



Paper to be presented at  
DRUID15, Rome, June 15-17, 2015  
(Coorganized with LUISS)

## **Market Creation as Social Movement: The Rise of Chinese Mobile Phones**

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### **Abstract**

This article, based on a naturalistic case study, examines how social movements contribute to institutional change and the creation of new markets. Focusing on Chinese mobile phones, we show how groups of actors can coalesce to contest state institutions, exploit opportunities, mobilize sources, build capabilities, and thereby create new markets. Social movements as drivers of new market creation in this case involved creation of nascent economic actors, exploitation of low-end consumers, collaboration between co-specialized firms, and engagement with local governments. We argue that the dramatic rise and success of Chinese mobile phones was largely the result of contestation and disruption, rather than acquiescence and conformity.

## **1. Introduction**

The creation of new markets is important to economic growth and national development. But markets do not emerge spontaneously; rather, they often arise when entrepreneurs or firms succeed in mobilizing resources in response to perceived opportunities. Resource mobilization or acquisition as a social process requires interaction with the environments, organization of collective projects, and access to legitimacy (Pfeffer and Salancik, 1978; Aldrich and Fiol, 1994). Despite the widespread recognition of state authority and legitimacy, we see people of all societies regularly engaged in market activities without regard for regulations, laws, or government policies. These unregulated activities may not concern the state if the influence on national economies is insignificant. But as these unregulated activities gain momentum, and move from the periphery to the center, they challenge the status quo. Examples include informal credit markets in Medieval Western Europe (Leysdon and Thrift, 1997), Internet telephony in Europe (Waesche, 2003), online gambling around the world (Wilson, 2003), and, our central case here, the Chinese mobile phone market. In these cases, market creation and development began when entrepreneurs, firms, or other actors dismissed or challenged state institutions by refusing to conform to the state's laws, regulations, and industrial policies. The processes through which various actors find advantage and achieve change in unpromising regulative circumstances have been largely neglected in the existing literature on the creation of new industries and markets. This paper explores this gap in the literature and identifies legitimacy-building processes by which new markets for specific products can arise, particularly those involving grassroots experimentation and collective mobilization.

We rely heavily on social movement theory (McCarthy and Zald, 1977; McAdam, McCarthy, and Zald, 1996). Consistent with this theory, we will emphasize “contestation and collective mobilization process – how groups coalesce to make claims for or against certain practices or actors in order to create or resist new institutional arrangements or transform existing ones” (Schneiberg and Lounsbury, 2008: 650-651). Although social movement theorists have traditionally aligned themselves with urbanization, political processes, and class interests, more recently they have mobilized to study organizational and market change (Carroll and Swaminathan, 2000; Lounsbury, Ventresca, and Hirsch, 2003; Weber, Heinze, and DeSoucey, 2008). By reintroducing agency, power, and interests into institutional analysis, social movements allow us to look beyond how actors or entrepreneurs strategically handle external constraints and see a more nuanced picture of the interplay between market creation and institutional change.

Our research context is the Chinese mobile phone market between the late 1990s and 2008. Since 2002, China has become the world’s largest mobile phone producer and market (Fig. 1). The Chinese state has been highly involved in the industry’s evolution and market development, from erecting protective walls and limiting firm entry, to controlling production and cracking down on counterfeiters. Nevertheless, the Chinese mobile phone market was not, ultimately, a product of deliberate industrial policies designed and implemented by the government; it grew out of a collective mobilization of a range of interest-seeking actors or institutional entrepreneurs who ignored, defied, and influenced regulations of the state to develop new market segments. These actors included Chinese vendors, low-end consumers, Taiwanese producers, and Chinese local governments. Addressing how regulative institutions change, we will show how the actors overcame state authority by

aggregating to exploit opportunities, building capabilities, and gaining alternative legitimacy.

## **LITERATURE AND THEORY**

### **Market Creation as Social Movement**

Social movements can fuel projects that seek to challenge or reorganize existing arrangements and relationships and thereby create a new market. Accounts of social movements vary widely. Rao, Morrill, and Zald (2000: 242), for example, emphasize the source of power and broadly define social movements as “organized collective endeavors to solve social problems”. King and Soule (2007) treat social movements more narrowly as extra-institutional entrepreneurs who take action to change political agendas or social practices. Lounsbury, Ventresca, and Hirsch (2003) take a cultural-political perspective and identify social movement research as a body of research increasingly anchored by social construction processes, which give much attention to cultural frames, meaning and identity. Scully and Creed (2005) adopt a more dialectical perspective, seeing movements as arising primarily from the exploitation of contradiction and multiple logics. Though differing in their emphases, these studies each consider social movements as a particular form of collective action contesting existing arrangements for institutional change or innovation. Here, in considering the rise of China’s mobile phone market, our study delineates social movements as a collective mobilization process in which a few groups of actors coalesce to contest certain arrangements and thereby create new ones that operate in their interests.

In analyzing market creation, tracking social movements allows us to address one of the limitations of institutionalist approaches: their general neglect of change or agency

(Scott, 1995). Institutions such as those of the state shape new market development by defining what is appropriate, what is legitimate, and, thereby, what gets support. The prevalence of state institutions, with their power to sanction, tends to reinforce a determinism that may be at odds with emerging market opportunities. Social movements, on the other hand, mobilize and engage in collective action to build new market arrangements or transform existing ones. Market creation and innovation become possible in part because social movement activists, as interest-seeking, knowledgeable agents, can reflect and act on opportunities outside of existing markets (Oliver, 1991; Beckert, 1999), and in part because the variety and sources of these opportunities open spaces for movements and mobilization (Scott, Ruef, Mendel, and Caronna, 2000; Seo and Creed 2002).

In addressing institutional change and creation, social movements share much in common with institutional entrepreneurs (Hardy and McGuire, 2008). Both emphasize change, interests, resources, and power. Both address the role of skilled or powerful actors that engage in strategic action to bring about change. Both intersect the long-standing “structure-agency” debate, focusing in particular on the problems of structural change and embedded agency. Both also identify some of the same processes or activities as critical for change, including framing, assembling, networking, theorization, translation, and bricolage. Yet where institutional entrepreneurship research tends to attribute change to individuals, work linking social movements with institutional change is more concerned with the organization of, or relations between, collective actions or projects as engines of change. This paper emphasizes the role of inter-group relationships and mobilizations, and thus we employ the social movement approach to explain the rise of China’s mobile phone market.

## **Market Creation as Social Movement in China**

The Chinese mobile phone market provides a compelling context for the study of social movements in market creation because, despite strong and sometimes violent state control, the collective actions of non-state actors have shaped the birth, development, and expansion of new markets. China is characteristically a transition economy, undergoing massive institutional changes as it shifts from a planned economy to a market economy. Unlike other pre-socialist countries such as Russia, which employed shock therapies to make this transition in one abrupt leap (Lipton and Sachs, 1990), China administered a more pragmatic approach to gradually grow ‘out of plan’ (Naughton, 1995). By allowing solutions to emerge during the evolutionary processes of transition, Chinese leaders intended to exchange speed for stability. This approach also left more room for grassroots experimentation and social movements. Innovations provided by social movements eventually helped the state resolve several tough issues, including its household responsibility system (reform of people’s communes), its dual-track system (reform of state-owned enterprises) and its town and village enterprises (rural industrialization).

In the 1990s, China’s pragmatism resulted in the relaxation of state monopolies over industries and markets, which in turn created large numbers of economic actors and facilitated transactions between the state and non-state sectors. Changes in state institutions or state-business relationships became possible because new actors formed interest groups to make claims on their behalf. This was even the case in emerging industries like mobile phones, where critical issues about technological standards, value chain arrangements and business models remained largely unresolved. These issues ultimately evolved more quickly than regulators could follow, allowing

Chinese entrepreneurs to push into new markets without significant interference from the state.

## **METHODS**

This research is based on a naturalistic case study (Yin, 1984; Lincoln and Guba, 1985) of the development of the Chinese mobile phone market from the late 1990s to 2008. Given that our questions about market creation are exploratory in nature, we felt that this approach would be most useful for explanation building and theory development (e.g. Burgelman, 2002). In addition, by using a historical, field-analytic approach to tracking change, we gain insight into the evolutionary nature of institutional change and creation (Hoffman, 1999; Scott et al., 2000).

In terms of data gathering, we draw from documentary sources including published policy addresses, published annual reports, contemporary press information and a variety of other archive materials, and from more than 70 interviews with members of Chinese and Taiwanese government agencies, Chinese vendors, and Taiwanese producers conducted between 2004 and 2008. All interviews were conducted in person and lasted one to three hours. The interview records were transcribed immediately, resulting in more than 100,000 Chinese words of written notes. We triangulated this broad database to identify sources and the outcomes of market development processes. We finally identified three periods in the creation of China's mobile phone market: (1) regulation, (2) reinforcement, and (3) deregulation. For each of the three periods, we use historical evidence to chart key events, legislation, coalitions, contestation and change in the organization of the Chinese mobile phone market.

## **SOCIAL MOVEMENTS IN THE CHINESE MOBILE PHONE MARKET**

### **Regulation period, 1999 - 2002**

#### **Industrial policy and the push for national champions**

During the 1990s, China's mobile phone market experienced unprecedented growth. The number of subscribers rose from negligible in 1995 to about 40 million in 1999, and the number of mobile phones sold skyrocketed accordingly. This huge and fast-growing market was monopolized by foreign multinationals. In 1999, the top two multinationals, Nokia and Motorola, controlled 72 percent of the market (CCID, 1999). To nurture her own mobile phone industry, China kicked off a series of industrial policies in 1999. First, the central government issued an ordinance, also called the Number Five Document, to erect walls of protection via license control. Second, a change was made in the "Foreign Investment Industrial Guidance Catalogue" to impose restrictions on FDI (foreign direct investment) in the mobile phone industry. Third, the "Tenth Five-year Plan" designated the mobile phone industry as one of China's pillar industries, to which the state accorded the highest priority for planning, resource allocation, and implementation.

**\*\* Figure 1 about here \*\***

The policy formulation was based on two major strategic considerations. One was to "exchange market for technology" by leveraging market access into technology transfer. On the one hand, foreign firms were asked to form joint ventures with Chinese partners, establish research centers in China, set the ratio of local sale and export between 40 and 60 percent, and meet the requirements of local content. On the other hand, local firms were encouraged to strategically ally with foreign firms through joint venture, joint research and development, joint design, and joint production. This was done primarily through license control. By using licensure as a

means of negotiation, the central government managed to facilitate technology transfer from foreign firms to domestic firms, and to shorten the learning curve of domestic firms in building their technological capabilities.

The other strategy was to breed favored Chinese firms into national champions. Nurturing large firms has long been a central goal of political leaders in China, where state-owned enterprises (SOEs) continue to contribute the largest share of government revenues and urban employment. The desire for large and powerful Chinese firms – firms that could be both the backbone of a modern economy and the nation’s representatives in the global economy – remains a key policy objective in almost all of China’s pillar industries; only the selection process and the number of champions varies. In the mobile phone industry, the government used license control to pick winners from a limited number of chosen firms. The number of licenses it granted to domestic firms, foreign firms, and their joint ventures was designed to create an oligopoly, which would lead in turn to the emergence of large and technologically advanced domestic firms. The Ministry of Information Industry approved the first list of chosen firms in November 1999, selecting 17 joint ventures and 10 domestic firms. The former were state-led marriages between foreign leaders and SOEs, which manufactured mobile phones before license control; the latter were SOEs that diversified from related industries, such as telephones and TVs.

Besides license control, a special fund was set aside for supporting the research and development of domestic firms. According to the Number Five Document, a sum of 1 billion RMB (\$120 million) was to be provided to certain domestic firms for improving their R&D capabilities, funded with a 5 percent levy on telephone installation fees collected between 1998 and 2003, and with interest from national

bonds. These protection and promotion measures were designed to create a window of opportunity for domestic firms to catch up with leading foreign firms before China's accession to WTO (World Trade Organization), under which the protection walls would be gradually removed.

### **Chinese vendors and Taiwanese ODM firms find strategic fit**

The aim of Chinese industrial policies in the mobile phone industry was to achieve industrial leadership with a big push from the state, a common theme in China's development plans for pillar industries. The initial plan called for building technological leadership through quick assimilation of borrowed technology, and then using this leadership to leverage already accumulated capabilities in manufacturing and marketing: the so-called trinity of "ji (R&D), gung (manufacturing), mau (marketing)". Whether this approach was useful has been disputed. However, when it came to an emerging industry with fast-changing technologies like the mobile phone industry, the assimilation of borrowed technology ran into an apparently insurmountable barrier. TCL was a case in point. TCL started with telephone manufacturing in the 1980s, and grew into a diversified business group with a well-known brand spanning communications, consumer electronics, and computers, ranked at the top in the Chinese market for telephones, plugs and switches, and TVs since the 1990s. When it attempted to build up internal R&D through technology transfer in the mobile phone industry, its trials ended with failures -- first with Wavecom, then with Qualcomm and Alcatel -- because it did not possess the necessary capabilities to absorb, assimilate, and apply the acquired technologies. Because there was no shortcut to developing absorptive capacity, and because the window of opportunity opened only for a few years, TCL shifted its focus to marketing, where it might leverage its brand advantages.

A perfect complement therefore appeared between Chinese vendors that had nothing but brand names, and Taiwanese producers that had everything but brand names. Taiwan had developed a highly flexible and dynamic industrial system around contract manufacturing of informatics products beginning in the 1980s (Dedrick and Kraemer, 1998; Mathews and Cho, 2000). This system had two special features. One was vertical disintegration, by which specialized but interconnected firms excelled in different segments along the production value chain. The other was system integration, by which system firms were responsible for mobilizing and integrating numerous specialized firms to deliver new, timely products to satisfy rapidly changing niche markets. Vertical disintegration allowed each firm to build its core capabilities around specialization, while system integration distributed development costs, lowered transaction costs, and accelerated time-to-market. These advantages did not come from the capability of a single firm, but from scale and scope economies across the industrial system as a whole.

In the late 1990s, this system evolved into a more advanced form of contract manufacturing - original design manufacturing (ODM). Under this new architecture, in addition to pure manufacturing, Taiwanese producers took over some or all design-related activities, including leveraging rapidly changing technologies, acquiring necessary intellectual properties, and developing a diverse array of product choices. In other words, instead of selling these products under their own brands, they were able to design and make their own products and sell them to recognized brands. By using ODM, Taiwanese firms came to dominate contract manufacturing around the world in a variety of informatics products, including desktops, laptops, motherboards, monitors, optical scanners, modems and various add-on cards (MIC, 1997-1999).

### **Taiwanese ODM firms learn collectively**

Several barriers existed when Taiwanese ODM firms diversified into the mobile phone industry. First, in contrast to informatics products assembled from standardized modules, mobile phone manufacturing was based primarily on customization. Since there was no “dominant design” (Suarez and Utterback, 1995), mobile phone makers had to source product design solutions from chipset makers, work out these solutions by themselves, and require suppliers to customize components accordingly. Although product design solutions or chipsets could be bought off-the-shelf, mobile phone makers had to accumulate capabilities for fine-tuning interfaces between chipsets and numerous components. Second, unlike informatics products where hardware could be separated from software under the Wintelism regime, mobile phone makers were required to integrate hardware and software, so they had to build software design in house and accumulate software-related capabilities. Third, while external design was critical to a phone’s success, Taiwanese ODM firms frequently overlooked fashion and esthetics.

To overcome these shortcomings, the Taiwanese industrial system began a large-scale diversification in the late 1990s. System firms from a diverse background, including personal computer peripherals, modems, telephones, and laptops, pioneered this process. These system firms, which specialize in system integration at the product level, have become one of the major coordination vehicles in the Taiwanese industrial system. By leveraging thousands of suppliers, they are capable of rapidly bundling, unbundling, and re-bundling various product features to meet ever-changing demands. The coordination of system firms relies on a multiplicity of formal and informal institutions. Two of them deserve particular attention for supporting diversification. The first is technological communities: communities of managers and engineers who

share the same professional norms and values and thus act as carriers for transferring technology and knowledge (Debackere and Rappa, 1994; Rosenkopf and Tushman, 1994). By recruiting talents from technological communities both locally and internationally, Taiwanese system firms successfully closed technological gaps between informatics and mobile phone manufacturing, and by circulating talents they helped to accelerate knowledge diffusion throughout the industrial system. For example, BenQ, a peripheral producer that pioneered diversification in the mid-1990s, began by recruiting Taiwanese experts working in Silicon Valley and San Diego, where leading U.S. communications firms were located. Compal, a laptop producer that followed the move in the late 1990s, merged with a mobile phone firm run by former BenQ engineers in Taiwan. The diffusion of expertise was so efficient that by the early 2000s, almost all major players in contract informatics manufacturing had diversified into mobile phones.

The second institution that supported diversification is production networks (Saxenian, 1991; Jacobides, Knudsen, and Augier, 2006). Once technological gaps narrowed, system firms shifted their focus to supply chain formation through the reshuffle and recombination of production networks, particularly intra-firm networks that re-organized resources and capabilities within firms, and inter-firm networks that re-combined resources and capabilities across firms. Because system firms built efficient supply chains around contract manufacturing of informatics products, they tended to extend these supply chains to mobile phone manufacturing. For generic components, they asked suppliers to shrink products to fit the smaller profile of mobile phones. For example, by raising density and adding more layers to their products, Taiwan's printed circuit board producers succeeded in meeting size and performance requirements for mobile phones and grabbed a 40 percent share of the

global market in 2003 (YCPS, 2003). For components that were specific, system firms sought collaboration or cross-investment. For example, although BenQ and Asustek competed in mobile phone ODM, both invested in a new firm that focused on RFIC (radio frequency integrated circuits), a key component in mobile phones. To get more control over the supply chain, Compal started up several new firms to produce key parts and components for mobile phones, including International Semiconductor Technology for communications chip design, Toppoly Optoelectronics for LCDs, and Swenc Technology for keypads.

### **The gray market rises**

Through collaborative learning in the industrial system, Taiwanese ODM firms quickly closed the technological gaps between informatics products and mobile phones, and started to introduce ODM into the Chinese mobile phone market. Meanwhile, China's transitional economy was populated with gray markets because of high uncertainties and excessive government regulations (Fan, 1988; Li, 1996). Strong regulation confined legal activities within a relatively small area, thus providing a fertile ground for gray markets to grow. In the mobile phone industry, the white market was where the authentic national champions made and sold their own products based on their own R&D efforts. A definition of this national champion generally overlooked three implementation difficulties. First, learning by technology transfer takes time, particularly for firms lacking absorptive capacity, as shown in the case of TCL. Second, protectionism may encourage protected firms to extract monopoly rents directly rather than make efforts toward technological learning. China's protected firms could either source mobile phones from other firms and sell them under their brands, called "tie pai" (put on labels), or rent out their licenses to unlicensed firms by charging a usage fee per phone, called "jie pai" (rent the license).

Third, strong regulation incurs extra costs for firms. According to the regulations, firms wishing to introduce a new type of mobile phone had to go through four application processes across three governmental agencies. Multiple layers of bureaucracy and cumbersome procedures, in particular the delay or selective denial of permits, generated substantial costs in the form of taxes and lost time. In order to evade taxes and shorten the time to market, firms would sometimes skip portions of the application processes.

As a result, between the extremes of white and black, there was a vast gray market with varying degrees of grayness. The white market referred to legal products, produced indigenously or through tie pai, that passed all the application and examination processes. The black market consisted of illegal products that evaded all taxes, such as parallel imports, clones, and remodeled goods. In between were semi-legal “gray” products that were partially taxed.

To seek outsourcing opportunities from Chinese vendors, Taiwanese ODM firms targeted rent-seeking activities -- tie pai (put on labels) -- and devised a variety of tie pai practices to fit the various technological levels required by Chinese vendors. Pure-play tie pai, designed for pure-play vendors, offered finished goods through importation. This required the lowest technological level; Chinese vendors only needed to attach labels or make minor modifications on these finished goods. Profits were somewhat reduced, however, because of customs and costs associated with applying for an import quota. To avoid these costs, a more sophisticated model called “knocked down” was available, in which finished goods were knocked down into tax-free components and parts. Chinese vendors could procure knocked-down packages of components and parts, and then reassemble these pieces into whole

products. Firms with only basic assembly skill could begin with SKD (semi-knocked down) products composed of a few large modules. Firms with more sophisticated processes could advance to CKD (complete knocked down) that knocked down large modules into more fundamental components and parts.

In the early 2000s, almost all of the products sold under domestic brands were tie pai to some extent. In 2002, China had imported more than 17 million mobile phones, about one third of its market size, mostly from South Korea and Taiwan. If including modules imported in the forms of SKD and CKD, more than 90 percent of so-called domestically produced mobile phones were actually of foreign origins (MIC, 2004). It is fair to say that domestic firms in this period acted more like operators of distribution channels. By concentrating on the core competences of marketing and sales, domestic firms increased their market share dramatically and reached a climax of 55 percent in 2003, only four years after their entry (Fig. 2). For example, TCL built an extensive sales network that covered almost every city and county in China, staffed with more than 10,000 salespersons. By launching aggressive marketing campaigns through ubiquitous sales channels, TCL grabbed 10 percent of the market from foreign competitors in 2002 and became the top brand among domestic rivals (CCID, 2002).

### **Reinforcement Period, 2003 - 2005**

#### **The Qingdao meeting**

The uncontrolled growth of the gray market undermined the dreams of many policymakers in China's central government: particularly the dream of launching national champions. The central government had insufficient capacity to implement its policies and regulations because of obstacles at two levels. First, at the central

government level, the planned economy created parallel hierarchies of command and control that impeded horizontal coordination and integration. In the case of the mobile phone industry, the power to grant licenses belonged to the National Development and Planning Commission and the Ministry of Information Industry, but sales quotas and network connection permits were controlled by the Ministry of Foreign Trade and Economic Cooperation and the Ministry of Information Industry, respectively. State-owned enterprises (SOEs) that operated the mobile telecommunications networks, such as China Unicom, also played a significant role in regulating the mobile phone market.

The second obstacle to central government control was local government autonomy. Economic decentralization had encouraged local officials to develop a short-term view of economic growth rather than a long-term view encouraging technological learning and innovation (Zweig, 2002). The central government's policy of evaluating local officials by their local economic growth rate -- sometimes referred to as GNPism -- was a powerful mechanism for driving industrial development. The result was a highly fragmented governance structure guiding a highly fragmented market and populated by opportunistic firms.

The central government tried to reassert control over the fragmented market with additional regulation. In July 2003, the Ministry of Information Industry called all licensed firms to a meeting in Qingdao. The aim of the meeting was to convey the government's determination to regulate gray markets. Two months earlier, in its Number 128 Document, the government had announced its intention to keep track of all new types of mobile phone, in terms of quantity and quality, before granting permits. A second change, announced in the Number 189 Document, set up a new

mechanism for ex-post inspection. Firms that received permits were subject to spot checks by the government. If a firm failed its inspection, the permit would be revoked, and the firm could not apply for a new permit for six months.

The new regulations targeted firms engaged in rent-seeking -- activities that reaped profits without sowing indigenous capabilities. Three types of rent-seeking troubled the government most. First, almost all licensed firms participated in *jie pai*. They would rent their licenses by forming dual brands with unlicensed firms, or by allowing unlicensed firms to sell products under their brands. By the end of 2002, only 49 firms had received a license, but nearly 100 brands populated the market. Many of these were *jie pai* products. For example, Soutec-Malata was a dual brand formed by Soutec, an SOE licensed in Guangzhou, and Malata, an unlicensed private firm in Xiamen. Malata operated independently in terms of marketing, production and sales. It shipped its products to Soutec, which applied a dual-brand label and shepherded the product through quality control and monitoring. Soutec treated Malata as a distributor and charged a franchise fee, per label. This was win-win cooperation: Malata got market access, while Soutec collected franchise fees and added new product types to its portfolio. By leveraging *jie pai*, Soutec was listed as one of the top 10 brands in the Chinese mobile phone market in 2003 (CCID, 2004).

The second reason that rent-seeking troubled government regulators was that in order to sell *jie pai* products legally, license holders or license renters had to apply for a series of permits to get a series of numbers for their renters, including five IMEI (International Mobile Equipment Identity) numbers, a network connection number, a model serial number, a scrambling code and a production serial number. Only mobile phones that had these numbers printed inside or outside the phones (so-called

“nine-number” phones) were considered legal. However, to save time and trouble, license holders generally applied for more permits or production quantities than they needed and gave out their unused permits or production quantities to renters. Such jie pai products were illegal, strictly speaking, because although they had the required numbers, the products were different from what license holders had applied to produce. In 2002, for example, license holders received 404 permits, but launched only 160 new types of mobile phones. It is reasonable to assume that significant portions of these permits were hoarded for renting.

The third reason that rent-seeking bothered regulators was because tie pai created quick and easy money, and both license holders and renters preferred putting labels on acquired products to making products on their own. The technological level was so low that Chinese vendors were sometimes taunted for being “screwdriver jobbers” -- they only needed screwdrivers to put together imported pieces and modules.

### **Taiwanese firms relocate to China**

Government enforcement considerably increased transaction costs for ODM operations, from product development and design to manufacturing and shipment. To reduce these costs, it became necessary for Taiwanese firms to move to China to get closer to their Chinese customers. Beginning in the early 2000s, Taiwanese informatics producers relocated en masse from Taiwan to China, leading cross-border investment and contributing more than one-third of Taiwan’s outbound investment to China (Fig. 2). As a group, their investment was disproportionately high compared to China’s other foreign investors. In 2003, for example, the investment of Taiwanese informatics firms alone accounted for 3.3 percent of China’s total FDI, almost half as much as China’s total FDI from U.S. firms.

System firms pioneered the relocation of Taiwanese informatics. As system builders, they dominated the process of collective relocation from site selection, cross-border mobilization, and construction of an industrial system. The process was divided into three stages. In the first stage, system firms evaluated potential sites for the preparation and readiness of the Chinese local states, and finally settled on two major regions: the Shenzhen region, which had adopted China's first "open-door policy" and thus enjoyed the first-mover advantage in accommodating foreign investment; and the Shanghai region that has long been China's economic center. During the early 2000s, these two regions together attracted more than 90 percent of Taiwanese informatics firms (Fig. 3). However, rather than settle in the thick of these regional centers, system firms preferred smaller cities outside of the central district and lower in the urban hierarchy. For example, Foxconn, the world's largest informatics manufacturer, selected the small towns of Longhua and Kunshan, adjacent to the Shenzhen Special Economic Zone and Shanghai City, respectively. For system firms, smaller cities provided more room for negotiation and collaboration than did larger, more-sophisticated cities. Such "small-government advantages" granted system firms the flexibility and malleability necessary for relocating and constructing an industrial system (Lee, 2009).

In the second stage of relocation to China, collaboration between Taiwanese system firms and Chinese local governments became increasingly important. As system firms groped to re-arrange resources across the border, local governments invented new methods to attract additional investment. For example, the first informatics system firm that relocated to the Shanghai region, BenQ, required a large-scale mobilization involving dozens of firms and thousands of people within its business group. To circumvent regulations imposed by the Taiwanese government, all of BenQ's

investment was detoured via a holding company in Malaysia or a paper company in the British Virgin Islands. The investment was then carried out by a group of Taiwanese managers who spread their activities across the border, enabling the transfer of capabilities and institutions from Taiwan to China. At the same time, local governments in the Shanghai region adopted the “anchor tenant” strategy to target these firms as first-priority customers. Anchor tenants were firms with the potential to attract or cultivate their own suppliers. By extending preferential treatment to anchor tenants in terms of land price, tax exemption, infrastructural support, and administration services, Chinese local governments were able to attract anchors as well as a series of firms downstream and upstream along the supply chain.

As a result, the third stage of relocation witnessed a rapid growth in Taiwanese investment in terms of number and amount. Unlike the previous stages, in which system firms played the leading role, supplier firms led cross-border relocation in this stage. The inflow of supplier firms followed a growth pattern, from individual firms to a series of firms, and from discrete sectors to an entire industrial system. For example, after BenQ was relocated to the Shanghai region, three types of computer peripherals suppliers followed: suppliers that had previously followed BenQ to Malaysia; suppliers that BenQ nurtured in Malaysia; and suppliers that settled earlier in the Shenzhen region. Printed circuit boards was the second sector that chose collective relocation, followed by other key computer and mobile phone components. According to a survey from several reliable market intelligence agencies in Taiwan, more than 30 system firms and more than 1000 supplier firms had clustered in the Shanghai region by 2002, covering almost every major supply chain of the informatics industry. An interconnected industrial system thus emerged, interweaving supply chains and eventually emulating the flexibility and adaptability of the original industrial system.

### **Vertical disintegration of the value chain**

Regulatory enforcement changed the competitive environment for Chinese and Taiwanese firms. The early market success of Chinese brands had been primarily due to two competitive advantages: an ability to quickly penetrate vast markets with extensive marketing networks and aggressive marketing campaigns; and the cost advantages derived from monopoly and protectionism. These initial cost advantages eroded as the government added new layers of regulation. Domestic firms that enjoyed double-digit growth during the heyday of the early 2000s now watched their profit margins shrink with longer application and test cycles and more stringent inspections. Marketing advantages also declined when foreign firms adopted strategies that had been successful for Chinese firms. Nokia, for example, began reforming its channel system in 2004. Before it had relied on national agents to deliver its products in increments to front-line channels, a system that was both time-consuming and cost-ridden. After 2004 it designated some front-line channels as “fulfillment distributors” to which Nokia delivered products directly. This allowed Nokia to cut off unnecessary intermediaries while also reaching more customers.

The competitive situation tightened further when foreign firms initiated aggressive marketing campaigns to launch new products. In the first half of 2004 alone, foreign brands launched 52 new mobile phones with upgraded features such as color screens, multimedia message services, and million-pixel cameras – trumping the basic features of most products under domestic brands. Not surprisingly, the market share of domestic brands declined from 55 percent in 2003 to 48 percent in 2004 (Fig. 1).

These competitive changes had a direct impact on the mobile phone value chain that shaped the division of labor between Chinese and Taiwanese firms. Under the ODM

arrangement, Chinese and Taiwanese players were perfectly complementary: Chinese vendors focused on marketing, while Taiwanese producers took care of everything else. This benefited both parties because Chinese vendors could source a variety of products from a handful of Taiwanese producers, and Taiwanese producers could accrue economies of scale by selling a very similar product to as many Chinese vendors as possible. The liability of this model was that it didn't easily lend itself to customization because it was based primarily on commoditization and volume. It worked well when Chinese vendors desperately needed products of any kind to penetrate emerging markets; it reached its limitation when Chinese vendors wanted all kinds of products to compete in increasingly differentiated niche markets.

Some entrepreneurs saw this as an opportunity. Sales and design engineers who worked for foreign or domestic firms for years sensed a sea change in the market and the industry. TechFaith, for example, was founded in 2002 by a group of exodus employees from Motorola in China, led by then-sales manager Defu Dong. Now TechFaith's CEO, Dong observed that launching new products protected profits during a price war, but Chinese vendors generally lacked the resources and capabilities to launch new products quickly. Dong positioned TechFaith as an "independent design house" (IDH) to fill the missing link between product plans and manufacturing. They helped Chinese vendors speed up product development and design, including concept design, software design, hardware design, industrial design and mechanical design. In other words, they took over most or all ODM operations before mass production.

The emergence of IDH triggered vertical disintegration of Chinese mobile phone value chains. Rather than simply sourcing finished products from ODM firms,

Chinese vendors could source finished designs from IDH firms and outsource manufacturing to pure-play manufacturers. The latter, also called electronics manufacturing service (EMS) providers, were big assemblers that specialized in volume production. In 2003, for example, three foreign brand leaders -- Nokia, Motorola and Sony-Ericsson -- outsourced about one third of their production volume to EMS providers, mostly low-end and high-volume products (MIC, 2006). The advantages of IDH vis-à-vis ODM were speed and flexibility. Without the high asset specificity associated with mass production, IDH firms could design a variety of product choices and turn them over faster. They could design on demand in small batches and shorten the design cycle from 18 months to less than one year (MIC, 2007). Once new products hit the market, Chinese vendors could rely on EMS providers to speed time to volume. This was critical to surviving a price war. By adopting IDH, Chinese vendors were able to renew their product portfolio fast enough to enjoy higher premiums in the early stages of the product life cycle and thus survive the price war later on.

This change in industrial structure created an environment for additional cluster formation. New clusters started to burgeon through chain-like processes, in which major vendors drew in hundreds of first-tier suppliers such as ODM firms, IDH firms and EMS providers, which in turn drew in thousands of second-tier suppliers specializing in parts and components from chipsets, operation systems, application software, hardware, and peripherals. Together they formed an integrated system that could repeatedly develop new products through speedy and often unanticipated bundling, unbundling and re-bundling of numerous parts and components. By 2004, three geographic concentrations of mobile phone industry firms had emerged in the regions around Beijing, Shanghai, and Shenzhen, accounting for 32, 33, and 32

percent of China's total mobile phone production, respectively. The Beijing cluster, for example, was mainly formed around foreign vendors and their joint ventures, including Nokia, Motorola, Samsung, Sony-Ericsson, LG, Panasonic and Sanyo. Surrounding these vendors were Chinese IDH firms and Taiwanese EMS providers, which in turn were surrounded by suppliers along their supply chains. As documented elsewhere (e.g., Castells and Hall, 1994; Saxenian, 1994), such decentralized industry structure enjoys significant advantages over a more integrated model in a volatile environment because of speed and flexibility, and because of product innovation associated with specialization and recombination.

### **The black market expands**

Cluster formation benefited national champions in the white market as well as illegal vendors in the black market. Before, when most innovative and manufacturing capabilities had been held by foreign makers within their home countries, Chinese vendors with and without licenses could only access these capabilities through importation or smuggling. Because of protection, national champions could easily beat illegal domestic rivals by leveraging governmental supports and external linkages. However, as foreign firms like those from Taiwan relocated their production to China, and local entrepreneurial firms like Chinese IDH firms exploited opportunities emerging from vertical disintegration of value chains, capabilities that were once out of reach for Chinese vendors could now be acquired nearby. This fundamentally changed the rules by which national champions and illegal domestic vendors competed.

The first rule of competition was about appropriability. According to Teece (1986), appropriability refers to the ability of firms to capture rents generated by their

innovation activities. In a tight appropriability regime, firms profit from proprietary resources; in a loose regime, the profits earned by firms are subject to opportunistic leakages or spillovers to other firms. During its development, the Chinese mobile phone industry changed from a tight regime to a loose one. Legal measures which were sufficient to ensure appropriability when foreign firms restricted activities to their home countries gave way as foreign firms relocated to China, replaced with a more arbitrary system of governmental interventions. The black market, operating largely outside of government control, became the loosest regime of all.

The traditional black market business model was to evade as many costs as possible. When domestic Chinese firms dominated, the costs that could be evaded were mainly taxes, including customs, license and permitting fees, and commercial taxes. In that era, “black” mobile phones generally referred to parallel imports and outdated phones imported through smuggling. As more makers and suppliers moved to China, more opportunities for cost reduction appeared along the value chain. The most obvious opportunity was in marketing. Instead of launching new products and initiating marketing campaigns on their own, illegal vendors could simply imitate market leaders. The extent to which their clones approximated the original products varied. At one extreme were low-end clones that mimicked appearances or brand names: Nokir or Nokla instead of Nokia, for example. At the other end were high-fidelity clones that copied originals almost exactly. This created new costs for product design and development which disproportionately impacted white-market firms. It was reported that some EMS firms required workers to pass security checks to guarantee that they didn’t remove any semi-finished or finished products. Meanwhile, illegal vendors avoided development costs by reverse engineering or by acquiring product blueprints through inter-firm leakages or spillovers. Illegal vendors commonly

avoided other costs, as well, including quality control, verification, channel management, and after-sales service.

As the gap between originals and clones was closing, the black market also began rewriting the rules on innovation. The black market was itself a double-edged sword: on the one hand it discouraged incumbents from innovating in the presence of free riders, but on the other hand it generated enormous opportunities for entrants in formerly overlooked markets in urban areas, such as markets for the working class and rural-urban immigrants. Local entrepreneurs could take advantage of local knowledge to target these markets through seemingly unrestrained product innovation given that there was almost no protection of intellectual property rights. Furthermore, thanks to digital convergence, it was becoming easier to bundle a variety of audio, video, and data applications into mobile phones in innovative ways. In Beijing, Shanghai, and Shenzhen, local entrepreneurs who came up with good ideas for product innovation could run small shops with meager working capital in shopping malls and the busiest commercial districts, selling all kinds of “black” mobile phones, including high-fidelity clones, concept phones with the most advanced functions, and fashion phones in exotic shapes. It has been estimated that the number of mobile phones sold in China’s black market grew from negligible in 2003 to 15 million in 2004. If this number is credible, the market share for foreign brands, domestic brands and black market mobile phones in 2004 should be adjusted to 44, 41, and 15 percent, respectively.

## **De-regulation period, 2006 - present**

### **Relaxing license control**

The expanding black market was more problematic to Chinese policymakers than the gray market. By their view, players in the gray market were cautious rule-circumventers who searched for ways to circumvent the rules rather than break them outright. Players in the black market, on the other hand, were overt rule-breakers, who not only violated laws, evaded taxes, and sold defective goods that might be harmful to customers, but also challenged the authority of the ruling party. Notably, as the market moved through its periods of regulation and reinforcement, gray market firms had continuously attempted to gain recognition from the government; black market firms had alternately ignored the government and provoked it.

In 2005, the Chinese government endeavored to regulate the gray and black markets. The central organ in charge of economic transition, the National Development and Reform Committee, announced in an industry newsletter that the government intended to strengthen “macroeconomic regulation and control” to bring the industry to order. According to this newsletter, the industry was overheated: China’s overall production capacity had reached 300 million -- about half of the world’s demand -- but one fifth of capacity was unutilized. It was therefore imperative to cool down the industry, the announcement said, by confining entry to a handful of qualified players with sufficient capital and technological capability. Two policies followed. First, qualified players in the gray market were given new opportunities to apply for licenses. This new policy replaced the Number Five Document with a more transparent review process in which firms with sufficiently established experience, capital, technological capability and other requirements could win licenses.

For players in the black market, meanwhile, the government implemented a purge program. It called for collaboration between seven ministries and committees across the central and local governments, aiming to eradicate illegal mobile phones and their production sites. In Hua Qiang North Road at Shenzhen, China's biggest marketplace for black mobile phones, for example, a task force formed by seven ministries and committees searched 73 shopping centers, confiscated about 18,000 illegal mobile phones, and destroyed two underground factories in a single month.

Some analysts likened the treatment of gray market and black market players to co-optation and suppression: players in the gray market were to be co-opted, while players in the black market were to be suppressed. Ancient Chinese emperors had used similar methods to pacify revolutions. When grassroots revolutions arose, the emperor would skillfully differentiate the rebels, luring in some with high positions in the ranks and expelling the rest into mountain fortresses for extermination. In this vein, some analysts nicknamed mobile phones sold in the black market "mountain fortress" (shan zhai) phones, suggesting that the phones originated from rebel strongholds.

Despite these cooling measures, the industry continued to overheat. By mid-2006, the government had issued 34 more licenses, which together with 49 earlier licenses made China the most crowded mobile phone market in the world. All license holders, old as well as new, competed feverishly to launch new products and ramp up capacities. In 2006, China alone produced more than 500 million mobile phone sets, accounting for half of the world's production. Eighty percent of those were exported, while the rest poured into a saturated domestic market (CATR, 2008). The achievements of "mountain fortress" phones were no less impressive. The number of mobile phones sold in the black market nearly doubled after the governmental intervention (CCID,

2007). In the words of some commentators, the new policies simply added fuel to the fire: the harder the government attacked, the hotter they (mountain fortress phones) became.

### **The value chains disintegrates further**

Relaxed license control actually put Chinese license holders at a disadvantage against foreign and domestic rivals. They could no longer profit from protectionism because foreign vendors could apply for licenses; extracting rents directly from a license, as with tie pai and jie pai, was no longer a viable business model. At the same time, licensed Chinese firms shouldered more costs from taxes and fees than their illegal, domestic rivals.

During the periods of regulation and reinforcement, Chinese vendors, particularly national champions, were engaged in building extensive marketing and sales channels. While foreign vendors targeted mainly locations in the first and second administrative levels, such as provinces and prefectures, Chinese vendors could penetrate into fourth and even lower administrative levels through thousands of distributors and retail chain stores. This penetration allowed Chinese vendors to push their products from the top down through aggressive marketing campaigns, and gather valuable information about changes in markets and consumer behaviors from the bottom up. However, there were two caveats associated with the deployment of extensive channel networks. First, in order to sustain a large number of channels, there must be a comparable number of products to be delivered and marketed. Second, these products must be adaptive and responsive to fast-changing and highly differentiated local markets. Gaps arose when mismatches occurred between supply-push and demand-pull.

In the period of deregulation, the product cycle accelerated and the gap widened. In 2006, all license holders launched about 1,500 new types of mobile phones with a total shipment of 195 million sets in the Chinese market: equivalent to 4 new phone types with a shipment of 500,000 sets per day. A significant portion of these phones eventually went to inventory. In 2006, for example, the inventory rate was as high as 39 percent. The CEO of a Chinese vendor joked that selling mobile phones was like selling vegetables: “If you cannot sell by numbers when they (mobile phones) are still fresh, then you can only sell by pounds when they are expired.”

The accelerating product cycle put great stress on the division of labor along the value chain. In the arrangement of IDH, it was IDH firms that controlled the speed of product development and design. IDH firms would screen the market for new product ideas, call on design teams to turn these ideas into concrete designs, and sell these designs along with prototypes and bills of material. Chinese vendors then sourced whatever fit their product plans and put it into production. It usually took eight to ten months to complete the design cycle, a time frame appropriate to a product cycle of more than one year. As the product cycle shrank, design increasingly became the bottleneck in mobile phone value chains. CECW, once the largest IDH firms in China, for example, was notorious for delaying the delivery of design contracts with an average completion time of one year.

Delays were primarily the responsibility of chipmakers, rather than IDH firms. Because of a low level of integration in chips, design teams from IDH firms, ODM firms and vendors had to integrate a lot of chips, software, and hardware, and solve any problems between them. They might begin with a core chip from Texas Instrument or Qualcomm and combine major chips from other companies – for

example, radio frequency from Motorola, power management from National Semiconductor, and a variety of drivers from a variety of companies. They would then add all the necessary software applications, hardware parts, and components, including audio, video, data, entertainment, camera, transmission, etc. In a traditional basic phone, the number of chips, software and hardware in need of integrating could easily exceed several hundred. As phones added more and more functions, this number skyrocketed, as did the complexity of design work.

To remove the bottleneck, it was necessary to integrate these functions on a single chip. This is a familiar story in the development of integrated circuits of all sizes. What is surprising is that this work was done by a new entrant from the DVD player industry, Mediatek, rather than by incumbents in the mobile phone industry. To diversify into the Chinese mobile phone industry, the CEO of Mediatek recruited Ji-Chang Hsu from the former semiconductor division of Rockwell, which later became Conexant, one of world's largest communications chipmakers. Hsu was reportedly one of two Chinese in the world able to develop mobile phone core chips. He adopted an inside-out strategy to solve the problems of integration associated with numerous interfaces. First, he merged the core chip and some of the major chips into a single chip to build the system of mobile-phone-on-a-chip, a newly emerging practice called SoC (system on a chip). Second, he bundled software and hardware solutions with this single chip to save the work on software design and hardware design. To do so, he selected and tested choices of software and hardware for customers and offered them a "cookbook". Customers needed only to follow the procedures in this cookbook to "cook" a variety of new mobile phone, eliminating the need to select and test numerous software applications, hardware parts, and components.

The product Mediatek offered was also called “total solution”, because it took over two out of four services that IDH firms had controlled, namely software design and hardware design, and offered them at a much lower cost. The introduction of total solution initiated additional vertical disintegration of the value chain. Instead of outsourcing all segments of product development and design to IDH firms, vendors relying on a total solution platform needed only to outsource mechanical design and industrial design to IDH firms (Table 3). This new arrangement had two profound implications for the Chinese mobile phone industry. First, it helped shorten the design cycle by more than half, to about four months. Second, the bundling of software and hardware solutions facilitated the entry of Taiwanese suppliers listed in the total solutions “cookbook”. As a result, the market share of Mediatek and its bundled Taiwanese suppliers increased tremendously in China. In 2007, the market share of Mediatek exceeded 60 percent (Research in China, 2008). Taiwanese suppliers dominated the markets for a large and growing range of parts and components, such as Giantplus Technology (panel display), Merry (speaker), Green Point (case), Silitech (keypad), etc.

### **Virtual enterprises benefit “mountain fortress” phones**

Total solution production was created to serve China’s national champions, but illegal vendors -- vendors of “mountain fortress” phones – eventually benefitted far more. Total solution production lowered the technological barrier of product development and design dramatically, making it quicker and cheaper to launch new products. This advantaged illegal vendors, which competed primarily on speed and cost. Total solution also helped lower the managerial barrier of production given the availability of supply chains. This also favored illegal vendors because they were generally small in size and poorly equipped with technological and managerial capabilities.

In addition to the profits gained by evading taxes and fees, some illegal vendors leveraged total solution production for radical innovation: serving a variety of emerging markets that had been underserved by extant vendors, including low-income students and workers, and peasants and villagers in low-income regions. Tian-Yu, a former vendor of “mountain fortress” phones, helped pioneer this new business model. A channel agent, Xiu-Li Rong, founded Tian-yu in 2002, after she had worked for foreign vendors for about ten years. Rong realized that emerging markets were underserved by existing value chain arrangements. They were either too distant to feel the supply-push or too dispersed to exert a significant demand-pull. Exploiting these markets required support from channel agents, especially those who were low in the hierarchy because they were closest to local markets.

Rong introduced a new arrangement that catered to the interests of channel agents. Tian-yu would sell its products to channel agents outright, at a much lower price, while channel agents handled marketing, price setting, sales and inventory management. In other words, channel agents acted like entrepreneurs who had full control of their own businesses, taking most of the risks as well as the profits on their investment. This had three benefits. First, since channel agents were located on the market’s front lines, they were supposedly more capable of searching and screening new markets. Second, they also had more interests in exploiting new and unknown markets where they had a higher stake in value creation and profit sharing. Third, once they successfully opened new markets, they could accumulate market knowledge about consumer preferences and behaviors. Therefore, by collaborating closely with entrepreneurial channel agents, Tain-yu grew and expanded with unprecedented speed. One year after adopting its new business model in 2006,

Tian-yu's market share reached 5 percent, second among Chinese vendors after Lenovo.

Not surprisingly, Tain-yu's business model was soon copied across China, particularly in the black market. Numerous vendors, channel agents, IDH firms and EMS firms began targeting new and unknown markets with new products. Together, these firms operated as a virtual enterprise -- separate players headed in the same direction, following a clear division of labor. In this enterprise, Mediatek served as the R&D unit, responsible for acquiring necessary technologies, developing new chipsets and providing updated total solutions; hundreds of IDH firms and EMS firms were the design unit and the production unit, in charge of product design and manufacturing respectively; hundreds of thousands of channel agents comprised the marketing unit, taking charge of market development, sales promotion and inventory management; and thousands of vendors acted as project managers, presiding over the entire production cycle: initiating product plans, generating concept design ideas, coordinating product design and manufacturing, and organizing marketing and sales channels. What this virtual enterprise lacked was quality control, verification and after-sales service (Table 3), as well the burden of taxes and fees. This allowed for the sale of high-performance products at much lower prices, but exposed consumers to higher risks from defective and unsafe products. In 2007, this enterprise as a whole had sold 26 million mobile phone sets, accounting for about 18 percent of market share (CCID, 2009). Had this black market effort been accounted for in market ranking reports at the time, it would have been the second largest vendor in China.

### **“Mountain fortress” phones disrupt markets**

As the market grew for black market phones, the business model of “mountain fortress” phones appeared to disrupt the incumbent market structure (Christensen, 1997). By the mid-2000s, the Chinese mobile phone market had evolved into a three-tier structure divided by market share: the first tier held a few global leaders with market share of more than 10 percent; the second tier included a dozen Chinese national champions and their foreign rivals with market share of more than 1 percent; while, in the third tier, the remaining license holders claimed a market share of less than 1 percent. The division of market structure was based on the pursuit of scale economies. National champions believed that building scale economies was the best way to build competitiveness because it would help raise brand recognition, increase bargaining power vis-à-vis suppliers and retailers, and amortize costs over advertisement, R&D, and channel operation. Big vendors therefore placed more emphasis on “star” products for the mass market, because star products drove the accumulation of scale economies.

The business model of “mountain fortress” phones, on the other hand, distributed costs as well as profits across the value chain, and across a variety of niche products. Competitive advantages derived mainly from economies of scope, achieved in increments across a network with hundreds of thousands of participants. Rather than compete for market share, these black market enterprises collaborated to deliver small batches of many niche products with very high turnover rates. This model fundamentally challenged the ways that national champions tried to spur entrepreneurship, develop new markets, and change customer behaviors. First, because all stakeholders held a relatively equal share of value creation and value division, they were encouraged to take initiative on their own. Entrepreneurship could

happen anywhere along value chains. Small IDH firms that came up with novel product ideas, retailers that built up new customer bases, or illegal vendors that raised their first working capital could all trigger a new production cycle. Second, as each small entrepreneur developed its own niche market, they collectively opened a vast range of niche markets based on different product criteria. In these markets, price and variety were valued more than quality and brand image. New products that combined features in innovative and often unexpected ways were launched bi-weekly or even weekly, and customized products could be built to order in even the smallest batch. What was common to these products was low price, usually a fraction of the price charged for white market sets. Third, the features, variety and price of black market phones changed customer expectations and behavior toward the purchase, usage and disposition of mobile phones. What had been seen as a luxury product and a durable good became an inexpensive, fashionable good that could be replaced every half a year or even every few months.

The disruption created by “mountain fortress” phones was felt first in the third and fourth administrative levels such as counties and towns, where the market power of incumbents was weakest. But as the performance of “mountain fortress” phones improved in terms of lower price and wider variety, the disruption gradually penetrated higher administrative levels and threatened the market shares of incumbents. Almost all of the national champions suffered declining sales and financial losses in 2007. The so-called Big Three of Lenovo, Bird, and Amoi reported losses of \$72.8, \$66.2 and \$19.1 million (U.S.), respectively, during the first three quarters of that year. Some of them resorted to drastic measures in hopes of stopping the bleeding. Amoi, the only national champion that had invested heavily in R&D, for example, sold its most important R&D center, the Shanghai Research Institute.

In the end, the production and marketing capabilities nurtured by black market enterprises were too strong for China's national champions to overcome, and the already-shaky system of license control collapsed. In October 2007, after eight years wrestling for regulatory control, the Chinese state finally abandoned its licensing hurdles, leaving in place only basic regulations on network connection and testing.

## **DISCUSSION**

The social movement perspective provides a useful framework for examining the development of China's mobile phone market. As a transitional economy characterized by pragmatism, China is simultaneously pursuing a viable entry into capitalism and a safe retreat from socialism. The entry into capitalism pushes the state to develop regulatory institutions under which new markets can grow, while the history of socialism perpetuates the state's central role as the market regulator controlling firm entries, exit, and competition. The dual role of regulator and interventionist on the one hand makes the state a notorious player-referee. On the other hand, it invites unintended conflicts and tensions, which lay the foundation for social movements. From the state's view, regulatory institutions are designed to support the interests of dominant groups, both in the state and in the market. The state will not willingly change its institutions until these dominant interest groups are in crisis. Rather, the state expects to manage small crises and minor policy modifications while the market grows and expands in keeping with the plan it created.

The Chinese mobile phone market developed contrary to the state's plan, as social movements will. Market actors that were not recognized by the state took advantage of market opportunities much like grassroots activists leverage political opportunities (Fligstein, 1996; Rao, Morrill, and Zald, 2000). At the center of these collective

mobilizations was the entrepreneurial Chinese vendor, born and developed without state blessing, in competition with national champions that the state defended. Most of these entrepreneurial vendors were opportunistic in the sense that they neither specialized in particular product areas nor committed themselves to particular partners. They were keen to start their own business, partly because of the traditional logic of Chinese family business (Redding, 1990) and partly because of China's new open-door policies. When access to regulated, national markets was restricted to national champions, entrepreneurial vendors acted as institutional entrepreneurs, developing the social structures and relationships they needed to solve problems, mobilize resources, and pursue their business interests.

By actively developing markets among nascent, low-end consumers, entrepreneurial Chinese vendors became a source of disruptive innovations (Christensen, 1997). They escaped the formal, state-controlled markets, and created their own gray and black markets. To further exploit and develop these semi-illegal or illegal markets, Chinese vendors allied with Taiwanese producers to innovate the value chain and facilitate new product development and introduction. The division of labor along the value chain across the Taiwan Strait fostered collective attempts to garner resources and spearhead new rules and values, creating discontinuities in the organization of the industry and the market. Also critical to this collective mobilization were Chinese local governments, which provided an alternative source of legitimacy for market competition and development. By taking advantage of the tensions between central and local governments, the Taiwanese suppliers, coupled with their Chinese partners, were able to confidently secure political support, mobilize local resources and thereby create an environment for cluster formation. All these movements drove the market on a peculiar path of development in which black market enterprises gained and built

momentum by contesting state policies. Their contestation fueled market growth, which bred more opportunities for contestation, which in turn triggered the next round of market growth and contestation.

## References

### **Aldrich, H.E., and C. M. Fiol**

1994 "Fools rush in? The institutional context of industry creation." *Academy of Management Review*, 19(4): 645-669.

### **Beckert, J.**

1999 "Agency, entrepreneurs, and institutional change: the role of strategic choice and institutionalized practices in organizations." *Organization Studies*, 20: 777-799.

### **Burgelman, R. A.**

2002 "Strategy as vector and the inertia of coevolutionary lock-in." *Administrative Science Quarterly*, 47: 325-357.

### **Carroll, G. R., and A. Swaminathan**

2000 "Why the microbrewery movement? Organizational dynamics of resource partitioning in the U.S. brewing industry." *American Journal of Sociology*, 106: 715-762.

### **Castells, M., and P. Hall**

1994 *Technopoles of the World: The Making of 21st Century Industrial Complexes*. London: Routledge.

### **China Academy of Telecommunications Research (CATR)**

2008 "2007-2008 Report on China's Mobile Phone Market." Beijing: Ministry of Information Industry (in Chinese).

### **CCID Consulting**

- 1999 "Monthly Market Share and Brand Structure in the Chinese Mobile Phone Market." Various issues. Beijing (in Chinese).
- 2002 "New Outlook of the Chinese Mobile Phone Market." Beijing (in Chinese).
- 2004 "Chinese Mobile Phone Market in 2003." Beijing (in Chinese).
- 2005 "Special report: black mobile phones affect the industry." Beijing (in Chinese).
- 2007 "Market Research on China's Black Mobile Phones." Beijing (in Chinese).
- 2009 "Market Research Report on China's Mountain Fortress Phones from 2008 to 2009." Beijing (in Chinese).

### **Christensen, C.**

1997 *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard University Press.

### **Debackere, K., and M. A. Rappa**

1994 "Technological communities and the diffusion of knowledge: A replication and validation." *R&D Management*, 24(4): 355-371.

### **Dedrick, J., and K. L. Kraemer**

1998 *Asia's Computer Challenge: Threat or Opportunity for the United States and the World?* New York: Oxford University Press.

### **Fan, G.**

1988 "A theory of the gray market" (Hui Shi Chang Li Lun). *Economic Research* (Jing Ji Yan Jiu), August: 1-15. (in Chinese)

### **Fligstein, N.**

- 1996 "How to make a market: Reflections on the attempt to create a single market in the European Union." *American Journal of Sociology*, 102: 1-33.
- Hardy, C., and S. McGuire**  
2008 "Institutional entrepreneurship." In R. Greenwood et al. (eds.), *The SAGE Handbook of Organizational Institutionalism*. London: Sage Publications.
- Hoffman, A. J.**  
1999 "Institutional evolution and change: Environmentalism and the U.S. chemical industry." *Academy of Management Journal*, 42(4): 351-371.
- Jacobides, M. G., T. Knudsen, and M. Augier**  
2006 "Benefiting from innovation: Value creation, value appropriation and the role of industry architectures." *Research Policy*, 35: 1200-1221.
- King, B. G., and S. A. Soule**  
2007 "Social movements as extra-institutional entrepreneurs: The effect of protest on stock price returns." *Administrative Science Quarterly*, 52: 413-442.
- Lee, C. K.**  
2009 "How does a cluster relocate across the border? The case of information technology cluster in the Taiwan–Suzhou region." *Technological Forecasting & Social Change*, 76: 371–381.
- Leyshon, A., and N. Thrift**  
1997 *Money Space: Geographies of Monetary Transformation*. London: Routledge.
- Li, D.**  
1996 "A theory of ambiguous property rights in transition economies: The case of the Chinese non-state sector." *Journal of Comparative Economics*, 23:1-19.
- Lincoln, Y. S., and E. G. Guba**  
1985 *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.
- Ling, Z.**  
2006 *The Lenovo Affair: The Growth of China's Computer Giant and Its Takeover of IBM-PC*. Singapore: John Wiley & Sons (Asia).
- Lipton, D., and J. Sachs**  
1990 "Creating a market economy in Eastern Europe: The case of Poland." *Brookings Papers on Economic Activity*, 1: 75-147.
- Lounsbury, M., M. Ventresca, and P. M. Hirsch**  
2003 "Social movements, field frames and industry emergence: A cultural-political perspective on U.S. recycling." *Socio-Economic Review*, 1(1): 71-104.
- McAdam, D., J. D. McCarthy, and M. D. Zald**  
1996 *Comparative Perspectives on Social Movements*. Cambridge, UK: Cambridge University Press.
- McCarthy, J. D., and M. N. Zald**  
1977 "Resource mobilization and social movements: A partial theory." *American Journal of Sociology*, 82: 1212-1241.
- Market Intelligence Center (MIC)**  
1997-99 "Information Industry Yearbook." Taipei (in Chinese).

- 2004 "Review and prospects of Chinese mobile phone industry in 4<sup>th</sup> quarter of 2003." Taipei (in Chinese).
- 2005 "Review and prospects of Chinese mobile phone industry in 4<sup>th</sup> quarter of 2004." Taipei (in Chinese).
- 2006 "Analysis of global outsourcing market of mobile phone industry." Taipei (in Chinese).
- 2007 "From Rising to Restructuring: Using TechFaith as a Case to See the Development of the Chinese Mobile Phone Design Industry." Taipei (in Chinese).

**Naughton, B.**

- 1995 *Growing Out of the Plan: Chinese Economic Reform, 1978-1993*. Cambridge, UK: Cambridge University Press.

**Oliver, C.**

- 1991 "Strategic responses to institutional processes." *Academy of Management Review*, 16/1: 145-179.

**Pfeffer, J. and G. R. Salancik**

- 1978 *The External Control of Organizations: A Resource-Dependence Perspective*. New York: Harper & Row.

**Rao, H., Morrill, C., and M. N. Zald**

- 2000 "Power plays: How social movements and collective action create new organizational form." *Research in Organizational Behavior*, 22: 237-281.

**Redding, S. G.**

- 1990 *The Spirit of Chinese Capitalism*. New York: de Gruyter.

**Research in China**

- 2008 "Global Mobile Phone Platform (Baseband) Industry Report, 2008-2008." Beijing (in Chinese).

**Rosenkopf, L. and M. Tushman**

- 1994 "The coevolution of technology and organization." In J.A.C. Baum and J.V. Singh (eds.), *Evolutionary Dynamics of Organizations*: 403-424. New York: Oxford University Press.

**Saxenian, A. L.**

- 1991 "The origin and dynamics of production networks in silicon valley." *Research Policy*, 20(5): 423-437.
- 1994 *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.

**Schneiberg, M., and M. Lounsbury**

- 2008 "Social Movements and Institutional Analysis." In R. Greenwood et al. (eds.), *The SAGE Handbook of Organizational Institutionalism*: 650-672. London: Sage Publications.

**Scott, W. R.**

- 1995 *Institutions and Organizations*. Thousand Oaks, CA: Sage Publications.

**Scott, W. R., M. Ruef, P. Mendel, and C. Caronna**

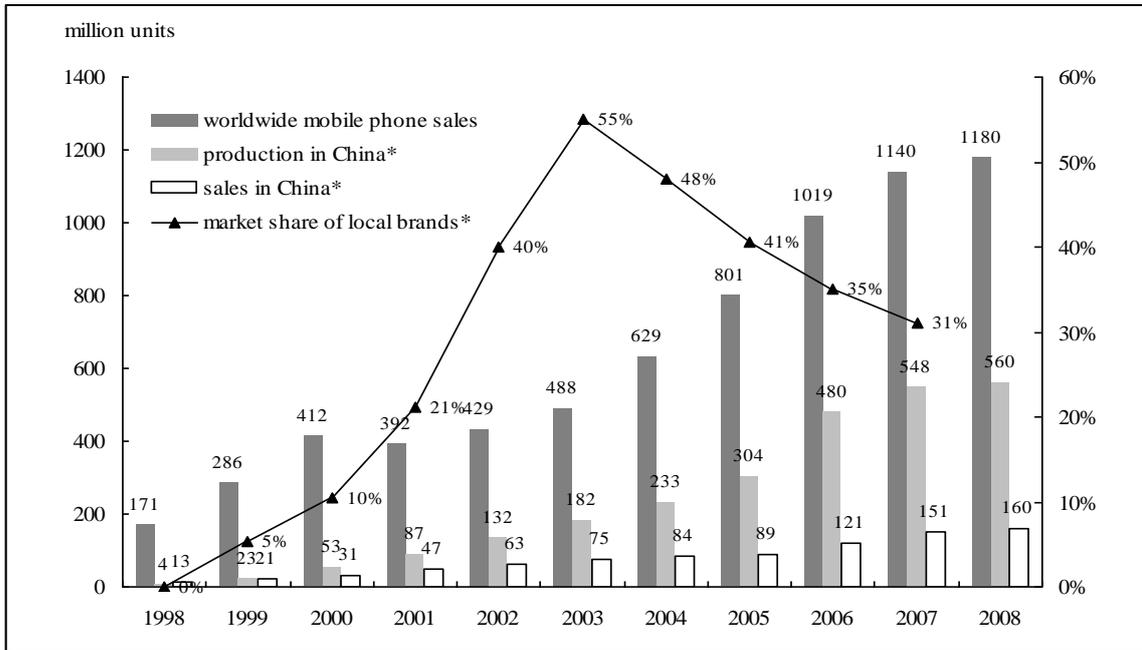
- 2000 *Institutional Change and Organizations: Transformation of a Healthcare Field*. Chicago, IL: University of Chicago Press.

**Seo, M.G., and W. E. D. Creed**

- 2002 “Institutional contradictions, praxis, and institutional change: A dialectical perspective.” *Academy of Management Review*, 27(2): 222-247.
- Scully, M., and W. E. D. Creed**  
 2005 “Subverting our stories of subversion.” In G.F. Davis, D. McAdam, W.R. Scott, and M.N. Zald (eds.), *Social Movements and Organization Theory*: 310-332. Cambridge, UK: Cambridge University Press.
- Suarez, F. F., and J. M. Utterback**  
 1995 “Dominant designs and the survival of firms.” *Strategic Management Journal*, 16(6): 415-430.
- Teece, D.**  
 1986 “Profiting from technological innovation: Implications for integration, collaboration, licensing, and public policy.” *Research Policy*, 15(6): 285-305.
- Weber, K., K. L. Heinze, and M. DeSoucey**  
 2008 “Forage for thought: Mobilizing codes in the movement for glass-fed meat and dairy products.” *Administrative Science Quarterly*, 53: 529-567.
- Waesche, N. M.**  
 2003 *Internet Entrepreneurship in Europe: Venture Failure and the Timing of Telecommunications Reform*. Cheltenham, UK: Edward Elgar.
- Wilson, M.**  
 2003 “Chips, bits, and the law: An economic geography of Internet gambling.” *Environment & Planning A*, 35(7): 1245-1260.
- Yuanta Core Pacific Securities (YCPS)**  
 2003 “An Undeveloped High-Margin Industry: The Overview of Handset Components.” Taipei (in Chinese).
- Yin, R. K.**  
 1984 *Case Study Research: Design and Methods*. London: Sage Publications.
- Zhao, Q.**  
 2006 *Reflection: The True Story of Soutec’s Being Sealed Up*. Beijing: Contemporary China Publisher (in Chinese).
- Zweig, D.**  
 2002 *Internationalizing China: Domestic Interests and Global Linkage*. Ithaca, NY: Cornell University Press.

**Figure 1**

Size of Chinese Mobile Phone Market and Share of Local Brands, 1998-2006



Source: Ministry of Information Industry, China, Statistics Yearbook of Telecommunications Industry (various years).