The Financial Implications of the Chinese Healthcare System

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Abstract

In 1949 one of the world's most powerful and influential countries was born: The People's Republic of China. Perhaps the greatest challenge the country has consistently faced since its inception has been ensuring a fiscally sound healthcare system. Today, China has the world's largest population and a rapidly aging society with 330 million citizens over the age of 65 projected by 2050- nearly the same size as the total U.S. population. Living standards across China have been drastically increasing in recent decades and the Chinese people are desiring better, higher quality healthcare to complement their new lifestyles. With this desire comes China's unique challenge of scale - operating the world's largest healthcare system for 1.4 billion people. This paper introduces the historical perspective and background of China's healthcare system, the major phases of reforms, how successful those reforms have been, and finally explores the financial impact China's healthcare system has had around the globe.

1 INTRODUCTION TO CHINA'S HEALTHCARE SYSTEM

1.1 Overview and the Financial Importance of the Chinese Healthcare System

For a long time, the Chinese economy has relied on factories and investment and not much on spending. The central government has been focused on shifting China's economy to a more consumer-oriented economy with high-tech companies replacing factory workers. A major challenge to achieving this transition is the healthcare system. Too many people are worried about future medical bills and choose to save rather than spend. To help combat this issue, the government has made healthcare reform a priority and is working to increase access, increase the quality of care, and decrease costs[1].

From China to the US to Germany to Brazil, the heart of healthcare debates around the world stems from the question "how do you ensure healthcare is high quality and affordable for everyone without stressing a nation's finances?". The following sections describe China's current healthcare system.

1.2 Government Healthcare

The Chinese government operates on the principle that every citizen is entitled to receive basic health care. Government-sponsored healthcare in China has been increasing gradually over the past decades and the Chinese population is now more than 95 percent covered by government insurance. The central government is responsible for national health legislation, policy, and administration while local governments are responsible for organizing and providing healthcare services. Providing coverage to 1.4 billion people requires a large institutional structure.

The China People's Congress is responsible for healthcare legislation while the National Health Commission is responsible for formulating health policy and healthcare reform. The Ministry of Finance provides funding for the government healthcare system through a shared system of financing and delivery between local, provincial, and central government entities[2].

1.3 Chinese Hospital Structure

Chinese hospitals are categorized using a three-tier system. Hospitals with over 500 beds are classified as Tier 3 and are considered to have the highest quality of care that China offers. They perform the most advanced, complex procedures and many of China's top doctors work in those facilities[3]. Tier 2 hospitals are medium-sized city or county hospitals. Tier 1 hospitals are local township hospitals. Part of the Chinese healthcare reform, which will be discussed in detail in a later section, has been addressing the imbalance between Tier 1, 2, and 3 hospitals.

1.4 Chinese Healthcare Insurance

China's healthcare insurance system can be broken down into three categories:

1. *Urban Employee Basic Medical Insurance.* This form of insurance is required for those who are employed within a major city and is financed via employee and employer payroll taxes. In 2018, 316.8 million had employer-based insurance[2].
2. *Urban-Rural Resident Basic Medical Insurance.* This form of insurance is primarily paid by the government and partially financed through individual premiums[4]. It covers rural and urban residents who are: self-employed, children, students, elderly adults, and others. Unlike the Urban Employee Basic Medical Insurance, this form of insurance is not mandatory. In 2018, 897.4 million were covered under this insurance program[2].
3. *Private Health Insurance.* This type of insurance is purchased primarily by higher-income individuals. Private insurance can be used to cover deductibles, copayments, and other cost-sharing, as well as provide coverage for expensive services not paid for by public insurance[2]. Although there is no data available for private health insurance in recent years, in 2012, approximately 30 percent of China's urban population had private health insurance while another 20 percent were planning to buy private health insurance in the future[5]. Most Chinese private health insurance plans use private facilitates, since they usually have lower wait times, internationally trained staff, a high standard of service, and high-quality facilities[6]. However, private insurance can also be used at public hospitals.

There are no annual caps on out-of-pocket spending. In 2018, out-of-pocket spending per capita was CNY 1,186, which is equivalent to approximately USD 262[2]. For comparison, the per capita GDP in China is USD 9,770[7]. Meanwhile, in the US, out-of-pocket spending is USD 1,125[8], and the per capita GDP is USD 62,794.59[7].

Total healthcare expenditure in China (including out-of-pocket spending, and insurance/ government spending) per person in 2018 was CNY 4,236, equivalent to approximately USD 648.03[9]. In contrast, the total healthcare expenditure per person in the US was USD 11,582[10]. While these numbers could lead to the conclusion the US has a superior healthcare system, it is important to note raw numbers do not explain the full story. For example, on average other western countries spend about half as much per person on healthcare, yet many have significantly better health outcomes[11]. It is important to remember that efficiency- how healthcare expenditures are utilized and how doctors spend their time- is more important than raw healthcare spending numbers. Readers should be cautioned against basing conclusions about Chinese and American healthcare systems purely on surface-level data.

For citizens who cannot afford their healthcare costs, including out-of-pocket spending, copayments, and insurance premiums, there is a financial assistance program available. This program is funded by local governments and social donations. In 2018, 76.7 million people, approximately 5.5 percent of the population, received this social safety net assistance[2].

2 FINANCIAL CHALLENGES OF THE CHINESE HEALTHCARE SYSTEM

There have been six major phases of reforms in the Chinese healthcare system with the most recent ending in 2020. The reforms are continual, and a seventh reform will be announced for 2021. This section explores the challenges faced by the Chinese population which led to these reforms. Older data was used to showcase the challenges the healthcare system was facing in the 1990s and early 2000s. This section is further divided into the various problems faced by the Chinese population, yet nearly all of them face the same overarching issue of cost control. These challenges have led to a series of governmental healthcare reforms which will be discussed in the section titled "Major Reforms".

2.1 Demographic Shifts

By 2050, it is estimated that almost half of the total Chinese population will be 50 years or older[12]. This is a result of increased living standards triggered by swift economic growth in recent decades, major advances in health technologies, an increase in healthcare insurance coverage, and better education[13]. Additionally, the one-child policy, which limited families to one child from 1979-2015, allowed families to focus healthcare resources and education on one child, which led to a higher life expectancy[14]. At the same time, people are less physically active due to changes in types of work, lifestyle, and modern transportation, resulting in more non-communicable diseases (NCD). These factors have increased the needs and costs of healthcare[13].

Shifts in Chinese demographics have resulted in three important consequences for the Chinese healthcare system:

1. Higher expectations of the healthcare system. Chinese patients have grown accustomed to using health facilities offering a full array of equipment and medical services. Additionally, Chinese patients are no longer required by their insurance to seek medical care in the district where they live, which allows patients to go to any hospital, in any city. Recent advancements in transportation and road networks across China have also led to

increased mobility. This has led to many people from rural or poor districts being able to travel to high-quality healthcare centers like Beijing. This has increased the expected level of care all around China[14].

2. Geriatric and Long-term Care. With a higher life expectancy and a large aging population, the Chinese healthcare system is facing a push to increase the amount of care for the elderly. This includes increasing the number of long-term care facilities, as well as developing more treatments for diseases that typically affect older populations, such as arthritis[14].
3. Increased costs. The recent increase in both healthcare quality and healthcare consumption has put a tremendous financial strain on the healthcare system[13]. Government healthcare decision-makers face the difficult challenge of increasing healthcare technology and quality, to generate the largest health gain with the least possible cost[12].

2.2 Individual Healthcare Costs, Insurance Coverage, and Out-of-Pocket Payments

The costs associated with the Chinese healthcare system have come under scrutiny as citizens have been paying an increasingly large proportion of the bill since the end of the nearly-free Maoist-era healthcare system. By 2003, only 30 percent of the Chinese population could afford insurance[15]. On average, a single inpatient episode in 2003 involved out-of-pocket expenditures equivalent to nearly 55 percent of annual per capita consumption.

By the end of the 1990s, private health spending as a share of total health spending, which was just 20 percent in 1978, exceeded 60 percent[16]. This may be acceptable if a patient is expected to pay 60percent of a 30 dollar flu vaccine but is certainly not acceptable if a patient is expected to pay 60 percent of a 100,000 dollar heart transplant.

Another challenge faced by Chinese patients is that all payments for healthcare treatment must be paid upfront, in one single invoice[14]. Later, insurance may reimburse some of the expenses, but the patient must initially bear the entire cost. This often involves taking out significant loans and coming to the hospital with large sums of cash to be ready to pay for whatever treatment is necessary[17].

2.3 National Healthcare Costs

In addition to individual healthcare costs, the Chinese government has also faced rising healthcare costs in recent decades. The annual rate of healthcare has been increasing 17 percent annually over the past two decades. Total health expenditure, including government spending, collective spending, and private out-of-pocket spending, increased from CNY 74.7 billion in 1990 to CNY 1.998 trillion in 2010. According to the National Health Account Report (conducted by the Chinese government), the increased rate of health care costs in China far exceeded the rate of economic growth during the same period. Since 1980, the government funding appropriated to Chinese health has been in decline, resulting in many hospitals having to directly charge patients. Although prices were regulated, it was done in a way that inadvertently gave providers powerful incentives to focus on medicines and high-tech care at the expense of basic cost-effective interventions and core public health functions. As a result of hospitals' decreased government funding, personal health care costs increased dramatically. Figure 1 shows how high China's patient costs became, in comparison to other countries during the 1980s[13].

2.4 Over-utilization of Tier 3 Hospitals and Over-utilization of Services

Since the economic reforms of the 1980s and beyond, which drastically increase living standards across China, the expected level of treatment quality has risen considerably. The number of establishments able to meet these new, high-quality care expectations, was reduced to only the very best urban hospitals, thus creating high demand and low supply for such treatment. Meanwhile, lower-tier healthcare establishments have found themselves with too much supply, and insufficient demand as their patients travel to seek care at the more advanced Tier 3 hospitals. Contrary to practices in the West, where the patient consults a general practitioner in a healthcare practice for problems that are considered minor, China's public hospitals, especially those referred to as "excellent" deal with both inpatient and outpatient treatment[14]. Thus, if someone has a simple cold and wants to be seen, they go to the hospital, not a general practitioner. Each time they go to a hospital, they may see a different doctor.

In part, the high costs of the 1990s and early 2000s were caused by hospital inefficiency. During the 1990s and early 2000s, patients chose to go to Tier 3 hospitals for even the slightest cold or cough. This resulted in overcrowding at Tier 3 hospitals and drastic underutilization of local Tier 1 and 2 hospitals and clinics, causing nationwide inefficiency. While people waited in lines at Tier 3 hospitals, thousands of beds lay empty in local hospitals and clinics. Underutilized beds tended to be accompanied by underutilized staff and overinvestment in equipment. Costs, as a result, were higher than necessary. For township health centers (THC), the cost of excess capacity was around 40 percent higher than it would have been if their excess capacity had been eliminated. Not only was there more capacity than necessary for the number of patients, the patients who

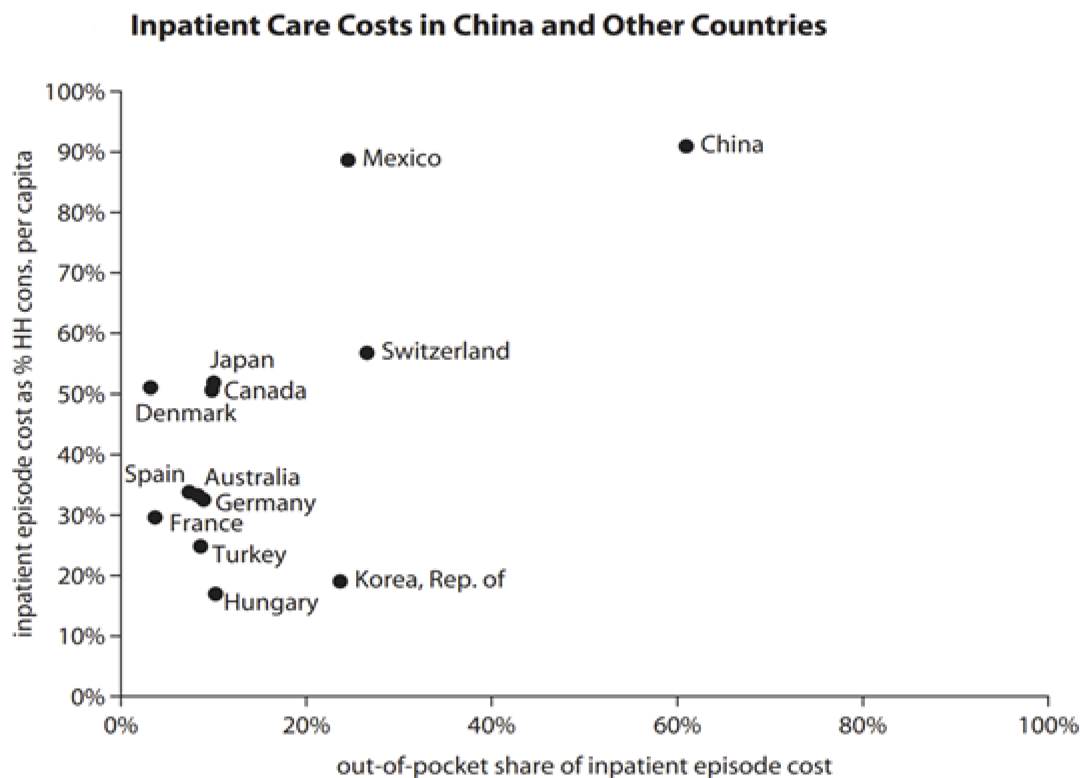

Figure 1

were treated tended to incur very high costs; and in some cases, the higher costs were medically unwarranted [13]. These patients had to bear the burden of a lack of hospital clientele. This, in turn, drove even more patients away from local hospitals and towards Tier 3 hospitals.

With major advances in public transportation and road networks in recent decades, rural residents can easily travel long distances to visit Tier 3 hospitals. Once they arrive, patients may wait for hours or even days in waiting rooms for an outpatient consultation. The result is an overload on Tier 3 facilities, resulting in very long waiting times and short consultations times. This increase in demand for hospital consultations has fueled a healthcare system that gives little incentive to consult locally since patients are entitled to go to any hospital they choose. Major public hospitals account for more than 90 percent of inpatient admissions and more than 50 percent of outpatient consultations, with between 60 and 80 consultations per day per physician [14].

2.5 Urban vs Rural and Rich vs Poor Divide

Prior to the 2003 reforms, rising healthcare costs and out-of-pocket payments made it increasingly difficult for poor patients to pay for healthcare. The World Health Report of 2000 stated China had the most inequitable healthcare system in the world. In 2002, it was found that subsidies for both outpatient and inpatient services were generally allocated to the rich rather than to the poor [18]. In the 2003 National Health Survey, 30% of poor households blamed health care costs for their poverty [16].

Rural areas tended to have fewer hospitals and care facilities, fewer doctors and nurses, and as a result, lower quality of care [14]. In the 1990s, children living in the poorer central and western provinces were more likely to be malnourished than those living in the richer eastern provinces, and rates of malnutrition were found to have fallen faster among children in cities than in the countryside [19].

Prior to the economic reforms of the 1980s, nearly all citizens were covered by some type of health insurance. The bulk of the rural, agricultural population in the 1970s was covered by the Commune Cooperative Medical Scheme (CMS). During the 1980's transition from a planned economy to a market economy, health insurance coverage in rural areas fell dramatically. By 2003, 80 percent of China's rural population—some 640 million people—lacked health insurance and only 10 percent of the rural population was covered by a government scheme. Coverage in China's cities also declined, though less dramatically, and by 1998 nearly half the urban population lacked insurance coverage [16].

2.6 Overuse of Medication

During the 1980's shift to a market economy, hospitals began to turn into for-profit institutions. They typically had a monopoly within their geographic area and acted much like a private company. Doctors and nurses were rewarded with bonuses if they brought in more profit for the hospital. This unfortunately led medical staff to over-diagnose and over-prescribe in order to maximize profit[14]. In 2003, it was found that China had one of the world's highest shares of pharmaceutical expenditures compared to total healthcare expenditure- nearly 45 percent, compared to an OECD (Organization for Economic Co-operation and Development) average of only 15 percent. It was also found that less than 1 percent of drug prescriptions in village clinics were reasonably prescribed[16].

3 MAJOR REFORMS

To address the issues discussed in the previous section, the Chinese government has embarked on a series of reforms. This section will discuss the six phases of the Chinese healthcare system, first beginning with the Maoist-era healthcare system, then the shift to privatization, and finally the modern reforms beginning in 2003 as China moved away from privatized healthcare.

3.1 Phase 1 (1949-1980)

On October 1st, 1949, the creation of The People's Republic of China was declared by Chinese Communist leader Mao Zedong. Shortly after the founding of modern China, a rudimentary healthcare system was established called the Community Medical System (CMS). Healthcare was nearly free for everyone and the system was regulated by tiers. Citizens were required to first go to a Tier 1 hospital/ clinic. If more advanced care was needed, the patient would be referred to a Tier 2 hospital. If further care was needed the patient would be referred to a Tier 3 hospital. This system of healthcare was rudimentary and basic. The quality of care was low, and the equipment was primitive, yet the outcomes were remarkable[14]. This system led to an extraordinary improvement in most major health indicators including a decrease in infant mortality and an increase in life expectancy. Health care financing was largely centralized, with strict budgeting and financing for the system of provincial and local hospitals, with a particular emphasis on controlling costs and delivering basic services through public hospitals[20].

3.2 Phase 2 (1980-2002)

The 1980s brought a time of economic reform and opening-up in China. Communes were phased out and market-oriented reforms were ushered in. With the decollectivization of agriculture, rural citizens were no longer required to contribute to the community medical system. Hospitals and clinics became privatized and government funding quickly dwindled. By 1990, government subsidies made up only 10 percent of hospital budgets. As hospitals became for-profit institutions with effective monopolies in their specified geographic areas, prices began to skyrocket. Hospitals raised drug prices and patient care prices in order to compensate for the government funding that had been withdrawn[14]. Incentives were created for doctors to over-treat, over-prescribe, and ignore basic, low-revenue preventative health care. This resulted in fewer Chinese citizens receiving basic, low-cost, preventative primary care.

An additional consequence of the economic reforms of the 1980s was many state-owned enterprises, which made up a major sector of the economy, were broken down into smaller companies to be privatized. State-owned enterprises were gigantic organizations, and each provided healthcare insurance for their employees and their families. The sheer size of these companies made it possible to pool risk. The newly formed, small, private companies had difficulty financing their insurance because the scale/ number of people was greatly reduced which meant risk was pooled on a smaller number of individuals[14]. Financial burdens were increasingly shifted to individuals, who were asked to pay more out-of-pocket for their healthcare[20]. Citizens often could not afford to pay for primary care and waited until they were seriously ill to be seen by a doctor. Often it was too late by the time the patient sought help. As a result of high out-of-pocket costs, Chinese citizens began saving large sums of their income to prepare for future health expenses.

By 1999, only 7 percent of the 900 million rural residents had health insurance coverage and only 49 percent of the 400 million urban residents had insurance. As a reaction to these numbers and the other problems faced by the mostly privatized healthcare system, the government introduced the Urban Employee Basic Medical Insurance (UEBMI) which was discussed earlier[21]. This was the beginning of the healthcare reform area.

3.3 Phase 3 (2003-2008)

Since 2003, new cycles of reform have been pushed toward a more welfare-state oriented healthcare system[14]. In 2003, the Chinese government implemented the first series of reforms, aimed at increasing government healthcare inputs, expanding health insurance coverage, and lowering patient fees.

In urban areas, the government launched the Urban Resident Basic Medical Insurance (URBMI) to compliment the UEBMI which had been created in 1999. The

new URBMI provided urban insurance to those who were not covered by the old UEMBI[13]. This included children, those unable to work, and the retired. The annual premium is primarily paid for by the Chinese government and individuals are required to contribute a small portion. In 2014, reimbursement rates for URBMI reached 70 percent for inpatient visits and 50 percent for outpatient visits[21].

In rural areas, the New Rural Cooperative Medical Scheme (NRCMS) was established to replace the earlier CMS which had dissolved as a result of the 1980's economic reforms. NRCMS is voluntary[20], although today, more than 99 percent of rural residents are covered by NRCMS[21]. NRCMS is funded partially by enrollee contributions and partially by subsidies from central and local governments[16].

In addition to URBMI and NRCMS, the government also created a Medical Assistance program. This program acts as a healthcare safety net to assist those who cannot pay for their premiums and copayments and to help households facing unusually large medical bills for catastrophic events[16].

A deliberate policy to improve healthcare was also enacted and resulted in a massive increase in the number of hospitals and other healthcare structures. The number of hospitals has grown from 18,000 in 2003 to more than 33,000 today (excluding hospitals built for Covid).

Other reforms were aimed at reducing providers' incentives to deliver expensive drugs and high-cost, high-technology care at the expense of basic care. The government has also been moving towards creating a price ceiling system to prevent over-charging of patients. These reforms were the beginning of eliminating perverse incentives to overcharge, increase prices, and charge high out-of-pocket fees.

3.4 Phase 4 (2009-2012

In 2009, the Chinese government introduced a new set of reforms focusing on five key areas:

1. Service delivery
2. Essential medicines
3. Public health
4. Insurance
5. Public hospital reform

The government recommitted itself to the principle of "equalization of access to public services" for all[22]. Between 2009 and 2010, the government invested CNY 42.2 billion in health care facilities, which was more than the sum of all investments in the prior 30 years. In 2011 the government announced they would further increase investments to CNY 1.13 trillion over the next three years. During this time, patient reimbursements greatly increased while individual copayments decreased[21].

3.5 Phase 5 (2012-2016)

In 2012, the Chinese government introduced a five-year plan (for the years 2012-2016), which was aimed at the following major reforms:

1. Expand basic medical insurance programs
2. Establish a national essential drug system
3. Develop a primary healthcare service system
4. Provide equal access to urban and rural residents
5. Continue the reforms of public hospitals[14].

This era of reforms also ushered in some of the first commercial/private companies to assist with healthcare financing. The aim of using commercial insurance companies was to help cover catastrophic disease insurance to prevent families from incurring life-altering debt and poverty after a devastating medical bill[20]. The government also began to support private hospitals, in hopes a free-market hospital system could help ease some of the congestion at public hospitals[14].

Another structure that was introduced to reduce costs of drugs and medical equipment was a collective bidding system. Under this system public hospitals in a city/ province use their collective bargaining power to purchase drugs and equipment. Any qualified pharmaceutical manufacturer or supplier can join the bidding. Then, quality, prices, company's reputation, and delivery services, are reviewed by the government health authority and they select a contract. Internet bidding has also become popular. Hospitals and other health providers publish the needs of pharmaceutical products and their quantities at an internet-based pharmaceutical procurement information platform. Pharmaceutical companies can then make an offer and try to out-bid other companies. This competition, in turn, will hopefully help lower prices.

Additionally, the National Essential Drug List was established in 2012 to prevent unaffordable drug prices. This requires primary care providers to follow a zero-mark-up policy[14].

3.6 Phase 6 (2016-2020)

In 2016, the Chinese government introduced the next five-year plan to cover the years 2016 to 2020. The plan was nicknamed "Healthy China 2020" and focused on the following reforms:

1. Strong efforts to develop advanced medical equipment
2. The development of traditional Chinese medicine (TCM) healthcare services
3. The implementation of a "fitness for all" strategy
4. The encouragement of non-governmental participation in the healthcare services industry
5. Granting non-profit private hospitals, the same status as public hospitals

This era saw a greater focus on private companies in healthcare as a way to help reduce government costs[20].

4 RESULTS

This section evaluates the impact made by the reforms laid out in the previous section. However, it is difficult to measure the effects of the Chinese healthcare reforms for three reasons:

1. There are nearly an infinite number of metrics to measure how "good" a healthcare system is and how much change has occurred- cost, quality of care, life expectancy, insurance coverage, affordability, etc.
2. The healthcare reforms are quite recent, occurring within the last twenty years and many occurring within the past five years. Many policies have not been fully implemented and/or there has not been enough time to accurately measure the reforms.
3. The most recent research available was written between 2011 and 2018 and therefore may not accurately reflect the current healthcare system in China. In the time these studies have been published, new reforms and policies have likely been carried out to further improve the Chinese healthcare system.

This section should be used as a guide to show that China's healthcare reforms so far have been successful in many regards yet still have areas to improve. This section is divided into subsections measuring particular aspects of the Chinese healthcare system with a special focus on financing.

4.1 Insurance Coverage and Insurance Cost

China has drastically expanded insurance coverage from 29% in 2003 to nearly 95% by 2011. This was done through the NRCMS, UEBMI, and URBMI[13]. These insurance programs have provided significant financial protection to Chinese citizens. For rural residents specifically, who faced only a 7% insurance coverage rate prior to the reforms[21], insurance coverage increased 4.6 times between 2003 and 2009.

Inpatient reimbursement rates increased by more than three times on average, and by 7.5 times in rural areas[23]. The NRCMS made significant progress in closing the rural-urban insurance coverage divide. Today, rural coverage now exceeds urban coverage. The insurance coverage gap between the poorest and the wealthiest in China has also been closed, with no significant differences found between the poorest and wealthiest groups. Additionally, inpatient reimbursement rates rose rapidly beginning in 2003 as did hospital admissions and household spending. Inpatient self-discharge (a patient discharging themselves from a hospital without a doctor's recommendation) declined as a result of the reforms[23]. The reason for this decrease is thought to be as follows. Increased insurance coverage and reimbursement rates could cause both the increase in hospital admissions and the decrease in self-discharge. Citizens felt more comfortable going to a hospital when they felt ill since they knew they would be at least partially covered by insurance. This could also be the reason for the lowered self-discharge rate. Prior to the reforms nearly half of rural patients would discharge themselves, against their doctor's advice. Of those who self-discharged nearly, 85% said that they could not afford the expense of treatment[16].

Unfortunately, increased hospital admissions contrasts with the overall reform goals of emphasizing higher uses of primary care. The financial incentives of the insurance programs do not motivate citizens to seek primary care. Instead, insurance systems unintentionally incentivize citizens to seek inpatient care at large hospitals by providing higher reimbursement rates for those visits and lower reimbursement rates for primary care visits[23].

4.2 Individual and Out-of-Pocket Costs

An interesting trend emerges when comparing individual payments before and after the reforms. On one hand, the reforms seem to have encouraged more people to seek treatment and have narrowed the gap in treatment and reimbursement rates between poor and wealthy households, yet on the other, households are spending more on healthcare and even experience slightly higher rates of catastrophic health expenses.

In 2002, only about 58.33% of the poorest and 68.14% of the less poor who reported illness sought treatment. In 2007, the corresponding percentages were 71.43% and 84.00%, suggesting a large increase in the amount of people who are seeking treatment. The increased use of health services by poor households is attributed to expanded coverage thanks to NRCMS[18]. However, while NRCMS has been crucial in increasing coverage, there are high deductibles, many services are uncovered, and patients still pay large out-of-pocket sums[16].

Parity has been achieved in reimbursement rates between poorer and wealthier households, yet poor households still face a greater financial burden since health expenditures make up a larger percentage of their income. Although the health reforms have made many positive changes throughout the Chinese healthcare system, the reforms have not yet helped to decrease the percentage of households experiencing catastrophic health expenses. In fact, the percent of households experiencing catastrophic health expenses actually increased slightly by 0.2% between 2003 and 2011. Approximately 13% of households, or 173 million people, faced catas-

trophic health expenses in 2011 and poor households experienced catastrophic health expenses at twice the rate of wealthier households. Health spending as a share of total household expenditures continued to rise, and households dedicate on average 13% of their annual expenditure to paying healthcare costs[23].

Thankfully, the Chinese government continues to increase the amount of reimbursement patients receive and more services are continually being covered by insurance which should eventually help bring down individual out-of-pocket healthcare costs[18]. The insurance programs set ceilings for maximum levels of patient reimbursement, which applies largely to inpatient care. These ceilings have recently been increased for the government insurance programs which may help to reduce catastrophic health expenses. In 2011, pilot programs were initiated for covering the costs of diseases and treatments that are typically associated with extremely high healthcare costs such as childhood leukemia, congenital heart disease, kidney dialysis, and cervical and breast cancer therapies. These patients receive a subsidy that covers 20% more of treatment costs that are not already covered by insurance[23].

4.3 National Cost of the Chinese Healthcare System

Since the beginning of the reform era, the cost of the healthcare system has been rising. This is to be expected since the government has taken on an increased role in healthcare, providing insurance to nearly the entire Chinese population, increasing the number of hospitals, and more. When looking at the increased rate of healthcare spending, it is important to compare it to the economic growth rate to determine if the increased spending is sustainable. Figure 2 shows that economic growth is decreasing while healthcare spending as a percentage of GDP is increasing.

This shows an important trend. In recent years, the Chinese economic growth rate has slowed, and it is important that government healthcare spending does not dramatically exceed economic growth. If spending consistently outpaces growth, the Chinese government will have to find new ways to finance the healthcare system such as increasing taxes or employing foreign direct investment.

4.4 Financial Incentives to Over-Prescribe and Over-Treat

The financial incentives for hospitals and doctors to over-prescribe and over-treat have largely been removed. Hospitals are now required to have a 0% drug markup which has helped to significantly lower the cost of prescription drugs for patients. Bidding methods have helped to lower drug costs for hospitals which have helped further lower costs for patients. Some hospitals have moved away from fee-for-service compensation systems for doctors and toward a fixed salary. This, along with other new salary methods, has helped to reduce the incentives for doctors to over-treat, or provide only high-technology treatment while providing few primary and preventative care options[13].

4.5 Medical Outcomes and Access to Medical Care

While results remain somewhat mixed for how the reforms have affected financial healthcare protection, it is quite clear the reforms have been successful in increasing health outcomes, especially for rural residents. Maternal mortality dropped from 80 per 100,000 live births in 1991 to 25 per 100,000 live births in 2012. The neonatal mortality dropped from 33 per 1,000 live births in 1991 to 7 per 1,000 live births in 2012. The difference in urban and rural maternal mortality narrowed from 1:2 in 2005 to 1:1 in 2010[21]. Gaps in access to hospital child delivery no longer exist between rural and urban residents and the supply of health services has expanded significantly[23]. Life expectancy has increased from 71.4 years in 2000 to 76.6 years in 2019[24].

5 PRIMARY RESEARCH

In order to partially compensate for the fact that research used in this paper was primarily from prior years and may not accurately reflect the current state of the Chinese healthcare system, primary research was conducted. While not extensive, this one-question survey can help the reader partially gauge the current healthcare system and how the reforms have evolved and continued to improve since much of the research in this paper was written. The author will also add some of her own experiences living in China while analyzing the results of the survey.

The following question was asked to 207 Chinese citizens, currently living in China:

"The healthcare system is an important topic and many countries are constantly trying to improve their own healthcare systems. Please rank the following in order of importance to you with 1 being the most important and 5 being the least important:

(a) Increase the amount of healthcare coverage accessible to rural citizens
(b) Increase the quality of healthcare for citizens
(c) Decrease out-of-pocket costs for patients
(d) Increase preventative healthcare measures
(e) Decrease wait times at major hospitals"

An average composite score was then calculated for each option. The lower the average, the more important

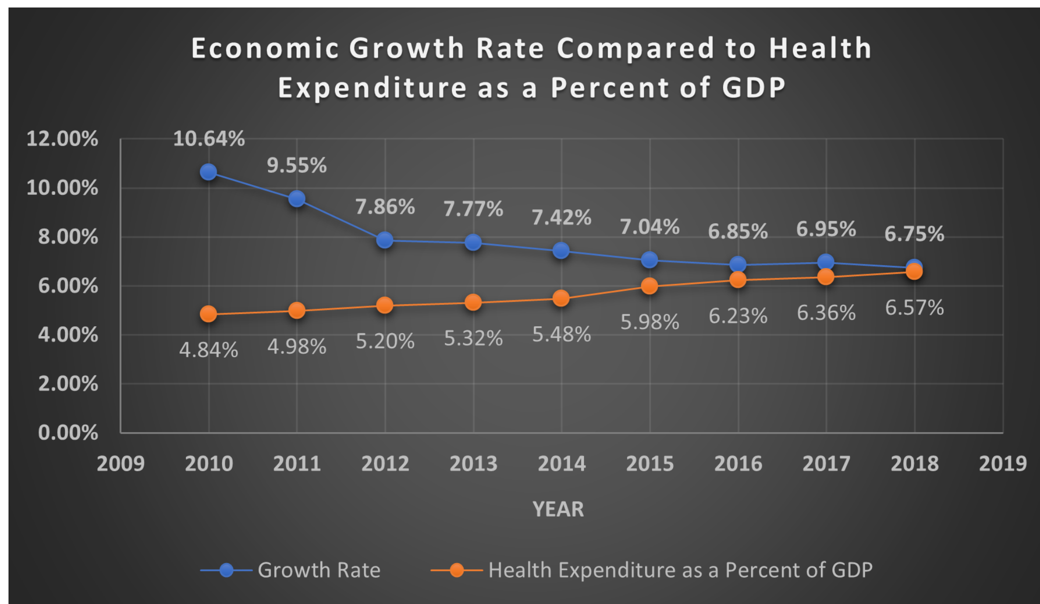

Figure 2

(closer to 1 indicates the higher importance). Figure 3 shows the results.

The most important issue to the surveyed group was increasing preventative healthcare measures. This makes sense since the Chinese healthcare system is still operating on a system where citizens only go to the hospital when they are sick and do not have a regular primary care physician to assist with preventative care. While studying abroad in China in the fall of 2019, I witnessed first-hand this system of hospital care. My Chinese friends and co-workers would go to the hospital if they had even a minor ailment since they did not have a primary care provider. Many US citizens who have a minor ailment will schedule an appointment with their primary care physician in a local office rather than going to the hospital.

The second most important issue to respondents was decreasing wait times at major hospitals. This is consistent with my experience in China. My friends and family in China often discussed the wait times at hospitals. They suggested that to be seen in a timely manner, it was important to be at the hospital as soon as they open, and often there was a queuing line outside the hospital before opening. It is important to note that my friends and family live in Beijing, one of the largest and busiest cities in China. In addition, the survey was likely collected from people in or around Beijing, thus their perspective may be different from someone in a smaller city or rural area. For example, a citizen in Beijing- a city with nearly 22 million inhabitants, may wait longer than a citizen in Luoyang- a city with only 2 million inhabitants. Wait times at major hospitals in large urban centers are an issue faced by countries around the world.

The third most important issue to survey respondents was increasing quality of care for citizens. This suggests that while China's healthcare quality has improved drastically in recent decades, there is still improvement to be made.

The fourth most important issue to survey respondents was increasing the amount of healthcare coverage accessible to rural citizens. Since this option was ranked second to last, it shows Chinese citizens are relatively satisfied with the amount of healthcare coverage available to rural citizens. This would match the data presented above, which states that more than 98% of rural citizens are covered by government health insurance. However, this survey was taken predominantly by people living in Beijing, which could distort the results. A different result may have been yielded if the survey were given exclusively to rural residents.

The least important issue to respondents was decreasing out-of-pocket costs for patients. This is the most unexpected result from the survey since the data presented in the "Results" section of this paper suggested that citizens still had to pay a majority of healthcare costs out-of-pocket. The "Results" section also noted the government was working on increasing reimbursement rates and providing more insurance coverage. It could be concluded that the measures the government took between 2011 (the time that study was conducted) and today have helped to decrease out-of-pocket costs to the point where residents rank this as the lowest priority.

While these results give some insight into the healthcare system today, it is important to note the difference between the highest ranked and lowest ranked was less than 1 point. This suggests that all the options held a

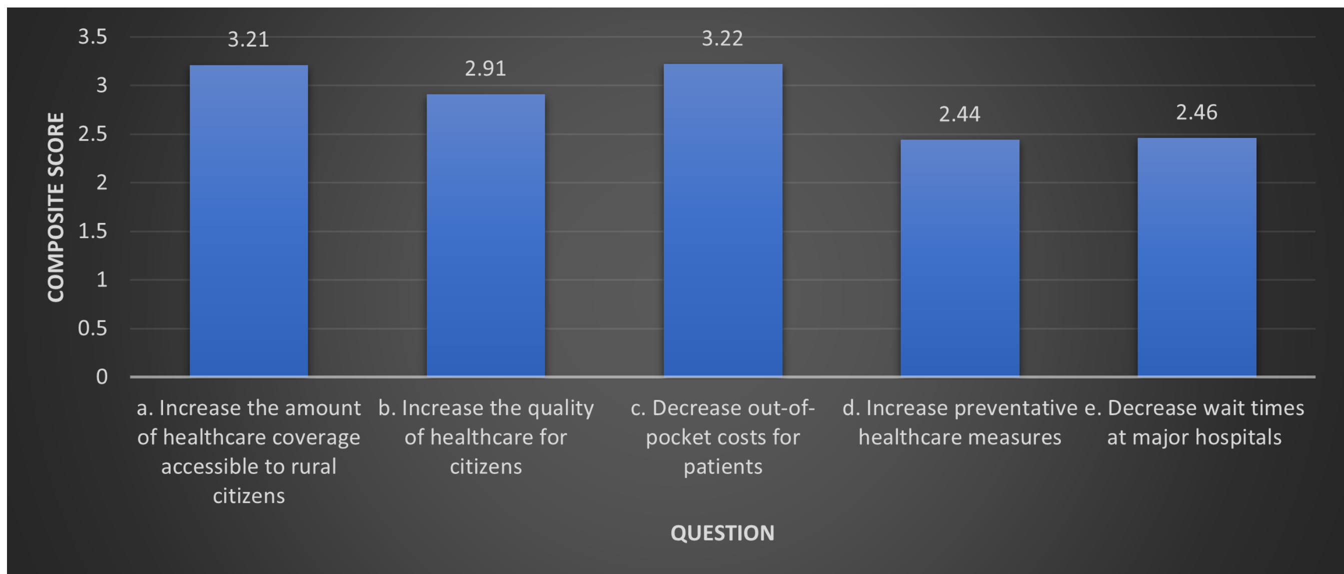

Figure 3

relatively similar importance. More research would be needed to draw definitive conclusions.

6 RECOMMENDATIONS

The following sections are the five recommendations the author makes based on the results of the reforms. These recommendations are intended to address only the financial side of the Chinese healthcare system and do not delve deeply into the health implications of such recommendations.

6.1 Introduction of Primary and Preventative Care

"Unlike some western countries, Chinese patients usually do not have a regular physician like a general practitioner"[21]. As a result, preventative care is rarely sought, and citizens only go to hospitals when they are quite ill. Instituting a primary healthcare system would have three benefits.

1. A primary healthcare system would help identify diseases and disorders at an early stage when more significant treatment options are available to ensure a better long-term outcome.
2. Identifying diseases and disorders earlier in addition to making use of preventative care will help to decrease the overall cost of patient care. For example, seeing a dermatologist annually for a physical exam can help to identify Melanoma and other types of skin cancer. When caught early on, Melanoma is an easily treatable cancer. However, if patients wait until they are experiencing severe symptoms, it is likely the cancer has spread and is too late to treat. A patient may experience severe financial difficulties, physical pain, and emotional hardship trying to treat late-stage Melanoma which could have been easily treated if caught early.
3. Introducing more primary facilities and physicians could help to decrease Tier 3 hospital crowding. Primary care physicians could be located in Tier 1 and 2 hospitals to help shift some patients away from major Tier 3 hospitals.

6.2 Insurance Consolidation

Consolidating the three insurance schemes (UEBMI, URBMI, and NRCMS) could bring several benefits to the healthcare system. First, merging would provide significant cost benefits. It is inefficient for each insurance scheme to have its own provider payment system, certify its providers, and have their own financial management and auditing system. Merging the three systems would create opportunities for economies of scale. Consolidating management and financial systems would help to reduce cost and oversight. It would also allow for a larger pool of citizens which could help to reduce overall risk and the costs associated with higher risk[16]. Second, merging these three systems could benefit the Chinese people directly. At present, the insurance systems are developing at different paces, meaning some citizens get better care on one insurance than on another[21]. Not only does this have questionable ethical implications, but it also creates perverse financial incentives. If patients with UEBMI have larger insurance compensation than URBMI and NCMS patients, hospitals and providers are more likely to see UEBMI patients first, give them more time, and more treatment.

Meanwhile, URBMI and NCMS patients may be sent to the end of the treatment queue[16]. Combining the insurance schemes would create more equitable financial incentives.

In January 2016, the State Council issued a document on 'Integrating the Basic Medical Insurance Systems for Urban and Rural Residents' to establish a unified basic medical insurance system for urban and rural residents...". The merged systems will be run at the national level[21]. This is certainly a step in the right direction and more progress should continue to be made on unifying the insurance systems.

Another option to help decrease health insurance cost is to allow for the development of private health insurance schemes. One of the goals of the 'Phase 6' reform period for the years 2016-2020, was to encourage non-governmental participation in the healthcare services industry. Continuing to allow for private insurance could help decrease the cost of government health insurance.

Foreign investment is also another viable option for reducing healthcare insurance costs. Given the opportunity to operate in China, foreign health insurance companies could help to further develop the private insurance market. Companies like Cigna, Aetna, and MSH have begun to introduce high-end Chinese health insurance but so far it has mainly catered to expatriates and has yet to gain traction throughout China[5].

6.3 Insurance and Healthcare Cost Control

One concern of the new governmental healthcare system is cost control. Since the reforms began, each year the government spends more and more on the healthcare and insurance system.

One way to control overall healthcare costs is to change the insurance systems from passive bill-payers to active purchasers of healthcare. If government-run insurance systems were able to "shop" for the best care, costs would decrease and care would increase[16].

In order for this system to work, a platform like eBay for health insurance would need to be developed where hospitals would openly list their prices, death rates, readmission rates, patient reviews, and a host of other performance metrics. Although this online system would likely be quite complex and costly, changing how insurance systems operate could help to increase competition in both quality and price among hospitals, and thus reduce the overall cost of the healthcare system. Of course, some restrictions would have to be implemented. For example, this system would likely not work for emergency treatment since the patient would have to go to the closest hospital and would not have time to consider cost or quality.

6.4 Decrease Catastrophic Health Expenses

To help alleviate the catastrophic health expenses families continue to experience despite the reforms, the government could increase funding for the Medical Assistance scheme. This system was established to be a vehicle for helping the poor with insurance contributions and copayments. This program could be funded by the money saved from combining the three insurance schemes. If additional funding is needed, perhaps taxes would need to be increased, or insurance premiums would need to be raised.

Another way to decrease catastrophic health expenses would be to create a cap on annual out-of-pocket medical payments. Once a patient reaches a certain amount of out-of-pocket spending, insurance would cover the rest. This would likely be a costly measure and would also require the government to find additional sources of funding.

6.5 Continue to Change Provider Incentive Structures

One goal of the reforms was to change the pay-for-performance incentive structure for doctors and other healthcare providers. This structure promotes over-treatment and over-prescription for those with the most serious and costly diseases. Hospitals should continue to shift towards fixed salaries or fixed salaries with performance bonuses. This way, doctors have a financial incentive to spend time with each patient, prescribe the appropriate treatment, and ensure they receive the best care possible.

7 CONCLUSION AND IMPORTANCE FOR THE FIELD OF FINANCE

After the de-collectivization, opening up, and privatization of the Chinese economy in the 1980s, China's health care system was left in shambles. Most citizens lost their insurance, hospitals operated as for-profit monopolies, and major divides in access to care existed between rural and urban, and wealthy and poor. Households began saving large portions of their income to pay for medical bills, which was inhibiting the Chinese economy from its full growth potential. Today, insurance coverage is now nearly universal, government healthcare spending has increased drastically in the past two decades, and the gap between rural and urban access to healthcare has closed. Of course, there are still areas of the Chinese healthcare system to improve such as continuing to lower out-of-pocket costs and catastrophic health expenses. The financial impact of the Chinese healthcare reforms on the Chinese people and the Chinese government is undeniable. But how do these financial reforms impact the field of finance and

the financial state of the rest of the world?

China's healthcare system impacts global economies. This became increasingly clear with the Covid-19 pandemic. When China's health system falters, the world economy suffers. As a result of Covid, 3.3 billion people have had their formal workplace fully or partially closed[25], and of the approximately 2 billion people working in the informal sector, it is estimated more than 80% have been significantly affected. Global economic growth is projected to be negative 4.9% in 2020 and global trade has contracted by 3.5% this year thanks to Covid-19[26]. China's healthcare system matters not only to global health but also to global economic wellbeing. Everyone- whether Chinese, American, or Brazilian, a business owner, investor, or employee- has an interest in the success of Chinese healthcare.

Aside from Covid-19 economic implications, healthcare system improvement in general results in better health. Better health improves productivity and strengthens human capital, thereby contributing to stronger economic performance. The good health of citizens also results in an overall better economy and thus investing in better healthcare helps to boost income, GDP, and productivity, and helps to alleviate poverty. It was shown that "an annual improvement of 1 year in life expectancy increases economic growth by 4%" and "an increase in healthcare expenditure has a positive relationship with economic performance"[27].

Additionally, if China does not control its healthcare costs, it will increase the fiscal deficit so much that it could reduce China's ability to lend overseas. China holds USD 1.06 trillion in U.S. securities and a decreased ability to lend could impact the US economy and economies around the world[28]. With China making up a large portion of the global economy and playing a vital role in the global supply chain, their citizens need to be healthy so their economy can continue to grow. Living in an increasingly globalized world means that China's healthcare system must succeed for the sake of the global economy.

8 EDITOR'S NOTES

This article was peer reviewed.

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