embrace this change will be the determinant of whether we will be able to prosper as individuals, communities or nations during the fourth industrial revolution. The new environment created by the coming industrial revolution will fundamentally change our ways of working and co-existing together, bringing along broad socioeconomic, geopolitical and demographic impacts.

China is confronting the arrival of this turbulent era, after passing through a phase of challenging transition, leaving behind three decades of remarkable economic and social development and entering a stage of weakening growth and increased uncertainty. As it is the case with all changes, the next industrial revolution will present challenges to tackle and opportunities to take advantage of, and it seems that China's capacity to diffuse innovation throughout its industry will be a key influencer for the country's path of future development.

Based on our analysis, China is already the world leader in various industry sectors based on consumer-focused and efficiency-driven innovation, while it is still to experience growing competitiveness in the engineering- and science-based sectors. After examining China's commitment to the promotion of R&D and the existing ecosystem that supports technological and innovative firms, we are confident that if the country can follow its current path of economic development, continuously supporting the diffusion of innovation in the economy and instilling a culture of innovation, China could become one of the winners, if not the winner of the next industrial revolution.

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The Road to a Market-Oriented Monetary Policy and the "New Normal" Monetary Policy Regime in China

Laura Komlóssy – Gyöngyi Körmendi – Sándor Ladányi

Over the past decades, China has implemented a series of economic reforms, as a result of which it progressed in successive stages from a centrally planned economy system to a market economy system. As part of this process, both the framework and the toolbox of monetary policy changed in line with the prevailing economic systems. Our paper describes this evolution from the emergence of the two-tier banking system onwards, with particular focus on the post-2008 reform process, which involved the establishment of the current framework operating within the "New Normal". This new framework copies a number of monetary policy elements commonly occurring in developed market economies, while it also has unique characteristics that reflect the specific features of the country. On the one hand, these bear the marks of earlier monetary policy regimes, while on the other hand, they may also be conceived of as means of adapting to new challenges: certain tools which previously were of a purely monetary policy nature have taken on a new meaning within China's new economic system as tools of macroprudential policy, a new area emerging in the aftermath of the crisis of 2007–2008.

Journal of Economic Literature (JEL) codes: E42, N15

Key words: monetary policy toolbox, macroprudential policy, China, "New Normal", People's Bank of China

1. Evolution of the monetary policy regime from the centrally planned economy to the economic crisis of 2007–2008

In the centrally planned economy, monetary policy was comprised of a credit plan and a cash plan. While the credit plan specified the amount of credit that individual enterprises needed to meet their production plans, the cash plan was used to quantify the amount of cash required to conduct transactions. Performance of the targets set in the cash plan, and cash payments themselves were controlled by the People's Bank of China (PBC). Since the prices of most products were set centrally,

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the effects of increasing money supply were felt in an intensifying shortage of goods and in forced savings rather than in prices (*Bléjer et al. 1991*).

In 1978, the Chinese leadership decided that it would reform the systemic errors of the centrally planned economy by relaxing the structure of the system through the gradual introduction of market elements. As the most pressing problem was that of supplying the population with food, the process began with the reform of agriculture. In the new system, a dual price system was applied: a portion of the products was purchased by the state, allowing the remaining part to be sold at market prices by the newly established family farms. To complement the reform of agriculture, in rural areas sole traders and small partnerships began their activity due to relaxation of former restrictions, facilitating both the development of small-scale industry and the optimisation of the number of agricultural employees. In the 1980s, the reform of state-owned enterprises also started, accompanied by the remodelling of the monetary framework.

With the reestablishment of specialised banks in 1984, the two-tier banking system was formally created, and from then on, the volume of credit required to meet the central plan was granted to state-owned enterprises through the intermediation of such institutions. As the most important monetary tool, the credit plan was complemented by credit ceilings set on a regional basis, subject to which – in addition to the planned loans – banks also lent to enterprises, with pressure from local government leadership playing a major role in the distribution of such additional lending. The introduction and adjustment of credit ceilings was an efficient instrument for monetary policy to influence the amount of credit disbursed, even on a regional basis. This tool, however, affected entities in the corporate sector differently, because in the event of tightening, small and privately-owned enterprises were crowded out of borrowing, while the impact of such measures was more modest on large state-owned enterprises (*Bléjer et al. 1991*).

In addition to the direct tool of credit ceilings, with the establishment of the two-tier banking system, indirect monetary policy tools also appeared such as the reserve requirement ratio, central bank credit, and deposit and lending rates. On the one hand, central bank credit enabled growth in bank lending, facilitating, on the liability side, the achievement of the higher targets in the credit plan, while it also played a role in managing liquidity. Accordingly, typical maturity terms moved on a very wide scale from some days through maturities of several months to one or two years. In terms of deposit and lending rates, the interest rates set on retail deposits had a stronger impact, as the retail segment was interest rate-sensitive due to the hard budget constraint it was facing. By contrast, the interest rate sensitivity of large state-owned enterprises was relatively low, since in the centrally planned economy framework, relative to the achievement of the plan, it was of minor importance whether or not enterprises were making profits or losses (*Tseng et al. 1994:14–16*).

In the second half of the 1980s, the performance of the real economy responded relatively sensitively to monetary policy measures (*Bléjer et al. 1991:15*): during periods of tightening, industrial production growth decelerated considerably. Even inflation followed the changes in monetary conditions relatively closely, despite the fact that a substantial part of prices were still set centrally at the time. The impact mechanism worked primarily through the amount of credit available to enterprises; accordingly, the volume of credit and the quantity of money were applied as intermediate monetary policy targets between 1986 and 1993. In this period, monetary policy served a dual purpose: currency stability[1] and support for economic growth were equally important (*Laurens – Maino 2007*).

The reforms introduced in 1978 also brought about radical changes in the foreign relations of the Chinese economy. Its former isolation was succeeded by tentative opening up: incentives were provided for exports, and opportunities to borrow from abroad and for foreign direct investments in China. The official exchange rate was set according to the evolution of the balance of payments, changes in the cost level, and changes in the exchange rates of main trading partners. However, the official exchange rate was not universally applicable to all settlements. In order to boost exports and restrict imports, between 1981 and 1984 the exchange rates used for the inland settlement of transactions related to foreign trade were different from the official rate. To set the exchange rate partly on the basis of market mechanisms, a trading system available to a relatively limited group of users was first introduced in 1981, allowing participant enterprises to trade foreign exchange among one another in quantities up to their retention quotas. This was followed by the establishment of the first foreign exchange swap centres in 1986, which already allowed participation by foreign enterprises. In 1988, this system was extended both geographically and in terms of the group of participant Chinese enterprises. In the same year, the retention quota system was partially liberalised (*Mehran et al. 1996*).

Drawing on the lessons learned from the reforms, in 1992 the Communist Party of China set the objective of building a socialist market economy. Accordingly, between 1993 and 1997 new programmes were launched, while previously introduced reforms were also continued and crystallised. This was the period when the reform of the banking system, which had started in 1980, was completed and the established new order was codified (*Okazaki 2007*). Although the decision that as of 1984 the People's Bank of China would act as the central bank was adopted in 1983, the relevant legislative framework was set only in 1995. In the little over a decade between the two dates, the mechanism of the institution's operations was consolidated, and decisions were adopted on key issues. Although in the 1980s local authorities strove to influence the operations of the central bank's

[1] Based on subsequent communication by state leadership and the People's Bank of China, currency stability was probably a term to mean the stability of both the exchange rate and prices.

local branches and the implementation of the monetary policy, finally centralisation efforts outweighed attempts at decentralisation. As a result, a restriction was laid down in the Central Bank Act that the People's Bank of China was only subordinated to the State Council, which prevented local authorities from intervention in shaping monetary policy (*Mehran et al. 1996:18-20*). In the same year, the Commercial Banks Act was passed, which was made possible by the decoupling of economic policy lending from commercial banking in 1994. This enabled the specialised banks re-established in the 1980s to convert into commercial banks, and economic policy lending was taken over by newly established banks (*Okazaki 2007*).

Monetary policy also followed the changes in the economic system. In 1993, the State Council adjusted the earlier dual purpose of monetary policy so that it would primarily ensure currency stability, and thereby support economic growth (*Laurens – Maino 2007*). In 1995, this direction was reinforced by the Central Committee of the Communist Party of China, which identified containing inflation as one of the most important tasks of economic policy for the period of 1996–2000 (*Genyou 2001*). New intermediate targets were also set at this time. The People's Bank of China defined three different money supply indicators in 1994, and in 1996, money supply was declared as an interim target (*Laurens – Maino 2007*).

The monetary policy toolbox also became wider: open market operations (OMOs) were first applied in 1993 to influence the liquidity of banks. However, the efficiency of the instrument was poor, due to an underdeveloped interbank market and regulated interest rates, and so the instrument was used by the central bank only rarely and to a relatively limited extent before 1997 (*Geiger 2008*). A decision in principle was adopted on the liberalisation of interest rates as early as 1993, but the process only evolved very slowly. Free interest rates were first enabled in the wholesale market: as the initial step in the introduction of market-based interest rates, the restrictions on the interbank market were removed in June 1996, and then by 1999 the Chinese central bank lifted all regulations concerning money market and bond market rates, allowing interbank rates and the prices of government bonds and of bonds issued by financial institutions to be determined entirely by the market. Additionally, central interest rate setting was also abandoned in the case of foreign currency denominated instruments (*Laurens – Maino 2007*). Other measures of interest rate liberalisation affecting a broad spectrum of society were not yet carried out at that time, as a result of which interest rates on the renminbi loans and deposits of enterprises and households remained centrally regulated for nearly two decades to come.

The mid-1990s also saw substantial changes in terms of exchange rate policy. In early 1994, the exchange rates set at foreign exchange swap centres, which had previously been segmented on a regional basis, and the official rate set by the state were consolidated within a new integrated exchange rate system,

which was also supported by the launch of a fully computized integrated trading system. Compared to the previous official rate, integration resulted in a significant depreciation. Subsequently, a crawling peg system was implemented linked to the US dollar, driving a modest appreciation over the next one and a half years (*Geiger 2008:3*). Following implementation of the new system, Chinese enterprises could use the central system to trade with authorised financial institutions at the average exchange rate established on the previous day, with same-day settlement. By contrast, foreign-funded enterprises were given direct access to the trading system, which enabled them to trade at current exchange rates with next-day settlement. Transactions also became simpler to manage: the transactions of domestic enterprises were authorised by the banks that carried out the transactions rather than by a central authority, while foreign-funded enterprises were required only to submit annual plans, within which they were free to conduct their transactions (*Mehran et al. 1996*).

China intended to join the General Agreement on Tariffs and Trade (GATT) as early as at the start of the opening up; however, negotiations broke down due to the events in Tiananmen square. Negotiations were resumed only around 1995, but by then it had become evident that the institution, transformed into the World Trade Organization (WTO) in the meantime, set very strict membership criteria, including the opening up of the financial sector. As the performance of the Chinese financial system was rather poor at the time due to its structure, WTO membership required major reforms. The commitment of the political leadership to those efforts was also reinforced by the lessons learned from the Asian crisis of 1997. While the crisis itself did not cause severe problems in China, it did highlight the importance of the condition of the financial system, the vulnerability of which gave rise to serious concerns (*Okazaki 2007:17–18*).

Although from 1994 onwards economic policy lending was carried out by dedicated institutions, in reality commercial banks still did not have genuine decision-making powers over the funding of large state-owned enterprises. As they were not in a position to refuse to fund such enterprises, banks were not responsible for their own profitability. Due to the non-performing loan portfolio built up in the banking system, which was mostly associated with large state-owned enterprises, banks were insolvent, and the viability of the system was sustained solely by trust in the shareholder state. However, a solution to the problem required more than recapitalisation and management of the non-performing loan portfolio: the systemic errors causing the accumulation of bad debt had to be corrected as well. To that end, banks needed to be authorised to make independent decisions on granting or rejecting loan applications, and to take responsibility for their decisions. In that spirit, banking supervision was reinforced: separated from the central bank, the China Banking Regulatory Commission (CBRC) began operating in 2003 (*Komlóssy et al. 2015*).

The autonomy granted to banks in their lending decisions also required the monetary policy toolbox to be reformed. In contrast to the previous dominance of the credit plan, from 1998 onwards a number of tools gained prominence in the implementation of monetary policy. Credit plans and credit ceilings were abandoned, and were replaced by "window guidance". The new tool continued to enable the central bank to provide quantitative guidance on lending and to specify preferred areas in terms of lending. As the banks strove to comply with the guidance received, the tool worked relatively efficiently. Additionally, a decisive role was also given to open market operations, reintroduced in May 1998, which were implemented more efficiently than previously (*Geiger 2008*).

Changes also occurred in the regulation of deposit and lending rates, and thereby in the interest rate channel of monetary policy: as of 2004, the ceiling of lending rates and the floor of deposit rates were removed, giving more room for banks' decisions in this respect as well (*Laurens – Maino 2007*). By relaxing regulations, the Chinese central bank enabled banks to factor in the credit risk associated to each customer when determining their lending rates, while ensuring that interest rate margins remained stable. In the course of interest rate liberalisation, the deregulation of lending rates was given priority over the removal of restrictions on deposit rates. This approach contributed to the protection of bank margins, while it also prevented the sudden intensification of competition among Chinese banks in subsequent years (*FRBSF 2014:1*). In addition to the progressive easing of interest rate regulations, Chinese authorities also reformed the interbank market. In order to promote the reference rate system in the Chinese money market, to influence the prices of money market products, and to improve the monetary transmission mechanism, in January 2007 the new interbank rate SHIBOR (Shanghai Inter-bank Offered Rate) was introduced (*Si 2015:7*).

The Asian crisis also necessitated changes in exchange rate policy. While a crawling peg to the US dollar was officially maintained, in reality authorities applied a de facto peg by setting a very narrow trading band around the peg (*Geiger 2008:3*). This arrangement was maintained until 2005, with further tightening of the trading band.

2. The road to the "New Normal": additional reforms and further liberalisation

Although the impact of the global economic crisis of 2007–2008 was more moderate in China than in the world's developed countries, it became clear that the earlier double-digit growth rates were unsustainable. On the one hand, external demand for Chinese products fell in the wake of the crisis, and on the other hand, growing imbalances developed in many areas of the economy, which would have been inappropriate to heighten further through economic policy measures. The Chinese leadership therefore set the target of achieving a sustainable growth path, which

called for economic restructuring, and further reinforcement of market economy mechanisms. However, as reforms imply additional growth costs in addition to the deceleration resulting from external conditions, the Chinese leadership set the target of doubling 2010 GDP by 2020[2]. This assumes an annual growth rate of 7.2 per cent, which, while being more modest relative to previous growth rates, represents a politically acceptable level in exchange for more stable economic arrangements. This is to be accomplished by keeping inflation around 3 per cent, which would be equivalent to the achievement of price stability for China. The new arrangements and growth path outlined above was referred to as the "New Normal" by China's president Xi Jinping for the first time in 2014[3].

A number of reforms were introduced to achieve a sustainable growth path: the previously started and interrupted interest rate liberalisation was successfully completed, further adjustments were made to the exchange rate system, and in alignment with the new system, a number of elements within the monetary policy toolbox were also renewed.

2.1. Completion of interest rate liberalisation and establishment of the interest rate corridor

Following the onset of the global economic crisis, the process of interest rate liberalisation was interrupted as the Chinese leadership strove to counterbalance decelerating growth; consequently, the central bank only resumed its interest rate liberalisation measures in 2012. As part of those measures, regulations on the floor of lending rates and the ceiling on deposit rates were relaxed further, and ultimately in July 2013 all restrictions on lending rates were lifted (*PBC 2013c*).

As a further cornerstone in the move towards a market-oriented interest rate regime, in addition to the benchmark one-year lending and deposit rates, the LPR (Loan Prime Rate) was introduced as a new reference rate in October, which is currently derived as the average of the lending rates offered to the best customers of nine commercial banks[4], and serves as a guideline for other banks in determining their lending rates (*PBC 2013b*). Following the introduction of the new reference rate, the Chinese central bank allowed financial institutions to issue certificates of deposit (CDs) and to trade these with each other in the interbank market, which was another major step towards the full liberalisation of interest rates (*Si 2015*).

After years of preparatory work, a deposit guarantee scheme was introduced in May 2015 to cover all institutions engaged in deposit taking, which was seen

[2] Hu's Goal for Chine: Double Incomes by 2020. Bloomberg News. 8 Nov., 2012. http://www.bloomberg.com/news/articles/2012-11-08/hu-s-goal-for-china-double-incomes-by-2020 Downloaded: 11 September 2016.
[3] Xi Says China Must Adapt to 'New Normal' of Slower Growth. Bloomberg News. 11 May, 2014. http://www.bloomberg.com/news/articles/2014-05-11/xi-says-china-must-adapt-to-new-normal-of-slower-growth Downloaded: 29 August 2016.
[4] The reference group is comprised of Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, Bank of Communications, China CITIC Bank, Pudong Development Bank, Industrial Bank and China Merchants Bank.

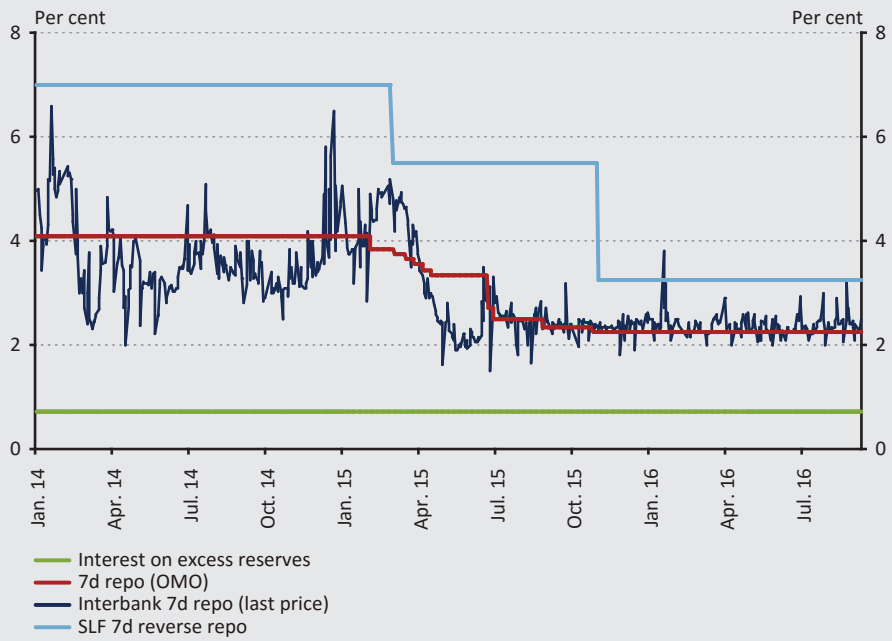
as a milestone in terms of both the stability of the banking system, and the liberalisation processes (*PBC 2015b*). Deposit guarantee was of outstanding significance in several respects. While it is required for non-state owned banks to enter the market, it also contributes to the clarification of the risks associated with specific investment methods, which is a prerequisite for both interest rate liberalisation and the containment of shadow banking.

As the last step of interest rate liberalisation, which had started nearly two decades earlier, in October 2015 the People's Bank of China announced the removal of the ceiling on deposit rates, giving banks complete autonomy in determining their deposit and lending rates (*PBC 2015c*). Although full interest rate liberalisation was a slow process, it was of outstanding significance to the authorities, which followed a conservative approach in timing and scheduling liberalisation in an effort to preserve the stability of the financial system (*FRBSF 2014:1*). At the same time, it is unique, even by international standards, for liberalisation to have spanned a period of nearly 20 years. The reasons underlying the slow nature of the process have been addressed by several authors. In a paper, *Hu* (*2014*) found that in the early 2000s, liberalisation was protracted due to efforts by the state to address the problems resulting from loan losses, partly by keeping deposit rates low (financial repression). *Song* (*2001*) argued that interest rate liberalisation was also hindered by the segmented financial market, the lack of competition, the high ratio of non-performing loans in state-owned banks' portfolios, macroeconomic considerations, and the absence of financial markets infrastructure. In China, interest rate deregulation was not supported by large state-owned enterprises and state-owned banks as it would sharply increase their funding costs and erode their profits, which had been secured by the inflexible interest rate regime. Additionally, the Chinese leadership was also deterred by the concern that relaxing regulations would increase the cost of funding the budget deficit (*Si 2015*).

However, the removal of restrictions on deposit and lending rates does not yet mark the completion of the interest rate liberalisation process, as the new regime presents new challenges to both financial institutions and monetary policy. Free interest rates are likely to increase interest rate volatility, of which the central bank regularly reminded market participants in the course of the reforms. Additionally, institutions' profitability is expected to decrease as competition among them intensifies, since banks' interest rate margins are no longer protected by benchmark rates. Substantial changes are also taking place in the monetary policy toolbox: on the one hand, the benchmark rates have lost prominence as they bind only certain state-owned participants of the financial system (*Tan et al. 2016*); on the other hand, rather than quantitative adjustments, the central bank has been moving increasingly towards influencing interest rates, improving the efficiency of monetary policy transmission (*PBC 2014a:50*). For that reason, with a view to promoting market-determined interest rates further, a number of analysts think that over the coming period, the Chinese central bank might transition to targeting a widely accepted market rate

such as the 7-day reverse repo rate or the 7-day repo rate, or possibly the SHIBOR (*Tan et al. 2016:12*). Reform of the monetary policy framework also includes the establishment of an official interest rate corridor (*PBC 2014a*). At present, China's financial system involves the operation of an unofficial interest rate corridor, which is capped at the 7-day repo rate of the central bank's Standing Lending Facility (for details, see Section 2.3), and floored at the rate of interest paid on excess reserves (*Tan et al. 2016*). As interest rate restrictions were progressively removed and the interest rate corridor narrowed, the volatility of the interbank rate decreased significantly, and monetary transmission has also improved recently (*Figure 1*).

Figure 1
Evolution of the central bank's interest rate corridor and interbank yields



Source: Bloomberg.

2.2. Further reforms of the exchange rate system

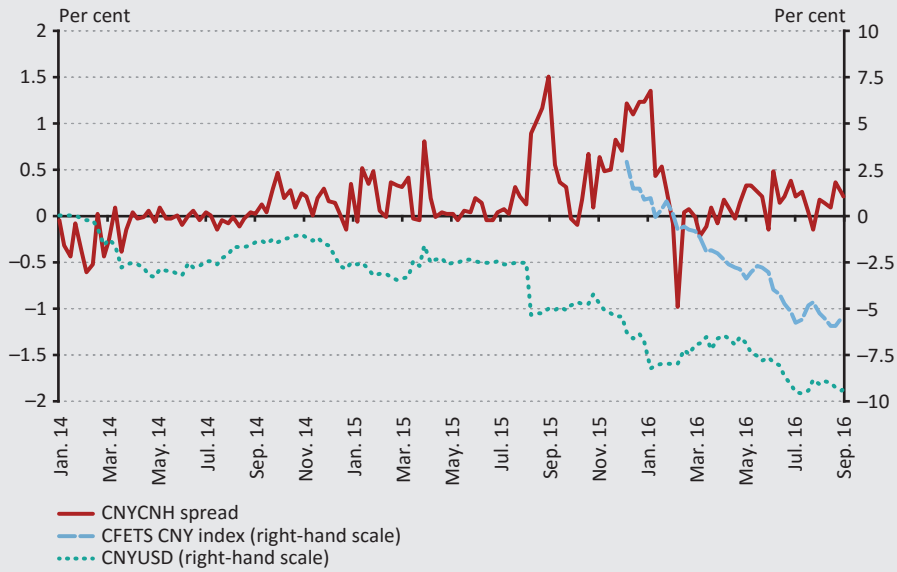
As shown partly in Section 1, up to the 2000s the Chinese exchange rate system, in its transition from the centrally planned economy regime, allowed the relationships of supply and demand to work only in certain periods and even then only to a certain degree. For the authorities, in alignment with the export-oriented strategy of industrial development, exchange rate stability was always a priority, which was secured through major restrictions and a tight exchange rate policy. By contrast, the most recent reform on the exchange rate system pursues the ultimate goal of achieving total convertibility and allowing market forces to shape the exchange rate.

Although that is a distant goal for the time being, a number of reform measures have been implemented for its achievement over the past decade, significantly reshaping the system that characterised the early 2000s.

The earlier official crawling peg to the US dollar was replaced in July 2005 by managed floating against a currency basket, where the exchange rate at any point in time was determined by taking market supply and demand into account. The central bank assumed the closing rate established on the interbank market to be the central parity for the next trading day, around which it defined a trading band in an effort to ensure both the stability of the exchange rate and its alignment with the equilibrium value (*PBC 2005:15-19*). Following a progressive approach, the trading band was widened from the initial ±0.3 per cent to ±0.5 per cent in 2007, ±1 per cent in 2012, and finally to ±2 per cent in 2014 (*PBC 2014c*). The new system was also supported through trading-related developments and by providing more extensive access (*Laurens – Maino 2007*). Although the US dollar probably carried considerable weight in the currency basket, the new system enabled the central bank to manage the exchange rate more flexibly than before.

From the 2000s onwards, as part of opening up the Chinese economy the renminbi took on an increasingly prominent role in international trade and financial settlements, but despite this China initially wanted to set up a system that allowed the renminbi to be traded without opening up the country's capital account. A solution to this problem was provided by the establishment of the offshore renminbi market in Hong Kong (*HKMA 2010*). Since then, it has been possible to trade the renminbi in two markets, subject to different quotation and exchange rate mechanisms. While in the onshore (mainland) market (CNY), the Chinese authorities continue to have significant influence over the exchange rate, in Hong Kong's offshore market (CNH) the exchange rate is increasingly shaped by market forces. In the latter case, the central bank typically intervenes in response to specific market situations in order to prevent permanent widening in the CNY-CNH spread. The correlation between the CNY and CNH rates simultaneously reflects the interoperability of the two markets and, since the correlation is imperfect, the limitations on interoperability. The close correlation is attributable to the fact that a larger spread between the onshore and offshore exchange rates provides participants that are eligible for conversion with an arbitrage opportunity, exploiting which will have the effect of narrowing the spread (increased demand for an undervalued currency will drive its price upwards). At the same time, spreads of up to 100 basis points have been observed between the offshore and onshore rates (*Figure 2*), and these are far larger than the spreads of a few basis points that are characteristic of fully convertible currencies.

Figure 2
CNY-CNH spreads, CNY-USD exchange rates and the CFETS CNY NEER index
(per cent)



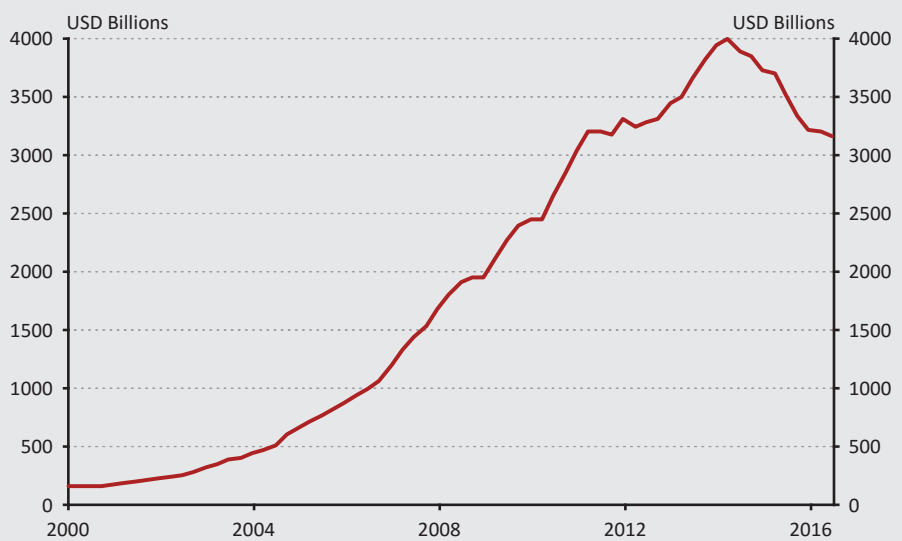
Source: Bloomberg.

Owing to the gradual opening up of the money and capital markets, the Chinese central bank is faced with the classic policy trilemma, i.e. the fact that it is not possible to achieve a fixed exchange rate system, an independent monetary policy, and free capital flows. Earlier, in the context of a closed capital account, China followed a tight exchange rate policy to implement its monetary policy, whereas recently, as a result of liberalisation, it has been moving towards an independent monetary policy, an open capital account, and a freely floating exchange rate. However, that process has caused intensifying volatility in the money market variables that were previously regulated centrally, i.e. the exchange rate and money market interest rates, and the central bank has reminded money market participants of this on several occasions. The capital flight induced by the opening of the capital account was counterbalanced by the Chinese central bank through FX market interventions and further reforms on the exchange rate system.

To increase the flexibility of the onshore exchange rate system and to give more prominence to the effects of supply and demand factors, in August 2015 the central bank improved its calculation method for the renminbi fixing. Using the new calculation method, going forward the People's Bank of China will determine the central parity by taking the previous day's closing rate and the movements

of the major international currencies into account (*PBC 2015b*). Simultaneously with the fixing change, the Chinese central bank devalued the renminbi by almost 2 per cent against the previous day's closing rate, which represented the largest intraday exchange rate adjustment since the abandonment of the dual exchange rate system in 1994.[5] In communicating its decision, the Chinese central bank underlined the fact that the devaluation of the renminbi was a one-off move, and that continuous devaluation was not to be expected (*PBC 2015d*). The move was received unfavourably by the market: many investors and analysts explained the decision of the Chinese authorities by China's poor export performance, while concerns were also raised that the major capital flight observed since 2014 might intensify as a result of the depreciating exchange rate. No consensus has emerged among analysts to date on the reasons underlying the capital flight. Some consider the process to be concomitant with the global re-weighting of Chinese portfolios, while others explain it by the repayment of Chinese enterprises' dollar debts (*BIS 2016*). Fears have so far proved to be partially justified: following devaluations of various sizes, the renminbi depreciated against the US dollar by almost 7 percent over the past year. The effect of market concerns was also apparent in the widening of the spread between the onshore and offshore rates of the renminbi. Some market participants opened significant speculative short positions in anticipation of

Figure 3
Evolution of China's foreign exchange reserves



Source: Bloomberg.

[5] Lingling Wei: *China Moves to Devalue Yuan*. The Wall Street Journal, 11 August 2015, http://www.wsj.com/articles/china-moves-to-devalue-the-yuan-1439258401. Downloaded: 5 September 2016.

progressive devaluation of the renminbi. To stabilise market processes, the Chinese central bank was forced to respond by means of continued interventions and open market operations, which was reflected in the rapid and substantial decrease in foreign exchange reserves (*Figure 3*).

While in the early 2000s China's foreign exchange reserves amounted to a mere USD 200 billion, 2003 marked the beginning of a period of strong accumulation, as a result of which the reserves amounted to nearly USD 4,000 billion in mid-2014. Similarly to a number of other export-driven economies in the developing markets, the build-up in China's foreign exchange reserves was primarily attributable to the current account surplus and the fixed exchange rate system, as the Chinese authorities were making foreign exchange purchases to counterbalance excessive demand for the renminbi. The excess foreign exchange reserves thus accumulated significantly improved the structural liquidity of the banking system, which was sterilised by the central bank primarily through the system of reserve requirements.

However, between 2012–2014 the above arrangements became inherently weaker as the current account surplus fell and the renminbi was made convertible, and the money market turbulences of 2015 forced the Chinese central bank to make FX market interventions on an unprecedented scale in order to counterbalance the capital flight and to keep the exchange rate of the renminbi stable.

In recognition of the increasing role of the Chinese currency in the global economy, and, as it were, acknowledging the reform processes, during the review of the SDR currency basket in November 2015, the International Monetary Fund decided to include the renminbi in the basket. According to the IMF, in addition to the export requirement, the renminbi fulfils the other necessary condition, i.e. free usability (*IMF 2015*). This had the additional effect that when the new SDR basket was introduced from 1 October 2016, Chinese investments with an adequately high rating became part of the official foreign exchange reserves. In the new SDR basket, the renminbi was given a weight of nearly 11 per cent, primarily at the expense of EUR and GBP, which corresponds to the third largest share. For these reasons, it is particularly important to ensure that the exchange rate of the renminbi can behave more flexibly relative to USD, because an exchange rate closely aligned with USD would result in an increased share of the latter in the SDR basket.

Among other considerations, the Chinese authorities introduced the CFETS CNY Nominal Effective Exchange Rate (NEER) index[6] in December 2015 to avoid this undesirable effect. The index follows the exchange rate of the renminbi against

[6] The China Foreign Exchange Trading System (CFETS) is the operator and supervisor of the system that handles China's interbank foreign exchange trading, and is an institution within the central bank.

a basket of 24 currencies[7], where the currencies and their weights are determined on the basis of commercial and investment activities (*Figure 2*). By giving prominence to the new index, the Chinese central bank supports the less restricted behaviour of the renminbi–US dollar exchange rate, and strives for more room for manoeuvre in exchange rate policy, while maintaining central bank credibility.

2.3. Renewal of the monetary policy toolbox

In a broad context, the reform of China's monetary policy over past decades has been attributable to the modernisation effort of the Chinese state to approximate its institutions, with a view to the success of economic reforms, to the standards generally accepted in Western countries. To achieve its objectives, the Chinese central bank uses a mix of direct tools based on quantitative controls and of indirect market-oriented tools. The mixed composition of the toolbox is the result of economic transformation, where in addition to market-based tools, regulation-based monetary policy also continues to play a role (*Gehringer 2015:4*). Key elements of the Chinese central bank's standard toolbox include the reserve requirement ratio, benchmark rates, open market operations, and central bank loan. The significance of specific tools has changed constantly over the past decade due to the reform processes and the global economic crisis, as a result of which a gradual transition was made from the use of tools based on quantitative controls to the use of market-oriented tools (*Tan et al. 2016*).

One of the most important tools in the Chinese central bank's toolbox is the system of reserve requirements. With Western central banks, the function of this tool today is mostly limited to facilitating banks' daily liquidity management, whereas in China it is a fundamental tool of influencing the quantity of money as an intermediate monetary policy objective. From 2007 onwards, increased prominence has been given in the implementation of China's monetary policy to the regulation of the reserve requirement ratio, in which an important role has been occupied by the tight exchange rate policy, as the increased foreign exchange reserves have been sterilised by the People's Bank of China primarily through the system of reserve requirements. From the central bank's perspective, the preference for the reserve requirement ratio over other tools is supported by a number of arguments. By adjusting the reserve requirement ratio, the central bank permanently drains liquidity from the banking system, unlike the tools of open market operations (repos and central bank bills), which tend to be short-term. Another benefit of the tool is that the Chinese central bank pays a much lower rate of interest on allocated reserves than it would on discount central bank bills. Additionally, while adjustments to the reserve mechanism have a tangible effect on the liquidity of the banking system,

[7] The number of currencies used to calculate the index has recently been expanded to 24 from 13. The HUF is amongst the newly added 11 currencies. As a result of the adjustment, the weight of the US dollar decreased in the index.

they do not directly and extensively influence borrowers' funding costs. Moreover, further to its conventional role in monetary policy, the reserve requirement ratio also plays an increasingly important role in the shaping and implementation of macroprudential policy (*Ma et al. 2011*). Owing to the dominance of the banking system within China's financial system, and to restrictions on convertibility, the tool has proven to be highly effective in the regulation of money supply (*Gehringer 2015:6*). In September 2015, a substantial adjustment was made to the calculation method of the ratio: instead of the previous daily compliance, banks were then obligated to meet a requirement for the average of daily closing values over the given reporting period. This adjustment provides more room for manoeuvre in banks' liquidity management, and is also expected by the central bank to reinforce monetary transmission (*PBC 2015b*).

While in the pre-crisis period the liquidity of the banking system was mainly managed by central bank loans, over the past 10 years this tool has been used by the central bank to a more limited extent, for two reasons. On the one hand, monetary policy was tightened between 2006–2008 in order to contain inflation and counterbalance capital inflows, which made liquidity-providing operations unnecessary: as a result of the overheated economy and capital inflows, significant excess liquidity was generated in the banking system. On the other hand, the fine tuning of liquidity conditions gave prominence to open market operations in the central bank's monetary policy (*HSBC 2016*). Initially, open market operations played a marginal role in implementing the monetary policy of the People's Bank of China, but as financial markets developed, these tools also gained more weight within the central bank's toolbox and have now become one of the most important tools of monetary policy, in addition to non-standard tools such as "window guidance", and the reserve requirement ratio. To ensure that liquidity conditions are efficiently fine-tuned, in January 2016 the central bank resolved to conduct open market operations on a daily basis[8].

In the period of centrally regulated interest rates, benchmark rates determined the prices of the one-year loans granted by the financial system and the deposits placed with the system, and therefore represented a different type of commitment, and a much stricter one, compared to the base rates used as part of modern central bank toolboxes. Understandably, as interest rate liberalisation was completed, benchmark rates have lost prominence as they bind only certain state-owned participants of the financial system (*Tan et al. 2016*).

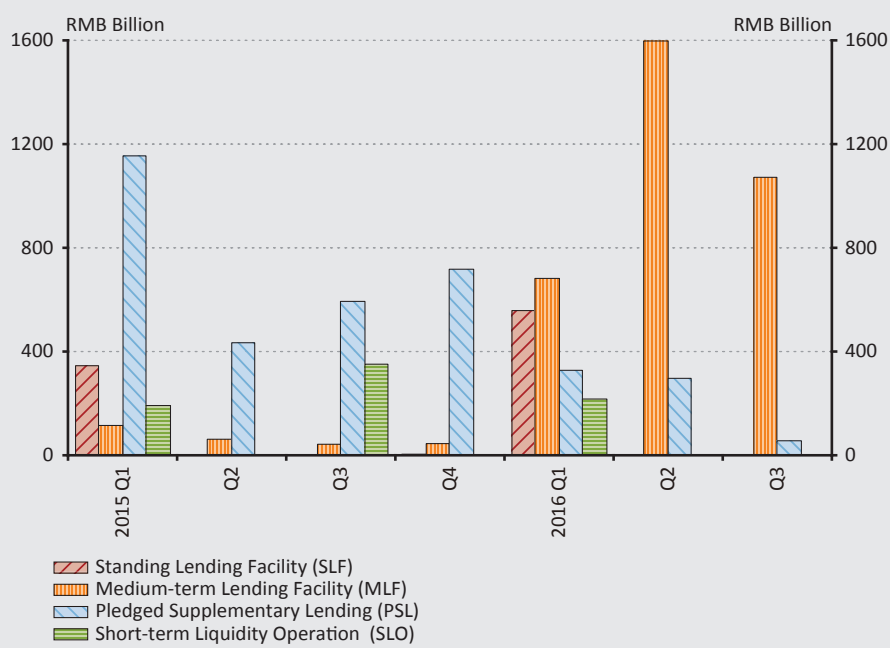
Despite its modern toolbox, the Chinese central bank continues to rely heavily on influencing the lending processes of the economy based on non-market and

[8] *China PBOC to Conduct Open-Market Operations Daily.* The Wall Street Journal, 18 February 2016. http://www.wsj.com/articles/china-pboc-to-conduct-open-market-operations-daily-1455792726 Downloaded: 8 September 2016.

non-public agreement, which is implemented in practice by means of "window guidance". The official position is that guidance is merely advice by the central bank to financial institutions to ensure that their lending meets the needs of specific sectors. In practice, as banks consider themselves bound by the Chinese central bank's guidance and act accordingly, control over lending has been maintained (*Gehringer 2015*).

As a result of the economic slowdown seen in recent years, the central bank has been under increasing pressure to do everything in its power to boost the economy with the tools at its disposal. In a stable environment of low inflation, due to decelerating growth the emphasis is being gradually shifted to supporting the implementation of the central bank's second mandate, i.e. economic growth, while continuing to safeguard currency stability. To provide incentives for lending and thereby to stimulate growth, and to manage liquidity problems, the Chinese central bank introduced a number of innovative tools from January 2013 (*Figure 4* and *Table 1*). In addition to facilitating the liquidity management of the banking system in times of turbulence, the programmes launched by the central bank also support other economic policy goals.

Figure 4
Liquidity generated by the Chinese central bank's liquidity-providing programmes



Source: PBC.

The Chinese central bank launched its *Short-term Liquidity Operation* (SLO) programme in January 2013 to reduce money market volatility even on days when it was not conducting open market operations. The SLO is available to primary dealers participating in open market operations which are also important systemically, have high-rated asset portfolios, and have also particular importance in monetary policy transmission (*PBC 2013a*). Over the past year, the SLO has lost some of its significance since open market operations have been conducted on a daily basis.

The central bank's *Standing Lending Facility* (SLF) programme was also launched in January 2013, and is used by the central bank to provide liquidity to financial institutions for terms of up to 3 months (*PBC 2013a*). The SLF programme was designed to improve the central bank's liquidity support channel for small and medium-sized financial institutions, to manage seasonal liquidity fluctuations, and to support the stable functioning of the financial market. The programme was rolled out nationwide in February 2015, providing access to funds also for commercial banks in urban and rural areas, and for cooperatives and credit cooperatives in rural areas (*PBC 2015a*).

The central bank announced the *Medium-term Lending Facility* (MLF) programme in September 2014. This programme differs from the tools referred to in the foregoing in that the central bank uses it to provide the banking system with liquidity over the longer term, and specifies areas for the use of the funds that are preferred from a lending perspective. Initially, liquidity was provided to banks through the MLF programme for terms of up to 3 months, extended in June 2015 to 6-month loans, and most recently in February 2016 to one-year loans. The MLF programme encourages participating banks to lend to the agricultural sector and to SMEs (*PBC 2014b*).

To support the urban development projects of the Chinese state, the central bank offers long-term, stable and low-cost funds to credit institutions through its *Pledged Supplementary Lending Facility* (PSL) programme, launched in April 2014. However, access to funds is limited; to date, loans have been granted through the PSL only to China Development Bank, The Export-Import Bank of China, and Agricultural Development Bank of China. Eligible collateral includes both bonds and high-rated bank credit.

Table 1
The Chinese central bank's main liquidity-providing tools

Liquidity-providing tools	Duration	Frequency	Function
Short-term			
Open market operations (OMOs)	More frequent: 7 and 14-day repos and reverse repos Other: 21, 28 and 91-day repos and reverse repos Central bank bills: 3 months, 1 year, 3 years	On every working day from 29 January 2016; previous to that twice a week	Reducing money market volatility
Short-term Liquidity Operation (SLO)	O/N to 7-day repos and reverse repos	Irregular	Reducing money market volatility on days where there were no scheduled OMO
Standing Lending Facility (SLF)	O/N and 7-day reverse repos 1 to 3-month loans	Irregular, on request	Improving the central bank's liquidity support channels for small and medium-sized financial institutions, addressing seasonal liquidity fluctuation, and promoting stable functioning of the money market
Long-term			
Medium-term Lending Facility (MLF)	3-month, 6-month and 1-year loans	Irregular, on request	Encouraging financial institutions to allocate more credit resources to the agricultural sector, rural areas, and farmers, and small and micro enterprises
Pledged Supplement Lending (PSL)	3 to 5-year loans	Irregular	Promoting the government's urbanisation programme

Source: PBC.

3. The macroprudential policy aspect of monetary policy tools

Given the significant operational overlaps between the monetary and macroprudential toolboxes of the People's Bank of China, a description of monetary policy tools would be incomplete without a reference to the macroprudential approach. Indeed, there are a number of country-specific phenomena to be observed in this field as well, since several elements of the toolbox have been developed from the remnants of the centrally planned economy regime and as such

are quite unlike the tools established in developed countries following the crisis of 2007–2008. This developmental difference is also the reason why the Chinese central bank already has experience with the operation of its macroprudential toolbox from the pre-crisis period, whereas in developed countries the powers and tools of macroprudential authorities were established only after the crisis. That said, it should be noted that in China macroprudential policy is not a task only for the central bank: the People's Bank of China uses a number of tools in cooperation with the China Banking Regulatory Commission, and the partner authority also has a toolbox of its own that is independent of that used by the central bank[9].

In international practice, the prevention of excessive credit flows has been a prominent goal of macroprudential policy since the crisis, given that systemic bank crises have frequently been preceded by strong credit flows and consequently a significant build-up of risks. In China, however, control over credit growth was primarily driven by a monetary policy consideration: with a view to containing inflation, monitoring the quantity of money and credit was a particular focus as early as in the 1990s. Although one might be led to believe that the goals of monetary and macroprudential policy are the same, this is not supported by actual observations. Following the crisis, significant credit flows took place in order to keep economic growth at the preferred level, leading to a drastic increase in the indebtedness of the private sector. This is undesirable in a macroprudential approach, while it does not raise any problems from a monetary policy perspective, since inflation has nevertheless been stable at a low level, which gives the central bank margin to support economic growth. It cannot be argued, however, that monetary policy considerations and a growth-oriented central government have entirely superseded macroprudential policy aspects. Although credit flows have been strong for years, the central bank has been striving to apply other macroprudential tools to mitigate the increase in risk this might potentially involve.

The level of risk entailed by fast credit flows is closely correlated with the quality of credit, which was initially influenced by the central bank directly through credit plans, and since they were abandoned, indirectly through "window guidance". Guidance specifies areas to be preferred and avoided, respectively. In determining these areas, economic development targets and the mitigation of systemic risks are both taken into account. For example, central bank guidance prohibits lending to sectors with excess capacities. The quality of credit is strongly influenced by systemic risks emerging via the property market, the mitigation of which is restricted by the central bank and the banking regulation authority by regulating the terms of mortgage lending, e.g. by specifying the minimum required downpayment, or in the case of the purchase of second homes, by requiring a stricter interest rate level.

[9] As this paper concerns the development of monetary policy and its toolbox, macroprudential policy tools which are independent of the central bank are not discussed here.

However, the efficiency of macroprudential policy is severely impaired when a considerable part of lending occurs through a channel that is not subject to the regulations concerned. This problem is also relevant to China, because over the past decade, as a result of interest rates kept artificially low and strict regulations on the banking system, lending outside of the banking system (so-called shadow lending) has reached massive proportions. Although this form of lending is built on the legal circumvention of regulations, the Chinese authorities had no interest in stifling the segment, because of the information content of the pricing established there. In recent years, however, shadow banking has grown dynamically and has reached massive proportions by now. By nature, it carries considerable additional risk in comparison to lending through the banking system. For one thing, the solution is typically used to fund enterprises and projects which banks have no intention or possibility to fund on grounds of the risk involved or for regulatory reasons. On the other hand, investors providing funds mostly through private banking and wealth management products tend to assume that such products are implicitly covered by a state guarantee, as a result of which risks are actually not properly considered for every funding decision. Since shadow banking has grown to a size that is also significant in terms of systemic risk, the authorities have taken measures to curb the growth of lending outside of the banking system. Additionally, they place special emphasis on the best possible understanding of the system that has already been established and is often highly complex in legal terms, and on the assessment of the risks that have already built up.

While the parts of macroprudential policy related to credit primarily aim to prevent or slow down the build-up of risks, another group of tools is intended to improve the resilience of financial institutions through regulations on their capital and liquidity. In addition to the tools also widely used in international practice, such as the prescription of various capital buffers and liquidity ratios, in China the reserve requirement ratio also plays an important role in this respect. Originally linked to bank liquidity, this monetary policy tool has, even earlier, been used much more frequently in China in comparison with the practice of developed countries, partly due to the cumbersome nature of the other indirect tools. Initially standardised, the set of requirements have been differentiated since 2004 according to institutions' indicators (*PBC 2004*). The variables taken into account included the capital adequacy of the bank concerned, the ratio of non-performing loans in its loan portfolio, and a wide range of information on the regularity of, and level of risk involved in, the operation of the institution. The higher the level of risk an institution was found to carry, the stricter the requirements it was required to comply with. This was meant to compensate for actual systemic risks, while providing incentives for their mitigation. Differentiation by size of institution first occurred in 2008, when requirements were relaxed in successive steps; however, this was applied only partially to the largest deposit takers (*PBC 2008a, 2008b*). In addition to systemic

risk criteria, institutions were also differentiated by economic policy goals, whereby institutions funding rural areas, or regions hit by earthquakes at that time, were subject to less stringent requirements.

In the aftermath of the crisis of 2007–2008, the system of reserve requirement ratios was increasingly shaped by macroprudential considerations. In 2011, the system of differentiated reserve requirements was extended to include a dynamic adjustment mechanism, which enabled continuous adjustments to requirements depending on the macroeconomic environment, the capital adequacy of each institution, the quality of its governance, and the extent to which its lending policy was aligned with economic policy goals (*PBC 2011*). As of 2016, this system was superseded by Macroprudential Assessment (MPA), which provides an even more comprehensive and flexible framework for requirement calculations. Currently, in addition to capital adequacy and leverage, the reserve requirement ratios for individual financial institutions are determined by taking liquidity, pricing behaviour, portfolio quality and the risks of cross-border financing and credit policy implementation into account (*PBC 2016:28*).

4. Summary

As a result of the reform processes that have been taking place for decades, China has progressed from a strict centrally planned economy regime to an economic system in which a relevant part of economic processes is shaped by market mechanisms. Over this period, the country has become an integral part of the international economy and trade; indeed, by strengthening its position, it has been making efforts to gain influence that is approximately proportional with its size, in respect of the main processes driving the global economy. Although China's economic system increasingly approximates those of developed Western countries, the reform process has by no means been completed; therefore, the country continues to face a number of economic and financial challenges.

As an integral part of economic reforms, monetary policy has also been subject to constant change over the past decades. Previous, for the most part direct, monetary policy tools have been gradually replaced by operations based on indirect tools, and market processes have become increasingly important in monetary transmission. While today's toolbox already shows considerable similarities with the common elements of the monetary policies of developed Western economies, China has retained some special elements, which have taken on a role in both monetary and macroprudential policy. The characteristic of Chinese authorities, the attitude of taking the initiative is also felt in monetary policy, as the central bank often induces economic processes rather than simply following them. Obviously, it is not possible for economic reform and restructuring of such a scale to proceed perfectly smoothly.

An inventory of reform measures shows that some of the solutions have been less successful, but the Chinese authorities have been making efforts to remedy them.

Interest rate liberalisation and reforms of the exchange rate system have increasingly enabled market forces to work. In practice, this also implies abandoning the familiar controlled stability, which may at times appear to be an unfavourable development, but is actually concomitant with market economy arrangements. Going forward, both market participants and economic policy makers should expect volatility to emerge and intensify in the pricing of specific financial products, as well as in the evolution of the renminbi exchange rate. In responding to the challenges arising from economic restructuring, economic policy may be assisted by an ever-wider monetary policy toolbox and a continuously developing macroprudential policy.

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Current Challenges Facing Chinese Financial Supervision and Methods of Handling these Challenges

Bence Varga

This paper presents the main challenges currently facing China's financial supervisory authority and the supervisory response to these challenges, focusing on the shadow banking system and Digital Finance. The author seeks to find out what reforms were introduced and what tools were applied in the realm of supervision in the recent period, what results they have yielded and whether any further reform is necessary to improve the efficiency of Chinese financial supervision, and if so, in what area(s). This paper focuses on the activities and toolset of the CBRC, the main financial supervisory body, and also covers the relevant tasks discharged by the PBC.

Journal of Economic Literature (JEL) codes: G18, G21, G28

Keywords: financial supervision, CBRC, financial institutions, shadow banking system, Digital Finance

1. Introduction

In parallel with the modernisation of the Chinese banking system (including the establishment of a two-tier banking system, the creation of a securities market and the adoption of the law regulating the operation of commercial banks) which began in 1978, the supervisory body and supervisory methodology has also undergone transformation. That said, it was the China Banking Regulatory Commission (CBRC), established in 2003, governed by the State Council, and tasked primarily with supervising financial institutions[1] which brought about the greatest change in regulatory terms. With its establishment, the People's Bank of China (PBC) transferred the majority of the supervisory tasks it had previously performed to the CBRC. The CBRC's core task is to authorise the establishment, termination and business scope of banking institutions, conduct on-site examination and off-site supervision, draft supervisory guidelines and regulations and take enforcement action against infringements. Further tasks include conducting fit-and-proper

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[1] In the context of this paper, "financial institution" mainly refers to banks, and does not include insurance companies and investment firms.

assessment of senior managerial personnel, carrying out consumer protection functions, compiling and publishing statistics and reports on the banking industry as a whole in accordance with relevant regulations, and making proposals on the resolution of problem deposit-taking institutions, in consultation with other regulatory authorities. In addition, it is responsible for the administration of the supervisory boards of the major state-owned banking institutions and other functions delegated by the State Council (*CBRC 2016*).

The PBC also has significant powers in respect of the entire banking system, along with its microprudential supervisory function applying to individual institutions. Its scope of responsibilities includes preventing and reducing the emergence of systemic risk and maintaining financial system stability (*PBC 2016*), while also performing the oversight of the payment and settlement system. In addition to traditional central bank functions, it also regulates interbank lending, foreign currency trading, foreign currency exchange and certain financial oversight tasks (*SEACEN 2013*), such as those related to the regulation of the amount of transactions per account in the case of Digital Finance products. China's supervisory framework features what is referred to as a "one bank and three committees" structure, which refers to the separation of central bank and supervisory functions, but nevertheless, similarly to the supervisory practice prevailing in the EU (*MNB 2013*), it can be classified among countries where the central bank also holds a certain supervisory mandate. Among the EU member states, this group includes Austria and Germany, although all the PBC's supervision-related tasks are far more limited than in these countries or in countries featuring a Twin Peaks style system (such as the Netherlands or Belgium). The China Securities Regulatory Commission (CSRC), which in charge of capital market supervision, and the China Insurance Regulatory Commission (CIRC), which in charge of insurance institution supervision, also perform supervisory functions alongside the CBRC and the PBC.

Besides changes in the supervisory body, the applied methodology also underwent a transformation, with principle-based regulation gaining momentum following the turn of the millennium alongside the earlier, essentially rule-based regulation that typically prevailed at the end of the 20th century (the Basel accords also require the former approach), which has given rise to a mixed supervision model. Rule-based regulation can be applied more easily, supervisory monitoring can be conducted relatively simply and it affords flexibility for ad hoc interventions, however there is a greater risk of loopholes with the emergence of financial innovation. Meanwhile, principle-based regulation affords greater leeway for creating implementation methods, but may require more in-depth interpretation and a greater number of guidelines. An example of rule-based regulation is the credit quota applied earlier to avoid procyclicality (*Loechel et al. 2010*), while an example of principle-based regulation is the restriction of the domestic activities of foreign financial institutions

using offshore derivative products for marketing purposes (*He 2014*). The fact that the Financial Stability Board (FSB) report published in November 2015 on global systemically important banks (G-SIBs) identifies four major Chinese banks (Agricultural Bank of China, Bank of China, China Construction Bank, Industrial and Commercial Bank of China) increases the significance of China's financial supervision (*FSB 2015*).

The following section presents the main challenges faced by Chinese supervision in the late 1990s and currently — highlighting, in the latter case, the shadow banking system and Digital Finance — alongside the supervisory regulatory framework. This paper attempts to provide help for understanding the operating background and unique characteristics of the Chinese financial institutions present in Hungary, and to contribute to an adequate and effective regulatory approach to phenomena that also carry risk for Hungary.

2. The main challenges facing financial supervision, their changes and handling methods

Chinese financial market supervision has faced numerous challenges recently, which are also linked to the reforms introduced. These include the introduction of deposit insurance, the comprehensive formal liberalisation of interest rates, the introduction of the PBC's Macro Prudential Assessment (MPA), the launch of pilot programmes linked to securitisation, the introduction of equal capital requirements and risk weights for certain on- and off-balance sheet activities, and the application of a "periodic average" for the monitoring of financial institutions' reserve requirements (*IMF 2016*). Besides the foregoing, Chinese supervision will also face challenges from the Basel IV reforms drafted by the Basel Committee and the introduction of TLAC (Total Loss Absorbing Capacity).

2.1. Challenges and their handling methods in the late 1990s

The nature of the challenges facing Chinese supervision and consequently, the methods of handling such challenges differed. At the turn of the millennium, supervision faced the following challenges: during the transition from a planned economy to a market economy, financial institutions failed to fully adapt their activities to the new market circumstances, which made it difficult for the CBRC to supervise these institutions which lacked adequate risk awareness. A sign of the relative weakness of supervision in the past is that the PBC only qualified as an exclusively central bank organisation after 1984; prior to that, its operations included collecting deposits and lending, and supervisory bodies were only created after this point in time, so neither the central bank nor the supervisory bodies and related regulations boast a long history. The public disclosure (and recognition of the importance) of relevant information on financial institutions was not fully

achieved during this period, and the exit of financial institutions from the market was also contentious (*Esheng 1999*). The volume of non-performing loans was also an issue: it was estimated at around 20-50% of loans, thus exceeding banks' capital stock (*Komlóssy et al. 2015*). The majority of these issues were resolved over the past two decades, as the risk awareness and experience of the supervisory bodies have increased, the supervisory toolset has grown, the majority of non-performing loans have been temporarily resolved through asset managers, bank recapitalization has been completed in multiple steps, exit strategies have been developed, and the range of publicly disclosed information has increased. In the context of what is referred to as paternalistic regulation, the CBRC shared the practices that it deemed the best with the supervised institutions in an effort to increase risk awareness, the application of which was definitely helpful to domestic banks, despite the fact that diverging parent bank practices created difficulties for foreign banks in several cases (*He 2012*).

The fact that the Basel Committee found China's capital regulation system adequate and consistent with Basel principles in 2013 (*BIS 2013*), that the CBRC has made the public disclosure of relevant information a priority (*He 2012*) and that the European Commission qualified China's supervisory and regulatory system as being equivalent to the European Union's relevant system (*EC 2014*) shows that the challenges facing supervision are being addressed. An example of the CBRC's expanded supervisory toolset was the restriction of the loan-to-deposit ratio of domestic and foreign banks, which was capped at 75%[2] and was valid until 1 October 2015. Given that the majority of Chinese banks were credit-focused, this indicator was initially an effective tool for controlling outstanding borrowing, but became obsolete as other fundraising options, such as interbank lending, bond issuance and repos became widespread. Customer funds were placed in asset manager products, shares and private capital rather than bank deposits, which caused banks to engage in window-dressing to inflate their reported deposit numbers, and thus the use of other, more sophisticated indicators (such as LCR and NSFR) proved to be more effective (*Zhang 2015*). In terms of the loan-to-deposit ratio, the CBRC granted a three-year transitional period to foreign banks, but it was more difficult to meet this requirement, as foreign banks have more limited deposit collection options compared to their domestic peers (*PWC 2010*).

The strength of the supervision applied to foreign bank's operations is illustrated by the fact that all bank products and services are subject to licensing, not only specific activities, but all products and services linked to the core activity (including, for instance, bank card services).[3] The CBRC identified seven circumstances for the

[2] Law of the People's Republic of China on Commercial Banks (2003), Article 39, Section (2).
[3] Decree of China Banking Regulatory Commission (2006): Based on "Rules for Implementing the Regulations of the People's Republic of China on Administration of Foreign-funded Banks" (*He 2014*).

fit-and-proper assessment. If any of these circumstances apply — for instance, if the person in a management position failed to attend one third of board meetings during a business year, did not submit any comments or did not require the correction of the financial institutions business strategy or risk management policy following the identification of shortcomings — the person will be deemed professionally unfit. The CBRC defined an additional four circumstances, and if any of them apply, then the person in a management position will be deemed professionally unfit: public disclosure of trade secrets violating the legitimate rights of the financial institution; gaining unlawful personal benefits or advantages through abuse of office; failure to issue a counter opinion when the financial institution suffers material loss stemming from the adoption of a board decision that violates the law, relevant regulations or internal regulations; or any other circumstance that the supervisory authority identifies as a severe breach of obligations.[4] The requirement for persons to show up in person at the financial institution and the recording of the contract conclusion process (on videotape) by financial institutions represents a great step forward in terms of customer identification. However, this requirement affected foreign institutions adversely, because many did not have the expansive branch network of their domestic peers (*PWC 2010*), which offered "protection" for domestic financial institutions, which are typically vulnerable within the competition represented by foreign financial institutions; at the same time, the benefits of more intense competition cannot be ignored (such as new practices, higher standard products and services, etc.) (*He 2012*, *Achhorner et al. 2006*). The current uncertainty surrounding the reliability of certain national economic data (such as the unemployment rate) clearly affecting risk strategies and business plans creates difficulty for both foreign and domestic financial institutions (*Bloomberg 2016*).

2.2. Main challenges and their current handling methods

2.2.1. The shadow banking system

Currently, one of the major financial supervisory challenges for China is the shadow banking system, which has gradually and increasingly gained significance since 2008. This financing system operating alongside the banking system plays a pivotal role in the Chinese economy. In late 2014, the ratio of assets forwarded through the shadow banking system reached 8% of total assets (*Lasak 2015*). The characteristics of China's shadow banking system differ from those found in Western countries in many regards. Specifically, China's shadow banking system mainly affects the domestic financial system, is mainly driven by commercial banks, features an underdeveloped secondary market, and the shadow banking system comprises less complex financial instruments, most of them initiated by individuals, whereas

[4] Decree of China Banking Regulatory Commission (2010): "Guidance on the Directors' Performance Appraisal of Commercial Banks", Article 31-32.

Western type shadow banking systems that typically affect both the domestic and foreign financial system, is mainly driven by non-bank financial institutions, the secondary market is relatively well developed and transactions are mainly conducted by institutional investors (*Linden 2015*). The willingness to seek out alternative forms of financing has also been driven by the funding shortages affecting certain sectors and industries and the generally low interest rate levels. The two main "products" of the Chinese shadow banking system are WMPs (Wealth Management Products) and TPs (Trust Products); the former are mainly issued through financial intermediaries, which are not licensed to collect deposits or engage in lending, but are authorised to manage such activities. These products are more similar to loans based on their characteristics, but there are some that are very speculative in nature. Trust Products are mainly offered by non-bank financial institutions, such as trust companies, brokers, and insurance companies, in partnership with banks. WMPs and TPs accounted for more than 50% of China's GDP in 2015.

Drafting regulations on the shadow banking system has been a priority for China's government recently, in the context of the 12th five-year (2011-2015) plan. The main issues and the related regulatory framework were defined in a circular letter aimed at bolstering the regulation of the shadow banking system. A need to specify the allocation of responsibility among the various supervisory bodies was laid down, as the current supervisory system applies a sectoral approach, under which different supervisory bodies perform the supervision of different sectors, as a result of which the "supervision" of the shadow banking system is shared among several institutional bodies, which raises questions of responsibility that have not yet been resolved. In this regard, an integrated or Twin Peaks type supervisory model could offer a solution, but no meaningful steps have been taken in this direction. In addition, increasing transparency is also priority, as the shadow banking system, due to its nature, decreases the transparency of capital flows and financial institutions, which in turn lowers the effectiveness of macroprudential regulation. It is therefore paramount to improve the transparency of the statistics and information policy on the shadow banking system. In this regard, there have been some initiatives, for instance for banks to manage separate accounts for all WMPs, along with the associated supportive and information documents with adequate content. Thirdly, the regulation of the affected institutions and products is a priority, and in this context, based on the CBRC's measure, commercial banks are required to restrict their WMP exposure; while this measure only restricts the shadow banking system without eradicating it (*Linden 2015*), it nevertheless deserves special attention.

The measures introduced to address the shadow banking system have spurred the appearance of newer and newer shadow banking system products. In 2008, WMPs were the greatest challenge for the CBRC in terms of managing the shadow banking system. The CBRC adopted numerous supervisory measures to fight

these products, mainly in the form of authority notices that took advantage of the supervisory framework's flexibility. In these notices, the CBRC stipulated that the ratio of non-traditional assets to the WM portfolio could not exceed 30%, and the proportion of the WM portfolio within the balance sheet total could not exceed 4%, and requirements for disclosing the data of such products were also defined. At the same time, 2009 saw a further increase in WMPs, which necessitated the issuance of additional notices. In two notices issued in 2009, the CBRC regulated the reporting system of WM services and rolled out tighter rules for managing investment funds, but these regulatory documents failed to duly address the links within the risks inherent to WM services, and the frequent notices created uncertainty among capital market players. The aforementioned measures significantly slowed the spread of WMPs, but gave rise to a new shadow banking system activity through WM cooperation between banks and trust companies in 2010 in a bid to circumvent the relevant rules, referred to as trust-based lending, which affects banks' off-balance sheet items (*Hu et al. 2016*). In response to this, the CBRC issued new notices in 2010 and 2011 to reinforce the regulation of WM cooperation between banks and trust companies, in the context of which commercial banks were required to transfer their off-balance sheet assets within a deadline of two years (later amended to one year and four months), which was regularly monitored by the CBRC. If a bank failed to comply, it had to set aside a 10.5% risk reserve on its exposure of this type. These measures helped decrease banks' hidden off-balance sheet risks and to curb trust-based lending, but 2012 saw the emergence of non-traditional loan intermediation (such as reverse repos) on the Chinese money market with the participation of banks and trust companies, or other third party players. In 2014 the CBRC created a supervisory framework to address these products (*Zheng 2015*) and issued numerous authority notices (e.g. capping investments in non-traditional credit instruments and crafting related risk management methods).

For the sake of international comparison, in Europe, it was the CRR (Capital Requirements Regulation) that granted the EBA (European Banking Authority) the power to draft a recommendation for restricting banks' exposure to the shadow banking system. According to the EBA's recommendations on the shadow banking system, banks must apply effective processes and control mechanisms, coupled with internal frameworks, individual and aggregate limit systems, and also be able to identify their associated individual exposures and control these risks. However, tightening regulations governing banks is not enough, as this may further push their activities towards the shadow banking sector (*Seregdi 2016*). So the measures introduced by China's supervision and its capacity to react to the shadow banking system does not fall short of the measures seen in Europe, but there are uncertainties surrounding its degree of success (for instance in terms of its management of maturity mismatch).

It should be emphasised that most regulatory guidelines and policies in China are introduced after broad public consultation, their communication to the public was frequent and in-depth, which contributed to the effectiveness of the measures. However, the regulation of the shadow banking system still exhibits shortcomings, firstly because the regulation lacks a systemic-level guiding principle that factors in both economic development and risk prevention and regulates the associated financial innovation in such a manner that supports real economic development. The integration of supervisory bodies or better communication between them would increase the harmony between the supervisory tools applied and macroeconomic objectives. Currently, every supervisory body is in charge of supervising the institutions they authorise, but this presents the danger of inadequate assessment of risks stemming from enhanced relationships between institutions and cross-sector products within the shadow banking system. This divided supervisory structure may also contribute to the emergence of disagreements between the various bodies (*He 2014*). On the other hand, supervisory bodies underestimated financial institutions' capacity to adopt financial innovation, and the time required to do so. This also contributed greatly to the rapid emergence of new financial products in response to the supervisory measures introduced. Thirdly, the assessments following the papers, impact assessments and guidelines preceding the issuance of regulatory guidelines are not sophisticated enough. However, solving these problems would only be sufficient to address the existing issues in the short term; material change would require structural reforms, but first and foremost the creation of a more diversified financial system than the current one, further reduction of systemic and regional risks, tighter regulation of non-traditional lending methods within the banking system and deeper structural reform within the financial system. These can be considered as the most important tasks (*Hu et al. 2016*).

2.2.2. Digital Finance

The marked rise in online financial services (such as Yu'E Bao, Alipay) in China began in 2013, and there were over 2,500 P2P platforms operating by 2015,[5] representing capital in excess of RMB 375 billion.[6] Initially, the CBRC adopted a lenient approach to supervising these activities in a bid to offer a partial solution to the funding difficulties faced by SMEs. Meanwhile, these were also regarded as a main instrument fostering the broader spread of financial services. The idiosyncrasies of the credit- and price system (including a shortage of market loans, the impact of non-market mechanisms on certain prices, etc.) and more generally, the shortcomings of China's financial system contributed the rising share of Digital Finance products (*Hu et al. 2016*). The regulation of Digital Finance prior

[5] Peer to peer (P2P) platforms are online services supplied by innovative firms in the context of which lending and borrowing takes place with the intermediation of financial institutions and insurance companies, but typically without them.
[6] HUF 15,536.25 billion (based on the MNB exchange rate of CNY/HUF 41.43 valid on 30 September 2016).

to 2015 remained lenient in spite of the fact that many P2P service providers went bankrupt as early as in 2011 due to payment difficulties, and most industry professionals supported regulation of this area (*Zhou et al. 2015*). As a result of lenient supervision, nearly one third of all P2P platform transactions became non-performing, or raised the suspicion of misappropriation of the capital involved. As a result of the above, the regulation of online financial services became a priority, and in 2015, the PBC announced its objective to create a regulatory framework for Digital Finance as soon as possible at the 12th National People's Congress. Accordingly, the CBRC issued guidance and draft regulation in 2015, and further regulatory steps are expected in the future. Based on the CBRC's approach to P2P, no capital or licensing requirements would be defined, and the authorisation of platforms would mainly occur in the context of registration. In addition, the range of unauthorised activities would be defined, e.g. transactions between parties within the same circle of interest, the assumption of principal guarantees, the pledging of collateral, etc. The regulatory framework includes the requirement for platforms to distinguish their own funds from foreign funds, placing the latter on a deposit account at a financial institution. The regulation issued by the PBC in 2015 also emphasised the importance of customer identification, and depending on the authentication methods used, payments per account will be limited to RMB 1,000 over the life of the account, RMB 100,000 or RMB 200,000 per year (*Jingu 2016*). Based on the framework, the fundamental principles governing the regulation of Digital Finance are "tolerate, encourage, guide and standardise" and the associated supervisory requirements can be summed up as "comprehensive, timely, professional and effective".

Hence, significant progress has been made in terms of the regulation of Digital Finance by the Chinese supervisory authorities, but the financial products classified as Digital Finance currently and will continue to create challenges for them, as Digital Finance functions within a mixed operating model that involves multiple sectors, and the decentralised nature of supervisory bodies renders their supervision more difficult. The high level of innovation and IT support, the changing nature of business models, the technological issues stemming from the virtual environment also pose challenges for on-site examinations and the finding of evidence; addressing these and prioritising disclosure and consumer protection considerations will be warranted in the future (*Hu et al 2016*).

An international comparison shows that the EBA has highlighted several tools for the supervision of online financial services, which allow the efficient measurement and management of the risks associated with P2P. These include the disclosure of the general risks inherent to P2P, the rating of creditors and borrowers, KYC (Know Your Customer) tasks, the establishment of protection for financial transaction participants in the event of P2P platform operating malfunctions, and the licensing

or at least the registration of P2P platform operation (*EBA 2015*). In this paper, the EBA also emphasises the regulatory practices applied in England, France, Spain and Italy, member states which all have P2P specific regulation, adding, however, that Italy's regulations do not cover every type of P2P lending. Based on all of this, China has reacted rather late to the supervisory challenges posed by P2P, prioritising certain risks. Nevertheless, the application of the tools recommended by the EBA are not yet widespread in Europe, and there is no generally accepted practice for addressing these challenges.

3. Regulatory framework and certain associated supervision policy matters

The nature of the financial institution regulatory framework primarily creates difficulties for foreign financial institutions, but may also be an issue for the supervision of the operation abroad of Chinese financial institutions stemming from diverging regulatory cultures. The regulatory framework features four tiers: at the top are the laws passed by the National People's Congress, below this level are the regulatory policies drafted by the CBRC, the third tier consists of the CBRC's authority notices and guides. The majority of the CBRC's regulatory initiatives fall within the latter category, as specific measures are generally considered more effective than a more general, principle-based approach (*He 2014*). The measures adopted at this level generally address current regulatory issue and mainly define rules on the activities of financial institutions, financial products and corporate governance systems (e.g. customer rating, risk assessment, contracting procedures, exposed monitoring, etc.). The aforementioned difficulty consists of the fourth supervisory regulatory level, which combines the principle- and rule-based approach and is referred to as Window Guidance.[7] The CBRC uses the associated measures to supervise the activities of financial institutions in line with regulatory objectives. This is because Window Guidance tools are generally not applied in writing (so their enforcement through legal avenues is not possible), and their objective is to inform financial institutions of the current regulatory intention or to draw attention to certain risks, but in some cases, Window Guidance was used to restrict lending to certain sectors or to define the volume thereof. Window Guidance is a kind of legacy of the planned economy, and can be objected to because its use in the context of monetary policy, for instance, could contribute to the emergence of stop-and-go cycles by intervening directly in lending (*Delatte 2008*), and may also trigger the same effect when used as a supervisory policy tool. The CBRC also uses this tool to support economic policy objectives: for instance in 2007, it fostered

[7] Window Guidance was introduced in China by the PBC in 1998, and was applied on numerous occasions, including in 2005 to boost credit supply to the rural economy and the non-public sector, and to increase credit supply following the global crisis (*Barth et al. 2013*).

increased credit supply to pig farmers to boost the supply of pigs, as there was a shortage at the time (*He 2012*). Window Guidance tools offer the CBRC flexibility and the possibility for immediate action in the context of the regulation of financial institutions of wildly varying size and scope of activity. Their use replaces the need for formally supplementing and amending laws and regulatory guidelines on a frequent basis, but verbal notification carries the risk of losing or changing the gist of the message, and understanding this element of regulatory culture for the financial institutions operating in China and the authorities overseeing the Chinese financial institutions operating abroad is often difficult, as it may be synonymous with a lack of transparency.

4. Summary

The Chinese supervisory toolset gives the flexibility for the supervisory authority to handle the risks and challenges that may arise. However, with the spread of the shadow banking system, supervisory bodies were unable to respond with sufficient efficiency with the flexibility afforded by the applied toolset. Numerous authority notices were issued and awareness-raising measures introduced, followed by new ones, and still handling the shadow banking system remains a challenge for supervisory authorities, although this also stems from the financial institutional system's idiosyncrasies.

Handling Digital Finance and the associated risks is also a priority for supervisory bodies. In this regard, several initiatives and specific recommendations have emerged following an initially lenient supervisory approach, but supervising the area calls for the establishment of a relevant legislative environment.

Effectively addressing the challenges currently facing Chinese supervisory authorities will require a certain degree of integration of the current supervisory body, and reinforcing communication among supervisory bodies is essential. Studying the supervisory tools linked to the rise of Digital Finance is also pivotal, as managing the risks inherent to Digital Finance will also become a challenge for Hungary in the near future.

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A Western Diet with Chinese Spices – The Specificities of Payments in China

László Kajdi

Overall, in China the payment system is less developed and electronic payment methods are less widely used than in European countries, while in this regard China is also relatively underdeveloped among the BRICS countries.[1] That said, data indicate that in accordance with China's economic growth since the turn of the millennium, major changes have also been taking place in this field. Although it enjoyed a monopoly in the country until recently, the Chinese payment card system now competes with international card companies, and innovative mobile payment solutions are also popular. This latter is also remarkable because despite the steady growth in the number of people using mobile payment solutions in Western states, even the most developed payments systems have so far failed to convince a wide range of consumers to use the latest technologies. By contrast, in China a significant group of consumers has skipped over arguably traditional payment methods such as credit transfers or card payments, and switched from cash usage directly to mobile payment solutions. This has also caused the role of banks to become less central, and that of other payment service providers more prominent, which may also significantly influence the situation of the banking sector going forward.

Journal of Economic Literature (JEL) codes: E42, G18, O33

Key words: payments, payment systems, China

1. Introduction

The modernisation of the Chinese banking system has been a gradual process since the 1970s, as part of which the initially one-tier banking system evolved into a two-tier banking system through the establishment of specialised commercial banks. Although the People's Bank of China (PBC) has been acting as the central bank since 1984, the Central Bank Act was only adopted officially in 1995 (*Komlóssy et al. 2015:2*). Under the Central Bank Act, the PBC is required to operate payment and settlement systems, and is authorised to supervise payments and to ensure compliance with regulations on money laundering. As of 2014, the banking system

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[1] BRICS stands for five major emerging economies (Brazil, Russia, India, China, South Africa).

was comprised of 3 policy banks,[2] 5 state-owned commercial banks, 12 privately-owned commercial banks, 133 urban commercial banks, 665 rural commercial banks, 1,596 rural credit cooperatives, 1 postal savings bank, 41 foreign financial institutions, and 1,153 township banks (*PBC 2015:149*).

Similarly to other areas of the economy, payments have seen a gradual opening-up in recent years. This involved a number of measures to increase the international prominence of the RMB, China's currency, such as the establishment of international clearing centres and the launch of a new clearing system to facilitate cross-border payments. Operational since 2015, the China International Payment System (CIPS) handles cross-border RMB transactions for 11 hours a day, currently involving 19 banks, 8 of which are subsidiaries of non-resident banks.

The liberalisation of payment cards also started recently, and important changes may occur in the long term due to the fact that since June 2016 international card companies have been allowed to clear card transactions, breaking up the monopoly of the Chinese card system UnionPay. The measure was preceded by a decision of the World Trade Organization (WTO), which declared the closed Chinese market and the monopoly of UnionPay to be in violation of the organisation's rules. Although this opening is not expected to produce radical short-term changes in market structure, and the local card system will presumably retain its dominance, over the long term foreign card companies will also be allowed to participate in clearing the increasing volume of card payments. Market participants outside China had long been looking forward to the measure, and UnionPay and VISA had previously entered into a Memorandum of Understanding on security, innovation, and reducing the ratio of the population without any bank relations. A further market shift may be produced by the appearance of innovative, primarily card-based payment services such as ApplePay or SamsungPay on the Chinese market. These two service providers offer their payment services in association with UnionPay.

However, the uniqueness of China's payments system primarily lies in participants that offer payment services outside of the banking system and the conventional payment infrastructure. State-owned commercial banks have lost their monopoly in a major part of the payments market due to their late response to new competitors' innovative solutions. Not only has this enabled third-party providers to compete internationally in the field of payment services, these providers have also been emerging as a threat to conventional payment services providers in other fields of banking services (e.g. deposit taking).

As indicated by the foregoing, the impact of this opening may be felt in many areas of payments in the future: it may promote international trade by making cross-

[2] Specialised state-owned banks serving economic policy purposes: China Development Bank, Export and Import Bank, Agricultural Development Bank.

border transactions easier to clear, and it may contribute to the establishment of a consumption-driven economy through innovative payment solutions that facilitate retail trade, while larger participants in China's payment system may enter the international scene, offering more intense competition to payment solutions that dominate in the West.

2. The level of development of payments in China in international comparison

In order to be able to adequately interpret the data on China's payment system, it is appropriate to first assess the level of development of the country's payments in an international comparison. According to the global survey conducted by MasterCard (*Thomas 2013*), cash transactions are predominant in China, with a mere 10 per cent of all transactions conducted using electronic payment methods. This puts China in the "transitioning" group out of the four groups used in the survey (advanced, tipping point, transitioning, inception); on the other hand, the results are qualified by the fact that of the BRICS countries, only Brazil ranks higher with a 5 per cent higher cashless share, and the shortfall against Japan is also only 4 per cent (*Annex, Figure 1*). By comparison, according to surveys on the payment habits of Hungarian households (*Ilyés – Varga 2015:30*), in Hungary the share of electronic payments is above 20 per cent, i.e. over twice that of China. According to the international statistics of BIS (*2015*), the number of credit transfers and card payments per inhabitant is significantly lower in China than in either advanced Western states or the BRICS countries (*Annex, Table 1*). It should be noted that while these indicators may be useful in judging the broad trends, they fail to show a number of underlying factors: the low Chinese values represent only averages, which conceal the differences between payments in relatively underdeveloped rural areas characterised by a population without a significant penetration of bank relations that conducts most of its transactions in cash or by cheque, and the high volume of electronic payments in mostly urban areas. Importantly, on the other hand, this relatively low level of development has additional potential in terms of the Chinese market—it is by no accident that an increasing number of Western companies want to break into this market as well. According to World Bank data, close to 80 per cent of the Chinese population above 15 years of age hold accounts with some type of financial institution, which, although it falls significantly short of the rates of above 90 per cent of the euro area or the US, may provide a sound base for the further development of payments. According to World Bank data, and as confirmed by a survey by the MNB, 72 per cent of the Hungarian population have bank relations (75 per cent of the adult population are account holders, cf. *Ilyés – Varga 2015*), but in Hungary the accounts opened are used more extensively and more frequently.

3. Clearing and settlement systems

By forwarding payment information pertaining to specific transactions, payment infrastructures contribute strongly to the execution of transactions in the real economy and finance, and thereby to ensuring that the economy functions efficiently. It is precisely due to this key role that in most countries in the world, the smooth functioning of payments is supervised by the central bank; similarly, in China, the core elements of the payments system are operated by the central bank in exercise of the powers conferred on it by the Central Bank Act. Payment infrastructures employ predefined operational mechanisms and business terms to enable the clearing and settlement of payment orders. In the course of clearing, the payment system accepts payment orders after a series of formal and content checks, then determines the positions of the banks concerned. Clearing is followed by settlement, which is defined as the financial settlement (accounting) of cleared transactions between accounts. Generally, interbank settlement takes place on the accounts of commercial banks with the central bank, using an RTGS[3] system operated by the central bank. In Hungary, the equivalent system is VIBER, while interbank credit transfers and direct debit transactions are cleared by the GIRO clearing house. Payment card transactions are cleared by card companies between individual banks, and are then also settled in the RTGS system (in Hungary, VIBER).

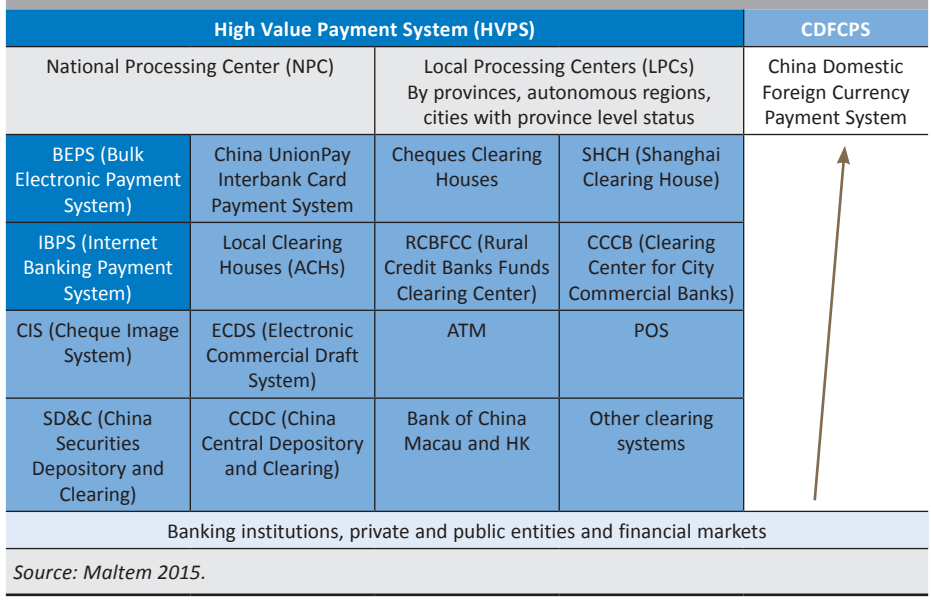
In 1991, the PBC launched the pilot of its nationwide electronic system for interbank messaging and transaction settlement, which initially took 7 to 10 days to process transactions. After a series of developments, the real time gross settlement system for high value payments (HVPS) was launched in 2005, which was followed a year later by the launch of BEPS (Bulk Electronic Payment System), the system used for the clearing of low-value payments. Simultaneously with developments in information technology, the PBC also published its guidelines on payment transactions in 2005 (*UnionPay 2005a*).

Due in part to the large size of the country, the payment system operated by the PBC is rather complex and comprises a number of elements, which are subdivided further regionally:

- High-Value Payment System (HVPS),
- Bulk Electronic Payment System (BEPS),
- Internet Banking Payment System (IBPS),
- Cheque Image System (CIS),
- China Domestic Foreign Currency Payment System (CDFCPS),
- local clearing houses.

[3] Real-time gross settlement.

Figure 1
Overview of China's payment systems



Source: Maltem 2015.

Collectively, the HVPS, BEPS and IBPS systems make up the China National Advanced Payment System (CNAPS). The PBC authorises the opening and closing of banks' settlement accounts, while CNAPS is operated by the China National Clearing Center (CNCC), reporting directly to the PBC. Additionally, the PBC's branches also operate a number of local clearing houses. The PBC is headquartered in Beijing and Shanghai, and also operates 8 provincial centres and several hundred regional sub-branches (*PBC 2015:149*).

Similarly to the Hungarian VIBER, the HVPS is therefore a real time gross settlement system, which is used for the settlement of high-value and time-critical financial transactions, while it is also the platform for settling the net positions of low-value interbank items that have been cleared in other systems. Direct participants in the system are banks and PBC regional offices which have accounts with the HVPS, whereas indirect participants represent the same group of institutions but have no dedicated accounts with the HVPS, and engage a direct participant to handle their payments. In addition to the above two participant groups, there are also participants specifically chartered by the PBC, which render only certain special services and submit the cleared transactions of such services directly to the HVPS for settlement. The extensiveness of the Chinese payment system is also reflected by the number of participants: in 2010, there were 1,729 direct participants, 100,510 indirect participants and 6 chartered participants in the HVPS (*BIS CPMI*

2012:50). Interbank transactions are cleared and settled real-time on a gross basis, whereas chartered participants, e.g. institutions clearing securities, the UnionPay card company's clearing, and local clearing houses submit net positions. The HVPS is structured into two tiers: complementing the core element (National Processing Center, NPC), provincial cities operate additional processing centres (City Clearing Processing Center, CCPC), which only forward messages to the NPC. Participants in the HVPS are typically linked to CCPCs on a regional basis, and the regional centres forward the messages to the central system for settlement, i.e. there is no regional settlement for intra-provincial transactions. It is typically chartered participants that can submit transactions directly to the NPC, which is where, amongst others, payment card clearing results are also received directly. The system is open on business days from 8:30 a.m. to 5:00 p.m., and where required, participants can acquire additional liquidity until 5:30 p.m.

Launched in 2006, the BEPS is the system used for the clearing of paper-based credit transfers and direct debits. As at 2010, a ceiling of CNY 50,000 applies to the submission of ordinary credit and standing order transactions to the BEPS. In addition to the number of direct and indirect participants equivalent to those of the HVPS, there are 16 chartered participants in the system. The BEPS and the HVPS share the same communication network, and also have similar two-tiered regional structures, wherein transactions are submitted by regional centres for central clearing, and are then forwarded on a cyclical basis to the HVPS for settlement. The difference between the two systems is that the BEPS runs and accepts transactions for clearing on a 24/7 basis, but settlement can only take place in the HVPS. Pricing is different for the clearing of local (intra-provincial) and inter-provincial transactions, but fees are also differentiated by period so that traffic load can be better distributed over time.

Launched in 2010, the IBPS system is used for the real-time clearing of electronically submitted payments. Like the BEPS, the IBPS also runs continuously. In 2010, the system had about 120 participants, mainly covering the commercial banks that were providing internet banking interfaces. The transactions cleared in the system are settled in the HVPS; BEPS and IBPS transactions both rely on the same liquidity recorded in the HVPS for their settlement. Payments are cleared within 20 seconds, and may be submitted through banks' internet banking interfaces and mobile applications, or via ATMs. Currently users cannot initiate transactions by supplying a secondary identifier such as a mobile number, they can only place orders by entering the payees' account numbers (*BIS CPMI 2016*). Transactions are cleared in real time (within 20 seconds), but interbank positions are settled only later, six times each business day. Banks must allocate liquidity in advance in the HVPS to settle real-time transactions, which provides for the management of interbank credit risk,

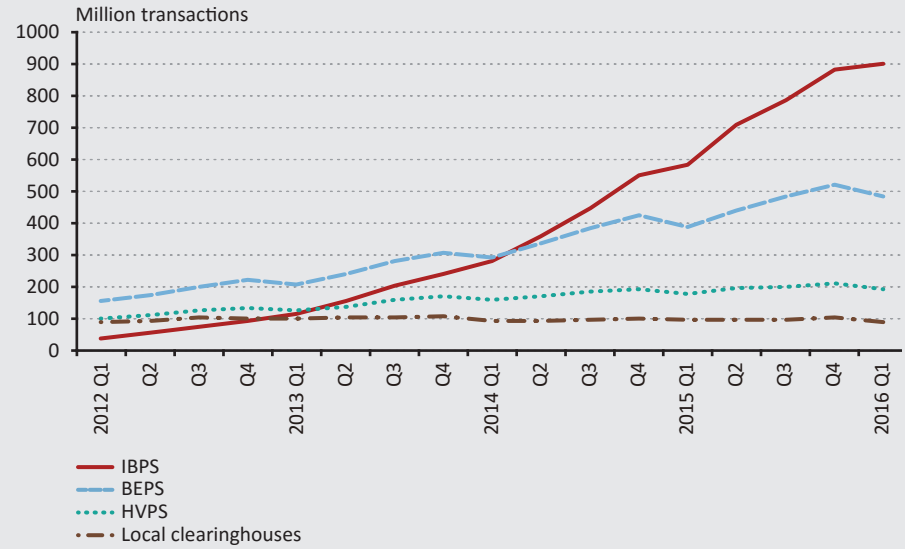
i.e. the risk that the account of the beneficiary is credited, but the payee's bank can only access funds at a later time. The risk from subsequent interbank settlement can be mitigated by applying transaction ceilings, which is CNY 50,000 in the IBPS, but individual banks may also apply additional restrictions. Additionally, banks may place security deposits to reduce loan risks. In the event of a party's insolvency, this security deposit is used to settle the insolvent party's debit position. Where this is insufficient, the situation is handled by sharing losses between the banks.

Accordingly, in this operational model the execution of a real-time payment is somewhat different from that of "conventional" credit transfers. In the conventional model, once the payer has placed the payment order with its payment service provider, the transaction is first cleared between banks (by the GIRO clearing house in Hungary and in the BEPS in China), followed by interbank settlement in the central bank's RTGS (VIBER in Hungary and HVPS in China), and finally the payee's account is credited. By contrast, in China's real-time payment system the payee's account is credited in real time in the IBPS, while the transaction is settled at a later time in the HVPS in one of the 6 cycles each weekday.

As regards the number of transactions processed in each system, there has been an apparent pick-up in real-time payments, which accounted for the largest volume from 2014 Q2 onwards, exceeding 900 million transactions in 2016 Q1. The relatively low number of transactions cleared in local clearing houses and the high total payments value indicate that typically transactions of larger amounts are submitted to these systems.

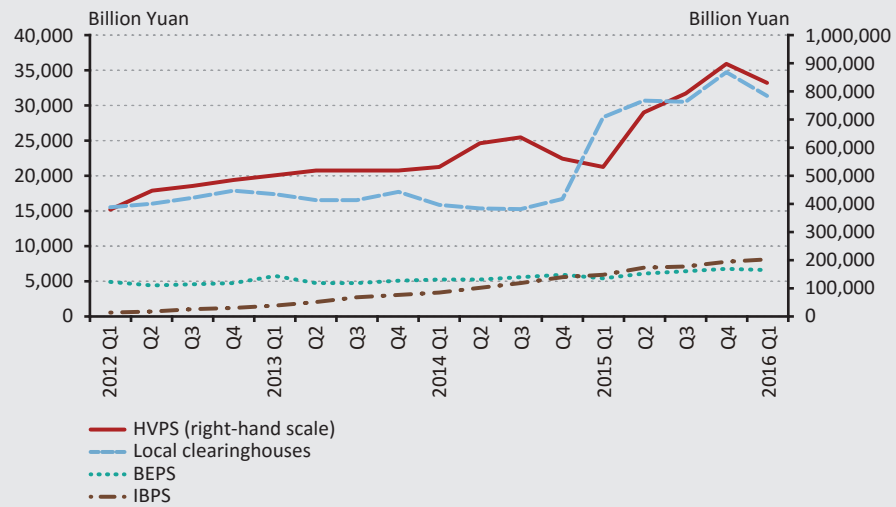
Interbank transactions are settled in the HVPS, which is also where participants may submit high-value and time-critical transactions. Consequently, this is where the value of payments processed is the highest, exceeding CNY 2,950,000 billion in 2015. Although the total value of transactions cleared in the BEPS and IBPS systems amounted to a fraction of this (about CNY 25,000 billion and CNY 28,000 billion, respectively), electronic transactions have apparently also been gaining ground in this area: traffic in the IBPS first exceeded that in the BEPS in 2015Q1, and the difference has been increasing ever since. The total value of transactions cleared in local clearing houses exceeded CNY 120,000 billion during the year, which means that the intra-provincial turnover processed here is significantly higher than the value of transactions submitted to national clearing systems.

Figure 2
Turnover of HVPS, BEPS, IBPS and local clearing houses by number of transactions



Source: PBC 2016.

Figure 3
Turnover of HVPS, BEPS, IBPS and local clearing houses by value



Source: PBC 2016.

The improved CNAPS II went live in October 2013, and introduced changes in 6 areas (*PBC 2014:144*):

- Single addressee: in the previous system the provincial branches of commercial banks were also required to open accounts in the CNAPS, whereas in the new system each bank's head office and provincial branches use a single account. This makes liquidity management simpler and more efficient.
- Improving liquidity management: in the new system, HVPS allows queued transactions to be matched and thereby the queues to be broken down.
- Supporting users by giving notification when the amount of electronically originated interbank transactions is credited to payees' accounts.
- Increased safety due to enhancements to the operational monitoring system.
- Improved data security and operational reliability.
- In line with international trends, the ISO 20022 message format was adopted.

Apart from the CNAPS, which is the core element of China's payment system, a number of additional systems support the execution of payment transactions. Launched in 2007 and operating on a 24/7 basis, the CIS converts cheques with a value of less than CNY 500,000 into images, which it forwards to the issuing banks for review. Following positive confirmation from the issuing banks, the transactions are cleared in the BEPS. As of 2010, the CIS had 59,548 participants, primarily including local banks and clearing houses (*BIS CPMI 2012:56*). Use of the CIS is free of charge, but local clearing houses, for instance, typically charge fees for the submission of transactions.

CDFCPS handles domestic transactions where purchases of goods or services are paid in foreign currencies. Launched in 2008, the system handles 8 currencies: USD, HKD, GBP, EUR, JPY, CAD, CHF and AUD. CDFCPS consists of two parts: the component responsible for clearing functions is run by the PBC, while settlement is carried out by settlement agents in their own systems. Settlement agents are commercial banks chartered for that purpose by the PBC, usually for 3 years, and direct participants (31 in 2010) open foreign currency accounts with settlement agents. The system operates from 9:00 a.m. to 5:00 p.m. on business days, and the orders submitted are cleared by China's central clearing house (CNCC), and forwarded for settlement.

The volumes processed in the CIS and the CDFCPS are significantly smaller than those processed in the HVPS, BEPS or IBPS; however, while the volume of foreign currency transactions has increased slightly in recent years, cheque turnover has steadily and significantly declined as electronic payment methods have gained grounds.

At the end of 2010, PBC branches operated 1,017 clearing houses, of which specific institutions cleared only certain transactions such as those conducted in securities markets. Local clearing houses are primarily responsible for clearing cheques and drafts. They send net positions to local PBC branches of commercial banks, which forward the positions to the HVPS for settlement. Regional clearing houses are mostly operated on a not-for-profit basis, and bill the institutions using their services only for the cost of their operation.

In addition to the systems operated by the PBC to provide clearing and settlement services, a number of private providers are also engaged in such activities:

- China UnionPay: an entity headquartered in Shanghai that provides clearing for bank card transactions between issuing institutions and acquiring institutions. UnionPay also sets the rules to be followed by card companies, and the technical standards for clearing card transactions.
- Clearing Center for City Commercial Banks (CCCCB): a not-for-profit organisation providing services to urban commercial banks and credit cooperatives, and rural banks. It primarily clears banker's promissory notes, online payments and interbank transactions. It is headquartered in Shanghai, and had 203 members at the end of 2013, and 4,164 at the end of 2014.
- Rural Credit Banks Funds Clearing Center (RCBFCC): set up jointly by 30 rural banks and credit cooperatives and headquartered in Beijing, it clears interbank transactions for such institutions.
- Local clearing houses: private companies to clear transactions for payment service providers; there were 144 such institutions at the end of 2010.

The turnover of the CCCCB and the RCBFCC is far smaller than the volumes cleared in the systems of the PBC: in 2015 Q2, 600,000 and 104 million transactions amounted to a total turnover of CNY 134 billion and CNY 801 billion, respectively.

The vast majority of card payments in China are conducted using the cards issued by the card company China UnionPay, across the company's acceptance network. The concept of a Chinese national card system dates back to 1993, when the idea of the "golden card" project was conceived, but was only implemented in 2003, when the company was set up with the participation of the four largest banks in China (ABC, BoC, CCB, ICBC). A further step forward occurred with the 2005 publication of the document "Some Opinions on Promoting Bankcard Industry" by 9 ministries and the PBC, which declared public policy guidelines and strategic goals for the development of the card market (*UnionPay 2005b*).

The turnover cleared by UnionPay is growing steadily: the total value of the 18.67 billion transactions in 2014 amounted to more than CNY 41,000 billion (*PBC 2015:152*), which makes UnionPay a potentially serious competitor to major card

companies such as VISA or MasterCard even on the international scene. According to *Nilson* (*2016*) data, in 2014 close to 12 per cent of global credit card transactions and 8.6 per cent of debit card transactions were cleared in Chinese systems, which demonstrated the highest growth rate among international card companies. At the end of 2014, UnionPay's network covered 150 countries, with merchant outlets in 107 countries, ATMs accepting UnionPay cards in 129 countries, and Chinese payment cards issued in 39 countries.

4. Turnover of specific payment methods

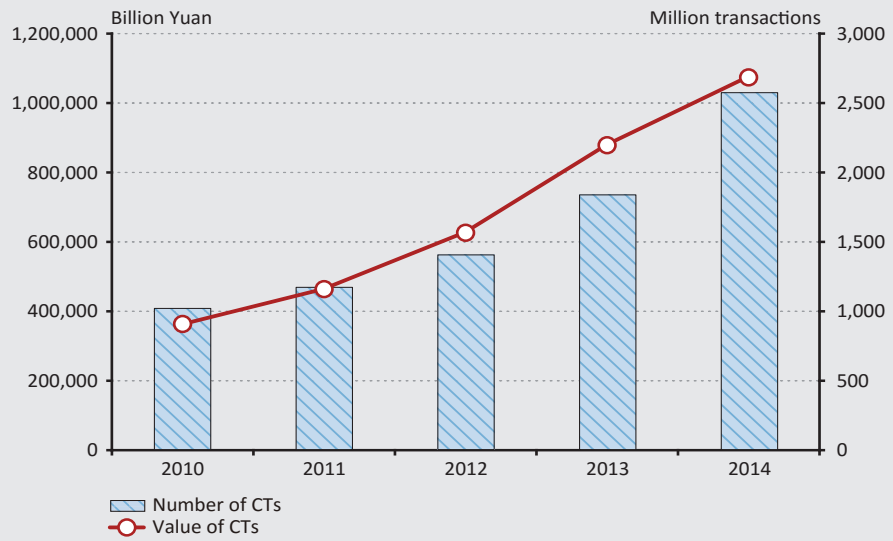
4.1. Cheques and drafts

Cheques are primarily used by businesses. Those with a value of less than CNY 500,000 may be submitted to the CIS, but cheques may also be processed in other local clearing systems. Bank drafts are negotiable instruments issued by banks to businesses and individuals after taking their deposits. Some drafts can be used nationwide, while others only regionally (within specific provinces). Most drafts are cleared in the BEPS, but in certain cases local clearing (CCCB or RCBFCC) is also possible. A commercial draft is also a negotiable instrument, which is issued by a business primarily in connection with commodity transactions, where the acceptor (this could also be a bank) is instructed to pay the given amount on the specified date unconditionally. In the case of electronic drafts, the parties may also agree on six-month payment terms, during which the buyer either purchases commodities or applies the discount. Upon expiration of a draft, the beneficiary instructs their bank to present the draft to the payer's bank. The Electronic Commercial Draft System (ECDS) was established in 2010 to support the dematerialisation of paper-based drafts. It supports issuance, discounting, rediscounting and clearing. Banker's promissory notes are issued by banks after taking deposits, are payable at sight and are cleared in the BEPS. Drafts and promissory notes account for less than ten per cent of total turnover, but the total turnover of cheques has also declined considerably in recent years.

4.2. Credit transfers

The increasing rate at which electronic payment methods are spreading is not only reflected by the decline in cheque payments, but also by the growing turnover of credit transfers. In 2014, the number of transactions was up nearly 40 per cent on the previous year, and the value of the total turnover of credit transfers was also 22.5 per cent higher year on year.

Figure 4
Trend of credit transfers by volume and value



Note: BIS statistics are based on the turnover of the HVPS and the BEPS systems; however, the data presented here cannot be matched directly with the turnover data of each system as presented previously, because in addition to credit transfers, both systems process other transaction types as well.
Source: BIS 2015.

4.3. Payment cards

Although the dynamic growth in the number of payment cards issued in China decelerated slightly in comparison to the rates of close to 20 per cent seen in previous years, the growth rate of the number of cards compared to the end of 2014 is still considerable, at more than 10 per cent. As a result of the progress made in the past years, the cumulative number of payment cards issued in the country was over 5.6 billion in 2016 Q1, more than 90 per cent of which are debit cards.

The development of the acceptance network has been even more remarkable, with a 2015 growth rate of about 40 per cent compared to the end of the previous year, in terms of both merchant outlets and POS terminals and ATMs (*Annex, Figure 8*). Compared to the more than 17 million merchant outlets and the 23.5 million POS terminals operated in these outlets, the number of ATMs shows a significant shortfall at close to 900,000, but this number is expected to grow at an accelerating rate, as many banks are deploying multifunctional devices that are also capable of other tasks than cash withdrawal. This may be crucial in the supply of banking services to parts of the population residing in areas that are not covered by bank branches, including the possibility of account administration. Using ATMs, payment service providers may also develop additional innovative solutions, which may be instrumental in connecting the population without bank relations to financial services. One example is the method developed by HDFC Bank, which provides

agricultural producers with access to cash in exchange for the supply of certain commodities. The method is also useful because it allows the bank to monitor the sales of the producer concerned, making it possible to grant micro credit on that basis. It is to be noted that Chinese manufacturers have a high share of the ATM market, which is also secured by legal regulations. The regulations introduced in 2014 require Chinese banks to increase the share of IT equipment manufactured in China to 75 per cent in 5 years, and ATM-related data to be stored within the territory of China (*Banking Automation Bulletin 2, 2016*).

The spread of electronic payment methods is supported by the fact that agricultural aid and pensions are transferred to recipients' bank accounts, forcing every household to open at least one account. Consumer campaigns have been run locally involving designated merchants and centrally by the PBC, targeting the population of rural areas with a view to reinforcing confidence in electronic payment methods. Accordingly, the PBC issued its guidelines[4] on the development of the rural payment system, specifically addressing the improvement of bank card payment options for migrant workers working in cities (*PBC 2014:147*). Education on the use of bank cards was also provided specifically to young people in an attempt to reach the older generations indirectly. In these regions, even cash withdrawal using bank cards is a challenge, which is why until the end of 2013 cash can be withdrawn using POS terminals with 850,000 designated merchants. This covered approximately 80 percent (480,000) of towns and villages which had no bank relations. With such withdrawals, interchange fees are lower, and the distribution of interchange fees among issuing banks, acquirers and UnionPay is 3:6:1, tilting towards the acquirers (*PBC 2014:74*), which means that the measure may provide further incentives for increasing the number of cash withdrawal options in areas that have been less covered so far, and may also reduce the costs to customers. In 2013, new regulations on interchange fees were introduced, which specify rates varying by sector (*Wang 2012*):

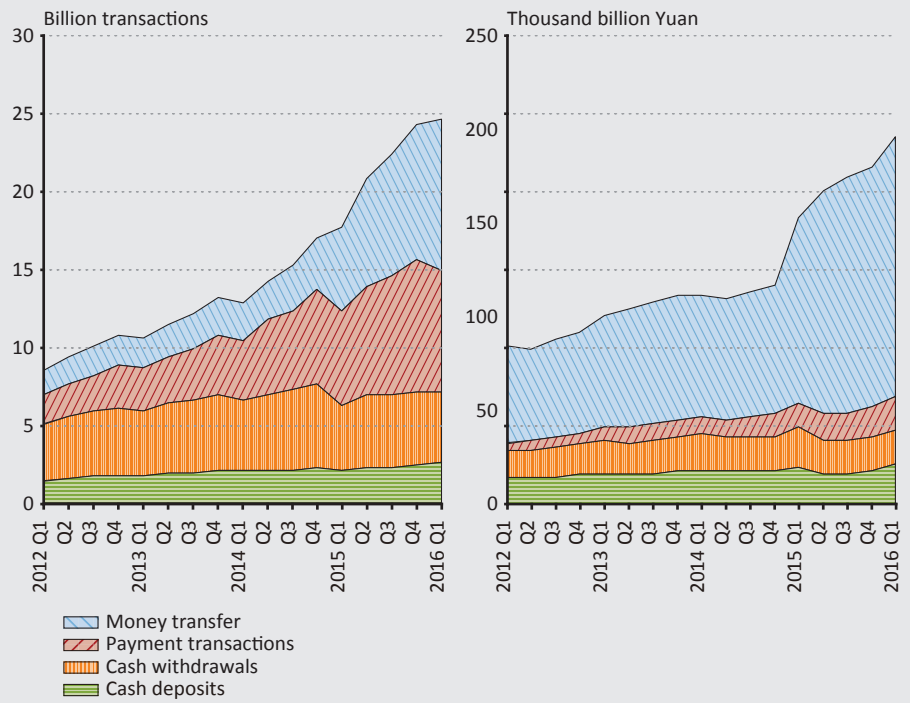
- food and beverage, entertainment, real estate and automobile sales: varying between 2 per cent and 1.25 per cent, capped at CNY 80 in the case of real estate and automobile sales
- merchandise, travel agencies and ticket services: 0.78 per cent
- utility fee payments: 0.38 per cent
- public welfare sector (e.g. public education and healthcare): no interchange fee charged.

The growth in payment card turnover is primarily attributable to purchases and money transfers, while no significant change has occurred in the number and value of card withdrawals and deposits, which points to the increasing prominence of faster and more efficient electronic payment solutions. The data also show that of

[4] Guiding opinions on promoting the development of rural payment service environment.

the 24.6 billion card transactions executed in 2016Q1, about one-third were related to purchases and 40 per cent to money transfers, whereas in terms of transaction value, money transfers accounted for more than 70 per cent of the total. This also includes services where the payer is only required to know the card number of the payee, and during the day (between 7:00 a.m. and 11:00 p.m.) the money transferred will be immediately at the payee's disposal. One example of money transfer by payment card is UnionPay's solution, which uses e-money to render the money transfer service. Customers are required to open e-money accounts, and top up these accounts from their bank accounts, and money transfers are made between e-money accounts (*MoneySwap 2016*).

Figure 5
Payment card turnover by number of transactions and transaction value



Source: PBC.

It is also appropriate to look at the evolution of the key indicators of card turnover (*Annex, Figure 9*). The steady increase in the average per capita purchase value (exceeding CNY 10,000 by the end of 2015) indicates the growing intensity of consumers' card use, while the decrease in average transaction value (less than

CNY 1,700 in 2016 Q1) suggests that cardholders are increasingly using their cards also for low-value transactions, which may contribute to the reduction of cash usage. This may be supported by the spread of contactless payment facilities based on the NFC technology; a solution of this kind is already available to cardholders from the Chinese card company.

The market of payment cards is currently the largest in the Asia-Pacific region: in a global comparison, 60 per cent of all payment cards were issued and 47 per cent of all ATMs were operated in the region in 2014, of which China had 42 per cent and 20 per cent shares, respectively (*Banking Automation Bulletin 1, 2016*). That said, there is obviously plenty of room for growth, given that the region's share of the global market is 24 per cent in terms of the number of transactions, and 47 per cent in terms of total transaction value. The low transaction number indicates that presumably the share of cardholders who use their payment cards only for cash withdrawals rather than frequent purchases remains considerable, whereas the higher share of turnover value may suggest that the middle class is becoming stronger in the countries of the region, and so is effective demand as a result.

4.4. Turnover of third-party providers

Apart from the above payment methods, which are essentially linked to banking services, independent third-party online payment systems provide additional cashless payment options. In such arrangements, customers open dedicated accounts in their online payment providers' systems, which they can generally top up by means of credit transfers or card payments, and use subsequently for their transactions in the providers' self-contained proprietary systems, which are independent of banking infrastructures. Below is a brief overview of the payment solutions applied by China's two most prominent service providers.

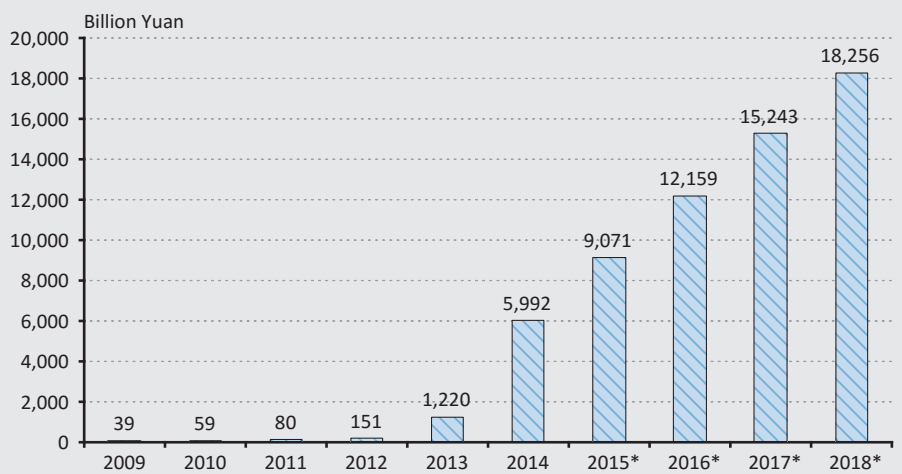
One of the first, but undoubtedly the most significant player in the market was Alibaba, and its solution AliPay. Initially, AliPay primarily supported the execution of e-commerce solutions on Alibaba and Taobao platforms by acting as a third party between merchants (in the case of Taobao, the individual seller) and buyers, providing an *escrow* service to remove the obstacles resulting from the lack of trust between the parties, where the consideration for the purchase was held on a central account until the terms of the purchase were fulfilled. It is therefore important to understand that in respect of China's payment system, any reference to a third-party provider means this type of service provider rather than the payment initiation services and account information services under the Payment Services Directive (PSD2),[5] effective as of 2018 in Europe. It is also to be noted that in contrast to US law, where escrow services are regulated in great detail, China did not impose

[5] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L2366.

any legal regulations on such activities before 2011 (*Yu – Shen 2015*). As online purchases essentially concerned low-value transactions and involved a relatively high level of risk, commercial banks avoided this segment, and the regulator also found that the market was too small to be regulated specifically. By the time the new regulation was finally adopted in 2011 (*PBC 2010*), commercial banks had lost the vast majority of the market. The new regulation set capital requirements (CNY 100 million for services to be provided in the whole of China, and CNY 30 million for services to be provided in a single province), while it also provided that licences may only be granted to Chinese entities. As a result, for instance Alibaba, otherwise registered in the Cayman Islands, was forced to establish AliPay in China. Later, as the company started to widen the range of its services, P2P money transfers as well as purchases in physical merchant outlets became available, and the latest developments already cover low-value investment services (by the name of *Yuebao*) and microcredit.

The steadily growing market for the mobile payments of Chinese third-party providers amounted to CNY 5,992 billion in 2014 and the turnover of such payments is estimated to exceed CNY 18,000 billion by 2018.

Figure 6
Gross merchandise volume of Chinese third-party providers' mobile payments



**estimated figures*
Source: iResearch 2015.

P2P credit transfers account for the largest part (close to 60 per cent) of the transaction turnover, while mobile finances, accounting for one quarter of the turnover, include the purchase of financial products such as securities. Online purchases make up approximately one-eighth of the total turnover (*iResearch 2016*).

The Chinese online payments market is essentially dominated by two players: AliPay, a solution by the e-commerce giant Alibaba, controlled close to one half of the market in 2015, while Tencent, which also operates China's most popular messaging application WeChat, had a market share of 20 per cent (*Annex, Figure 10*).

Among other players, AliPay teamed up with VISA and China's four largest banks (ABC, BoC, CCB, ICBC[6]) to set up an innovative payment system. Launched in 2004, the service supports online purchases both with Alibaba and Taobao, an online marketplace that also generates an extremely high volume of sales in China. Apart from these platforms, it has contracted an additional 500,000 merchant outlets, the services of which cover a major part of the retail sector, and also the electronic payment of utility bills. Foreign companies must pay a USD 1,000 setup fee and are subsequently charged a 2.5 to 3 per cent transaction fee, whereas the setup fee is waived for Chinese companies, which are charged transaction fees ranging from 0.7 to 1.2 per cent of annual sales with a USD 5,000 minimum (*LTP 2013*). At the end of 2013, AliPay had 800 million users, while PayPal, one of the world's largest online payment providers, 132 million. Compared to the previously recorded daily volume of 80 million transactions (*Yu – Shen 2015*), in 2016 AliPay generated a daily turnover of 175 million transactions, 60 per cent of which are conducted via mobile phones (*China Post 2016*).

In 2014, AliPay teamed up with China's largest microblog provider Weibo to enable Weibo users to make payments online or offline (in physical space) using their AliPay accounts. With offline payments (just as with "regular" AliPay purchases made without using the Weibo application), the mobile phone generates a QR code, which is scanned by the merchant to initiate the payment transaction. There is also a payment option where the payee's code is scanned by the payer to initiate a transaction. The partnership with Weibo is a major step, primarily in view of the fact that in addition to providing a payment function for the microblog provider's more than 220 million subscribers and 100 million daily users (*BoA 2015*), the platform also enables various personal discounts to be recorded, and merchants to send direct personal offers.

International expansion has also started, involving an agreement with the ridesharing application Uber, whereby rides can be paid via AliPay in more than 400 cities around the globe, which, given the pick-up in Chinese tourism, could drive a considerable increase in turnover. With a view to expansion in Southeast Asia, the company is set to enter the e-commerce markets of the six most developed countries of the region (Philippines, Indonesia, Malaysia, Singapore, Thailand, Vietnam), which offers the potential of adding another 250 million users (*Card and Payments World 2016*). The company is also expanding in Europe, and following an

[6] Agricultural Bank of China, Bank of China, China Construction Bank, Industrial and Commercial Bank of China.

agreement with a major participant in Germany's acquirer market, the next step is expected to be the expansion of the Austrian acceptance network.

In China, AliPay's greatest rival is TenPay, established by Tencent in 1994. In addition to purchases with about 1.1 million merchants, the system also enables cash withdrawals and P2P money transfers. These latter are free of charge, whereas 1 per cent transaction fee is charged on each retail purchase. Over the long term, Tencent may derive an advantage from the WeChat messaging application operated by it, which is currently the most popular application of its kind in China, with over 760 million users.

In terms of their operating mechanism, both AliPay and TenPay are based on e-money, requiring each user to open an account in the provider's proprietary system, which they can top up using their payment card. Once the account has been topped up, transactions are conducted outside of the banking system within AliPay's or TenPay's proprietary system, avoiding the use of conventional payment infrastructures. This is one of the factors that allow person-to-person (P2P) and retail (P2B) payments to be executed in real time.

4.4.1. Innovative payment solutions: What makes mobile payments work in China?

A major part of innovative payment solutions build on the possibilities offered by smartphones and the mobile internet, both of which have become extremely widespread in developed countries. One consequence is that mobile payment has become a collective term for a rather wide variety of technologies. There may be differences in the underlying payment method (credit transfers, direct debits or requests with the features of direct debit, card payments, e-money), the submission channel (e.g. NFC or QR codes), and the operating model (e.g. payments within a phone application, wallet service).

As shown above, enjoying its previous monopoly, the commercial banking sector aided by the state was relatively late to realise the degree of threat third-party providers posed to the banking sector, and by the time they launched their new products such as real-time payments (IBPS) or card transfers, they had suffered a major market loss in retail payments. The further transformation of the payment system and the shifting power of market participants do not only raise a key question in China, but this is where participants have emerged which, with their strong customer base and continually growing product range, have been making deliberate efforts to break the banks' dominance in the market. Other than the loss of customers, the banking sector also faces the risk that a major part of bank liquidity will be channelled from customers' bank accounts to third-party providers' proprietary accounts. In terms of the standard of service, China's banking sector has arguably overcome its previous disadvantage: real-time credit transfers between bank accounts have been implemented, while online money transfers linked to

payment cards, and mobile payment applications are also available. The state itself is actively supporting the use of payment cards in an effort to protect the market of conventional banking actors, which complements recently tightened conditions for third-party providers. On the one hand, as of 2016 H2 any customer can only register in the system of a third-party provider with a payment card issued in China and their real name, following the provider's verification of the customer's identity (*Bloomberg 2016*). Providers are required to classify customers into three categories: customers whose identity has not been established directly by the provider may initiate transactions worth up to CNY 1,000 per year, while the limits are CNY 100,000 and CNY 200,000 for customers whose identity has been verified through 3 and 5 channels, respectively. On the other hand, third-party providers are prohibited from opening accounts for financial institutions in their systems (*Parsons – Zou 2016, Xinhua 2015*). In addition to the fight against money laundering, the regulation[7] seeks to prevent consumers from keeping considerable amounts in systems outside the scope of the deposit guarantee scheme, i.e. to reduce risks to individual consumers and systemic risks.

It is apparent from the foregoing that mobile payments in the broad sense, i.e. including P2P money transfers, purchases in physical merchant outlets and e-commerce transactions executed using mobile applications, are extremely widespread in China in comparison with other countries. This, however, is only partly attributable to initially more relaxed regulations: although online payment services are provided by a number of market participants (such as PayPal) also in the West, they have not been able to gain such a strong market presence. It is then appropriate to ask what local specificities justify this phenomenon in comparison with Western countries that have more advanced financial infrastructures and more bank relations relative to the size of their populations?

Within mobile payments, the popularity of online payments is explained by several factors, one being that the functionality of such applications (most prominently WeChat) is by no means limited to payments. Apart from being the most popular messaging service, which has largely replaced previous call and sms-based communication, especially among the urban population, it can also be used to place taxi or meal orders, book medical appointments, municipal administration, and photo sharing. Consequently, for a large segment of the population using the application has become part of everyday life, and for them payments are only one of the many functions rather than a unique solution.

In terms of business operations, Chinese third-party providers are also different from banking participants in that they create their own ecosystems consisting of

[7] Announcement of the People's Bank of China (*2015*) No. 43 – Administrative Measures for Internet Payment Services of Non-banking Payment Institutions.

multiple companies, which cover various segments of the market, but may also offer competition to one another. Organisation and product development is much more flexible, as a result of which such companies are less exposed to disruptive technologies that have been eroding banks' market share. One example is the story of Alibaba, established in 1999 to support trade among small businesses, which was extended to consumer-to-consumer retail in 2003 (Taobao online marketplace) and business-to-consumer retail in 2008 (Tmall). To support additional services, they have set up their cloud-based data platform (Ali Cloud Computing), and have also entered the entertainment industry (Alibaba Pictures, Ali Music) and the financial services market (Ant Financial). Ant Financial is the umbrella for payment services (AliPay), the money market fund (Yuebao), online scoring (Sesame Credit), microlending (Ant Micro), and exclusively internet-based MYBank (Tech in Asia 2015).

Another relevant factor is the extremely rapid development of the Chinese economy over the recent years and decades. In the realm of payment solutions, part of the population has simply skipped the developmental phase represented by physical cards, and switched to mobile payments as their primary electronic payment method directly from cash (*Banking Automation Bulletin 1, 2016*). That is, relative to Western countries, the use of payment cards started later, and although their number is rather high today, many people are still using them only for cash withdrawals, which may partly be attributable to the subdued development of the acceptance network.

Another possible factor is the specific network character of the payments market, which in many cases makes the spread of new payment solutions a challenge. Due to this network character, launching a new product in the market is difficult, because even if a provider offers an extremely innovative and affordable payment solution, it will fail if there are no merchants to accept it, or if its usage is limited (i.e. there are only few people to send money to using the solution). As it were, China's two dominant providers worked around the problem by initially acquiring customers in markets other than payment services: Alibaba became successful and popular in the field of online trade, and Tencent (WeChat) in messaging. In this way, offering payment services to a customer base built around other services enabled these providers to gain considerable market shares immediately, reaching the "critical mass" needed for a successful payment service within a relatively short time.

Certain culture-specific marketing techniques such as running hong bao campaigns may also have contributed to the spread and wide recognition of mobile payment applications. Hong bao is the name of the red envelope used by family and friends to give one another money gifts at the time of the Chinese New Year. Both leading mobile payment systems have developed proprietary solutions to send electronic hong baos; additionally, WeChat staged an extremely popular game in which

participants could win smaller prizes by shaking their mobile phones. In the minute with the highest traffic, 810 million users were shaking their phones at the time of the 2015 new year (*Forbes 2015*), which demonstrates the capability of such campaigns to mobilise massive numbers of people.

As a final key aspect, providers are also trying to generate a higher turnover through pricing, granting discounts to buyers who use an online mobile payment solution to pay sellers, making the choice more worthwhile. Providers of such applications have access to direct and immediate information about the use of discounts and their impact on turnover, which enables them to gain a much better understanding of customer habits than banks.

5. Conclusions

China's development in recent decades has also been felt in payments, and major advances have been made in the spread of electronic payment methods. Although an international comparison shows a considerable disadvantage in the field of conventional payment methods relative to countries with the most developed payment systems, data on the past years suggest that the difference has been declining.

In terms of financial infrastructure, advantages could be derived from the vast size of the country and the large number of users. In the case of payments, economies of scale are crucial: due to high fixed costs (infrastructure investments) and low variable costs (the cost of clearing a single transaction being marginal), infrastructures in large and homogeneous markets such as that of China can process electronic transactions at an extremely low cost. Low system costs may support the spread of Chinese cashless payment solutions going forward, particularly if the current system, characterised by multiple levels of complexity, continues to be simplified.

Simultaneously with the decline in the volume of cheque payments, the number of conventional electronic payment methods such as credit transfers and card payments has been growing dynamically. A relevant question about payment cards concerns the extent to which the Chinese card company, which previously enjoyed a monopoly in a closed market, will remain competitive in the domestic market, where as a result of opening up, it will face competition from international card companies as well as Chinese competitors offering extremely powerful mobile payment solutions. Conversely, international expansion could be equally important, as the rapid growth in China's international tourism could provide an advantageous starting point for the global development of the Chinese card system.

While China has also taken the road to advanced, mostly cashless payments which have so far been characteristic of Western countries and particularly Scandinavia, it also has a number of specificities regarding which its development diverges from that of the payment systems of Western states. On the one hand, due to the rapid economic and technological development, a major part of the population switched directly from cash to mobile payment solutions, skipping the interim developmental stages of conventional payment methods such as credit transfers or card payments. This means that although the breakthrough in this respect has been expected for years in Western countries, currently China is the only country with a popular and widespread mobile payment solution that is both known and effectively used by a major portion of the population.

This developmental leap has two consequences. One is the much faster evolution of the process that is also underway in Western countries, and is expected to be reinforced in the new Payment Services Directive to take effect in Europe as of 2018, i.e. the weakening relationship between banks and their customers. Although an increase is expected in both the size and share of the population with bank relations, this does not necessarily mean that banks can also draw a profit from this. As shown for Chinese solutions, topping up a mobile payment account in a simple way (e.g. using a payment card or by credit transfer) still requires a bank account; however, effective payments subsequently take place outside of the banking sector in the proprietary systems of the provider issuing e-money. Chinese third-party providers often have an equivalent number of customers to those of the largest banks in China, and although payment services account for only a relatively small part of their revenues (around 7 per cent), banks may not only lose customers but also key data (such as those suitable for scoring based on actual customer behaviour) as new market participants gain ground (*Citibank 2016:11*). It should also be apparent that the new systems created not only drive banks out of increasingly significant areas of their services: as a result of transactions being executed in specific providers' proprietary systems rather than in conventional clearing systems between bank accounts, bank liquidity may dry up to a large extent in the long run.

The other consequence is that the mobile payments market is currently dominated by two providers, and no major new entries are expected over the short term. Due to the specific network character of payments, it is extremely difficult to spread new services given the need to acquire a critical mass of customers that can make the system viable; however, it is inconvenient for customers to register with a large number of services and assess in every payment situation whether the payee participates in the system concerned, i.e. capable of receiving the amount sent. In this situation, to a certain degree the two service providers are competitors and to a certain degree they have divided up the market (e.g. the focus of Alibaba is e-commerce, and that of WeChat is messaging); however, over the long term

consumers' interests would be served by effective competition and low barriers to entry in a market of many participants. This would ensure continuous technological innovation on the one hand, and the most advantageous prices to customers on the other. This is the direction in which developments on payments are heading in an attempt to increase competition and facilitate market access for new providers and products by means of standardisation and interoperability. In China, the initial steps were helped by a relatively closed market and the fact that certain international IT companies were crowded out or constrained; however, over the long term this does not support the emergence of solutions that are efficient in terms of society as a whole: the systems created are self-contained and not interoperable, which may lead to market failures in the future.

Based on the foregoing, it may be argued that by implementing the recent developments on payments, China has gone down a road that is paved by the same components as those used in Western countries and is, in many respects, similar to the advances made in those countries, but certainly has a specific Chinese character. In managing future challenges, a major role will be played by the Chinese central bank, which is expected to adopt further measures to support market liberalisation and competition.

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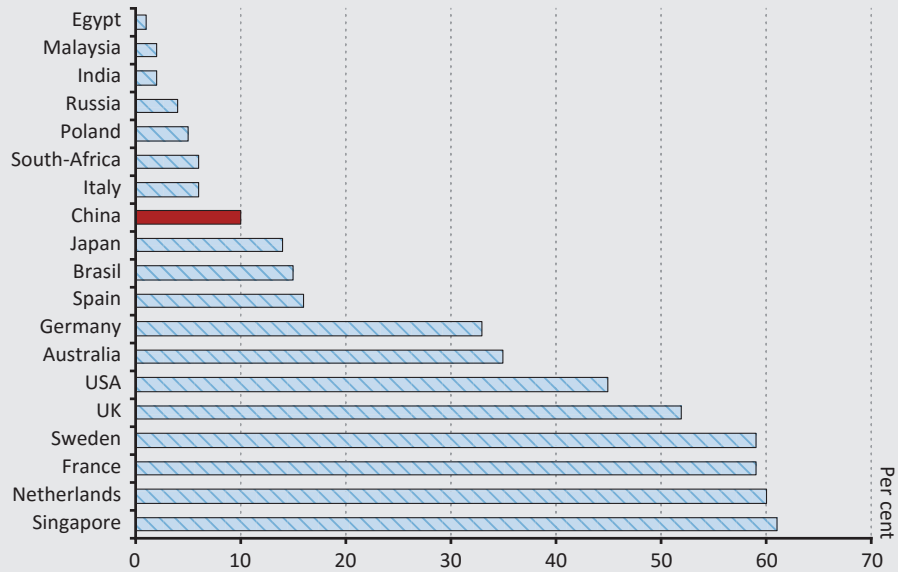
Annex

Figure 7
Share of electronic transactions by country, 2013



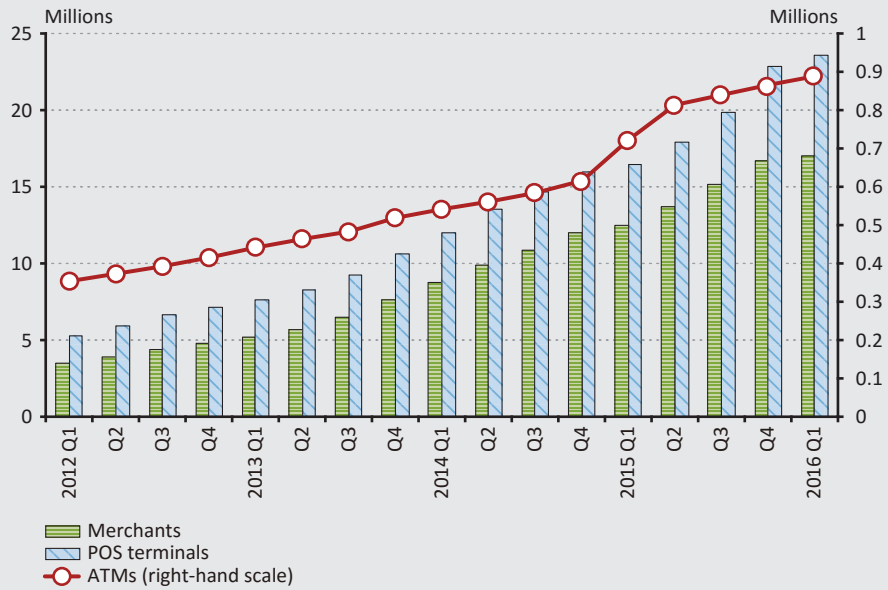
Source: MasterCard (Thomas 2013).

Table 1
Indicators of the level of development of payments in international comparison

	2010	2011	2012	2013	2014
China	0.8	0.9	1	1.4	1.9
Brazil	39.4	42.8	45.2	47.7	53
Germany	71.8	74.3	75.1	75.7	71.9
India	0.3	0.3	0.5	0.7	0.9
Japan	11.1	11.3	11.8	12	12.3
Russia	18.4	18.8	18.8	19.7	19.6
South Africa	10.4	11	12.5	12.6	13
USA	24.8	25.7	27.1	28.6	29.7
Number of card payments per inhabitant					
	2010	**2011**	**2012**	**2013**	**2014**
China	3.6	4.8	6.7	9.5	14.4
Brazil	32.4	37.6	43.6	49.9	54.8
Germany	32.8	36	38.8	44.2	40.5
India	4	4.8	5.3	5.9	6.7
Japan	42.3	47.9	53.5	na.	na.
Russia	7.1	11.6	19.9	31.9	47
South Africa	19.9	21.9	26.1	30.6	36.5
USA	210.9	235.2	248.3	266.4	283.1
Value of cashless transactions as a ratio to GDP					
	2010	**2011**	**2012**	**2013**	**2014**
China	16.8	16.6	18.2	21.1	21.9
Brazil	7.6	7.5	8.3	9.0	8.7
Germany	24.4	26.2	26.0	25.1	19.5
India	10.3	9.7	8.3	7.9	7.4
Japan	6.1	6.5	6.6	6.9	6.9
Russia	8.3	7.9	8.0	8.7	9.3
South Africa	45.2	43.6	50.0	62.4	na
USA	na	na	10.0	10.0	11.7

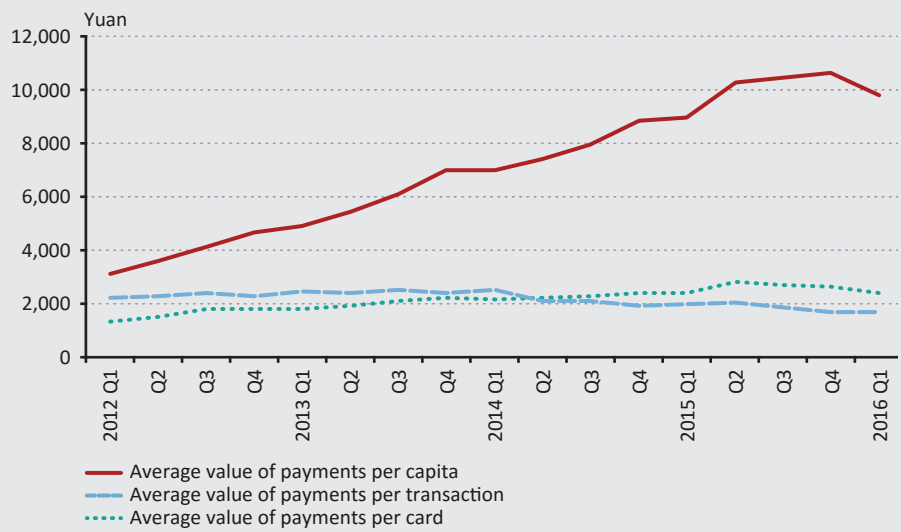
Source: BIS 2015, cashless transactions: credit transfers, direct debit, card, cheques, e-money payments.

Figure 8
China's payment card acceptance network



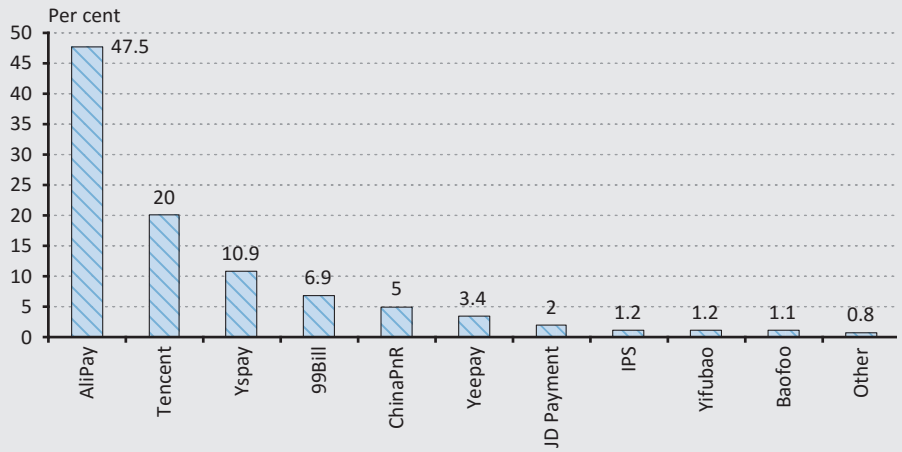
Source: PBC 2016.

Figure 9
Key indicators of payment card turnover



Source: PBC.

Figure 10
Market share of third-party providers (TPPs) in China, 2015



Source: Statista (2016).

Challenges of Internationalisation from the Perspective of the Chinese Currency

Tamás Gerőcs

This paper examines the spread of the international use of the renminbi (yuan), with particular focus on, the multipolarisation of the international monetary system. Additionally, the study addresses the question of how the spread of a new currency in international financial markets influences the external financing opportunities of small open economies (e.g. Hungary). The author sets out two possible scenarios in relation to the spread of the Chinese renminbi (yuan) and, in terms of the development of the entire international financial system, he points out that over the next years it will be of crucial importance which model the Chinese economic policy will move toward, and if there is a road that leads from the one to the other.

Journal of Economic Literature (JEL) codes: G28, G15, H12, H63, N25

Keywords: renminbi (yuan), hegemony, multipolarity, international financial system, convertibility

The quasi-monopoly of the US dollar as an international reserve currency is being eroded as the United States is losing its economic weight, and as *Campanella* (*2014*) notes, there has been a protracted multi-polarisation process in the international monetary system, whereby in parallel with the relative weakening of the US dollar in international financial flows and financial settlements, alternative currencies are becoming increasingly widespread: in line with the regionalisation of the world economy, a financial regionalisation can also be observed (*Gerőcs 2016; Feenstra 1998*). The ongoing changes in the world economy will largely determine the direction for the development of the international monetary system. In this paper, I seek the answer to how the spread of the international use of the Chinese currency, the renminbi (yuan),[1] has repercussions for the development of the international monetary system in the midst of these global economic processes.[2]

The convertibility of the renminbi, i.e. its free use in international transactions, has been ongoing since 1996, although capital account liberalisation, a part of

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[1] The official name of the Chinese currency is renminbi, and the yuan is its primary unit.

[2] The economic size of the People's Republic of China caught up with that of the United States by 2015, based on the GDP volume calculated by the IMF at purchasing power parity, and it has been the world's largest exporter of goods since 2009 (*Medeiros da Silva 2016:2*).

the balance of international payments, is still not fully achieved.[3] In addition, convertibility and internationalisation are two separate, and only partially overlapping processes. There are different views in the literature as to what extent an only "partially convertible" currency can take over global currency functions, since based on previous experience, international use is a necessary, but not sufficient condition for convertibility (*Ausch 1969:162; Eichengreen – Kawai 2014: 16-18; Subacchi – Driffil 2010; Laurenceson – Ki Tang 2005*).

The renminbi has become one of the most significant settlement currencies in regional transactions, and if this progression moves towards full convertibility, the renminbi could become a global key currency. It is worth taking up this idea, particularly since more and more governments in Central and Eastern Europe, relatively remote from Chinese commercial networks, are also planning to denominate their revolving debt in renminbi.

It is not by chance that China's central bank (*People's Bank of China, PBC*) announced the internationalisation of the renminbi (yuan) in 2009, following the outbreak of the global economic and financial crisis spreading from the US mortgage market, and then accelerated the capital account liberalisation, making steps towards convertibility (*Cohen 2012*). In the following, I look at the settlement function of the yuan in international trade, its reserve-currency function in terms of central banks' foreign currency accounts, and its role in international financial transactions (such as direct equity investments, portfolio investments). The latter affects capital account transactions and thus also the question of convertibility, whereas the first two functions relate to the use of the renminbi in international payments through current account transactions.[4]

1. The yuan in international trade

The share of the renminbi (yuan) in China's external trade finance has been increasing dynamically since 2010. While the share of transactions denominated in yuan was barely 0.5 per cent of China's total external trade in the first quarter of 2010, this ratio exceeded 35 per cent by 2014, according to data from SWIFT/ Bloomberg (*Zhang – Tao 2014*). As China's weight has been steadily increasing in

[3] By convertibility, I mean the right of the holder of a country's currency to freely convert it into another convertible currency at a market rate, at any time. However, convertibility has several degrees: full convertibility covers all components of the balance of payments, including current and capital account items. Convertibility is considered to be limited, if it is restricted to current account transactions. Furthermore, a distinction can be drawn between external and internal convertibility, meaning that limitation refers exclusively to resident or non-resident currency holders. Central bank convertibility occurs when free exchange only applies among central banks in full (*Ausch 1969:144*).

[4] With regard to the latter, it is worth noting that effective October 2016, the IMF revised the weights of each currency in the SDR basket that serves as the international unit of account, and the renminbi (yuan) became part of the SDR basket. For the funding period until 2020, the renminbi is the third largest member of the SDR basket with a 10.9 per cent weight, following the US dollar (41.7 per cent) and the euro (30.9 per cent).

international trade, this has also had various effects in international settlements. In terms of the pace at which the use of yuan invoices has grown, we can see that the crisis in 2009 was a turning point. The reason for this is that China's foreign trade partners did not have sufficient access to US dollar funds in the global liquidity crisis (*Eichengreen – Kawai 2014:18*). During the months most affected by the crisis, banks suspended their payments, and therefore accessing enough credit to realise trade transactions was not possible. All of this particularly affected China's exports, as the traditional outlets of the country were actually faced with resource constraints, they could not issue foreign invoices in US dollars. As a result of the contraction of export markets, the global crisis had a large impact on the Chinese export-oriented mercantile model. Consequently, as one of the first decisions to respond to the crisis, China's government and central bank provided liquidity for their major commercial partners. At the same time, China did not want to make its own foreign exchange reserves available for partners without restrictions, instead it introduced facilitations in payments in renminbi (yuan) and in the issuance of foreign invoices. In 2009, companies in five designated Chinese provinces[5] obtained special permission to issue and accept invoices in yuan in trade settlements with ASEAN countries. In 2010, this scheme was expanded to 20 provinces, and today all companies across the whole of China are allowed to use their own currencies for their international trade transactions (*Medeiros da Silva 2016:4*). In order to improve regional trade integration, China and the ASEAN countries concluded a free trade agreement in 2010 (*Campanella 2014:10*).

It was about that time when the role of China's central bank became more significant in regional trade settlements. Although most partner countries of ACFTA (the free trade area including China and the member states of ASEAN) – just like China – still use a currency-peg to the US dollar, most countries are planning to re-peg their currencies to the yuan, when China moves to a floating exchange regime. The aim is to set up a "currency snake" around the renminbi (yuan), that would link the regional trade integration to a monetary cooperation (*Campanella 2014:4-11; Eichengreen – Kawai 2014:18*).

Accordingly, the role of China's central bank is gradually increasing in providing liquidity for regional transactions. However, regional trade integration is characterised by some asymmetry. In China's foreign trade, settlement in yuan essentially materialises on the import side, with 80 per cent of yuan invoices coming from imports, whereas the ratio of exports in invoicing is only 20 per cent. This is primarily because most companies that issue invoices are Chinese firms registered in Hong Kong and they only export their products to Hong Kong on paper with settlements done in US dollars to re-import them back in exchange for renminbi (*McCauley 2011*).

[5] *Guangzhou, Shenzhen, Shanghai, Zhuhai and Dongguan*.

2. The yuan among reserve currencies

Attempts by China's central bank to boost the international use of the renminbi are also recognised in the cooperation among other central banks. The PBC has been concluding bilateral agreements on currency swap transactions with other states since 2008, directly providing renminbi funds for peer central banks (*Campanella 2014:7*). The bilateral agreements include currency swap transactions, i.e. participating central banks – within the limit and period specified in the agreement – may exchange their own currencies to renminbi.[6] So far, there are no official statistics available to show how many states drew money from the facility and to what extent, just as we do not yet know exactly the ratio of the renminbi in central banks' foreign exchange reserves.[7] However, bilateral agreements on currency swap transactions are open to the public, and according to these, if not the exact financial effects, at least the content of the agreements concluded by the PBC can be monitored.[8] The geographic scope of the agreements is less concentrated on Southeast Asia: it more facilitates the wide spread of monetary liquidity from Latin America through Europe and Russia to Asia. However, there is no such agreement in place with the United States, which is attributable to the multipolarisation of the monetary system.

The total value of the global swap lines set up by the PBC amounts to roughly USD 500 billion, which allows us to suspect that reserves in renminbi may represent a maximum of 5 per cent in the balance sheet total of the world's central banks. It comes as no surprise that direct trading partners, such as South Korea and Hong Kong, have the largest swap line.[9]

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[6] Countries participating in the bilateral currency swap agreements benefit from the possibility of buying foreign goods in exchange for their own currencies, which is an important alternative to barter transactions, in case there is a shortage of convertible key currencies on financial markets. This was the case during the crisis in 2009, due to the global shortage of US dollar liquidity. For partners with convertible foreign exchange reserves, such as China, it may be worth entering into bilateral agreements for the following reasons: (1) they may expand the international use of their own currencies, (2) they do not have to fear that their exports will decline in countries where convertible currency is not available in sufficient quantity, (3) they can save their own convertible foreign exchange reserves. Similar agreements existed following the global economic crisis in 1931, and between 1945 and 1950 when there were not enough convertible currencies in international payments to sustain international trade (*Ausch 1969:146-147*).

[7] Following its inclusion into the SDR basket, it is officially considered as a reserve currency in central bank balance sheets. At the same time, estimates are already available on the share of the yuan within the balance sheet and put this share at less than 5 per cent of the global reserves, based on calculations in the field.

[8] E.g. in September 2013, the Magyar Nemzeti Bank (MNB) and the People's Bank of China concluded an agreement on the establishment of a bilateral foreign exchange swap line with a notional amount of 10 billion yuan (USD 1.6 billion). As the study of the *MNB* (*2013*) pointed out, the bilateral swap agreement (BSA) is important for Hungary for two reasons: on one hand, it promotes the further development of trade relations between the two countries, and on the other hand it helps to mitigate financial stability risks. With regard to the latter, the MNB draws attention to the point that foreign exchange swap agreements between central banks may considerably improve the risk perception of a country, as central banks can easily access foreign currency resources in the case of market turbulences. Moreover, the mere existence of a swap line agreement represents strong financial commitments from the central bank providing foreign currency. Source: https://www.mnb.hu/letoltes/kina-swap.pdf.

[9] Countries with a line amounting to over USD 20 billion are Russia, Canada, Switzerland, Australia, Brazil, Malaysia, Singapore and the United Kingdom. The European Central Bank established a USD 56 billion swap line, which is not considered to be significant, considering the weight of the community within world trade.

This prompts the question of why the PBC provides renminbi reserves for central banks under bilateral arrangements, and why it does not make a better use of the opportunities provided by multilateral institutions. It is worth examining this question in detail, in the context of international finance.

3. The yuan in international transactions

Since its accession to the WTO in 2001, China has gradually liberalised capital account items, to which the country otherwise made commitments. However, the liberalisation process can be considered to be slow and structurally asymmetric. *Kawai* (*2014*) uses the expression *basic capital account convertibility* for the complex regulatory mechanism, through which China's central bank – in addition to the current account convertibility – allows limited access to local capital markets through a quota system, and increasingly accepts renminbi-denominated investments. One feature of the quota system is the preference of longer-term (greenfield or brownfield) foreign direct investments (FDI) versus short-term portfolio investments related to equity market transactions. Within the FDI category, the weight of the renminbi-denominated portfolio is increasing.[10] However, authorisation of the latter is more limited by the central bank which seeks to detect hot money. According to *Kawai* (*2014*), China does not aim to achieve full convertibility for the time being, because a quick and unilateral changeover could jeopardise the foundations of its current economic model. Over the longer term, the question is more so how long the capital account will only remain partially liberalised (some portfolio and other capital operations are subject to prior authorisation) and whether full convertibility will be achieved with the current account liberalisation (within this, in particular, the capital account), within a reasonable time. As noted, the structure and the development of the opening-up depends on China's economic policy, and within this, in particular, China's central bank.[11] One of the ultimate objectives of China's economic policy is to promote convergence to the advanced economies. For that purpose, the regulator seeks to widen the access of Chinese companies to foreign capital and the most advanced technologies by fostering cooperation between foreign and Chinese companies. Due to the large economies of scale made possible in China, the Chinese regulator is able to impose strict requirements on Western capital investments, thereby encouraging the ever-increasing specialisation of its own companies within various global value chains. In most cases, these requirements target the integration of the imported technology into China's economic infrastructure, which accelerates technology transfer between domestic and foreign companies. The most important economic policy

[10] In 2014, the renminbi-dominated portfolio increased to one third of the FDI stock invested in the entire People's Republic of China (*Eichengreen – Kawai 2014*).
[11] Private contractors have less considerable influence than was observed in history during the international spread of the US dollar or the British pound.

tools are regulations on sharing ownership, for example joint venture cooperation, as well as market protection in relation to balancing trade (to offset import), and local content requirements (*Liu – Dicken 2006*). Due to its internal potentials, the People's Republic of China is one of the few countries which is able to impose strict conditions on foreign direct investment, since the size of its internal market in addition to the quality of the infrastructure, for example, skill levels and relatively low labour costs valorise Chinese investments on a global scale.

However, embeddedness of foreign companies in China is not without imbalances either. As state regulation has a determining role, which is called *obligated embeddedness* by *Liu – Dicken* (*2006:1238*), asymmetries developed in the process of capital account liberalisation. Foreign direct investments into China (*RMB-FDI*) are subject to stricter rules than China's outward direct investment (*RMB-ODI*).[12] However, the "one-leg" liberalisation was disturbed by the sudden outbreak of capital market panic at the end of 2015, and the subsequent sharp increase in capital outflows.[13] This manifested itself in China's balance of payments turbulences, for example capital flight reduced the level of foreign exchange reserves by USD 500 billion. The sudden effect of the capital flight, which in volume terms, was more significant compared to previous periods, provided useful lessons for China's regulators, indicating the slowdown or the possible suspension of a further reform process related to the outflow side of the capital account, and the synchronisation of rules governing capital outflows (RMB-ODI) and inflows (RMB-FDI).

For the time being, access to renminbi (yuan)-denominated foreign exchange and bond markets is limited for foreign investors and securities issuers. In the case of both shares and bonds, there is a mainland (onshore) and an overseas (offshore) market. Onshore and offshore markets fall within different jurisdictions, and trading as well as issuance in the two markets are subject to different pricing and exchange rules. Central bank regulation applies to the onshore market, which, in terms of capitalisation, is bigger in both securities segments – also more liquid and deeper – than the offshore market,[14] although operators are typically Chinese state institutions or companies. The central bank may intervene through open market operations in both markets. In the case of the onshore market, it works in a regulated manner with a view to defending the exchange rate band, whereas in the offshore market, intervention is a matter of consideration.

[12] Use of the renminbi was subject to simplified authorisation procedures, in relation to both outflows of foreign direct investment (*Renminbi Outward Direct Investment Scheme in January, 2011*) and FDI inflows (*Renminbi FDI scheme in October, 2011*).

[13] In the summer of 2015, A shares traded on the Shanghai Stock Exchange lost one third of their capitalisation in the space of one month, and as a result, some domestic owners of capital evacuated their assets outside their home country, mainly to Hong Kong or other surrounding financial market centres.

[14] Compared to the onshore market, there may be less renminbi liquidity in the offshore market, which may be recognised in the offshore renminbi exchange rate (in the level of short-term offshore interest rates and in the difference between the onshore and the offshore exchange rate) (*Ladányi et al. 2016: 6*).

Currently, foreign residents are only present in the offshore market in a larger proportion, although due to the easing measures (RMB-FDI) introduced since 2011, their number is increasing spectacularly in the domestic market as well. Onshore markets remain partially closed, and transactions here are subject to authorisation.[15] Accordingly, convertibility in this segment does not fully apply, as operations related to China's capital account are subject to authorisation. However, convertibility is applicable to the offshore market: market operations here are conducted outside of the direct jurisdiction of the central bank, and private investors are free to trade renminbi-denominated assets on the stock exchange, for example in Hong Kong. At the same time, the PBC provides sufficient liquidity in this context, by ensuring renminbi sources for the clearing bank in the given offshore centre, and this bank then may issue renminbi assets and hold renminbi accounts. To that extent, it has an indirect influence over offshore market liquidity.

Offshore markets play an important role in establishing convertibility, as transactions here impact the onshore markets that are only partially open. The more direct the connection is – either in terms of regulation or investor behaviour – the more exchange rate convergence is achieved between the fragmented markets. For example, according to *Sütő* (*2016*), in the case of bond markets a stable coexistence can be observed for some time.

It can be considered that the harmonisation of China's capital market rules, i.e. the gradual liberalisation of transactions towards the mainland is the most advanced in the equity markets. The Stock Exchange of Hong Kong and the Shanghai Stock Exchange are the two biggest and most active platforms for trading renminbi assets; connectivity between them started in 2014, and the Shenzhen Stock Exchange will also join the program by 2017.[16] In terms of capitalisation, the second biggest trading platform in the world will be established with the integration. The Shanghai-Hong Kong Stock Connect can be regarded as a milestone in the opening up of China's capital market, as through this channel, foreign institutional investors may have access to China's internal capital market within certain limits. The stock connect enables foreign residents to trade A shares of China-based companies listed on the Shanghai Stock Exchange directly, through Hong Kong brokers, and vice versa, Chinese investors may trade H securities of international companies registered in Hong Kong more easily, through their mainland brokers. The direct impact of the integration on the financial markets started last year when the prices of A shares and H shares began to converge. Henceforth, financial market developments on one stock exchange affect companies traded on the other one, in an increasingly direct way. It mainly impacts China's internal capital market, which will be more

[15] For example, in the case of a bond issue, the issuer is obliged to assign a credit rating by Chinese credit rating agency to securities.
[16] http://www.portfolio.hu/vallalatok/hamarosan_letrejohet_kina_masodik_legnagyobb_tozsdeje.235888.html.

directly influenced by international financial market developments due to the gradual opening up.

Compared to the foreign exchange market, even closer yield convergence was reached in the two parallel bond markets last year, between the Dim Sum (offshore) bonds issued in Hong Kong and used by foreigners, and the Panda (onshore) bonds which are traded on the internal capital market. For the time being, the onshore market is accessible by a limited circle from both investor's and issuer's side, as that is more closed. In the onshore market, Chinese state-owned companies, credit institutions, even state institutions are predominant among the issuers. By contrast, on the offshore bond market, non-Chinese issuers have been in the majority so far. The first pioneering Western company to issue a Dim Sum bond was McDonald's in August 2010, acquiring renminbi in Hong Kong with the prospect of expanding in mainland China.

The tendency for the two markets to converge is attributable to the opening up of the onshore market beginning in 2011. In the onshore market, more and more foreign investors are issuing bonds. Before 2010, issuers were mainly supranational institutions[17]or central banks, however, since 2011, institutions duly authorised may also use the onshore market for raising capital. Owing to that, the presence of foreign issuers in the Panda bond market has been gradually increasing. In parallel, foreign issuance has been decreasing on the offshore market (by 40 per cent in 2015). Among sovereign issuers, South Korea was the first to issue the Panda bonds at the end of 2015. In the summer of 2016 Poland also announced that it had mandated on a Panda bond issuance, worth USD 450 million. Although, these issuances are few and of low value for the time being, based on the increase in the sovereign issuance of Panda bonds, we can conclude that over the longer term renminbi-denominated financing will have a more important part to play in the management of public debt.[18]

4. Crisis management

In this paper, I cannot ignore the question of why integration between onshore and offshore markets has not yet been completed, because such completion could have facilitated full convertibility on all renminbi transactions. I have partially answered this question by presenting the economic policy measures applied in respect of the economic and technological convergence with advanced economies. However, there is another important aspect, and it is not independent from geopolitical interests.

[17] The first international issuers in the 2000s were the International Finance Corporation (IFC), a member of the World Bank Group and the Asian Development Bank (ADB) (*Sütő 2016:2*).

[18] Interestingly, Hungary issued the first sovereign bonds in Hong Kong on 14 April 2016, in a symbolic amount of EUR 140 million (about CNY 1 billion). Following the transaction, the Hungarian government indicated that the low value issuance, which is aimed at testing investors, may be followed by a larger one on the Panda bond market with a view to attracting China's institutional investors.

This measure has slowed down the process of the opening up in the past year, and this process may result in the permanent sustainability of certain rules affecting the capital account.

Although the global economic crisis of 2009 pushed Chinese policy makers toward liberalisation, certain elements of the crisis management at that time had unintended consequences, which encouraged China's new government, taking office in the meantime, to reconsider their priorities for the reform process. Between 2009 and 2013, China's government administrations launched an economic stimulus programme worth USD 586 billion (CNY 4,000 billion). In parallel, the central bank started to ease the monetary stance (lowering interest rates on deposits and loans, and providing the banking sector with extra liquidity). This represented the most vigorous easing of the monetary and fiscal stance ever seen since the four decades of "Reform and Opening" announced by Deng Xiaoping in 1979. Although the net external financial position of the country remained strong enough to cover the financing needs of the monetary stimulus from the reserve fund of USD 3,300 billion, serious financial imbalances emerged in the economy in particular, in the banking sector, and in some cases even across households, local governments and construction firms.

The Chinese economy became overheated as a result of over-investment, which triggered countless economic and social tensions. This was because investments were financed by credit institutions operating under state supervision[19] through the entire state institutional system, and mainly state-owned construction firms carried out infrastructure investments according to the demands of local governments. Although the process took place through strictly controlled channels, there were no institutional feedbacks that could have prevented banks from accumulating toxic assets or rationalised the allocation of local government funds (*Csanádi 2013*). This gave rise to a geographically uneven infrastructure development model, which became subject to political bargaining.

Although, after a while, the central bank started to manage the bad loans accumulating in the banking sector in substantial quantities, the measures taken so far have produced mixed results. For example, the tightening of loan placement steered the focus of capital allocation towards the informal shadow banking sector (*Komlóssy et al. 2015:142; Csanádi and Liu 2012*). The other problem is that although the country's net external financial position can be considered to be stable due to the very high level of foreign exchange reserves, most economic actors – especially households, companies and local governments – have accumulated huge debts in the

[19] Allocation of the funds from the incentive package was carried out through central distribution in smaller proportion and through channels of state banks and bonds issued by the Ministry of Finance in greater proportion. Large and state-owned companies were preferred. Regarding distribution rates, the ratio of funds received from the central budget is smaller, the ratio of bank funds is larger, with the ratio of local bank funds being even larger, and funds granted through the channels of the shadow banking sector were also received (*Csanádi – Liu 2012*).

past years and all of them have become net borrowers.[20] Therefore, total internal debt jumped close to 300 per cent of GDP by 2014, which is the second highest in Asia after Japan, and its potential default may bring about tremendous economic damages.[21]

To handle the overheating arising from the crisis management, China is seeking and creating external demand to resolve the overcapacity problem in its construction industry caused by an oversupply of loans. In order to achieve this goal, new infrastructure investments must be initiated for construction firms. Due to the previous spatial unevenness in regional development, China's government is seeking to steer these investments toward internal territories (*Gyuris 2015*), but also outside of the People's Republic of China (*Matura 2015*). With regard to the latter, capital export is moving to centre-stage in economic policy making.

Capital export in general is linked to the operation of the international monetary system, and it is also not unrelated from geopolitical interests, in a broader sense. According to *Matura* (*2015*), China began building parallel institutional structures, as most international development funds operate under Anglo-Saxon or European influence. For example, following the positive experiences in relation to ACFTA, Beijing prefers to create a wider free trade area to be wrapped up within the framework of free trade agreements in the Asia-Pacific region (FTAA), from 2013. China is also working on integrating other regionally dominant countries, for example, India into its sphere of influence through a free trade agreement, known as Regional Comprehensive Economic Partnership (RCEP) in order to offset the growing ambitions of the United States in the Pacific region.

China's capital export is typically linked to the extraction of mineral resources, infrastructure development, logistics and long-distance trade, i.e. as a whole, to industries that were once already targeted by the crisis management launched in 2009. One of the most important infrastructure development projects is the "New Silk Road", also known as the "One Belt and One Road" programme (*Nolan 2012*). So far, China has invested USD 40 billion into the Silk Road Fund, 65 per cent of which was allocated to the debit of the foreign exchange reserves, the remaining part was paid by China Investment Corporation, an investment fund created with an initial share capital of USD 400 billion, the Export-Import Bank of China and China Development Bank (*Trebitsch 2015*).

[20] In particular, private debt in the corporate sector has increased, and as calculated by *Garcia-Herrero* (*2015*), one quarter of the companies fail to cover their interest payment requirements by their operating profit (EBITDA), which portends a wave of bankruptcies (*Garcia-Herrero 2015:11*). Although the debt of the public sector can be considered to be moderate (at 55 per cent of GDP), according to Garcia-Herrero, there may be a serious risk to local governments from using short-term debt to finance long-term investments and being compelled to finance their debt at 6-8 per cent lending rates, compared to an average of 4-5 per cent.

[21] So far, there are only estimates available for the apparent increase in the ratio of non-performing credit portfolio (*Komlóssy et al. 2015:136-139*). At the same time, risk are mitigated when the debt is denominated in local currency instead of foreign currencies, and therefore the central bank has wider room for manoeuvre in facilitating the process of deleveraging. http://bruegel.org/2016/04/chinese-banks-the-way-forward/.

Amongst the institutions financing international infrastructure investments, the two most important ones are the Asian Infrastructure Investment Bank (AIIB) with an initial share capital of USD 100 billion and the New Development Bank (BRICS), headquartered in Shanghai and established by the BRICS states in 2014, with a same amount of initial share capital. In addition to these, China has interests in many other financing institutions, for example, the Inter-American Development Bank, which finances developments in Latin America.[22] Half of the initial share capital of AIIB based in Beijing is provided by China, in spite of this, the country has no veto rights. Although its share capital is only half of the Bretton Woods institutions in Washington, it may exercise a significant competitive advantage, in regional and even bilateral comparisons. It finances numerous projects related to infrastructure development, generating more than a few conflicts of interests. It also implements rail, road, bridge and even port development projects in Central Eastern Europe and the Balkans.[23]

The direction of China's capital flow remains geographically concentrated, 70 per cent of capital export is kept inside Eurasia, with Asia having a share of 50 per cent, the remaining part flows to Europe,[24] within which, the role of the Central and Eastern European region is growing.[25]

The experience of a sudden disinvestment at the end of 2015 showed that an open capital account and a fixed exchange rate system may constitute a dangerous mix, since external financial shocks can be prevented most effectively by a flexible exchange rate system (over the course of a few months, it cost China about USD 500 billion to keep the yuan within the exchange rate band). Therefore, changing over to a floating exchange rate regime has to keep pace with capital account liberalisation. According to the Mundell-trilemma (*Mundell 1963*), it is impossible to meet the cumulative conditions of independent monetary policy, an open capital account and a fixed exchange rate system, at the same time. Two of the three may only be enforced, to the detriment of the third one. For example, the open capital account and the fixed exchange rate sustain monetary mechanisms that reduce the central bank's room for manoeuvre, and thus its ability to support economic convergence, primarily due to the limited use of foreign exchange reserves. If the central bank's room for manoeuvre is an economic priority, convertibility with the

[22] http://kitekinto.hu/kelet-azsia/2015/03/17/uj_selyemut_kina_uj_megaprojektet_keszit_el.
[23] See privatisation of Piraeus port in Athens.
[24] China's FDI stocks are still low in international comparisons: while global FDI stocks increased from USD 2,100 billion to USD 23,600 billion between 1990 and 2012, 79 per cent of it was accounted for by capital allocations of advanced Western countries. According to 2012 figures, the stock of foreign direct investments was USD 5,200 billion in the United States, whereas it was USD 1,800 billion in United Kingdom, however, in the case of the People's Republic of China, the stock amounted to only USD 509 billion. Moreover, China receives larger FDI inflows than the capital flowing out of the country, and data on FDI net stocks show a negative position of USD 324 billion. In 2009, 68 per cent of China's foreign direct investment outflows went to Hong Kong (or through Hong Kong) (*Nolan 2012*).
[25] In 2010, China launched a package of 12 measures, consisting of an investment strategy in relation to the Central Eastern European region. The major steps include the provision of a ten billion investment loan, the establishment of an investment cooperation fund with USD 500 million, as well as the creation of trade and investment promotion missions to the region.

floating exchange rate channel remains the only mechanism capable of tackling the impact of the financial turbulences.

In the case of China, leeway for the PBC constitutes an integral part of the economic model. Taking on an active role, the central bank helps Chinese exporters to adjust to the changing international market competition. Consequently, in order to maintain its independence, sooner or later, the PBC will be compelled to change over to a freely floating exchange rate system. As a first step, the PBC expanded the trading band against the dollar to ±1 per cent from ±0.3 per cent in April 2012, then allowed the yuan to float ±2 per cent in March 2014, and band widening is expected to continue in the coming years.[26] However, such a sudden changeover carries risks, which are best identified by the Triffin dilemma (*Triffin 1964; Maziad – Shik Kang 2012:7*). Based on this, a fully open capital account combined with a floating exchange rate system may undermine the stability of the balance of payments, as export competitiveness erodes in a flexible exchange rate system, if extra profits from foreign trade trigger the strengthening of the currency. In line with free international movements of capital, a part of the productive investments increasingly leave the national economy, just as happened in the United States after abolishing the Bretton Woods system in 1971. Capital outflows in addition to changes in export/import ratio enhance the role of external financing in the balance of payments. However, historical experiences suggest that such a shift – in spite of external financial dependencies – is not necessarily harmful. Such an economy, like the US in the past, can be capable of covering almost unlimited financing needs externally.

To sum up, we can conclude that the widening of the exchange rate band in parallel with capital account liberalisation is unavoidable due to the exchange defence mechanism against financial market shocks; however, changing over to a completely open capital account and a flexible exchange rate system, with convertibility entailed, enforces a shift from a mercantile export-led economy model toward domestic consumption, as well as economic restructuring and new concepts on the role of the monetary policy.

5. Conclusions

There is no consensus in the literature about whether the expansion of the international use of the renminbi (yuan) can be made under one or two scenarios. *Gao and Yu* (*2011*) distinguish two models based on financial experiences following the Second World War. The first one is called “German” type or mercantile model. The core feature of this model is the maintenance of the trading and current

[26] The PBC once moved away from fixed dollar peg in 2005, and let the yuan float around a basket of numerous currencies, however, during the crisis in 2008, it reintroduced a fixed exchange rate against the US dollar at USD/RMB 6.83.

account surpluses, and the central bank subordinates currency convertibility to this goal. On the long run, capital account openness only partially remains, because independence of the monetary system is much more important: it aims to prevent surplus capital inflows from strengthening the currency, i.e. to ensure the reserve-currency function only marginally applies. In view of the expansion in trade and production networks, this monetary goal cannot be kept indefinitely and – as in the case of the Bundesbank and hence the German mark, following the 1970s – regional monetary integration comes into the forefront of economic policy. In such cases, the role as an anchor currency is confirmed, rather than the role as a global reserve currency. Also, convertibility will apply within these regional monetary (and trade) blocs, whereas, in global (external) terms, the aforementioned restrictions on capital account operations will be maintained for a longer time. According to Gao and Yu, the advantage of the German model is that the mercantile basis for growth remains, and it can be sustained through an economic policy that extends regional trade integration, while central bank independence is not damaged either.[27] To sustain export competitiveness, a state that issues debt is compelled to maintain strict financial policies, which, in turn, entails a shrinking of the fiscal room for manoeuvre. We can partly see the realisation of this scenario in relation to the Chinese renminbi (yuan), as a loose monetary co-operation began to gradually build around the production and trade networks in China's neighbourhood, in which the renminbi already functions as an anchor currency. With the possible development of this model, setting up a currency snake around the renminbi, an Asian Currency Unit could be predicted (similarly to the history of the euro).

In contrast to the German model, the other type is called "American" or hegemon by Gao and Yu. This is much more characterised by a rapid changeover to full convertibility, which is necessary to sustain and continuously ensure global financial market liquidity. Regarding currency use, the reserve currency function becomes dominant, which continuously raises money financial demand for the currency in terms of reserve, as well as trade and financial transactions. This extra demand will obviously cause the currency to appreciate, leading to the erosion of the issuer's export competitiveness, and its central bank will increasingly focus on how to ensure balance in the international monetary system rather than sustaining its own mercantile model. The disadvantage of this model is that instead of the previous mercantile export-led growth model, it requires structural changes in the economy, which makes the engine of growth to shift into new bases. In line with the currency, the role of the central bank also internationalises, e.g. it will become a lender of last resort for the international monetary system. The advantage is that the financial policy of the state, and hence the fiscal room for manoeuvre is

[27] Based on the Mundell-trilemma, in such a case, an independent monetary policy and a fixed exchange rate system is enforced, whereas an open capital account cannot be fully applied due to restrictions. This is what defined the European monetary cooperation in the 1970s and 1980s (*Benczes 2011*).

expanded by offering global funding and exercising the right of issuing safe currency; furthermore it is able to finance rising external debt from global financial markets, relatively unhindered. As a result, it will be able to realise geostrategically important objectives, and that is something a real global hegemon can only afford. In the context of gaining more fiscal room for manoeuvre through the international use of a currency, all of this could mean that the focus would shift from the export-led growth model to domestic consumption, in particular, private and public (for example military) expenditures. The answer to which model China's economic policy will move toward, and if there is a road that leads from one scenario to the other, will be of crucial importance in the coming years, also in terms of the development of the international financial system as a whole.

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Hungary's Link to Financial Cooperation with Asia

János Müller – Levente Kovács

In recent years, China's contribution has increased in nearly every aspect of life. This process is strongly supported by Chinese economic growth, which has continuously and consistently exceeded the global average. China is opening up its financial markets very gradually, while integration in the global economy requires more immediate financial cooperation. Recognising this tension, the Chinese President publicly put forward an initiative to build the organisation and establish the operating conditions of the Asian Financial Cooperation Association (AFCA), the incorporation of which is currently in progress. Consequently, one of the most important financial associations in the world will launch its operations at the turn of 2016/2017.

The Hungarian Banking Association was also invited to participate in the preparations for the AFCA and in the foundation of the organisation. In August 2016, in addition to the approval the draft Regulations of the AFCA and the operation of the organisation, the senior officers of the Association were elected, with the representative/Secretary General of the Hungarian Banking Association elected as a member of the Executive Board of the Board of Directors.

In this paper, we present the background of the AFCA's foundation and the objectives of its operation, and describe the new opportunities afforded by Hungary's participation, membership and relationship network.

Journal of Economic Literature (JEL) codes: F53, F55

Keywords: AFCA, Banking Association, China, economic policy

1. Chinese economic policy at a crossroads

A few years ago, a paradigm shift took place in the economic policy of China. Owing to the progressive implementation of the economic reform launched in 1984, the country was characterised by years of dynamic, double-digit economic growth and

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a strong inflow of foreign direct investment and modern technology. The sources of this extensive economic growth, however, have been depleted and, as the erosion was further exacerbated by the 2008 global economic crisis, economic growth faltered. At the same time, the importance of strengthening China's international political and economic role became apparent and the necessity of addressing such internal problems as the rapid ageing of the population came to the foreground.

The question for China, therefore, was to find a way to ensure sustainable growth while also tackling the country's other challenges. With a view to promoting an aggressive opening to external markets, the Chinese government announced its much-publicised *Belt and Road* policy, which consists of two main pillars: the *"Silk Road"* and the *"Maritime Silk Road"* initiatives. One of the cornerstones of the latter decision was to support China's exports of goods and to boost foreign direct investment by utilising substantial financial resources, i.e. subsidised (preferential) loans. Indirectly, this agenda bolsters the economy, creates new jobs and, over the medium term, allows for the remittance of yields on foreign investments.

In parallel with the above, China began to strengthen its international financial and economic relations. One important achievement in this endeavour was the International Monetary Fund's October 2016 decision to include the renminbi – the Chinese currency – in the IMF's SDR basket of reserve currencies (USD, GBP and EUR), with a significant weight. China was also aware of the negotiations that commenced between the European Union and the United States on the Transatlantic Trade and Investment Partnership (TTIP). Presumably also in consideration of the impending trade agreement, in 2014 China organised an economic and political collaboration under the auspices of the Asia-Pacific Economic Cooperation (APEC).

2. Relations between China and the European Union

One of the most critical objectives of the European Union is to boost and ensure the sustainability of economic growth. In order to achieve this goal, the EU needs to put in place a set of adequate tools. From the financial side, one of the most crucial decisions of the European Union is to complete the Monetary Union in the coming period. Last October, the Commission announced a roadmap for the reform of the Monetary Union's architecture and its envisaged stages. In recognition of the importance of external financial relations, it should be noted that, interestingly, one part of this action plan is to reinforce the external representation of the euro area. According to the Commission, the external representation of the EU has failed to keep in step with the increased economic and political weight of the currency area. While the US dollar has a single, solid representation in the international financial community, Member States of the euro area speak with a fragmented voice. The Commission proposes a consolidated external representation for the

euro area both in the international arena and in the IMF, with the president of the Eurogroup designated to represent the euro area in the latter. Another important component of completing the Monetary Union is to accomplish the construction of the Banking Union.

The next important step of the European Union in the area of international financial relations and direct investment is to launch a Capital Markets Union, the implementation of which is in progress.

When these European Union processes are compared to the strategic objectives of the Chinese government, it becomes evident that there are indeed opportunities for cooperation that serves the interests of both parties and the chances of establishing such win-win collaborations should not be passed up.

From the perspective of China, this opportunity for cooperation can be summed up, in simple terms, as follows. The Chinese government has embarked on numerous reforms in recent years (price reform, agricultural reform, rural industrial development reform, etc.), but now it is time to move forward. According to the programme announced by the government, excessively rapid economic growth is unhealthy; however, a certain growth rate – which is currently defined at an annual rate of 6 per cent – needs to be maintained. To that end, several decisions have been made, ranging from boosting internal demand and consumption to counteracting the ageing of the population; however, it is the international aspects of addressing the problem that bears the most relevance to this paper.

The first and perhaps most important task of the established strategy is to ensure that the surplus substantial industrial capacities and capital buffers accumulated as a result of enormous inflows of foreign direct investment are utilised abroad. China has developed the economic, commercial and financial conditions required for the implementation of this concept: the inception and announcement of the "One Road, One Belt" programme have established the contractual and infrastructure conditions that enable Chinese goods to be exported through Central Asia to the West all the way to Europe and to the markets of the European Union (referred to as the "Green Road"), or via the maritime "Blue Road" through Southeast Asia and South Asia to Africa and Europe.

Guy de Jonquiéres, the acclaimed analyst of ECIPE[1] expressively and wittily characterised the relationship between the EU and China as follows: *"Henry Kissinger famously once asked: "What number should I dial when I want to talk to Europe?" Beijing has found the answer. It begins +4930, the code for Berlin. Last autumn, President Xi Jinping added two more numbers to his address book: those of Britain's Prime Minister and Chancellor of the Exchequer, who accorded*

[1] European Centre for International Political Economy.

him a rapturous – some unkindly souls said sycophantic – welcome to London and declared Britain to be China's "best partner in the West".

When Mr Xi or his colleagues call Berlin or London, they can expect an enthusiastic response – especially if there is Chinese money in it. Beijing, however, guarantees European leaders no such reciprocity […][2] Then, they can expect a frosty reception, or none at all.

As that suggests, the relationship between China and Europe is unbalanced, with the scales weighted mostly, though not entirely, in China's favour. [Arguably], that imbalance owes less to Chinese strength, which is often over-rated abroad, than to European weaknesses – mostly self-inflicted.

Beijing is pretty clear what it wants from Europe. Chiefly three things: free access to its single market; a secure home for its investments, particularly its fast-growing acquisitions of corporate assets; and a diplomatic foil in its increasingly fractious relationship with the United States. […]

Europe's interests in China today are basically mercantilist. Its governments think of China primarily as a big and promising market and, more recently, as a source of otherwise scarce capital. Increasingly, they view China also as a rising global power with which to make their number in the hope of political, as well as economic, dividends in the future. This has translated into an undignified scramble by EU members to curry favour and preferment with Beijing at each others' expense. In narrow national terms, such tactics may make sense, if cosying up to China earns rewards in export orders and inward investment. That means jobs in Europe and jobs mean votes for politicians who claim credit for creating them. Offending China, on the other hand, risks forgoing prizes in the great treasure hunt. Or so European politicians seem to believe."[3]

The strategy of the "Belt and Road" initiative, i.e. the new economic policy of the Chinese government, conjures up all keywords of international cooperation: an opening towards new business relations, increased foreign direct investment overseas, revaluation of global economic relationships. That notwithstanding, the strengthening of international financial and banking relations and the establishment of the relevant institutional framework are not listed among the objectives either in the European Union's, or in China's external economic strategy, even though decades-old experience has clearly demonstrated that international investors and foreign project-owners feel far more comfortable when they have access to reliable, well-functioning banking relations in the target country. In this day and age, stock

[2] When broaching certain subjects to which Europeans tend to be sensitive (authors' note).
[3] Guy de Jonquières: The EU and China: Redressing: An Unbalanced Relationship, January 2016. Online: http://ecipe.org/publications/the-eu-and-china-redressing-an-unbalanced-relationship/.

exchanges and financial institutions act as a compass for enterprises: they show directions, instil confidence and suggest reliability. Similarly, the role of international banking associations cannot be ignored in a globalised world confronted with mounting challenges after the international financial crisis.

The Asian Financial Cooperation Association is seeking answers to just such challenges from the financial and banking side. The AFCA may become a part of the compass and the guidance that can assist in forging a way forward for capital and exports.

3. The significance of Chinese economic and financial relations for Hungary

We attempted above to outline the course which led China and the Asia-Pacific region, as well as the European Union and the United States, to define a programme, a set of tools and a timeline to address the situation arising after the global crisis. Initially, it appeared that these major economic powers and regions set out on two different roads in parallel directions. More often than not, the landmarks alongside the two roads are similar to each other, and they also conspicuously coincide in time. Knowing the interests of these formidable economic units, it has become clear by now that the parallel roads, driven by the partners' interests, converge in the distance.

One junction where these two roads may cross – not only in a geographic sense – is Hungary. Hungary and the Central European region serve as an important gateway for Asian and Chinese exports to the market of the European Union. There is heightened demand for foreign – in this case, Chinese – direct investment and for the support of infrastructure developments. As an example closer to home, the upgrade of the Belgrade–Budapest railroad should be mentioned, which is scheduled to be implemented with Chinese participation as, hopefully, an important future section of the "Green Road".

The traditionally sound Chinese–Hungarian economic and financial ties became even tighter during China's preparation for its 1978 economic reform. It is perhaps a lesser known but historical fact that, when Hungary's accession to the IMF and its ability to draw down the stand-by credit facility was a matter of life and death in 1980, the USD 500 million quota required for the entry and for the membership was put up by the People's Bank of China.

Hungary also represents a significant opportunity in the area of financial and financing infrastructure. On 2 October 2015, the People's Bank of China and the Magyar Nemzeti Bank officially announced that the Hungarian subsidiary of the Bank of China was given a mandate to launch its RMB clearing centre in Hungary. Since Bank of China Hungary Ltd. operates in the context of a regional framework

and mandate, this means that the RMB clearing centre in Budapest can be used across the entire Central European region. It demonstrates the significance of this step that after Hong Kong, Taiwan, Paris, Frankfurt, Sidney and Kuala Lumpur, Hungary was the first to receive this entitlement in the region, and the Bank of China Hungary was the first to issue "One Belt, One Road" bonds.

In this context, it is important to mention that the Chinese and the Hungarian Banking Associations have nurtured a continuously developing and mutually advantageous professional relationship for years. As a result, the Memorandum of Understanding signed by the two associations in 2014 was the first such arrangement in the Central and Eastern European region.

4. The significance of the Asian Financial Cooperation Association (AFCA) for Hungary

Two main conclusions can be drawn from the above: (1) It is clear that the establishment of an organisation that represents and reinforces China's power and influence in the international financial market and promotes China's working capital exports was an important and timely step both from an economic and from a financial point of view; (2) the traditionally strong ties between Hungary and China, as well as the deepening professional and personal relations between the banking associations of Hungary and China and the senior executives of the Bank of China allowed and indeed, warranted Hungary's invitation to be a founding member of the AFCA.

At the Boao Forum[4] held in Hainan province in March 2016 with the attendance of invited institutions and those initiating the foundation of the association, including the Hungarian Banking Association, Chinese Premier Li Keqiang urged "to enhance economic and financial cooperation and dialogue to ward off potential risks and contribute to world economic recovery". He proposed to establish an Asian financial cooperation association in order to improve markets and prevent financial turmoil.[5]

The objectives and operating principles of the Association to be established were defined at the meeting of the originating institutions as follows: (1) The primary objective of the new, non-political, non-profit professional financial organisation is the advancement of financial relations, mutual understanding and trust; (2) Establishment of high-level financial forums;[6] (3) Building financial cooperation platforms; and (4) The AFCA is an Asia-oriented but open organisation; its fundamental principle is openness and inclusion.

[4] Boao Forum for Asia (BFA).
[5] "Li calls for financial cooperation", China Daily, 25 March 2016, p. 1.
[6] High-end Financial Forums.

The originating institutions signed the Memorandum of Understanding on their intention to establish the organisation on 25 March 2016, in the framework of the Boao Forum held on the island of Hainan. On the side of Europe, this document initiating the foundation was signed by the Hungarian Banking Association. The Memorandum of Understanding reinforced the basic principles outlined above and expressed the signatories' intention to actively participate in the establishment of the association's organisation and in the launch of its operation, and reconfirmed the signatories' readiness to include influential financial stakeholders, associations, development institutions, commercial and investment banks, investment funds, stock exchanges, and financial and clearing centres. The Memorandum of Understanding presages the expected international weight of the AFCA. It states that Asia is a critical part of the global economy and one of the most dynamically developing region of the world with continuously increasing global strategic influence, and the financial sector is one of the key pillars of this trend. In view of these factors, globalisation trends necessitate the operation of regional organisations and integrations and call for the deepening and the expansion of the financial cooperation between them.[7]

By the end of August, founders and the institutions and banks joining the association since March – a total of 101 financial institutions – were invited to discuss the Regulations of the AFCA and the operating conditions of the association. Attendees of the conference held in Shanghai discussed and adopted the Regulations, members' rights and responsibilities and the organisational structure of the AFCA. The latter follows the following classical organisational principles: General Meeting, Board of Directors (including a high level Executive Board with a limited number of members), Organisation and Secretariat. With due consideration to the recommendations of the Preparatory Committee, on a preliminary basis, attendees approved the elected members of the supreme decision-making bodies. The representative of the Hungarian Banking Association was elected to be both a member of the Board of Directors and of the Executive Board with the rank of Vice Chairman. In this case, the preliminary election of members means that the election is pending the official incorporation of the Association and the approval of the Chinese Banking Supervision.[8]

Hungary, therefore, was invited to be member of a prestigious international financial organisation that is expected to become an influential member of the international financial community; indeed, its currently registered members as well as the signatories of the Memorandum of Understanding on membership are among the

[7] Originating Institutions' Meeting, Asian Financial Cooperation Association (AFCA), Conference Paper, Haikou (China), 25 March 2016.
[8] Preparatory Meeting on Asian Financial Cooperation Association's Establishment, Meeting Documents, August 2016. The AFCA Working Group, and Preparatory Meeting on Asian Financial Cooperation Association's Establishment, Conference Book, 28–29 August 2016, Shanghai (China).

largest financial organisations, banks, stock exchanges and investment funds of the Asian region from China through Singapore to Hong Kong. Hungary is looked upon as a regional and geopolitical centre of utmost importance for the AFCA and primarily, China. The Hungarian Banking Association is counted upon to be a partner in furthering and intermediating these regional interests.

Chinese Abstracts

用比较的视野看中国的权力结构和它的转变

Mária Csanádi

本文介绍了党政国家体系的结构，运作以及转化的一般和具体特征，尤其聚焦了中国。这些特征也许会从权力结构中显示，并从决策过程中的党，国家和经济体之间的依附关系和利益促进关系中逐渐形成发展。 这种结构提供了经济，政治和国家决策的动态环境，同时也为不同的党派国家以及它们的转化提供了比较框架。这个框架允许作者将关于中国和政治系统的几种理论方法进行分类和比较。

经济增长结构转型的困境

Miklós Losoncz

过去几年中国生产总值的减缓表明：一，粗放型经济增长的推动力慢慢地消失；二，中国必须从粗放型经济增长向集约化经济增长转化。为了增长路径的转化能成功以及避免中等收入陷阱，除了改变经济政策的目标以外，中国政府也必须进行必要的经济改革。 根据数据和匈牙利与国际的文献，本文不完全地分析了： 经济增长原因的角色转变和2010年后增长路径转换的主要特点，以及这两者跟经济治理的关系。笔者的假设是中国政府会优先选择社会政治稳定，而不是经济合理性。

中国–再平衡和可持续性的趋近

Géza Rippel

中华人民共和国面临着在过去的几十年中经济增长强劲，向发达经济体显著趋近。全球经济危机爆发后，国内生产总值增长速度明显放缓，与周期性和结构性因素密切相关。从危机前的增长模式继承的严重失衡已经出现，挑战着经济快速趋近的可持续性。虽然私营成分的重要性有待进一步加强，但新常态下的中国经济再平衡方面，一直在强调家庭消费。为了避免中等收入陷阱，中国必须提高由国内创新来进行的生产力驱动、高附加值的产品和一个更加灵活的金融体系。另外，转变为一个更加平衡和可持续的增长路径则需要消除失衡，比如中国金融体系的显著区域差异和弱点。本文突出强调的成功趋近标准，是建立在趋近理论和东亚各国经验总结上的。

中国会不会成为下一次工业革命的赢家？

Lilla Sarolta Balogh

本文试图描述一幅中国当前地位和前景的综合全景图，来展示中国在下一次工业革命中的发展，并评估在即将来临的转变中中国能否成为一个 “全球赢家”。

我们给出的概述是基于文献综述的所谓第四次工业革命带来的大趋势，并代表着影响着中国的最重要的社会经济结论。我们逐步通过分析中国目前的经济状况和增长前景，回顾次级数据来进行。

我们发现，为确保一个积极的增长路径，有必要通过创新提高生产力，我们还将评估中国行业的创新能力。我们认为，基于以消费者为中心和效率驱动的创新方面，中国已经是各个行业的世界领导者。但在以工程和科技为基础的行业中，中国还没有达到和掌握全球竞争力。如果中国能在促进研发上遵循目前的道路发展，没有重大的系统性干扰，中国在高科技领域也成为世界领袖将会是一个时间早晚的问题。

通往市场导向的货币政策的道路和新常态的新货币政策

Laura Komlóssy – Gyöngyi Körmendi – Sándor Ladányi

由于在过去的几十年中中国进行了经济改革，通过一系列的步骤中国从国营经济体开始转移到市场经济体。这个过程当中货币政策的框架和工具也发生了变化，以适应现行的经济体。本文我们介绍货币政策的发展。首先我们介绍建立二级银行体系，然后特别关注了2008年后的改革进程。当前货币政策的框架是2008年后改革进程的一部分，也是新常态的一部分。这个新货币政策模仿了一些常见于发达市场经济国家的一些货币政策成分，然而其中也有它独特的，有中国特色的显著特征。一方面，其中有中国特色的成分是以前货币政策遗留下来的，另一方面它们也符合新的挑战。2007-2008年的经济危机成为引发名为 “宏观审慎” 领域的原因。在中国，新的体制由于宏观审慎，所以以前一些纯粹的货币政策工具，也有了新的意义。

中国金融监管目前的挑战，与其处理这些挑战的能力

Bence Varga

本文试图描述中国金融监管局目前最大的挑战，与其处理这些挑战的能力。重点是：影子银行系统和金融科技。我们的目标是了解：第一近期关于监管中国金融监管局进行了哪些改革，用了哪些工具和这些改革和工具引发了哪些结果。第二，为了提高中国金融监管局的效率是否需要进行其他改革。如果需要，哪些方面需要进行其他改革。本文侧重描述中国银行监督管理委员会的职责与如何运作，还介绍了中国人民银行的职责。

中国支付方式的特色

László Kajdi

中国支付方式的发展水平和电子付款方式的使用率落后于发达国家，即在金砖四国中中国也比较落后。根据数据，从千禧年开始伴随着中国经济达到的增长，支付方式方面也开始有了很重要的变化。以前银联的信用卡支付处于垄断地位，之后它也进入了国际信用卡行业。同时新型手机支付也非常受欢迎。

尽管在西方国家使用手机支付的客户越来越多，但使用最新技术的客户还不足。然而大部分的中国客户并没考虑用传统支付方式，比如银行汇款和使用信用卡。而且他们直接用手机支付方式来取代用现金支付。这个情况导致了传统银行业地位的削弱，加强了其他类型的付款服务提供者的地位，并将持续影响传统银行业的未来发展。

人民币国际化的挑战

Tamás Gerőcs

本文研究人民币在国际上的使用率，并特别关注全球金融体系的多极化，以及一个新货币传播对小规模开放型经济（比如说匈牙利）的融资机会有什么影响。关于人民币的传播，笔者介绍两个有可能出现的情况。从全球金融系统的发展来看，本文也指出今后的几年里中国经济政策选择哪个模式。

匈牙利与亚洲金融合作的联系

János Müller – Levente Kovács

近年来，中国加强了在生活中几乎每个方面的贡献。这个过程的坚定支持来自于强劲的中国经济增长持续超过全球平均水平。中国逐步开放金融市场，而全球经济一体化也要求更直接的金融合作。对于这种严峻形势的认知促使了中国国家主席公开提出了倡议建立和组织亚洲金融合作组织的可行性条件，目前这种合作正在进行中。正因为有了这种合作，世界上最重要的金融协会之一将在2016 / 2017年启动。

匈牙利的银行业协会也应邀参加亚洲金融合作组织的准备工作和组织的筹备。2016年8月，除了批准亚洲金融合作组织组织运行的条例草案，选举协会的高层官员，匈牙利银行业协会的代表也当选为董事会执行委员会的成员。

下面我们介绍亚洲金融合作组织建立的背景，基础和它的经营目标，并描述由匈牙利参与其中，成其会员以及互利关系提供的新遇。

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