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Chairman Dennis C. Shea, Vice-Chairman William Reinsch, and other Commissioners of the U.S.-China Economic and Security Review Commission, thank you for the opportunity to testify today on the important topic of China's healthcare sector.

China's healthcare system faces challenges common around the globe: safeguarding public health, expanding health-care coverage, and improving quality while controlling costs and balancing government and market roles in the health sector. My research on China's health system in comparative international perspective uses the lens of microeconomics. As you know, microeconomics explores choices under scarcity, and few other areas pose the social dilemma of choice under scarcity more starkly than that of health. In the extreme, such decisions determine "who shall live," the title of the 1974 book by pioneering health economist Victor Fuchs. Individuals – currently healthy or not – as well as medical providers, managers and regulators all make decisions shaping health and welfare; none are immune to influence from economic incentives. As Chinese policymakers experiment with reforms, a health economics perspective can help understand how to design incentives to promote "healthy choices" for individuals and for society: choices that increase human capital, spur economic development, and promote an efficient and equitable healthcare system.

My written testimony is based on fieldwork and empirical analyses summarized in several recent research papers cited in the reference section, as well as the contribution of many other health economists and other analysts of China's recent health sector reforms.<sup>1</sup> The references provide fuller citation of that literature.

In responding to the specific questions sent me by the Commission, I draw on health economics analysis and put less emphasis on the political economy of reforms or the governance process, since those are not my research focus. My testimony is guided by the view that it is important (i) to strike a balance, not focusing exclusively on the shortcomings of China's system nor extolling its progress while neglecting its challenges;

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<sup>1</sup> My testimony draws extensively from Eggleston (2010, 2012ab, 2013) and co-authored work cited in the references (e.g. Eggleston and Fuchs 2012, Eggleston et al. 2013, Chen and Eggleston 2014). Views expressed here are my own and do not reflect the views of Stanford, the Asia Health policy Program, the National Bureau of Economic Research, the Asia-Pacific Observatory, or any other organization with which I am affiliated. I extend sincere thanks to colleagues for their input through discussions and their published research on these topics.

and (ii) to keep a comparative perspective in mind. China's health status and health system performance fall short compared to some high-income countries, or (perhaps most importantly) compared to the aspirations of China's people. But China's health reforms can be considered a success compared to some lower-income countries, and a model for some developing countries aspiring to universal coverage. Consider for example the insights of Nobel laureate Amartya Sen (as articulated in a *New York Times* editorial "Why India Trails China" on June 19, 2013):

The far greater gap between India and China is in the provision of essential public services — a failing that depresses living standards and is a persistent drag on growth. Inequality is high in both countries, but China has done far more than India to raise life expectancy, expand general education and secure health care for its people. . . . India may be the world's largest producer of generic medicine, but its health care system is an unregulated mess. The poor have to rely on low-quality — and sometimes exploitative—private medical care, because there isn't enough decent public care. While China devotes 2.7 percent of its gross domestic product to government spending on health care, India allots 1.2 percent. . . . In China, decision making takes place at the top. The country's leaders are skeptical, if not hostile, with regard to the value of multiparty democracy, but they have been strongly committed to eliminating hunger, illiteracy and medical neglect, and that is enormously to their credit" (Amartya Sen 2013).

A third critical distinction that guides my testimony is that between the healthcare system and the broader determinants of health. The goal of health reforms in most countries is not exclusively (or even primarily) to raise life expectancy, but to address critical barriers to accessing quality, affordable medical care. Extending life involves a much broader set of factors than medical care, such as air and water quality, sanitation and waste disposal, lifestyle choices about physical activity and smoking, traffic safety, and other factors.

- **Your work has looked at diverse aspects of sickness in China, from TB in poor rural areas to demographic aging and diabetes. How has the nature of disease in China changed in recent decades? What kind of burden might it place on China's future development? Also, if providers are "inducing" demand by overprescribing drugs, is this a public health crisis in the making?**

The nature of disease in China has changed from a primary burden of infectious disease to a disease burden dominated by chronic, non-communicable diseases such as cancer, heart disease, and diabetes, but with important lingering problems from endemic and re-emerging infectious diseases such as hepatitis (a primary cause of liver cancer), multi-drug-resistant tuberculosis, and HIV/AIDS. At the same time and as part of the related demographic transition, China's population age structure is becoming more and more like high-income countries with low fertility, increasing longevity, and an increasing proportion of the population over age 60. In a sense, this shift in the burden of disease represents a natural progression of economic development and a triumph of earlier efforts to control infectious disease. However, the shift also places some constraints on China's

future economic and social development—challenging economic growth to continue without the benefit of a “demographic dividend” from a large bulge in the working-age population; challenging the health system to better identify and manage chronic disease; and challenging communities and authorities beyond the health sector to address the broader social determinants of health, from clean air and water to tobacco control and active rather than sedentary lifestyles as China rapidly urbanizes.

China’s leadership has launched major initiatives to correct perceived dysfunction in the health sector and meet the expectations of a population with ever-increasing per capita income. To understand the prospects for newly infused government funds to translate into effective health care service delivery and improvements in population health requires understanding the starting point: how China’s health sector evolved over the Mao era and the last 30 years of reform.

### *China’s epidemiologic and demographic transitions*

China’s growth in life expectancy between 1950 and 1980 ranks as among the most rapid sustained increases in documented global history. However, no study has quantitatively assessed the relative importance of various explanations proposed for these gains. Babiarz, Eggleston, Miller, and Zhang (2014) create and analyse a new province-level panel data set spanning 1950-80 using historical information from Chinese public health archives, official provincial yearbooks, and infant and child mortality records contained in the 1988 National Survey of Fertility and Contraception. Although exploratory, results suggest that increases in educational attainment and public health campaigns jointly explain 50-70 per cent of the dramatic reductions in infant and under-five mortality between 1950 and 1980. These results are consistent with the importance of non-medical determinants of population health improvement – and under some circumstances, how general education may amplify the effectiveness of public health interventions.

Because of the overall health improvements during the Mao era (despite the tragic disaster of the Great Leap Famine), China began the reform era in 1980 as an international outlier, having achieved high population health status for its relatively low per capita income level. One might have hoped that China’s above-average economic growth would have reinforced China’s previously above-average health indicators. Instead, compared to unprecedented economic growth, health status measures improved more slowly in the 1980s and 1990s, with growing population disparities. By 2000, life expectancy, infant mortality and under-five mortality rates were all about average for countries of similar per capita income.

While in principle this pattern need not signal failure—certainly the previous health improvements helped to fuel rapid economic gains, which in turn may be just as valuable as increased health improvements—it does pose a challenge to those who assume that economic growth is the key to longer, healthier lives. At a given point in time, health tends to be positively correlated with per capita income in a given country. However, there are wide variations in health outcomes for populations at a given level of per capita

income, and changes in health spending are often not directly correlated with changes in population health.

Why did China make such dramatic health gains when it was relatively poor and then stop making large gains during a period of rapidly rising income? Eggleston, Wang and Rao (2008) discuss several not-mutually-exclusive explanations for this “regression to the mean”: the social and economic stresses of systemic transformation from central planning to a market-based economy (which has been associated with dramatic health declines in Eastern Europe and the Soviet Union); reverse causality from health to subsequent growth; and changes in health care financing and delivery.

It is also important to recognize that China’s changing environment for health outside of medical care *per se* has had a large impact on health outcomes. To blame market reform of medical care for 100 percent of the stagnation in health improvement in the 1990s and 2000s would be to exaggerate the role of medical care. The stress of economic reforms that destroyed China’s infamous “iron rice bowl,” the increase in environmental pollution and traffic accidents, the continuing high prevalence of smoking among Chinese men—these factors certainly contributed to a slower reduction in premature mortality than would have occurred even if every Chinese citizen had ready access to basic and acute medical care. Just as medical care cannot take all the credit for health improvement, it also cannot take all the blame for poorer-than-expected health outcomes.

Since the late 1990s, China has gradually continued to move up the socio-economic gradient in health, with wide disparities but clear progress for most segments of the population. Life expectancy increased between 1990 and 2010 from 69.9 to 76.7 for women, and from 66.9 to 72.5 for men, levels slightly above those expected for China’s per capita income.<sup>2</sup>

Studies on the causes of mortality and morbidity in contemporary China confirm the dominant and growing role of chronic non-communicable diseases. According to official statistics (China Health Statistics Yearbook 2012), the leading cause of death in rural areas in 1990 was respiratory disease for both males and females, with heart diseases only number 4, and tuberculosis and other infectious diseases within the top 10 causes. By 2011, the leading causes of death in rural China were cancer, cerebrovascular disease (stroke), and heart disease, with tuberculosis and other infectious diseases no longer among the top 10 causes of death. In 2011, these top 3 chronic diseases accounted for 69% of urban deaths and 65% of rural deaths.

According to the estimates of the Global Burden of Disease Study 2010<sup>3</sup>, the leading risk factors for mortality in China include high blood pressure, dietary risks, and smoking; interestingly, the risk from air pollution has two components, one (outside air pollution) has increased, while indoor air pollution (from cooking) has decreased. Physical inactivity did not appear as a risk factor in 1990, but was among the top 10 by 2010.

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<sup>2</sup> The specific figures are from the U.S. Census Bureau (retrieved from life tables, April 2011).

<sup>3</sup> See <http://www.healthmetricsandevaluation.org/gbd>.

Clearly, China's burden of disease is changing from that of a low-income country to one more closely resembling a high-income profile, especially in urban areas. Hypertension – often undiagnosed and untreated -- is the leading preventable risk factor for premature mortality in China. He et al (2005), based on a national survey of adults 40 and older, found that the leading causes of death (between the 1991 baseline and the 1999-2000 follow-up surveys) were cancer, heart disease, and cerebrovascular disease, but that infectious diseases were also among the top 5 causes for both men and women. Leading risk factors besides hypertension were smoking and physical inactivity, but also included underweight (i.e., body mass index below 18.5). Fueled by increases in high-fat and calorie-rich diets, reductions in physical activity, and other environmental factors, there is also high and rapidly increasing prevalence of diabetes among adults in both rural and urban China (Yang et al., 2010), with the age-standardized prevalence 9.7% in 2007-2008 (20.4% among the elderly). Diabetes prevalence is higher among urban residents than among rural residents (11.4% vs. 8.2%), although the prevalence of pre-diabetes is greatest in rural areas (Yang et al., 2010).

As a result, China now faces a “double burden” of diseases, including those common in both developing and industrialized economies. Reducing behaviors that lead to chronic disease—including smoking, unhealthy diets, and sedentary lifestyles—will be key to reducing the burdens of future morbidity and mortality.

In addition and causally related to this epidemiologic transition, China has experienced rapid demographic transition from high mortality and high fertility to relatively low mortality and low fertility. The total fertility rate declined from around 6 in 1950-55 to around 2 in 1990-95, with the most rapid decline in the 1970s prior to the beginning of the one-child policy. The total fertility rate is now below replacement level (Peng 2011), and is likely to remain low even with the recent relaxation of China's strict family planning policies. As a result, China's population is aging rapidly. The 2010 census revealed a population of 1.34 billion, 50 percent urban and 13.3 percent above age sixty. The median age will exceed that of the United States within this decade, and the proportion aged sixty-five and above will increase to 25 percent by 2040, totaling 300 million strong (Peng 2011). How will the graying of China shape its rise? Eggleston and colleagues (2013) argue that demographic change—including gender imbalance and population aging and how they interact with rapid urbanization—will constrain how China copes with a slower rate of economic growth.

Moreover, as in many other middle- and high-income countries, improved health and survival in China no longer play a large role in increasing lifetime labor force participation and instead contribute to longer retirement lives. In a relatively young population at an earlier stage of the demographic transition, such as in India, health improvements reduce infant and youth mortality, keeping more people alive into their working ages. Of the increase in India's life expectancy over the past two decades, three-quarters accrued to those younger than age sixty-five. Just the opposite was true in sixteen European countries and the United States: more than 75 percent of increases in life expectancy came after age sixty-five (Eggleston and Fuchs 2012). China is catching up quickly: the share of years lived past age sixty-five as a percentage of increase in life

expectancy at birth was 52 percent for men and 41 percent for women in the most recent twenty-year period (Eggleston and Fuchs 2012). In only the most recent couple decades, China has shifted from a distribution of death rates with largest decreases in infancy to a distribution with the largest decreases after age 60—a shift that took place over a much longer period in the west (ibid). As a result, except for the poorest rural areas, improvements in longevity tend to lengthen retirement rather than working lives. Although grandparents do provide substantial childcare and other nonmarket services in China, the longevity transition implies a decrease in working years as a percentage of life expectancy and a challenge to social support systems because of the growing needs to finance medical care and pensions (Eggleston et al. 2013).

### ***Challenges to China's health system from the changing burden of disease***

China's health financing and delivery system—originally designed to control infectious diseases and treat episodic, acute medical conditions—needs to reorganize to emphasize primary and secondary prevention of chronic disease, patient education in self-management skills, and community-based primary care.

One strong challenge for China is addressing the underlying causes of health disparities. Controlling infectious disease often disproportionately benefits the poor. Managing chronic disease, by contrast, brings out differences in risk factors, affordability and ability to self-manage with sometimes complicated treatment regimens (e.g. for diabetes). The decrease in under-nutrition and the increase in over-nutrition have been most rapid among China's poorest. China's least advantaged are catching up rapidly in terms of “diseases of affluence.” The poor are less well nourished, less able to attend and concentrate in school, and most challenged to understand the importance of adhering to specific treatments. Educational gradients have been documented in China for prevalence of hypertension, diabetes, and pre-diabetes; having difficulties with activities of daily living; having depressive symptoms; micronutrient deficiencies and anemia; and general self-reported and objectively measured health. Thus, attention to educational and health disparities can jointly address root causes of social deprivation in China; with sufficient policy attention and rigorous evaluation of effective programs, such investments in the human capital of the vulnerable could have manifold returns for China's future social and economic development.

Despite the large returns to health and social well-being from investments in simple health interventions like vaccinations and improved primary health care, China's widening disparities in income and educational attainment translate into a wide disparity in healthy lifespan. Inter-generational transmission of relative deprivation further exacerbates this trend. Thus, while China confronts the “standard” health policy challenges of middle- and higher-income countries (such as robust health insurance coverage with sustainable financing), China must address the stagnation of health improvement among those most vulnerable. Recent reforms that significantly increased health insurance coverage are a notable step in that direction, but China's current separate health insurance systems for urban and rural residents offer modest financial protection from catastrophic medical spending and imperfectly cover the vast migrant or floating

population. In the decades to come, addressing inequalities in health and education and in the inter-generational transmission of human capital are likely to be even more important as China transitions to ever more human-capital-intensive mode of development (Eggleston 2012b).

Part of the problem facing China's health system stems from the administrative prices set for medical services in China, based on fee-for-service (FFS) payment, which does not necessarily align well with the goal of cost-effective management of chronic disease. Providers can make money by over-treating patients with costly diagnostic procedures (such as CT and MRI scans) and prescribing drugs, while skimping on unprofitable basic curative and public health services. The risks of this kind of supplier-induced demand – a controversial phenomenon documented to some degree in the U.S. and other high-income countries – are even greater in developing countries where consumers are more vulnerable vis-à-vis providers (except that wealth and liquidity constraints preclude many from following advice for expensive treatment). Moreover, China faces large opportunity costs of excessive spending on high-tech medicine, since the burden of disease is primarily in areas addressed cost-effectively with public health and lower-tech services. The unintended, but hardly unpredictable, supply-side reaction to distorted FFS reimbursement spurs cost escalation and exacerbates the very access problems that distorted prices were meant to prevent. I return to this issue in discussion of the recent and current initiatives for reform, below.

***If providers are “inducing” demand by overprescribing drugs, is this a public health crisis in the making?***

The incentive structure that underpins over-prescription of pharmaceuticals has a long social and cultural legacy throughout East Asia, not only in China. This propensity to over-prescribe certainly has severe and long-lasting implications for Chinese and the rest of the world—the most prominent example being the over-use of antibiotics and its threat to the global public good of antimicrobial effectiveness. “Supporting medical services through drug sales” (*yi yao yang yi*) has been widely criticized amongst mounting evidence that such financial incentives distort prescribing and contribute to rising expenditures. In one study, Currie, Lin, and Zhang (2010) audit the antibiotic prescribing behavior of hospital-based physicians in two cities and one rural area using student “simulated patients” during the 2008 and 2009 flu seasons. They find that Chinese physicians prescribe antibiotics for a startlingly high proportion of patients (averaging 62 percent), even when patients report symptoms that do not warrant antibiotics; and 39 percent of physicians still prescribed antibiotics when the simulated patients signaled to doctors that they knew that taking antibiotics would be inappropriate. These results provide strong evidence of physician-induced demand in China, with adverse consequences not only for medical spending but also for patient health and development of antibiotic resistance. They also illustrate the kinds of distortions introduced by FFS payment with higher fee margins for some services relative to others.

However, “public health crisis” suggests a sudden onset and devastating scope, such as a pandemic like the Severe Acute Respiratory Syndrome (SARS) crisis of 2003 or the

potential for an avian influenza pandemic. Over-prescribing of drugs in China is not a public health crisis in the same sense. First, it has long roots and has been ongoing for decades; second, the government reform policies have taken steps to ameliorate the underlying incentive structure (for example, by removing the drug profit mark-up from grassroots providers); and third, a case can be made that some important drugs are *under-*used rather than over-used in China, such as drugs to control blood pressure.

The public health challenge from over-prescribing goes beyond contributing to development of drug-resistant “superbugs,” because it leads to a pervasive and deep distrust of healthcare providers, with patients suspecting that they do not prescribe in the best interest of their patients. Especially for asymptomatic conditions like high blood pressure, patients may completely discount providers’ urging to take drugs, assuming that profit-seeking is distorting the physician’s judgment. While more research is warranted, I hypothesize that the over-prescribing “inducement” incentives of China’s physicians, combined with the real affordability problems of long-term drug adherence facing the less fortunate segments of China’s population, plays an important role in the low diagnosis and treatment of high blood pressure. This impact may be especially large, since hypertension is a leading risk factor contributing to the large burden of chronic disease in China.

Policy remedies are themselves complicated. Efforts to reduce over-prescribing can lead to patient dissatisfaction and reduced confidence in primary care, precisely when China’s health system needs to enhance confidence in primary care to reduce the over-crowding in large urban hospitals (e.g. Wang et al. 2011). Reducing primary care providers’ profits from drug sales (as under the Essential Medications List system introduced in the 2009 reforms) may reduce over-prescribing in primary care, but shift high-severity patients to higher-level providers, so that overall spending may even increase (ibid; and as Chen and Eggleston (2014) also found in a study of EML implementation in Shandong). More encouragingly, a recent study by Yip et al. (2014), based on a randomized experiment in Ningxia Province between 2009 and 2012, found that capitation payment with pay-for-performance helped to reduce prescribing of antibiotics and slightly reduced spending per visit to village posts, with no effect on other outcomes.

- **For many sectors of China’s economy, Western economists advocate privatization and liberalization. But as you note in your research, for example, private hospitals do not always outperform public hospitals in China. Moreover, after years of market reform, healthcare providers in China rely too heavily on drug sales. Can you outline the pros and cons of market reform in China’s healthcare sector? What might be the proper role of the state in improving healthcare delivery?**

The distribution of public, private for-profit, and private nonprofit health care providers in any given country reveals the tracings of history and ideology, with the evolution of ownership patterns heavily path-dependent. While there are identifiable benefits from

privatization and liberalization in many parts of the economy, most experts in the health sector agree that privatization and liberalization are no panacea or magic pill.

For China, rigorous evidence is lacking about differences in performance by private and government-owned healthcare providers, and what evidence is available provides a somewhat mixed story. This result is not surprising, since many factors aside from ownership are powerful determinants of provider performance, including the payment structure, competition, and regulatory context. For example, Eggleston and Yip (2004) calibrate a simulation model of the impact of China's 1990s ownership and pricing reforms on cost, quality and access. Both theoretic and simulation results show how providing implicit insurance through distorted prices leads to over/under use of services by profitability, which in turn fuels cost escalation and reduces access for the poor. The authors suggest that regardless of ownership structure, broadened insurance coverage and mixed payment are better options than continued implicit cross-subsidies through distorted FFS.

Based on economic theory as well as empirical evidence from a range of countries, a strong case can be made that the proper role of the government in healthcare includes regulatory oversight and promotion of population health services either through direct delivery or "contracting out" to assure access to basic public health services for the whole population. The role of government in personal medical services is less clear cut, as summarized by a systematic review that Yu-Chu Shen and I (in our 2007 and 2008 publications) completed synthesizing the conflicting findings in the voluminous empirical literature on differences between not-for-profit, investor-owned and government-owned hospitals. In pursuing this ownership meta-analysis, a key objective was to provide a comparative evidence base for policy debates about ownership structure in China and elsewhere. Consistent with that review and much of the international evidence, an empirical study of Chinese hospitals (Eggleston et al. 2010) found that public and private hospitals in Guangdong, China, were surprisingly similar once the analysis accounted for other important determinants of cost and quality such as size and teaching status.

Although China's recent health reforms call for non-discrimination against private providers, the legacy in China that the government directly owns and manages the most-reputable providers—the large tertiary and teaching hospitals in all China's urban centers—shapes the market niche of private providers. For example, Wang et al. (2013) find that residents in the communities served by private community health centers are of lower socioeconomic status (more likely to be uninsured and to report poor health), compared to residents in communities served by a government-owned community health centers. Government and private community health stations in Weifang, Shandong province did not statistically differ in their performance on contracted dimensions, after controlling for size and other characteristics.

Certainly one of the most challenging aspects of China's 2009 national health reforms has been the professed goal of reforming public hospitals. Improvement of governance structures for government-owned hospitals has the potential to clarify rights,

responsibilities, and accountability in such a way that could significantly improve the health system.

In terms of the locus of service provision, China has inherited a largely hospital-based delivery system managed through the Ministry of Health and local governments, supplemented by a vast cadre of village doctors and a newly developed system of grassroots providers in urban areas (Eggleston 2012a). Like many other health systems in Asia (including Japan and Korea), a large share of outpatient visits, even for relatively minor conditions and first-contact care, is to secondary and tertiary hospital outpatient departments.

China's recent reforms promote development of a primary health care system of "grassroots providers," strengthening the quality and funding for village clinics, township health centers, urban community health centers, and launching a new program for GPs designed to bring "barefoot doctors" into the 21<sup>st</sup> century in terms of training and quality.<sup>4</sup> The effort to build up a reliable network of non-hospital-based primary care providers is a difficult and long-term process, since patients have a well-founded distrust of the quality of primary care providers. Unlike in some other developing countries, however, China does not face the same challenges of rampant absenteeism and crumbling infrastructure.

China's hospitals, and a large share of its grassroots providers, are government owned and managed. The latest available statistics, covering January through October 2013, show that government hospitals accounted for 90% of inpatient discharges and 89% of outpatient visits (although government hospitals account for 55% of hospitals).<sup>5</sup> Government-owned provider organizations also account for the majority of services at the grassroots level, including 90% of visits to community health centers and stations and 99% of visits to township health centers, although almost half of all visits to grassroots providers were to village clinics, most of which are private.

Arguably more important than ownership per se is the structure of governance (who appoints the managers, whether there is a board, how the hospital interacts with the local health department and other agencies of the municipal government), as well as the incentives of the hospital's payment system and regulatory environment. For example, a "purchaser-provider split" (or in China, "separation reform") can be key in differentiating the roles of government agencies as regulatory bodies versus owner/managers of local government hospitals. These reforms can be viewed as an important constituent component of China's overall reforms of public service units (PSUs) and state-owned enterprises (SOEs). Several cities have established hospital management organizations as separate units from the department of health. These non-profit corporate entities contract with the health bureau for hospital services. Shanghai's reforms along these lines were

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<sup>4</sup> The official definition of "grass-roots health care institution" includes community health centers, community health stations, sub-district health centers, village clinics, freestanding outpatient departments, and other clinics.

<sup>5</sup> See the National Health and Family Planning Commission website for current statistics, such as <http://www.nhfp.gov.cn/mohwsbwstjxxzx/s7967/201312/b9d67fd3299241ed990084ad5acc11e8.shtml>.

pioneering; Beijing and several other cities (e.g. Suzhou and Wuxi in Jiangsu province; Weifang in Shandong province; Chengdu in Sichuan province) have adopted variants of these governance reforms for public hospitals. Whether these reforms will succeed in their professed aims without unintended effects has yet to be determined, although some early evidence seems encouraging (Liu and Ke et al. 2014).

Regarding the role of the state, government investment in prevention and population health services is critical, as well as regulation of qualifications of primary care providers so that patients have confidence in the quality of their services. Primary care needs aligned incentives to be the quality foundation for a health system, especially with population ageing and need for cost-effective management of patients with chronic disease.

Although ownership form has not been found to be the primary determinant of health provider performance, there is some evidence of more alacrity among private providers in responding to incentives (for good and ill), and of a more severe “soft budget constraint” (Kornai 1986) phenomenon among government-owned providers.<sup>6</sup> There can be benefits of contracting with public and private providers on an equal basis, if outputs and outcomes can be clearly defined and evaluated.

- ***Kan bing nan, kan bing gui* (inaccessible and unaffordable healthcare) is one of the top concerns of ordinary Chinese. Which groups are most affected? If this is a global problem, what lessons can we learn from China?**

The ubiquitous slogan “*kan bing nan, kan bing gui*” (getting health care is difficult and expensive) captures the average Chinese patient’s concern about access to appropriate and high-quality care. Indeed, surveys consistently shows that this “*kan bing nan, kan bing gui*” problem is one of the top concerns of ordinary Chinese. Alongside issues of affordable housing and education, healthcare is one of the contributors to China’s high savings rate, and families rely on “precautionary savings” to allay the concerns that they may be only one major hospitalization away from illness-induced poverty. The most affected groups are the poor (with the least cushion from catastrophic medical spending and the highest risk of foregoing medical care recommended by medical professionals because of affordability), as well as the rural population and the large “floating” population of migrant workers. Their social benefits are least generous, albeit improving

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<sup>6</sup> In “Soft Budget Constraints in China: Evidence from the Guangdong Hospital Industry,” Eggleston and co-authors ask a simple question, using data on about 300 hospitals in southern China over the early 2000s: Are hospitals that were struggling financially in previous years more likely to receive government financial support in subsequent years? Yes, according their analysis: controlling for hospital size, ownership, and other factors, the probability of receiving government financial support is inversely associated with the hospital’s previous net revenue. This is consistent with soft budget constraints. However since the sample is not nationally representative and is now dated, given the rapid pace of change in China, further studies of this nature are warranted. In the future it would be important to examine not only the extent of hardness/softness of hospital budget constraints, but also the impact on how hospitals operate and the outcomes for their patients.

over time, and thus they are most vulnerable to the uncertainties from loss of health and livelihood, compounded by large out-of-pocket payments for medical treatment.

Before the 1980s, universal affordable basic health care had been provided in rural areas by the Cooperative Medical System (CMS), a government insurance scheme for government employees and teachers. In urban areas, employees and their dependents received their health care through firm-based schemes. CMS covered 90 percent of the rural population in the late 1970s (Yip and Hsiao 2008). As a result of rural economic reform in 1979, CMS disappeared, and 90 percent of peasants suddenly became uninsured. In urban areas, a social health insurance scheme financed by employer and employee contributions replaced the previous government and worker schemes, but only formal employees, not their dependents or migrant workers, were eligible (Yip and Hsiao 2008; Eggleston 2008). In 2006, only 27 percent of urban residents received coverage under the scheme (Ministry of Labor and Social Security 2007).

Under this system, the average cost of a single inpatient episode represented 60 percent of annual household per capita consumption (Wagstaff and Lindelow 2008). According to one study, health care expenditures in the early years of the 21<sup>st</sup> century led to the impoverishment of 5.2 percent of China's households, or 67.5 million people, disproportionately in rural areas (Evans and Xu 2008). Out-of-pocket payments have been common even for preventive public health services (Wagstaff and Lindelow 2008).

The structure of China's health expenditures has changed significantly since dawn of the 21st century and introduction of government-subsidized social health insurance programs. Patients' out-of-pocket spending peaked in 2001 at 60 percent of total health expenditures in China, subsequently declining to 34.9 percent of health spending by 2011 (2012 Health Statistical Yearbook). The ratio of urban to rural per capita health expenditures decreased from 4.09 in 1990 to 3.09 in 2011. Nevertheless, that urban residents spend more than 3 times what rural residents spend on health care represents a large disparity, as large if not larger than that of urban and rural incomes (depending on how incomes are measured).

To gain an understanding of the *Kan Bing gui* (unaffordable healthcare) problem, consider the average spending for an inpatient admission in China was 4733.5 RMB yuan in 2007, rising to 6632.2 RMB yuan in 2011 (according to the China Health Statistical Yearbook 2012). Such a hospitalization represented 32% of average urban income, and 82% of average rural income, in 2007. By 2011, an average hospitalization represented 28% of urban and 67% of rural average per capita income. Even with part of those expenditures now covered by health insurance, these figures illustrate the large risk that households still face regarding medical spending in China. Compare these figures to the US, where in 2010 the average hospitalization cost of about \$9700 represented 24% of average per capita personal income, and insurance would cover a larger share of that hospitalization expense for the average household.

Further strengthening of quality, and encouraging greater access through deeper health insurance coverage, would increase healthcare expenditures further in China, highlighting the importance of simultaneous efforts to control cost.

To a certain extent, of course, “*kan bing nan, kan bing gui*” (inaccessible and unaffordable healthcare) is a global problem. The remarkable capabilities of medicine and new technologies to improve quality of life and extend life come with an increasing price tag. Most economies are struggling to make quality care accessible with sustainable financing. And China’s challenge in this regard is especially daunting because of the large population, the dramatic regional disparities, and the rising expectations of a generation that has only known rapid economic growth and improving living standards.

China’s success in reaching almost universal health insurance coverage at a relatively low per capita income level does have lessons for many developing and middle-income countries attempting to achieve financially sustainable universal coverage. But as the Chinese authorities themselves acknowledge, basic coverage is only the beginning of a long process, an incremental achievement along the way to an accessible and affordable health system that meets the reasonable expectations of China’s population. Strengthening the risk pooling of health insurance, filling in the remaining gaps in coverage for selected groups and catastrophic diseases, and reforming healthcare delivery to improve “value for money” will all be critical. And health sector reform in turn can be a critical link as China rebalances its economy toward greater domestic consumption, reducing precautionary savings and investing in the human capital needed for China to avoid a “middle income trap” and continue robust if more moderate economic growth.

As I have argued elsewhere (Eggleston 2013), China’s health system challenges need to be understood against the global backdrop of medical technology innovation and the difficult social trade-offs implied by China’s current stage of economic development. The ultimate success or failure of China’s health system reform process lies not with the broad outlines of reform, as important as those are. Rather, “the devil is in the details,” especially regarding governance and incentive structures. To truly resolve the *kan bing nan, kan bing gui* problem, policymakers must pay close attention to payment incentives (including provider reliance on drug dispensing revenue, or *yi yao yang yi*), quality assurance, efficient insurance management, accountability, patient satisfaction, and responsiveness.

Increasing government financing and achieving risk pooling on a national scale, while tremendously important and laudable, are only half of the solution. Without reform of the payment and delivery system, the financing reforms will not be sustainable. Patients’ ability to pay out of pocket put some demand-side constraints on the system, but as insurance coverage expands, those constraints will loosen. The difficult task of constraining health expenditures will then fall to the organized payers: social insurance schemes and policymakers allocating tax financing.

The rhetoric in China tends to oversimplify and sometimes directly blame providers for exploiting asymmetric information to manipulate patients and thus inflate health-care

expenditures. Just as it is wrong to say that providers are immune to economic incentives, it is equally misleading to allege that supplier-induced demand is the only factor driving healthcare spending increases. China's access problems extend beyond the greed, incompetence, or malfeasance of some "bad apples"; analysts' and patients' ire would be better focused on system-wide incentive problems, though these are not easy to capture in media sound bites or policy statements.

- **The pharmaceuticals industry features in China's Medium and Long-Term Plan for Science and Technology (2006-2020), as well as in more recent measures to promote indigenous innovation and industrial upgrading. Is it fair to say that the Chinese government is prioritizing domestic pharmaceutical companies, which foster economic growth, over the welfare of patients?**

It might be fair to say that some agencies within the Chinese government prioritize domestic pharmaceutical companies' development to foster economic growth and innovation, while other agencies within the Chinese government prioritize the welfare of patients and access to pharmaceuticals. But whether policies to date and going forward unambiguously favor one over the other is not as clear. Indeed, the development of affordable domestically-produced generic medications is not contradictory to the goal of improving patient welfare, and the tensions inherent in that relationship can be managed in many economies (including our own) with patent protection and pricing rules.

There is a perennial balancing act of providing access to medications and incentives for innovation. At a given point in time, it is efficient and equitable to provide access to therapeutically beneficial drugs to all patients for whom the benefit exceeds the low user-specific marginal cost. But maximizing access in this way is also myopic. Over time, it is efficient (and, many would argue, equitable) to invest in innovations that bring benefits to patients in the future. Indeed, without past innovation, there would be no current access. The dilemma arises because promoting innovation—dynamic efficiency—requires a price high enough to cover the joint sunk costs of R&D and some return on investment, whereas promoting access—static efficiency—requires a price low enough to cover only user-specific marginal costs. No pricing policy can achieve both goals simultaneously. This access-versus-innovation dilemma is not an equity-versus-efficiency trade-off, even though some observers frame it as such. In fact, one can argue that promoting access is efficient and promoting innovation is equitable.

Fostering indigenous innovation and industrial upgrading in China can have benefits for patients in the long run if the short-term trade-offs are acknowledged and the welfare of China's poorest patients is kept to the fore in China's overall policymaking. The trade-off is not the same as the global one of access versus innovation, because it is focused on the industry structure and domestic versus multinational market share for a given innovation, rather than overall incentives for innovation per se. Just as India's generic pharmaceutical industry has helped with global access to drugs for the developing world – but has not

solved the challenges of access for all of India's own poor – so too can appropriate development of China's pharmaceutical industry contribute to better access. Certainly it is myopic to push prices so low that the quality of medications suffers, and some innovations in China based on traditional Chinese medicine—such as artemisinin-based combination therapy for the treatment of *P. falciparum* malaria—have made significant contributions to Chinese and global health.

- **What were the major successes and failures of the 2009 healthcare reforms? How have those reforms been supplemented by more recent measures (e.g. last November's Third Plenum)?**

### *The 2009 healthcare reforms*

The five articulated goals for China's national health reforms during 2009-2011 were extending basic health insurance coverage to 90% of the population, expanding the public health service benefit package, strengthening primary care, implementing an essential drug list for all grass-roots service providers (including separation of prescribing from dispensing in primary care), and piloting reforms of government-owned hospitals.

Patients' financial burden, in terms of out-of-pocket spending as a share of total health expenditures, increased significantly to a peak of 60% in 2001. The government emphatically reasserted its role in the health sector with government-subsidized basic health insurance in rural areas (the New Cooperative Medical Scheme, NCMS) starting in 2002/03, the government subsidized urban non-employee insurance program (Urban Residents Basic Medical Insurance, URBMI) starting in 2007, and further national health reforms announced in 2009. These voluntary government-subsidized programs of NCMS and URBMI have lower premiums and less generous benefit packages than the mandatory and longer-standing insurance programs for urban employees and government workers. China has expanded risk pooling through "wide but shallow coverage" that is gradually deepened over time to achieve universal coverage with a more robust benefit package.

One of the major successes for the 2009 healthcare reforms was to provide basic health insurance coverage to more than 800 million people. Other aspects of the 2009 reforms, especially the initiatives to strengthen government financing of population health and primary care, have made significant strides. Probably the least successful reforms, and hence the current focus on the next phase of reforms, was the effort to reform the governance of public hospitals.

It is worth noting that China's remarkable progress with health insurance expansion since 2003 may have been spurred by the SARS crisis, and these reform successes came at a time when many China analysts agree that there was a lack of meaningful deepening of overall economic reforms.

China has also announced that a general practitioner (GP) system will be implemented throughout China by 2020. Policies aim to improve GP capabilities in clinical practice, standardize criteria for training, and create strict requirements for licensure and certification. The plan calls for two or three GPs in practice for every 10,000 urban and rural residents. The government will provide subsidies to GPs who are willing to work in remote areas in the central and western parts of the country. The initiative also envisions enabling local residents to establish stable contract-based ties with GPs to receive appropriate and coordinated services.

China has achieved wide, shallow coverage, and is proceeding to deepen coverage while putting in place additional mechanisms to try to assure that the additional health spending achieves “value for money spent,” including improvements in personnel training, provider organization governance, clinical service delivery, payment and contracting, and population health services.

China’s 2009 health reforms recognize the need to improve incentives throughout the health care system (Yip et al. 2013). For example, a key component of plans to strengthen primary care is improving the performance appraisal system for health workers, starting with government-owned primary care organizations. Furthermore, authorities have urged experimentation with case-based payment methods for inpatient services, focusing on medical conditions that have clearly defined clinical pathways and health outcomes. Some of the government documents explicitly mention the problems arising in pilot implementation, calling for better supervision and oversight [for example]: “health service providers cannot turn away [refuse to treat] high-cost patients, or without cause reduce length of stay or split treatment across multiple admissions.”<sup>7</sup> Clearly, at least some providers have responded to the incentives of case payment in the pilots by actively selecting profitable patients, discharging “quicker and sicker,” and/or discharging and re-admitting patients so that they can bill for multiple admissions within the fixed case payment ceiling per admission.<sup>8</sup> Although complicated, these problems are not insurmountable, and as implementation experience accumulates, the necessary regulatory context will gradually lay the foundation for mixed provider payment methods to spur better quality care with greater efficiency. Careful evaluation of China’s few experiments with pay-for-performance would also make a contribution to making the health system sustainably affordable while still promoting improved quality of care.

### ***The Essential Medications List (EML) policy and prescribing incentives***

Physician dispensing and provider reliance on revenue from drug sales have deep historical and cultural roots in East Asia.<sup>9</sup> Supporting hospitals through drug sales (*yi yao*

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<sup>7</sup> See <http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohbgt/s7692/201104/51217.htm>.

<sup>8</sup> See <http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohbgt/s7692/201104/51217.htm>.

<sup>9</sup>Eggleston (2011) develops a model predicting physician-dispensing prevailed until the perceived social cost from supplier-induced demand outweighed the benefits of the previous self-reinforcing equilibrium, inspiring search for ways to change provider incentives, as embodied in the current EML policy and public hospital reform. The proposition predicts that China will adopt more rigorous separation policies as it commits to universal coverage and (gradually) replaces demand-side constraints with supply-side constraints on spending.

*yang yi*) has been widely recognized as a problem in China, decried by the former Minister of Health, and was the explicit target of the EML policy reforms. Since at least the 1950s, China's health care providers receive between 15% (the official mark-up) and 40% or more of the retail price of pharmaceuticals that they directly dispense to patients. These margins became significant determinants of provider behavior when prospective budgets declined under the 1980s and health care providers had to earn profits to remain operational.

China's EML policy includes several components.<sup>10</sup> First, the policy required government-owned primary care organizations to implement a zero mark-up policy for dispensing drugs to their patients, and they were proscribed from dispensing drugs not included in the EML. Most local governments allowed providers a transition period in which they could continue to dispense non-EML drugs and retain some drug dispensing revenue.

Second, EML policies required more generous insurance coverage for EML drugs than non-EML drugs. This component of EML involves changing the benefit package of social insurance.

Third, the national EML policy implemented in March 2010 set guiding retail prices and called for provincial-level bidding for medications listed in the national essential medications list.<sup>11</sup> These supply-side reforms may have reduced the price of EML drugs through changing the industrial organization of the drug market.

Statements by China's officials praise EML as helping to control spending, enhance access, reduce over-prescribing and thereby improve quality of care.<sup>12</sup> However, the health economics evidence is mixed. Several studies showed that instead of increasing utilization in primary care, after EML many patients with more complicated conditions were referred to higher-level providers (Yang et. al., 2012; Wang et. al., 2012; Ye et. al. 2011). Patients may also self-refer to hospitals if they perceive EML medications to be inferior quality (Sun et. al., 2011). Whether from provider selective referral or patient self-referral, utilization at primary care providers in many cases appears to have decreased (Li et. al., 2012), while the number of inpatients in county hospitals and higher-level hospitals increased (in Anhui, by 18% on average; Sun et. al., 2012). Similarly, Tian and colleagues (2012) suggested that after EML implementation, more patients received care at hospitals and spending per visit continued to increase, albeit with some moderation in the out-of-pocket share of per-visit spending. The evidence is limited

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<sup>10</sup> This section draws extensively from Chen and Eggleston (2014).

<sup>11</sup> Provinces could add medications to their own province-specific EML, if they also provide subsidies to compensate provincial government-owned primary care providers for those additional lost revenues. On average provinces supplemented the 307 medications on the national EML with 207 additional medications (Tian, Song, and Zhang 2012).

<sup>12</sup> For example, Minister of Health Chen Zhu stated in a 2012 interview that EML policies clearly reduce people's burden of drug costs, and that prescriptions for antibiotics, stimulants, and intravenous infusions as a percentage of total expenses for outpatient and inpatient care have all declined in varying degrees (Cheng 2012, p.2538 and p.2539).

by several weaknesses of previous study designs, and ongoing study of the EML policy implementation will help to clarify its relative benefits and correct disadvantages of the policy design. While overall the goal of removing profits from drug dispensing is laudable, it is far from clear that the EML has successfully accomplished this goal, and it remains unclear how prescribing incentives for China's largest drug dispensers, hospital-based physicians, will be reformed. Perhaps the most promising approach is through broader provider payment reform (such as toward clinical-pathway case-based payments combined with appropriate quality bonuses and evaluation structures).

### *More recent reform measures*

The most recent measures call for pushing ahead with the reforms previously articulated, to strengthen the parts of the system (such as social health insurance coverage) that have worked well and to further improve the parts of the system (such as quality and “value for money”) that are fundamental to reaching China's goal of a truly equitable and efficient basic healthcare system by 2020. It is too early to say which of the many initiatives mentioned—from enhancing access for private providers and promoting long-term care services for the elderly, to consolidating the essential medications list system and strengthening effectiveness of government regulatory oversight—will thrive, capturing the attention of central and local officials and defining the next phase of China's health sector reforms. But there are reasons for cautious optimism.

Recent policy statements reveal considerable continuity with earlier-announced reforms, with an injected sense of urgency given the overall reform milieu. An NDRC policy statement released in October 2013 called for more involvement of the private sector in health and long-term care services, and explicitly set a goal for increased spending on the health and long-term care industry in China. General Secretary of the Communist Party of China (CPC) Central Committee Xi Jinping, in his address to the third Plenary Session of the 18th CPC Central Committee in November 2013, emphasized that “reforms must be accelerated in the social sector including education, employment, income distribution, social security and public health.” The Report on China's economic, social development plan adopted on March 13 by the 12th National People's Congress<sup>13</sup> emphasizes that the government launched “a pilot program of insurance against major diseases for rural and non-working urban residents in 28 provinces, autonomous regions and municipalities directly under the central government, and carried out trials on comprehensive reform in over 1,000 county-level public hospitals”; that “the social security system will be improved” and “basic public services will be made more equally available”; that the government “will expand the comprehensive trial reform of public hospitals, and consolidate and improve the system of using basic medicines and the new operating mechanisms of community-level medical and health care institutions” as well as expand “trials to comprehensively reform services for the elderly”; and that the government “will move faster to open banking, education, culture, medical care and other services to foreign investment in an orderly way.”

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<sup>13</sup> [http://www.china.org.cn/china/2014-03/15/content\\_31797508.htm](http://www.china.org.cn/china/2014-03/15/content_31797508.htm)

Downloaded 17 March 2014.

Emphasizing improvement in rural drinking water quality, especially to provide safe drinking water to all rural residents in the next 2 years – as mentioned in the government work report by Li Keqiang in the section on agriculture – may have just as large if not a larger impact on rural health than any of the health-sector-specific initiatives. Similarly, the targets mentioned in the section on “effectively promote ecological advancement,” such as making polluters accountable for the pollution and environmental damage that they cause, may have significant positive impact on health if effectively enforced.

The National Health and Family Planning Commission meeting reviewing the “*Liang Hui*” results in March 2014 emphasized (1) assurance of high-level policy support for continuing health reforms; (2) reform of government-owned hospitals as a top priority, expanding the pilot reforms of county-level hospitals to 1000 counties nationwide; (3) strengthening the EML and “new operations of the grassroots providers” reforms, having to do with removal of drug dispensing revenues, as well as improvements in incentive and evaluation structures for health care personnel; (4) raising the government subsidy for NCMS to 320 RMB per capita per year; (5) increasing the per capita government subsidy for population health to 35 RMB per year; and (6) seeking to improve patient-physician relations through a better process for dispute resolution and medical malpractice.

Interestingly, these statements do not emphasize insurance program mergers or enlarging risk pools, although some provinces have announced plans to merge the city-level non-employed (URBMI) and rural (NCMS) health insurance systems. In Shandong province, for example<sup>14</sup>, integration will take place by municipality, thus starting to aggregate the health insurance system across urban and rural areas by at first equalizing benefits across urban and rural areas of the same sub-provincial administrative region. A guiding principle is that insurance benefits for the urban (non-employed) residents should not decrease – so reforms may entail a significant increase for rural areas for some regions. During the transition, residents may choose between 2 or 3 different benefit levels with different premium contribution rates (although with similar proportions of government subsidy), so that rural residents may still choose the lower coverage if so desired. Whether any urban residents would choose the lower level – and whether that option may encourage migrant workers to enroll and gain coverage whether in urban or rural areas – is not yet clear, especially since the unification so far is only in a given sub-provincial level, and many urban-rural migrants migrate further away, including across provinces. Such initiatives may signal the way for later unification of health insurance risk pools at the prefecture and provincial level, which would significantly streamline administration and raise the level of risk pooling to spread medical risk across much larger populations. Eventually, China may merge employee and non-employee insurance at the municipal level, but that will be even more challenging since the employee insurance plans typically are far more generous and in principle are compulsory, whereas enrolment in NCMS and urban resident’s insurance is voluntary.

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<sup>14</sup> See <http://sd.sina.com.cn/news/s/2014-02-15/091356848.html> and [http://www.zgylbx.com/ngocejwhnew60352\\_1/](http://www.zgylbx.com/ngocejwhnew60352_1/); accessed 24 March 2014.

There are at least two large challenges for China's health system ahead: reforming the distorted incentives structure of health service delivery (as mentioned several times above); and addressing the disparities of access and life opportunity that lead to wide gaps in health and longevity between the advantaged and the disadvantaged. According to analysis of the 2000 census of China, college-educated Chinese in year 2000 could expect to live 12.5 years longer than Chinese with no formal schooling (Li et al. 2004). Cai (2009) analyzes disparities in life expectancy across counties in China, using county-level life tables that he carefully estimated from 2000 census data (Cai 2005). He finds that the average years of schooling in a county is one of the strongest correlates of life expectancy, controlling for demographic differences, GDP per capita and other factors. A one standard deviation increase in average years of schooling is associated with an increase of 0.38 standard deviations—about 1.4 years—in life expectancy (Cai 2009, p.146). Analyzing recent large and nationally representative data, Chen, Eggleston and Zhou (2014) find that China exhibits a significant educational gradient in health and survival. Although these are correlations, not causal impacts of education on health, the estimates point to the double disadvantage of those with low education, and suggest synergies in policies that foster both aspects of human capital.

There are also risks of stagnation and crisis. Perhaps most plausible is the possibility of crowding-out policymakers' attention with the initiatives in other areas of social services and broader economic reforms, leaving the health sector to putter along with smaller innovations and failing to address key underlying distortions – until, perhaps, another public health crisis brings those weaknesses too much to attention to be ignored. However, I think cautious optimism is warranted. Broader reforms of the economy – especially the balancing toward greater domestic consumption as a driver of sustainable economic growth – will contribute fundamentally to improving the socioeconomic basis and policy context for China's health sector, and may help to lay the foundation for reaching true universal coverage. With renewed effort toward reforms, China's health sector may host greater experimentation and systematic evaluation of different reform approaches. If taking place under a uniform basic safety net and access to basic population health services, local experimentation can avoid “one size fits all” policies that dampen prospects for delivery and financing innovations to improve quality at a reasonable cost.

Finally, reforms in the health sector are inter-related with other reforms in China's safety net, social protection, and strategy of economic growth. Improved health insurance can reduce precautionary savings and contribute to domestic consumption as a driver of economic growth. Improvement in pensions—such as the recent announcement of consolidation of rural and urban basic pension systems—can impact household decisions about health care use for the elderly as well as trickle down to enhance the welfare of the middle-aged and younger generations. For example, in a recent study on the intergenerational impact of China's new rural pension program using a fuzzy regression discontinuity design, Eggleston, Sun and Zhan (2014) find that China's new rural pension program enhances confidence in healthcare access, and promotes migration of labor and off-farm employment in this rapidly aging and urbanizing society. Pension-eligible elderly are more confident that they will be able to be hospitalized if recommended by a

doctor, even though self-assessed health and health insurance coverage do not change at the pension-eligible age threshold.

- **What aspects of China's healthcare reform should the U.S. government and U.S. companies pay most attention to? Are there any recommendations you would make to Congress?**

That the USCC takes the time and effort to understand the background of China's tremendous health system challenges is itself a sign of giving appropriate attention to critical issues facing China's development, with implications that spill over to the region and to the world. While many specific issues require greater study before specific policy recommendations can be made with an ample evidence base, there are several arenas where the U.S. government and U.S. companies can play a positive role in enhancing the well-being of those on both sides of the Pacific.

One small but important example comes from the U.S. National Institutes of Health support of new data collection in China, the pioneering China Health and Retirement Longitudinal Study (CHARLS). The NIH support sends a clear signal about evidence-based policymaking and transparency in the collection and sharing of data. This new nationally representative dataset is not only harmonized with similar datasets around the world based on the seminal Health and Retirement Study in the US; the CHARLS data is also setting a new example in China for public release of de-identified data so that researchers need not have close *guanxi* connects to access data, as has been the standard in China to date for most other large and current datasets.

We can also demonstrate the value we place on rigorous ethical review of proposed studies of health interventions and patient privacy issues, as for drug and medical device clinical trials.

In a similar spirit, U.S. companies doing business in China should be open and transparent in their business dealings. There are remarkable opportunities for bringing quality care to China's growing middle class, especially at the nexus of health care and long-term care to serve China's burgeoning number of elderly. U.S. government policies and U.S. companies might demonstrate through their actions that private sector involvement in the health sector can bring benefits to the poor, not merely target the wealthiest segment of the market. And firms should be open to working with government agencies to help shape appropriate regulatory structures, while firms experiment in arenas with currently murky regulation (such as home healthcare).

In another example, on a topic that will be covered in more detail in the subsequent panels at today's hearing, Michael Santoro and Caitlin Liu (2009) examine the complexity and ineffectiveness of drug regulation in China. After discussing recent reforms in drug regulatory structure and evaluating their likely impact, the authors conclude that both China's regulatory system and the current bilateral efforts between China and the United States to provide further regulation may be inadequate to assure drug safety and quality. Santoro and Liu propose reforms to make the pharmaceutical

supply chain more transparent, hold responsible parties accountable, and improve safety for global consumers. Both Chinese and U.S. citizens will benefit from efforts to enhance the supply chain of pharmaceuticals in China and avert public health threats from unsafe ingredients.

Thank you for the opportunity to testify today.

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