

ALIBABANOMICS:
ONLINE COMMERCE, MARKET INTEGRATION, AND MACROECONOMIC
REBALANCING IN CHINA

by

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ABSTRACT

China's economic rise has coincided with the arrival and mass adoption of the Internet in China. The convergence has enabled entrepreneurs like Jack Ma¹ to take advantage of immense arbitrage opportunities in a country with rapidly rising levels of income and fragmented and unmet consumption demands— transforming the retail landscape and spurring both innovation and entrepreneurship. Drawing on data provided by CEIC Data Company Ltd (CEIC) as well as previous market research by McKinsey Global Institute on China's 21st century economy (Chen, Orr, Manyika, Chui, & Chang, 2013), this paper examines the impact of expanding Internet penetration on two key drivers of future Chinese economic growth: domestic consumption spending and service sector employment. Private sector innovations in online marketplaces have played an integral role in creating a conducive environment for China's transition into a more mature economy by conquering key China-specific challenges. The incremental effect of Internet access on consumption is stronger across China's poorer provinces where regional disparities in development have created larger obstacles such as lack of physical retail, highly fragmented marketplaces, and heavy consumer focus on savings.

¹ CEO and founder of Alibaba.com, China's premier online commerce marketplace.

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INTRODUCTION

Over the past 20 years, China has made amazing leaps towards catching up to the level of industrialization and advancement of other major world economies. According to the International Monetary Fund (IMF), from the period of 1990 to 2010, China experienced 536% growth in real gross domestic product (GDP) as compared to the US 61%. It is now the second largest economy in the world, second only to the United States. Fueling this transformation has been China's economic opening to the world followed by a tremendous influx of outside investment and rural to urban migration in support of export-led manufacturing— following the traditional economic growth model which takes advantage of low cost labor as wealthier economies transfer capital to build manufacturing infrastructure. While their low-cost, export-led manufacturing growth strategy may continue to generate growth for some time, China has begun to lose this comparative advantage due to rapidly rising wage levels and a corresponding decline in marginal returns from export-led manufacturing, especially in capital intensive industries such as steel and coal. As suggested by the smiling curve value diagram² (see page 10), the next phase in China's economic evolution will require a transition towards higher value added operations and away from simply being a hub for outsourced manufacturing, as well as greater internalization of revenues within China. This will entail a macroeconomic rebalancing away from savings towards domestic consumption and a greater reliance on the services sector rather than manufacturing as a driver of growth.

² A smiling curve is an illustration of value-adding potentials of different components of the value chain in an IT-related manufacturing industry. The concept was first proposed by Stan Shih, the founder of Acer, an IT company headquartered in Taiwan, around 1992

Interestingly, this turning point for economic growth has coincided with the arrival and mass adoption of the Internet in China— creating a unique opportunity for more efficient consumer and service sector development through the growth of online channels. Thanks to adaptive private sector players in China, specifically the top e-commerce players like Jack Ma’s Alibaba, China has become one of the world’s top online retail marketplaces with online retail sales growing \$589 billion in 2015— well above that of the United States (InternetRetailer.com). This rapid growth has been made possible by of private sector innovations in delivery and payments which have improved the efficiency of online commerce and provided solutions to some of China’s unique challenges. As China’s Internet and mobile penetration rates are rapidly on the rise, Chinese consumers can easily access an immense array of products and services that previously were unattainable. This is particularly true outside of China’s larger and wealthier cities, Tier³ 1 and 2, where brick and mortar retail still remains massively fragmented and underdeveloped. E-commerce, which includes online sales to consumers by vendors of all sizes, offers a unique solution to both servicing unmet consumer demand across China while also revitalizing growth across service sector industries such as IT, online payments, and logistics.

³ The division of China’s cities into five tiers says more about each city’s relationship with the central government than its viability as a consumer market. Tier 1 cities such as Shanghai and Shenzhen are the megalopolises of China—the largest and the wealthiest. Tier 2 cities are their slightly smaller, slightly less well-off cousins, like Hangzhou and Wuhan. Nearly all cities from the top two tiers are in China’s east or near coastal areas. Tier 3 and Tier 4 cities are smaller and less affluent still, and are geographically dispersed. The fifth tier is everything else. (Keeley, 2015)

The ability for Chinese consumers to spend online is not only channeling demand away from brick and mortar retailers but is actually fueling domestic consumption and giving rise to a whole new class of consumers in China. This paper will analyze the impact of growing access to the Internet, through online marketplaces, on the achievement of China's broader macroeconomic goals as well as the implications of online commerce's "leapfrog" potential⁴ for the future of retail development in China.

Relying on previous research done on China's 21st century economy, I seek to further explain the impact of the Internet by looking at private sector development and innovation in online marketplaces. In my empirical analysis, I will use fixed cross sectional data across regions to measure how much online access, measured by Internet penetration, is affecting consumption habits across various demographic groups of Chinese consumers. While e-commerce is key to my analysis, the paper as a whole will focus on how the broader impact of the Internet, through the development of online retail marketplaces, can be seen as a catalyst for consumption growth as well as broader economic development within China.

⁴ The leapfrog potential was first named and described by MGI's 2011 consumer survey and analysis on online commerce growth in China. It describes the potential for e-commerce in china to skip the traditional growth model entirely and dominate China's broader retail industry because of its ability to vastly improve efficiency of services and availability of products with low capital requirements (Chen et al., 2013).

BACKGROUND DISCUSSION

China's economic rise has coincided with the arrival and mass adoption of the Internet. The convergence has generated a vast amount of opportunity for entrepreneurs like Jack Ma to take advantage of the immense arbitrage opportunities in a country with rapidly rising levels of income and fragmented and unmet consumption demands— transforming the retail landscape and spurring both innovation and entrepreneurship.

As mentioned previously, China's historical growth strategy has generally relied on low-cost manufacturing. This is a necessary first step in economic development following Rostow's 5 stage model⁵ (Rostow 1960) for Economic development which includes:

- Stage 1: Traditional Society— Subsistence, barter, and agriculture
- Stage 2: Transitional Stage— Specialization, surplus, and infrastructure
- Stage 3: Takeoff— Industrialization, growing investment, regional growth, political change
- Stage 4: Drive to Maturity— Diversification, innovation, less reliance of imports, investment
- Stage 5: High Mass Consumption— Consumer oriented, durable goods flourish, services sector becomes dominant

⁵ Walt Rostow, US economic historian, while criticized for his Imperialist views typical of post World War 2 politics, does, in his 1960 book “The Stages of Economic Growth”, provide a sound theoretical model to categorize basic developmental stages (Rostow, 1960).

However, critical here is that as China moves into maturity, categorized by high mass consumption, it must move away from export led manufacturing and move into higher value chain service sector operations while becoming more consumer oriented. To illustrate this point, the service sector in a mature economy such as the US as a percentage of GDP is 80% while in China is only 40%. Also the gross domestic savings rate in China is 51%— one of the highest in the world, compared to only 17% in the US.

Figure 1: Rostow's Stages of Economic Growth (Rostow, 1960)

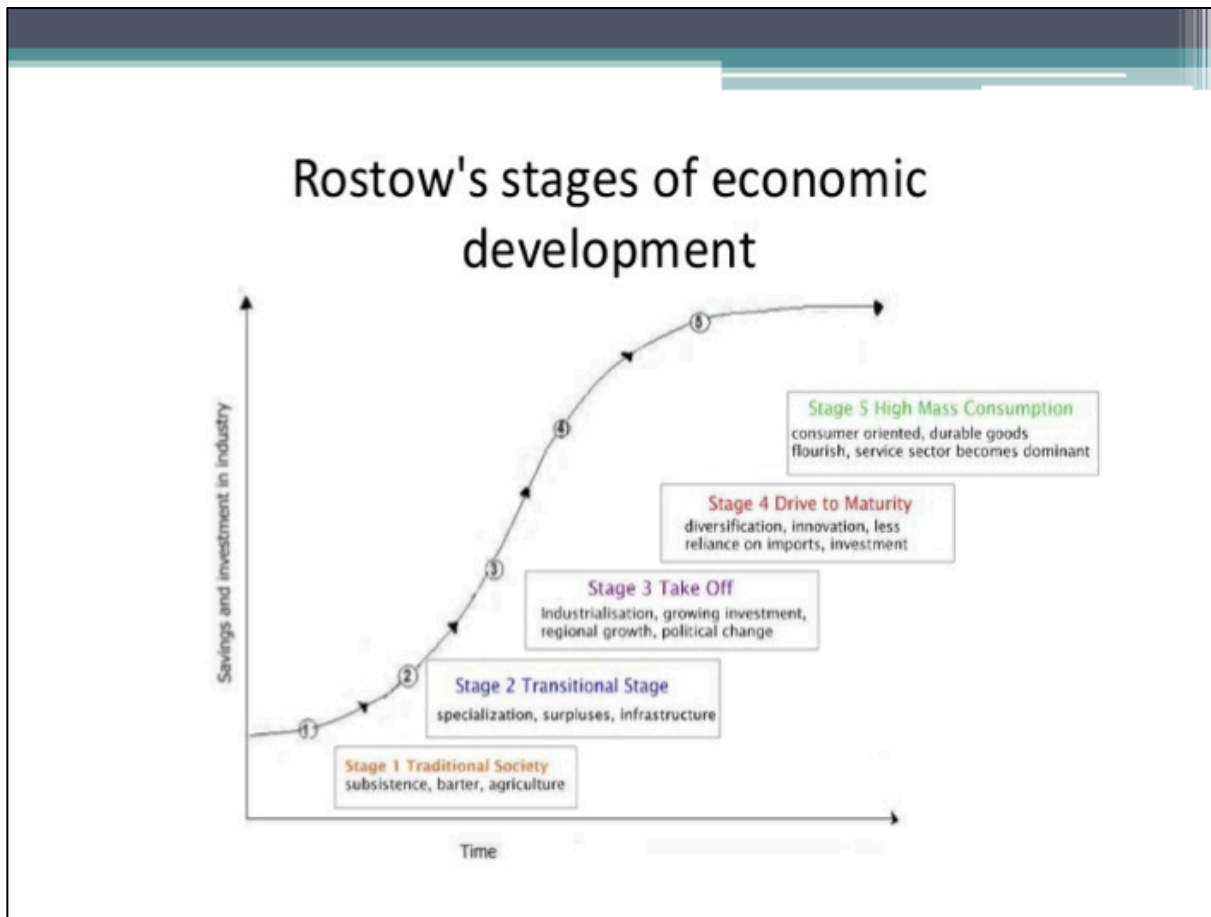
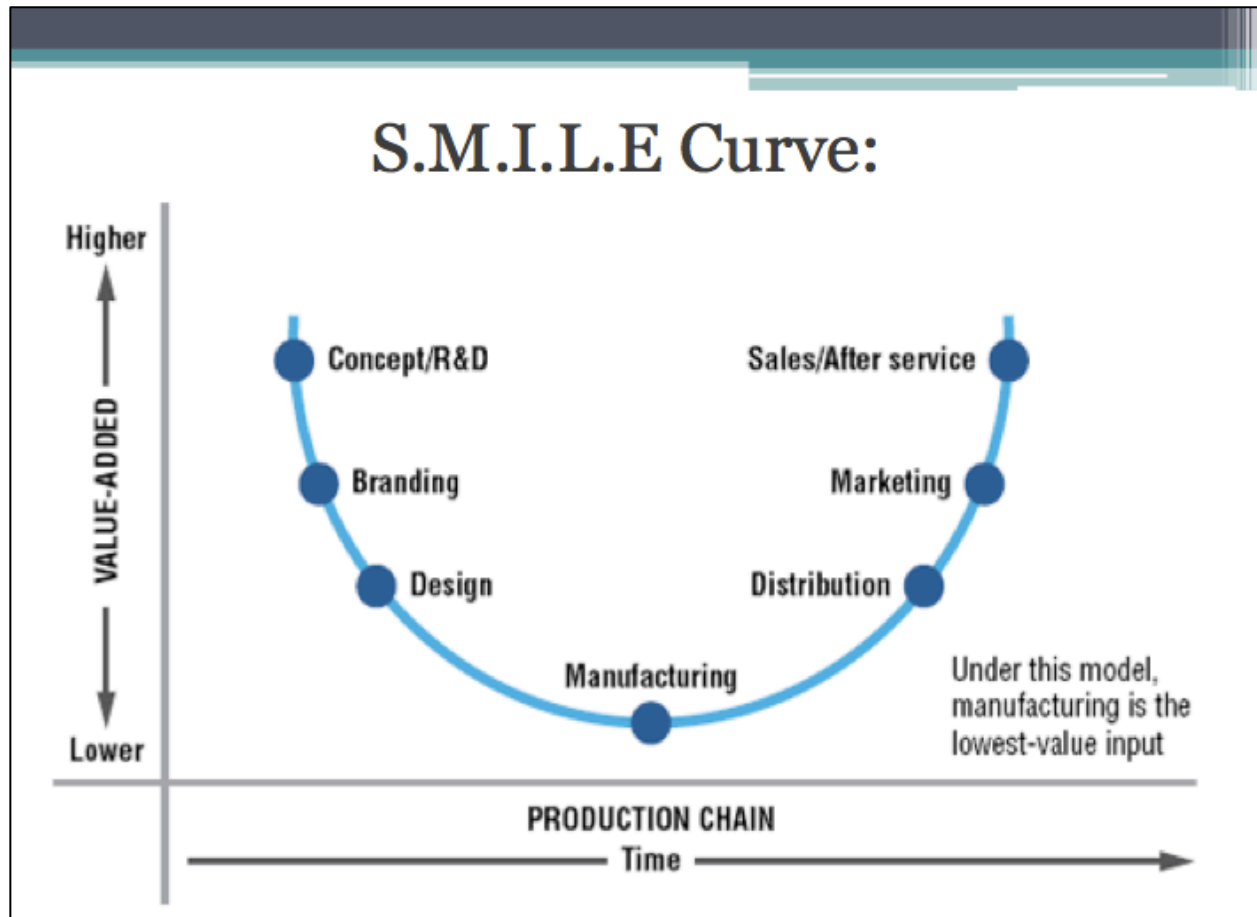


Figure 2: Smiling Curve Diagram (Shih, 1992)



Even though only about half of China's population has access to the Internet; that alone is still about twice the population of the US. What is more interesting here is that, even though only half of China's population has access to the internet, already online sales as percent of total retail sales has surpassed the United States— which has an internet penetration rate of close to 100%. Thus, in a nation where many other sectors are rapidly expanding due to rapid growth and rising wages, Chinese consumers seem especially active on online commerce channels. This gives online retail great promise as a method for China to transition growth and move up into higher value chain activities.

Although income per capita as well as Internet and mobile penetration rates in China are extremely low relative to other major economies, in 2013 China’s online retail market surpassed that of the United States to become the number one in the world. Its growth continues to outpace the rest of the world by a wide margin as evidenced by growing total Internet users in Figure 3.

Figure 3: China’s Internet Revolution (Griffiths, 2015)

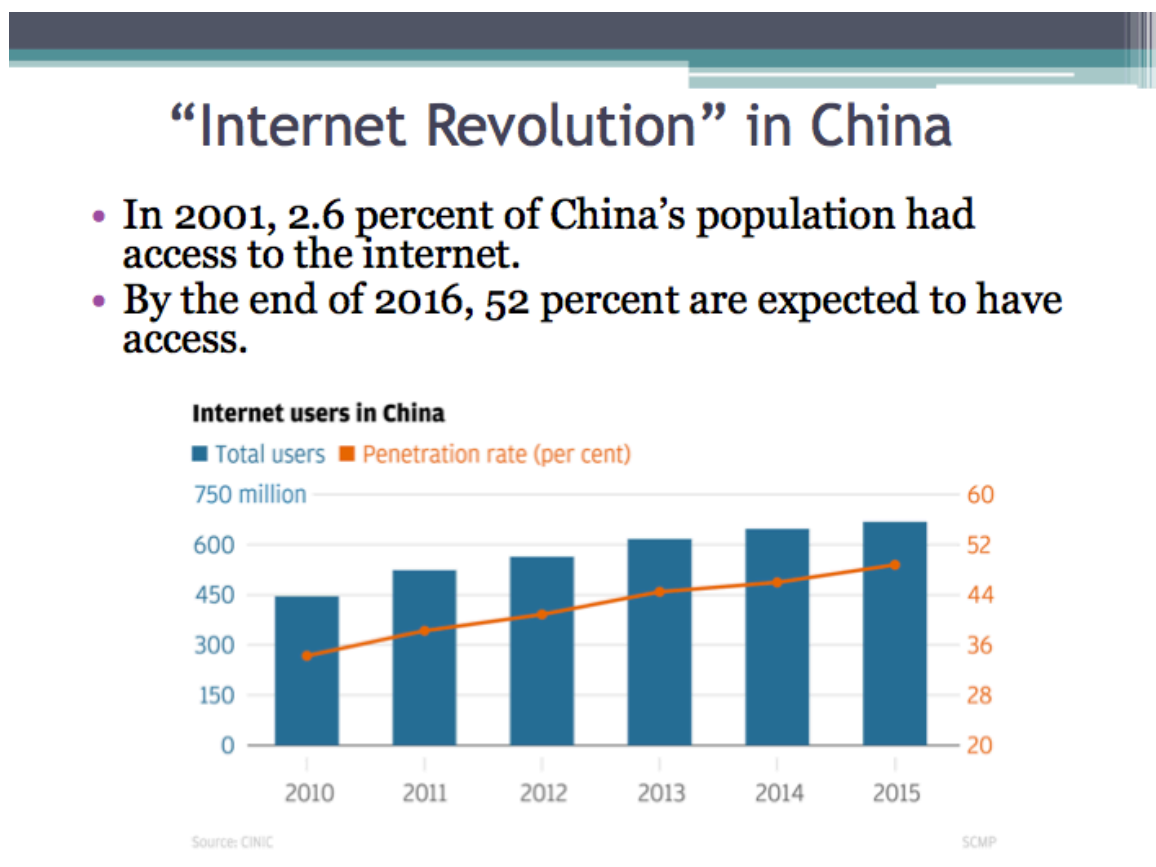


Figure 4: E-Commerce Sales as % of Total Retail Market (The Economist, 2015)



As shown in Fig. 4, despite the relatively low Internet penetration rate, China’s online sales as a percent of the total retail market have already surpassed that of the United States. To understand this phenomenon, we must dissect the unique challenges facing the growth of China’s broader retail industry as whole.

China still heavily lacks the brick and mortar infrastructure that is present in the US—comparatively, Chinese consumers only have access to about one fourth the physical retail infrastructure per capita. This means that consumers in China simply do not have

the same consumption opportunities as those in the US. Furthermore, physical retail in China also remains highly fragmented. For example, take an analysis of the Shoe Industry done by Report Linker in which 90% of the Chinese market is commanded by third-party vendors as opposed to the United States, where the industry is dominated by the bigger brand names. Thus, as the traditional retail market is still hugely underdeveloped, this could give evidence that online retail rather than physical could emerge to become the dominant source for consumers because of its advantages in capital efficiency, scalability, and corresponding service sector benefits.

An analysis done by McKinsey Company across 266 cities in China revealed that “e-tailing”, or e-commerce, is having a strong incremental effect on private consumption—particularly evident in China’s medium and small sized cities in which physical brick and mortar retail offerings are hugely lacking. As consumers in these locations gain access to a broader set of products, they are spending more. They concluded, “accessing this previously untapped demand in underserved regions may help to accelerate China’s policy goal of increasing private consumption” (Chen et al., 2013).

This could be caused in part by the immense challenges to scaling up traditional retail store networks across such a large and diverse developing country. For example, building out networks of physical retail stores into new areas requires a huge amount of capital. Especially in areas lacking high levels of preexisting retail demand, the logistics for profitability are slim. However, scaling retail via online commerce channels only requires access to a computer or mobile phone to instantly have access to a huge market basket of

goods at competitively low prices. The ability to reach a huge new market is an advantage for both suppliers and those with unmet consumption demand. Industry giant, Alibaba, in their singles day sales by transacting a total value of \$9.3 billion in singles day⁶ sales in 2015, as compared to 2.04 billion transacted on Cyber Monday— proving that online commerce channels are providing a solution to creating scalable payments and logistic networks across China.

MGI argues in their 2013 report that there are two likely scenarios that could occur over the next decade. China could develop a balanced mix of both physical and digital retail — requiring huge capital investments to overcome a slew of technical disadvantages due to its fragmented retail economy. Alternatively, taking into account the massive growth of online retail over the past five years, another, perhaps more interesting, scenario can be considered. This distinct scenario would involve forging the western retail development model of expansion in traditional brick and mortar retail entirely, and rather see a direct transition towards a primarily digital retail environment. (Chen et al., 2013). In this paper, I will discuss the rationale for the greater likelihood of the latter.

Such a shift would have broad implications for both state and private investment in consumption to thrive including the allocation for capital— not towards physical

⁶ Singles Day takes place on November 11 (11/11). It is a popularized Chinese holiday in which people celebrate the fact that they are proud of being single. With the expansion of online commerce in recent years, Singles Day has become the premier online shopping festival in China—the Chinese equivalent to Cyber Monday. While almost all retailers in China will now have singles day sales, the shopping festival was invented by Alibaba Group in 2009, who later trademarked the term "双十一" (meaning "Double 11"). (Hui, 2015).

storefronts but rather logistic and technical services as well as continued coordination of delivery. Already outlined in China's 12th Five-Year Plan, the government seeks to help construct 200 logistics industrial parks in major economic zones. Investments in highways, railways, and waterways are key initiatives. Subsequently, the massive market capitalization⁷ of Alibaba, China's foremost ecommerce market player, may also provide the tools for a more rapid expansion and development of China's online retail ecosystem.

Increased activity on online channels also helps to generate many other positive ripple effects. It has given China's next generation entrepreneurs and small and medium sized enterprises (SMEs) a platform to succeed. These SMEs are now able to sell directly into an already established and hugely trafficked retail marketplace. Later, an empirical analysis will be conducted in order to try to quantify the impact of online commerce on SME growth. On these online marketplaces such as TaoBao or C-Mall, economies of scale matter much less than in manufacturing and distribution — allowing for greater competition and innovation to occur. Secondly, strong growth in e-commerce may lower the demand for commercial real estate as the marketplace moves online. It is the belief of many economists that the Chinese real estate sector is in the midst of a bubble and must begin to rebalance itself or risk pushing China into a recessionary period. This decreased demand may help rebalance a Chinese real estate sector or at least take away from the influx of real estate demand in urban markets where the bubble is most severe.

⁷ In 2014, Alibaba listed itself for the first time as a public company on the New York Stock Exchange. Its record-setting IPO raised a market capitalization of over \$25 billion, the largest ever recorded.

However, for the full emergence of e-commerce in China, it will require large-scale investments in the expansion of broadband penetration, 3G+ coverage, data analysis capabilities, and logistics infrastructure as well as make advancements in labor productivity. These are areas in which it will take cooperation between both the private sector as well as state. While the government has been thus far supportive of the development of China's online marketplace powerhouses, future restrictions and taxes across complimentary industries such as online payments could hurt their overall business model and threaten growth.

While these areas must be improved, the success that the online retail has already found within China underscores the potential opportunity for all stakeholders— in and outside of China. In today's global economy, the success and failures of nations are all integrally linked. The ability for China to transition away from growingly inefficient and capital intensive industrial output towards a more consumption-driven service economy will have an impact on the wellbeing of all other major economies. While e-commerce is only one of many drivers for China's new growth model, it presents a unique opportunity for China to not only develop a new comparative advantage to the rest of the world but also see positive ripple effects across related service sector industries such as IT, marketing, and data analytics. If they are successful in utilizing online channels to “leapfrog” the traditional offline retail development model seen in other advanced economies, China could present a valuable case study for other growing economies across the world for how to harness online marketplaces to overcome many logistic and technical challenges that can be found across many other developing nations.

China's Unique Online Retail Landscape

As average incomes in China are rapidly rise, the consumer class across all city tiers now has increasingly more money to spend. While growing amounts of available disposable income generally encourages larger amounts of consumption, much of the Chinese population still is unable to participate. The heavy fragmentation of physical infrastructure, especially outside of Tier 1 and 2 cities equates to a large amount of unmet demand potential. The future potential for e-commerce to fulfill this niche market is an area of hope for the development of Chinese consumer spending. While the already established and diverse presence of consumer product manufacturing creates a huge amount of supply of merchandise, the challenge will be connecting them with the multitude of demand that is still isolated from fully participating. Later, in my analysis, I will try to show how access to the Internet, measured by Internet penetration rates across provinces, has been a crucial tool in solving this problem.

The unique factors of China's online retail landscape include:

- Large Business-to-Consumer (B2C) sites are the clear leaders in other countries but not in China — where nearly 90 percent of the industry is marketplace based— meaning the majority of transactions take place on market platforms like Alibaba rather than individual e-merchants. Compare this to a 23-24 percent share of transactions in the United States. Thus, marketplace operators, such as Alibaba

(which owns TaoBao, Tmall, and other online retailers that make up the marketplace), have been able to command huge amount market share and be a successful channel for small manufacturers and wholesalers to tap into the enormity of the Chinese market directly.

- More than 70 percent of the market is Consumer-to-Consumer (C2C) as compared to single digit share in other countries. This figure indicates that much of the market surplus remains on the table and much consumer demand has yet to be met— underscoring the importance of greater development of more small and medium sized retail enterprises to continue to meet user demand and drive industry growth.
- The online commerce ecosystem in China has continued on a high growth trajectory with a relatively very low investment— 2-4% of total revenue on an annual basis (Chen et al., 2013). This unique factor can be attributed to the large amount of C2C transactions. However, as the industry expands, it will begin to require larger amount of capital investment. On this note, Alibaba’s record breaking IPO may be highlighted as a vanguard runner for pushing the industry into further growth as they use capital to expand their market outreach and access new consumer markets.

Much like Ebay or Amazon, their US counterparts, Chinese online retail marketplaces provide one central website in which merchants can sell a variety of products. The low overhead due to the online environment allows market players to not only meet micro and local demands while remaining price competitive but also provides them with the tools to scale their businesses should the demand increase. Outside of the multitude of business services provided to small and medium sized business by online marketplaces, the biggest advantage for individual businesses is accessing the enormous amount of aggregate online traffic that is already being generated by these sites such as Tmall or Taobao. As mentioned before, these online marketplaces can provide the tools necessary for entrepreneurs and SMEs that previously inhibited many from entering the larger market including the tools for setting up online storefronts, listing items, collecting payment as well as connecting them with services for warehousing and shipping.

Comparing the Chinese and US models of online retail side by side can also provide insights into differences of both consumer expectations and psychology. There are two primary differences that are worth mentioning; First, most Chinese consumers within Tier 1 and 2 cities expect next day delivery — compared to the US where next day delivery is only a premium option and added expense. This first differences highlights the fact of how China is already bridging the gap between traditional physical retail and online purchasing — allowing consumers more “instant gratification” of in store purchases by speeding up deliver times. Secondly, the cash on delivery system remains a common practice among online retailing in China where in the United States it has become largely a thing of the past. The cash on delivery method has allowed for the unique Chinese

phenomenon of the “mobile fitting room” in which couriers often wait for the shopper to try on the product before collecting payment. This method also helps add credibility⁸ to a marketplace historically infamous for fake products. Both of these differences in Chinese and US retailing suggests that the online market place in China is trying to bridge the gap between online and offline purchases— alleviating the some of the logistical difficulties with providing timely product delivery. This is just another example of how the private sector online channels are innovating to fulfill niche consumer demands.

E-Commerce is Generating Incremental Consumption and Stimulating Economic Growth

Rather than just existing as a replacement channel for consumption, which would otherwise occur offline, e-commerce is actually boosting incremental consumption within China (Chen et al., 2013). This effect is especially apparent in lower Tier cities in which physical brick and mortar retail is massively fragmented and there remains a large amount of unmet consumer demand. As mentioned before, China’s previous growth strategy relied heavily on export-led manufacturing: this included massive investment in infrastructure and intensive capital allocation towards heavy industrial development. E-commerce could play a major role in rebalancing the nations diet for consumption by harnessing the previous developments to further drive development and growth by pushing into a more efficient and growing service sector and help stimulate consumption demand.

⁸ While many consumers within China are well aware of the existence of fake products and willing to sacrifice legitimacy for favorable prices, the existence of cash-on-delivery system presents them with an opportunity to access quality in person.

In the 2013 report by McKinsey Global Institute that examined data from a consumer survey conducted across 266 cities, their findings supported the claim that the development of e-commerce was found to produce an incremental increase in total consumption. After controlling for income variances, they found that the cities with higher online consumption tend to have higher overall consumption per capita. According to MGI, “by analyzing consumption patterns in 266 Chinese cities accounting for over 70 percent of online retail sales, we found that a dollar of online consumption replaces roughly 60 cents of sales in offline stores and generates around 40 cents of incremental consumption. It’s important to note that the data sets behind this analysis don’t cover the full market. Our approximations do, however, provide a preliminary picture of what’s occurring in China and permit a rough calculation of the extent to which e-tailing may be boosting consumption there” (Chen et al., 2013, pg.3). They also found that the incremental effect is larger in the lower-tier cities that were surveyed, which is consistent with a purely theoretical hypothesis of heavily fragmented retail creating unmet consumption demand. Later, in my empirical analysis, I will expand on this preliminary picture of e-commerce in China provided by MGI’s 2011 consumer survey by looking at the incremental effect of Internet across all of China’s provinces.

Thus, while historic consumption levels in China have historically been drastically different across city tiers, e-commerce is helping to equalize these differences. In their 2011 consumer survey, MGI also analyzed the wallet shares across city tiers directed towards online spending. They found that while lower tier cities account for a smaller

amount of online consumption, the wallet share directed towards e-commerce, that is to say the percent of disposable income allocated towards e-commerce, was much higher in lower tier cities as opposed to higher — suggesting that consumers in areas in which physical retail is largely underdeveloped are much more excited about online retail. This is especially important because the majority of the Chinese population still lives outside the upper tier cities. Therefore, while the larger population has yet to join the online retail marketplace (with broadband penetration still only around 50% in China), those who do have shown a huge acceptance of online shopping as evidenced by their large portion of disposable income directed towards online purchases. This fact again further highlights China's unique online retail landscape and its potential evolution as both the primary source of retailing within China and also as a massive driver for consumption growth.

Beyond increasing overall consumption, online retail is helping reshape the Chinese economy in many other ways, especially by lowering retail prices for consumers and stimulating growth across adjacent sectors, most notably professional and business services. A good example of this is Alibaba's creation of an online payment system, 'Alipay', which now dominates over 80% of the third party mobile payments market (CIW Team, 2015). It also facilitated the rapid development and consolidation of China's logistical networks to drive revenue growth. Both of which have allowed for online commerce channels to be successful and create a mass amount of service sector opportunity. Thus, the development of online commerce in China has been synonymous with that of online payments, logistics, and growing use in big data analytics— as the

online retail sector increases efficiency, China may experience ripple effects across the broader economy and see greater development of service sector growth.

Massive Opportunities, Massive Challenges

While the growth of online retailing has already provided a huge amount of consumer surplus (added value to the consumer) by lowering overall retail prices, as evidenced by Alibaba's price Index across 2007-2015, it has furthermore given consumers in lower tier cities direct access to an enormous market basket of goods which was previously unavailable. This is directly impacting the quality of life for millions of people across not only China but also the world. All consumers, even those outside China, can benefit from the increased availability of niche products provided by the massive Chinese online retail machine that is its online commercial market.

The rapid rise of online retailing in China has also created a multitude of opportunities for private companies, especially small businesses and entrepreneurs who can be often kept from the market by the large investment barriers to entry and overhead expenses of traditional retail. Now entrepreneurs both in and outside of China have the ability to launch new ideas with minimal start-up costs and access to an enormous pool of potential consumers and business services with the ease of one platform. This creates an atmosphere for competition and innovation among China's retailers to capture greater amounts of market share, and thus, is an area of great promise towards the development of more real brand value created domestically inside China. As competition spurs brand

value creation it creates an environment for domestic Chinese business to begin to compete internationally. Because of online channels ability to instantly and easily access consumers around the world, Chinese small and medium sized manufacturers can now be more connected with the outside world in ways previously inexperienced. This translates to a move towards higher value chain operations and a greater share of revenues kept within China. Alibaba directly points to this advantage in their 2013 prospectus to investors by referencing a young NYC start up company which was able to connect with a manufacturer to produce miniature yoga mats, just one example of millions.

The platform created by e-commerce players such as TaoBao or Alibaba do not only benefit young companies. Established market players of consumer products can take advantage of their platforms to access new emerging markets in smaller, harder to reach areas— this includes markets outside China in which Chinese online retail platforms are gaining traction. Undoubtedly, the wider expansion of digital marketplace outside of China will create further logistical challenges, however online commerce players such as Alibaba have shown that they are able to handle it thus far while remaining cost efficient.

The Chinese online retail landscape is hugely market based rather than the prevalent existence of individual online retail storefronts such as in the United States. As stated earlier, large business-to-consumer (B2C) sites dominate the marketplace in other developed economies, but in China, nearly 90 percent of the industry is marketplace based— compared to a 23-24 percent share in the United States. Thus, China's dominant online market players like Alibaba, which owns TaoBao, Tmall, and other online retailers

that make up the marketplace, have been able to command a majority market share and be a successful channel for small manufacturers and wholesalers to tap into the entire market directly. This market discrepancy between China and other developed western economies may signal that as the e-commerce industry further develops, an increasing number of Chinese e-merchants may seek to build their own online storefronts rather than work through the already established market platforms. However, should the China model continue on its own unique trajectory, the continued marketplace dominance remains a possibility because of its many advantages in efficiency, market allocation, service, data analysis, and ability to solve logistical dilemmas across China's widely fragmented retail infrastructure.

The Chinese government has allowed e-commerce to develop without much intervention to date. The continued cooperation of the Chinese State with private industry ecommerce players will be essential for the growth and success of this industry to continue. This will be a challenge as the private industry players grow into new markets and sometimes conflict with those of the central government. Continued State cooperation in promoting and expanding broadband coverage and 3G+ infrastructure is also vital for online channels to continue expanding into new markets and reaching out to more consumers. As mobile and broadband penetration rates continue to rise, widespread access to Internet across China can be achieved.

Furthermore, the growth of China's online retail landscape could also pose specific challenges and necessary adaptations for infrastructure within China's cities. This

includes the need for warehousing space over physical retail infrastructure as well as more trucking routes and other logistical/technical infrastructure. This is just an example of how moving capital allocation away from increasingly inefficient industries in China such as its enormous focus on steel will help guide their sustainable growth. Rather, a focus on less capital intensive, consumption and service based industries such as IT and greater technical infrastructure pose as both a more sustainable option for China's growth as well as that of online retail as an industry.

Other emerging economies may be able to draw on China's experiences in growing the online retail sector through both its private and state initiatives to harness the disruptive power of the Internet to promote growth through entrepreneurship and consumption. These initiatives range from a secure online payments system, coordination of transportation to online/offline business cooperation to Xi Jinping's stated policy goal of increasing entrepreneurship and allowance for private industry continue to operate as it has as well as the promoting the State's push for wider 3G and broadband penetration rates across provinces. Following the 'Alibaba model' of development, to fully harness the Internet, building the base of technological infrastructure to provide payment systems and traffic aggregation are also essential developmental steps.

Should China's online retail industry continue to follow its growth trajectory, it would be a successful example of how a still developing nation could harness the disruptive power of the internet to transition their economy forward. This model could assist nations like

China in which income and developmental inequalities have resulted in barriers to traditional retail development move towards a more efficient digital retail market.

VALUE-ADDED GROWTH: HARNESSING THE CONSUMER

It is evident that throughout China both its urban and rural populations are becoming increasingly modernized. After their economic opening and surge of economic development, the new generation of young Chinese has grown up with access to a variety of factors that were not present to the older generations— most notably, the Internet. The disruptive factor of the internet has profound impact on not only the way the market is able to operate, but arguably more importantly it has irreversibly changed consumer psychology throughout China. No longer can the typical Chinese populous be satisfied with bare means and rudimentary access to goods. Now, more than ever, the Chinese outlook is similar to that in the West. Commercialism and materialism are now common facets of the typical Chinese consumer mindset. While these may not be enviable personal qualities, they are certainly positive economic stimuli to an economy that striving to rebalance itself through greater domestic consumption.

Online marketplaces in China like Alibaba are making strides to solve logistics and technical problems associated with serving such a large, diverse, and fragmented consumer class across various demographics in China. Part of serving these demographics means being able to offer and deliver a market basket of goods that include

products of premium pricing to their substitutes. This is all a part of fully harnessing the massive potential of the Chinese consumer machine that is 1.3 billion strong.

Furthermore, as mentioned previously, China's primary growth strategy over the past couple decades had been largely focused on low cost export manufacturing. Most of the higher value chain operations here including R&D, marketing, branding, design and sales were administrated outside of China. Only the low-value manufacturing activities were taking place within China. This has had a lasting impact on not only on the direct demand for professional business service sector growth but also indirectly through consumer psychology— no real brand value was being created internally.

This poses a problem now for China's future manufactures to continue to challenge the demand for foreign products and stimulate real value creation, within China. The entrenchment of the Chinese market into product manufacturing creates the ready ability to produce an enormous variety of products, and because of online marketplaces, businesses can now access data and analytics about its consumers and better understand domestic demand.

Therefore, with the cooperation and support of the government, Chinese private sector businesses are in a unique position to harness the power of the internet to begin to create real brand value within China in the 21st century— reaching a vast amount of domestic consumers as well as markets outside of China. Online marketplaces help them do this without a huge amount of overhead because of their ability to provide both logistical and

payment networks as well as a variety of professional business services. This further helps to push China's immense and diverse consumer population.

Addressing the Market for "Fake Goods"

While modernized does not necessarily mean "westernized", the greater exposure to western consumer and popular culture combined with rising incomes across China has certainly brought rise to an enormous new consumer class with a new demand for broad range of goods, especially many popular western brands. Thus, many western brands such as Gucci, D&G, Rolex, Nike, etc have made their way into Chinese popular culture; many of these brands remain largely unaffordable to the common Chinese consumer. Income disparities and considerations aside, physical retail still remains extremely fragmented and problems as a large portion of the Chinese consumer population do not have access to a sufficient supply of merchandise to meet the demand. However, e-commerce, through the increasing Internet and mobile penetration rates is helping to address this problem by proving Chinese consumers with a huge market basket of goods quite literally at their fingertips. So while the typical Chinese consumer may not be able to afford the iPhone, they may now be able to easily and quickly access a substitute, such as the China made XiaoMi mobile phone.

Very commonly may a Chinese brand product be looked upon by a western consumer and immediately labeled a "knock-off". However, many of these types of products, which in many cases mimic the functional utility of their western counter parts are simply

market adaptations. In adaptation, there is innovation as companies strive to best adapt to needs to the consumer markets and help fill niche demands by allowing consumers access to the same service at a lower pricing point. This niche market of consumers is not limited to China but instead these products are meeting consumer demands for substitution goods across the globe.

Subsequent to Alibaba's IPO on the NYSE, their company has gained international name recognition and thus an added amount of credibility to international consumers. While fake products remain somewhat of a gray area within China, as online marketplaces like Alibaba grow and develop credibility, it will allow more domestic companies in China more opportunities to draw in consumers by offering substitute and equal quality goods at comparatively low prices— not by faking western brands but rather by actually building new Chinese brands.

The problem with fake goods in China deserves to be unpacked itself. To the extent to which fake goods are actually a 'problem' in China is dependent upon which perspective one takes. From an economic perspective, fake products are simply a market adaptation— suppliers are simply adjusting to consumer demands by mimicking preexisting western styles. Because of the huge demand for western brand names but lack of disposable income in the average Chinese consumer wallet complemented by extra taxes excised by the state on foreign goods, many Chinese consumers find little issue with buying a knockoff product that mimics the same style/function of a premium good at a lower price point. Furthermore, the ability to access these products via online

marketplaces, not to mention, is helping to boost domestic consumption spending within China. However, the presence of fake goods on online marketplaces reduces the general sentiment of reliability and quality expectations of consumers. This especially hurts the ability for Chinese businesses to reach out to international consumers via online marketplace channels such as Alibaba. Furthermore, many of China's fake/knockoff products are in violation of international trademark and patent laws making them illegal. When Jack Ma spoke at the Davos World Economic Forum, he described that “for e-commerce, the most important thing was trust... Without the trust system, the credit system- its impossible to do business” (Ma, 2015). Now Ma and Chinese e-commerce marketplaces face a new challenge in establishing that trust within foreign markets. China must reconcile the problem with fake goods if it wants to continue the push towards generating real brand value internally and putting truly “china-made” consumer goods into international markets.

Noted earlier, increased access to the Internet, through online commerce channels has also helped consolidate China's fragmented retail market — providing benefit to both suppliers to meet a much larger market as well as consumers to reach a much larger selection of product. This means even greater competitive pressure in the market and pressure on innovation. With greater consumer access third party vendors may now be able to establish themselves and create real brand value. This poses an opportunity for “China-made” goods to take on a new context internationally and develop real brand value.

Shifting Consumer Psychology

As discussed earlier in this paper, China's enormous gross domestic savings rate of 51 % is an inhibiting factor towards moving to a more mature economy, categorized by high mass consumption. The extremely high savings rate is a barrier towards rebalancing to greater domestic consumption spending and also therefore limiting China's domestic professional and business services sector. To tackle this issue, we must first understand the background variables that are affecting China's consumer climate.

Firstly, one can find much literature on China's implementation of the somewhat infamous "One Child Policy". While this policy in great part has done its job in alleviating the logistical concerns to feeding such a large and growing population, it has indeed also had some unintended effects on the development of China's economy. One of which has been the persistence of a very large savings rate.

One aspect of China's traditional Confucian values that has very much survived into the 21st century has been the importance of familial duty. In China, families stick together. As parents and the older generation lose the ability to bring home cash, this means that their children, not a social security system, will have to become their primary care takers. This puts a huge strain and responsibility on the young generation of only-children, who understand they may have to be responsible for both their own as well as their spouses' parents as they move into retirement. Because of this, the culture of savings and fixed investment has arisen as many would-be consumers, unsure of their economic futures,

must look out for family first. “The lack of a strong social safety net—the fact that Chinese citizens are mostly on their own when it comes to covering costs of health care, education, and retirement—is an important motivation for China’s extraordinarily high household saving rate” (Bernanke, 2016).

Next, traveling outside of China’s most developed cities, one can see a huge disparity in not only modern development but also consumer culture. The culture of consumerism is built on a variety of factors. In this paper I argue that growing access to the internet is helping to promote a greater culture of consumerism outside of China’s largest cities where such consumer ideology was not previously present. Outside of China’s larger cities, there is much less consumer materialism driving brand demand. This can be attributed to not only the lack of access to consumption opportunities but also the lack of target advertising and marketing that those consumers are exposed to. In areas in which we see Internet beginning to disrupt consumption patterns I believe we can expect to see an exponential effect as increased brand demand ripples across consumers. Monkey see, monkey do.

EMPIRICAL ANALYSIS

Variation in Consumer Adoption of E-Commerce across Regions in China

Introduction

In order to better understand exactly how access to the Internet is affecting consumption in China, I gathered data (listed in Appendix 1) from CEIC across 31 provincial-level administrative districts from the years 2003 to 2014. Specifically, I acquired data for the

variables of annual retail consumption, Internet penetration, number of retail enterprises, number of retail employees, GDP per capita, urbanization rate, disposable income per capita and population. Using this data, I hoped to isolate the impact of the Internet by controlling for other supply/demand variables that could also impact total retail consumption.

Methodology

Using EViews⁹, because of the large variation in units of measurement, I decided to estimate the equation using the logarithmic functions of the variables in order to solely focus on how growth in Internet penetration was impacting growth in annual retail sales, and therefore, consumption. By using logs, I am able to estimate the effect as a percent change rather than directly in units. Next, I will use provincial-level fixed effects in my estimation in order to account for any other variables across provinces that may change over time including any state laws or policies. Finally, I wanted to account for the interaction effect between Internet penetration and GDP per capita to understand how incremental effect of growth in Internet penetration would vary across the different levels of wealth across China's provinces. Therefore, the regression equation I sought to estimate was as follows:

$$\begin{aligned} \log(\text{annualretailsales}) = & \beta_0 + \beta_1 \log(\text{internetpenetration}) + \beta_2 \log(\text{noretaiemployes}) + \\ & \beta_3 \log(\text{noretailenterprises}) + \beta_4 \log(\text{urbandisposableincome}) + \beta_5 \log(\text{population}) + \beta_6 \log(\text{urbanizationrate}) + \beta_7 \log(\text{gdppercapita}) + \beta_8 \log(\text{internetpenetration}) * \log(\text{gdppercapita}) + \hat{\epsilon} \end{aligned}$$

⁹ EViews is a statistical package for Windows, used mainly for time-series oriented econometric analysis. EViews can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting.

My hypothesis is that Internet penetration will have a significant positive effect on annual retail sales by allowing consumers greater access to goods as well as encouraging greater consumerism through marketing and advertisement. I also hypothesized that the other supply/demand variables including population, number of retail employees, urban disposable income, number of retail enterprises and GDP per capita will all have positive impacts on the amount of annual consumption. Finally, I expected the interaction effect between Internet penetration and GDP per capita to be negative because I expect internet penetration to have a greater impact on annual retail sales in less wealthy, more rural provinces where physical retail market is underserved and highly fragmented.

Results

The results of the regression are presented in Table 1.

Table 1: Annual Retail Sales Regressed on Internet Penetration Output

Dependent Variable: LOG(ANNUAL_RETAIL_SALES)
Method: Panel Least Squares
Date: 03/29/16 Time: 10:31
Sample: 2003 2014
Periods included: 12
Cross-sections included: 31
Total panel (balanced) observations: 372

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.52339	1.304792	-11.13081	0.0000
LOG(INTERNET_PENETRATION)	0.648665	0.165515	3.919057	0.0001
LOG(NO_RETAIL_EMPLOYEES)	0.234018	0.050031	4.677429	0.0000
LOG(NO_RETAIL_ENTERPRISES)	0.140815	0.033545	4.197790	0.0000
LOG(POPULATION)	0.949791	0.220087	4.315526	0.0000
LOG(URBANIZATION_RATE)	0.316707	0.158691	1.995750	0.0468
LOG(URBAN_DISPOSABLE_INCOME)	0.440446	0.136349	3.230289	0.0014
LOG(GDP_PER_CAPITA)	0.937937	0.121039	7.749025	0.0000
LOG(INTERNET_PENETRATION)*LOG(G...)	-0.057469	0.018047	-3.184404	0.0016

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.992870	Mean dependent var	4.342804
Adjusted R-squared	0.992056	S.D. dependent var	1.411271
S.E. of regression	0.125784	Akaike info criterion	-1.209572
Sum squared resid	5.268616	Schwarz criterion	-0.798720
Log likelihood	263.9803	Hannan-Quinn criter.	-1.046411
F-statistic	1220.257	Durbin-Watson stat	1.808857
Prob(F-statistic)	0.000000		

After running the regression, the results were largely as anticipated. Internet penetration had a coefficient of .648 which means that for every 1% increase in internet penetration, we can expect annual retail sales to also increase by .648%. This variable also had a p-value of .0001, which means it is significant at the 1% level. Number of retail employees had a coefficient of .23 meaning that for every 1% increasing in number of retail employees, annual retail sales will increase by .23%. This variable had a p-value of .0000 meaning that it is highly significant at the 1% level. Number of retail enterprises had a coefficient of .14 meaning that for every 1% increase in number of retail enterprises, annual retail sales will increase by .14%. This variable had a p-value of .0000 meaning that it is significant at the 1% level. Urban disposable income had a coefficient of .44 meaning that for every 1% increase in urban disposable income, annual retail sales will increase by .44%. This variable had a p-value of .0014 meaning that it is significant at the 1% level. Population had a coefficient of .94 meaning that for every 1% increase in population, annual retail sales are expected to rise by .94%. This variable had a p-value of .0000, meaning that the results were highly significant at the 1% level. Urbanization rate had a coefficient of .316; meaning that for every 1% increase in urbanization rate, annual retail sales would be expected to rise .316 %. This variable had a p-value of .046, meaning that it is significant at the 5% level. GDP per capita had a coefficient of .937; meaning that for every 1% increase in GDP per capita, annual retail sales would be expected to rise by .937%. Finally, Internet penetration * GDP per capita had a negative coefficient of -0.05; meaning that the interaction effect of the two variables is negative. When GDP per capita is higher, the impact of Internet penetration on annual retail sales

will be lessened and vice versa. This variable had a p-value of .0016, meaning that it is significant at the 1% level.

While these results were as hoped for and all significant, after running a correlation test I found significant amount of multicollinearity between variables— suggesting that my regression equation was incorrectly specified. The correlation diagram is presented in Table 2.

Table 2: Correlation Diagram with Multicollinearity

Correlation							
	URBANIZATI...	URBAN_DIS...	POPULATION	NO_RETAIL...	NO_RETAIL...	INTERNET ...	GDP_PER ...
URBANIZATI...	1.000000	0.684228	-0.097080	0.356085	0.490379	0.697255	0.843740
URBAN_DIS...	0.684228	1.000000	0.069834	0.597387	0.613249	0.934588	0.915540
POPULATION	-0.097080	0.069834	1.000000	0.623735	0.667215	-0.028642	-0.023601
NO_RETAIL...	0.356085	0.597387	0.623735	1.000000	0.927696	0.529074	0.535833
NO_RETAIL...	0.490379	0.613249	0.667215	0.927696	1.000000	0.536139	0.589645
INTERNET ...	0.697255	0.934588	-0.028642	0.529074	0.536139	1.000000	0.896899
GDP_PER ...	0.843740	0.915540	-0.023601	0.535833	0.589645	0.896899	1.000000

As evidenced by the results of the correlation diagram, there was a high degree of multicollinearity between Internet penetration and urban disposable income per capita, GDP per capita and urban disposable income per capita, as well as number of retail enterprises and number of retail employees. All of these correlations are not surprising. Therefore, in order to fix the problem of multicollinearity, I decided to run the regression again while admitting the variables of urban disposable income per capita as well as number of retail employees. The new correlation matrix is presented in Table 3.

Table 3: Correlation Diagram without Multicollinearity

Correlation					
	URBANIZATI...	POPULATION	NO_RETAIL...	INTERNET ...	GDP_PER ...
URBANIZATI...	1.000000	-0.097080	0.356085	0.697255	0.843740
POPULATION	-0.097080	1.000000	0.623735	-0.028642	-0.023601
NO_RETAIL...	0.356085	0.623735	1.000000	0.529074	0.535833
INTERNET ...	0.697255	-0.028642	0.529074	1.000000	0.896899
GDP_PER ...	0.843740	-0.023601	0.535833	0.896899	1.000000

As evidenced by the new correlation matrix, removing the variables of urban disposable income per capita as well as number of retail employees was able to fix the problem of high multicollinearity across the variables. Thus, after accounting for multicollinearity, the new regression equation and output is presented below and in Table 4:

$$\log(\text{annualretailsales}) = \beta_0 + \beta_1 \log(\text{internetpenetration}) + \beta_2 \log(\text{noretailenterprises}) + \beta_3 \log(\text{population}) + \beta_4 \log(\text{urbanizationrate}) + \beta_5 \log(\text{gdppercapita}) + \beta_6 \log(\text{internetpenetration}) * \log(\text{gdppercapita}) + \hat{e}$$

Table 4: New Regression Estimation without Multicollinearity

Dependent Variable: LOG(ANNUAL_RETAIL_SALES)
 Method: Panel Least Squares
 Date: 03/29/16 Time: 10:40
 Sample: 2003 2014
 Periods included: 12
 Cross-sections included: 31
 Total panel (balanced) observations: 372

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.56082	1.304644	-10.39427	0.0000
LOG(INTERNET_PENETRATION)	0.414110	0.159596	2.594736	0.0099
LOG(NO_RETAIL_ENTERPRISES)	0.211908	0.031434	6.741373	0.0000
LOG(POPULATION)	1.260173	0.212962	5.917363	0.0000
LOG(URBANIZATION_RATE)	0.418342	0.161970	2.582835	0.0102
LOG(GDP_PER_CAPITA)	1.210181	0.104941	11.53206	0.0000
LOG(INTERNET_PENETRATION)*LOG(G...	-0.031311	0.017374	-1.802224	0.0724

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.992204	Mean dependent var	4.342804
Adjusted R-squared	0.991366	S.D. dependent var	1.411271
S.E. of regression	0.131131	Akaike info criterion	-1.131073
Sum squared resid	5.760470	Schwarz criterion	-0.741291
Log likelihood	247.3796	Hannan-Quinn criter.	-0.976280
F-statistic	1184.351	Durbin-Watson stat	1.639012
Prob(F-statistic)	0.000000		

Analysis

Interpreting the output after accounting for multicollinearity, the distribution curve remained normal and the tested beta coefficients still supported my hypothesis. Internet

penetration yielded a slightly less strong relationship to annual retail sales with a coefficient of .41. This means that if there is a 1% increase in Internet penetration, we can expect a .41 % increase in annual retail sales. This variable yielded a p-value of .0099, meaning that it is significant at the 1% level. Number of retail enterprises produced a coefficient of .21 meaning that if there is a 1 % increase in number of retail enterprises, we can expect a .21 % increase in annual retail sales. This variable yielded a p-value of .0000, meaning that it is highly significant at the 1% level. Population yielded a coefficient of 1.26— a much stronger relationship than before. This means that for every 1% increase in population, we can expect a 1.26% increase in annual retail sales. This variable yielded a p-value of .0000, meaning that it is highly significant at the 1% level. Urbanization rate yielded a coefficient of .41; meaning that if there is a 1% increase in urbanization rate, we can expect a .41% increase in annual retail sales. This variable yielded a p-value of .0102 % meaning it was just barely insignificant at the 1% level, but was still significant at the 5% level. GDP per capita also yielded a much stronger relationship after accounting for multicollinearity with a coefficient of 1.21. This means that if GDP per capita increases by 1%, we can expect a 1.21% increase in annual retail sales. This variable yielded a p-value of .0000, meaning that it is highly significant at the 1% level. Finally the interaction coefficient of internet penetration and GDP per capita again yielded a negative coefficient of -.03, meaning that after accounting for multicollinearity internet penetration and GDP per capita still interact negatively in terms of their impact on annual retail sales. This variable yielded a p-value of .072, so while insignificant at the 5% level, was still significant at the 10% level.

Measuring E-Commerce as Catalyst for SME Growth

Introduction

In order to see if the internet, through online commerce channels, is acting not only as a boost towards consumption growth but also stimulating the growth of SME across regions in China, I used the same data as listed in Appendix 1 previously collected from CEIC across 31 provincial-level administrative districts from the years 2003 to 2014. Again the variables used were for annual retail consumption, Internet penetration, number of retail enterprises, retail employees, GDP per capita, urbanization rate, disposable income per capita and population. Using this data, I hoped to isolate the impact of the Internet by controlling for other supply/demand variables that could also impact growth of SMEs.

Methodology

Again, using EViews, I use the same methodology as used in the regression equation from the previous chapter. Therefore, keeping in mind my previous issues of multicollinearity of variables, the regression equation I sought to estimate was as follows:

$$\log(\text{no retail enterprises}) = \beta_0 + \beta_1 \log(\text{internet penetration}) + \beta_2 \log(\text{population}) + \beta_3 \log(\text{urbanization rate}) + \beta_4 \log(\text{gdppercapita}) + \beta_5 \log(\text{annual retail sales}) + \beta_6 \log(\text{internet penetration}) * \log(\text{gdppercapita}) + \hat{e}$$

My hypothesis is that growth in Internet penetration will be having a positive effect on the growth of SMEs in China. I anticipate that this effect will be larger in wealthier provinces where most manufacturing infrastructure is already in place, allowing online commerce channels to help scale business growth and development.

Results

After running the regression, the output is presented in Table 5:

Table 5: No. Retail Enterprises Estimation Output

Dependent Variable: LOG(NO_RETAIL_ENTERPRISES)
Method: Panel Least Squares
Date: 04/05/16 Time: 14:40
Sample: 2003 2014
Periods included: 12
Cross-sections included: 31
Total panel (balanced) observations: 372

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.971082	2.417240	2.883901	0.0042
LOG(INTERNET_PENETRATION)	-0.647161	0.260516	-2.484156	0.0135
LOG(POPULATION)	-1.576371	0.354736	-4.443780	0.0000
LOG(URBANIZATION_RATE)	-0.233353	0.266486	-0.875666	0.3818
LOG(GDP_PER_CAPITA)	0.244292	0.201858	1.210220	0.2270
LOG(ANNUAL_RETAIL_SALES)	0.563710	0.083619	6.741373	0.0000
LOG(INTERNET_PENETRATION)*LOG(G...	0.064091	0.028258	2.268109	0.0240

Effects Specification

Cross-section fixed (dummy variables)				
R-squared	0.974139	Mean dependent var	6.610446	
Adjusted R-squared	0.971360	S.D. dependent var	1.263795	
S.E. of regression	0.213875	Akaike info criterion	-0.152688	
Sum squared resid	15.32376	Schwarz criterion	0.237095	
Log likelihood	65.39991	Hannan-Quinn criter.	0.002105	
F-statistic	350.5302	Durbin-Watson stat	0.677361	
Prob(F-statistic)	0.000000			

Analysis

I found that results to be quite interesting; growth in population was actually having a negative impact on growth in number of retail enterprises, significant at the one percent level. I would expect this coefficient to be positive because increased population means increasing demand for goods. Secondly, growth in Internet penetration also had a negative effect on growth in SMEs. This could be possibly due to increased competition for business and falling price levels possibly pushing many small businesses out of the market. This relationship was significant at the five percent level. Another noteworthy

finding is the positive interaction effect of GDP per capita and Internet penetration. This finding would suggest that greater access to the Internet has a stronger impact on SME development in richer areas. An important factor to note is that this study only tested the measure of number of retail enterprises, which may not fully reflect the growth of SME's in general. Because while online marketplaces have pushed many small fragmented businesses out of the market, they have as a whole made the market more efficient and competitive— which are long run positives for all SMEs as well as China's broader economy.

CONCLUSION

This paper has addressed how the presence of the Internet in China has boosted aggregate consumption spending through the private sector development of online commerce channels. This boost to consumption can be attributed to a variety of factors including a shift in consumer psychology, lower prices (including lower transaction costs), and increased access to goods via online marketplaces which are mitigating some of the unique technical/logistical challenges of the Chinese market.

As China's current growth model, focused on capital-intensive industrial exports, becomes less and less efficient, China will increasingly rely on higher value chain operations in the services sector to provide larger shares of GDP and growth. This transition can only be accomplished by a macroeconomic rebalancing towards greater domestic consumption. The online commerce channel in China provides a unique

opportunity for China to not only rebalance the relationship between domestic consumption and savings but also, through greater Internet access, to reach an enormous new market of consumers. While rising wages in China create inefficiency for manufacturing growth, they fuel the expansion of consumer markets which offer new platforms for 21st century growth in the Chinese economy. Moving forward, we should expect to see an increasing portion of total retail transactions conducted through online commerce platforms as Internet penetration continues to expand and private sector marketplaces further adapt to serve niche consumer demands. The rise of this new online consumption channel could serve as a new source of comparative advantage— not for China’s manufacturing but for higher value chain activities in the services sector. As businesses from around the world seek to enter this enormous and growing market, high value added services such as IT, target marketing, and big data analysis provided by China’s domestic service industry are likely to thrive.

Should China’s online retail industry continue to follow its growth trajectory, it would be a successful example of how a developing nation could harness the disruptive power of the Internet to transition their economy forward. In China’s case, this means solving the challenges of a fragmented economy and demographics that threaten its overall consumption growth. This model could assist nations, like China, in which vast economic inequalities caused by rapid regional development have created challenges toward transitioning into a more mature, consumer oriented economy.

APPENDIX 1:

Year	Province	Annual Retail Sales (RMB bn)	Internet Penetration (%)	No Internet Users (person mn)
2003	Beijing	100.55	28	3.98
2004	Beijing	107.16	27.60	4.02
2005	Beijing	175.63	28.7	4.28
2006	Beijing	201.16	30.4	4.68
2007	Beijing	244.69	46.6	7.37
2008	Beijing	327.33	60	9.8
2009	Beijing	349.96	65.1	11.03
2010	Beijing	487.92	69.4	12.18
2011	Beijing	547.87	70.3	13.79
2012	Beijing	639.3	72.2	14.58
2013	Beijing	699.68	75.2	15.56
2014	Beijing	783.22	75.3	15.93
2003	Tianjin	23.66	14.4	1.45
2004	Tianjin	27.94	19.10	1.93
2005	Tianjin	41.82	22.4	2.29
2006	Tianjin	46.88	24.9	2.6
2007	Tianjin	54.31	26.7	2.87
2008	Tianjin	91.61	43.5	4.85
2009	Tianjin	90.09	48	5.64
2010	Tianjin	124.99	52.7	6.48
2011	Tianjin	153.99	55.6	7.19
2012	Tianjin	189.82	58.5	7.93
2013	Tianjin	237.35	61.3	8.66
2014	Tianjin	263.01	61.4	9.04
2003	Liaoning	47.02	6.9	2.92
2004	Liaoning	48.91	7.6	3.22
2005	Liaoning	78.34	8.8	3.72
2006	Liaoning	97.94	11.4	4.83
2007	Liaoning	123.62	18.3	7.83
2008	Liaoning	166.38	26.5	11.38
2009	Liaoning	177.75	37	15.95
2010	Liaoning	240.83	44.4	19.16
2011	Liaoning	290.08	47.8	20.92
2012	Liaoning	330.8	50.2	21.99
2013	Liaoning	385.46	55.9	24.53
2014	Liaoning	476.22	58.8	25.8
2003	Shanghai	110.6	26.6	4.32
2004	Shanghai	111.10	25.8	4.41
2005	Shanghai	162.57	26.6	4.63
2006	Shanghai	226.53	28.7	5.1
2007	Shanghai	233.56	45.8	8.3
2008	Shanghai	312.03	59.7	11.1
2009	Shanghai	336.58	62	11.71
2010	Shanghai	380.67	64.5	12.39
2011	Shanghai	446.75	66.2	15.25

2012	Shanghai	464.19	68.4	16.06
2013	Shanghai	542.69	70.7	16.83
2014	Shanghai	667.98	71.1	17.16
2003	Jiangsu	99.76	8.3	6.11
2004	Jiangsu	99.26	8.9	6.61
2005	Jiangsu	160.74	10.6	7.9
2006	Jiangsu	219.88	13.7	10.27
2007	Jiangsu	259.05	23.3	17.57
2008	Jiangsu	380.45	27.3	20.84
2009	Jiangsu	397.39	36	27.65
2010	Jiangsu	559.74	42.8	33.06
2011	Jiangsu	694.59	46.8	36.85
2012	Jiangsu	795.51	50	39.52
2013	Jiangsu	986.84	51.7	40.95
2014	Jiangsu	1084.3	53.8	42.74
2003	Zhejiang	82.99	9.7	4.51
2004	Zhejiang	83.49	11.4	5.34
2005	Zhejiang	137.67	15	7.07
2006	Zhejiang	177.1	19.9	9.77
2007	Zhejiang	227.24	30.3	15.09
2008	Zhejiang	280.03	41.7	21.08
2009	Zhejiang	310.34	47.9	24.52
2010	Zhejiang	434.33	53.8	27.86
2011	Zhejiang	542.05	56.1	30.52
2012	Zhejiang	597.39	59	32.21
2013	Zhejiang	760.12	60.8	33.3
2014	Zhejiang	809.62	62.9	34.58
2003	Fujian	33.01	9.2	3.18
2004	Fujian	32.29	9.3	3.26
2005	Fujian	59.2	11.3	3.97
2006	Fujian	72.31	14.6	5.16
2007	Fujian	92.86	24.3	8.66
2008	Fujian	117.08	38.5	13.79
2009	Fujian	129.31	45.2	16.29
2010	Fujian	185.91	50.9	18.48
2011	Fujian	275.38	57	21.02
2012	Fujian	316.97	61.3	22.8
2013	Fujian	380.88	64.1	24.02
2014	Fujian	445.47	65.5	24.71
2003	Shandong	88.2	6.9	6.27
2004	Shandong	87.14	9.3	8.48
2005	Shandong	145.64	10.8	9.88
2006	Shandong	204.81	12.2	11.26
2007	Shandong	273.44	13.5	12.56
2008	Shandong	388.84	21.2	19.83
2009	Shandong	410.14	29.4	27.69
2010	Shandong	565.29	35.2	33.32
2011	Shandong	725.69	37.8	36.25
2012	Shandong	836.48	40.1	38.66

2013	Shandong	1013.36	44.7	43.29
2014	Shandong	1062.66	47.6	46.34
2003	Guangdong	121.77	12.1	9.5
2004	Guangdong	128.38	14.9	11.88
2005	Guangdong	224.04	17.9	14.86
2006	Guangdong	267.7	19.9	18.31
2007	Guangdong	327.79	35.9	33.44
2008	Guangdong	424.34	48.2	45.54
2009	Guangdong	464.48	50.9	48.6
2010	Guangdong	584.33	55.3	53.24
2011	Guangdong	706.86	60.4	63
2012	Guangdong	840.07	63.1	66.27
2013	Guangdong	980.47	66	69.92
2014	Guangdong	1242.32	68.5	72.86
2003	Hainan	2.68	4.9	0.4
2004	Hainan	2.59	5.8	0.47
2005	Hainan	7.97	8.4	0.69
2006	Hainan	9.66	14.1	1.17
2007	Hainan	12.82	17.2	1.44
2008	Hainan	18.22	25.6	2.16
2009	Hainan	20.00	28.6	2.44
2010	Hainan	29.47	35.1	3.03
2011	Hainan	36.08	38.9	3.38
2012	Hainan	40.33	43.7	3.84
2013	Hainan	45.56	46.4	4.11
2014	Hainan	49.16	47	4.21
2003	Hebei	27.72	4.3	2.89
2004	Hebei	29.79	5.7	3.87
2005	Hebei	43.6	7.1	4.86
2006	Hebei	52.81	9.2	6.31
2007	Hebei	69.31	11.1	7.62
2008	Hebei	100.86	19.2	13.34
2009	Hebei	103.36	26.4	18.42
2010	Hebei	154.02	31.2	21.97
2011	Hebei	198.28	36.1	25.97
2012	Hebei	237.42	41.5	30.08
2013	Hebei	326.84	46.5	33.89
2014	Hebei	358.07	49.1	36.03
2003	Shanxi	18.18	4.5	1.49
2004	Shanxi	19.57	6.4	2.11
2005	Shanxi	40.38	8.1	2.69
2006	Shanxi	41.86	11.3	3.8
2007	Shanxi	56.43	15.9	5.36
2008	Shanxi	73.48	24.1	8.19
2009	Shanxi	80.51	31.2	10.64
2010	Shanxi	117.69	36.5	12.5
2011	Shanxi	155.19	39.3	14.05
2012	Shanxi	182.88	44.2	15.89
2013	Shanxi	211.72	48.6	17.55

2014	Shanxi	210.68	50.6	18.36
2003	Jilin	19.6	5.4	1.46
2004	Jilin	21.52	6.6	1.79
2005	Jilin	32.52	7.4	2.01
2006	Jilin	43.03	10	2.71
2007	Jilin	50.14	15.9	4.34
2008	Jilin	71.55	19	5.2
2009	Jilin	75.34	26.6	7.26
2010	Jilin	96.19	32.2	8.82
2011	Jilin	122.83	35.2	9.66
2012	Jilin	153.93	38.6	10.62
2013	Jilin	175.68	42.3	11.63
2014	Jilin	182.9	45.2	12.43
2003	Heilongjiang	17.61	5.9	2.26
2004	Heilongjiang	18.57	7.3	2.78
2005	Heilongjiang	32.58	8.3	3.16
2006	Heilongjiang	38.99	9.6	3.66
2007	Heilongjiang	47.48	12.5	4.76
2008	Heilongjiang	60.64	16.2	6.2
2009	Heilongjiang	66.81	23.9	9.12
2010	Heilongjiang	101.5	29.5	11.27
2011	Heilongjiang	128.14	31.5	12.06
2012	Heilongjiang	154.28	34.7	13.29
2013	Heilongjiang	195.42	39.5	15.14
2014	Heilongjiang	206.6	41.7	15.99
2003	Anhui	19.83	2.9	1.84
2004	Anhui	19.70	3.7	2.4
2005	Anhui	33.91	4.3	2.76
2006	Anhui	46.23	5.5	3.37
2007	Anhui	55.26	9.6	5.87
2008	Anhui	86.76	11.8	7.23
2009	Anhui	88.98	17.4	10.69
2010	Anhui	154.58	22.7	13.92
2011	Anhui	193.52	26.6	15.85
2012	Anhui	255.52	31.3	18.69
2013	Anhui	314.88	35.9	21.5
2014	Anhui	367.25	36.9	22.25
2003	Jiangxi	13	4	1.69
2004	Jiangxi	12.98	3.7	1.56
2005	Jiangxi	23.21	4.4	1.87
2006	Jiangxi	28.82	6.6	2.85
2007	Jiangxi	35.06	11.8	5.11
2008	Jiangxi	49.88	14	6.1
2009	Jiangxi	52.78	18	7.9
2010	Jiangxi	74.94	19.8	9.5
2011	Jiangxi	100.58	24.4	10.88
2012	Jiangxi	129.9	28.5	12.67
2013	Jiangxi	157.48	32.6	14.68
2014	Jiangxi	178.79	34.1	15.43

2003	Henan	31.61	2.3	2.26
2004	Henan	33.08	3.2	3.05
2005	Henan	64.7	4.1	3.96
2006	Henan	84.67	5.5	5.17
2007	Henan	111.32	10.2	9.56
2008	Henan	158.57	13.7	12.83
2009	Henan	169.61	21.3	20.07
2010	Henan	216.93	25.5	24.17
2011	Henan	278.56	27.5	25.82
2012	Henan	328.35	10.4	28.56
2013	Henan	392.57	34.9	32.83
2014	Henan	468.75	36.9	34.74
2003	Hubei	37.77	6.4	3.81
2004	Hubei	35.82	7.1	4.29
2005	Hubei	57.97	7.7	4.63
2006	Hubei	65.37	9.3	5.32
2007	Hubei	86.35	12.4	7.06
2008	Hubei	127.95	18.4	10.5
2009	Hubei	129.53	25.7	14.69
2010	Hubei	224.94	33.3	19.02
2011	Hubei	308.19	37.2	21.29
2012	Hubei	399.13	40.1	23.09
2013	Hubei	537	43.1	24.91
2014	Hubei	611.67	45.3	26.25
2003	Hunan	25.38	4	2.65
2004	Hunan	26.27	4.7	3.12
2005	Hunan	46.14	5.2	3.48
2006	Hunan	62.55	6.4	4.08
2007	Hunan	78.07	10.9	6.9
2008	Hunan	104.54	15.7	9.99
2009	Hunan	113.92	22	14.06
2010	Hunan	161.08	27.3	17.47
2011	Hunan	229.29	29.5	19.36
2012	Hunan	280.66	33.3	22
2013	Hunan	359.06	36.3	24.1
2014	Hunan	401.58	38.6	25.79
2003	Mongolia	9.58	3.1	0.75
2004	Mongolia	10.17	3.9	0.93
2005	Mongolia	23.78	4.9	1.16
2006	Mongolia	35.16	6.7	1.6
2007	Mongolia	45.18	13.4	3.22
2008	Mongolia	68.98	16	3.85
2009	Mongolia	73.48	23.8	5.75
2010	Mongolia	105.1	30.8	7.47
2011	Mongolia	145.41	34.6	8.54
2012	Mongolia	166.25	38.9	9.65
2013	Mongolia	180.34	43.9	10.93
2014	Mongolia	180.86	45.7	11.42
2003	Guangxi	16.64	4.7	2.29

2004	Guangxi	16.77	5.9	2.85
2005	Guangxi	29.82	6.7	3.3
2006	Guangxi	36.3	8	3.74
2007	Guangxi	42.53	11.9	5.6
2008	Guangxi	55.16	15.4	7.34
2009	Guangxi	60.51	21.4	10.3
2010	Guangxi	78.92	25.2	12.26
2011	Guangxi	106.32	29.4	13.53
2012	Guangxi	118.51	34.2	15.86
2013	Guangxi	143.75	37.9	17.74
2014	Guangxi	162.17	39.2	18.48
2003	Chongqing	23.07	5.7	1.77
2004	Chongqing	24.68	5.8	1.81
2005	Chongqing	36.51	6.1	1.89
2006	Chongqing	43.27	7.9	2.2
2007	Chongqing	57.1	12.7	3.56
2008	Chongqing	82.14	21.2	5.98
2009	Chongqing	84.40	28.3	8.03
2010	Chongqing	157.43	34.6	9.9
2011	Chongqing	221.55	37	10.68
2012	Chongqing	271.58	40.9	11.95
2013	Chongqing	280.12	43.9	12.93
2014	Chongqing	328.46	45.7	13.57
2003	Sichuan	28.29	4.9	4.24
2004	Sichuan	29.42	6	5.23
2005	Sichuan	47.04	7	6.09
2006	Sichuan	74.63	8.4	6.9
2007	Sichuan	81.28	9.9	8.09
2008	Sichuan	120.2	13.6	11.03
2009	Sichuan	127.75	20.1	16.35
2010	Sichuan	198.19	24.4	19.98
2011	Sichuan	286.05	27.7	22.29
2012	Sichuan	369.53	31.8	25.62
2013	Sichuan	457.54	35.1	28.35
2014	Sichuan	569.3	37.3	30.22
2003	Guizhou	5.56	2.2	0.83
2004	Guizhou	5.87	2.5	0.98
2005	Guizhou	12.01	2.8	1.09
2006	Guizhou	14.67	3.8	1.42
2007	Guizhou	19.46	6	2.24
2008	Guizhou	31.05	11.5	4.33
2009	Guizhou	31.86	15.1	5.73
2010	Guizhou	52.69	19.8	7.51
2011	Guizhou	73.04	24.2	8.4
2012	Guizhou	98	28.6	9.91
2013	Guizhou	124.18	32.9	11.46
2014	Guizhou	147.07	34.9	12.22
2003	Yunnan	15.6	3.8	1.66
2004	Yunnan	14.97	4.7	2.06

2005	Yunnan	28.28	5.5	2.41
2006	Yunnan	35.21	6.2	2.75
2007	Yunnan	39.65	6.8	3.03
2008	Yunnan	57.91	12.1	5.48
2009	Yunnan	61.19	18.6	8.44
2010	Yunnan	102.99	22.3	10.21
2011	Yunnan	130.2	24.8	11.4
2012	Yunnan	173.05	28.5	13.21
2013	Yunnan	205.3	32.8	15.28
2014	Yunnan	219.44	35.1	16.43
2003	Tibet	0.73	3.2	0.09
2004	Tibet	0.78	2.6	0.07
2005	Tibet	1.31	3.3	0.09
2006	Tibet	1.71	5.8	0.16
2007	Tibet	1.97	12.7	0.36
2008	Tibet	3.64	16.4	0.47
2009	Tibet	3.54	18.6	0.53
2010	Tibet	4.91	27.9	0.81
2011	Tibet	6.07	29.9	0.9
2012	Tibet	7.36	33.3	1.01
2013	Tibet	8.67	37.4	1.15
2014	Tibet	10.83	39.4	1.23
2003	Shaanxi	15.06	5.4	1.97
2004	Shaanxi	16.43	7	2.58
2005	Shaanxi	29.31	8.5	3.14
2006	Shaanxi	41.88	10.6	3.95
2007	Shaanxi	50.02	13.9	5.17
2008	Shaanxi	73.52	21.1	7.9
2009	Shaanxi	78.27	26.5	9.95
2010	Shaanxi	141.92	34.3	12.95
2011	Shaanxi	197.11	38.3	14.29
2012	Shaanxi	239.71	41.5	15.51
2013	Shaanxi	294.08	45	16.89
2014	Shaanxi	347.09	46.4	17.45
2003	Gansu	9.55	4.7	1.22
2004	Gansu	10.94	4.6	1.2
2005	Gansu	14.61	4.8	1.25
2006	Gansu	15.39	5.9	1.52
2007	Gansu	19.37	8.4	2.19
2008	Gansu	25.66	12.5	3.27
2009	Gansu	26.58	20.4	5.35
2010	Gansu	42.38	24.8	6.55
2011	Gansu	58.53	27.4	7
2012	Gansu	80.26	31	7.95
2013	Gansu	101.37	34.7	8.94
2014	Gansu	117.78	36.8	9.51
2003	Qinghai	1.95	3.7	0.2
2004	Qinghai	2.06	3.7	0.2
2005	Qinghai	5.01	5.4	0.29

2006	Qinghai	5.47	6.8	0.37
2007	Qinghai	4.72	11	0.6
2008	Qinghai	9.55	23.6	1.3
2009	Qinghai	9.44	27.7	1.54
2010	Qinghai	10.55	33.6	1.88
2011	Qinghai	24.25	36.9	2.08
2012	Qinghai	28.87	41.9	2.38
2013	Qinghai	32.94	47.8	2.74
2014	Qinghai	25.33	50	2.89
2003	Ningxia	3.81	5.8	0.33
2004	Ningxia	3.62	5.3	0.31
2005	Ningxia	5.26	5.4	0.32
2006	Ningxia	6.62	7	0.42
2007	Ningxia	7.96	10.1	0.61
2008	Ningxia	12.69	16.6	1.02
2009	Ningxia	12.54	22.8	1.41
2010	Ningxia	20.55	28	1.75
2011	Ningxia	27.42	32.8	2.07
2012	Ningxia	30.56	40.3	2.58
2013	Ningxia	34.71	43.7	2.83
2014	Ningxia	38.38	45.1	2.95
2003	Xinjiang	13.12	6.2	1.18
2004	Xinjiang	13.33	6.2	1.19
2005	Xinjiang	21.43	6.4	1.26
2006	Xinjiang	23.39	7.7	1.55
2007	Xinjiang	29.77	17.7	3.63
2008	Xinjiang	40.3	27.1	6.25
2009	Xinjiang	42.27	27.5	6.34
2010	Xinjiang	59.51	37.9	8.19
2011	Xinjiang	72.12	40.4	8.82
2012	Xinjiang	82.63	43.6	9.62
2013	Xinjiang	92.51	49	10.94
2014	Xinjiang	101.93	50.3	11.39

Year	Province	Number of Retail Enterprises (units)	Population (person mn)	Urbanization Rate (%)	GDP per capita (RMB)
2003	Beijing	1120	14.56	0.76932	34777.12
2004	Beijing	1853	14.93	0.79786	40915.6
2005	Beijing	2586	15.38	0.83485	45992.81
2006	Beijing	2407	16.01	0.83260	51722
2007	Beijing	2595	16.76	0.82339	60096
2008	Beijing	3201	17.71	0.81254	64491
2009	Beijing	3142	18.6	0.80215	66940
2010	Beijing	3019	19.62	0.85933	73856
2011	Beijing	2870	20.19	0.86181	81658
2012	Beijing	2726	20.69	0.86225	87475

2013	Beijing	2490	21.15	0.86288	94647.88
2014	Beijing	2818	21.52	0.86338	99995
2003	Tianjin	250	10.11	0.64005	25544
2004	Tianjin	329	10.24	0.68555	30575
2005	Tianjin	407	10.43	0.75072	37796
2006	Tianjin	348	10.75	0.75721	42141
2007	Tianjin	356	11.15	0.76323	47970
2008	Tianjin	624	11.76	0.77211	58656
2009	Tianjin	680	12.28	0.78013	62574
2010	Tianjin	769	12.99	0.79138	72994
2011	Tianjin	867	13.55	0.80517	85213
2012	Tianjin	1015	14.13	0.81529	93173
2013	Tianjin	1092	14.72	0.81997	100105.43
2014	Tianjin	1157	15.17	0.82268	105231.35
2003	Liaoning	520	42.1	0.55320	14270
2004	Liaoning	692	42.17	0.56584	15835
2005	Liaoning	863	42.21	0.58683	19074
2006	Liaoning	932	42.71	0.58979	21914
2007	Liaoning	1061	42.98	0.59190	26057
2008	Liaoning	1978	43.15	0.60046	31739
2009	Liaoning	1899	43.41	0.60055	35149
2010	Liaoning	2433	43.75	0.62149	42355
2011	Liaoning	2625	43.83	0.64043	50760
2012	Liaoning	2955	43.89	0.65641	56649
2013	Liaoning	3290	43.9	0.66446	61996.17
2014	Liaoning	3315	43.91	0.67046	65201.18
2003	Shanghai	280	17.66	0.77209	38486
2004	Shanghai	387	18.35	0.78663	44839
2005	Shanghai	493	18.9	0.83810	49649
2006	Shanghai	1203	19.64	0.81976	54858
2007	Shanghai	1180	20.64	0.79845	62041
2008	Shanghai	1720	21.41	0.78141	66932
2009	Shanghai	1422	22.1	0.77014	69165
2010	Shanghai	1386	23.03	0.89275	76074.49
2011	Shanghai	1629	23.47	0.89305	82560
2012	Shanghai	1586	23.8	0.89328	85373
2013	Shanghai	1693	24.15	0.89607	90993
2014	Shanghai	2029	24.26	0.89571	97370
2003	Jiangsu	827	74.58	0.45378	16743
2004	Jiangsu	1042	75.23	0.47283	20031
2005	Jiangsu	1256	75.88	0.49315	24616
2006	Jiangsu	1919	76.56	0.51176	28526
2007	Jiangsu	2124	77.23	0.52518	33837
2008	Jiangsu	4268	77.62	0.53710	40014
2009	Jiangsu	3962	78.1	0.54994	44253
2010	Jiangsu	4406	78.69	0.60198	52840
2011	Jiangsu	4865	78.99	0.61894	62290
2012	Jiangsu	5740	79.2	0.63005	68347
2013	Jiangsu	8681	79.39	0.64114	75354

2014	Jiangsu	8147	79.6	0.65214	81874
2003	Zhejiang	763	48.57	0.51524	20149
2004	Zhejiang	929	49.25	0.52900	23817
2005	Zhejiang	1095	49.91	0.54939	27062
2006	Zhejiang	1366	50.72	0.55481	31241
2007	Zhejiang	1509	51.55	0.56140	36676
2008	Zhejiang	2552	52.12	0.56581	41045
2009	Zhejiang	2574	52.76	0.56842	43842
2010	Zhejiang	2867	54.47	0.61594	51711
2011	Zhejiang	3324	54.63	0.62292	59249
2012	Zhejiang	3680	54.77	0.63192	63374
2013	Zhejiang	4216	54.98	0.64005	68804.72
2014	Zhejiang	4695	55.08	0.64869	73002.05
2003	Fujian	769	35.02	0.41159	14125
2004	Fujian	886	35.29	0.43249	16235
2005	Fujian	1003	35.57	0.46978	18353
2006	Fujian	995	35.85	0.47643	21105
2007	Fujian	1102	36.12	0.48283	25582
2008	Fujian	1273	36.39	0.49409	29755
2009	Fujian	1442	36.66	0.50846	33437
2010	Fujian	1743	36.93	0.57027	40025
2011	Fujian	2210	37.2	0.58091	47377
2012	Fujian	2731	37.48	0.59605	52763
2013	Fujian	3383	37.74	0.60758	58145
2014	Fujian	4138	38.06	0.61797	63472
2003	Shandong	1179	91.25	0.42032	13268
2004	Shandong	1542	91.8	0.43272	16413
2005	Shandong	1904	92.48	0.44961	19934
2006	Shandong	2300	93.09	0.46095	23603.26
2007	Shandong	3344	93.67	0.46749	27604.45
2008	Shandong	5959	94.17	0.47605	32935.77
2009	Shandong	6160	94.7	0.48321	35893.57
2010	Shandong	6895	95.88	0.49666	41106
2011	Shandong	6809	96.37	0.50949	47335
2012	Shandong	7253	96.85	0.52432	51768
2013	Shandong	8703	97.33	0.53755	56884.94
2014	Shandong	8793	97.89	0.55011	60879.1
2003	Guangdong	986	89.63	0.57504	17798.19
2004	Guangdong	1564	91.11	0.58859	20875.62
2005	Guangdong	2141	91.94	0.60616	24646.59
2006	Guangdong	2127	94.42	0.62084	28533.66
2007	Guangdong	2305	96.6	0.61760	33271.59
2008	Guangdong	3305	98.93	0.61134	37637.92
2009	Guangdong	3585	101.3	0.60316	39435.89
2010	Guangdong	4613	104.41	0.66114	44735.57
2011	Guangdong	5139	105.05	0.66502	50807
2012	Guangdong	5450	105.94	0.67397	54095
2013	Guangdong	6790	106.44	0.67756	58833
2014	Guangdong	7535	107.24	0.67997	63469

2003	Hainan	83	8.11	0.42953	8849
2004	Hainan	103	8.18	0.44083	10067
2005	Hainan	122	8.28	0.45048	11165
2006	Hainan	132	8.36	0.46053	12810
2007	Hainan	135	8.45	0.47219	14923
2008	Hainan	223	8.54	0.48009	17691
2009	Hainan	239	8.64	0.49074	19254
2010	Hainan	291	8.69	0.49597	23831
2011	Hainan	284	8.77	0.50513	28898
2012	Hainan	240	8.87	0.51522	32377
2013	Hainan	240	8.95	0.52737	35663
2014	Hainan	224	9.03	0.53821	38923.7
2003	Hebei	389	67.69	0.34174	10250.72
2004	Hebei	437	68.09	0.35756	12487
2005	Hebei	484	68.51	0.37659	14659
2006	Hebei	538	68.98	0.38446	16682
2007	Hebei	577	69.43	0.40256	19662
2008	Hebei	977	69.89	0.41894	22986
2009	Hebei	1010	70.34	0.43005	24581
2010	Hebei	1482	71.94	0.43898	28668
2011	Hebei	1683	72.41	0.45601	33969
2012	Hebei	1888	72.88	0.46803	36584
2013	Hebei	2068	73.33	0.48111	38909
2014	Hebei	2315	73.84	0.49323	39984
2003	Shanxi	382	33.14	0.37519	8641
2004	Shanxi	472	33.35	0.39248	10741
2005	Shanxi	562	33.55	0.42057	12647
2006	Shanxi	548	33.75	0.43022	14497
2007	Shanxi	621	33.93	0.44032	17805
2008	Shanxi	794	34.11	0.45119	21506
2009	Shanxi	845	34.27	0.45988	21522
2010	Shanxi	1404	35.74	0.48013	26283
2011	Shanxi	1533	35.93	0.49680	31357
2012	Shanxi	1827	36.11	0.51260	33628
2013	Shanxi	1987	36.3	0.52562	34983.83
2014	Shanxi	2094	36.48	0.53783	35064
2003	Jilin	200	27.04	0.52320	9854
2004	Jilin	254	27.09	0.52506	11537
2005	Jilin	308	27.16	0.52504	13348
2006	Jilin	298	27.23	0.52956	15720
2007	Jilin	304	27.3	0.53150	19383
2008	Jilin	488	27.34	0.53219	23521
2009	Jilin	552	27.4	0.53321	26595
2010	Jilin	778	27.47	0.53331	31599
2011	Jilin	850	27.49	0.53401	38460
2012	Jilin	907	27.5	0.53709	43415
2013	Jilin	925	27.51	0.54198	47428
2014	Jilin	991	27.52	0.54833	50160
2003	Heilongjiang	212	38.15	0.52042	10638

2004	Heilongjiang	294	38.17	0.52589	12449
2005	Heilongjiang	376	38.2	0.53063	14440
2006	Heilongjiang	340	38.23	0.53492	16255
2007	Heilongjiang	344	38.24	0.53896	18580
2008	Heilongjiang	510	38.25	0.55399	21740
2009	Heilongjiang	539	38.26	0.55489	22447
2010	Heilongjiang	864	38.33	0.55622	27076
2011	Heilongjiang	937	38.34	0.56495	32819
2012	Heilongjiang	1126	38.34	0.56912	35711
2013	Heilongjiang	1195	38.35	0.57392	37696.97
2014	Heilongjiang	1234	38.33	0.58022	39226.33
2003	Anhui	243	61.63	0.32638	6375.4
2004	Anhui	299	62.28	0.33693	7681.25
2005	Anhui	355	61.2	0.35458	8630.7
2006	Anhui	389	61.1	0.37103	9995.88
2007	Anhui	493	61.18	0.38705	12039.47
2008	Anhui	967	61.35	0.40505	14448.15
2009	Anhui	1148	61.31	0.42098	16407.66
2010	Anhui	1583	59.57	0.42941	20887.8
2011	Anhui	2201	59.68	0.44806	25659.3
2012	Anhui	2660	59.88	0.46493	28792
2013	Anhui	3444	60.3	0.47861	32000.89
2014	Anhui	3957	60.83	0.49153	34424.61
2003	Jiangxi	188	42.54	0.33826	6624
2004	Jiangxi	248	42.84	0.35380	8097
2005	Jiangxi	308	43.11	0.36952	9440
2006	Jiangxi	326	43.39	0.38673	11145
2007	Jiangxi	350	43.68	0.39789	13322
2008	Jiangxi	463	44	0.41364	15900
2009	Jiangxi	454	44.32	0.43186	17335
2010	Jiangxi	738	44.62	0.43702	21253
2011	Jiangxi	876	44.88	0.45700	26150
2012	Jiangxi	1024	45.04	0.47513	28800
2013	Jiangxi	1150	45.22	0.48872	31930
2014	Jiangxi	1392	45.42	0.50220	34674
2003	Henan	1341	96.67	0.26882	7375.9
2004	Henan	1768	97.17	0.28317	9200.6
2005	Henan	2195	93.8	0.30618	11346
2006	Henan	2970	93.92	0.32474	13172
2007	Henan	3345	93.6	0.34338	16012
2008	Henan	4133	94.29	0.36027	19180.89
2009	Henan	4115	94.87	0.37704	20596.8
2010	Henan	4415	94.05	0.38511	24446.1
2011	Henan	4248	93.88	0.40573	28661
2012	Henan	4279	94.06	0.42430	31499
2013	Henan	4823	94.13	0.43801	34211.49
2014	Henan	5710	94.36	0.45199	37071.72
2003	Hubei	377	56.85	0.38274	8378.01
2004	Hubei	485	56.98	0.39876	9897.64

2005	Hubei	592	57.1	0.43170	11554
2006	Hubei	607	56.93	0.43808	13360
2007	Hubei	658	56.99	0.44306	16386
2008	Hubei	1011	57.11	0.45193	19858
2009	Hubei	1190	57.2	0.45997	22677
2010	Hubei	2284	57.28	0.49668	27906
2011	Hubei	2609	57.58	0.51824	34197.27
2012	Hubei	3310	57.79	0.53504	38572
2013	Hubei	5061	57.99	0.54509	42825.76
2014	Hubei	5509	58.16	0.55674	47144.6
2003	Hunan	358	66.63	0.31968	7589
2004	Hunan	486	66.98	0.33401	9165
2005	Hunan	613	63.26	0.36959	10562
2006	Hunan	673	63.42	0.38710	12139
2007	Hunan	736	63.55	0.40456	14869
2008	Hunan	1337	63.8	0.42147	18147
2009	Hunan	1333	64.06	0.43194	20428
2010	Hunan	1783	65.7	0.43303	24719
2011	Hunan	1988	65.96	0.45103	29880
2012	Hunan	2414	66.39	0.46649	33480
2013	Hunan	3420	66.91	0.47960	36943
2014	Hunan	3688	67.37	0.49280	40270.54
2003	Mongolia	177	23.86	0.43655	10015
2004	Mongolia	248	23.93	0.45324	12728
2005	Mongolia	318	24.03	0.46858	16285
2006	Mongolia	375	24.15	0.48282	20523
2007	Mongolia	396	24.29	0.49650	26521
2008	Mongolia	648	24.44	0.51064	34869
2009	Mongolia	707	24.58	0.52604	39735
2010	Mongolia	828	24.72	0.55502	47347
2011	Mongolia	933	24.82	0.56608	57974.17
2012	Mongolia	990	24.9	0.57751	63886
2013	Mongolia	1062	24.98	0.58687	67835.6
2014	Mongolia	1200	25.05	0.59521	71046.37
2003	Guangxi	278	48.57	0.29969	6169
2004	Guangxi	350	48.89	0.31107	7461
2005	Guangxi	421	46.6	0.33584	8590
2006	Guangxi	440	47.19	0.34647	10121
2007	Guangxi	484	47.68	0.36242	12277
2008	Guangxi	623	48.16	0.38164	14652
2009	Guangxi	638	48.56	0.39209	16045
2010	Guangxi	761	46.1	0.39957	20219
2011	Guangxi	1004	46.45	0.41808	25326
2012	Guangxi	1210	46.82	0.43528	27952
2013	Guangxi	1321	47.19	0.44819	30741.21
2014	Guangxi	1542	47.54	0.46003	33089.61
2003	Chongqing	243	28.03	0.40275	9098
2004	Chongqing	326	27.93	0.42552	10845
2005	Chongqing	408	27.98	0.45175	12404

2006	Chongqing	411	28.08	0.46688	13939
2007	Chongqing	445	28.16	0.48331	16629
2008	Chongqing	812	28.39	0.49982	20490
2009	Chongqing	980	28.59	0.51591	22920
2010	Chongqing	1244	28.85	0.53033	27596
2011	Chongqing	1807	29.19	0.55019	34500
2012	Chongqing	1936	29.45	0.56978	38914
2013	Chongqing	2358	29.7	0.58350	43223
2014	Chongqing	2836	29.91	0.59612	47850
2003	Sichuan	340	81.76	0.29890	6623
2004	Sichuan	389	80.9	0.31673	7895
2005	Sichuan	437	82.12	0.32988	9060
2006	Sichuan	436	81.69	0.34300	10613
2007	Sichuan	501	81.27	0.35597	12963
2008	Sichuan	970	81.38	0.37405	15495
2009	Sichuan	1026	81.85	0.38705	17339
2010	Sichuan	1867	80.45	0.40199	21182
2011	Sichuan	2696	80.5	0.41826	26133
2012	Sichuan	3303	80.76	0.43536	29608
2013	Sichuan	3838	81.07	0.44899	32617
2014	Sichuan	4179	81.4	0.46302	35128
2003	Guizhou	84	38.7	0.23076	3701
2004	Guizhou	91	39.04	0.23974	4317
2005	Guizhou	97	37.3	0.26836	5394
2006	Guizhou	96	36.9	0.27967	6305
2007	Guizhou	108	36.32	0.29240	7878
2008	Guizhou	304	35.96	0.30701	9855
2009	Guizhou	371	35.37	0.32089	10971
2010	Guizhou	494	34.79	0.33745	13119
2011	Guizhou	547	34.69	0.34967	16413
2012	Guizhou	798	34.84	0.36424	19710
2013	Guizhou	1178	35.02	0.37836	23151
2014	Guizhou	1463	35.08	0.40023	26437
2003	Yunnan	266	43.76	0.25841	5870
2004	Yunnan	349	44.15	0.27301	7012
2005	Yunnan	432	44.5	0.29461	7809
2006	Yunnan	448	44.83	0.30493	8929
2007	Yunnan	469	45.14	0.31591	10609
2008	Yunnan	647	45.43	0.32996	12570
2009	Yunnan	688	45.71	0.33997	13539
2010	Yunnan	945	46.02	0.34681	15752
2011	Yunnan	1154	46.31	0.36796	19265
2012	Yunnan	1506	46.59	0.39300	22195
2013	Yunnan	1813	46.87	0.40474	25322
2014	Yunnan	1967	47.14	0.41727	27263.63
2003	Tibet	10	2.72	0.26867	6893
2004	Tibet	14	2.76	0.26473	8103
2005	Tibet	17	2.8	0.26429	9036
2006	Tibet	15	2.85	0.27719	10422

2007	Tibet	17	2.89	0.27682	12083
2008	Tibet	46	2.92	0.22260	13588
2009	Tibet	46	2.96	0.23311	15008
2010	Tibet	46	3	0.22667	17027
2011	Tibet	47	3.03	0.22772	20077
2012	Tibet	65	3.08	0.22727	22936
2013	Tibet	64	3.12	0.23718	26326
2014	Tibet	76	3.18	0.25786	29252
2003	Shaanxi	124	36.72	0.34013	7057
2004	Shaanxi	184	36.81	0.35757	8638
2005	Shaanxi	243	36.9	0.37507	10674
2006	Shaanxi	301	36.99	0.39497	12840
2007	Shaanxi	382	37.08	0.41046	15546
2008	Shaanxi	707	37.18	0.42604	19700
2009	Shaanxi	896	37.27	0.44030	21947
2010	Shaanxi	1162	37.35	0.45676	27133
2011	Shaanxi	1409	37.43	0.47288	33464
2012	Shaanxi	1754	37.53	0.50013	38564
2013	Shaanxi	2261	37.64	0.51302	43117
2014	Shaanxi	2542	37.75	0.52583	46929
2003	Gansu	139	25.37	0.27290	5429.4
2004	Gansu	176	25.41	0.28569	6566.15
2005	Gansu	212	25.45	0.30570	7476.53
2006	Gansu	211	25.47	0.31802	8945
2007	Gansu	225	25.48	0.32457	10614
2008	Gansu	259	25.51	0.33124	12421
2009	Gansu	282	25.55	0.33659	13269
2010	Gansu	440	25.6	0.35898	16113
2011	Gansu	521	25.64	0.37168	19595
2012	Gansu	676	25.78	0.38751	21978
2013	Gansu	810	25.82	0.40124	24538.85
2014	Gansu	911	25.91	0.41683	26432.92
2003	Qinghai	27	5.34	0.34852	7345.62
2004	Qinghai	55	5.39	0.36252	8692.65
2005	Qinghai	83	5.43	0.39227	10044.74
2006	Qinghai	73	5.48	0.39234	11889
2007	Qinghai	71	5.52	0.40036	14507
2008	Qinghai	100	5.54	0.40794	18421
2009	Qinghai	89	5.57	0.41831	19454
2010	Qinghai	97	5.63	0.44760	24115
2011	Qinghai	96	5.68	0.46303	29522
2012	Qinghai	110	5.73	0.47469	33181
2013	Qinghai	141	5.78	0.48443	36875
2014	Qinghai	150	5.83	0.49743	39671
2003	Ningxia	59	5.8	0.38538	7733.77
2004	Ningxia	86	5.88	0.39989	9198.69
2005	Ningxia	113	5.96	0.42282	10349
2006	Ningxia	124	6.04	0.43046	12099
2007	Ningxia	133	6.1	0.44098	15142

2008	Ningxia	186	6.18	0.44984	19609
2009	Ningxia	191	6.25	0.46080	21777
2010	Ningxia	207	6.33	0.47709	26860
2011	Ningxia	219	6.39	0.49765	33043
2012	Ningxia	236	6.47	0.50696	36394
2013	Ningxia	256	6.54	0.51988	39613
2014	Ningxia	277	6.62	0.53625	41834
2003	Xinjiang	189	19.34	0.34981	9828
2004	Xinjiang	240	19.63	0.36210	11337
2005	Xinjiang	291	20.1	0.37114	13108
2006	Xinjiang	315	20.5	0.37951	15000
2007	Xinjiang	321	20.95	0.39141	16999
2008	Xinjiang	418	21.31	0.39653	19797
2009	Xinjiang	410	21.59	0.39833	19942
2010	Xinjiang	462	21.85	0.42746	25034
2011	Xinjiang	491	22.09	0.43549	30087
2012	Xinjiang	526	22.33	0.43977	33796
2013	Xinjiang	613	22.64	0.44479	37552.55
2014	Xinjiang	768	22.98	0.46084	40648

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