



## KNOWING BUT NOT DOING? – THE INSTITUTIONALIZATION OF FINANCIAL KNOWHOW IN CHINA

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### **Abstract:**

*This article focuses on the organizational practices of traders in the Chinese OTC derivatives markets, the knowledge and techniques they use, and their perceptions of the markets. Such analysis is seen as prism through which to get a larger view of the ongoing expansion and institutionalization of Chinese financial markets and their global integration. The article discusses the mechanisms behind the transfer of expertise and technology (e.g. pricing models) from Western markets into China and the dissemination of this knowhow within the Chinese financial sector. Existing research has shown that organizational practices in Western derivatives markets have been heavily structured by these knowledge and technologies. It is however clear that the expertise and technologies have limited applicability to Chinese financial markets which poses questions regarding the impact on organizational practices. The central question which the article attempts to answer is therefore what, if any, role or function the transferred knowledge has.*

*Keywords: Knowledge Transfer, China, Organizational Behaviour, Institutionalization, Structured Finance.*

## 1. THE FINANCIAL MARKETS IN CHINA

The Chinese financial markets are being developed with some speed but certainly also a great deal of caution on the side of the Chinese authorities. The development includes creations of markets for OTC traded structured financial products and derivatives – some of the hallmarks of ‘advanced’ finance. The demand for derivatives is a result of the development, liberalisation, and global integration of primary financial markets (equities, bonds, foreign currency exchange etc.): derivatives are used to hedge market risks. In the case of China however, the primary financial markets have not yet been fully developed, certainly not liberalised and only partially globally integrated. As we shall see examples of later, political risks are under these circumstances important factors, simply due to the political control over financial and economic matters. Derivatives are based on financial (i.e. probabilistic) knowledge of market risk, not political ditto, which raises questions about the applicability of derivatives and the expertise (such as pricing models) on which they are based to the Chinese setting.

China has since initiating economic reforms in the early 1980’s developed and expanded their financial markets (Bryan, Yang, & Wang, 2008; Hsio, 2009; Neftci & Ménager-Xu, 2007). There are today over 1200 companies listed on the Stock exchanges in Shanghai and Shenzhen. There have since the early 1990’s been sizeable commodity futures exchanges in Shanghai, Dalian and Zhengzhou. There are treasury bond and foreign exchange (FX) markets. There has been created interbank OTC derivatives markets of some size in various structured products especially since regulatory reforms in 2005–6. China has since 2005 had a relatively liquid FX forwards and since 2006 also a FX swap exchange market. In addition to FX forwards and swaps the following types are being traded: RMB/foreign exchange currency swaps; interest rate swaps; interest rate forwards; bond forwards; asset backed securities. Table 1 shows the growth of the market since its start.

All of financial derivatives are traded at the China Foreign Exchange Trade System (CFETS). All of these markets are however tightly regulated, for example based on the clause that such instruments only must be acquired for hedging purposes. Foreign banks are allowed to enter the CFETS interbank markets under the Qualified Foreign Institutional Investor (QFII) scheme. Main regulatory body is the China Banking Regulatory Commission (CBRC). See table 1 for an indication of volume and growth of the industry.

**Table 1:** Annual turnover 2005–09, selected OTC instruments. Sources: chinamoney.com and Chinese Monetary Policy Implementation Report (2006–2009)

unit:100 Million RMB	2005	2006	2007	2008	2009
Bond forwards	178	664.5	2518.1	5008.1	6556.4
Interest rate swaps	*	355.7	2186.9	4121.5	4646.4
Interest rate forwards	*	*	10.5	113.6	60
Asset backed securities	0	5.6	8.27	152,37	96,25
FX forwards	*	140.846	224,227	174	98
RMB/foreign exchange currency swaps	*	702	3180	4403	8018

## 2. METHOD

The aim of the qualitative interview research conducted was to collect actors' interpretations of knowledge and information, and through this develop an understanding of how actors attribute meaning to knowledge and information (Kvale, 1996). All such accounts are necessarily subjective (although objective facts about things such as regulation also were obtained from the interviews) but through analysis which draws on theory basic premises underpinning the accounts can be gleaned. Hence the analysis does not shy away from using theories to analyse the data (see [Silverman, 1993: 4] for a support of such an approach). In the present case the theories largely fall in two categories. The first (with relatively little weight – presented in the sections above and also marginally in the coming section) is general theories about the Chinese market architecture which primarily help put the accounts in the data into a meaningful context. The second category (with a more dominant role in the analysis) primarily consists of theories of how agents adjust knowledge to different contexts and diverging aims and outcomes and how agents' actions in turn are adjusted to knowledge. This theoretical focus is due to the fact that existing research clearly show that organizational practices have been markedly shaped by knowledge (pricing models) and theories about risk. Hence, it seems pertinent to study in detail how agents give account of their use of this knowledge and the organizations and markets in which they operate.

## 3. HOW CHINESE FINANCIAL DERIVATIVES MARKETS ARE DIFFERENT

The Chinese financial markets are markets where state regulation is heavy handed yet opaque. The regulation for example means that trading on stock markets may be suspended if there is high volatility. Short selling has until recently been banned and is still heavily regulated. Chinese markets have a high proportion of retail investors which display a fundamental lack of knowledge about market fundamentals, including knowledge of derivatives (Rooker, 2008). Irrational behaviour is however not only a trait of retail investors but also lower rung Chinese banks and other institutional investors (interview data). The most fundamental trait of Chinese financial markets, which resonates with the more general description of the Chinese economy, is that the state is both the most important gate keeper and greatest source of uncertainty. The regulation of the markets for example means protection for Chinese banks because Chinese regulators, to quote an official at a bigger European country's national financial regulation authority 'are reluctant to let market risks reign' (interview data). On the flip side, sudden government changes in economic and monetary policies and arbitrary interventions are great sources of uncertainty.

The interviewed traders generally point to the Government as the controlling agent. The dominant market makers are, or are seen as being, under Government control and hence the prices which they offer are, or are seen as, reflections of government policies and/or inside information. It really does not matter if this in fact is true. There will in any case be a strong incentive for imitation for the other, smaller market makers who otherwise risk either taking positions which will be unprofitable because planned government initiatives will work against them or be punished by the dominant market makers who can squeeze other market makers through their dominant position.

Trader (T5): They will think that... it is the practice, no, I just only say the convention, that when Bank of China or the Agricultural Bank... they are all government controlled. We view that when some new policy comes out, they will get instructions first. So that is

why all the other market makers will follow. Because they will think that their [the big four] behaviour may instruct something – they [the smaller market makers] just don't want to miss something, new policy or something.

Such forms of imitation, born by hierarchies of the markets makers where some have, or are perceived to be, either under more control or as having privileged access to information, are uncertainty reductions. Although scholars have used network analysis to show how social networks of various sorts are constituted in virtually all markets, it is generally the finding that social networks play a more substantial role in Chinese markets than most places elsewhere. This creates a different perception of risk among Chinese market participants. The following lengthy quotation by a native Chinese, American trained, investment banker who now has taken up an academic career, sums it up:

Trader (T3): Risk in western institutions, they perceive it as being able to model: statistics, probability. Uncertainty is something you don't really know. There's no model behind it. Here, risk actually is more like uncertainty in the western mind. There's no model to be made.

The most developed market [...] in China is the interbank money market. Because there, there is a safe volume and also the participants are institutions and they're considered more rational than individuals. So it's considered to be closer to the market in the western sense. However in that market the players are very few compared to the market in the Europe or the US. There [in the West], there are a lot of different features and it's relatively competitive. In China, the money market consists of mainly the banks, they have the majority of the trading volume. So it's more important to know who is trading. So all the traders know each other, they know their characteristics, traditions, and because there are just a few main players. And also the market event, the driving force will change the risk. Mainly the regulations change rather than the market. So that's how people perceive risk in China. The biggest risk is government policies, that for some people is predictable for other people is totally out of the...because if you know the government... people close to the...er...there's a lot of inside trading.

The quotation both assumes that the market price developments are not truly random and hence cannot be modelled - which again means that there is more uncertainty than risk - as well as it implies that networks and social capital are more important in such a market.

It is into this financial system that financial knowledge and technologies are being transferred. Foreign banks who act as market makers for example actively disseminate knowledge about pricing models and structured products to clients and market participants (interview data). Traders from foreign banks also state that they take positions on the OTC markets which are not profitable in order to introduce customers to structured products with the hope of gaining a foot hold in the market. On the side of financial authorities, initiatives like SHIBOR, or the decision to allow limited short selling show a willingness to change the system to increase transparency and liquidity. And for Chinese companies, world trade creates a strong incentive to adapt new risk management procedures and a need to be able to hedge through the use of FX forwards and swaps. For this and other reasons there is a massive influx of financial technologies and knowledge. Yet, at the same time it is abundantly clear that the Chinese financial system remains so designed and regulated that an adaption to a generic 'Western' style of system is not immediately foreseeable. This means that the generic financial expertise is not directly applicable in the Chinese context. For example, the pricing model output does not correlate with the real market prices. As a trader observes, much of this is related to the

above mentioned fact that the few market makers exerts a considerable degree of control over the market:

Trader (T2): The market expectation accounts for the most... often the pricing mechanism in this market. And I think that[...] it's also a market maker driven system in the on-shore market. We [the bank T'' is working for] are not the market makers but anytime we want to do a forward or swap we are going into the market to see the price quoted by the market makers. But if you calculate it in a formula that you use for other currencies, you can't.. it does not work. You can't get the price that you see on the screen from that market. What is the market expectation is the market forecast of the appreciation against the dollar. Another is based on the different liquidity status of each market maker. In RMB swaps there's no correct yield curve because the interest rate market hasn't been liberalised. The PBC still controls the rates for the client and lending. But for Interbank there are no restrictions because the interbank price will be decided by the real supply and demand which means that we have different markets, interbank, funding market, treasury... That is why it's difficult to get a correct and objective... market level.

Note that the 'market expectation' really is a political forecast. It is the assumption of the monetary policy of the Chinese government. This in turn raises questions about what the use and function of financial know-how is. This question is all the more pertinent given the fact that there according to the quotation earlier is little belief in risk (formal knowledge) and much emphasis on (especially political) uncertainty.

#### **4. DOES FORMAL KNOWLEDGE AFFECT ORGANIZATIONAL BEHAVIOUR?**

In the realm of markets and economics, scholars using Actor Network Theory (ANT) have demonstrated the tremendous impact of financial and economic knowledge and technology. ANT not only entails a focus on objects and technologies in the material world, it also reverses the causal connection between object (or technology, or knowledge) and society. Rather than seeing, say, a new technology as being a product of the social, ANT would investigate what kind of social and economic worlds are being created (or at least enabled) by such a technology. This reversion of causal relations clearly accentuated in the notion of performativity (Callon, 1998, 1999) which has been used very successfully in studies on the creation of derivatives markets in the US in the 1970's by Donald MacKenzie and others (MacKenzie, 2003, 2004; MacKenzie & Millo, 2003). Central in Mackenzie's study of derivatives is the proposition that the Black Sholes options pricing model and its extensions were pivotal in constructing derivatives markets because they create 'agancement'. Agancements are part complexity reductions, part capacities for action, that is, they offer a 'handle' on the markets on which traders can peg their beliefs and actions. Crudely speaking, the function of the models is not that the prices they generate are true, but that they reduce uncertainty for market participants. The models make option prices calculable in an objective and 'certain' manner. Crucially, these prices are not mere social constructions, because when the majority of the market participants use the models, the market value will approximate the theoretical value based on the models. Hence the strength of performative knowledge is that it produces verisimilitude; correlation between model output and market price. Callon's, and even more markedly, Mackenzie's (2006), definitions of performativity hinge on the ability of knowledge and utterances to impact on the world and produce verisimilitude. The reason for verisimilitude is that more and more traders use the models and hence behave as the models

prescribe (although negative performativity may also happen if all slavishly follow the models prescriptions [MacKenzie, 2003]).

Even though there does not have to be total correlation between model output and market prices there is little doubt that pricing models did boost significantly the derivatives markets in the US and later Europe because a correlation was quickly established (Braddock, 1997, p. V). Among Chinese market participants there is general agreement that pricing models for derivatives, such as those derived from Black and Schole's options pricing model, or models based on Monte Carlo modelling or Gaussian Copula do not really work in China. They simply cannot be applied in a setting with imperfect markets as described above.

It is in this regard striking that relatively little work has been done to develop new models which may provide a better fit. The big international investments banks as well as the big four Chinese do employ (Chinese) quants who are assigned the task of adapting the models the best possible. But no breakthrough has been made and all interviewees questioned on this matter make no secret of the fact that no extensive efforts are being made. One high ranking manager of a foreign investment bank stated that employing young Chinese quants were a small expense paid with no real expectation of results.

It is worth noting that Mackenzie at several instances shows how the models are not simply scripts which are slavishly enacted by markets participants - the notion of actor is more sophisticated than that. The models are held to provide a series of profound insights into the workings of derivatives. One such insight mentioned by Mackenzie is the simple insight that derivatives trading is trading of volatility (MacKenzie & Millo, 2003, p. 125). MacKenzie's discussion of the volatility skew also gives a slight indication (which however ought to be developed much further) that while the models may no longer correlate with real market prices, the discrepancy has itself becomes a metric with which traders gauge the market. The crucial point is however that such a metric cannot be performative in the strong Barnesian (MacKenzie, 2006) sense used by Mackenzie. Echoing this, one interviewee argued that the function of the models in China is to provide a benchmark of discrepancy. The real measure is hence not the model output but the discrepancy between model output and market prices. Financial know-how is not used during the development of the Chinese markets to perform or 'act out' trading. It does not produce verisimilitude.

If financial models and other forms of expertise do not have the performative, or transformative, power when transferred to the institutional setting of China, then why is this knowledge transferred and diffused? The transfer is a marker of the expansion of the Chinese financial markets and the adoption of new trading and hedging activities among Chinese banks and institutional investors; of an adaption to a new global regulatory regime epitomized by the Basel II framework; and of a professionalization of investment banking as a profession – a professionalization which in the West occurred with the quantitative turn in finance in the 1960's and 1970's (Bernstein, 1992; Dunbar, 2000; MacKenzie, 2006) of which the invention of option pricing models was a crucial part. All three of these aspects fit with general analyses of globalization processes fuelled by an institutionalization or formalization of organizational practices (Meyer & Rowan, 1991). According to new institutional organizational theory, the adoption of formal procedures, codification of regulatory regimes of practices professionalization of staff, and not least implementation of scientific practices (risk management being a case in point) leads to isomorphism, that is, a gradual homogenization of an organizational field such as a financial market. Homogenization through adoption of formal organized practices occurs not only within specific organizational fields but also

across nation states. As such, institutionalization is a driver of global integration (Meyer, 2009). Scientific knowledge plays a pivotal role in this (Drori, Meyer, Ramirez & Schofer, 2003b; Strang & Meyer, 1993). Institutionalization most often happens through the application of scientifically grounded meanings and frames to organizational practices (Meyer & Rowan, 1991, p. 42–3; Powell & Dimaggio, 1991b, p. 15).

The diffusion of financial models and their application in China can to a wide extent to be explained as such an institutionalization of formal organizational practices. According to the theory, the driving force behind it is the great authority which is bestowed science in modern society (Drori et al., 2003b) – in this case financial and economic theory. The diffusion is part of a more general, and global, integration of financial systems (see account of global integration above) which includes implementation of regulatory regimes, accounting standards, certifications, etc. As described most extensively by John W. Meyer and colleagues (Drori, Meyer & Hwang, 2006; Drori, Meyer, Ramirez & Schofer, 2003a; Meyer, 2009; Meyer & Rowan, 1991; Strang & Meyer, 1993), these institutionalized rules and practices are diffused around the globe, which means that even the least developed countries have adopted such regimes.

As mentioned, new institutional theory would explain the proliferation of formalized institutional practices by the symbolic power of science and other rationalized ‘myths’ of modern institutions. But these myths are often very loosely coupled to the level of organizational practice. Several interviewed market participants pointed to the volatility skew in the American market. As one interviewee remarked, the models ‘don’t even work in America’ (former FX trader now academic in Chinese business school). Another corrected me for overemphasizing the models:

Trader 11: Look, I don’t think you should not spend so much time on models. Models rely on us [...] humans are very complex creatures...

Together with earlier outlined statements regarding the perception of risks, this is ample evidence of a decoupling of perceptions of risks and pricing mechanisms from an institutional level where formal, codified, knowledge and conventions are applied.

## **5. DEALING WITH UNCERTAINTY**

Uncertainty also offers an explanation of the institutionalization which occurs. Even if the complex models do no work properly the structured instruments themselves still can be used for hedging or speculation and models provide insights into the workings of the instruments. And even if there is uncertainty about the prices and the market prices diverge from the theoretical values, this discrepancy is something which itself calls for interpretation and explanation. Hence traders use the divergence between market and theoretical value as a metric with which to gauge the market. Similarly, it is clear that both use of the instruments and the gauging of discrepancy require an understanding of the fundamentals on the basis of which the instruments are structured. Seen from this perspective the models function not as concrete tools (in the present case as tools for pricing products) nor are they institutionalized as trading techniques, but they do function as general concepts for valuating and negotiating prices of structured securities and for using the same for strategic investment. Traders working in China are faced with uncertainty and complexity precisely because of the market imperfections and lack of applicability of the pricing models. In such situations they adopt various strategies such as imitating the market leaders who (are held to) enjoy privileged

information. But they also abstract from the diverging specificities in order to gain a general understanding. And abstraction requires theory and theoretical concepts. The following is an excerpt from a trader who was asked why there was little development of models given the fact that the existing did not fit. The answer was that traders did not so much depend on the models for precise pricing but rather to provide ‘conceptual insights.’ When trader was asked to explicate the importance of abstraction became clear:

Trader (T1) : Black and Scholes taught us that the value of an option has got nothing to do with your directional view but the volatility you try and hedge... this ... is an real conceptual breakthrough.

JA: *But this means that Black Scholes is important not only because it is a practical tool for pricing but because it is a concept that you can unfold in different concrete situations and apply in different contexts, to generate new and creative ideas...*

T1: for example capital structure which is an interesting idea right now.

JA: *You know, there are some social theorists that see Black Scholes as the corner stone of modern derivatives markets because it kind of gives traders a scrip which they can follow. But what you are saying about the conceptual breakthrough ...*

T1: It means that it is even more important.

JA: *Yes.*

T1: Anyone can value a forward and in an option anyone can value the intrinsic value, so the real mystery lies in the time value which is a function not of expectations but a function of liquidity and the pricing gap, so these two things explain everything. And this is a real conceptual insight.

The basic assumption of the so called convention school is that human beings are able to relate all specific - often conflicting - events or experiences to abstract values which create equivalence. Any particular event can hence be compared to others and particular events or problems can be evaluated with reference to some form of standard or principle of equivalence. Such discussions about common standards, conventions, or principles of justice, might invoke a sense of stable norms which uphold social order but this is not the hypothesis of this theory. Rather, the school invokes a ‘notion of coordination which is much more open to uncertainty, critical tensions and creative arrangements than the ideas of stabilized and reproductive orders.’ (Thévenot, 2001, p. 406). Consequently, convention theory is more aligned with phenomenology, symbolic interactionism and above all pragmatism.

This focus on what I will refer to as small scale conventions leads to a focus on the technologies in which small scale conventions are embedded and sustained. Thévenot refers to these as investments in forms. These are objects and materials which create generalities and standards over time and space which facilitate coordination (Thévenot, 2001, p. 187). In this area there are significant similarities with Actor Network Theory but according to Thévenot the construction of what Callon would call calculative devices (Callon, 1998, 1999; Callon & Muniesa, 2005) is dependent upon the prior construction of a general principle of equivalence (Thévenot, 2001, p. 408).

The prior construction of small scale conventions often happens through a gradual bottom up process. Thévenot describes such practices, the result of actors intentionally striving to reduce



uncertainty, as a three stage process. It starts with an agent experiencing a given thing in the world, human or objective. This is best described by with the phenomenological notion of intentionality. Thévenot stresses the open-endedness of such an experience but adds that "new configurations of links do not emerge without the identification and development of some sort of new equipment of humanity" (Thévenot, 2001, pp. 409–10) be this equipment cognitive or instrumental. The next phase will then consist of a strengthening of this equipment, in the first instance through further generalisation through e.g. language or money, or algebraic formula for that matter. It may also evolve through investment in forms, that is, through the construction of technologies (spanning from the invention of paper to the personal computer) that can sustain the conventions. The result: conventions about worth, and in the case of markets, value, are general principles which are intellectual or human resources. This means firstly that the agents can understand, negotiate, and further develop them and secondly that they are not specific tools but general principles, i.e. conventions.

Convention theory gives in many ways a more modest account than new institutional theory and ANT. Unlike ANT, the conventions or investments in form do not necessarily structure nor construct the organizational field. Unlike new institutional theory, the conventions are not seen as necessarily being institutionalised (although they often are) and they are to an even lesser extent seen as necessarily leading to codification or an institutionalization of technologies/investment in forms. But even in an imperfect market like the Chinese there have to be principles of equivalence with which securities can be created, correlations can be assessed, and prices negotiated. In order for the latter to occur the principles have to be mutually known so that they can "facilitate negotiation amongst sophisticated participants" as Mackenzie writes in a sentence which echoes convention theory (2009, p. 15). Indeed, we find a theoretical confluence when it comes to uncertainty and a need for a common conceptual framework which can coordinate valuation and negotiation. New institutional theory sees institutionalisation as being accelerated in transactional environments with high uncertainty (Powell & Dimaggio, 1991a, p. 77), and both ANT and convention theory places great emphasis on market devices (which for the convention school primarily are conceptual) which reduce uncertainty. Hence, even under conditions which require/are characterized by decoupling, uncertainty may accelerate diffusion of formal, scientifically grounded, techniques and expertise.

## **6. CONCLUSION**

The development of the Chinese OTC derivatives (and by implication the financial sector as a whole) is in many ways to be seen as an institutionalization of an organizational field which includes implementation of regulatory regimes and practices, adoption of knowledge and technologies and professionalization of actors working in the field. However, there is a clear discrepancy between this general institutionalization and individual markets participants' view of the markets and the price dynamics. This discrepancy may be theoretically explained as decoupling.

The development in China has been uneven when it comes to creating market institutions on a general level. Indeed, as briefly described above, the general Chinese market architecture is characterised by an absence of the basis institutional structures which constitute the generic "western" market model. This is reason for the decoupling and the reason for why the financial technology's functionality is limited. When it comes to the financial sector specifically, there are clear institutional and regulatory differences compared to Western

markets, one important one being the dominant position of the big four Chinese banks and the control which government can exert through these.

But if decoupling can be explained as the necessary result of the overarching political structures in China, then the real issue is what drives the formal institutionalization, in this case the diffusion of pricing models, which nevertheless occurs. As seen above, there is strong evidence that the pricing models do not have any performative capacity. In other words, the organizational field is not significantly structured by this set of expert knowledge to the same extent as in the US and Europe. There is however clear evidence of an adoption of various formal organizational structures - followed by decoupling. The proposition of this article is that uncertainty and the need for uncertainty reductions should be the starting point for any deeper explanation of the process, including its scope. Conventions and concepts which can be used to value securities are needed even if market rates do not correlate with these resulting theoretical values (see quotation above). The structure of the instruments needs to be understood and the market can be gauged by for example measuring the spread between theoretical and market value (see quotations above). Uncertainty generally provides fertile ground for the diffusion and institutionalisation of scientific knowledge (Powell & DiMaggio, 1991a; Strang & Meyer, 1993, p. 492), and the more abstract the knowledge, the speedier the diffusion (Strang & Meyer, 1993, p. 495). Both conditions are certainly present in the present study.

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