Essays in Household Finance in China

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by

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Abstract

This PhD thesis presents three novel essays on household finance in China, using the Chinese Household Finance Survey (CHFS) data of 2013 and 2015. Its identification strategies involve quasi-experimental methods to identify the effects of social, education, and economic reforms on household financial outcomes later in life, along with an inquiry on the impact of financial inclusion and formal financial market participation on the well-being of the Chinese population. All three essays are novelties in the related literature and the use of the CHFS. They offer insights to the academic literature and policy making, regarding the importance of future reforms to household finances and well-being. Reforms that emphasize on the development of skills related to financial knowledge, reforms that aim to strengthen the financial resilience of the Chinese population, and reforms that are conducive to formal financial market participation and behavioural change are likely to be conducive to sustainable development in the Chinese economy, inequality reduction, and welfare enhancement among the Chinese.

The first essay examines the effect of education on financial market participation and portfolio choice in China. The identification strategy uses the exogenous variation in years of compulsory schooling that arose from a major reform in the late 1980s, combined with the overlapping single-child policy of 1980, which applied financial constraints on school attendance for noncompliant households. Using a fuzzy regressions discontinuity design that instruments the years of schooling with reform exposure, I find that schooling has a large influence on participation in markets for stocks and risky assets, amounts invested, and portfolio diversification. The effects are larger for males and for residents of urban regions. Causal mediation analysis suggests that increased financial literacy and the decline in Confucian norms of filial piety are the potential channels of transmission through which education affects household financial behavior. The results highlight the importance of educational, social, and market reform in a *sui generis* environment of limited household participation in financial markets.

The second essay investigates the effect of early life exposure to local financial markets using the reform of special economic zones and coastal cities (SEZ) in China that led to differential development of financial markets across Chinese cities. I find that individuals who were still at school during the time and after the reforms are more likely to access finance from formal financial institutions, compared to a control group of individuals born in non-SEZ regions and those who were at post-schooling age during the reforms. Those exposed to local financial institutions early in life are less likely to obtain finance from informal sources and have lower informal-to-total finance ratios. Using difference-in-difference estimation, I find a large significant impact of growing up with finance on financial market participation, in terms of stock and risky-asset ownership and holdings, as well as on portfolio diversification. The effects are stronger for individuals who grew up and currently live in SEZ regions, compared to those who moved there from other parts of China. The inquiry suggests that higher financial literacy mediates the effect of early life exposure to financial institutions among individuals living in SEZ regions. The mediating effect is higher than that of financial risk tolerance, peer effects on social interactions, and filial piety, inter alia.

The third essay examines the relationship between financial inclusion and happiness in China, I find large effects of financial inclusion on subjective well-being, and those effects are robust to specifications with regional macroeconomic indicators and relative income as well as the usage of proxies for formal and informal finance. The instrumental-variable estimates suggest that the financially included are 10% -20% happier on average, with the financially excluded being 30% - 40% more likely to be unhappy. Causal mediation analysis suggests that financial resilience, in terms of higher liquid-asset ownership rate, is the channel that explains that relationship between financial inclusion and well-being in China.

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Dedications

“This work is dedicated to my parents who gave me my life and strength

To Baron and Cupid, who completed my soul and life”

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This thesis is the culmination of a long and arduous journey, one that I have only been able to make a result of the dedicated support I have received from so many people along the way. On finishing the last word of my doctoral thesis, I see a heart filled with gratitude beating inside my chest.

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Declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation work, entitled "*Essays in Household Finance in China*", has been composed by myself; that it has not been submitted for any other degree at the University of Glasgow or any other institution.

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Chapter 1

Introduction

The research field of household finance is widely regarded as one of the newest and most integral aspects of accounting, finance, and economics, receiving substantial research attention as many empirical and theoretical studies have attempted to explore how households use financial markets to achieve their objectives in recent decades (Guiso and Sodini, 2013). According to Gomes *et al.* (2021), the importance of household finance is highlighted by the influential role in which households contribute to the understanding of finance, representing pivotal decision-making agents that affect the volumes of direct and indirect investment within financial markets, ultimately dictating the productive corporations and flows in the economy. Alieva (2021) further expanded on the importance of household finance by evaluating the impacts of household financial decisions on boosting economic growth, stating that household finance forms the fundamental basis of the modern financial system, allowing policy decision makers to predict short term economic trends through evaluating the nature of mainstream household financial behaviours. From a research perspective, Gomes *et al.*, (2021) argue that it is of great research importance to gain further understanding of household finance, as the dominant research trend in finance and economics studies was almost exclusively focusing on studying financial markets, non-financial corporations, financial institutions and related intermediaries, whereby households have traditionally been modelled as simplistic representative agents or as exogenous noise traders, neglecting their due importance.

In recent years, the importance of household finance is increasingly recognized beyond the lens of mainstream economics, as it is found to have a positive relationship with gender equality (Guiso and Zaccaria, 2021), the development of national culture (Breuer and Salzmann, 2012), food insecurity (Chang *et al.*, 2014) and subjective well-being/happiness levels (Qiao and Cai, 2021), highlighting its wide-reaching influence across multiple domains. Furthermore, Gomes *et al.* (2021) argue that the importance of studying household

financial decision-making has become a strategic priority across the international political landscape, enabling policy decision makers to gain practical insights on the causes of income and wealth inequality measured via household finance, facilitating more effective solutions to address fundamental societal challenges through obtaining a better understanding of household finance. The general research consensus confirms that household finance represents a highly complex, interdisciplinary and heterogenous field that directly impacts the functioning of every country's own financial system (Badarinza *et al.*, 2016), raising the need for research to obtain further and country-specific knowledge of household finance, as important for, e.g., the design of unique pension plans to encourage retirement savings investment decisions (Bommier *et al.*, 2017), the stimulation of desired macroeconomic outcomes and asset price determination through influencing household finance decisions (Antonides, 2015).

As the world's second largest economy that has experienced several decades of rapid economic growth, the Chinese economy and its households have drastically shifted from a state owned and centrally-planned model to a socialist market economic model, driven by increasing levels of economic liberalization and private capital investment upon the initiation of its major economic reform in 1978 (Ding, 2009). As a result of the shift in the economic system, China's middle-class households have increased from a 3.1% share of the total population in 2000 to 59.8% in 2018, demonstrating a drastic 56.7 percentage-point increase that has lifted hundreds of millions of Chinese households out of poverty and into a burgeoning middle class (China Power, 2022). Subsequently, the importance of household finance in China has become one of the leading research fields as many scholars have attempted to explore the exponential change in Chinese household financial behaviours (Liu *et al.*, 2020; Zhang, 2016, Qiao and Cai, 2021), investigating how Chinese households are engaging in investment behaviours throughout decades of surging economic growth where financial markets have rapidly evolved and the spending power of Chinese households has vastly increased. Additionally, it is estimated that over $5.6 trillion USD are spent by Chinese households per year with forecasted growth to $12.7 trillion by 2030 according to a report by Morgan Stanley (CNBC, 2021). These figures denote the country ranking second

in consumer/ household expenditures, behind the US. Hence, the importance of understanding household finance in China is of primary standing for both the academic and practitioner fields.

In comparison to developed countries, it is recognized that the influential drivers behind China's household financial decision making and behaviours differ as the distinctive financial choices of Chinese households are predominantly driven by institutional factors as opposed to free market drivers. These include labour market risks and costs of asset market participation induced by political and economic regime changes (Cooper and Zhu, 2017). Additionally, Cooper and Zhu (2017) argued that Chinese household financial behaviours are shaped by both high economic volatility and distinctive cultural values, differing from Western countries, as Chinese households have far higher saving rates due to apparent restrictive institutional factors, high levels of uncertainty, high labour market risks and strong patience levels deeply embedded into the roots of the Chinese culture. Cooper and Zhu (2017) illustrated the importance of exploring household finance in China from a renewed perspective, as opposed to the traditional approaches used in Western and developed countries. This highlights the need for a country-specific focus when measuring Chinese household financial behaviours given the unique, restrictive and influential factors from its highly uncertain political and economic environments. This is further echoed by Li *et al.* (2021), as the relationship between household asset allocation, household wealth and financial activities amongst Chinese households are found to differ from the conventional household finance literature, raising the research need to thoroughly investigate its unique dynamics.

According to Tobin and Volz (2018), major financial sector developments have been achieved in China since the start of the economic and financial reforms in 1978. A series of policy-supported capital market developments have reduced the credit expansion impetus of traditional large state-owned banks. Moreover, these induced the emergence of smaller private/commercial banks, which contributed to improved access to retail banking services, the development of wealth management products and the access to capital markets. Huang

et al., (2020) highlighted that the Chinese government's reform strategies targeted the reduction of implicit guarantees of state-owned financial institutions and enabled the utilization of interest rates to influence financial outcomes and the operation of private sector financial institutions. The key financial sector developments in China include the establishment of the Shanghai and Shenzhen stock exchanges on 1st December 1990, facilitating securities trading for the first time since the suspension of previous stock exchanges during the Community revolution of 1949 (Huang *et al.,* 2020). Additionally, the Chinese government established the Chinext and Star-A markets as an independent financial system, relaxing entry standards for listings, and becoming a popular exchange for a series of large IPOs. These developments encouraged early-stage tech companies to pursue IPOs due to the relaxation of requirements regarding company profitability during the listing process. As a result, the availability of investment products, risky assets, and the options of Chinese households have increased remarkably over the last decades (Statista, 2022).

Chinese policymakers have actively encouraged institutional developments in financial markets and financial infrastructures, developing a range of financial instruments to facilitate investments and trading activities under the free operation of the price/interest rate mechanism (Mehran and Quintyn, 1996). The People's Bank of China (PBC) became the country's central bank in 1984, and a flourishing network of new banks and other private financial institutions emerged to deliver financial services in accordance with the credit banks' standards set out by the PBC (Mehran and Quintyn, 1996). According to Elliot and Yan (2020), banks have continued to dominate the Chinese financial system that has provided the private sector with credit that accounted for 128% of the country's GDP in 2012. In comparison the respective figure amounts to 48% in the USA, highlighting major developments in the accessibility to financial capital especially for previously financially excluded communities and small businesses. Furthermore, the MIC (Made in China) 2025 plan issued by the Chinese government in 2015 has placed strategic priorities over the developments of innovative financial technologies, encouraging and supporting financial technology (FinTech) developments that would further open-up traditional financial services towards private financial institutions, stimulating a variety of technology-enabled financial

activities such as mobile banking, digital banking and online insurance for Chinese consumers, providing regulatory support and funding to further enhance financial infrastructures (Luthje, 2022).

According to Chen and Yuan (2021), rapid developments toward financial inclusion in China have been supported under the issued Plan for Advancing the Development of Financial Inclusion (2016-2020), as 53.21% of Chinese households reported using credit, 66% have formal bank account ownership and 88% have savings account ownership, substantially higher than global averages. Additionally, Li *et al.* (2022) estimated that Chinese households have over 190 trillion yuan in personal investable assets, as over 75% of Chinese household financial assets are invested on risk-free assets, whereby 4.4%, 1/3% and 0.2% are allocated on stocks, funds and bonds respectively. Ye *et al.* (2022) explored the data from the China Household Finance Survey (CHFS) and found that the participation rate amongst Chinese households investing in risky financial markets has substantially increased from 2% to 26% between 2013 and 2017.

According to the micro-level credit risk assessment of Chinese households by Funke et al. (2022), it is found that Chinese households demonstrate relatively strong financial resilience in events of income decline during the economic downturns of 2011 and 2015, which did not seem to inflict major impacts on Chinese household financial decision making. However, it is argued that culmination of financial instability overtime, such as a potential housing bubble burst would likely affect Chinese household finance due to a high rate of mortgage-indebted Chinese households that could face repayment difficulties, thus curbing their consumption levels (Agarwal *et al.*, 2022). The current financial literacy rate amongst Chinese households scores at an average rate of 43.5 percent when measuring basic financial knowledge including inflation, interest rates and financial risk, which is substantially lower than other developed countries such as the USA (75.3%) and the Netherlands (78.8%) according to Lu *et al.* (2021). This illustrates poor financial literacy among Chinese households, highlighting that the understanding of the processes of asset allocation and wealth accumulation is limited.

Departing from this unique background and recent development of the Chinese economy and financial sector, this PhD thesis aims to adhere to the field of household finance, enabling inferences that are relevant to the closely related fields of financial economics, personal finance, socioeconomics, banking, and development finance and economics, and education economics, inter alia.

The first essay, titled "Sui Generis: Conditional Free Compulsory Schooling and Financial Market Participation in China", initiates its identification strategy from the utilisation of a major reform in compulsory schooling which overlapped historically with the initiation of the one-child policy in China. The latter policy induced financial penalties that made free compulsory schooling conditional to satisfying its conditions. The essay aims to identify a causal effect of years of schooling on participation to financial markets, such as stock and risky asset markets. Moreover, it aims to examine the impact of education on the portfolio diversification of Chinese households. The timeline of the two reforms is such that individuals born in or after 1980 began primary school in 1986 and later, and thus received nine years of compulsory schooling, compared to only six years for individuals born one year earlier (in 1979). The one-child policy included financial penalties, such as exclusion from free schooling, inter alia. Hence, exposure to the free compulsory schooling reform was conditional on compliance with the one-child policy. The main empirical research question that the essay aims is to address is if an additional year of schooling induces a causal effect on participation in stock markets? Does schooling have a causal effect on participation to risky markets? Does extra education increase the amounts held in terms of shares of stock and risky asset holdings? Finally, does education exert an impact on the portfolio diversification among Chinese household? Finally, the study aims to identify the mediating factors that are conducive to the transformation of additional schooling to behaviour that is enabling financial market participation. Mediators of particular interest entail the formation of relevant cognitive skills, such as financial literacy, along with the initiation of behavioural change, such as the decline in Confucian norms of filial piety.

Using a fuzzy regression discontinuity design (RDD), the results of the first essay reveal that increased educational attainment as a result of the conditional free-schooling reform has a substantially beneficial impact on financial market involvement and portfolio diversification. Specifically, the effect of additional schooling on stock market participation is in the magnitude of 50% and greater, and the effect on risky asset market participation is greater than 30%. Schooling increases that amounts invested in stocks in magnitudes of 50% or more, in terms of the logarithm of the amount in stocks, and as well as the ratios of stocks to financial assets, and stocks to wealth. The respective magnitudes for investment in risky assets are greater than 30%. The effects are significant for both males and females, although the magnitudes of the effects are higher for males. The results are not significant for the residents of rural regions. These findings are confirmed in several robustness exercises implemented in the first essay. Causal mediation analysis indicates that the moderate increase in financial literacy and the decrease in Confucian norms of filial piety are likely to be the plausible transmission channels through which the effect of increased schooling affects financial participation. The mediators dominate among the several candidates tested, including financial risk tolerance, earnings and earnings uncertainty, savings, and wealth, inter alia.

In the second essay, titled “Growing up with finance: Special Economic Zoning and Household Finances in China", I initiate my identification strategy benefitting from the reform of special economic zones and coastal cities (SEZ) in China, which led to differential development of financial markets across Chinese cities. The outcome of interest in this study is the effect of early life exposure to local financial markets to financial inclusion and financial market participation. The motivation for this essay stems from the view that the special economic zone and coastal city reforms in China were the incubator of the major financial market development that followed in recent decades. According to the World Bank, between 1985-2017, the total loans outstanding as a percentage of China’s GDP have increased from 64.8% to 150.6%. Moreover, from 1990 onwards, stock markets and bond markets started developing in China. My identification strategy defines growing up with finance as early life exposure to the environment of special economic zones and coastal

cities. An individual is identified to have grown up with finance if he or she was aged 12 or less at the year in which the related reform took place in his or her city. The main empirical question is whether individuals who grew up with finance in special economic zones and coastal cities are more likely to access finance from formal financial institutions. In a setting of widespread informal finance provision, are individuals who grew up with finance less likely to engage with informal institutions and loan providers? Is exposure to greater financial sector development at young age likely to have long-lasting effects in terms of greater stock market participation and higher investment in riskier asset classes several years after the reform took place? Do the individuals who grew up with finance in China hold more diversified asset portfolios? Additionally, I am interested in the moderating factors that underpin any such connection, i.e., does greater financial knowledge or higher financial risk tolerance moderate or mediate the effect of growing up with finance on financial market participation? Do these effects dominate those of other moderating channels, such as trust, socialization, filial piety, inter alia?

Using the difference-in-difference model, I identify the relationship between growing up with finance and household financial behaviours. The results suggest significant impacts on all three sets of household financial outcomes. Specifically, individuals who were exposed to financial development early life are more likely to engage with credit cards and obtain credit from formal financial institutions. Growing up with finance induces an effect of 20%-30% magnitude on the probability of having a credit card. The effect on the probability of having access to finance from a formal financial institution is in the magnitude of 53%-58%. In contrast, there is a negative effect on the informal-to-total finance ratio, in the magnitude of -12% and -37%.

In terms of financial market participation, growing up with finance increase the likelihood of stock ownership by 32-46%, as well as the likelihood of owning risky assets by 22-37%. The effect on the amounts invested in stock if between 35%-44%, and that on the amounts invested in risky assets is 30%-35%. The magnitude of the effect on the ratio of the amount invested in stocks to total financial assets is in the order of 35%-49%. That on

the ratio of the amount invested in risky assets to total financial assets is around 30%. Furthermore, individuals who grew up with finance have more diversified portfolios, in terms of the number of assets held by some 24%-31%. Their portfolio variance is found to increase by 33%-50%. Moreover, in terms of the mediation analysis, it is found that financial literacy and financial risk tolerance appear to by the strongest moderating mechanisms of the relationships found, with financial literacy exerting the highest moderating impact.

Finally, the third essay in this thesis examines the relationship between financial inclusion and subjective well-being, and it is titled "Financial Inclusion and Well-Being in China". This relationship has not received much attention in the related literature of happiness in economics, despite the vast literature on the effects of income and wealth on subjective well-being. I utilise microdata from the 2015 Chinese Household Finance Survey (CHFS) to investigate the effect of financial inclusion on subjective well-being, as typical proxy of happiness. Financial inclusion is approximated by account ownership, and I also employ alternative proxies, such as an affiliation with a formal financial institution, in terms of loan receivership, in conjunction with the ratio of informal-to-total finance, among individuals with any finance receivership.

The findings of the third essay indicate a significant relationship between financial inclusion and happiness among Chinese households. I find large effects of financial inclusion on subjective well-being, and those effects are robust to specifications with regional macroeconomic indicators and relative income as well as the usage of proxies for formal and informal finance. I employ an instrumental variables approach using financial literacy and distance between the home and a bank branch as the sources of exogenous variation in financial inclusion. My instrumental-variable estimates suggest that the financially included are 10-20% happier on average, with the financially excluded being 30-40% more likely to be unhappy. Causal mediation analysis suggests that financial resilience, in terms of higher liquid-asset ownership rate, is the channel that explains that relationship between financial inclusion and well-being in China.

Overall, the results of the three essays aim to be conducive to inferences enabling policy-relevant insights to the process of China's economic transformation. It is found that education, and the formation of cognitive skills, along with behavioural change are all enabling mechanisms for wealth accumulation, inequality reduction, and the increase in the well-being of the Chinese population. For China's rapid economic growth to become endogenous, the results aim to highlight to Chinese authorities that, apart from capital investment, the prioritization of education and skills development can have welfare-enhancing effects to the majority of the Chinese population. Further enabling the Chinese middle-class and catering to excluded segments of the population are all priority areas for policy makers in China and internationally.

Chapter 2

Background and Data

In order to examine the importance of household finance by evaluating the impacts of the education, early life exposure to financial market and subjective happiness on boosting economic growth in China. This research would rely on the historical reform implementation that centrally planned across China and financial environment change. Also, I use data from 2 waves of 'China Household Finance Survey' (*hereafter* CHFS) conducted in 2013 and 2015.

2.1 The Historical Regulatory and Financial Environment in China

The centrally planned opening of China's financial sector is one of a kind in history. In July 1981, the State Council decided to resume the issuance of government bonds, starting the development of China's bond market after the reform and opening up; in August 1984, the Shanghai Municipal Government approved the issuance of the Interim Administrative Measures on the Issuance of Shares, and in November of the same year Ltd. was approved to issue RMB 500,000 ordinary shares to the public for the first time, kicking off the development of China's stock market; in May 1987, Shenzhen Development Bank was approved to issue RMB 7.9 million ordinary shares to the public, which was officially listed for trading on the local securities trading counter in April 1988, followed by organized stock trading activities on 1992 ~ During 1998, China's securities market entered a phase of rapid development. The variety of stocks developed from a single A share at the beginning to both B shares, a domestic listed foreign stock, and H shares, an overseas-listed foreign stock, and the number of listed companies increased rapidly, from 14 in 1991 to 851 in 1998. *Figure 2.1* illustrates that equities' total market value rose from 2.1% of GDP in 1992 to 144.7% of GDP in 2017, and the total value of publicly developed bonds rose from 2.5% of GDP in 1990 to 35.1% of GDP in 2017.

[Insert Figure 2.1 about here]

In China, banks are more likely to be representative of the financial sector, which functions as the financial system (Walter and Howie, 2012). *Figure 2.2* provides an overview of the evolution of banks in China. Bank deposits as a percentage of the GDP with a red line have grown from a figure close to 20% in 1985 to a figure going up to 40% around 2017, which have doubled between essentially 1985 and 2017. Meanwhile, in terms of deposit assets, money in banks and the private credit by the money banks that seem to be growing in parallel, somehow the assets, to a certain extent, are growing more than the private credit essentially. Furthermore, figures also are close to more than doubling basically in theory in some years almost tripling configure starting at 65% and arriving at close to 150%. Or even more when it comes to essentially so far deposit money banks.

[Insert Figure 2.2 about here]

Since China's economic reform in 1978, a series of aggressive reforms have occurred in the country's previously restrictive financial systems, thereby increasing financial inclusion and fueling the growth experienced since the reform (Fungacova and Weill, 2015). Panel A of figure 2.3 shows that in 2015, according to the Global Findex database, bank deposits in China accounted for 40% to 60% of GDP. Regarding penetration of bank accounts around China, panel B of figure 2.3 shows that 70% to 80% of Chinese households have an account at a financial institution. According to an extensive review of key developments in China's financial system by Chen and Yuan (2021), increased financial inclusion is occurring across low-income households, rural regions, and in small and medium-sized companies that have traditionally experienced difficulty accessing financial services.

[Insert Figure 2.3 about here]

Additionally, Chen and Yuan (2021) highlight the role of supportive policies and regulations behind China's increasingly inclusive financial systems and practices, as reflected in the Plan for Advancing the Development of Financial Inclusion (2016-2020) by

the Central Committee of the Communist Party of China. Kumar *et al.*, (2021) and Wu *et al.*, (2022) also reinforce the importance of this plan, which outlines the key ideas, guidelines, and support from the Chinese government to improve the availability, confidence, and quality of financial services, especially for previously excluded communities and individuals. According to Kumar et al., (2021), the Chinese government has implemented a wide range of monetary policy changes, supervised and encouraged improvements in financial system infrastructures, ensured that financial services have lower operational and communication costs, and ultimately reduced the costs of financial services delivery per customer with the support of cutting-edge innovative technologies. *Figure 2.4* presents the historical evolution of deposits and financial inclusion in China. In panel A, I plot the ratio of bank deposits-to-GDP using the world bank financial development database, from year 1985 to 2021, which presents growth tendencies although with volatility in the year 2008, 2014 and 2019. Panel B of Figure 3 describes the account ownership of different types between 2011-2021.

[Insert Figure 2.4 about here]

2.1.1 The one-child policy reform in China

Starting in 1980, the Chinese government introduced a strict one-child policy for the largest population segments. It was a vital component of a series of population-control population policy reforms dating back to the 1960s. [1] The one-child policy originated in socialist ideology and shared values regarding the importance of household/family planning. The policy applied to Han-ethnicity citizens in urban regions and restricted them to having only one child per family.[2] However, gradually, rules relaxed for specific groups. Specifically, the one-child policy focused on citizens' ethnicity and *hukou*, which created different rules

[1] China's one-child policy had three phases. In the first phase, there was no policy for family planning during 1949-1963, and during 1963-1971, the government established family planning commissions but paused during the Cultural Revolution. The second phase (1971-1979) widely advocated voluntary compliance with the fertility policy. In the third phase (1979-2015), the one-child policy was formally enacted as legislation, and compliance became required (Feng and Wang, 2014).

[2] China has 56 ethnic groups; the Han ethnicity comprises the majority (i.e., 93.3%) of the population. The remaining 55 ethnicities are all minority.

for urban Han, rural Han, urban non-Han, and rural non-Han populations.[3] For instance, an urban non-Han couple could have a second child, and a rural non-Han couple could even have more children due to their ethnic group size. In addition, the one-child policy was relaxed for rural families of Han ethnicity. They could have another child for labour productivity if the first child was a girl (Feng and Wang, 2014).

Meanwhile, supervision commissions formed in every province and extended to sub cities, counties, etc. The one-child policy imposed penalties for noncompliant households, including rejection from public services, including from free schooling. Moreover, it involved the imposition of abortion, and sterilization (McElroy and Yang, 2000). As encouragement, local governments offered single-child families a series of rewards.[4] Local authorities also tightened the intensity of inspections and registration work on *hukou*; in addition, they conducted publicity campaigns and distributed posters to raise awareness among households.

2.1.2 The educational reform of 1986-1992 in China

The illiterate population in China was between 15% and 20% before 1949 due to the scarcity of schooling and unsystematic educational curriculums (Tsang, 2000). Therefore, accompanied by the central government's awakening awareness of education, in 1985 the Communist Party of China Central Committee decided to revamp the educational system because the strength and competitiveness of any country is a reflection of its educational standards, the quality of its academic qualifications, and the related provision of technical skills. Reflecting on educational priority, the Chinese government promulgated a structured modern reform, which is considered a milestone for the Chinese educational system.

In the early 1980s, the Central Committee of the Chinese Communist Party (CCCPC) issued a series of decisions concerning economic restructuring, on science and technology

[3] *Hukou* is a registration method for households in China.

[4] The Chinese government provided one-child families with child-care benefits, welfare allowances, and preferential access to schooling (Arnold and Zhao, 1992).

reform, and on educational reform, namely the “Decisions” (CCCPC, 1985). The nine-year compulsory education reform, officially started on 1st July 1986. The reform was a key ingredient of a wholistic educational reform at all levels in China that entailed two primary pillars: (1) China was to restore and rebuild educational institutions that were destroyed by the “Cultural Revolution” and improve education; (2) China was to streamline administration and decentralize to expand school autonomy on various levels and aspects (Fan, 2020).

The core of educational institutional reform can be pinned down to streamlining administration and decentralizing to expand school autonomy on various levels and aspects. Regarding the central-to-local relationship, while strengthening the macro management from the central government, in primary education, the responsibility of basic education development is decentralized to local government. To promote the development of compulsory education, the Decisions first proposed the “two-growths” principle of the educational input system, i.e., “the growth of education allocations of central and local governments should be higher than that of recurrent financial income, and the average education cost per student should gradually increase”. Regarding school leadership, the Decisions stipulated that “school[s] gradually implement a principal accountability system, i.e., clarifying the relationship of rights and responsibility among school leaders, party secretaries, university councils, and staff congress, which established the basic structure of China’s modern school system” (Fan, 2020).

Hence, the speed and development of the educational reform largely relied on the availability and the resulting need to train dedicated teaching and administrative personnel at the local level, as well as in the capacity for greater autonomy of each regional level. According to Xie and Mo (2014), China’s educational reform was geared toward the unique characteristics of its socialist market economy and political system. Improving overall literacy, knowledge, and education levels of the people complements the development of the Chinese economy.

The legislation specified that children at least six years of age would receive nine years

of compulsory education. Previously, there were no age limits, and the legal requirement was six years of compulsory education. The reform thus required children to complete junior high school. Starting in 1986, the Chinese government began strongly urging parents to enrol children in school for nine years of compulsory education (Garnaut *et al.*, 2018). This reform regulated two stages of compulsory education: six years of elementary school and three years of junior high school. School-age children would go straight through junior high school for free and without any selected examinations. Additionally to guaranteed enrolment and completion of nine years of education, the central government prohibited the employment of school-age children or adolescents. Simultaneously, local provincial governments were permitted to decide how and when to implement the rules in accordance with their economic and development situations (Fang *et al.*, 2012). On July 1, 1986, the law requiring nine years of compulsory education took effect, transforming the education curriculum in rural Chinese regions to be more in line with urban Chinese regions (Lewin and Hui, 1989). The reform represented the first nationwide effort to stipulate a national education policy, ensuring that all Chinese children would receive nine years of free education beginning at age six, regardless of geographical location, ethnicity, or family background (Liu and Dunne, 2009).

Therefore, the actual timing of implementing the compulsory education reform differs across provinces and spans 6 years in total. The majority of provinces reformed between 1986-1987. Then, fewer remaining provinces implemented the education reform between 1988-1992. *Figure 2.5* maps the provinces of China, with its colours distinguishing between the year of implementation of the educational reform. *Table 2.1* plots the implementation year of educational reform in each province. Overall, educational attainment increases with the completion of nine years of compulsory schooling for all school-age children.

[Insert Figure 2.5 about here]

This ground-breaking reform has received substantial research attention, as it had far-reaching impacts on the lives of Chinese children exposed to the reform. According to Huang (2015), China's compulsory education law had profound effects on education among Chinese teenagers, particularly in rural regions, where illiteracy rates for people over the age

of 15 drastically declined from 37.7% in 1982 to 11.6% in 2000. During the same period, the illiteracy rate in urban regions also dropped from 17.6% to 5.2%, illustrating major improvements among Chinese children after the 1986 reform (Huang, 2015).

[Insert Table 2.1 about here]

2.1.3 The special economic zone and coastal-city reforms in China

Since 1978, the Chinese government has planned the agenda of economic reform. In the year 1980, the Chinese government identified four cities in two provinces, namely Shenzhen, Zhuhai, and Shantou in the Guangdong province, and Xiamen in the Fujian province, as pilot cities for the introduction of a special economic zoning policy[5]. These four cities were granted preferential policy status and were the market economy laboratories of China. They were unique in that they were also responsible for creativity and development in orientating the planning of economic strategy towards to market economic strategy (Vogel, 2011). Furthermore, during the first phase of economic reform where remarkable performances of the four initial SEZs drastically grew in the short term.

By 1984, an additional 14 coastal cities[6] were granted the right to establish economic development zones under the open coastal cities' regime, and in 1985 the Chinese government further expanded the open economic zones near the Shandong Peninsula, Yangtze River and the Xiamen-Zhangzhou-Quanzhou triangle to develop coastal exporting infrastructure and exporting economies. Moreover, in 1988 the coastal economic expansion was extended to nearby inland areas near the Yangtze river, as the Hainan island became the largest SEZ in China with enlargement to the four key SEZs. In 1990, the Pudong new area in Shanghai was granted similar privileges as the region was opened up and specialized for overseas investment and stimulated economic development amongst other cities along the

[5] The special economic zone's concept was no invention of China in itself. China's special economic zone (SEZ) has inherited some fundamental properties of the export processing zones, which are developed by 1980 in more than 80 countries (Blonigen *et al*., 2007; Vogel, 2011).

[6] The 14 coastal cities are Lianyungang, Fuzhou, Guangzhou, Zhanjiang, Beihai, Qinhuangdao, Dalian, Qingdao, Yantai, Tianjin, Ningbo, Wenzhou, Nantong, respectively.

Yangtze River valley (Macpherson, 1994)[7]. In essence, most of the related privileges and allowances granted were the same as those of the initial four cities (Pak and Park, 1997). *Table 2.3* presents the special economic zones and coastal cities next to their corresponding province and year of implementation of the reform.

[Insert Figure 2.6 about here]

The special economic zones (hereafter *SEZ*) were granted serials of privilege provisions to stimulate the local economic growth in SEZs and various preferential treatments for attracting foreign direct investment and foreign trade. These SEZ experiments are regionally entitled to tax deductions (e.g., peculiar import and export tariffs) and exemptions from the foreign exchange and land use regulatory measures (Wang, 2013). The explicitly legislative regulations based on the region are following:

1) Incentives on taxation. Foreign enterprises set up organizations and engaged in economic production in the SEZs have promised a corporate income tax rate of 15%. Financial institutions (e.g., banks) with foreign backgrounds move into SEZ for operating at least ten years, and the income tax shall be levied at a deducted rate of 15% and exempt from the first-year income tax.
2) Preferential on land use. All land's nature in China is state-owned, but in SEZs, the rights to land creation and business use could be legally given to foreign companies. More specifically, when ventures operate in SEZs for more than 15 years, the land-use charges would be exempted for five years.

3) Financial sector development here, which will be explicitly analyzed in the next sub-section. For instance, SEZs are to be granted some autonomy in financial and foreign currency management (Pak and Park, 1997);

[7] Shanghai's Pudong new area economic region was dubbed as the Dragon Head as it was opened to lead the economic development of nearby regions along the Yangtze River valley (Macpherson, 1994).

These SEZs were granted special tax incentives for foreign direct investments in the region, encouraging more foreign firms with reduced or exempted taxes if they fulfilled the requirements to enter the SEZ regions (Lai, 2006). Moreover, SEZs were granted a high degree of interdependence from the central Chinese government, particularly in areas of international trading activities, and were largely privileged under four economic principles in areas of 1) adopting primary economic orientation to attracting and utilizing foreign capital, 2) establishment of the earliest Sino-foreign joint ventures, strategically designed partnerships with foreign entities and wholly-owned foreign enterprises that have never been seen in China's history before, 3) export-driven focus of products produced in these regions, 4) adoption of the capitalism market approach where market conditions are primarily driven by market forces rather than traditional state intervention. Furthermore, the SEZs' economic role was separated from the national planning legislation, and the central government delegated substantial power and province-level authority to the independent economic administration of these regions (Leong, 2013)[8].

The seminal book by Li (1994) was one of the first academic publications to associate China's SEZ formation to the development of the financial sector, drawing upon foreign funds to promote China's foreign economic and technological cooperation. China's financial sector development through the expansion of foreign trade within SEZs was categorized under four key areas. 1) the establishment of foreign equity with mutual benefits and lawful rights that can be used for the development of the financial sector, 2) the development of good faith and appropriate terms to the use of foreign resources, 3) the ability to repay the borrowed loans and credits from foreign institutions, 4) the raising of funds that are in proportion to China's available foreign exchange reserve. In addition, China's consolidated economic status in the 80s from the IMF and became a member of the Asian Development

[8] Policy changes to grant province level authority on the independent economic administration of SEZs saw similar liberalization process in other developing countries like India, whereby the role of SEZs were utilized as instrumental variables to stimulate exports and foreign direct investment growth (Leong, 2013).

Bank allowed China to obtain foreign savings and financial sector development in three key sources such as exports, trading agreements and foreign capital inflows (Li, 1994)[9].

These experimental SEZ achieved remarkable economic performance between 1980 and 1984[10]. Shenzhen expanded at an annual rate of 54%, with the four SEZ occupying 26% of China's total foreign direct investment by 1984. In the meantime, these four SEZ have established a range of well-functioning financial markets (Zeng, 2010). According to Garnaut *et al.* (2018), a critical analysis of China's 40 years of reform and development, China's financial sector development, and the liberalization of FDI policies in SEZs are categorized under two sequential phases. During the first phase between 1979 and 1991, it is suggested that the introduction of the Equity Joint Venture Law, Equity Joint Venture Income Tax Law, the Foreign Enterprise Income Tax Law, and the Industrial and Commercial Tax Provisions saw the encouragement of FDI inflow in foreign capital and foreign bank markets (Garnaut *et al*., 2018). Towards the latter stages of this phase, the Chinese government gradually expanded the privileges of FDI policies toward other cities to balance economic development throughout the country. During the second phase of the economic reform between 1992 and 2001, the Chinese government further liberalized the specialized foreign investment regime with the introductions of the Regulatory Provisions of Foreign Banks, the securities Exchange Law and the Foreign Exchange Control Regulations as the bond and stock markets within SEZs attracted even higher foreign investment and aided the development of the financial sector (Garnaut *et al*., 2018).

With the implementation of policies in the pilot areas of economic reform, the special economic zones and 14 coastal cities all made brilliant achievements in total GDP, industrial restructuring, import and export trade volume, and income of urban residents. The intuitively increase in the GDP of special economic zones and coastal cities between the year 1980 and

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[9] China took over from Taiwan's membership in the International Monetary Fund on 17th April 1980 and it became a member of the Asian Development Bank on 10th March 1986, further consolidated its attempts to opening up its economy to foreign countries (Li, 1994).

[10] China has also established at least five variants of SEZs, each catering to a specific need. They are Economic Development Zones; Free Trade Zones; Export-Processing Zones; High-tech Industrial Development Zones.

2015 are present in *Figure 2.7*. Grow growth in the GDP of these cities has been heterogeneous, but the point is all of those cities have experienced growth. I can see that some of these cities like Shanghai, Guangzhou, Shenzhen, and Tianjin are the four cities that experienced the biggest growth, essentially their GDP. Growth has also been experienced in the remaining special economic zones and coastal cities. Although obviously, those special economic zones were an experiment by the Chinese government, where you can see from *Figure 2.8* that the contribution of their essentially complete distribution of these special economic zones and coastal cities to the GDP of China grew by a lot from a figure close to 7.5% and around 12% in 1990, then rise to a figure close to 20.5% in 2017. This is the percentage essentially of the GDP and the actual amounts in terms of nominal GDP growing essentially. On a yearly basis, which in amounts of essentially billions of Yuan.

[Insert Figure 2.7 about here]

[Insert Figure 2.8 about here]

2.2 Household Financial Data for China

Having understood that background of reform and financial sectors development in China in the previous sections, I aim to expand my analysis to a more dynamic fashion, catering to concerns regarding the CHFS datasets, along with potential causality considerations. This thesis uses data that utilized were obtained from the China Household Finance Survey (hereafter: CHFS), which is a pioneering project that gathers micro-level financial information on Chinese households from 2011[11]. Continuously, every two years the survey would be conducted, namely, in 2011, 2013, 2015 etc. It offers comprehensive and extensive information about socioeconomic status and household financial circumstances; it also speculates on future household financial-development trends. Specifically, the survey asks

[11] Gan *et al.* (2014) report on Chinese household finance development, encompassing demographics, work characteristics, non-financial assets, financial assets, household loans, insurance, social welfare, spending, income, and wealth, using the CHFS dataset.

about household financial planning and managing debt, attitudes toward and understanding of monitoring investment risk and accumulating wealth, awareness of financial products/services, etc. Therefore, the data set is ideal for researching Chinese household financial outcomes as it contains precise, nationally representative household information. Although there is a small panel element to the CHFS dataset, in this research, I selected cross-sectional data across survey waves completed in 2013, 2015, which applied of survey sample of 2013 in the Chapter 3 and sample of 2015 in the Chapter 4 and Chapter 5. I presented weighted summary statistics and weighted estimates for regressions. The weights used in the regressions are those provided and recommended by the data collectors to make the sample representative of the Chinese population. The weights are used in the regressions as sampling weights (pweight in Stata), which are weights that denote the inverse of the probability that the observation is included because of the sampling design. I do not use the svy estimates in Stata, because I do not have the full information by the data collectors required to identify primary sampling units and levels of clustering. However, the data collectors do not recommend using the svy range of estimates, but they recommend using the provided weights as pweights instead, i.e., as sampling or inverse probability weights.

2.2.1 CHFS 2013

In the 2013 wave of CHFS dataset, which geographically crosses 29 provincial regions and municipalities, 262 counties, and 1,048 communities. I focused on the CHFS2013 dataset in the first essay, because it enables identifying the initiation of identification strategy based on the exclusion criteria for free compulsory schooling stipulated by the one-child policy, i.e., ethnicity, urban/rural region, and the number of siblings.

Table 2.2 provides summary statistics for CHFS data in 2013, the analysis present through four groups of outcome variables. The first outcome variable is an indicator of whether an individual directly owns stocks, which I refer to as direct stock market participation. The second outcome variable is participation in risky assets, which means the individual owns stocks, bonds, mutual funds, derivatives, wealth management products, foreign exchange assets, non-RMB assets, or gold. The third group of outcome variables

comprises the amount and shares of stocks and risky assets (i.e., the value of shares, stocks-to-financial-assets ratio, stocks-to-wealth ratio, value of risky assets, risky assets as a proportion of financial assets, and the risky-assets-to-wealth ratio). The last group of outcome variables are the number of financial assets with diversification and portfolio variance. I find that 5.2% of individuals in the sample own stocks, although there is not much difference in the participation percentages between men and women in the stock market. Women account for a slightly larger share than males (5.4% and 5.1%, respectively). The urban population has a stunning significant advantage over the rural population in terms of stock market participation (13.3% versus 1.2%). The figure shows that 9.2% of individuals own risky assets; this is higher than stock market participation. Also, 8.9% of males, 9.4% of females, 21.5% of urban residents, and 3.0% of rural residents own risky assets.[12]

In terms of demographic characteristics, the average disposable household income in the sample is ¥72,674.5, and households have 10 years of education on average. In addition, 51.1% of the respondents are male and 71.3% are married; 33.2% are in urban regions, and households have one or two children on average. The average age in the sample is 32.8, and the financial literacy measure in Chinese households is 0.7, which according to the CHFS2013 survey contains three questions (about interest rate calculations, inflation, and investment risk).

To measure attitudes toward financial risk, the exact wording of the question was: "*Which of the choices below do you want to invest in most if you have adequate money?*" The five options range from investments requiring a high-risk tolerance to investments requiring a low risk tolerance. The results show that people have a low risk-tolerance score (2.1), which is below the average in China. A proxy for Confucian values comes from answers to questions that allow us to generate variables for filial piety in seven categories: 1) supporting parents as the primary purpose for marriage; 2) children's propensity to take care of aging parents; 3) the importance of filial piety in children (obedience to parents); 4)

[12] In *Appendix 2A*, I calculate the portfolio variance from the CHFS sample by using the formula for calculating the portfolio variances and covariances. The results are in *Appendix Table 2A1*. I confirm these associations in the weighted pairwise correlation matrix in *Appendix Table 2B1*.

filial piety's implications regarding giving money to aged parents; 5) parents' reliance on financial support from children in retirement; 6) children's responsibility for elders; and 7) elders' preference to "age in place" at home.

[Insert Table 2.2 about here]

2.2.2 CHFS 2015

The survey sample in 2015 covered 29 provinces containing 4 municipalities, 172 cities, 351 counties (districts and county-level cities) and 1,396 village committees (residential), with a sample size of 37,289 households and 133,183 individuals. Overall, the sampling collection scheme used a stratified, three-stage sampling design proportional to the size measure, with weights based on the number of people (or households) in that sampling unit. The sample is representative of the proportion of urban and rural areas and the provincial distribution, and in addition, the data collector provides weights calculated in strata within provinces so that the data are representative of the population in each region.

The CHFS2015 survey includes specific questions regarding city and province in which the respondents' primary and secondary residences are located[13]. Moreover, the survey entails questions that enable to identify if the respondents live in the same city and province as their parents. These sets of questions enable the identification of residing and/or growing up in a specific city among those included in the CHFS sample. This particular feature of identifying cities is only possible in the CHFS 2015 and is among the major innovations of this PhD thesis, i.e., my work is the first to use this unique feature for an identification strategy. This feature of identifying cities is not possible in previous or follow-up waves of the CHFS other than the 2015 wave. The cities covered by the CHFS 2015 sample are shown in *Figure 2.6*. An additional advantage of the 2015 wave is that it entails

[13] There are two survey questions in *Part 2.1.2–Housing and Land* of the 2015 CHFS questionnaire, asking specifically about the province and city in which the respondent's housing is located at. The 2 separate questions cater to respondents who were also interviews in the 2013 questionnaire, and those who are new in the 2015 questionnaire, respectively. The wording of the two questions was: (1) "*Is this housing in [all provinces list] provinces and ____ city?*"; (2) "*is the house in ____ city _____ province?*".

richer information on happiness and financial inclusion. A final advantage in using the wave of 2015 for chapters 4 and 5, is that 2013 was year in which the most recent stock market crisis reached a bottom in China, as indicated by the stock market capitalization in Figure 2.1 (p. 42). By 2015, the related figure has started picking up again. This is likely to result in higher stock and risky asset ownership rates in China, compared to 2013, and I find this to be a more indicative year for the actual ownership rates. I use the wave of 2013 for chapter 3, as this is the only wave that enables identifying the ethnicity of individuals which is a crucial feature for the one-child policy. Merging the 2013 with the 2015 waves results in half of the sample being present in both waves.

In my analysis, I keep individuals aged between 18 and 68, and they were unique householders of respondents at the time of the CHFS2015 survey, which leave 97,446 individuals of the sample. Then, I keep the main financial respondents to the financial section of the questionnaire by generating the household level identifiers. It is appropriate to refer to the survey respondent as the household financial decision-maker for two reasons. First, the CHFS2015 expects the responder to be the most informed family member about the household's financial circumstances. Second, the responder submits household-level and demographic information for each household member and answers a series of unique questions about their personal situation and subjective opinions. Eventually, my resulting sample comprises 31,416 financial respondents.

[Insert Table 2.3 about here]

Table 2.4 provides weighted summary statistics of the main variables from the CHFS2015 survey. Panel A presents the demographic characteristics, and panel B shows the financial characteristics of Chinese households, respectively. Column 1 presented the overall pooled sample; the figures are presented in Column 2 are present individuals who were born in the SEZ regions and 12 years before the reform; the statistics are presented for everybody else excluded individuals born 12 years before in SEZ regions (Column 3); for respondents who born 12 years before the reform period while living outside SEZ regions are presented in Column 4; Column 5 denotes the difference in the figures between Column 2 and Column

3; Column 6 illustrates the difference in the figures between Column 2 and Column 4. Both Column 5 and Column 6 generate a weighted t-test for differences in averages.

As reporting demographic characteristics in panel A, according to the CHFS 2015 survey, 52.1% are male, with an average age of 48 years, 87.9% are married on average in the pooled sample. The employment rate represents 31.2% among the overall sample while 66.3% in SEZ regions. Approximately 38.3% of households live less than 1 kilometre away from a bank on average, compared to living in the SEZ regions are presented 45.0% of households live near a bank. The general distance to a bank is 5.1 kilometres on average, while living in SEZ regions denotes the shorter distance, illustrating 2.8 kilometres specifically.

In terms of household financial characteristics, the average annual disposable household income in the pooled sample denotes ¥79,461, while individuals in SEZ regions are able to receive ¥152,973 annually. Moreover, the total value of financial assets held among individuals born 12 years before the reform and living in SEZ regions is more than half of the average, which denotes ¥195,270 and ¥91,374, respectively. From the perspective of financial market participation, the average figures for access to formal finance are 15.7% and 23.9% for access to the informal financial market, respectively. 8.2% of the households have entered the stock market, with the figure for their own risky assets being higher, i.e., 16.6%[14]. According to an international comparison of risky assets holding among four developed countries provided by Guiso, Haliassos, and Jappelli (2002)[15], the share of risky assets holding among Chinese households is especially remained at a lower standard even compared with the lowest Europe country (Germany). Interestingly, 85.3% of the average

[14] It is worth noting that Gomes *et al* (2021) referred that the ownership of stocks is not occupied of the majority population, and for all over the world countries except Sweden , the equity market participation rates are found to be below 50 percent, evidence from the United States (Mankiw and Zeldes, 1991; Haliassos and Bertaut, 1995; Christelis, Georgarakos, and Haliassos, 2013; Badarinza, Campbell, and Ramadorai, 2016); The United Kingdom, Germany, Italy, and the Netherlands (Guiso, Haliassos, and Jappelli, 2002; Guiso, Sapienza, and Zinglales, 2008).

[15] They have presented information for share of risky assets holding in the United States (59.6%), the Netherlands (53.6%), Germany (21.8%) and Italy (57.3%).

households own tangible assets (i.e., houses, flats, etc.), which occupied a slightly higher fraction than the average rate of real estate ownership in developing economies[16].

[Insert Table 2.4 about here]

In the wave of 2015 of the China Household Financial Survey (CHFS), the sample is nationally representative at the household level and includes 29 provinces of mainland China.[17] The questionnaire collects information on individuals' subjective well-being, measured by responses to the question, "How happy do you feel?" The response categories range from 1 (lowest) to 5 (highest), where 1 ="*Very unhappy*," 2 = "*Somewhat unhappy*," 3 = "*Neither happy nor unhappy*," 4 = "*Somewhat happy*," and 5 = "*Very happy*." I present the basic statistics of happiness reflected in the sample. I use the composite indicator of having a bank account and having a credit card as a proxy for financial inclusion. *Figure 2.9* shows that in China, more than 40% of residents say they are happy; panels A and B of figure 2.9 denote the circumstances of provinces and cities in detail. The dataset also collects information about the use of financial services (e.g., bank accounts, bank deposits, formal and informal credit, etc.). *Figure 2.9* captures the penetration of financial inclusion in China. There, financial inclusion exists in almost a third of Chinese provinces; panels A and panel B of figure 2.9 plot the penetration of financial inclusion in provinces and cities of China. I also capture information on consumer credit, such as whether it is from a bank, a formal institution, or other channel.[18]

[Insert Figure 2.9 about here]

[16] Badarinza, Balasubramaniam, and Ramadorai (2019) show that substantial household sample from developing economics with the higher home-ownership rate which indicated above 75% in every country considered. These associations are also confirmed in the weighted correlation matrix in the *Appendix Table 4C1*.

[17] The survey did not collect data from Tibet and Xinjiang.

[18] I measure the use of formal debt by defining a dummy variable that equals 1 when individuals have loans from banks or formal institutions. I take the ratio of informal sources of borrowing to total finance as another independent variable.

Moreover, the CHFS dataset provides accessible, rich demographic characteristics and socioeconomic information. I use gender, age, age squared, marital status, educational attainment, household size (number of children), physical condition, place of residence (whether moving or staying in the same province), relative income, wealth, and labor market status as control variables. Additionally, because economic development and the government affect well-being (Ram, 2010), I add macroeconomic variables at the provincial level as control variables.

Table 2.5 provides summary statistics of the main variables in this study. The overall figures are in column (1) for individuals who are financially included by having bank accounts and credit cards (column 2); individuals who are excluded are in column 3. Column 4 presents the differences between the financially included and excluded, along with a weighted *t*-test for differences in averages.[19] The table depicts subjective well-being captured by financial inclusion and financial exclusion. The mean difference between the two groups is positive and statistically significant at the 1% level. This discovery corresponds well with *Figure 2.10*, which depicts the decile distribution of well-being in China at the provincial and municipal levels. In addition, individuals with access to formal finance are reported positively and statistically significant at the 1% level. The informal-to-total-finance ratio shows that the difference between financial inclusion and exclusion is negative and significant at the 1% level.

[Insert Figure 2.10 about here]

In terms of demographic characteristics, the average household's disposable income in the sample is ¥81,704 annually, net worth is ¥439,349, 52.7% are male, 87.9% are married, 5.9% are single, the average age is 48 years, with the sample of financially included individuals being younger. Families have an average of one child, and 17% of the sample lives in the same province as their parents. Moreover, I measure financial literacy using a

[19] I compute the weighted *t*-test by using the "parmby" command in Stata.

similar question design (Lusardi and Mitchell, 2014).[20] The figures in *Table 5.1* indicate that the financially included are more financially literate than the financially excluded. Then, I compute a variable capturing distance to a bank; as expected, living closer to a bank or financial institution is associated with financial inclusion. Approximately 49.6% of financially included individuals live less than one kilometer from a bank on average; only 21.3% of financially excluded households live near a bank. The general distance to a bank is 1.92 kilometres on average, while financially included denotes the shorter distance, illustrating 1.72 kilometres specifically.

[Insert Table 2.5 about here]

I also generate series moderating variables, which capture financial resilience, proportion of liquid assets[21], ratio of savings to income, and filial piety. The financial resilience[22] variable focuses on financial products and services, which measured through the ratio greater and equal to 25% that divided household income by value of liquid assets. I show the specific distribution in both provinces and cities in China of *Figure 2.11*. The CHFS2015 survey questions illustrate filial piety (Chen *et al.*, 2019).[23] Table 2.5 shows that the financially included are more likely to report higher financial resilience, such as owning more liquid assets or savings.[24]

[Insert Figure 2.11 about here]

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[20] Three questions measure knowledge of fundamental financial concepts such as interest (numeracy), interest compounding, inflation (money illusion), and risk (Klapper *et al*., 2015).

[21] Liquid assets include the value of cash, savings, stocks, bonds, mutual funds, derivatives, wealth management products, foreign exchange assets, and gold.

[22] Financial resilience is the capacity of an individual to access and utilize internal capabilities and suitable, acceptable, and accessible external resources and supports in times of financial distress (Salignac *et al.*, 2019). It is the capacity of an individual to "bounce back" from unfavorable events and experiences, to adjust to changing conditions, and to manage environmental stress (Abbott-Chapman *et al.*, 2008).

[23] The proxy for filial piety has seven categories: 1) supporting parents is the primary purpose for marriage; 2) children take care of their parents when they get old; 3) the most preferred trait in a child is filial piety (obeying parents); 4) filial piety requires giving money to parents in their old age; 5) primary financial support in old age comes from one's children; 6) children are responsible for parents' old-age life; and 7) the elderly would like to live at home.

[24] The *Appendix Table 5A1* presents the weighted pairwise correlation matrix among some of the key variables in this study.

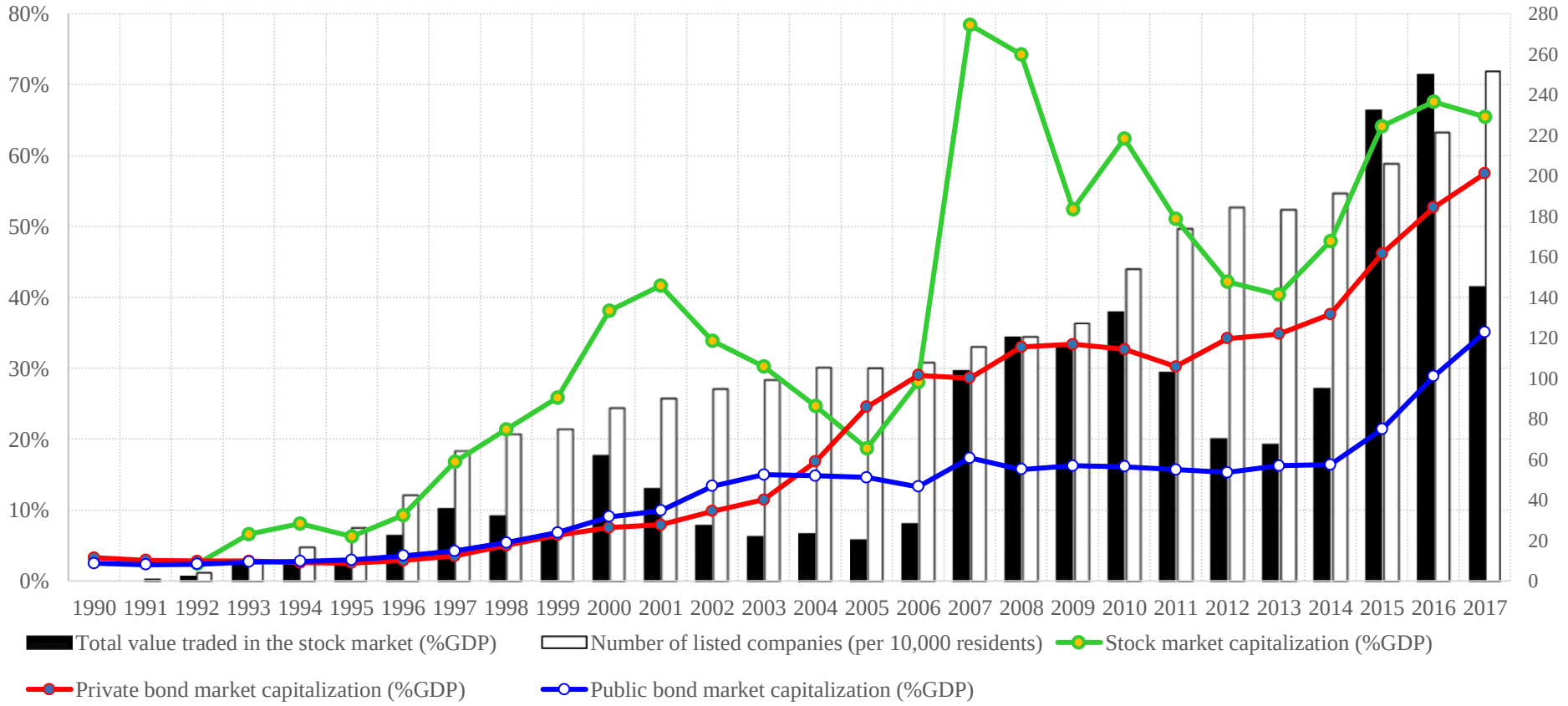


Figure 2.1

The Evolution of the Financial Sector in China Between 1990-2017

This figure uses data from the World Bank's Financial Structure Database, available at: The figure presents financial sector development in China since 1990, in terms of the development of stock and bond markets. The black bars depict stock market capitalization as a percentage of the Chinese GDP, the red line shows the total value traded in the stock market as a percentage of GDP, and the blue line shows the number of listed companies. Then, the white bars depict the private bond market capitalization as a percentage of GDP, and the grey bars capture the public bond market capitalization as a percentage of the Chinese GDP.

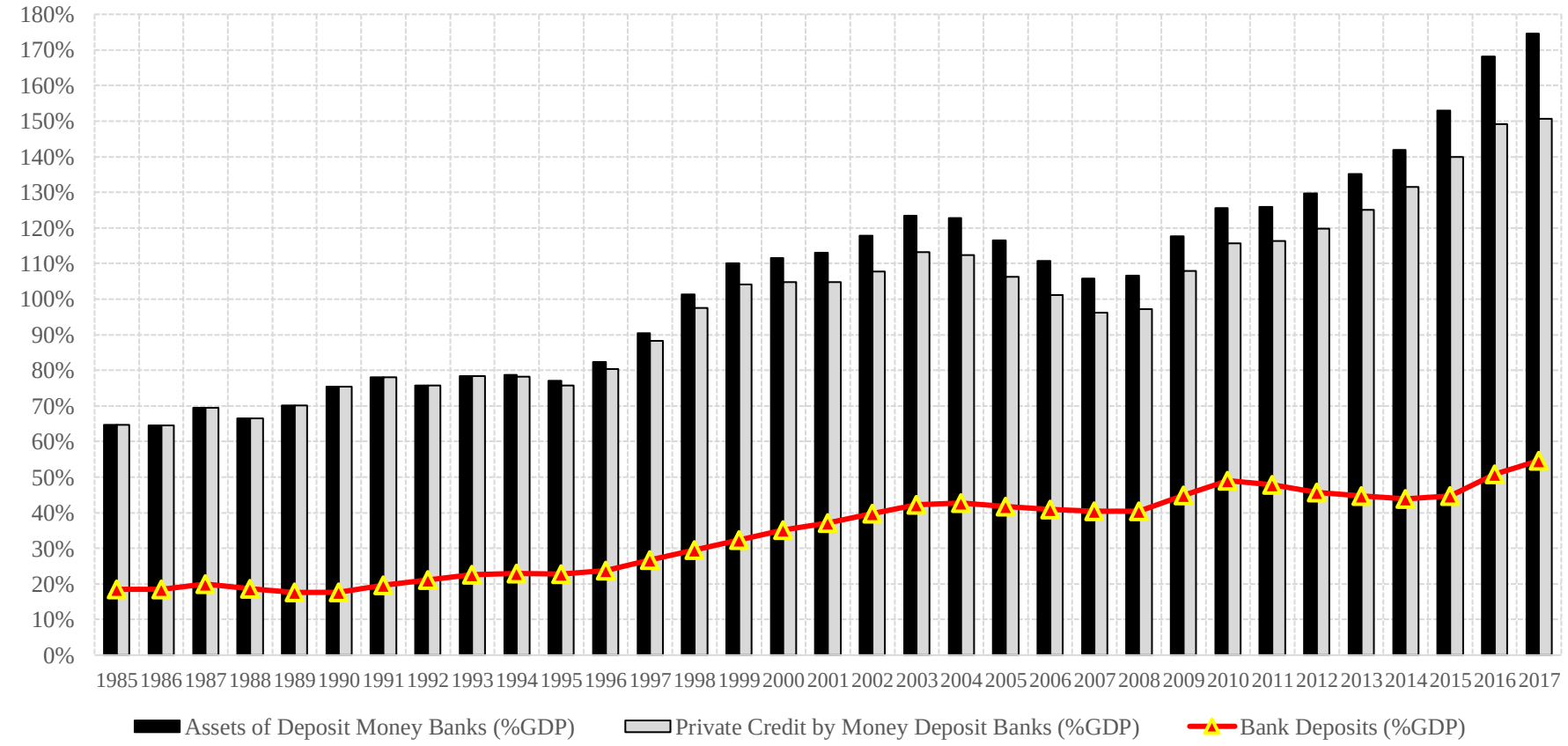
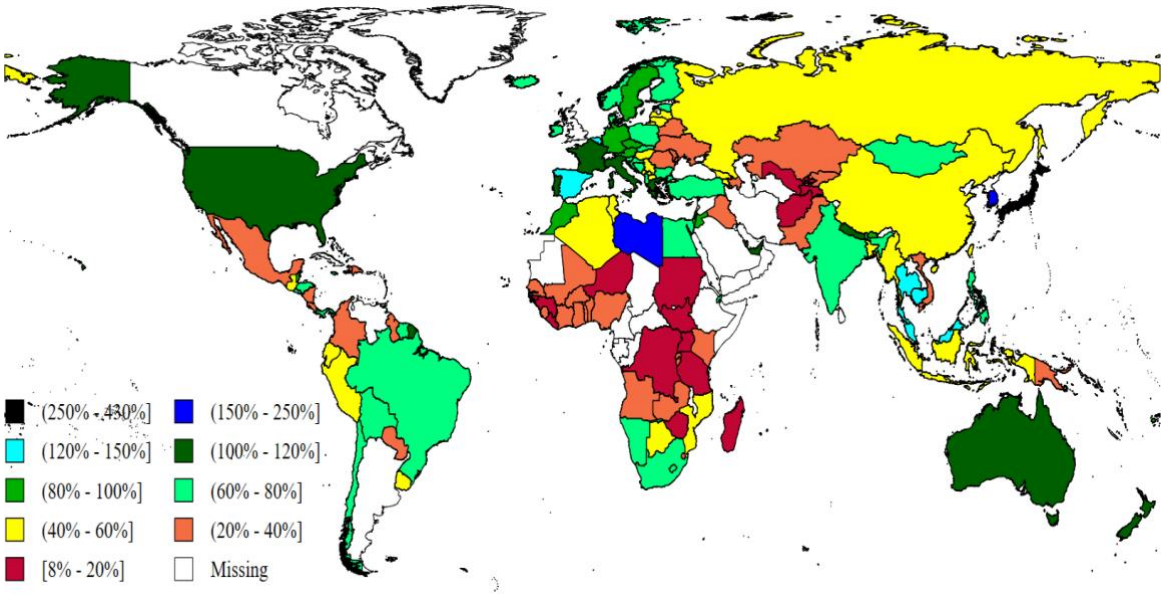


Figure 2.2

The Evolution of the Banking Sector in China Between 1985–2017

This figure uses data from the World Bank's Financial Structure Database, available at: https://www.worldbank.org/en/publication/gfdr/data/financial-structure-database. The black bars depict the assets of deposit money banks as a percentage of the Chinese GDP, and the grey bars depict private credit by money deposit banks as of a percentage of the Chinese GDP for the years 1985-2017. The red line shows banks deposits as a percentage of the Chinese GDP.

Panel A: %Bank deposits – to – GDP (World BankFinancial Development Database, 2020-2021)



Panel B: %Account ownership (Financial Development Database/Global Findex 2021)

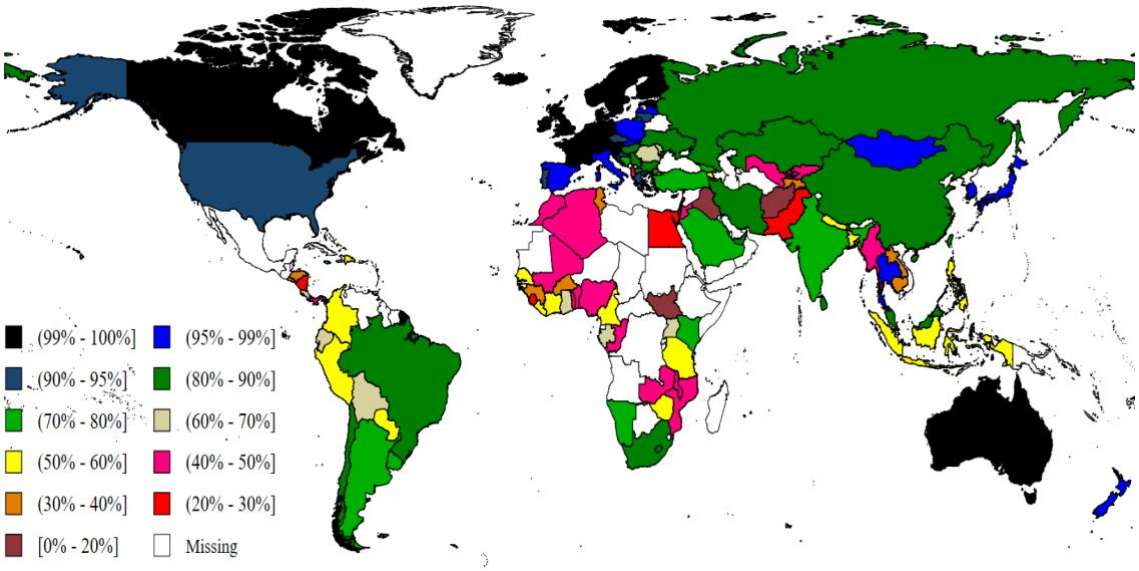
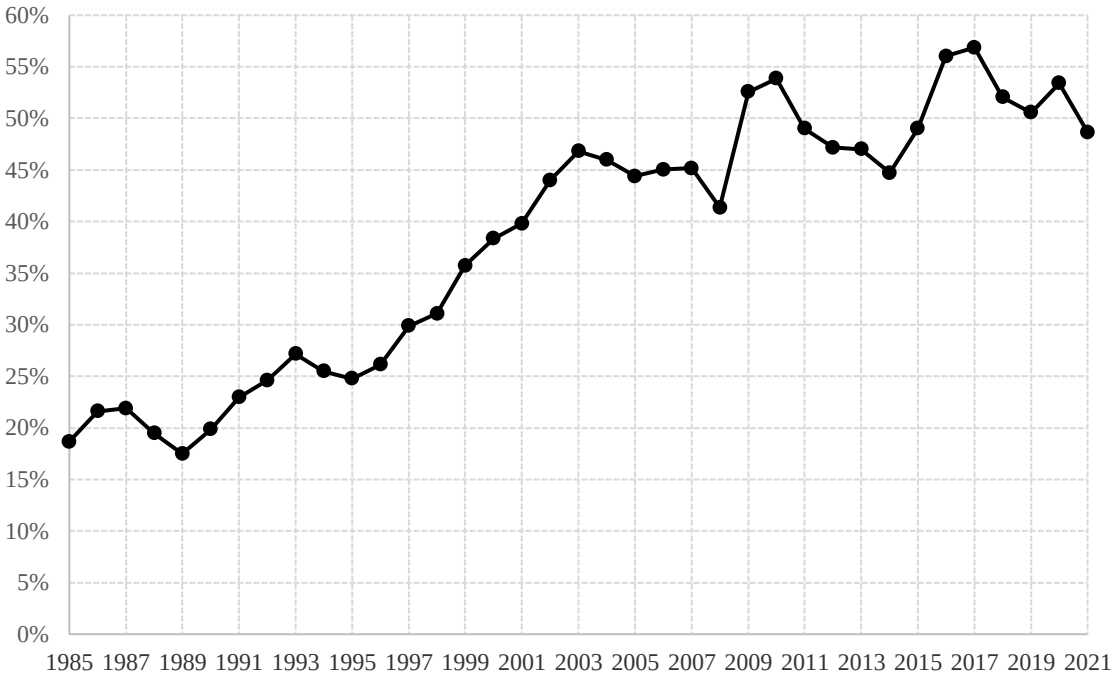


Figure 2.3
Distributions of bank deposits and financial inclusion around the world in 2021

Panel A: %Bank deposits – to – GDP (World Bank Financial Development Database, 1985-2021)



Panel B: %Account ownership (Global Findex 2011-2021)

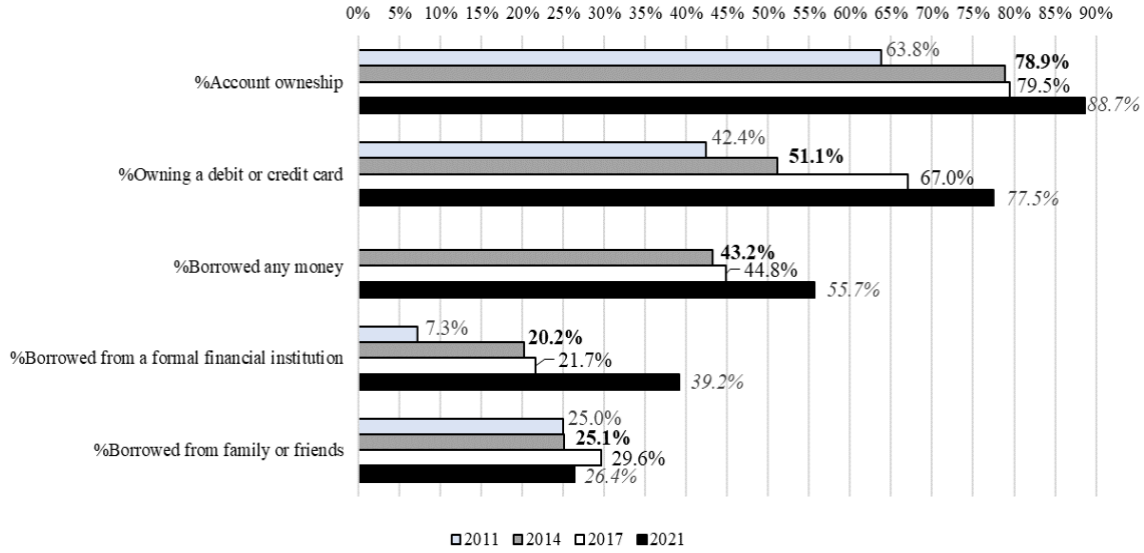


Figure 2.4
The historical evolution of deposits and financial inclusion in China

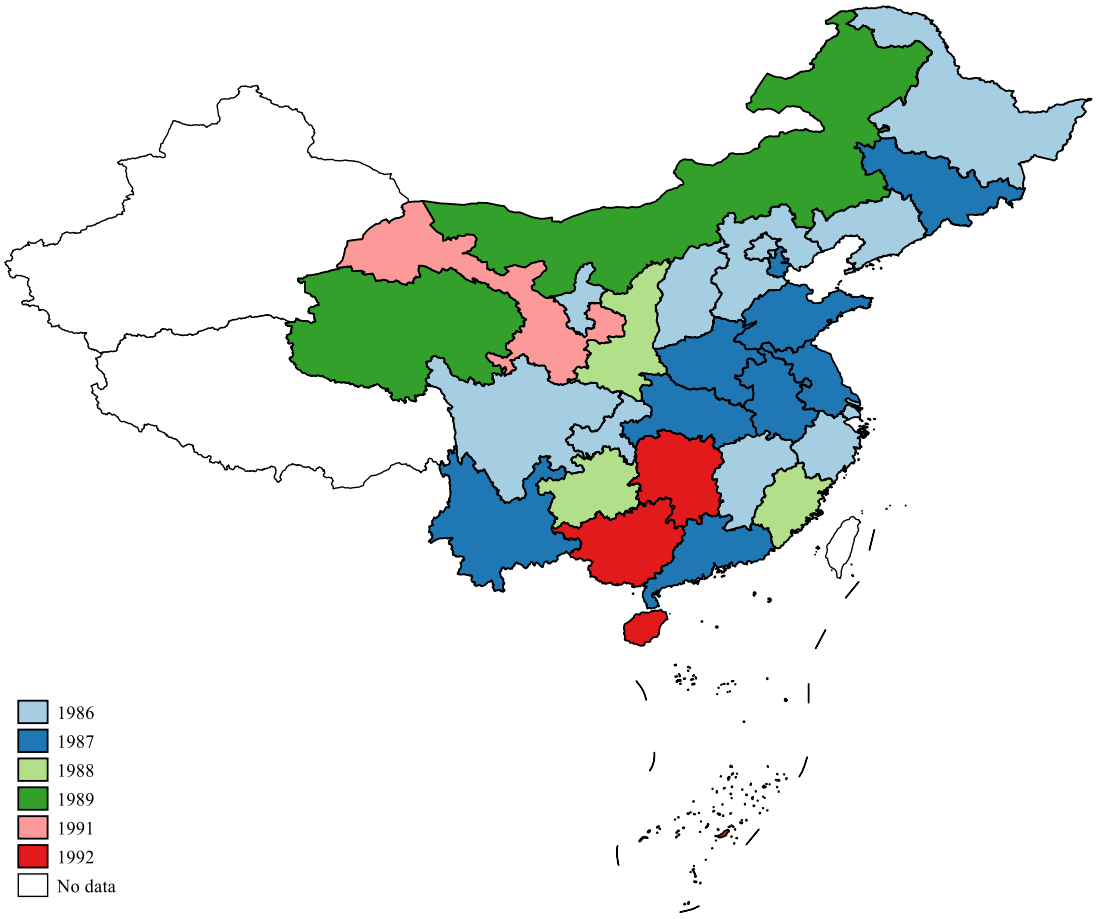


Figure 2.5
Map of the educational reform by Chinese province

The figure maps the administrative borders of the 31 major provinces in China. The 11 provinces that have implemented compulsory schooling reform in 1986 are shown in light blue colour (Beijing, Hebei, Shanxi, Heilongjiang, Shanghai, Zhejiang, Jiangxi, Chongqing, Sichuan, Ningxia, Liaoning), the 9 provinces of 1987 is shown in deep blue colour (Tianjin, Jilin, Jiangsu, Anhui, Shandong, Henan, Hubei, Guangdong, Yunnan), and the 3 provinces of 1988 is shown in light green (Fujian, Guizhou, Shaanxi). The 2 provinces that enacted educational reform in 1989 are shown in deep green colour (Inner Mongolia, Qinghai), and the 1 province of 1991 is shown in pink (Gansu). Additional 3 provinces (Hunan, Guangxi, Hainan) enacted in 1992 are shown in red, while regions without data are presented in white The map coordinates for the Chinese administrative regions, along with map platforms are available at: http://datav.aliyun.com/tools/atlas/index.html.

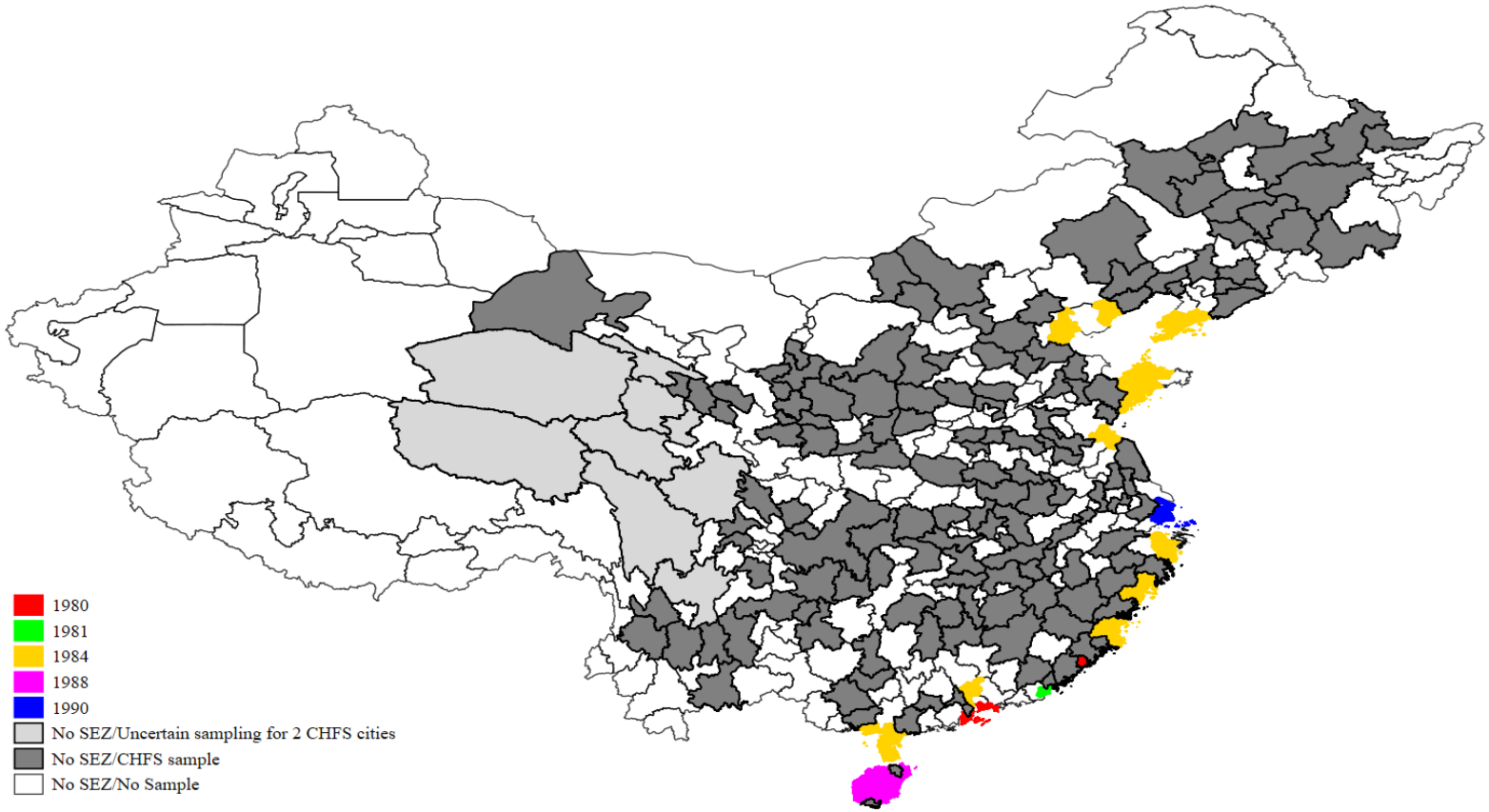


Figure 2.6

The Chinese Special Economic Zones and Coastal Cities

The figure maps the administrative borders of the 344 major cities in China. The coordinates' dataset is available at: http://www.diva-gis.org/datadown. The 2 cities that became special economic zones in 1980 are shown in red colour (Shenzen, Zhuhai), the 1 city of 1981 is shown in green colour (Shantou), and the 1 city of 1988 is shown in purple (Hainan). The 13 coastal cities that became economic zones in 1984 are shown

in yellow colour (Lianyungang, Fuzhou, Guangzhou, Zhanjiang, Beihai, Qinhuangdao, Dalian, Qingdao, Yantai, Tianjin, Ningbo, Wenzhou), and the 1 city of 1990 is shown in blue (Shanghai). Nantong, an additional coastal city of the 1984 reform is not included in the CHFS sample.

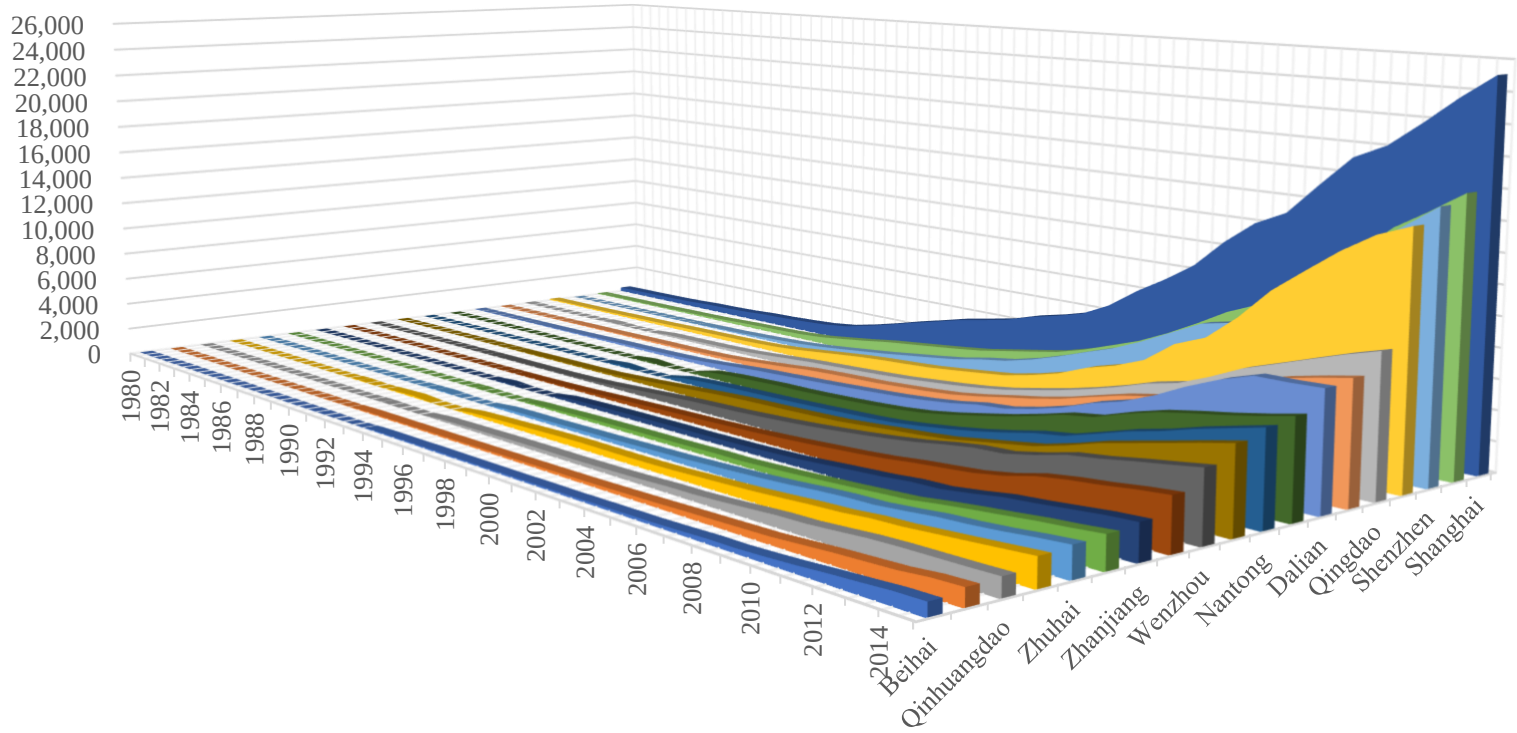


Figure 2.7

The GDP of Special Economic Zones and Coastal Cities in China Between 1980–2015 (unit: Billion Yuan)

This figure presents the nominal GDP of special economic zones and coastal cities in China for the period between 1980-2015. The figures are from the Wind Economic Database, available at: https://www.wind.com.cn/en/edb.html.

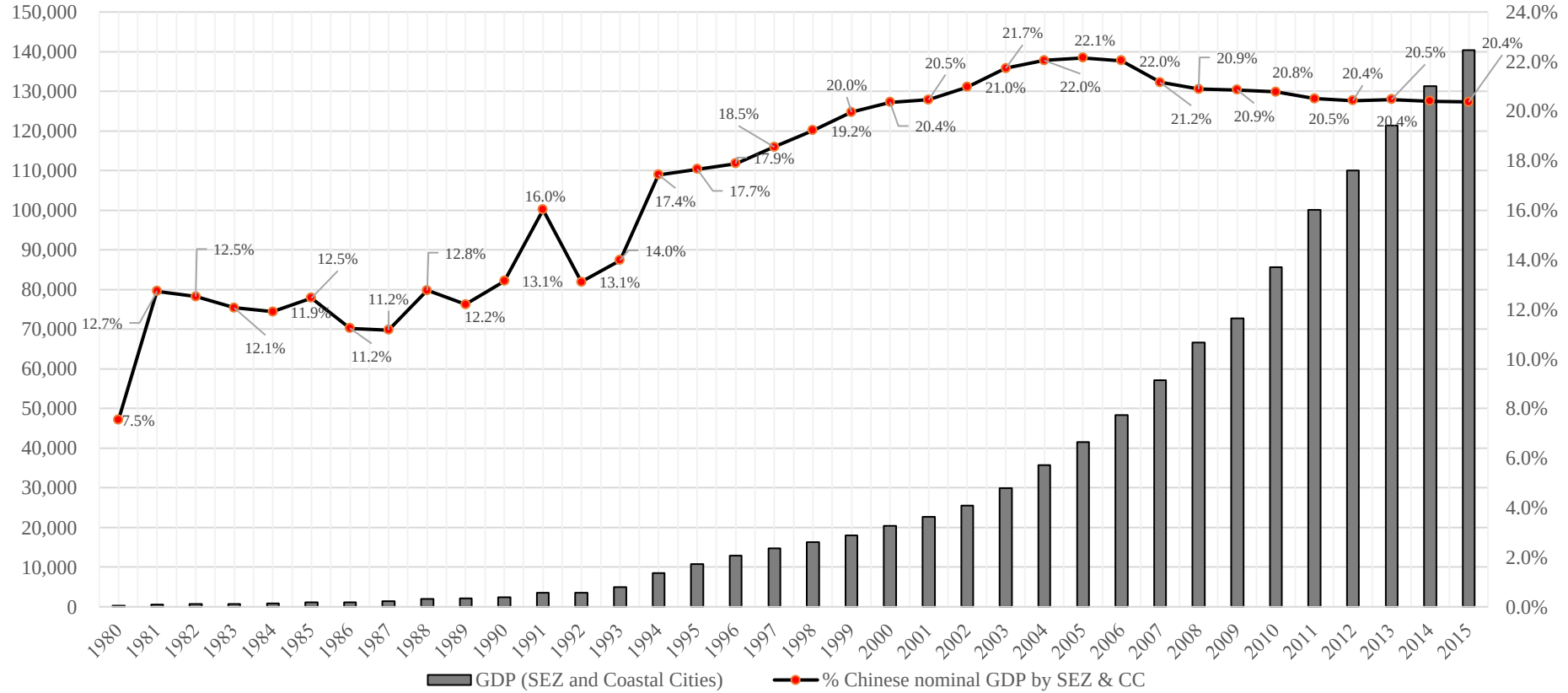
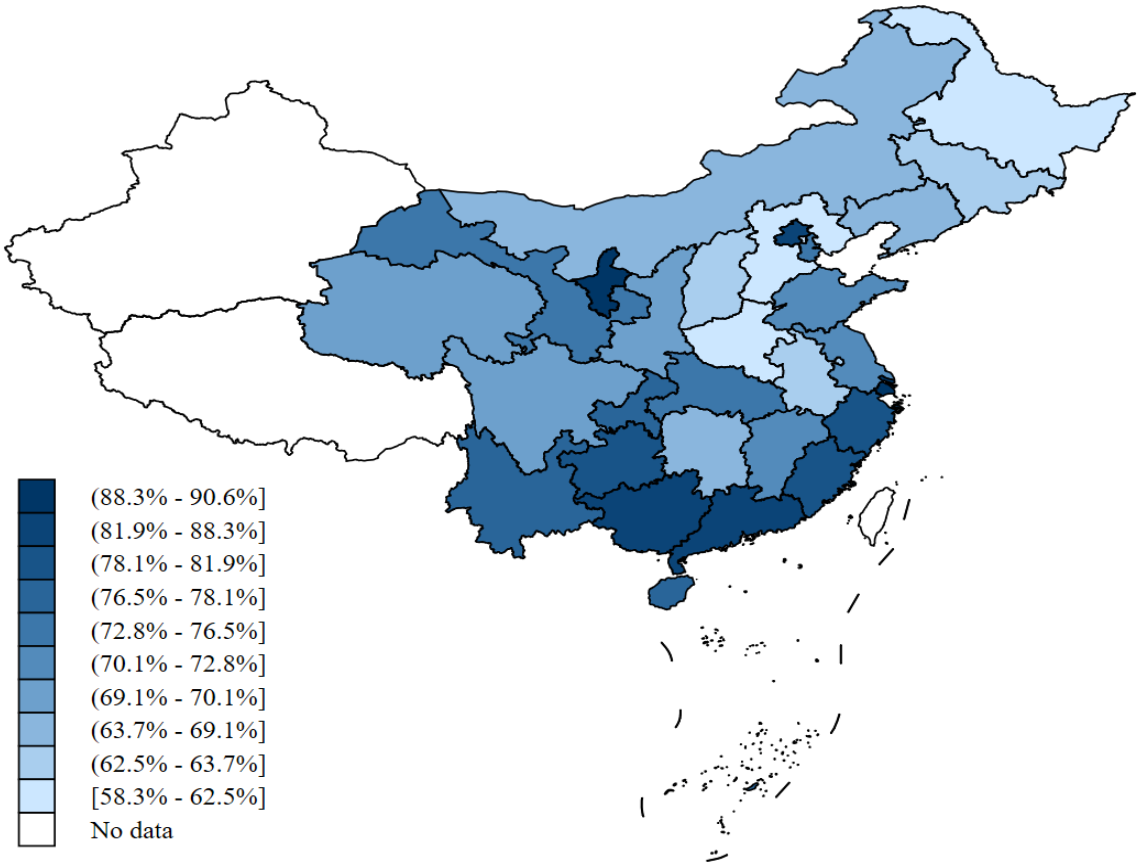


Figure 2.8

The Contribution of Special Economic Zones and Coastal Cities to the Chinese Nominal GDP Between 1980–2015 (unit: Billion Yuan)

The bars present the total nominal GDP of special economic zones and coastal cities in China during the years 1980-2015. The unit of measurement is in billion Yuan, as shown at the left axis. The red-dotted black line presents these totals as a percentage of the Chinese nominal GDP for the same 35 years. The data is from the Wind Economic Database, available at: https://www.wind.com.cn/en/edb.html.

Panel A: Financial inclusion across Chinese provinces



Panel B: Financial inclusion across Chinese cities

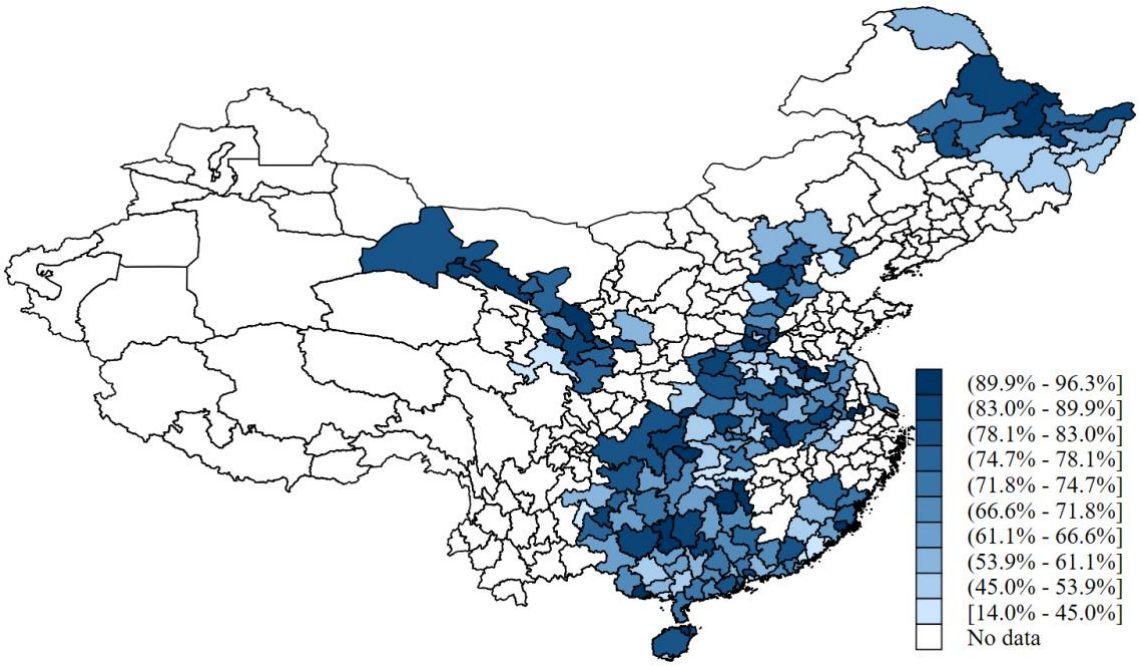
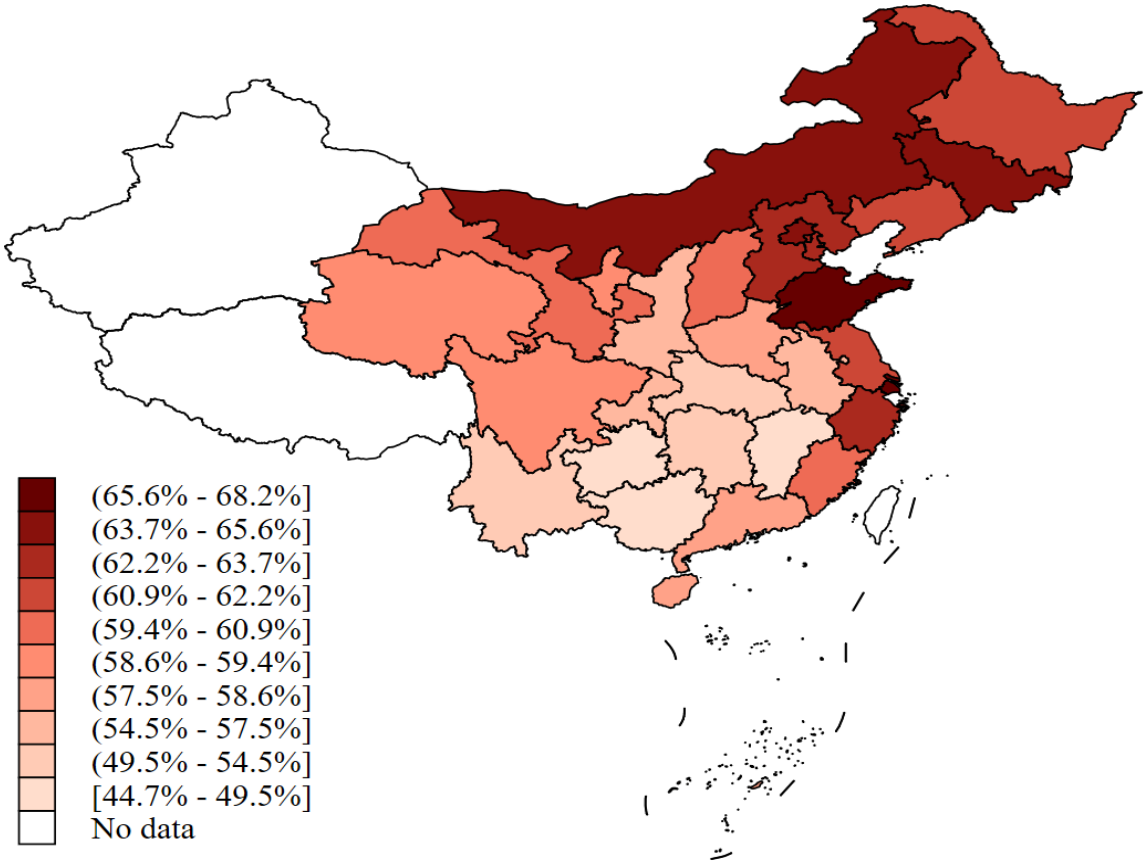


Figure 2.9

Financial inclusion across Chinese provinces and cities in 2015

This figure presents the distribution of financial inclusion in China in the year 2015. Deciles of the weighted average scores across provinces are presented in panel A, and the respective deciles across cities in the Chinese Household Finance Survey 2015 are presented in panel B.

Panel A: Subjective well-being across Chinese provinces



Panel B: Subjective well-being across Chinese cities

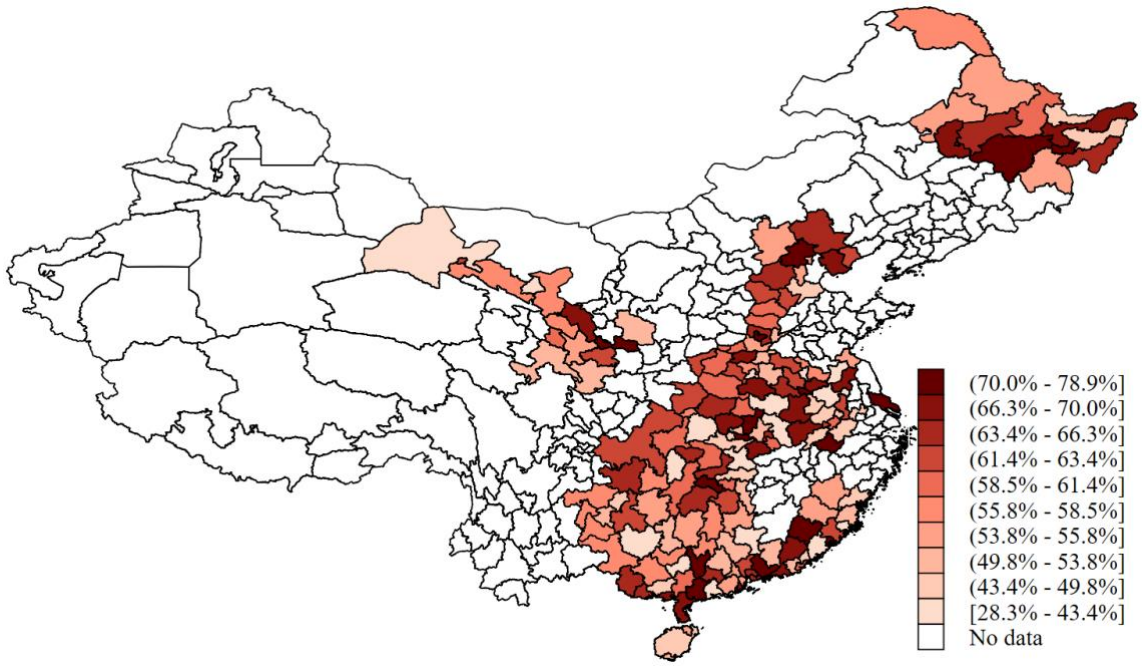
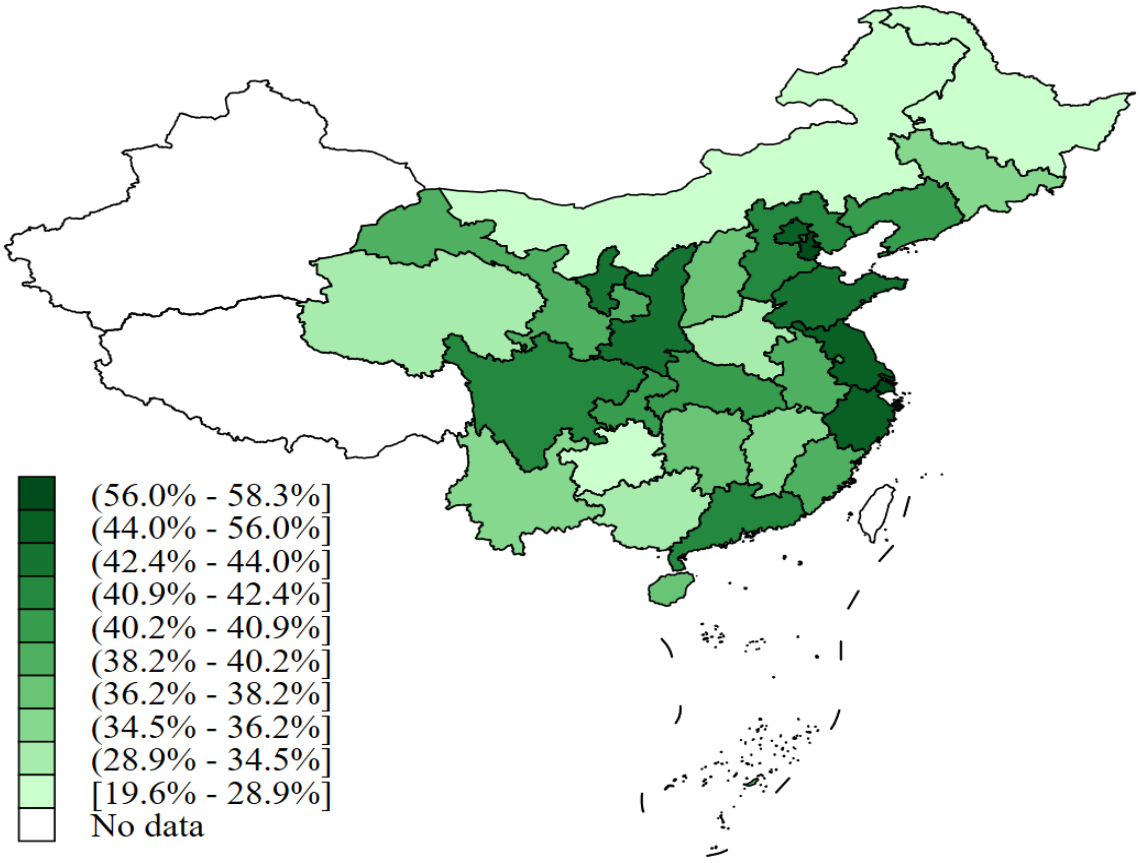


Figure 2.10

Subjective well-being in China in 2015

This figure presents the distribution in deciles of the weighted percentage of individuals who respond either 'very happy' or 'happy' to the following question in the Chinese Household Finance Survey (2015): "How happy to you feel"? The responses range from 1 (Extremely unhappy) to 5 (Extremely happy).

Panel A: Financial resilience across Chinese provinces



Panel B: Financial resilience across Chinese cities

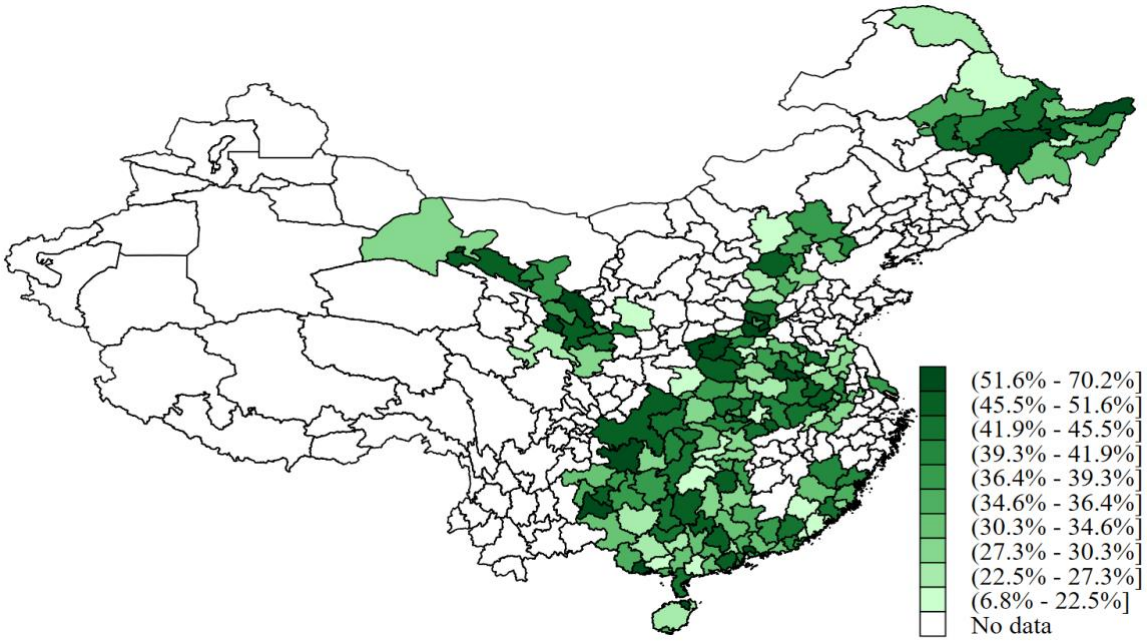


Figure 2.11

Financial resilience in China in 2015

This figure presents the distribution in deciles of the weighted percentage of individuals who are considered as financial resilient in the Chinese Household Finance Survey (2015). Financial resilience is defined as the liquid asset ownership that is greater or equal to 25% (i.e., 3 months) of annual disposable household income.

Table 2.1

Overview of implementation year of compulsory schooling reform in China

This table presents the years in which 29 provinces have implemented compulsory schooling reform year during 1986-1992.

Year	Province
1986	Beijing, Hebei, Shanxi, Heilongjiang, Shanghai, Zhejiang, Jiangxi, Chongqing, Sichuan, Ningxia, Liaoning
1987	Tianjin, Jilin, Jiangsu, Anhui, Shandong, Henan, Hubei, Guangdong, Yunnan
1988	Fujian, Guizhou, Shaanxi
1989	Inner Mongolia, Qinghai
1991	Gansu
1992	Hunan, Guangxi, Hainan

Table 2.2

Weighted Summary Statistics for CHFS 2013 in Chapter 3

This table summarizes the weighted averages for the demographic characteristics and financial outcomes of the pooled sample of respondents in the survey of the CHFS2013 databases (Column 1). It denotes weighted averages of individuals, who age between 18 to 48. The remaining Column (2) shows samples of males, Column (3) for females; Column (4) indicates the respondents who were based in urban regions, Column (5) for rural regions. [A] all monetary values are reported in Chinese Yuan in 2013.

	Pooled sample	**Males**	**Females**	**Urban Region**	**Rural Region**
No. of Observations	*43,888*	*22,366*	*21,522*	*17,064*	*26,824*
	(1)	(2)	(3)	(4)	(5)
No conditionality in free schooling	48.2%	48.1%	48.2%	45.5%	49.5%
Aged ≥6 post single-child reform	44.0%	51.5%	36.1%	41.6%	45.1%
Reform exposure (interaction term)	29.0%	33.8%	24.0%	28.8%	29.1%
Ownership of stocks	5.2%	5.1%	5.4%	13.3%	1.2%
Ownership of risky assets	9.2%	8.9%	9.4%	21.5%	3.0%
Value of stocks^{A}	8,145.7	7,759.8	8,548.7	20,526.0	1,985.1
Value of risky assets^{A}	11,047.9	10,821.0	11,284.9	27,946.0	2,639.2
Stocks-to-financial asset ratio	2.4%	2.3%	2.5%	6.2%	0.6%
Risky-to-financial asset ratio	4.4%	4.2%	4.5%	10.9%	1.1%
Stocks to wealth ratio	0.6%	0.6%	0.6%	1.4%	0.2%
Risky assets to wealth ratio	1.0%	1.0%	1.0%	2.4%	0.3%
#Assets held	1.75	1.74	1.76	2.09	1.58
Portfolio variance	0.11	0.10	0.11	0.26	0.03
Wealth^{A}	546,478.7	533,296.1	560,247.0	922,229.0	359,502.2
Disposable income^{A}	72,674.5	72,478.6	72,879.2	104,769.9	56,703.6
Value of financial assets^{A}	56,422.8	55,471.8	57,416.1	99,260.4	35,106.5
Years Of Education	10.4	10.6	10.2	12.8	9.3
Male	51.1%	100.0%	0.0%	49.7%	51.8%
Age	32.8	32.7	32.8	33.4	32.5
Physical condition [1, 5]	2.97	3.02	2.93	3.08	2.92
Urban region	33.2%	32.3%	34.1%	100.0%	0.0%
Parents living in urban region	25.7%	24.8%	26.5%	66.2%	5.5%
Married	71.3%	67.0%	75.8%	70.0%	72.0%
#Children	1.45	1.49	1.42	0.84	1.76
Financial literacy	0.66	0.65	0.67	0.94	0.53
Attitude to financial risk	2.09	2.09	2.09	2.27	2.00
Confucian values - Filial piety	2.33	2.36	2.29	1.61	2.68

Table 2.3

The Timeline of the Special Economic Zone and Coastal City Reforms in China

This table presents the years in which 4 cities in 3 Chinese provinces became special economic zones during 1980-1981, and years in which an additional 15 cities became coastal-city economic zones between 1984-1990. Nantong is marked with a symbol (‡) as there was no sample from this city in the CHFS 2015 database. Moreover, Shanghai and Tianjin are shown in italics, as they are metropolitan cities and are not formally part of a province. Both metropolitan cities provided samples in the database.

Year	City	Province
1980 (Special Economic Zones)	Shenzhen	Guangdong
	Zhuhai	
1980 (Special Economic Zones)	Xiamen	Fujian
1981 (Special Economic Zones)	Shantou	Guangdong
1984 (Coastal Cities)	Lianyungang	Jiangsu
	Fuzhou	Fujian
	Guangzhou	Guangdong
	Zhanjiang	
	Beihai	Guangxi
	Qinhuangdao	Hebei
	Dalian	Liaoning
	Qingdao	Shandong
	Yantai	
	Tianjin	*[Tianjin]*
	Ningbo	Zhejiang
	Wenzhou	
	Nantong‡	{Jiangsu}
1988 (Special Economic Zones)	Hainan	Hainan
1990 (Coastal Cities)	*Shanghai*	*[Shanghai]*

Table 2.4

Weighted Summary Statistics for CHFS 2015 in Chapter 4

This table presents the weighted averages for the demographic characteristics and financial outcomes of the pooled sample of respondents to the financial questionnaire of the CHFS 2015 database (Column 1). It presents weighted averages for the treated group of individuals, who were born in the SEZ cities less than or equal to 12 years prior to the reform in Column 2, and for the control group of all remaining individuals in Column 3. Then, it presents the weighted averages for the sub-sample of the control group who were born in the non-SEZ cities post 1984. Column 5 displays the mean differences and asterisks for the levels of significance obtained from weighted t-tests between the weighted averages of columns (2) and (3), and their respective standard errors (not shown). Column 6 displays the mean differences and asterisks for the levels of significance obtained from weighted t-tests between the figures of columns (2) and (4) and their respective standard errors (not shown). The parmby and metaparm commands were used in Stata to produce weighted t-tests and the levels of significance. The asterisks denote the following levels of significance at the ***: 1% **: 5%, and *: 10%. The symbol † denotes figures for types of finance access among individuals with any access to finance, i.e., excluding the financially excluded. The symbol ‡ denotes figures for different types of financial market participation among financial asset owners only, i.e., excluding those without any financial assets.

	Pooled sample (1)	**Post-SEZ** (2)	**Control group** (3)	**Post-non-SEZ** (4)	**Diff./ Sig. (2) vs (3)** (5)	**Diff./ Sig. (2) vs (4)** (6)
Number of observations	*31,416*	*2,474*	*28,941*	*7 ,201*		
Panel A: Demographic characteristics						
Male	52.1%	52.7%	52.1%	48.4%	0.006	0.043 *
Age	47.9	32.5	49.2	33.6	-16.623***	-1.073 ***
Years of education	9.5	12.2	9.3	11.5	2.911***	0.705 ***
Physical condition [1, 5]	3.4	3.8	3.4	3.7	0.470***	0.157 ***
Married	87.9%	77.9%	88.7%	82.4%	-0.108***	-0.045 **
#Children	1.1	0.7	1.2	0.8	-0.517***	-0.098 **
Urban region	44.5%	48.5%	44.2%	48.1%	0.043*	0.004
Parents living in urban region	39.3%	37.0%	39.4%	42.0%	-0.024	-0.050 **
Self-employed	13.0%	13.0%	13.0%	17.2%	0.000	-0.041 **
Employed	31.2%	66.3%	28.4%	50.0%	0.379***	0.163 ***
Farmers	24.5%	2.6%	26.2%	12.9%	-0.236***	-0.102 ***
Generic risk tolerance	24.2%	31.1%	23.7%	30.5%	0.074***	0.006
Financial risk tolerance	2.8	3.6	2.8	3.4	0.809***	0.222 ***
Confucian values - Filial piety	2.6	2.2	2.6	2.3	-0.485***	-0.168 ***
Financial literacy	1.0	1.4	0.9	1.3	0.493***	0.125 ***
Living near a bank	38.3%	45.0%	37.8%	37.3%	0.073***	0.077 ***
Distance to bank (km)	5.1	2.8	5.3	4.6	-2.484***	-1.779 ***
Living in same region since birth	68.8%	76.5%	68.2%	69.2%	0.084***	0.074 ***
Panel B: Financial characteristics						
Value of financial assets	91,374	195,270	83,153	108,472	112,117***	86,798***
Financially included	70.0%	82.7%	69.0%	80.8%	0.137***	0.019
Having a credit card	20.0%	45.6%	17.9%	33.4%	0.277***	0.122***
Formal finance	15.7%	32.0%	14.4%	24.0%	0.177***	0.080***
Informal finance	23.9%	15.7%	24.6%	25.1%	-0.089***	-0.094***
–" – †	70.9%	40.2%	73.8%	62.3%	-0.336***	-0.221***
Informal-to-total finance ratio†	56.0%	25.1%	58.9%	44.4%	-0.338***	-0.193***
Ownership of stocks	8.2%	19.2%	7.3%	10.4%	0.119***	0.088***
Ownership of risky assets	16.6%	37.4%	15.0%	24.8%	0.225***	0.126***
Ownership of house	85.3%	64.8%	86.9%	78.8%	-0.221***	-0.140***
Value of stocks	19,612	53,269	16,948	24,094	36,321***	29,176**
–" – ‡	238,007	277,652	229,752	228,948	47,900	48,704
Value of risky assets	33,315	85,149	29,213	38,231	55,936***	46,918***
–" – ‡	200,480	227,478	195,138	154,163	32,340	73,315
Stocks-to-financial asset ratio	4.1%	9.1%	3.7%	4.9%	0.054***	0.042***
–" – ‡	6.0%	11.2%	5.5%	6.1%	0.057***	0.051***
Risky-to-financial asset ratio	8.2%	17.1%	7.5%	10.7%	0.097***	0.064***
–" – ‡	12.0%	21.1%	11.1%	13.4%	0.100***	0.077***
#Assets held	0.2	0.4	0.2	0.2	0.408***	0.163***

Table 3.2 continued in next page

Table 3.2 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
–" – ‡	0.3	0.4	0.3	0.3	0.231***	0.145***
Portfolio variance	0.2	0.5	0.2	0.3	0.319***	0.222***
–" – ‡	0.4	0.7	0.3	0.4	0.342***	0.269***
Panel C: Mediating variables						
Educ. reform exposure	4.2%	14.9%	3.3%	12.6%	0.1152***	0.0222*
Father: Educated (≥9 years)	5.5%	14.6%	4.8%	12.1%	0.0975***	0.0248*
Parent: Business	3.6%	12.0%	2.9%	5.9%	0.0907***	0.0605***
Parent: Manager	5.3%	8.0%	5.1%	6.4%	0.029***	0.0157
Windfall gains	8.2%	12.4%	7.9%	10.4%	0.0448***	0.02
Disposable household income	82,520	155,817	76,720	98,048	79,097***	57,769***
Savings rate	70.0%	87.9%	68.6%	74.8%	0.1933**	0.1304*
Wealth	507,630	,393,612	437,519	562,117	956,093***	831,495
Net financial wealth	30,800	9,674	32,471	26,579	-22,797	-16,905
Filial piety	62.5%	64.1%	62.4%	65.2%	0.0172	-0.0108
Socialization	2.463	2.183	2.485	2.337	-0.3023***	-0.1539***
Trust	2.6	2.151	2.635	2.319	-0.4849***	-0.1684***
Fin. risk tolerance	2.825	3.575	2.765	3.353	0.8094***	0.222***
Fin. Literacy	0.976	1.434	0.94	1.309	0.4933***	0.1249***

Table 2.5

Weighted summary statistics for CHFS 2015 in Chapter 5

This table reports weighted averages for the pooled sample in the CHFS 2015 (Column 1), and then for the sub-samples of financially included (Column 2) and excluded (Column 3). Column 4 reports differences in weighted average and their significance in weighted t-tests. The asterisks denote the following levels of significance: *** p<0.01, ** p<0.05, * p<0.1. All monetary values are in Chinese Yuan.

	Pooled sample	**Fin. Included**	**Fin. Excluded**	**Diff.**	**(Sig.)**
	(1)	(2)	(3)	(4)	(5)
#Observations	*32,541*	*23,562*	*8,979*		
Subjective Happiness	3.66	3.71	3.54	0.1709	***
Formal finance*	15.4%	18.0%	8.8%	0.0920	***
Informal-to-total finance ratio*	56.4%	48.2%	74.3%	-0.2612	***
Male	52.7%	53.7%	50.0%	0.0374	***
Age	48.00	46.33	52.25	-5.9143	***
Years of education	9.47	10.37	7.19	3.1740	***
Marital status: Cohabiting/married	87.9%	87.6%	88.8%	-0.0121	*
-"-: Widowed/Divorced /Separated	6.2%	5.4%	8.0%	-0.0263	***
-"-: Single	5.9%	7.0%	3.2%	0.0384	***
Income	81,704	97,694	40,964	56,700	***
Net worth	439,349	541,640	178,712	362,900	***
Number of children	0.92	0.92	0.91	0.0057	
Single child	6.9%	7.9%	4.4%	0.0357	***
Same province as parents	17.0%	18.6%	13.0%	0.0559	***
Sociable person	62.7%	64.7%	57.5%	0.0718	***
Financial literacy	0.97	1.135	0.548	0.5877	***
Near bank	41.6%	49.6%	21.3%	0.2823	***
Distance to bank	1.92	1.75	2.36	-0.6042	***
Financial resilience	0.401	0.496	0.213	0.3381	***
Trust	41.7%	39.0%	48.7%	-0.0970	***
Liquid assets ratio	0.71	0.91	0.18	0.7313	***
Non-liquid assets ratio	4.72	5.03	3.95	1.0804	***
Savings-to-income ratio	0.70	0.93	0.11	0.8275	***
Filial Piety	2.62	2.43	3.09	-0.6621	***
Physical condition: Good	84.6%	88.6%	74.5%	0.1416	***
-"-: Fair	13.2%	9.9%	21.4%	-0.1154	***
-"-: Poor	2.2%	1.5%	4.1%	-0.0258	***
Labour market status: Self-employed	13.4%	13.4%	13.5%	-0.0012	
-"-: Employed	30.9%	38.3%	12.1%	0.2620	***
-"-: Farmers	24.3%	18.0%	40.2%	-0.2217	***
-"-: Casual workers	0.5%	0.5%	0.5%	-0.0003	
-"-: Students	7.0%	8.4%	3.7%	0.0464	***
-"-: Homemakers	8.6%	7.8%	10.8%	-0.0295	***
-"-: Retired, Inactive, Other	2.0%	1.8%	2.5%	-0.0068	*
-"-: Unemployed	38.9%	45.8%	21.4%	0.2441	***
Urbanisation: Urban-Urban	5.3%	6.0%	3.4%	0.0261	***
-"-: Rural-Urban	0.2%	0.2%	0.2%	-0.0002	
-"-: Urban-Rural	44.2%	51.8%	24.8%	0.2702	***
-"-: Rural-Rural	55.6%	48.0%	75.0%	-0.2700	***
$GRP_{\text{per capita}}$	0.542	0.553	0.514	0.0383	***
Income inequality	0.147	0.157	0.124	0.0330	***
Unemployment	0.215	0.217	0.210	0.0061	***
Inflation	99.035	99.056	98.983	0.0722	***
Social expenditure	0.094	0.096	0.090	0.0058	***
$\text{Sunshine}_{\text{hours}}$	1.812	1.797	1.85	-0.0531	***
$\text{Water emissions}_{\text{per capita}}$	0.542	0.553	0.516	0.0367	***

Chapter 3

SUI Generis: Conditional Free Compulsory Schooling and Financial Market Participation in China

3.1 Introduction

The opening of the financial sector in contemporary China after the early 1990s plays a crucial role in fostering its large economic expansion over the last decades. As labour income per capita in households continues to increase, individual ability to allocate assets efficiently over time is paramount to increasing living standards and well-being (Campbell, 2006). The development of the financial sector over the last three decades has increased the availability of diverse financial products to households, such as stocks, bonds, mutual funds, and derivatives, as well as wealth management products and risk-free bank savings accounts.

However, despite the increase in savings rates in China, diversification in the portfolios of Chinese households is very limited. According to a report by the Household Finance Survey (CHFS, 2016), over 70% of Chinese residents' assets are concentrated in property. Financial assets account for less than 30% of a typical Chinese portfolio, and 80% of those financial assets are savings accounts. Investment in stocks and/or mutual funds was 12.4% of Chinese portfolios in 2015, which is much lower than in developed countries such as the United Kingdom and the United States, for which the figures are just below 50% or around 20% if one excludes participation via defined-contribution accounts (Gomes *et al*., 2021). According to Ge *et al*., (2021), based on the 2014-2018 China Family Panel Studies (CFPS), 23% of individual investors participate in risky asset markets, including gold and foreign currencies, and 10% of financial wealth is allocated to risky assets. However, these estimates are likely to refer to the individual, rather than the household level.

Several studies attempt to explain the phenomenon of limited participation in risky asset markets from the perspectives of institutional and legal constraints (Cardak and Wikins, 2009; Brown *et al.*, 2019), social norms and interactions (Guiso, 2008), investor mentality (Hong *et al.*, 2004), risk aversion (Ayyagari *et al.*, 2017; Halko *et al.*, 2012), and financial literacy (van Rooij *et al.*, 2011), inter alia. A distinctive literature examines the effect of education on financial market participation. Cooper and Zhu (2016), for example, suggest that educational attainment lowers the information costs that residents pay when making

financial investments, which could make it more likely for households to have diversified portfolios.

A series of recent studies use compulsory schooling reforms to identify the causal effect of exogenous variation in years of schooling on household financial behaviours. For instance, using U.S. data, Cole *et al.*, (2014) find that more years of education due to compulsory schooling reforms considerably increase financial market participation and investment returns, with increases in cognitive ability and financial literacy being the likely mechanisms. Using compulsory schooling reforms between 1947 and 1972 in Great Britain, Gray *et al*., (2021) identify a positive relationship between educational attainment and financial market participation. Using state-of-the-art Swedish data, Black *et al*., (2018) find that an extra year of education due to a related compulsory-schooling reform increases stock market participation by two percentage points and the share of financial wealth invested in stocks by 10%. The relevant literature includes more studies and related contexts, such as Oreopoulos (2007) and Cole *et al*., (2016) for the United States, Ajayi (2020) for Kenya, García and Tessada (2013) for Chile, and Aydemir (2021) for Turkey, inter alia.

This study examines the impact of schooling attainment on financial market participation in China. The household financial outcomes involve investment in stocks and risky assets, amounts invested, and portfolio diversification. The identification strategy exploits two related and overlapping major policy reforms in China in the 1980s. The first reform is the compulsory-schooling reform that raised the mandatory years of schooling from six to nine. The reform was initiated in 1986-1987 in 20 Chinese provinces and gradually took effect in another nine provinces by 1992. The second overlapping reform was the one-child policy of 1980, which allowed urban residents of Han ethnicity to have only one child. Rural residents of Han ethnicity were allowed to have a second child if their first child was female. There were no limitations for individuals of non-Han ethnicity, as they are a small minority of the Chinese population.

The relevance of the two reforms is that individuals born in or after 1980 began primary school in 1986 and thus received nine years of compulsory schooling, compared to only six years for individuals born one year earlier (in 1979). The one-child policy included financial penalties, such as exclusion from free schooling, inter alia. Hence, exposure to free compulsory schooling reform was conditional on compliance with the one-child policy.

I use data from the 2013 China Households Finance Survey, which is based on a very rich questionnaire to study all aspects of household financial behavior. The data collectors

provide household weights that render the resulting data nationally representative of China. The data shows very limited financial market participation among Chinese households in 2013: 9.2% of the Chinese households in sample invest in risky assets, and only 5.2% invest in stocks. The unique feature of the 2013 wave, compared to other waves, is that it contains all the essential questions related to ethnicity and the number of siblings. This enables the initiation of identification strategy based on the exclusion criteria for free compulsory schooling stipulated by the one-child policy. In order to investigate the causal effect of education on household financial behaviour, I implement a fuzzy regression discontinuity design that captures the effect of reform exposure on years of schooling.

I find that higher educational attainment due to the conditional free-schooling reform exerts a significant positive effect on financial market participation and portfolio diversification. Specifically, the effect that years of schooling has on stock market participation is 50% and greater; its effect on risky asset market participation is greater than 30%. Schooling increases the amounts invested in stocks in magnitudes of 50% or more, in terms of the logarithm of the amount in stocks, as well as the ratios of stocks to financial assets and stocks to wealth. The respective magnitudes for investment in risky assets are greater than 30%. The effects are significant for both males and females, although the magnitude of the effects is higher for males. The results are not significant for residents of rural regions. I confirm these findings in a number of robustness exercises in this study. The causal mediation analysis indicates that the moderate increase in financial literacy and the decrease in Confucian norms of filial piety are likely the plausible transmission channels through which increased schooling affects financial participation (among the several candidates tested, including financial risk tolerance, earnings and earnings uncertainty, savings, and wealth, inter alia).

This study contributes to the related literature on household finance, social transmission mechanisms, and educational reform in several ways. First, this is a pioneering empirical study that examines how education affects financial market participation in China, using the context of the two most relevant and overlapping exogenous policy reforms. Second, although there is prior evidence of a positive relationship between educational attainment and financial market participation in other contexts (Almenberg and Dreber, 2015; Barnea *et al.*, 2010; Yoong, 2011), this study is most relevant to the limited literature that identifies the causal effect via exogenous policy changes (Cole *et al.*, 2016; Black *et al.*, 2018; Gray *et al.*, 2021). Third, this study presents evidence on the mediating role of the formation of cognitive skills such as financial literacy, as well as the evolution of social

norms, such as filial piety, which interact with education and are likely to affect household financial outcomes. Prior evidence from China (Chen *et al.*, 2019) suggests that stronger Confucian social norms reduce the gap in the savings rate between families with sons and with daughters. There is less evidence of the impact of education on financial literacy in China, and the mediating role of financial literacy is of interest, given a very recent educational reform in China, which emphasizes the importance of the formation of related cognitive skills.

The remainder of this study is organized as follows. Section 2 reviews the literature on the relationships among education, household financial behavior, and outcomes, along with likely transmission mechanisms. In section 3 I describe the context of the two related reforms of the 1980s in China, which enable identification strategy. Section 4 then describes the data and summary statistics for sample; it also presents the empirical approach based on identification strategy. Section 5 presents the empirical results from fuzzy regression discontinuity design, a number of robustness exercises, and the causal mediation analysis for financial market participation. Section 6 concludes and discusses the policy relevance of findings.

3.2 Background and Literature

In this section, I discuss the relationship between educational attainment and financial market participation, emphasizing on previous findings and potential mechanisms. I also present a recent historical overview of the development of the financial sector in China.

3.2.1 Educational attainment and financial market participation

The relationship between education attainment and financial market participation has received significant attention in recent years, with policy-relevant studies aiming to identify a causal effect of education on investment behavior (Cole and Shastry, 2008; Collard, 2009). According to Black *et al.*, (2018), a causal effect of education on investment decisions exists especially among men, with each additional year of schooling increasing the likelihood of stock market participation by two percentage points, and the likelihood of risky market participation by one percentage point. Similarly, Qiao (2012) finds that male university students have higher risk tolerance and are more driven by financial socialization than are female university students. Ozbilgin (2010) argues that there is a lack of consensus regarding

the mediating factors of the effect of educational attainment on investment behaviour in developed and developing countries, due to apparent cultural, gender, and socioeconomic differences.

Ozbilgin (2010) challenges the traditional viewpoint that there is a causal relationship between education and financial market participation, drawing upon the theory of cognitive behavior on portfolio choice in Christelis *et al.*, (2010) to illustrate that investment behaviors are influenced by many other individual characteristics, such as uncertainty-avoidance preferences, intelligence, family background, and previous investment experience.

This is incorporated in Black *et al.*, (2018), who examine the comprehensive primary schooling reform in Sweden during the 1950s and 1960s. This reform increased mandatory years of schooling from seven to nine, and the study measures the rates of financial market participation among individuals exposed to the reform, while acknowledging major cultural trends and legislative changes, including preferences in financial market participation outside of pension funds among Swedish households, the introduction of nontaxable securities and securities during the 1990s, and regulatory changes in reporting small bank accounts (over 10,000 SEK) in 2006.

Nonetheless, higher educational attainment increases the likelihood of financial market participation, validating the theoretical presumptions that higher educational attainment reduces risk aversion; it also enables the generation of greater financial wealth from investing in high-risk/high-reward financial assets with reduced costs in gathering and processing information related to financial markets (Christelis *et al.*, 2010; Qiao 2012).

3.2.2 The transmission channels from schooling to household finances

Inglae and Paluri (2020) do a bibliometric study of how years of schooling affect financial behaviors; they use 1,138 documents in the Web of Science database from 1985 to 2020. They identify financial literacy as the key mediator to explain how more years of schooling influence participation in riskier markets and vice versa. According to Huston (2010), financial literacy is commonly an input when modeling the need for financial education, measuring the level of financial education one has received, and subsequently explaining variation in financial behavior. As a key public policy objective, many countries attempt to increase their populations' financial literacy, stimulating better financial decision-making. This brings a wealth of advantages to the economy and minimizes the collective impacts of poor financial decisions, which are associated with the 2008 financial crisis, accumulation

of high debt, and bad credit (Hung *et al.*, 2009). According to the OECD (2017), countries with lower financial literacy often also have fewer years of compulsory education, as well as a higher likelihood of poor savings behavior and investment losses. Participation rates in financial markets are far greater in countries with high financial literacy levels and more schooling years.

The OECD (2017) study reinforces Inglae and Paluri's (2020) claims that financial literacy mediates the relationship between years of schooling and its effects on financial behavior. Xiao *et al.* (2013) also reiterates financial literacy's mediating effects on financial behaviors and years of schooling, particularly with regard to risky payment and borrowing behaviors. It finds that U.S. college students with more years of finance-related education are more likely to have stronger subjective financial knowledge. High levels of subjective financial knowledge have a positive correlation with a reduction in risky borrowing and payment behaviors, illustrating that financial education affects risky credit behaviors due to the awareness of potential risks and consequences (Xiao *et al.*, 2013). The general research consensus is that greater knowledge about personal finance reduces risky financial behaviors. Multiple studies find a clear positive correlation between years of education (especially financial education) and engagement in risky, unprofitable financial behaviors.

Another major research theme around years of schooling and financial behaviors is present in studies in China, where filial piety influences a broad range of behaviors, including financial behaviors (Yeh *et al.*, 2013). According to Beford and Yeh (2019), filial piety is an attitude of respect for parents, elders, and ancestors; it is one of the five constant virtues in Confucianism. As a culture deeply embedded in the roots of Confucianism, the importance of filial piety is known in all Chinese households. Financially, this means children have responsibilities to contribute to the retirement-related financial planning for their parents and elder relatives (LooSee *et al.*, 2013). In LooSee *et al.* (2013), filial piety mediates the relationship between education and financial well-being, indicating that receiving higher levels of education increases one's filial responsibilities to care financially for parents and families. Many choose to increase the financial well-being of themselves and their loved ones by making safer, longer-term investments.

Chen *et al.* (2019) finds that stronger Confucian social values (i.e., filial piety) have an essential impact on financial behavior, such as reducing the difference in savings rates between families with sons and families with daughters. Chen and Wong (2014) also explore the influential role of filial piety, measuring how it mediates the relationship between motivation to succeed and academic achievement among students in Hong Kong. They

recognize how filial piety shapes the mind-set of Chinese students to obtain higher academic achievements, enhance their future career possibilities, and achieve better financial well-being. The literature widely recognizes that culture shapes individuals' achievement cognition, as filial piety often explains one's motivation to succeed (Yu and Kang, 1994; Salili, 1996). According to Yu and Kang (1994), filial piety is one of the most influential drivers behind investment activities and entrepreneurship; the hope of better financial well-being for one's parents affects financial decision-making and encourages participation in financial markets as a way to achieve financial success.

3.3 Empirical Strategy

I begin by examining the relationship between years of compulsory education and exposure to educational reform. My analysis also includes individuals in households subject to the one-child policy, which denoted children who enter school at age six will complete their nine years of compulsory education at age 15. Therefore, children who are under 15 when the policy is implemented are educated for a longer period than would have been the case if the policy had not been implemented; they are thus the treatment group and children over 15 are the reference group. To capture years of schooling among individuals, I use the question from the CHFS 2013 questionnaire, which asks about educational attainment in ways that enable conversion to years of schooling. As shown in ***Figure 3.1***, which presents binned scatterplots of the weighted fraction of the sample with more than or equal to 9 years of education on the vertical axis, and distance to reform on the horizontal axis. Distance to reform is defined as year of birth, plus 6 years, minus the year in which the compulsory schooling reform was implemented at each province. In panel A, the scatterplot is based on the raw data, based on discrete changes in year of reform. In panel B, the scatterplot is based on discrete changes in distance to reform, for the two groups based on the inclusion criteria to unconditional free schooling specified by the one-child policy in 1980. Here, I propose the specification based on two equations. The equation of first-stage estimate is:

$$Schooling_i = \alpha_0 + \alpha_1 Reform\_Exposure_i + \theta_i + \delta_i + \rho_i + X_i + \varepsilon_i \qquad (1)$$

Where $Schooling_i$ denotes the number of years of schooling of individual i. $Reform_i$ is an interaction term reflecting whether the individual involved to the educational reform and at the schooling age post the single-child reform. θ_i, δ_i, and ρ_i denote provincial region, birth cohort, and urban status fixed effects. X_i, or other control variables, represent the list of

control variables; they include triple interactions of cohort, province and urbanization fixed effects, as well as cohort, province and urbanization specific linear trends, gender fixed effects, and urban-rural transition fixed effects.

[Insert Figure 3.1 about here]

3.3.1 Fuzzy regression discontinuity design

I implement a fuzzy regression discontinuity design (RDD) to identify the causal effect of schooling on the household financial outcomes of interest regarding stock and risky-asset market participation. Fuzzy RDD is an instrumental-variables (IV) regression (Angrist and Lavy, 1999; Meng, 2013), in which years of schooling are instrumented via an exogenous policy instrument, namely *reform exposure*. Reform exposure captures exposure to the two overlapping policy reforms, namely the one-child policy of 1980 and the educational reform of 1986-1992 as an exogenous policy shock.

The previous equation (1) presents the first-stage of my fuzzy RDD model, with the second-stage equation being presented by the equation below:

$$Y_i = \omega_0 + \omega_1 \widehat{schooling}_i + \theta_i + \delta_i + \rho_i + X_i + \varepsilon_i \qquad (2)$$

where Y_i signifies the explanatory variables of interest, including stock ownership, risky assets holding, value of shares, stocks-to-financial-assets ratio, stocks-to-wealth ratio, value of risky assets, risky-assets-to-financial-assets ratio, risky-assets-to-wealth ratio, etc. Here, $\widehat{schooling}_i$ is instrumented with reform exposure in equation (1). The parameter of interest is $\omega_{1,}$ which represents the causal relationship between schooling and financial outcomes. To accommodate heteroskedasticity and arbitrary serial correlation across cohorts within provinces, I group standard errors at the provincial level. In addition to the fundamental specification in equation (1), I estimate specifications using parental controls, provincial-specific trends, and region by cohort dummies. As we shall see in the subsequent section, the estimations are highly robust to the precise selection of specification.

As described, the reform is not applied uniformly among provinces. My empirical method is thus predicated on the premise that exposure to the reform is essentially indicative, which implies birth cohort-fixed effects, province-fixed effects, and urbanization fixed effects, etc. I also conduct an experiment to see whether there is a correlation between when reforms are implemented and other observable qualities; the findings are in *Appendix Table 3B2*. Each parent's level of education, membership in a political party, year of birth,

occupation (business/management), and adherence to Confucian values are all accessible background variables to explore. In each column, I provide the coefficients from a regression of a binary indicator of reform exposure on the mean family background characteristics of the birth cohort in a specific municipality. Overall, in the supplementary materials, I further demonstrate this by showing that my primary estimates hold even when controlling for other factors related to the respondents' families.

3.3.2 Causal mediation analysis design

Furthermore, I employ the novel estimation procedure proposed by Dippel *et al.* (2020), which expands the standard instrumental-variables model of equation (2), via adding the two following equations (3) and (4). In equation (3) we estimate the effect of schooling on the mediating variable M. The regression is an IV model similar to that of equation (2) in which schooling is instrumented by reform exposure. The equation includes that standard list of control variables, i.e., similar to equation (2). Then, equation (4) presents the final stage of the causal mediation analysis, in which both the instrumented mediator and schooling are introduced in the model simultaneously.

$$M_i = \varphi_0 + \varphi_1 \widehat{schooling}_i + \theta_i + \delta_i + \rho_i + X_i + \varepsilon_i \quad (3)$$

$$Y_i = \eta_0 + \eta_1 \widehat{M}_i + \eta_2 \widehat{schooling}_i + \theta_i + \delta_i + \rho_i + X_i + \varepsilon_i \quad (4)$$

Causal mediation analysis purports that a variable is a mediator if it exerts a significant impact on the outcome Y in the model of equation (4), and at the same time, the effect of schooling vanishes in the same model. Our list of candidate mediators is presented in the following sections. The Appendix 3C presents and illustrates the specifics of the causal mediation analysis in greater detail.

3.4 Empirical Results

My first-stage estimation demonstrates the relationship between exposure to the reform and years of education. In panel A of *Table 3.1*, I present the regression results of the first-stage effects of reform exposure on education using five different specifications. I find that schooling reform increases education by 0.52 years; for those of schooling age, it rises by 0.22 years after the single-child reform, whereas for exposure to both reforms, education years increases by 0.68.

When I next add triple interactions of birth cohort, province, and urbanization fixed effects to the base specification (column 5). The coefficient is 0.65. Column (7) adds province-specific linear trends to the base specification (column 5), which slightly increases the coefficients to 0.67. Despite control cohort fixed effects, province fixed effects, urban-rural transition fixed effects, and gender fixed effects in column (8), the estimate denotes 0.77. In column (9), once again, I add other demographic controls based on column (8), which represent a coefficient of 0.49 that inevitably decreases but at a significance level of 0.01. Furthermore, in panel B of table 3, I present the first-stage regression results of a subsample (i.e., male, female, urban individuals, rural individuals, household heads) that use specifications based on column (8). I find the reform increases education by 0.46 years for males and 1.05 years for females; it increases by 0.98 years in urban regions and by 0.47 years in rural regions; it also increases by 0.82 years for household heads. As the effect of years of education on reform exposure remains positive and statistically significant at the 1% level, therefore, education attainment is a sufficient instrument.

[Insert Table 3.1 about here]

3.4.1 Educational attainment and financial market participation

Table 3.2 shows how schooling affects stock market participation. Panel A shows the estimates for stock market participation of the pooled sample; panel B is for males, panel C is for females, panel D is for urban regions, and panel E is for rural regions. The first column shows the relationship between schooling and stock market participation by using an ordinary least squares (OLS) model. The coefficients are statistically and economically significant at the 1% level for all panels, which is consistent with Black *et al.*, (2018). The specific estimation for using instrumental variables (IV) under a variety of specifications is in columns (2)-(6), respectively. Controlling for cohort, province, and urban fixed effects applied to specification columns (2)-(4); column (3) adds the triple-interaction terms of cohort, province, and urban fixed effects based on columns (2)-(4), including the cohort-province-urban linear trend in the baseline specification (column 2). An additional control includes gender fixed effect in column (5) and other demographic variables in column (6). In column (2), the effect of an additional year of education on the probability of stock market participation is 49.2%; it is 69.9% for males and 46.3% for females. The magnitudes of the effect of an additional year of schooling for the sub-samples of individuals living in urban s and rural region become 46.8% and 18%, respectively. All panels are economically and statistically significant at the 1% level. In columns (3)-(6), I show that my estimates are

robust to adding a variety of specifications, which all present very consistent findings.[25] Overall, based on the regression results in *Table 3.2*, I find that education significantly facilitates individual participation in the stock market.

[Insert Table 3.2 about here]

The estimates in both panels of *Table 3.3* report the effect of risky asset market participation[26]. Table *3.3* reports the coefficients from my main IV estimation model for risky market participation, controlling for the variety of attitudinal variables in the same line as Table 3.1. The results in *Table 3.3* provide interesting associations regarding the expected directions for schooling years, namely that years of education are positively related to participation in risky markets. Specifically, the magnitude of the effect is 30.2% in the pooled sample, and the effects are significant at the 1% level. The effect is of a 50.0% magnitude in males, a 26.7% magnitude in females, a 30.3% magnitude in urban regions, and an 11.8% magnitude in rural regions; they are statistically and economically significant at the 1% level. Thus, individuals with more education are more likely substantially involved in risky markets, whereas the IV estimate of coefficient of males expresses a stronger effect than for females, in both urban and rural regions.

[Insert Table 3.3 about here]

I additionally investigate how educational attainment affects holdings of stocks and risky assets, which may also influence the allocation decisions of possession of shares of stocks and risky assets. *Table 3.4* reports the coefficients from my IV estimates in which the dependent variables are the shares of stock and risky holdings, respectively. The magnitude of these coefficients is interpreted as the ratio of the coefficient divided by the predicted probability of the model, multiplied by 100. Specifically, the presented estimates quantify the change in the likelihood of identifying a category (i.e., pooled sample, financial asset owners, males, females, urban regions, rural regions) associated with years of schooling.

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[25] However, Stephens and Yang (2014) demonstrate that adding interactions of census area and year of birth to the model generally are not robust to the results when they are based on compulsory schooling laws for identification in the United States.

[26] I measure risky-asset market participation via ownership of broader range of financial assets entailing risk (i.e., not deposit accounts), which include ownership of stocks, bonds, mutual funds, derivatives, wealth management products, foreign exchange assets, non-RMB assets, and/or gold. The CHFS has detailed information about whether the respondent holds each of these assets or not, along with the amounts of these assets held.

The estimates in panel A of *Table 3.4* indicate a relatively strong positive relationship between years of schooling and shares of stock (64.7%, significant at the 1% level). In panel B, the magnitude effects on the ratio of stocks to financial assets is 62.4%, and the effect is of a 73.5% magnitude of the ratio of stocks to wealth in panel C. Moreover, I look at the intensive margin and examine the effects of education on shares of risky holdings. Panel D of *Table 3.4* reveals a modestly significant positive correlation between shares of risky assets and years of schooling. Panels E and F report the coefficients from my IV models, in which the dependent variables are the ratios of risky-assets-to-financial-assets and risky-assets-to-wealth, respectively. The effects are positive, in the magnitudes of 54.4% and 55.3%, respectively.

[Insert Table 3.4 about here]

3.4.2 The effect of education on portfolio diversification

Furthermore, I consider how education affects asset diversification for seven asset categories in analysis of households' portfolio choice, as well as how it affects portfolio variance. The association is economically and statistically significant at the 1% level. In panel A of *Table 3.5*, the positive coefficients on years of schooling in the regression for number of assets held is 0.112, and on the effect is 6.4% of pooled sample; for financial assets owners, the magnitude effects on the number of assets held by 2.8%; for males and females, the magnitude effects on the number of assets held by 5.3% and 6.3%, respectively; for urban regions and rural regions, the magnitude effects on the number of assets held by 7.2% and 5.3%, respectively. In panel B, I show the effects on portfolio variance, which present a strong schooling effect with a coefficient of 0.05 by 46.5%, a coefficient of 0.067 by 35.9% for financial assets owners, a coefficient of 0.066 by 63.3% for males, a coefficient of 0.037 by 33.2% for females, a coefficient of 0.098 by 37.5% for urban regions, and a coefficient of 0.016 by 52.8% for rural regions. Schooling increases the likelihood of diversifying financial assets and having optimal asset portfolios.

[Insert Table 3.5 about here]

The OLS results and the estimation of instrumental variables suggest that education is highly relevant for financial market participation. As an example, individuals with a better family environment tend to be more educated, and they also have the ability to take more risk in equity assets. In general, more educated households are more likely to participate in equity and financial markets. Further, using the household equity returns calculated from the

data, I investigate how years of education affect investment returns. Consistent with the IV regression results, I find that years of schooling have a significant effect on households' return on investment in the financial markets. This is correspondent with empirical studies in developed countries such as the United States (Cole *et al.*, 2014) and Sweden (Black *et al.*, 2018), which find that education enhances households' financial behavior and financial market participation.

3.5 Validity Checks and Mechanisms

In this section, I perform several robustness exercises to verify the validity of my primary findings, namely the positive effect of education and ownership of stocks or other risky assets, as well as the positive effect on stock and risky asset ownership, and the positive effect on portfolio diversification. Then, I attempt a novel inquiry into the candidate transmission mechanisms of the causal effect of schooling on stock and risky-asset market participation.

3.5.1 Robustness exercises

My first robustness exercise in panel A of *Table 3.6* replicates my primary IV estimates in column (5) of Table 3.2, while dropping the 7,518 individuals who have higher education (i.e., university education at the graduate or postgraduate level). The estimates show that an additional year of schooling increases the probability of stock ownership by 63.8% and the effect is significant at the 1% level. The magnitude of the effects on ownership of risky assets of 45.3%, and the effect is significant at the 1% level. The magnitude of the effect of schooling on the value of stocks and value of risky asset holding is of 68.2% and 49.6%, respectively. In terms of how education affects amounts and shares of stock and risky holdings, the magnitude of the effects of the stocks-to-financial-assets ratio and stock to wealth presents a 61.3% and 68.8% increase, respectively. The magnitude of the effects of the risky-assets-to-financial-assets ratio and the risky-assets-to-wealth ratio presents a 49.2% and 52.1% increase, respectively. The magnitudes of the effects on assets held are very similar to those in table 8, which increase the probability by 6.9% and at the 1% significance level. There is a positive effect of years of schooling on the portfolio variance, which is 56.8% and significant at the 1% level.

In panel B of *Table 3.6*, I present coefficients and robust standard errors from weighted

IV regressions by dropping cities which entail special economic zones. The rationale is that any effects that we find might not be due to the conditional compulsory schooling reform, but they might be due to the special economic zone and coastal city reform discussed in Chapter 2. Although I cannot identify cities of birth and residence in the CHFS 2013 data so as to examine the impact of the special economic zone reform, as a rough robustness exercise I exclude provinces which entail cities that have special economic zones[27]. The estimates corroborate my earlier conclusions, and the impacts are statistically and practically identical to those I observed. That is, the estimates confirm the robustness of the positive effect of years of schooling on financial market participation, and the effect becomes significant at the 1% level. In panels C and D of *Table 3.6*, I present estimates for individuals who live in the same or a different province from their parents, respectively. This robustness exercise caters to the concern that my identification strategy might not capture the year of exposure to reform perfectly, if individuals were born in a different province, compared to the one they currently live at. This is a minor concern, as the compulsory schooling reform covered the entire country with small differences in the gradual year of implementation between 1986 and 1992. The effects are significant and robust for both samples, with only some higher magnitudes for the sample of individuals who live in the same province as their parents.

[Insert Table 3.6 about here]

Table 3.7 presents a set of different robustness exercises catering to different types of concerns regarding the validity of IV estimates. In panel A, I restrict the sample to household heads, in order to ensure that coefficient estimates are not biased by multiple responses from household with different sizes. There, the estimates show that the positive effect of years of education on household heads is significant at the 1% level and of a magnitude of 62.7% on stock ownership, 46.8% on risky assets ownership, 61.0% on logarithmic value of stocks, 51.6% on logarithmic value of risky assets, 54.4% on the ratio of stocks to financial assets, 58.1% on the ratio of risky assets to financial assets, 59.1% on the ratio of stocks to wealth, 50.3% on the ratio of risky assets to wealth, 7.3% on number of assets held, and 44.0% on portfolio variance.

Panels B and C present weighted IV estimates for the samples of individuals born at

[27] The provinces that entail a special-economic-zone city are: Guangdong, Fujian and Shanghai. The provinces that entail a coastal city are: Liaoning, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi, Hainan, and Tianjin. The attribution of these cities to the respective provinces is also shown in Table 2.3 of the previous chapter (Chapter 2).

an interval of 10 years before or after the reform and at an interval of five years before or after the reform, respectively. The results are robust at both intervals. The effects are of similar magnitudes, but the percentage effects become of a higher magnitude for individuals born five years before or after the reform. All effects are statistically significant at the 1% level. Finally, in panel D, I present the penultimate robustness exercise, by restricting the sample to individuals who were born between 1980 and 1986. Those are the individuals who started school between 1986 and 1992, i.e., the years in which the compulsory schooling reform was gradually implemented at different provinces. I consider this a most convincing robustness exercise, as any effect is to be identified by individuals who got exposed to the schooling reform earlier rather than later. The effects show robustness and are even of a higher magnitude compared to the baseline estimates.

[Insert Table 3.7 about here]

3.5.2 Causal mediation analysis

I find that in China, exogenous improvements in education result in more stock market involvement and increase the proportion of financial wealth allocated to stocks and risky assets, contingent upon participation. Specifically, according to the estimations, years of schooling are positively associated with stock market involvement, present ownership of risky assets, asset holding, and portfolio variance. In this section, I test the mediators for how years of schooling affect financial market participation. In particular, I use an innovative estimate method in Pinto *et al.*, (2020), which uses both an IV and assumptions on the error structure for identification. See *Appendix 3C*.

In terms of further examining the channels through which education takes place, I study various characteristics. These estimates are in *Table 3.8* and *Table 3.9*. Each column has baseline estimates by calculating in the context of equation (3) and adding in equation (4); I apply the same specification as in column (5) of table 3.2. In these columns, I gradually add controls for marital status, number of children, physical condition, logarithmic income, earnings uncertainty, saving rate, logarithmic wealth, financial wealth ratio, net financial wealth, financial risk tolerance, filial piety, and financial literacy. I use the key explanatory variables of stock ownership, risky asset ownership, and number of assets held in panels A, B, and C of *Table 3.8*, respectively. In *Table 3.8*, I provide the subsequent results of stock shares, risky assets, and portfolio variances with IV mediating effects in panels A, B, and C. Specifically, financial literacy and filial piety show the prominent mediating effects: 1.27 and 1.51 in stock ownership, 1.13 and 1.34 in owning risky assets, 0.88 and 1.05 in number

of assets held, respectively.

[Insert Table 3.8 about here]

In *Table 3.9*, I conduct one final exercise to test proposed mediators in the context of the logarithm value of stocks and the logarithm value of risky assets, as well as portfolio variance. Additionally, I identify the causal chain in financial literacy and filial piety from the aspects of logarithm of stocks, logarithm of risky assets, and portfolio variance in the same fashion in Table 3.10. Essentially, these results suggest that financial literacy and filial piety are two important channels through which education affects financial market participation. Factors such as marital status, number of children, physical condition, logarithmic income, savings rate, logarithmic wealth, financial wealth ratio, net financial wealth, filial piety, and financial literacy mediate the significant effect of the years of schooling. However, earnings uncertainty and financial risk tolerance have insignificant, minimal effects on the mediating coefficients. Financial literacy and filial piety show prominent mediating effects: 1.28 and 1.52 in stock holdings, 1.17 and 1.39 in risky asset holdings, and 1.13 and 1.34 in portfolio variances, respectively. Essentially, these results suggest that financial literacy and filial piety are two important channels through which education affects financial market participation. Factors such as marital status, number of children, physical condition, logarithmic income, savings rate, logarithmic wealth, financial wealth ratio, net financial wealth, filial piety, and financial literacy have a significant effect on the years of schooling. However, earnings uncertainty and financial risk tolerance have insignificant minimal effects on any of the mediating coefficients.

[Insert Table 3.9 about here]

3.6 Concluding Remarks

I examine the effect of educational attainment on financial investment behavior using data from the 2013 China Household Finance Survey (CHFS). I account for endogeneity in educational attainment using reform exposure to conditional free schooling based on the 1980 one-child policy and the 1986 compulsory schooling reform that increased mandatory schooling from six to nine years. The exclusions from free schooling stem from noncompliance with the one-child policy for the majority of the Chinese population.

Noting the low equity and risky-asset market participation in China and in the sample,

I find that individuals exposed to the reform are more than 50% more likely to invest in the stock market and more than 30% more likely to invest in risky assets. Moreover, I find that schooling has a large effect on portfolio diversification. The results are robust to dropping university graduates, dropping individuals residing near special economic zones, and for individuals living in the province in which they were born and those who moved away. My findings are also robust for the subsamples of household heads and for individuals born within narrower windows around the reform (i.e., 10 or five years before or after the reform).

When examining the potential transmission channels of the causal relationship between education and investment activity, I find that increased financial literacy among individuals with higher educational attainment moderates how years of schooling affect financial market participation. This is also the case with the declining Confucian norms of filial piety in Chinese society. Hence, the findings in this study have significant policy implications. The labour income and wealth of Chinese households has increased over the last decades as a result of significant economic development and increasing savings rates. However, the transformation of this higher disposable income into higher accumulated wealth for older generations, and resulting lower inequality, is limited by low financial knowledge, financial exclusion, limited financial market participation, and low portfolio diversification.

As I find that higher educational attainment, even with conditions, is likely to improve household financial outcomes by encouraging desirable behaviors, it is likely that eliminating exclusion restrictions and implementing educational reform aimed at cultivating cognitive skills such as financial literacy will solidify China's economic, financial, and social transformation. Toward that aim, the Chinese government announced that the one-child policy program was ending in early 2016 and all families would be allowed to have two children, a change that has yet to lead to a sustained increase in birth rates. Abolishing exclusions and constraints on schooling children from larger families could further improve household financial outcomes as a foundation of China's sustained endogenous growth.

Moreover, in 2019, the Chinese Regulatory Securities Commission (CSRC) announced plans for primary and secondary schools across the nation to teach financial literacy; pilot courses are being introduced in certain provinces. China's Ministry of Education and the CSRC agreed to introduce a more comprehensive curriculum and scale-up the financial literacy pilot program. In late July 2021, the State Council introduced another major educational reform that included among its aims the introduction of a financial literacy curriculum. Although the specifics are yet to be determined, the study indicates that

an earlier more generic reform induces positive effects on household financial outcomes via increased financial literacy. It is likely that a reform that specifically aims at a customized related curriculum will have large effects on financial market participation, as a healthy foundation of financial sector development, endogenous growth, and reduced inequality.

Finally, Chen *et al.*, (2019) suggest that the national decline in Confucian influence has contributed to the steady increase in savings, and that little or no difference exists in savings rates in regions with or without Confucian influence, as both family types have to prepare for uncertainties. The evidence suggests that the decline in Confucian values is a channel for transforming savings to investment. Hence, China's social transformation, the cultivation of relevant affective skills, alongside the abolishment of the one-child policy is likely to induce further improvements in household financial outcomes for males and females alike.

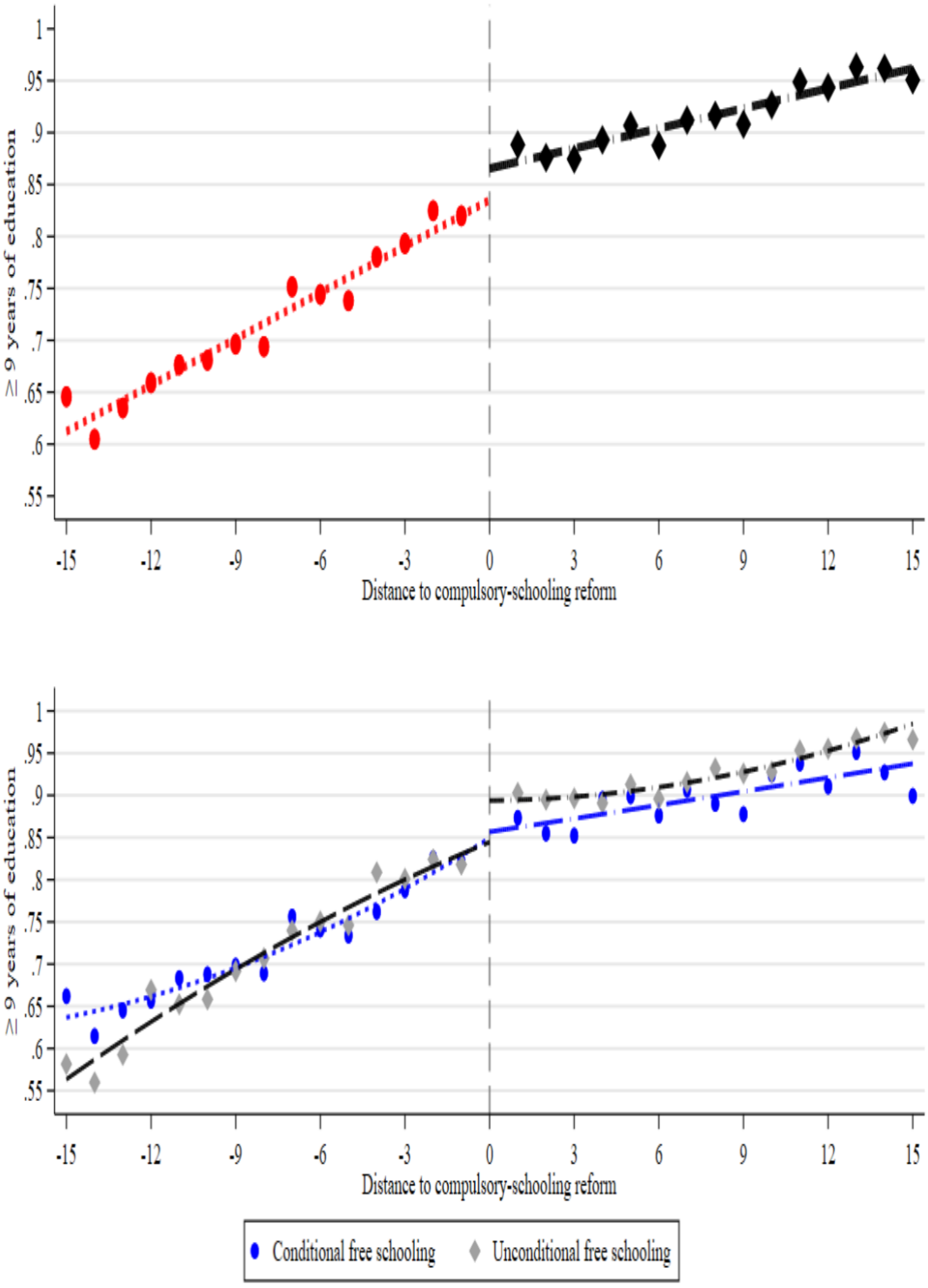

Figure 3.1

Percentage of individuals with ≥9 years of schooling by distance to reform [-15, +15]

This figure presents binned scatterplots of the weighted fraction of the sample with more than or equal to 9 years of education on the vertical axis, and distance to reform on the horizontal axis. Distance to reform is defined as year of birth, plus 6 years, minus the year in which the compulsory schooling reform was implemented at each province. In panel A, the scatterplot is based on the raw data, based on discrete changes in year of reform. In panel B, the scatterplot is based on discrete changes in distance to reform, for the two groups based on the inclusion criteria to unconditional free schooling specified by the one-child policy in 1980.

Table 3.1

The effect of the reforms on years of schooling

This table reports the effect of the reforms on years of schooling. In Panel A, Column (1) – Column (5) shows results including control cohort fixed effects, Province fixed effects, urbanization fixed effects. In addition, Columns (6) and (7) include: (6) interaction of cohort-province and urbanization fixed effects and (7) Cohort-province-urbanisation linear trends. Column (8) presents the results controlling for cohort fixed effects, provinces fixed effects, gender and urban-rural transition fixed effect. Column (9) adds other demographic control variables in the basis of Column (8). The specifications of Panel B are identical to that of Column 8 of Panel A. shows sub-samples in categories of males, females, urban, rural and household heads. The asterisks denote the following levels of significance: * p<0.10, ** p<0.05, *** p<0.01.

Panel A: Pooled sample (43,888 obs.)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No conditionality in free schooling	0.516***	–	0.515***	0.320***	–	–	–	–	–
	[0.043]		[0.043]	[0.061]					
Aged ≥6 post single-child reform	–	0.219*	0.206*	0.037	–	–	–	–	–
		[0.115]	[0.116]	[0.122]					
Reform exposure (interaction term)	–	–	–	0.370***	0.677***	0.650***	0.673***	0.769***	0.488***
				[0.082]	[0.056]	[0.055]	[0.056]	[0.056]	[0.050]
Cohort FE	+	+	+	+	+	+	+	+	+
Province FE	+	+	+	+	+	+	+	+	+
Urbanisation FE	+	+	+	+	+	+	+	–	–
Cohort*Province*Urbanisation FE	–	–	–	–	–	+	–	–	–
Cohort-Province-Urbanisation Linear Trend	–	–	–	–	–	–	+	–	–
Gender	–	–	–	–	–	–	–	+	+
Urban-Rural Transition FE	–	–	–	–	–	–	–	+	+
Other Control Variables	–	–	–	–	–	–	–	–	+
%Effect	*5.0%*	*2.1%*	*4.9%*	*3.6%*	*6.5%*	*6.2%*	*6.5%*	*7.4%*	*4.7%*
Predicted probability	*10.42*	*10.42*	*10.42*	*10.42*	*10.42*	*10.42*	*10.42*	*10.42*	*10.42*

Panel B: Sub-samples	*Males*	*Females*	*Urban*	*Rural*	*Household heads*
	(10)	(11)	(12)	(13)	(14)
Reform exposure (interaction term)	0.463***	1.053***	0.984***	0.471***	0.815***
	[0.077]	[0.076]	[0.084]	[0.063]	[0.109]

Table 3.1 continued in next page

Table 3.1 continued from last page

%Effect	*4.4%*	*10.3%*	*7.7%*	*5.1%*	*8.0%*
Predicted probability	*10.64*	*10.19*	*12.75*	*9.26*	*10.20*
No. of Observations	*22,366*	*21,522*	*17,064*	*26,824*	*12,786*

Table 3.2

The effect of education on participation in stock markets

This table reports OLS and IV estimates of the effect of education on participation in stock markets in China, along with the dependent variable is stock market participation. The asterisks denote the following levels of significance: ***: p<0.01, **: p<0.05, *: p<0.10. Panel A present the Pooled sample, Panel B and Panel C present the sub-sample in Males and Females, respectively. Panel D and Panel E present the samples who are in urban and rural regions. In column 1 (7, 13, 19 and 25), present OLS estimates on the pooled sample of respondents, in a specification with cohort and province fixed effects as well as urbanisation fixed effects. In columns 2 (8, 14, 20, and 26) present IV estimates are shown from models controlling the same fixed effects as column 1. In column 3 (9, 15, 21 and 27) additionally add the interaction term Cohort*Province*Urban FE. In column 4 (10, 16, 22 and 28) adheres a cohort-by-province linear trend to the specification of column 1. In column 5 (11, 17, 23 and 29) the estimates presented are from models controlling for cohort fixed effects, province fixed effects, urban-rural transition fixed effects and males. In addition, in column 6 (12, 18, 24 and 30) a rich list of control variable is added to the specification column (5), including marital status, number of children, logarithmic terms for household wealth and household income, and labour market status. The symbol † denotes OLS estimates. The % effect is calculated as the ratio of the coefficient of in interest divided by the linear prediction induced of the model. The coefficient of interest is that of years of schooling.

Panel A: Pooled sample	(1)†	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.009***	0.026***	0.025***	0.026***	0.032***	0.047***
	[0.000]	[0.005]	[0.005]	[0.005]	[0.005]	[0.011]
%Effect	*17.1%*	*49.2%*	*48.5%*	*49.9%*	*61.3%*	*90.4%*
Predicted probability	*0.0525*	*0.0525*	*0.0525*	*0.0525*	*0.0525*	*0.0525*
No. observations	*43,888*	*43,888*	*43,888*	*43,888*	*43,888*	*43,888*
Panel B: Males	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.009***	0.036***	0.048**	0.037***	0.037***	0.044***
	[0.001]	[0.014]	[0.019]	[0.014]	[0.011]	[0.016]
%Effect	*17.9%*	*69.9%*	*93.9%*	*72.9%*	*73.2%*	*87.3%*
Predicted probability	*0.0508*	*0.0508*	*0.0508*	*0.0508*	*0.0508*	*0.0508*
No. observations	*22,366*	*22,366*	*22,366*	*22,366*	*22,366*	*22,366*
Panel C: Females	(13)	(14)	(15)	(16)	(17)	(18)
Years of schooling	0.009***	0.025***	0.025***	0.025***	0.026***	0.041***
	[0.001]	[0.005]	[0.005]	[0.005]	[0.004]	[0.010]
%Effect	*16.8%*	*46.3%*	*46.1%*	*46.6%*	*47.2%*	*76.4%*
Predicted probability	*0.0542*	*0.0542*	*0.0542*	*0.0542*	*0.0542*	*0.0542*
No. observations	*21,522*	*21,522*	*21,522*	*21,522*	*21,522*	*21,522*
Panel D: Urban region	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.021***	0.062***	0.072***	0.064***	0.067***	0.095***
	[0.001]	[0.011]	[0.012]	[0.011]	[0.010]	[0.021]
%Effect	*15.9%*	*46.8%*	*54.0%*	*48.5%*	*50.6%*	*71.2%*
Predicted probability	*0.1331*	*0.1331*	*0.1331*	*0.1331*	*0.1331*	*0.1331*
No. observations	*17,064*	*17,064*	*17,064*	*17,064*	*17,064*	*17,064*
Panel E: Rural region	(25)	(26)	(27)	(28)	(29)	(30)
Years of schooling	0.003***	0.002	0.002	0.002	0.006*	0.008
	[0.000]	[0.003]	[0.003]	[0.003]	[0.004]	[0.006]
%Effect	*22.8%*	*18.0%*	*16.1%*	*20.0%*	*50.4%*	*65.9%*
Predicted probability	*0.0124*	*0.0124*	*0.0124*	*0.0124*	*0.0124*	*0.0124*
No. observations	*26,824*	*26,824*	*26,824*	*26,824*	*26,824*	*26,824*
Cohort FE	+	+	+	+	+	+
Province FE	+	+	+	+	+	+
Urban FE	+	+	+	+	–	–
Cohort*Province*Urban FE	–	–	+	–	–	–
Cohort*Province*Urban linear trend	–	–	–	+	–	–
Urban-rural transition FE	–	–	–	–	+	+
Gender	–	–	–	–	+	+
Other control variables	–	–	–	–	–	+

Table 3.3

The effect of education on participation in risky markets

This table reports estimates of participation in risky markets, The specifications of the six columns of each panel are identical to those of Table 3.2.

Panel A: Pooled sample	(1) †	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.014***	0.028***	0.027***	0.028***	0.038***	0.052***
	[0.001]	[0.007]	[0.007]	[0.007]	[0.007]	[0.013]
%Effect	*14.9%*	*30.2%*	*29.9%*	*30.7%*	*41.4%*	*56.6%*
Predicted probability	*0.0916*	*0.0916*	*0.0916*	*0.0916*	*0.0916*	*0.0916*
No. observations	*43,888*	*43,888*	*43,888*	*43,888*	*43,888*	*43,888*
Panel B: Males	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Years of schooling	0.014***	0.044**	0.050**	0.046**	0.051***	0.059***
	[0.001]	[0.018]	[0.025]	[0.018]	[0.014]	[0.021]
%Effect	*16.0%*	*50.0%*	*56.0%*	*51.9%*	*57.1%*	*65.9%*
Predicted probability	*0.0890*	*0.0890*	*0.0890*	*0.0890*	*0.0890*	*0.0890*
No. observations	*22,366*	*22,366*	*22,366*	*22,366*	*22,366*	*22,366*
Panel C: Females	**(13)**	**(14)**	**(15)**	**(16)**	**(17)**	**(18)**
Years of schooling	0.013***	0.025***	0.028***	0.025***	0.027***	0.039***
	[0.001]	[0.006]	[0.006]	[0.006]	[0.006]	[0.013]
%Effect	*14.3%*	*26.7%*	*29.7%*	*26.9%*	*28.9%*	*41.7%*
Predicted probability	*0.0943*	*0.0943*	*0.0943*	*0.0943*	*0.0943*	*0.0943*
No. observations	*21,522*	*21,522*	*21,522*	*21,522*	*21,522*	*21,522*
Panel D: Urban region	**(19)**	**(20)**	**(21)**	**(22)**	**(23)**	**(24)**
Years of schooling	0.029***	0.065***	0.070***	0.067***	0.075***	0.102***
	[0.001]	[0.013]	[0.014]	[0.013]	[0.012]	[0.025]
%Effect	*13.6%*	*30.3%*	*32.5%*	*31.0%*	*34.9%*	*47.4%*
Predicted probability	*0.2151*	*0.2151*	*0.2151*	*0.2151*	*0.2151*	*0.2151*
No. observations	*17,064*	*17,064*	*17,064*	*17,064*	*17,064*	*17,064*
Panel E: Rural region	**(25)**	**(26)**	**(27)**	**(28)**	**(29)**	**(30)**
Years of schooling	0.005***	0.004	0.003	0.004	0.011*	0.009
	[0.001]	[0.006]	[0.006]	[0.006]	[0.006]	[0.011]
%Effect	*18.2%*	*11.8%*	*10.2%*	*13.6%*	*35.1%*	*28.6%*
Predicted probability	*0.0301*	*0.0301*	*0.0301*	*0.0301*	*0.0301*	*0.0301*
No. observations	*26,824*	*26,824*	*26,824*	*26,824*	*26,824*	*26,824*
Cohort FE	+	+	+	+	+	+
Province FE	+	+	+	+	+	+
Urban FE	+	+	+	+	–	–
Cohort*Province*Urban FE	–	–	+	–	–	–
Cohort*Province*Urban linear trend	–	–	–	+	–	–
Urban-rural transition FE	–	–	–	–	+	+
Gender	–	–	–	–	+	+
Other control variables	–	–	–	–	–	+

Table 3.4

The effect of education on amounts and shares of stock and risky holdings

This table reports estimates of six indicators of amounts and shares of stock and risky holdings in China. Coefficients from weighted linear probability models are presented, along with and robust standard errors – clustered at the city level – in brackets. In panel A, the dependent variable capturing the amounts of stocks. The dependent variable in panel B is a ratio capturing stocks to financial assets. Panel C presents the dependent variable capturing ratios of stocks to wealth. Panel D presents estimates of the amounts of risky assets. The dependent of panel E denotes the ratio capturing risky assets to financial assets. The dependent of panel F denotes the ratio capturing risky assets to wealth. All specifications identical to Column 5 of Table 2.4, and the comments therein apply. Columns 1, 7, 13, 19, 25 and 31 present estimates for the pooled sample. Columns 2, 8, 14, 20, 26 and 32 present estimates for the sub-sample of financial asset owners. Columns 3, 9, 15, 21, 27 and 33 present estimates for the sub-sample of males. Columns 4, 10, 16, 22, 28 and 34 present estimates for the sub-sample of females. Columns 5, 11, 17, 23, 29 and 35 present estimates for the sub-sample of urban region. Columns 6, 12, 18, 24, 30 and 36 present estimates for the sub-sample of rural region.

	Pooled sample	Financial asset owners	Males	Females	Urban region	Rural region
Panel A: Log(Shares)	(1)	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.359***	0.475***	0.426***	0.281***	0.741***	0.072**
	[0.058]	[0.079]	[0.115]	[0.051]	[0.115]	[0.037]
%Effect	*64.7%*	*49.2%*	*79.5%*	*49.0%*	*52.5%*	*56.5%*
Predicted probability	*0.5544*	*0.9655*	*0.5361*	*0.5735*	*1.4105*	*0.1284*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel B: Stocks/Financial Assets	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.015***	0.020***	0.019***	0.011***	0.032***	0.003*
	[0.003]	[0.004]	[0.006]	[0.003]	[0.006]	[0.002]
%Effect	*62.4%*	*48.1%*	*83.6%*	*42.5%*	*52.1%*	*54.7%*
Predicted probability	*0.0243*	*0.0422*	*0.0233*	*0.0253*	*0.0617*	*0.0056*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel C: Stocks to Wealth	(13)	(14)	(15)	(16)	(17)	(18)
Years of schooling	0.004***	0.006***	0.005**	0.004***	0.009***	0.001
	[0.001]	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]
%Effect	*73.5%*	*56.2%*	*81.0%*	*58.2%*	*61.9%*	*49.4%*
Predicted probability	*0.0060*	*0.0105*	*0.0057*	*0.0063*	*0.0145*	*0.0018*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel D: Log(Risky Assets)	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.441***	0.586***	0.564***	0.329***	0.896***	0.100*
	[0.073]	[0.098]	[0.148]	[0.063]	[0.137]	[0.058]
%Effect	*46.9%*	*35.8%*	*61.8%*	*34.0%*	*39.6%*	*35.6%*
Predicted probability	*0.9400*	*1.6371*	*0.9125*	*0.9688*	*2.2638*	*0.2813*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel E: Risky/Financial Assets	(25)	(26)	(27)	(28)	(29)	(30)
Years of schooling	0.024***	0.033***	0.032***	0.017***	0.051***	0.004
	[0.004]	[0.006]	[0.008]	[0.004]	[0.008]	[0.003]
%Effect	*54.4%*	*42.8%*	*75.6%*	*37.3%*	*47.1%*	*33.0%*
Predicted probability	*0.0437*	*0.0761*	*0.0422*	*0.0452*	*0.1088*	*0.0113*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel F: Risky Assets to Wealth	(31)	(32)	(33)	(34)	(35)	(36)
Years of schooling	0.006***	0.007***	0.004	0.005***	0.012***	0.001
	[0.001]	[0.002]	[0.003]	[0.001]	[0.003]	[0.001]
%Effect	*55.3%*	*42.2%*	*45.3%*	*50.8%*	*51.7%*	*9.8%*
Predicted probability	*0.01*	*0.0175*	*0.0097*	*0.0104*	*0.0236*	*0.0033*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*

Table 3.5

The effect of education on portfolio diversification

This table reports estimates of two different indicators of financial market participation in China, i.e., the number of distinctive asset classes held in panels A, and portfolio variance in panels B. All specifications are identical to Column 5 of Table 3.2. The specifics of the calculation of portfolio variance are presented in the *Appendix 3A*. From Column1 to 6, presents the observation of pooled sample, financial assets owners, males, females, urban region, rural region.

	Pooled sample	Financial asset owners	Males	Females	Urban	Rural
Panel A: #Assets held	(1)	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.112***	0.064***	0.092**	0.111***	0.151***	0.084***
	[0.022]	[0.017]	[0.042]	[0.019]	[0.030]	[0.029]
%Effect	*6.4%*	*2.8%*	*5.3%*	*6.3%*	*7.2%*	*5.3%*
Predicted probability	*1.7495*	*2.27*	*1.7378*	*1.7618*	*2.0875*	*1.5814*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*
Panel B: Portfolio variance	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.050***	0.067***	0.066***	0.037***	0.098***	0.016**
	[0.009]	[0.013]	[0.019]	[0.008]	[0.017]	[0.007]
%Effect	*46.5%*	*35.9%*	*63.3%*	*33.2%*	*37.5%*	*52.8%*
Predicted probability	*0.1072*	*0.1867*	*0.1041*	*0.1104*	*0.2615*	*0.0304*
No. observations	*43,888*	*25,858*	*22,366*	*21,522*	*17,064*	*26,824*

Table 3.6

Robustness Exercises I

This table reports the effect on sub-sample of dropping university graduates, entailing the non-special economic zones individuals, and also status of individuals moves or stay with their parents. The specification is identical of column 5 of Table 3.2, entailing cohort and province fixed effects, as well as cohort-by-province fixed effects.

	Stock ownership	Risky asset ownership	Log (Shares)	Log (Risky assets)	Stocks/ Financial Assets	Risky/ Financial Assets	Stocks to Wealth	Risky Assets to Wealth	#Assets held	Portfolio variance
Panel A: Dropping university graduates (36,790 obs.)										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Years of schooling	0.023***	0.030***	0.254***	0.332***	0.010***	0.015***	0.003**	0.004*	0.117***	0.045***
	[0.006]	[0.009]	[0.066]	[0.094]	[0.003]	[0.005]	[0.001]	[0.002]	[0.034]	[0.012]
%Effect	*63.8%*	*45.3%*	*68.2%*	*49.6%*	*61.3%*	*49.2%*	*68.8%*	*52.1%*	*6.9%*	*56.8%*
Linear prediction	*0.0359*	*0.0672*	*0.3723*	*0.6695*	*0.0168*	*0.0304*	*0.0042*	*0.0071*	*1.6877*	*0.0786*
Panel B: Dropping provinces that entail a special economic zone (38,786 obs.)										
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Years of schooling	0.035***	0.042***	0.393***	0.491***	0.017***	0.026***	0.004***	0.006***	0.134***	0.056***
	[0.006]	[0.008]	[0.068]	[0.085]	[0.003]	[0.005]	[0.001]	[0.002]	[0.025]	[0.011]
%Effect	*70.6%*	*48.4%*	*74.2%*	*54.9%*	*73.3%*	*63.3%*	*77.8%*	*63.2%*	*7.7%*	*54.7%*
Linear prediction	*0.0500*	*0.0870*	*0.5294*	*0.8941*	*0.0231*	*0.0412*	*0.0057*	*0.0096*	*1.7414*	*0.1017*
Panel C: Individuals living in the same province as their parents (36,632 obs.)										
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Years of schooling	0.025***	0.028***	0.281***	0.333***	0.012***	0.019***	0.004***	0.005***	0.104***	0.041***
	[0.006]	[0.007]	[0.062]	[0.078]	[0.003]	[0.004]	[0.001]	[0.002]	[0.026]	[0.010]
%Effect	*60.0%*	*37.5%*	*64.4%*	*43.6%*	*63.7%*	*54.4%*	*79.1%*	*55.2%*	*6.1%*	*46.8%*
Linear prediction	*0.0414*	*0.0754*	*0.4365*	*0.7634*	*0.0192*	*0.0345*	*0.0055*	*0.009*	*1.7085*	*0.0869*
Panel D: Individuals living in a different province from their parents (7,256 obs.)										
	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)
Years of schooling	0.058***	0.071***	0.627***	0.816***	0.025***	0.041***	0.004*	0.007**	0.130***	0.084***
	[0.013]	[0.016]	[0.144]	[0.173]	[0.007]	[0.011]	[0.002]	[0.003]	[0.041]	[0.022]
%Effect	*48.8%*	*37.7%*	*50.0%*	*41.0%*	*46.0%*	*42.3%*	*44.0%*	*43.7%*	*6.5%*	*36.7%*
Linear prediction	*0.1181*	*0.1877*	*1.254*	*1.9883*	*0.0541*	*0.0979*	*0.0092*	*0.0164*	*1.993*	*0.2279*

Table 3.7

Robustness Exercises II

This table reports IV estimates for 4 distinctive sub-samples of individuals. The specification is identical of column 5 of Table 3.2, entailing cohort, urbanization and province fixed effects.

	Stock ownership	Risky asset ownership	Log (Shares)	Log (Risky assets)	Stocks/ Financial Assets	Risky/ Financial Assets	Stocks to Wealth	Risky Assets to Wealth	#Assets held	Portfolio variance
Panel A: Sample of household heads (12,786 obs.)										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Years of schooling	0.045***	0.057***	0.463***	0.644***	0.018***	0.033***	0.005**	0.007**	0.138***	0.063***
	[0.012]	[0.016]	[0.133]	[0.170]	[0.006]	[0.009]	[0.002]	[0.003]	[0.040]	[0.021]
%Effect	*62.7%*	*46.8%*	*61.0%*	*51.6%*	*54.4%*	*58.1%*	*59.1%*	*50.3%*	*7.3%*	*44.0%*
Linear prediction	*0.0719*	*0.1209*	*0.759*	*1.25*	*0.0327*	*0.0572*	*0.0083*	*0.0138*	*1.8897*	*0.1423*
Panel B: Keeping individuals born [-10, +10] years of reform (31,293 obs.)										
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Years of schooling	0.034***	0.039***	0.373***	0.458***	0.016***	0.025***	0.004***	0.006***	0.101***	0.054***
	[0.006]	[0.008]	[0.067]	[0.084]	[0.003]	[0.005]	[0.001]	[0.002]	[0.024]	[0.011]
%Effect	*60.9%*	*41.6%*	*64.2%*	*47.3%*	*64.6%*	*55.8%*	*74.6%*	*58.6%*	*5.7%*	*48.4%*
Linear prediction	*0.0552*	*0.0946*	*0.5809*	*0.9682*	*0.0251*	*0.045*	*0.0059*	*0.0101*	*1.7571*	*0.1117*
Panel C: Keeping individuals born [-5, +5] years of reform (15,732 obs.)										
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
Years of schooling	0.044***	0.055***	0.476***	0.616***	0.019**	0.036***	0.006**	0.010***	0.146***	0.066***
	[0.014]	[0.017]	[0.149]	[0.184]	[0.007]	[0.010]	[0.003]	[0.004]	[0.052]	[0.023]
%Effect	*76.1%*	*54.6%*	*79.6%*	*60.1%*	*77.7%*	*76.9%*	*108.4%*	*90.8%*	*8.2%*	*55.9%*
Linear prediction	*0.0576*	*0.1006*	*0.5977*	*1.0261*	*0.0245*	*0.0462*	*0.0058*	*0.0107*	*1.7809*	*0.1188*
Panel D: Individuals born between 1980-1986 (10,140 obs.)										
	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)
Years of schooling	0.039***	0.057***	0.414***	0.629***	0.015***	0.034***	0.003	0.008**	0.119***	0.064***
	[0.011]	[0.014]	[0.117]	[0.151]	[0.006]	[0.008]	[0.002]	[0.003]	[0.039]	[0.018]
%Effect	*74.58%*	*60.25%*	*77.03%*	*65.21%*	*65.42%*	*75.45%*	*64.50%*	*74.87%*	*6.76%*	*58.25%*
Linear prediction	*0.0517*	*0.0946*	*0.537*	*0.9644*	*0.0225*	*0.0447*	*0.0052*	*0.0104*	*1.7613*	*0.1106*

Table 3.8
Causal Mediation Analysis (*43,888 obs.*) on stock ownership, risky asset ownership and number of assets held

	Married/ cohabiting	*Number of children*	*Physical condition*	*Log (Income)*	*Earnings uncertainty*	*Savings rate*	*Log (Wealth)*	*Financial wealth ratio*	*Net financial wealth*	*Fin. risk tolerance*	*Filial piety*	*Financial literacy*
Panel A: Stock ownership	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.008***	0.008***	0.020***	0.023***	0.007***	0.010***	0.043**	0.008***	0.009***	0.029*	-0.009	-0.017
	[0.001]	[0.001]	[0.003]	[0.004]	[0.002]	[0.001]	[0.019]	[0.001]	[0.001]	[0.016]	[0.006]	[0.013]
Mediator	-0.140***	-0.058***	-0.398***	-0.136***	0.06	0.172***	-0.330*	1.136***	0.647***	-0.635	-0.226***	0.662**
	[0.026]	[0.011]	[0.113]	[0.044]	[0.040]	[0.060]	[0.188]	[0.368]	[0.229]	[0.506]	[0.075]	[0.330]
Direct effect	*0.008*	*0.008*	*0.020*	*0.023*	*0.007*	*0.010*	*0.043*	*0.008*	*0.009*	*0.029*	*-0.009*	*-0.018*
Indirect effect	*0.026*	*0.026*	*0.015*	*0.012*	*0.027*	*0.024*	*-0.008*	*0.027*	*0.025*	*0.005*	*0.044*	*0.052*
Total effect	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*	*0.034*
Mediation effect	*0.76*	*0.76*	*0.43*	*0.34*	*0.79*	*0.70*	*-0.24*	*0.77*	*0.74*	*0.16*	*1.27*	*1.51*
Panel B: Risky asset ownership	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.013***	0.013***	0.025***	0.028***	0.012***	0.015***	0.049**	0.013***	0.014***	0.035**	-0.005	-0.014
	[0.001]	[0.001]	[0.003]	[0.005]	[0.002]	[0.001]	[0.021]	[0.001]	[0.001]	[0.017]	[0.007]	[0.014]
Mediator	-0.147***	-0.060***	-0.417***	-0.142***	0.06	0.180***	-0.345*	1.192***	0.677***	-0.664	-0.237***	0.692**
	[0.035]	[0.015]	[0.134]	[0.052]	[0.041]	[0.068]	[0.208]	[0.415]	[0.257]	[0.543]	[0.084]	[0.353]
Direct effect	*0.013*	*0.013*	*0.025*	*0.028*	*0.012*	*0.015*	*0.049*	*0.013*	*0.014*	*0.035*	*-0.005*	*-0.014*
Indirect effect	*0.027*	*0.028*	*0.016*	*0.012*	*0.029*	*0.025*	*-0.009*	*0.028*	*0.027*	*0.006*	*0.046*	*0.054*
Total effect	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*	*0.040*
Mediation effect	*0.68*	*0.68*	*0.38*	*0.30*	*0.70*	*0.62*	*-0.21*	*0.69*	*0.66*	*0.14*	*1.13*	*1.34*
Panel C: #Assets held	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Years of schooling	0.049***	0.049***	0.073***	0.079***	0.047***	0.053***	0.121**	0.048***	0.051***	0.092**	0.013	-0.005
	[0.002]	[0.002]	[0.009]	[0.013]	[0.005]	[0.002]	[0.048]	[0.002]	[0.002]	[0.036]	[0.017]	[0.030]
Mediator	-0.294***	-0.121***	-0.835**	-0.284**	0.127	0.361**	-0.691	2.481***	1.356**	-1.331	-0.475**	1.387*
	[0.102]	[0.041]	[0.348]	[0.132]	[0.092]	[0.154]	[0.478]	[0.940]	[0.580]	[1.168]	[0.200]	[0.737]
Direct effect	*0.049*	*0.049*	*0.073*	*0.079*	*0.047*	*0.053*	*0.121*	*0.048*	*0.051*	*0.093*	*0.013*	*-0.005*
Indirect effect	*0.055*	*0.055*	*0.031*	*0.025*	*0.057*	*0.051*	*-0.017*	*0.056*	*0.053*	*0.011*	*0.091*	*0.109*
Total effect	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*	*0.104*
Mediation effect	*0.53*	*0.53*	*0.30*	*0.24*	*0.55*	*0.49*	*-0.17*	*0.54*	*0.51*	*0.11*	*0.88*	*1.05*

Table 3.9
Causal Mediation Analysis (43,888 obs.) on the logarithms of stocks and risky assets, and portfolio variance

	Married/ cohabiting	*Number of children*	*Physical condition*	*Log (Income)*	*Earnings uncertainty*	*Savings rate*	*Log (Wealth)*	*Financial wealth ratio*	*Net financial wealth*	*Fin. risk tolerance*	*Filial piety*	*Financial literacy*
Panel A: Log(Stocks)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.086***	0.086***	0.209***	0.244***	0.074***	0.109***	0.459**	0.082***	0.095***	0.311*	-0.102	-0.192
	[0.005]	[0.006]	[0.031]	[0.047]	[0.022]	[0.009]	[0.205]	[0.009]	[0.008]	[0.169]	[0.067]	[0.145]
Mediator	-1.522***	-0.624***	-4.319***	-1.470***	0.656	1.865***	-3.575*	12.316***	7.012***	-6.882	-2.455***	7.173**
	[0.276]	[0.115]	[1.208]	[0.476]	[0.431]	[0.650]	[2.033]	[3.946]	[2.436]	[5.481]	[0.803]	[3.570]
Direct effect	*0.087*	*0.086*	*0.209*	*0.244*	*0.074*	*0.109*	*0.459*	*0.082*	*0.095*	*0.311*	*-0.102*	*-0.192*
Indirect effect	*0.284*	*0.285*	*0.161*	*0.127*	*0.296*	*0.261*	*-0.089*	*0.288*	*0.275*	*0.059*	*0.472*	*0.562*
Total effect	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*	*0.370*
Mediation effect	*0.77*	*0.77*	*0.43*	*0.34*	*0.80*	*0.71*	*-0.24*	*0.78*	*0.74*	*0.16*	*1.28*	*1.52*
Panel B: Log(Risky assets)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.138***	0.137***	0.278***	0.317***	0.125***	0.164***	0.562**	0.133***	0.148***	0.394**	-0.077	-0.178
	[0.007]	[0.007]	[0.038]	[0.057]	[0.025]	[0.010]	[0.242]	[0.011]	[0.009]	[0.195]	[0.079]	[0.166]
Mediator	-1.733***	-0.710***	-4.916***	-1.674***	0.726	2.123***	-4.070*	14.042***	7.982***	-7.834	-2.795***	8.166**
	[0.364]	[0.150]	[1.476]	[0.582]	[0.489]	[0.763]	[2.400]	[4.628]	[2.858]	[6.324]	[0.946]	[4.083]
Direct effect	*0.138*	*0.137*	*0.278*	*0.317*	*0.125*	*0.164*	*0.562*	*0.133*	*0.148*	*0.394*	*-0.077*	*-0.178*
Indirect effect	*0.323*	*0.324*	*0.183*	*0.144*	*0.336*	*0.298*	*-0.101*	*0.328*	*0.313*	*0.067*	*0.538*	*0.640*
Total effect	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*	*0.461*
Mediation effect	*0.70*	*0.70*	*0.40*	*0.31*	*0.73*	*0.65*	*-0.22*	*0.71*	*0.68*	*0.15*	*1.17*	*1.39*
Panel C Portfolio variance	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Years of schooling	0.026***	0.025***	0.049***	0.055***	0.024***	0.030***	0.096**	0.025***	0.027***	0.068**	-0.010	-0.027
	[0.001]	[0.001]	[0.007]	[0.010]	[0.004]	[0.002]	[0.041]	[0.002]	[0.002]	[0.033]	[0.014]	[0.029]
Mediator	-0.290***	-0.119***	-0.822***	-0.280***	0.115	0.355***	-0.681*	2.349***	1.335**	-1.31	-0.468***	1.366*
	[0.071]	[0.029]	[0.267]	[0.103]	[0.080]	[0.137]	[0.406]	[0.839]	[0.519]	[1.070]	[0.169]	[0.702]
Direct effect	*0.026*	*0.025*	*0.049*	*0.056*	*0.024*	*0.030*	*0.097*	*0.025*	*0.027*	*0.068*	*-0.010*	*-0.027*
Indirect effect	*0.054*	*0.054*	*0.031*	*0.024*	*0.056*	*0.050*	*-0.017*	*0.055*	*0.052*	*0.011*	*0.090*	*0.107*
Total effect	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*	*0.080*
Mediation effect	*0.68*	*0.68*	*0.38*	*0.30*	*0.70*	*0.63*	*-0.21*	*0.69*	*0.66*	*0.14*	*1.13*	*1.34*

Appendix 3A: Portfolio Variance Calculation

The proxy for portfolio variance is the standard deviation of the portfolio's asset returns. I calculate weights based on the holdings of various assets in the CHFS database, i.e., the percentage of each asset in the entire portfolio. In addition, I compute the variances and covariances of daily returns between 4th January and 31st December 2013. It retrieves information from the Wind database. The formula for calculating the portfolio variance for seven financial assets, including stocks, bonds, mutual funds, derivatives, wealth management products, foreign currency, and gold, takes into account not only the riskiness of individual assets, but also the correlation between each pair of assets in the portfolio.

$$\begin{aligned} Portfolio\ Variance = {} & \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + \omega_3^2\sigma_3^2 + \omega_4^2\sigma_4^2 + \omega_5^2\sigma_5^2 + \\ & + \omega_6^2\sigma_6^2 + \omega_7^2\sigma_7^2 + 2\omega_1\omega_2 Cov_{1,2} + 2\omega_1\omega_3 Cov_{1,3} + \\ & + 2\omega_1\omega_4 Cov_{1,4} + 2\omega_1\omega_5 Cov_{1,5} + 2\omega_1\omega_6 Cov_{1,6} + \\ & + 2\omega_1\omega_7 Cov_{1,7} + 2\omega_2\omega_3 Cov_{2,3} + 2\omega_2\omega_4 Cov_{2,4} + \\ & + 2\omega_2\omega_5 Cov_{2,5} + 2\omega_2\omega_6 Cov_{2,6} + 2\omega_2\omega_7 Cov_{2,7} + \\ & + 2\omega_3\omega_4 Cov_{3,4} + 2\omega_3\omega_5 Cov_{3,5} + 2\omega_3\omega_6 Cov_{3,6} + \\ & + 2\omega_3\omega_7 Cov_{3,7} + 2\omega_4\omega_5 Cov_{4,5} + 2\omega_4\omega_6 Cov_{4,6} + \\ & + 2\omega_4\omega_7 Cov_{4,7} + 2\omega_5\omega_6 Cov_{5,6} + 2\omega_5\omega_7 Cov_{5,7} + 2\omega_6\omega_7 Cov_{6,7} \end{aligned} \quad \text{(A1)}$$

where:

ω_i presents the weight of each asset;

σ_i^2 presents the variance of each of each asset;

$Cov_{i,j}$ denotes the covariance between two assets *i* and *j*, respectively. This is calculated as the product of $\rho_{i,j} \times \sigma_i\sigma_j$, where $\rho_{i,j}$ is the correlation coefficient between assets.

Meanwhile, the mathematical relationship between covariance and correlation that I use the formula below:

$$\rho_{1,2} = \frac{Cov_{1,2}}{\sigma_1\sigma_2} \quad \text{(A2)}$$

Eventually, I calculated the standard deviation of the portfolio variance by the square root of the portfolio variance:

$$Portfolio\ Variance = \sqrt{Portfolio\ Variance} \quad \text{(A3)}$$

Table 3A1

The Standard Deviation and Covariance Matrix for the Returns of the Seven Asset Classes in China during 2013

This table presents the standard deviation of daily returns across seven assets classes during the period between 4th January and 31st December 2013 in China (Column 1), along with the covariance of returns among the seven financial assets (Columns 2-8). The following indices were used: stocks – CSI 300, which is a capitalization-weighted stock market index designed to replicate the performance of the top 300 stocks traded on the Shanghai Stock Exchange and the Shenzhen Stock Exchange; bonds – China Bond Index: mutual funds – CSI300 ETF Index Returns, derivatives – CSI1000 ETF Index Returns, foreign exchange – USD-HKD index, gold – China Metal Index returns. For wealth management products – China Bank's wealth management product index and returns are computed via the monthly change. The returns data was obtained from the Wind database.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Standard Deviation	Stocks	Bonds	Mutual Funds	Derivatives	Wealth Management Products	Foreign Currency Assets	Gold
Stocks	0.013997515	-	-	-	-	-	-	–
Bonds	0.001409021	0.0000000341	-	-	-	-	-	–
Mutual Funds	0.012308714	0.0001689166	-0.0000002723	-	-	-	-	–
Derivatives	0.006446885	0.0000430913	-0.0000001003	0.0000362474	-	-	-	–
Wealth Management Products	0.029124545	-0.0029984428	-0.0003801680	-0.0025807029	-0.0012605593	-	-	–
Foreign Currency Assets	0.000128169	-0.0000002087	0.0000000042	-0.0000001825	-0.0000002080	-0.0000444887	-	–
Gold	0.006527411	0.0000414278	0.0000000294	0.0000346742	0.0000376065	-0.0014857591	-0.0000002039	–

Appendix 3B: Additional Results

Table 3B1

Weighted correlation matrix

This table reports the correlation matrix for all individuals in the China Household Finance Survey in the year of 2013. The asterisk denotes the following level of significance: *p<0.05.

	Years of education	Ownership of stocks	Ownership of risky assets	Value of stocks	Value of risky assets	Stocks-to-financial asset ratio	Risky-to-financial asset ratio	#Assets held	Portfolio variance	Financial literacy	Urban region	Male	Marital Status	#Children
Years of education	1.00													
Ownership of stocks	0.22***	1.00												
Ownership of risky assets	0.27***	0.75***	1.00											
Value of stocks	0.22***	0.99***	0.73***	1.00										
Value of risky assets	0.27***	0.77***	0.98***	0.78***	1.00									
Stocks-to-financial asset	0.17***	0.82***	0.61***	0.85***	0.65***	1.00								
Risky-to-financial asset	0.24***	0.70***	0.82***	0.72***	0.87***	0.76***	1.00							
#Assets held	0.32***	0.51***	0.61***	0.51***	0.62***	0.36***	0.49***	1.00						
Portfolio variance	0.23***	0.65***	0.85***	0.63***	0.85***	0.56***	0.72***	0.48***	1.00					
Financial literacy	0.25***	0.17***	0.22***	0.17***	0.23***	0.13***	0.19***	0.28***	0.18***	1.00				
Urban region	0.46***	0.25***	0.30***	0.24***	0.30***	0.20***	0.26***	0.30***	0.26***	0.24***	1.00			
Male	0.06***	-0.01*	-0.01*	-0.01*	-0.01*	-0.01	-0.01	-0.01***	-0.01*	-0.01***	-0.02***	1.00		
Marital Status	-0.25***	0.02***	0.02***	0.02***	0.02***	0.01***	0.01***	0.03***	0.02***	0.02***	-0.03***	-0.09***	1.00	
#Children	-0.23***	-0.11***	-0.13***	-0.11***	-0.13***	-0.08***	-0.11***	-0.19***	-0.12***	-0.20***	-0.29***	-0.02***	-0.04***	1.00

Table 3B2
Predicting reform exposure by parental characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
Father: Years of education	0.001	0.001	0.001	0.001	0.001	0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Mother: Years of education	0.001	0.001	0.001	0.001	0.001	0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Parents: Party members	0.005	0.005	0.005	0.005	0.006	0.004
	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]
Parents: Business or Management	-0.005	-0.005	-0.006	-0.004	-0.002	-0.008
	[0.006]	[0.006]	[0.006]	[0.006]	[0.008]	[0.008]
Parental values: Filial piety	-0.009	-0.008	-0.007	-0.009	-0.01	-0.001
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.014]
Parental values: Gender equality	-0.014	-0.011	-0.012	-0.012	-0.018	0.004
	[0.014]	[0.013]	[0.013]	[0.013]	[0.014]	[0.021]
Parental values: Missing	-0.014	-0.017	-0.017	-0.018	0.001	-0.049**
	[0.012]	[0.012]	[0.011]	[0.012]	[0.013]	[0.019]
Male	0.009***	0.010***	0.011***	0.009***	–	–
	[0.003]	[0.003]	[0.003]	[0.003]		
Han ethnicity	-0.229***	-0.221***	-0.221***	-0.221***	-0.169***	-0.276***
	[0.006]	[0.007]	[0.007]	[0.007]	[0.008]	[0.009]
Log(#Siblings)	-0.350***	-0.344***	-0.343***	-0.345***	-0.319***	-0.368***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.007]
Missing #Siblings	-0.633***	-0.622***	-0.621***	-0.623***	-0.546***	-0.637***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.014]	[0.010]
Parents: Urban region	-0.132***	-0.135***	-0.136***	-0.135***	-0.140***	-0.134***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]
At schooling age post SCR_s	0.479***	0.457***	0.469***	0.457***	0.576***	0.332***
	[0.009]	[0.011]	[0.014]	[0.011]	[0.013]	[0.014]
Urban FE	+	+	+	+	+	+
Cohort FE	+	+	+	+	+	+
Province FE	–	+	+	+	+	+
Cohort*Province*Urban FE	–	–	+	–	–	–
Cohort-Province-Urban linear trend	–	–	–	+	–	–
Predicted probability	*0.2902*	*0.2902*	*0.2902*	*0.2902*	*0.3384*	*0.2399*
No. of Observations	*43,888*	*43,888*	*43,888*	*43,888*	*22,366*	*21,522*

Notes: This table reports estimates of the relationship between parental characteristics and reform exposure. ***p<0.01, **p<0.05, *p<0.1.

Appendix 3C: Causal Mediation Analysis

I use mediation analysis to shed light on the causal mechanisms through the effect of schooling on financial market participation. My mediation models include of a treatment variable *T* (in this case, years of education), a final outcome *Y* (in this case, financial market participation portfolios) and a mediating variable *M* (here, marital status, number of kids, physical condition, income, uncertainty earnings, savings, wealth, ratio of financial wealth, net financial wealth, financial risk tolerance, filial piety, financial literacy) that represents a mechanism by which T affects Y. The mediating variable, *M*, is indeed causally impacted by *T*, and mediates part of the overall causal effect of *T* on *Y*. The model basically differentiates the 'total effect' into 'direct effect' and 'indirect effect' of *T* on *Y* through *M*. Hence, I employ an instrumental variable *Z*, which could be added to cope with the endogeneity of both *T* and *M*.

I capture the coefficient of direct effect (DE= β_Y^T) of *T* on *Y* which is independent of *M*. Then multiplying the coefficients of *M* and *T* by the coefficients of *Y* gives the indirect effect through *M*, denoted by IE=$\beta_{\mathrm{M}}^{\mathrm{T}} * \beta_{\mathrm{Y}}^{\mathrm{M}}$. Regarding this mechanism, the total effect can be calculated by summing up these two terms, total effect (TE)= $\beta_Y^T + \beta_{\mathrm{M}}^{\mathrm{T}} * \beta_{\mathrm{Y}}^{\mathrm{M}}$.

Essentially, I have three model equations, which are graphically represented in <u>*Table C1*</u>. As model 1 estimating the causal effect of *T* on *M* and model 2estimating the causal effect of *T* on *Y* that are both estimating by using the standard IV models, where *T* is endogenous and *Z* is introducing exogenous variable. Model 3 is causal mediating equation identified with instrumental variable *Z*. $M = f_M(T, \epsilon_M)$ and $Y = f_Y(T, M, \epsilon_Y)$, which means *T* through *M* indirectly and directly causing *Y*. Hence, in the regression of *Y* on *T* and *M*, there are two potentially endogenous variables, but only one instrumental variables, *Z*, addresses their endogeneity. The approach that proposed by Dippel *et al.*, (2020), Causal mediation effect equations of Model 3 are denote following:

$$Z = \epsilon_z$$

$$T = \beta_T^Z * Z + \epsilon_T$$

$$M = \beta_M^T * T + \epsilon_M$$

$$Y = \beta_Y^T * T + \beta_Y^M * M + \epsilon_Y$$

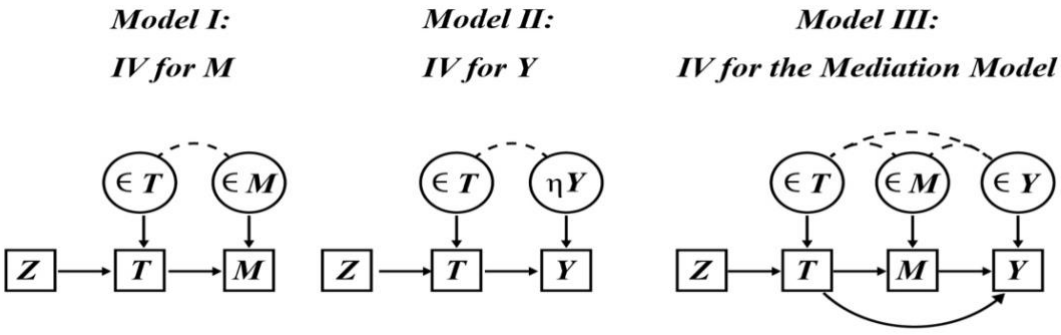

Figure 3C1
Graphical description of causal moderation analysis

Table 3C1

Causal Mediation Analysis – The Effect of Years of Schooling on the Candidate Mediating Variables

This table reports instrumental variable regressions for the effect of years of schooling on each of the candidate mediator variables in analysis. This is the second step out of the three steps required for causal mediation analysis, as illustrated in the Appendix 3C. The specification also includes cohort and province fixed effects, along with a constant term.

Dependent variable	*Married/ cohabiting*	*Number of children*	*Physical condition*	*Log (Income)*	*Earnings uncertainty*	*Savings rate*	*Log (Wealth)*	*Financial wealth ratio*	*Net financial wealth*	*Fin. risk tolerance*	*Filial piety*	*Financial literacy*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	-0.192***	-0.485***	-0.037**	-0.125**	0.552**	0.088**	0.034	0.027***	0.051***	0.006	-0.168***	0.078***
	[0.017]	[0.054]	[0.016]	[0.053]	[0.272]	[0.037]	[0.045]	[0.007]	[0.016]	[0.035]	[0.039]	[0.023]
Male	0.011	0.191***	0.113***	0.087***	-0.229	-0.064***	-0.045*	-0.019***	-0.024***	-0.004	0.133***	-0.054***
	[0.011]	[0.030]	[0.011]	[0.031]	[0.152]	[0.020]	[0.026]	[0.004]	[0.008]	[0.020]	[0.023]	[0.013]
Urban-urban transition	0.680***	1.329***	0.297***	1.143***	7.246***	-0.188	0.865***	-0.059**	-0.175***	0.365***	-0.528***	0.137
	[0.068]	[0.213]	[0.063]	[0.214]	[1.086]	[0.150]	[0.180]	[0.030]	[0.064]	[0.141]	[0.157]	[0.091]
Rural-urban transition	0.534***	1.137***	0.270***	0.738***	8.210***	-0.191*	0.590***	-0.043*	-0.167***	0.103	-0.253**	0.056
	[0.053]	[0.162]	[0.050]	[0.170]	[0.801]	[0.114]	[0.138]	[0.023]	[0.047]	[0.108]	[0.122]	[0.070]
Urban-rural transition	0.238***	0.559***	0.087**	0.372***	-0.341	0.011	0.392***	-0.008	-0.080***	0.07	-0.180**	0.028
	[0.033]	[0.095]	[0.034]	[0.112]	[0.469]	[0.117]	[0.096]	[0.017]	[0.026]	[0.073]	[0.080]	[0.046]
Rural-rural transition	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
No. of Observations	*43,888*	*43,888*	*43,888*	*43,888*	*43,263*	*43,888*	*43,888*	*43,802*	*43,888*	*43,888*	*43,888*	*43,888*

Table 3C2

Causal Mediation Analysis I – The Effect of Years of Schooling on Remaining Dependent Variables (43,888 obs.)

This table reports instrumental variable regressions for the effect of 12 candidate mediator variables on the ratio of the value of stocks to financial aseets in panel A, and on the ratio of the value of risky to financial assets in panel B. All specifications include urbanization, cohort and province fixed effects, along with a constant term (not shown). This table complements Tables 3.10 and 3.11 in the analysis, by showing the effect of years of schooling on the remaining dependent variables of the previous sections.

Mediator	*Married/ cohabiting*	*Number of children*	*Physical condition*	*Log (Income)*	*Earnings uncertainty*	*Savings rate*	*Log (Wealth)*	*Financial wealth ratio*	*Net financial wealth*	*Fin. risk tolerance*	*Filial piety*	*Financial literacy*
Panel A: Stocks/Financial Assets	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.004***	0.003***	0.009***	0.010***	0.003***	0.004***	0.019**	0.003***	0.004***	0.013*	-0.005	-0.008
	[0.000]	[0.000]	[0.001]	[0.002]	[0.001]	[0.000]	[0.009]	[0.000]	[0.000]	[0.007]	[0.003]	[0.006]
Mediator	-0.065***	-0.027***	-0.184***	-0.063***	0.027	0.079***	-0.152*	0.524***	0.298***	-0.293	-0.104***	0.305*
	[0.014]	[0.006]	[0.056]	[0.021]	[0.018]	[0.029]	[0.088]	[0.179]	[0.111]	[0.236]	[0.036]	[0.156]
Direct effect	*0.004*	*0.004*	*0.009*	*0.010*	*0.003*	*0.005*	*0.019*	*0.003*	*0.004*	*0.013*	*-0.005*	*-0.008*
Indirect effect	*0.012*	*0.012*	*0.007*	*0.005*	*0.013*	*0.011*	*-0.004*	*0.012*	*0.012*	*0.003*	*0.020*	*0.024*
Total effect	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*	*0.016*
Mediation effect	*0.77*	*0.78*	*0.44*	*0.35*	*0.81*	*0.71*	*-0.24*	*0.79*	*0.75*	*0.16*	*1.29*	*1.53*
Panel B: Risky/Financial Assets	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.006***	0.006***	0.015***	0.017***	0.006***	0.008***	0.031**	0.006***	0.007***	0.021*	-0.006	-0.012
	[0.000]	[0.000]	[0.002]	[0.003]	[0.001]	[0.001]	[0.014]	[0.001]	[0.001]	[0.011]	[0.005]	[0.010]
Mediator	-0.101***	-0.041***	-0.286***	-0.097***	0.043	0.123***	-0.237*	0.816***	0.464***	-0.455	-0.162***	0.475**
	[0.019]	[0.008]	[0.083]	[0.032]	[0.029]	[0.044]	[0.135]	[0.266]	[0.168]	[0.363]	[0.054]	[0.237]
Direct effect	*0.006*	*0.006*	*0.015*	*0.017*	*0.006*	*0.008*	*0.031*	*0.006*	*0.007*	*0.021*	*-0.006*	*-0.012*
Indirect effect	*0.019*	*0.019*	*0.011*	*0.008*	*0.020*	*0.017*	*-0.006*	*0.019*	*0.018*	*0.004*	*0.031*	*0.037*
Total effect	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*	*0.025*
Mediation effect	*0.75*	*0.75*	*0.42*	*0.33*	*0.78*	*0.69*	*-0.23*	*0.76*	*0.72*	*0.15*	*1.24*	*1.48*

Table 3C3

Causal Mediation Analysis II – The Effect of Years of Schooling on Remaining Dependent Variables (43,888 obs.)

This table reports instrumental variable regressions for the effect of 12 candidate mediator variables on the value of stocks to wealth ratio in panel A, and on the value of risky assets to wealth ratio in panel B. All specifications include urbanization, cohort and province fixed effects, along with a constant term (not shown). This table complements Tables 3.10 and 3.11 in the analysis, by showing the effect of years of schooling on the remaining dependent variables of the previous sections.

	Married/ cohabiting	*Number of children*	*Physical condition*	*Log (Income)*	*Earnings uncertainty*	*Savings rate*	*Log (Wealth)*	*Financial wealth ratio*	*Net financial wealth*	*Fin. risk tolerance*	*Filial piety*	*Financial literacy*
Panel A: Stocks to Wealth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Years of schooling	0.001***	0.001***	0.002***	0.003***	0.001**	0.001***	0.005**	0.001***	0.001***	0.004	-0.002	-0.003
	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]	[0.003]	[0.000]	[0.000]	[0.002]	[0.001]	[0.002]
Mediator	-0.019***	-0.008***	-0.054***	-0.018***	0.008	0.023**	-0.045*	0.154***	0.088**	-0.086	-0.031**	0.090*
	[0.005]	[0.002]	[0.019]	[0.007]	[0.006]	[0.010]	[0.027]	[0.056]	[0.035]	[0.071]	[0.012]	[0.049]
Direct effect	*0.001*	*0.001*	*0.002*	*0.003*	*0.001*	*0.001*	*0.005*	*0.001*	*0.001*	*0.004*	*-0.002*	*-0.003*
Indirect effect	*0.004*	*0.004*	*0.002*	*0.002*	*0.004*	*0.003*	*-0.001*	*0.004*	*0.003*	*0.001*	*0.006*	*0.007*
Total effect	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*
Mediation effect	*0.83*	*0.83*	*0.47*	*0.37*	*0.86*	*0.76*	*-0.26*	*0.84*	*0.80*	*0.17*	*1.38*	*1.64*
Panel B: Risky Assets to Wealth	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Years of schooling	0.001***	0.001***	0.003***	0.004***	0.001***	0.002***	0.007**	0.001***	0.002***	0.005*	-0.001	-0.003
	[0.000]	[0.000]	[0.001]	[0.001]	[0.000]	[0.000]	[0.003]	[0.000]	[0.000]	[0.003]	[0.001]	[0.003]
Mediator	-0.023***	-0.009***	-0.065**	-0.022**	0.01	0.028**	-0.054	0.187***	0.106**	-0.104	-0.037**	0.109*
	[0.008]	[0.003]	[0.026]	[0.010]	[0.007]	[0.013]	[0.033]	[0.071]	[0.047]	[0.088]	[0.016]	[0.062]
Direct effect	*0.001*	*0.001*	*0.003*	*0.004*	*0.001*	*0.002*	*0.007*	*0.001*	*0.002*	*0.005*	*-0.002*	*-0.003*
Indirect effect	*0.004*	*0.004*	*0.002*	*0.002*	*0.005*	*0.004*	*-0.001*	*0.004*	*0.004*	*0.001*	*0.007*	*0.009*
Total effect	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*	*0.006*
Mediation effect	*0.76*	*0.76*	*0.43*	*0.34*	*0.79*	*0.70*	*-0.24*	*0.77*	*0.73*	*0.16*	*1.26*	*1.50*

Chapter 4

Growing up with finance: Special economic zoning and household finances in China

4.1 Introduction

A well-functioning financial system is seen as one of the critical pillars upon which sustained economic growth may be built (Demirguc-Kunt, 2006; Beck *et al.*, 2000). According to Arestis *et al.* (2003), various financial policies have varying impacts on capital productivity in different nations. In particular, for developing market economies, financial sector expansion will result in significant gains for employment and capital acceleration. In the previous three decades, China has seen strong economic development and a rapid increase in financial intermediation in terms of the special economic zone and coastal city reform. Since 1978, when China began its economic reforms, the Chinese economy has grown at an annual rate of 9.8% in real terms (China Statistical Yearbook 2012), while the total loans outstanding in its financial institutions as a percentage of GDP has increased from 64.8 to 150.6 per cent (World Bank data, 1985–2017). Empirically, Cheng and Degryse (2010), using provincial data for the period 1995–2003 in China, studied the impact of banks and non-bank financial institutions on local economic growth and found that banking development has a significant positive effect on economic growth.

Previous research identifies several important determinates from individual characteristics that affect most households access to the financial market, such as Vissing-Jorgensen (2002) points out that there is significant heterogeneity in the asset portfolio choices of US households and that this heterogeneity is due in large part to the fact that some households cannot afford the transaction costs of participating in the equity markets. Using data from the US Census and the Survey of Income and Program Participation (SIPP), Cole *et al.* (2014) found that increased years of education for individuals significantly boosted financial market participation and investment returns as well as increased earnings from schooling attainment may have an effect on bank deposits. Black *et al.* (2018) denote the finding that increased educational attainment promotes more active participation in the financial market (i.e., stock and risky assets) among local men. Moreover, there has been a

growing focus on the function of economic institutions as the basic source of economic development inequalities (Acemoglu et al., 2002 &2005; Brown et al., 2019). As Hanushek (2008) provide the evidence confirms an independent effect of cognitive skills on economic growth, the effect differs depending on the economic institutions. The development of the financial sector can be an endogenous driver of growth through a mechanism that exposes and adapts people to financial institutions and promotes significant participation in formal financial markets, including riskier asset markets. Physical explanations for financial portfolio decisions are driven by social experiences throughout adolescence, as well as genetic and prenatal endowments that are fixed at birth (Addoum *et al.,* 2017).

The contributions of this study are threefold: Firstly, I study the Special Economic Zones (*hereafter* SEZ) reform policy function to introduce variation in household access to the financial market, including the risky assets market, and the key role early life experiences play in forming financial behaviors (e.g., Malmendier and Nagel, 2011; Brown, 2019). My research indicates that exposure to financial markets at a young age has a significant favourable effect on people's entrance into financial markets and their ability to create and manage their financial asset allocations. I attribute these beneficial effects to early exposure to rapidly growing financial markets (for example, the presence of a concentration of formal financial institutions such as banks can influence people to choose formal financial institutions more frequently, increased financial literacy related to awareness of risky financial market participation, and increased involvement in financial wealth management products). Second, I provide additional evidence on the importance of cognitive skills for economic growth (Hanushek, 2008) and financial knowledge for economic inequality (Lusardi *et al.,* 2017), thus, it is reasonable to assume that the years of education as a result of educational reforms have had influenced between growing up with finance and household financial behaviours, either explicitly or implicitly. Thirdly, I contribute to the literature regarding the importance of the social environment and transmission, i.e., the study of the social processes that shape economic thinking and behaviour (Hirshleifer, 2020; Gomes *et al.,* 2021). These are the results of early exposure to the development of the financial sector.

I attempt to identify whether early-life exposure to special economic zoning reform exerts an impact on formal financial market participation, equity and other assets market participation after the reform took place. My main empirical question is whether individuals who grew up with finance in SEZ and coastal cities are more likely to access finance from formal financial institutions? In a setting of widespread informal finance providers, are individuals who grew up with finance less likely to engage with informal institutions and

loan providers? Is exposure to greater financial sector development at young age likely to have long-lasting effects in terms of greater stock market participation and higher investment in riskier asset classes several years after the reform took place? Do the individuals who grew up with finance in China hold more diversified asset portfolios? Additionally, I am interested in the moderating factors that underpin any such connection. i.e., Does greater financial knowledge or higher financial risk tolerance moderate the effect of growing up with finance on financial market participation? If any effect of years of schooling or filial piety value can be explained on financial market participation of those growing up with finance? Do social interactions impact individuals' access to formal financial markets?

In my research design, I identify individuals growing up in special economic zones and coastal cities and being still at school age (i.e., younger than 12 at the time of the reform) as a treated group, and this is the group of individuals who are more likely to be exposed to knowledge and experience related to the operation of financial markets. My control group comprises of individuals at post-schooling age (i.e., older than 12 at the time of the reform), and those who did not grow up in special economic reform regions. I employ a difference-in-differences model where treated individuals of households are those that were born 12 years prior to the implementation of the reform and controlled the others are those at post-schooling age. Moreover, I examine the moderating factors that underpin the relationship in terms of greater financial literacy, higher financial risk tolerance, more years of schooling, filial piety, trust and social interactions. Thus, it is reasonable to assume that the SEZ and coastal cities reforms have resulted in apparent economic changes in SEZ regions, which have a direct or indirect effect on financial behaviours.

I utilize data from the 2015 Chinese Household Financial Survey, a dedicated dataset elaborated on capturing the Chinese household financial and economic behaviours. The questionnaire contains four parts: widespread demographic characteristics, household financial assets, liabilities, insurance, and security. I examine if exposure to local financial institutions from a young age is likely to induce individuals' great formal financial market participation. The Special Economic Zoning reform in specific cities in China, complemented with a similar parallel reform in specific coastal cities, provides the setting of the inquiry. The 2015 wave of the Chinese Household Financial Survey enables identifying Chinese cities, essentially the city of the primary responding to questions effectively, and as we will see, along with cities, it enables us to identify also movers wave stairs, that is, individual who grew up in the city versus people who moved in the city from somewhere else. I identified cities that enable examining the impact of assessing and postal

city reform in the way that I wish. Meanwhile, the survey allows for the identification strategy, which is based upon distinguishing between individuals and by individuals. By which means, the respondents who answered the financial questioners in reality, I am looking at one respondent per household, the person who's responsible for answering the financial section of the questionnaire, and I identify people who were still at schooling age that is less than 12 years old at the time of the reform, and those obviously, who were not at school at the time of the reform.

Using the difference-in-difference model, I identify the relationship between growing up with finance and households' financial behaviour outcomes. The preliminary findings highlighted significant findings in perspective in three sets of financial behaviour outcomes. The magnitudes are obtained by dividing the coefficient by the linear prediction of the model. The regression results indicate that the special economic zone reform is highly enhanced financial sectors development, in that case leading to individuals' financial activities more diversity. Specifically, for both individuals who were growing up with finance, in terms of access to finance, individuals who grew up with finance or grew up essentially in the SEZs regions have a 20%-30% higher probability of having a credit card, and 53%-58% have a high probability of having access to formal finance from a formal financial institution. In terms of informal to total finance ratio, they have lower informal to total finance ratios, which present between -12% and -37%. Here there is a bigger range in the estimates, and that range has to do with a sub-sampling; that is because the smaller estimates are the ones in the pooled sample, the bigger ones stem from the people that are again the group that essentially is born 12 years before the reform in either special economic zoning regions or non-special economic zoning regions, regarding experimental figures for informal finance range between -10% and -48%.

In terms of financial market participation, it presents high effects on the probability of stock ownership 32-46%, 22-37% in the probability of owning risky assets, 35%-44% in the probability of amounts invested in stock and 30%-35% of amounts invested in risky assets, respectively. The ratio of stocks invested in total financial assets denotes the probability of 35%-49%, and risky assets invested in total financial assets indicate the probability of 29%-27%, respectively. Furthermore, portfolio diversification, in which I examine the number of assets held and portfolio variance. The magnitudes both show at the 1% economically statistically significant level. The probability of the number of assets held remains in the

range of 24%-31%. The probability of portfolio variance[28] indicates the range between 33%-50%.

At the heart of the initiation of this process for opening up of the Chinese financial sector is what is known as the special economic zoning and coastal city reform, which facilitate the development of a market-oriented economy for China. The importance of this specific reform has been documented in terms of multiplier effects on the local economy, in terms of financial sector development (Feinerman, 1991; Fang *et al.*, 2018), GDP growth (Alder *et al.*, 2013), foreign direct investment (Busso *et al.*, 2013). After the opening up of the financial market, the government has implemented a series of policies for the development of its financial sector (e.g., the activation of commercial credit and the development of the bill business; the development of various forms of short-term financing; the establishment and development of long-term capital markets; including the establishment of full-credit investment banks; stock exchanges; foreign exchange markets, etc). With the continuous establishment and improvement of the banking system, a financial system centred on the Central Bank, with various specialized banks as the mainstay, supplemented by various specialized credit institutions and foreign banks, is gradually being formed (Huasheng, 1991).

I propose a rich set of robustness exercises, which estimate to check the main empirical findings. Firstly, I performed placebo-treated cities, which analyzed what if the reform happened instead of being enacted in the special economic zones and the coastal cities, it happened in the neatest city in terms of the Kilometre distance. I examine one nearest city placebo treatment and also four nearest cities. The insignificant results are robust to the usage of placebo cities. Secondly, I employed synthetic control group treatment[29] where the individuals are basically synthetic from multiple regions but essentially similar in aspects to SEZs regions. The significant results are robust to the usage of synthetic control groups. Thirdly, the robustness check has captured samples that are moving SEZs regions versus stayers. The results are strong and robust for individuals who have lived in special economic zones since birth and insignificant for those who moved to special economic regions from other locations. It is convinced of the importance of exposure to the reform at a young age.

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[28] I follow Von Gaudecker (2015), who uses the standard deviation of the portfolio, using asset weights from the main survey and then annualized return variances and covariances in bundles of asset classes form Wind. More details are presented in the *Appendix 3A*.

[29] I use propensity score matching based on marital status. Age, Group by region, household size, living the same problem since birth, household wealth, disposable income and the GDP per capita in that province.

Fourthly, I adopt a fuzzy Regression Discontinuity Design (RDD) framework, which in reality is an instrumental variable (IV) for essentially the Kilometre distance from a bank instrumented by growing up in a SEZs region also for some samples and stayers and movers. This approach more strongly identifies whether the hypothetical resident's proximity to a financial institution is an influential factor affecting their financial behaviour, and therefore establishing causality in this context is a more plausible framework (DiNardo and Lee, 2011). So far, I find the distance from home to a bank has a great explanatory variable in a fuzzy RDD framework, with distance being a strong predictor for individuals who lived in the same region since birth and being insignificant for individuals who moved out to SEZs regions.

In determining how local financial markets impact household financial behavior and accurately evaluating the mechanism behind the reforming effects. I account for exogenous changes in financial development by distinguishing between regions influenced by economic policy developments and those whose financial development is not facilitated by local financial policies, as these measures are geographically precise, comparable across households, and can provide information on the underlying factors of these financial behaviours. My study provides evidence suggesting that exposure to the financial market at a young age affects individual engagement with the stock market, assignment with risky assets and the ratio of informal finance to total access to formal finance.

Moreover, I am also interested in the moderators underlying any such relationship, i.e., is it that these people who have higher financial literacy appear to be exerting growing up with finance? Higher financial risk tolerance would exert the strongest moderating impact on growing up with finance? Would education, social factors (e.g., social interactions, trust), and filial piety be a moderator? With all the moderating analysis results coming out, it is identified that financial literacy and financial risk tolerance appear to exert the strongest moderating impact on growing up with finance, while financial literacy has the strongest moderating impact. Besides, the educational reform impact does not moderate the relationship between growing up with finance and household financial outcomes. The social interactions and filial piety exert some moderating impacts on the relationship between growing up with finance and household financial outcomes.

For the Robustness of the results, I also performed a placebo test and synthetic control test, and the results also show the positive impact of financial development on financial sector growth in the SEZs that likewise affects the individuals who grew up in these regions, given more statistically significant on the financial activities outcomes.

I contribute to the recent literature regarding the determinants of access to finance, stock market participation and portfolio diversification decisions (e.g., Campell, 2006; Bulter, 2017). I offer new insights regarding the importance of adaptive and experiential learning, based on growing up at a more developed financial environment within the same country. One recent seminal study by Brown *et al.,* (2019) highlighted the importance of early life exposure to financial institutions for financial outcomes later in life within the USA. In their study, differences in the legal environment between reservations in the USA induced an unintended difference in financial market development across cities, resulting in postponed entry to consumer credit markets, lower credit scores, reduced financial literacy and financial trust (Brown *et al.*, 2019). I complement the findings of that study, offering insights from a unique quasi-experimental setting in China. Greater financial sector development in the special economic zones and coastal cities of China seems to have affected more individuals who grew up during the early period of reform, in a way that has induced better household finances later in life. Experiential learning has resulted in higher financial literacy and higher financial risk tolerance among the individuals who grew with exposure to a more developed financial environment.

The remainder of this study is organized as follows. *Section 3.2* lays out China's SEZ reform background and financial development after the special economic zoning reform. *Section 3.3* presents the data in detail and empirical strategy. Then, *Section 3.4* presents the baseline SEZ effect specification estimates and robustness test. *Section 3.5* discusses the moderating analysis. Finally, *Section 3.6* concludes and discusses the relevant implications of findings.

4.2 Background and Literature

Since its foundation in 1949, the People's Republic of China had enacted rounds of rigid policies aiming to enforce economic development. The two decades before Chairman Mao Zedong's death in 1976 were characterized by unpredictable macroeconomic volatility, financial depression, and increased social turmoil. The reformist political authority that dominated the quest for Mao's progression in 1978, led by Xiaoping Deng, confronted the urgent requirement for measures to re-establish social union and economic rejuvenation. With limited priors and no blueprint to large-scale reforms, the government exerted

willingness for experimentation in a small number of cities[30]. After the 1978 plenum, the Chinese accepted the concept that domestic and international trade via market mechanisms was an essential and acceptable component of the country's economic growth strategy (Garnaut *et al.*, 2018). The government introduced the Chinese economic reform, transitioning from its traditional state-run economic system and partially opening up to foreign direct investment in order to stimulate economic growth and procedurally transition from the planned economy to a market economy (Lau and Zheng, 2017).

As the core of the modern economy, the financial sector is an important sector for special economic zoning reform and opening up. Since the 1980s, China's banking sector has accordingly embarked on a significant institutional reform. Before the establishment of the Special Economic Zones, China's financial system was a unified banking system, with only one bank in the country, the People's Bank of China, which could only assume the role of the central bank and was the only depository and lending institution. Its role was limited primarily to handing foreign exchange and international payments (Lardy, 2003). Between 1982 and 1985, foreign financial institutions were granted permission to enter the special economic zones to set up branches on a pilot basis. They were allowed to engage in various foreign exchange in 1985, and the Chinese government promulgated the Regulations on the Administration of Foreign Banks and Chinese-Foreign Joint Ventures in Special Economic Zones, which established the legal status of foreign financial institutions to set up business branches in China's special economic zones and marked the development of the opening up of China's financial sector in the direction of standardization.

Mendoza (2016) used the Chinese government's household income survey data across 6,000 households, 20,000 individuals, and 70 Chinese cities to establish a clear financial inequality gap between cities with and without preferential policies, particularly in areas of household income and income growth. Wang (2013) reinforced Mendoza's (2016) findings, revealing a significant increase in income levels for local workers of special economic regions, particularly for regions that received privileged policy supported preferential policies earlier with recorded higher income increases in municipalities. Moreover, Ge's (1999) study also found that special economic zones had enjoyed strong financial development in higher employment levels, financial resource utilization, capital formation, and trade expansion (Ge, 1999).

[30] As former President Deng (1987) said: "*when you go through the waterway, you have to seize for winding stones*" (Lau & Zheng, 2017).

4.3 Empirical Strategy

Special economic zoning reform progressively expanded from 1980 until 1990. Since the establishment of China's SEZs, the Chinese government has pushed for further reforms of the SEZs' and open coastal cities' financial markets, steadily boosting the issuance of securities and bonds and establishing a more sophisticated financing structure. The number of investors engaged in financial markets has risen dramatically in recent years. Risky assets, such as mutual funds, stocks, and bonds, have developed into significant investment vehicles and financial tools for investors (Zhang and Chen, 2021). Significant economic differences have emerged across SEZ reform skewed cities and others with local financial market development. Hence, I measure financial outcomes for these individuals of household who were born and growing up involved in reform.

The CHFS2015 survey includes specific questions regarding city and province in which the respondents' primary and secondary residences are locate. Moreover, the survey entails questions that enable to identify if the respondents live in the same city and province as their parents. These sets of questions enable the identification of residing and/or growing up in a specific city among those included in the CHFS sample. *Figure 4.1* illustrates the timeline between the SEZ reform implementation, the identification of samples, and the year of the China Household Finance Survey.

My identification strategy defines the treatment group as comprising of individuals who were still at schooling age in cities in which the reform took place. Age 12 is the compulsory school-leaving age, and the intuition behind the usage of that age as a cut-off point is that I aim to capture individuals who were still at compulsory schooling at the time of the reform. The control group comprises of individuals in the remaining cities, either born less than 12 years of the reform or born even more time than that. It also entails individuals in special economic zones and coastal cities who were born more than 12 years prior to the reform. So, the treated group comprises individuals growing up in special economic zones and coastal cities and being still at school age[31] (i.e., younger than 12 at the time of the

[31] Education provides the necessarily abilities that potentially assist individuals to cope with massive information and ultimately their decision-making in a range of fields, such as in the aspect of financial activities (Van Rooij *et al.*, 2011; Campbell, 2006; Gary *et al.*, 2021; Gomes *et al.*, 2021).

reform). This is the group of individuals who are more likely to be exposed to knowledge and experience related to the operation of financial markets[32].

[Insert Figure 4.1 about here]

4.3.1 Difference-in-Differences (DiD) Estimation

Noting the difference in household financial outcomes between individuals who grew up in SEZ cities and those who did not as shown in the summary statistics, I attempt to identify the causal effect of growing up in a SEZ city on household financial outcomes later in life using regression analysis. To estimate the effect of SEZ reform on Chinese household financial outcomes, I employ a difference-in-differences approach. The treated group are individuals of households who were born 12 years prior to the implementation of the reform, and control groups are those remaining individuals of households aged between 18-68, hence, likely to be a valid counterfactual. I design general specification by the following OLS regression in which the coefficient of interest is β_3 captures the differential effect of the reform on the dependent variables:

$$HF_i = \beta_1 SEZ_i^{CC} + \beta_2 Grow_i^{PR} + \beta_3 (SEZ_i^{CC} \times Grow_i^{PR}) + \varphi' X_i + \varepsilon_i \qquad (1)$$

where i indicates individual; HF_i denotes three sets of variables[33] capturing household financial outcomes, in terms of access to finance (i.e., having a credit card, access to formal finance[34], using informal finance[35] and informal to total finance ratio[36]); financial market

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[32] The Appendix *Table 4C5* and *4C6* (pp. 151-154) indicate that the effects are robust for individuals aged up to 15 years of age. However, they are stronger for those aged 12 and below at the time of the reform.

[33] The *Appendix 4A* presents the detailed calculation of the standard deviation of Chinese household portfolio for provide more significant insights. The computation results of standard deviation of these seven assets are presented in the *Appendix Table 4A1*, the *Appendix Table 4A2* presents the covariance matrix for the seven financial assets, i.e., for stocks, bonds, mutual funds, derivatives, wealth management products, foreign currency assets, gold.

[34] Formal finance is a dummy variable taking the value 1 if the household has access to credit through formal financial institutions, and 0 otherwise. In the CHFS questionnaire, there are questions asking if the respondent has borrowed from banks and formal financial institutions for business startups, agricultural production and activity, house purchases, vehicle purchases, stock and bond purchase, educational expenses and other expenses, e.g., medical services, marriage ceremonies and funerals.

[35] Informal finance is a dummy variable taking the value 1 if the member of the household has any non-banking loans. In CHFS questionnaire, there are questions asking if the respondent has borrowed from friends, relatives, private non-banking financial organisations, and other sources for exactly the same categories as the above for formal finance.

[36] The ratio of informal-to-total finance denotes the division between the amount of loans from informal sources to the total amount of loans from both formal and informal sources. The amounts of loans for the for the above 7 categories of the definitions of formal and informal finance are aggregated to a total figure.

participation (i.e., stock ownership, ownership of risky assets, amounts invested in stock and risky assets and ratio of stocks and risky assets invested in total financial assets); portfolio diversification (i.e., number of assets held, portfolio variance). SEZ_i^{CC} takes a value of 1 for implementing the reform of special economic zones and coastal cities, $Grow_i^{PR}$ takes a value of 1 for individuals born 12 years prior to the SEZ reform year and a value of 0 for excluding individuals [37]. The coefficient on the interaction term $SEZ_i^{CC} \times Grow_i^{PR}$ illustrate the magnitude of the SEZ reforming effects assumption, which essentially identifies the difference-in-differences estimator. The list of control variables in the vector X_i includes province effects, urban-rural transition fixed effects and age cohort-fixed effects.

For robustness, I also restrict the sample to people who essentially are born less than 12 years before the SEZ reform and growing up in SEZ and coastal cities as robustness. The estimation equation of the following equation:

$$HF_i = \gamma_1 Grow_{SEZ_i^{CC}}^{PR} + \varphi' X_i + \varepsilon_i \qquad (2)$$

where HF_i capturing financial outcomes for individual i, $Grow_{SEZ_i^{CC}}^{PR}$is a variable assuming that individuals born 12 years before SEZ reform year and grow up in SEZs regions, X_i controls for the province effects, urban-rural transition fixed effects and age cohort-fixed effects.

In the final sections, I evaluate the different moderating factors that are anticipated to impact SEZ reform on the results of household financial activities. To do so, I modify equation (1), by adding moderators in equation (3) and interacted between moderatos and the dummy of SEZ reform regions times 12 years born before the reform years in equation (3):

$$HF_i = \gamma_1 Grow_{SEZ_i^{CC}}^{PR} + \gamma_2 Mod_i + \gamma_3 Grow_{SEZ_i^{CC}}^{PR} \times Mod_i + \varphi' X_i + \varepsilon_i \qquad (3)$$

Here, Mod_i is a vector of moderating variables that affect household financial outcomes and I am interested in five aspects: financial literacy, financial risk tolerance,

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The definition excludes individuals who have no access to finance (either formal or informal), i.e., it excludes the financially excluded, as the ratio would go to infinity if they were not excluded.

[37] The *Appendix Figure 4B1, 4B2 and 4B3* present the depicting changing of dependent variables in SEZ and non-SEZ regions. Each figure of the *Appendix Figure in 4B1, 4B2 and 4B3* have a visible jump at 12 years before the reform. In the *Appendix Figure 4B4, 4B5 and 4B6*, they are shown that the shorter interval at 6-year is also have the same jump in sample.

single-child reform, social person, trust, filial piety. The specification above capture the impact of different moderating factors with the individuals who were born and grow up in the SEZ cities and coastal cities. If the interacted coefficients are statistically different from each other it can be concluded that the impact of moderators on growing up with financially developing regions is different. These moderating variables are discussed in detail in sub-*Section 4.3.4*.

4.3.2 Mediators

My inquiry will also attempt to identify the transmission channels of any adaptive learning induced by growing up at a special economic zone at young age. I perform causal mediation analysis using the framework by Imai *et al.*, (2010). I focus on the mechanism by which the treatment variable affects household financial outcomes later in life. My list of candidate mediators involves the following variables: (1) Educational reform exposure (4.2%). I generate a dummy variable for individuals who were impacted by the two parallel reforms of chapter 3 (i.e., one-child policy reform and educational reform)[38]; (2) Parental education, in terms of having a father with more than 9 years of schooling account (5.7%); (3) Parental self-employment (3.5%); (4) Parental managerial status (5.0%); (5) Windfall gains, in terms of receiving an inheritance of money (41.1%). The weighted averages for these variables have been shown in Table 2.4.

Moreover, as candidate mediators, I use (6) disposable household income, which has a weighted average of ¥ 82,520 in the sample; (7) the ratio of savings to disposable household income, which is 70% on average; (8) Household wealth, which has an average value of ¥507,630. (9) Net financial wealth, which has an average value of ¥30,800. Apart from these intuitive candidate mediators, in the paragraphs below I describe the list of some more candidates, which are proposed by some of the modern literature.

My 10th candidate mediator is filial piety, approximating Confucian values. As an informal structure within China, the extent of Confucian influence varies significantly across regions due to historical and economic reasons that children have obligated to their parents unconditionally, including supporting them when they are old (Cheung, 2009). Confucianism impacts the behaviours of households and, consequently, affects households'

[38] It is worth noting that due to the sample selection strategy of chapter 3, the figure for individual exposed to the reform is much higher there. The strategy involved selecting the individuals born 15 years before or after the reform.

investing preferences (Ge and Kong, 2021). Here, I comprise CHFS2015 survey questions that illustrate the filial piety proxy (Chen *et al.*, 2019). Finally, the proxy for Confucian value exact from the questions that enable the generation of categorical variables for filial piety to entail seven categories contains: 1) supporting parents is the primary purpose for marriage; 2) raising children to take care of the parents when they get old; 3) the most trait that prefers for the child to have is filial piety (obey their parents); 4) they defined the filial piety as giving money to parents in their old age; 5)the main way of the old-age plan is support from the child; 6) they assert that children have the responsibility for their old-age life; 7) the way of old-age living they would like to choose nursing at home. Chen *et al.*, (2019) identify the weakening influence of filial piety has increased saving behaviour in China, their research confirms the notion that parents regard their children, particularly boys, as a source of retirement income for old age. But persistent accelerated development of finance would be effectively offset the reliability of children as financial instruments and divert them to select other financial portfolios for old-age life safeguarding. *Table 2.4*, shows insignificant differences Confucian values (i.e., filial piety) between respondents in the treated and the control group.

My 11th candidate mediator approximates socialization. I generate a variable based on the sources of social interaction which report interacting with their families and friends, community cadres, social organizations, religion groups etc., which of these questions are asked: (1) *'if you conflict or disputed with residents in the community, whom will you turn to for help and conciliation?'* (2) *'whom will you turn to for help if you have difficulties in your life?'* (3) *'Are you willing to participate in community governance?'* admittedly, the way of thinking and personal behaviour is necessarily influenced by their social environment. Mansik (1993) summarized this influence as 'peer effects' which reflected from observing others using a particular product, exogenously effect by their characteristics or background (i.e., education or financial literacy), and correlated effects that arise from peers that induce similarity in behaviour, or exposure of the same environmental factors. Manski (2000) divides social interactions into endogenous interactions, also known as the partner group effect. That is, making decisions and situational interactions based on the investment behaviour of the reference group. Within social relations, the socialization interaction between individuals reflects the social relations of Chinese residents and has the character of social interaction. In reality, social interaction increases the likelihood that households participate in financial markets, for example, by holding shares (Hong, Kubik, and Stein, 2004).

My 12th candidate mediator is a proxy for trust. There were three related questions in CHFS2015: (1) *'Do you trust strangers?'* I reserved the respondent who signified with *'trust very much'* and *'trust'*. (2) 'in the four groups of people – doctors, scientists, teachers and lawyers, how many groups do you trust?' I reserved the respondents who selected *'one group'* and *'two groups'*. (3) 'Do you think whether today's society is fair or not?' I kept the individuals who given option on *'fair'* and *'quite fair'*. Guiso, Sapienza and Zingales (2008) examine the role of trust in stock market participation. They find considerable evidence that stock ownership in a country is positively influenced by the general level of trust exhibited by individuals in that country.

My 13th candidate mediator is financial risk tolerance. I use a relevant question from the CHFS, namely: "what kind of investment are you willing to choose if you win a lottery of ¥500,000?" The response categories were: (1) Unwilling to carry any risk; (2) Project with slight risk and return; (3) Project with average risk and return; (4) Project with slightly high-risk and slightly high-return; (5) Project with high-risk and high-return. The average score of 2.8. Van and Michayluk (2012) point out that financial risk tolerance varies with time and life experience (i.e., with high income and wealth categories; geographical location etc.), Barsky *et al*. (1997) demonstrate financial risk tolerance preferences between residents in the western United States and the rest of the nation presented differential at a statistically significant level since the geographical grouping of individuals are the most likely have higher income and wealth. The figures in *Table 2.4* indicate a significantly higher financial risk tolerance standard among respondents who were born and grew up in the SEZ regions than the averages.

My 14th and final candidate mediator is financial literacy, which is computed from the Big 3 financial literacy questions in the CHFS2015 survey (Lusardi and Mitchell, 2014) capturing the fundamental financial concepts, i.e., interest, inflation, and financial risk (Klapper *et al*., 2015). The exact wording of the questions was: (1) "*Given a 4% interest rate, how much would you have in total after 1 year if you have 100 yuan deposited?*" The answer options are signified in: "under 104", "104", "over 104", "cannot figure out". (2) "*With an interest rate of 5% and an inflation rate of 3%, the staff you buy with the money you have saved in the bank for 1 year is*?" The respondents give answers based on: "more than last year", "the same as last year", "less that last year", "cannot figure out". (3) "*Which one do you think is more risky, a stock or a fund*?" Here are given options: "stock", "fund", "haven't heard about stock", "haven't heard about fund", "neither of them has been heard about". I combined the correct responses to these three questions and created an index for

financial literacy, ranging from 0 and 3. *Table 2.4* presents the level of financial literacy in China in 2015. Compared to control group, the respondents in the treatment group score more highly in the number of correct financial-literacy responses.

4.4 SEZ Reform and Household Finances in China

In this section, I present the main difference-in-differences results. Using data from CHFS2015, I provide strong support for my main conjecture, which posits that individuals growing up with greater financial circumstances would more likely access to formal financial market, participate in financial markets, and own diversified assets portfolios.

4.4.1 SEZ reform and access to finance

Table 4.1 presents estimates of the relationship between SEZ reform and access to finance using equation (1) using the dependent variable *having a credit card* equals one in panel A, the dummy variable of *access to formal finance* in panel B, the *ratio of informal to total finance* in panel C, and variable *informal finance* equals one in panel D. Meanwhile, and I clustered sampling relies on the city-level which to articulate precisely the relation between the sample and the population (Abadie *et al.*, 2017; Angrist and Pischke, 2008). All specifications in each column include province fixed effects, cohort fixed effects and urban-rural transition fixed effects. Column (4) additionally controls demographic characteristics, and column (5) additionally controlled interactions of the province, year of birth and urban region to the regression. Furthermore, Column (6) presents estimates for the sub-sample of individuals who were still at schooling age or were born after the special economic zoning reform. The coeffcients and robust standard errors are shown in brackets.

The estimates confirm that SEZ reform positively impacts access to finance. Panel A present the relationship between SEZ reform on having a credit card as economically and statistically significant at the 5% level, and individuals born 12 years before SEZ reform year, especially those growing up in the SEZ regions report with an increase in SEZ regions at one standard deviation increases the probability of having a credit card in the future by 31.5%. The finding is robust by controlling the sample size in only SEZ regions, which indicate 0.075 increases at the 1% statistically significant level of credit card ownership by reforming effect of 20.7%. The results in panel B indicate that individuals in SEZ regions are with an increase of one standard deviation increases the probability of access to formal

finance by 57.6%. Panel C represents that the SEZ reform effectively influences the conditions of using informal finance, which decreases the probability of informal to total finance ratio by 14.2%. The probability of informal to total finance ratio in SEZ regions shows 37.5% decline by the reforming effect and significance at the 1% economic statistically level. Panel D denotes that one standard deviation decreases the probability of using informal finance by 12.7%. Controlling the SEZ regions individuals only, it present the probability of using informal finance by 47.9% decline effects. The magnitude of SEZ reform effects on access to finance is visible. Literately, individuals are more likely to express that SEZ reform is expected to bring prospective formal financial activities to individual households, particularly in being born and growing up in SEZ regions.

[Insert Table 4.1 about here]

4.4.2 SEZ reform and financial market participation

In *Table 4.2*, I examine the effects of SEZ reform on financial market participation in aspects of stock market participation, ownership of risky assets, the value of investments in stocks and risky assets, and the ratios of stocks-to-financial assets and risky-to-financial assets. In this case, risky assets are the sum of financial assets (i.e., stocks, bonds, mutual funds, derivatives, wealth management products, foreign currency assets and assets of gold).

Panel A of *Table 4.2* presents the coefficients from main OLS model using equation (1) for stock market participation, controlling for the fixed effects of the province, age cohorts, urban-rural transitioning. The results show positive associations at statistically significant as the expected directions for individuals who grow up in SEZ regions and were born 12 years before the SEZ reform. Accordingly, growing up in SEZ reform cities, the probability of participating stock market is 0.04 (statistically significant at the 5% level) with effects of 32.2%. Regarding ownership of risky assets, the relationship is strongly positively related to reforming SEZ cities. The results present in panel B of *Table 4.2* conduct the specifications correspond to panel A as well as those of *Table 4.2*, which indicate the coefficient is 0.062 after excluding individuals who live and grow up outside SEZ regions. Hence, SEZ reform has a positive effect on the propensity to own risky assets[39].

[39] In the *Appendix Table 4B2* computes the log number of stocks of Chinese household held. The results highly impacted by the SEZ reform, which shows the significance at 1% statistically economic level. Compared to the owners among the financial asset holder, the log number of stock remining at the 5% economically statistical level.

In panel C of *Table 4.2*, I study the reforming impacts of stocks market participation share and the value of risky assets. In columns (13) and (16), the estimate is now strong and statistical significance overall, with a magnitude of 14.8 percentage with an effect of 43.8% and 17.5 percentage with an effect of 34.8%, respectively. Additional estimation in columns (14) and (17) concerned of only financial assets owners, the results through the consistence specification using equation (1). The estimated relationship between the value of stocks and SEZ reform in the sampling of financial assets owners is also positive magnitude at 0.492 and slightly weaker significance at 5% level. The coefficient estimate of risky assets ownership presents 0.818, which is statistically significant at the 1% level. For robustness, columns (15) and (18) denote that narrowing window respondents growing up in SEZ region and exposure to reforming also have a significant positive correlation, with the probability of reform effect of 40.2% and 31.1%, respectively.

Furthermore, panel D of *Table 4.2* presents the effects on ratios of stocks-to-financial assets and risky-to-financial assets using specification controls in line with panel C. Specifically, early life exposure to the SEZ reform exerts a positive impact on the stocks-to-financial assets ratio and the risky-to-financial assets ratio. The coefficients are 0.018 and 0.027, which are statistically significant at the 1% level. The magnitude of the effects is large for the sub-sample of individuals who were born less than or equal to 12 years prior to the reform. There, the coefficient of growing up in a SEZ region is 0.036 at the model for stocks to financial assets ratio and 0.072 at the model for risky to financial assets ratio, respectively. Both are significant at the 1% level.

[Insert Table 4.2 about here]

4.4.3 SEZ reform and portfolio diversification

With the financial sector accelerate development, a wide variety of financial products have emerged in the financial market, assets portfolio choice is arising different with the elements of differences in economic environment and population characteristics (Christelis *et al.*, 2013). Getting the idea that SEZ reform on economic enhancement has important implications for the individuals' financial activities was a rational choice-driven. The extent to which household the design of portfolio diversifications and financial portfolio optimization risk management. In practice, I summarize the number of category assets held to realize a portfolio of financial assets (i.e., stocks, bonds, mutual funds, derivatives, wealth management products, foreign currency assets and gold assets) of financial respondents in the CHFS2015 survey, as an important measurement for risk management, which originates

from the portfolio theory works of Markowitz (1991). Following the condition, I further provide a mathematical computation of return and variance that with this the main characteristics of the portfolio in this theory in which to consider a more likely reliable indicator of risk and whether the portfolio has an appropriate level of risk.

Table 4.3 shows that individuals who live in special economic zones and coastal cities are significantly more likely to hold diversified financial assets and perform to have an optimal set of assets portfolio. The estimation results of panel A in *Table 4.3* show the significant effect of SEZ reform on the number of assets holders, which indicated the individuals benefiting from the reform, and statistically significant at the 5% level on the average and demonstrated with one standard deviation increase the number of assets holds among the household increased by 29.9%. While capturing the individuals in SEZ regions effects denoted 0.081, which is a more significant effect at the statistical level of 1%. In panel B, I show the effects on the owners of financial assets, which presented a strong reforming effect with a coefficient of 0.084 by 26.3%. The remaining panel C and Panel D denote that SEZ reform is positively and significantly associated with portfolio variance of individuals in SEZ regions and prospectively born 12 years before the reform year and grew up in the reform region. Panel C presents the coefficient of portfolio variance of 0.112 by the impact increase 49.6% at the 1% economic statistically level. Panel D of *Table 4.3* also presents a strongly positive association in portfolio diversification regarding who has ownership of financial assets. It shows the coefficient of 0.179 with statistically significant at the 1% level that people stay to remain in the SEZ regions[40].

[Insert Table 4.3 about here]

4.5 Robustness Exercises

In this subsection, I perform a battery of robustness exercises to ascertain the validity of core findings, *i.e.*, the positive effect of early-life exposure to the SEZ reform on individuals'

[40] I also present two additional robustness check by restricting samples of 12-year band before the SEZ reform in the *Appendix Table 4C3* and 6-year band before the SEZ reform in the *Appendix Table 4C4*. For completeness, I take different age interval into consideration and present all the results in the *Appendix Table 4C5* and results in the different age interval that basis on the reside at SEZ regions in the *Appendix Table 4C6*.

access to finance, financial market participation and portfolio diversification[41]. The set of robustness exercises comprise of the following: (i) Estimates with placebo-treated cities; (ii) Estimates with a propensity-score matched control group, based on individual and regional characteristics; (iii) Estimates for sub-samples of individuals who stayed in the same city since birth, and those who have moved to another city; (iv) Estimates for the subsample that excludes the 4 top-performing SEZ regions, that are also the ones nearest to Hong Kong; (v) Estimates from a stacked difference-in-differences design, which aims to the gradual implementation of the SEZ reform; (vi) Estimates from a fuzzy regression discontinuity design, in which the distance of an individual's home from a bank is the primary explanatory variable, instrumented by exposure to the SEZ reform at a young age. Apart from these primary exercises, several other conceptual experiments are presented for robustness in the *Appendix 4C*.

4.5.1 Placebo-treated cities

In the first robustness exercise in *Table 4.4* I estimate regressions of primary specification of Table 4.1. Specifically, I am using geographical distance from special economic zones and coastal cities to identify the placebo cities that are closer to cities that were actually treated. I performed four separate exercises based on one nearest city placebo treatment and four nearest cities (excluding SEZ and coastal cities during cities) placebo treatment, for both the full sample of individuals and the sub-sample of individuals who were born at least 12 years prior to the reform[42]. Panel A of *Table 4.4* report the results of the neatest placebo city, the magnitudes of policy effects on households' financial behaviours are insignificant. The exercise stems from weighted estimations showing an insignificant predisposition of access to finance, financial market participation, and portfolio diversification. Panel B of *Table 4.4* confirms the robustness of findings. I compare the performance of the four nearest outside SEZ and coastal cities, the estimation results are reported in panel C of *Table 4.4*, almost all of these estimates show statistical insignificance, but the small magnitudes further convinced that the effects from access to finance show no statistical significance while mitigating insignificance. In the bottom panel of *Table 4.4*, I also include the additional

[41] In the *Appendix Table 4C7* and the *Appendix Table 4C8*, I used the identical specification with Table 4.1, spilt the sample by gender to seek the SEZ reform effect on financial outcomes. In the *Appendix Table 4C9* and *Appendix Table 4C10*, this is also the case in models of robustness with separate region of urban and rural.

[42] The placebo treatments and matched control groups present in the *Appendix Table 4B1* and placebo city matches results present in the *Appendix Table 4B2*. The propensity Score matching Estimates present in the *Appendix Table 4B3*.

consideration of individuals who grow up in SEZ regions as a robustness exercise. Though access to finance, own stocks, the value of stocks, the ratio of stocks-to-financial assets, the ratio of risky-to financial assets and portfolio variance are marginally insignificant.

[Insert Table 4.4 about here]

4.5.2 Matched control group, based on propensity score matching

As a another robustness exercise, I use the propensity score matching method (Abadie *et al.*, 2010; Abadie *et al.*, 2021) to match individuals born less than 12 year prior to the SEZ reform in SEZ cities, with individuals with similar characteristics born in other cities. The control characteristics on which matching is based comprises of marital status, age, urban region, household size, living in the same province since birth, household wealth, disposable income, and gross regional product per capita at the level of the province. The significant results are shown in *Table 4.5*, which are robust to the usage of synthetic control groups of individuals with similar characteristics and indicate that synthetic control cities estimate a broadly positive impact on household financial activities outcome on average, which matches the previous findings.

[Insert Table 4.5 about here]

4.5.3 Movers versus stayers in the same city since birth

Next, I examine financial outcomes for individuals who have been in and moved away from SEZ and coastal cities since birth. This test quantifies the extent to which exposure to a more accelerated financial environment enhanced further financial activities of household individuals. Specifically, I use the identification strategy consistent with equation (1) to compare the stayer and move away residents in the financial activity in SEZ reform zones and coastal cities. As the identifying residents' geographical changes for tests are based on the age of respondents moving into the living place in line with their parental living place. By capturing the coefficient before the Post-SEZ in the baseline effect, I can converge the differential effects of individuals from SEZ regions and move to the other cities.

The strong impact of remaining in SEZ reform cities for financial activities are tremendous for those who leave SEZ reform cities. *Table 4.6* presents equation (1) estimates using *lives in the same region* in panel A *and away from the region of birth* in panel B. The results in panel A indicate that individuals born and living in the same region have a relatively stronger effect on all financial outcomes (i.e., access to finance, financial market

participation, assets portfolio diversification) and are statistically significant at the 1% level in all specifications. Compared to individuals who live in a different region than the region of birth, using the same set of specifications of panel A, the impacts on financial outcomes reports are statistically insignificant but have a very small magnitude in having risky assets. These estimates imply that those born and living in the same SEZ region have strongly benefited from the policy and embodied it in their financial activities outcomes while leaving SEZ regions leads to less effect on their financial behaviour outcomes.

[Insert Table 4.6 about here]

4.5.4 Dropping the top-4 performing SEZ cities

In Panel C of Table 4.6, I perform a robustness exercise that I also find pivotal to establishing the robustness of findings. Figure 2.7 has already shown that there are 4 SEZ cities in particular, which are performing disproportionately at the Chinese GDP. These are Shanghai, Guangzhou, Shenzhen, and Tianjin. In particular, Guangzhou and Shenzhen are also cities in close vicinity to Hong Kong, which can be considered as a hub of economic development, which might induce spillover effects to some of the SEZ in the sample. By excluding those 4 cities I ensure that the estimates hold for the remaining SEZ cities, and that the results are not driven by the top performing ones or any spillover effects stemming from Hong Kong. Indeed, the estimates in panel C show that the effects are actually of a higher magnitude for the remaining 14 cities, after I exclude the top performing ones. Hence, the validity of finding of the importance of early life exposure to financial development is further reinforced by this finding.

4.5.5 Stacked DiD design

Another major concern to the reliability of previous findings might stem from the fact that the SEZ reform was implemented gradually to the special economic zones and coastal cities in the sample. In particular, I have cities acquiring the special status in 1980, 1981, 1984, 1988, and 1990, with the majority of coastal cities acquiring the privileged status in the year 1984. Hence, a stacked or a staggered difference-in-differences design would be suitable as an estimation method. Due to the usage of the cross-sectional dataset for the year 2015, and the implementation of a cross-sectional DiD design in the previous estimates, implementing a staggered DiD design is not possible, as it would require panel data. However, a stacked DiD design (Cengiz *et al.*, 2019; Deshpande and Li, 2019) is enabled via distinguishing SEZ cities by year of reform and attaching the entire control group to each sub-sample of SEZ

cities. In this way, the dataset explodes into a pseudo-panel dataset. In the estimation, I include 5 control variables for the number of replicas of the control group, and I cluster the standard errors at the individual level, instead of the city level as I did in the previous estimates.

In *Table 4.9*, I present the related estimates for the pooled sample in panel A, and for the sub-samples excluding the 14 coastal cities only in panel B, and then excluding the special economic zone cities in panel D. Panels C and E repeat the latter two exercises for the non-stacked dataset for comparison. In panels A, B, and D, I am interested in the significance of the results, instead of the effect magnitudes. The magnitudes of the effects in these panels are much higher, which reinforces the interpretation of findings. However, I am not interested in deciphering the exact effect magnitudes from the stacked design. The results in all panels confirm the robustness of primary estimates. An interesting discrepancy arises from the comparison of the effect magnitudes in panels C and E. The effects of growing up with finance on formal financial market participation are of a higher magnitude in the coastal cities, compared to the special economic zones. However, the effects on stock and risky asset market participation, along with portfolio diversification are of a higher magnitude in the special economic zones, compared to the coastal cities. For example, the effect of growing up with finance in special economic zone cities on obtaining formal finance is 29.4% in panel C, while it is 90.2% when growing up in coastal cities in panel E. In contrast, the effect of the effect of growing up with finance in special economic zone cities on stock market participation is around 100% in panel C, while it is 37.6% when growing up in coastal cities in panel E.

[Insert Table 4.9 about here]

4.5.6 Regression discontinuity design: The effect of living near a bank

I provide additional evidence that these residents' access to the formal financial market, participation in financial market activities, and diversification of financial assets portfolio is due to differences in local economic development (e.g., the distance between residence and banks). In particular, any exogenous factor that increases the supply of formal financial institutions (e.g., banks) affects the differences between areas that grow up in a financially telling development and other areas. Hence, the distance from home to bans work as an explanatory variable in a fuzzy RDD framework, which instrumented with special economic zoning reform exposure as the instruments. As a result, I expect an increase in financial institutions density associated with SEZ and coastal cities would enhance the households'

financial activities. Greater access to local financial institutions enables customers to enter formal financial markets more rapidly (Brown *et al.*, 2019).

Table 4.8 reports the estimates of living near a bank for different areas. The results suggest that reforms had a positive impact on individual financial behaviours. More specifically, given that I observe the relationship of living near a bank using (fuzzy RDD), the observed increase in average financial outcomes remains statistically significant at the 1% level and qualitatively similar to Brown *et al.*, (2019). Considering the individuals are growing up in SEZ region or outside SEZ region panels, respectively. Panel B of *Table 4.8* reported that SEZ reform has a significant effect on those who are SEZ grow up individuals, the parameter estimates according to instrumented variable *distance to bank*, while the dependent variables are present economically meaningful results. Panel C of *Table 4.8* denote the individuals who grew up in outside regions have destroyed the results. So with distance being a strong predictor for individuals who live in the same region since birth, and being insignificant for individuals who moved to a SEZs regions from another location. This finding highlights that SEZ reform has a differentiated effect in terms of the home located in the developed financial market region.

In summary, RDD regressions represent a clear improvement upon the instrumental variable (e.g., distance to a bank and kilometres to a bank); among these results, I am confident that the SEZ reform is effective and powerful to robust findings.

[Insert Table 4.8 about here]

4.6 Causal Mediation Analysis

According to previous estimations, early life exposure to the new SEZ environment is positively associated with household financial outcomes, such as access to finance, financial market involvement, and portfolio diversification. In this section, I examine the channels of transmission of this relationship, i.e., the mediating factors that might facilitate the conversion of early life exposure to a more developed financial environment into real household financial outcomes later in life. In particular, I use causal mediation analysis as in Imai *et al.*, (2010) which is explained in the *Appendix 4D*.

In the *Table 4.9*, I examine the mediating channels via the inclusion of controls for 14 distinctive characteristics, namely exposure to the conditional compulsory schooling reform

of the 1980, parental education (≥9 years), parental entrepreneurship, parental managerial role, the receivership of an unexpected windfall gain, household disposable income, savings rate (as a fraction of income), household wealth, net financial wealth, filial piety, socialization, trust, financial risk tolerance, and financial literacy. The variables that are composite indices are previously discussed in sub-section 4.3.4. The table shows selected coefficients for the effect of early life exposure to SEZ cities after I control for the effect of the candidate mediator. The most likely mediator is the variable that will exert an effect on financial outcomes, while rendering the effect of the main independent variable (SEZ_{PR}^{CC}) insignificant.

As more financial instruments become available, the range of investment tools accessible to households expands. Financial literacy would impact an individual's capacity to invest in the new financial environment and will become a fundamental factor influencing households' investment selections and diversification (Gaudecker, 2015). For example, Lusardi and Mitchell (2017) show that financial knowledge accumulation is strongly associated with household wealth, such as making pension planning at a younger age by participating in the stock market rather than currency saving account. This could have produced very different levels of wealth inequality in their retirement age. Financial literacy also affects portfolio diversification, paying lower service fees for mutual funds, which means the net return could be boosted (Choi *et al.*, 2010; Hasting *et al.*, 2011). The positive correlation between financial literacy and stock-market participation as well as risky assets is conditional on participation (Jappeli and Padula, 2015). By using data from the 2014 China Consumer Finances Survey, Liao *et al.*, (2017) provide empirical evidence which suggests low levels of financial literacy impede Chinese households' ability to allocate risky financial assets to their portfolios, whereas higher levels of financial literacy would increase risky asset holdings in the household portfolio.

In the *Table 4.9*, the results show that financial literacy are in line with the prior literatures, I found a possible mechanism is that exposure to accelerate financial environment would greatly increase financial literacy, which leads to improved individuals' financial activities. The test explicitly states financial knowledge moderates the effect of early life exposure to financial institutions among individuals living in SEZ regions and counteract the negative effects of growing up without financial development for non-SEZ residents. Furthermore, these educational reforms are not related to changes in the development of financial markets. Thus, the pattern of results suggests that the externalities of financial

development do influence the growth process through a financial literacy channel operating through a different mechanism from other mechanisms.

As the results shown, the inquiry into the mechanics of the relationship between attitudes of financial risk tolerance and financial behaviour outcomes, also most likely to associated with the environment of growing up. Cordell (2011) previously proposed that attitude of financial risk tolerance influenced by external factors such as primary life experiences and associations with relatives or friends. For instance, the interaction effect is positive and significant across specifications. I identified the significance of explaining a decrease in the attitude toward financial risk tolerance of those born 12 years and growing up outside the SEZ regions. I propose that the changes in financial risk tolerance over time are driven by external influences (e.g., financial market development, exposure to a well-operated financial environment).

Overall, these findings imply that improving financial literacy can mitigate the negative repercussions of growing up without financial environment, but not only by improving education in general. Additionally, because educational reforms do not result in significant improvements in economic opportunity of household, the pattern of data indicates that the impacts of growing up with accelerated financial environment, which works via a financial literacy channel different from other processes. schooling has greater sensitivities on individuals born 12 years reform the reform and growing up in the SEZ regions for economic outcomes, which explicitly present significant coefficients of financial development outcomes during growing up in the SEZ regions than outside. With financial market development and exceptional individuals' knowledge, households have more years of educational attainment are possess to have a significant positive relationship with financial market participation and ore risky assets or diverse portfolios. This finding is consistent with the findings of Campbell (2006), Van Rooij (2011), Vissing, (2003) and Black *et al.*, (2018).

[Insert Table 4.9 about here]

4.7 Concluding Remarks

This study demonstrates that early exposure to local financial markets has a significant, causal effect on financial outcomes such as formal financial market participation, portfolio,

and risky asset allocation. The approach employs location-specific micro-level data on Chinese household finance surveys with large and unintended differences in financial development across special economic zones arising from the city-level reform of China governmental experiments since 1980. The results reveal that individuals who grew up in a more developed financial market environment possess more diversified financial asset portfolios and are more likely to engage with formal finance rather than informal financial access. Moreover, the study denotes that higher financial literacy and higher financial risk tolerance among individuals growing up with finance moderates the reform's effect on household financial asset allocation.

I contribute to the literature in social economics and finance by establishing a certain social transmission process that occurred in a novel and most interesting setting for policy purposes, i.e., that of the special economic zones and coastal cities in China. I contribute to the literatures in household finance and financial economics, via establishing determinants and mediators of formal financial market participation, financial inclusion, and risky-asset market participation, in the unique setting of the Chinese economy.

Hence, as China’s experiment of opening up to financial development through the special economic zones and coastal cities appears to have exerted positive significant impacts to household financial outcomes, apart from any anticipated positive trade and economic development effects it might have had at the regional and national level. There appear to have been knowledge and attitudinal spillover effects from the reform, which can be key attributes of the transformation of financial sector development into endogenous growth. The policy relevant inferences suggest that expanding upon the liberalization of the financial sector in more cities and provinces is very likely to generate positive effects on household financial outcomes. This can be conducive to wealth accumulation, inequality reduction, and increased well-being of the Chinese population.

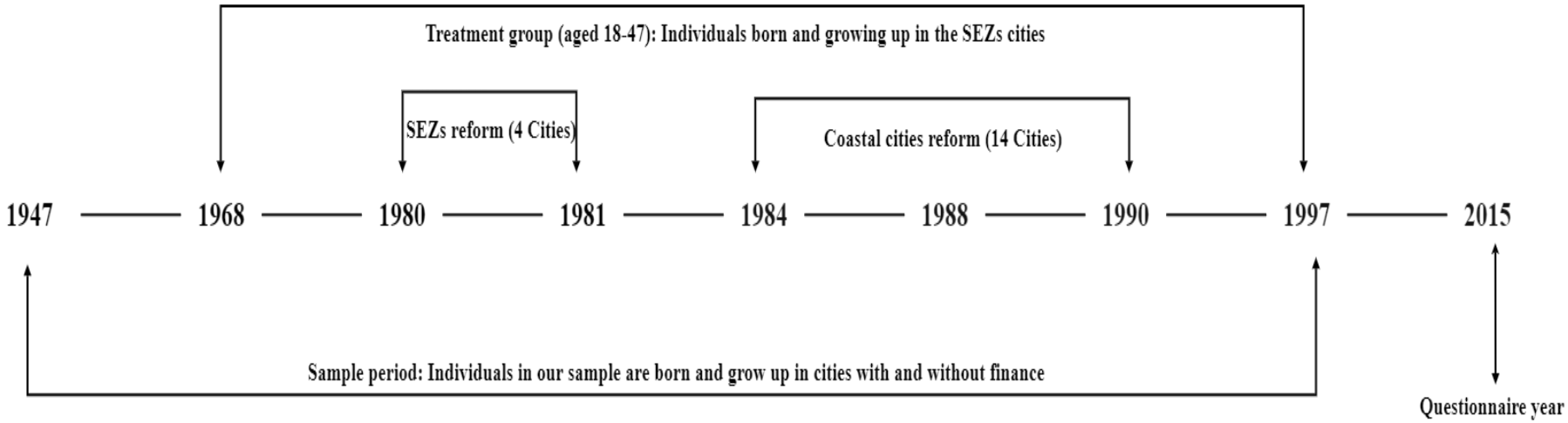

Figure 4.1
Event Timeline

This figure shows the timeline of events that enables identification strategy for the within estimators, using cross-sectional data from the China Household Finance Survey (CHFS) collected in 2015. The unique feature of the 2015 CHFS data is that they allow for the identification of major Chinese cities, which is critical to approach. The individuals in the sample were born between 1947 and 1997, i.e., they were aged between 18 and 68 at the time of the survey. The treatment group comprises of individuals aged 18-47 who were born and grew up in the cities that became special economic zones and coastal-city economic zones. Individuals in the treatment group were aged less than or equal to 12 at the time of the reform, i.e., they were at school. Individuals at the control group are aged 18-67 and they were born and grew up in cities that never became economic zones. The examination of differences in household financial outcomes in 2015, i.e, several years after the reforms took place, is beneficial to the aims in terms of allowing for the development of matured financial markets some 25-35 years after the reforms.

Table 4.1

The Effect of Growing Up With Finance on Access to Finance in China

This table reports estimates of four different indicators of access to finance in China. Coefficients from weighted linear probability models are presented, along with and robust standard errors – clustered at the city level – in brackets. The asterisks denote the following levels of significance at the ***: 1% **: 5%, and *: 10%. In panel A, the dependent variable is a binary variable capturing the ownership of a credit card. The dependent variable in panel B is a binary variable capturing access to formal finance, in terms of having any type of loan from a bank or formal financial instution, e.g., a mortgage, a home improvement loan, a student or business loan, inter alia. Panel C presents estimates for a binary variable capturing access to informal finance among the sub-sample of individuals who had access to any type of finance, i.e., excluding the financially excluded. Panel D presents estimates of the continuous informal-to-total finance ratio for the sub-sample of Panel C. The informal-to-total finance ratio is obtained by dividing the total value of loans from informal sources by the total value of loans from both formal and informal sources. In column 1 (7, 13, and 19), SEZ^{CC} is a binary variable denoting residence in a special economic zone or coastal city. The estimates shown are from models controlling for cohort, province, and urban-rural transition fixed effects. In column 2 (8, 14, and 20), Grow^{PR} is added to the specification, as is a binary variable denoting a year of birth that precedes the reform by at least 12 years. The year 1984 is used as the placebo reform year for individuals residing in non-SEZ^{CC} cities. All results are robust to alternative placebo reform years for the non-SEZ^{CC} cities, i.e., 1980 or 1988, inter alia. In column 3 (9, 15, and 21), the interaction term $\text{SEZ}^{\text{CC}} \times \text{Grow}^{\text{PR}}$ is added to the specification. In column 4 (10, 16, and 22), a rich list of control variable is added to the specification, including gender, years of education, physical condition, risk tolerance, marital status, number of children, logarithmic terms for household wealth and household income, and labour market status. In column 5 (11, 17, and 23), province×urbanization×cohort fixed effects are added to the specification of column 4. Finally, in column 6 (12, 18, and 24), the estimates shown are from a specification identical for column 1 for the sub-sample of individuals who were born at least 12 years prior to the reform year (1984 for individuals in non-SEZ regions). The % effect is calculated as the ratio of the coefficient of in interest divided by the linear prediction induced of the model. The coefficient of interest is that of SEZ^{CC} in Columns 1 and 6, Grow^{PR} in Column 2, and $\text{SEZ}^{\text{CC}} \times \text{Grow}^{\text{PR}}$ in columns 2-5.

Panel A: Having a credit card						
	(1)	(2)	(3)	(4)	(5)	(6)
SEZ^{CC}	0.040**	0.040**	0.015	0.003	-0.009	0.075***
	[0.018]	[0.018]	[0.020]	[0.016]	[0.014]	[0.026]
$Grow_{PR}$	–	-0.001	-0.012	-0.026	-0.089**	–
		[0.030]	[0.031]	[0.031]	[0.040]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.063**	0.050**	0.052**	–
			[0.024]	[0.022]	[0.021]	
% Effect: $SEZ^{CC} \times Grow_{PR}$	*20.3%†*	*-0.2%‡*	*31.5%*	*25.2%*	*26.0%*	*20.7%*
Linear prediction	*0.1997*	*0.1997*	*0.1997*	*0.1995*	*0.1995*	*0.3619*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel B: Access to formal finance						
	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.067***	0.068***	0.031**	0.024*	0.017	0.145***
	[0.023]	[0.023]	[0.014]	[0.014]	[0.012]	[0.045]
$Grow_{PR}$	–	0.027	0.01	0.003	-0.025	–
		[0.029]	[0.028]	[0.025]	[0.032]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.090**	0.083**	0.091***	–
			[0.042]	[0.038]	[0.026]	
% Effect: $SEZ^{CC} \times Grow_{PR}$	*42.8%†*	*17.3%*	*57.6%*	*53.1%*	*58.1%*	*56.1%*
Linear prediction	*0.1566*	*0.1566*	*0.1566*	*0.1565*	*0.1565*	*0.2587*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel C: Using informal finance						
	(13)	(14)	(15)	(16)	(17)	(18)
SEZ^{CC}	-0.142***	-0.143***	-0.107***	-0.083***	-0.064***	-0.192***
	[0.033]	[0.033]	[0.032]	[0.025]	[0.021]	[0.052]

Table 4.1 continued in next page

Table 4.1 continued from last page

	(13)	(14)	(15)	(16)	(17)	(18)
$Grow_{PR}$	–	-0.063	-0.051	-0.016	0.075	–
		[0.054]	[0.053]	[0.044]	[0.059]	
$SEZ^{CC} \times Grow_{PR}$	–	–	-0.071**	-0.056*	-0.073	–
			[0.031]	[0.029]	[0.045]	
% Effect: $SEZ^{CC} \times Grow_{PR}$	*-25.4%*[†]	*-11.3%*	*-12.7%*	*-10.0%*	*-13.0%*	*-47.9%*
Linear prediction	*0.5601*	*0.5601*	*0.5601*	*0.5603*	*0.5603*	*0.4003*
#Observations	*9,975*	*9,975*	*9,975*	*9,966*	*9,966*	*3,678*
Panel D: Informal to total finance ratio						
	(19)	(20)	(21)	(22)	(23)	(24)[‡]
SEZ^{CC}	-0.140***	-0.141***	-0.090***	-0.072***	0.049**	-0.215***
	[0.033]	[0.033]	[0.032]	[0.026]	[0.022]	[0.049]
$Grow_{PR}$	–	-0.092	-0.075	-0.048	0.008	–
		[0.069]	[0.068]	[0.062]	[0.077]	
$SEZ^{CC} \times Grow_{PR}$	–	–	-0.100***	-0.090***	-0.099*	–
			[0.036]	[0.034]	[0.054]	
% Effect: $SEZ^{CC} \times Grow_{PR}$	*-19.7%*	*-12.9%*	*-14.2%*	*-12.7%*	*-13.9%*	*-37.5%*
Linear prediction	*0.7093*	*0.7093*	*0.7093*	*0.7094*	*0.7094*	*0.5733*
#Observations	*9,975*	*9,975*	*9,975*	*9,966*	*9,966*	*3,678*
Province fixed effects	+	+	+	+	+	+
Cohort fixed effects	+	+	+	+	+	+
Urban-rural transition fixed effects	+	+	+	+	+	+
Control variables	–	–	–	+	+	–
Province×Urbanization×Cohort FE	–	–	–	–	+	–

Table 4.2

The Effect of Growing Up With Finance on Financial Market Participation

This table reports estimates of six different indicators of financial market participation in China, i.e., stock ownership in panel A, and ownership of risky assets in panel B, such as stocks, bonds, mutual funds, derivatives, wealth management products, foreign exchange, and gold. The dependent variables in panel C are the logarithm of the value of stocks in columns 13-15, and the logarithm of the value of risky assets in columns 16-18. The dependent variables in panel D are the ratio of the value of stocks to the value of financial assets in columns 19-21, and the ratio of the value of risky assets to the value of financial assets in columns 22-24. In panels A and B, the 6 specifications are identical to those of Table 4.1, and the comments therein apply. In panels C and D, the fewer specification presented include fixed effects for province, cohort, and urban-rural transitions. Columns 13, 16, 19, and 22 present estimates for the pooled sample. Columns 14, 17, 20, and 24 present estimates for the sub-sample of financial asset owners. Then, in columns 15, 18, 21, and 24 the estimates shown are for the sub-sample of individuals who were born at least 12 years prior to the reform year (1984 for individuals in non-SEZ regions). The calculation of the effect of dummy variables (Panel C and D) in models with log-transformed dependent variables (i.e., value of stocks and value of risky assets) is based on the formula:$100\times\exp[\text{Coef.}-(SE^2/2)-1]$.

Panel A: Stock ownership						
	(1)	(2)	(3)	(4)	(5)	(6)
SEZ^{CC}	0.018	0.019	0.004	-0.004	-0.01	0.040**
	[0.012]	[0.013]	[0.013]	[0.011]	[0.009]	[0.016]
$Grow_{PR}$	–	0.047*	0.040	0.035	0.022	–
		[0.027]	[0.026]	[0.022]	[0.019]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.038***	0.033**	0.042***	–
			[0.013]	[0.013]	[0.009]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*22.1%*	*57.8%*	*46.6%*	*40.8%*	*51.7%*	*32.2%*
Linear prediction	*0.0816*	*0.0816*	*0.0816*	*0.0815*	*0.0815*	*0.1244*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel B: Ownership of risky assets						
	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.027*	0.028*	0.003	-0.01	-0.014	0.062***
	[0.016]	[0.016]	[0.016]	[0.013]	[0.011]	[0.022]
$Grow_{PR}$	–	0.041	0.03	0.018	0.005	–
		[0.026]	[0.025]	[0.020]	[0.019]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.062***	0.055***	0.051***	–
			[0.016]	[0.015]	[0.015]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*16.4%*	*24.7%*	*37.3%*	*32.9%*	*30.9%*	*22.3%*
Linear prediction	*0.1663*	*0.1663*	*0.1663*	*0.166*	*0.166*	*0.2772*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel C: Amounts invested	**Log(Stocks)**			**Log(Risky assets)**		
	(13)	(14)	(15)	(16)	(17)	(18)
SEZ^{CC}	0.063	0.123	0.715***	0.093	0.158	1.128***
	[0.150]	[0.216]	[0.196]	[0.194]	[0.266]	[0.246]
$Grow_{PR}$	0.563*	0.579	–	0.464	0.359	–
	[0.334]	[0.368]		[0.315]	[0.349]	
$SEZ^{CC} \times Grow_{PR}$	0.401***	0.492**	–	0.609***	0.818***	–
	[0.148]	[0.193]		[0.175]	[0.275]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*43.8%*	*35.0%*	*40.2%*	*34.8%*	*30.4%*	*31.1%*
Linear prediction	*0.9146*	*1.4055*	*1.7820*	*1.752*	*2.6926*	*3.629*
#Observations	*31,348*	*20,592*	*7,470*	*31,348*	*20,592*	*7,470*
Panel D: Ratios invested	**Stocks-to-financial assets**			**Risky-to-financial assets**		
	(19)	(20)	(21)	(22)	(23)	(24)
SEZ^{CC}	0.005	0.009	0.036***	0.015	0.022	0.072***
	[0.007]	[0.010]	[0.013]	[0.010]	[0.014]	[0.017]
$Grow_{PR}$	0.036*	0.037*	–	0.039**	0.038*	–
	[0.020]	[0.021]		[0.019]	[0.020]	
$SEZ^{CC} \times Grow_{PR}$	0.018***	0.022**	–	0.027***	0.036**	–
	[0.006]	[0.010]		[0.010]	[0.016]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*42.5%*	*35.8%*	*49.2%*	*32.4%*	*29.6%*	*47.1%*
Linear prediction	*0.0412*	*0.0602*	*0.0734*	*0.0823*	*0.1202*	*0.1523*
#Observations	*29,870*	*20,592*	*7,470*	*29,870*	*20,592*	*7,470*

Table 4.3

The effect of Effect of Growing Up with Finance on Portfolio Diversification

This table reports estimates of two different indicators of financial market participation in China, i.e., the number of distinctive asset classes held in panels A and B, and portfolio variance in panels C and D. Panels B and D present estimates for the sub-sample of financial asset owners. The specifications of the 6 columns of each panel are identical to those of Table 4.1, and the comments therein apply. The specifics of the calculation of portfolio variance are presented in the *Appendix 4A*.

Panel A: Number of assets held						
	(1)	(2)	(3)	(4)	(5)	(6)
SEZ^{CC}	0.039*	0.040*	0.015	-0.003	-0.013	0.081***
	[0.022]	[0.022]	[0.024]	[0.020]	[0.015]	[0.030]
$Grow_{PR}$	–	0.047	0.036	0.021	-0.017	–
		[0.032]	[0.031]	[0.023]	[0.025]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.062**	0.053**	0.065***	–
			[0.026]	[0.025]	[0.022]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*18.9%*	*22.9%*	*29.9%*	*25.8%*	*31.6%*	*24.5%*
Linear prediction	*0.2074*	*0.2074*	*0.2074*	*0.2071*	*0.2071*	*0.3322*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel B: Number of assets held among financial asset owners only						
	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.062**	0.063**	0.024	0.001	-0.016	0.131***
	[0.025]	[0.025]	[0.033]	[0.026]	[0.022]	[0.026]
$Grow_{PR}$	–	0.035	0.019	0.010	-0.019	–
		[0.035]	[0.035]	[0.027]	[0.040]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.084**	0.045	0.068***	–
			[0.036]	[0.032]	[0.024]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*19.6%*	*11.0%*	*26.3%*	*14.3%*	*21.4%*	*30.5%*
Linear prediction	*0.3178*	*0.3178*	*0.3178*	*0.3175*	*0.3175*	*0.4274*
#Observations	*20,592*	*20,592*	*20,592*	*20,562*	*20,562*	*7,470*
Panel C: Portfolio variance						
	(13)	(14)	(15)	(16)	(17)	(18)
SEZ^{CC}	0.052*	0.056*	0.01	-0.008	-0.018	0.117***
	[0.030]	[0.031]	[0.031]	[0.027]	[0.023]	[0.035]
$Grow_{PR}$	–	0.149**	0.128**	0.115**	0.077	–
		[0.060]	[0.058]	[0.048]	[0.051]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.112***	0.099***	0.113***	–
			[0.025]	[0.024]	[0.026]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*23.2%*	*66.2%*	*49.6%*	*43.9%*	*50.4%*	*33.4%*
Linear prediction	*0.2252*	*0.2252*	*0.2252*	*0.2249*	*0.2249*	*0.3502*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel D: Portfolio variance among financial asset owners only						
	(19)	(20)	(21)	(22)	(23)	(24)
SEZ^{CC}	0.081**	0.086**	0.019	-0.004	-0.017	0.179***
	[0.039]	[0.040]	[0.044]	[0.039]	[0.032]	[0.045]
$Grow_{PR}$	–	0.156**	0.128**	0.121**	0.110	–
		[0.066]	[0.064]	[0.053]	[0.070]	
$SEZ^{CC} \times Grow_{PR}$	–	–	0.146***	0.100***	0.114***	–
			[0.038]	[0.034]	[0.037]	
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*23.5%*	*45.0%*	*42.1%*	*29.0%*	*32.9%*	*39.6%*
Linear prediction	*0.3461*	*0.3461*	*0.3461*	*0.3457*	*0.3457*	*0.4513*
#Observations	*20,592*	*20,592*	*20,592*	*20,562*	*20,562*	*7,470*

Table 4.4

Robustness: Placebo Treatments Based on Nearest Cities

This table shows the placebo effect of being born at least 12 years prior to the specific year of reform in the nearest city/cities to the special economic zones and coastal cities. Nearest cities are obtained in terms of the minimum distance in kilometres. The names of the matched cities for the placebo cities are presented in the *Appendix 4C3* Individuals born 12 years prior to the reform in special economic zones and coastal cities are dropped from the sample. The specifications in Panels A and C are identical to those of column 3 of Table 4.3, and they are estimated for the pooled sample. Only the effect of the interaction term is shown for convenience. The specifications in panels B and D are identical to those of column 6 of Table 4.1, and they are estimated for the sub-sample of individuals born at least 12 years prior to the reform (1984 for the non-SEZ regions). The specifications for informal finance and informal to total finance ratio are for the sub-samples of individuals with access to any finance. The specifications for the ratio of the value of stocks to financial assets and the ratio of the value of risky to financial assets, are for the sub-samples of individuals with any financial assets.

	Credit card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (Stocks)**	**Log (Risky assets)**	**Stocks-to-financial assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Panel A: Nearest city placebo treatment (28,874 observations – 3,258 pseudo-treated individuals)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Placebo_{SEZ_{CC}} \times \text{Grow}^{\text{PR}}$	0.056	-0.019	-0.049	0.020	-0.002	0.025	0.005	0.328*	0.192	0.018*	0.016	0.03
	[0.039]	[0.029]	[0.068]	[0.063]	[0.065]	[0.016]	[0.026]	[0.192]	[0.281]	[0.011]	[0.016]	[0.027]
#Observations	*28,874*	*28,874*	*9,124*	*9,124*	*9,124*	*28,874*	*28,874*	*28,874*	*28,874*	*27,454*	*27,454*	*28,874*
Panel B: Nearest city placebo treatment – Sample born<12 years before the reform (7,192 observations – 1,163 pseud-treated individuals)												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$\text{Placebo}^{\text{PR}}_{\text{SEZ}^{cc}}$	-0.048	-0.043	0.011	0.115	0.088	-0.024	-0.100***	-0.233	-0.896**	-0.009	-0.027	-0.056
	[0.044]	[0.048]	[0.068]	[0.075]	[0.067]	[0.021]	[0.033]	[0.238]	[0.372]	[0.010]	[0.020]	[0.041]
#Observations	*7,192*	*7,192*	*2,827*	*2,827*	*2,827*	*7,192*	*7,192*	*7,192*	*7,192*	*6,953*	*6,953*	*7,192*
Panel C: 4-nearest-cities placebo treatment (28,874 observations – 7,516 pseudo-treated individuals)												
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
$Placebo_{\text{SEZ}^{cc}} \times \text{Grow}^{\text{PR}}$	0.012	0.001	-0.023	-0.004	-0.017	0.020*	0.032	0.206	0.272	0.01	0.005	0.01
	[0.031]	[0.021]	[0.039]	[0.041]	[0.041]	[0.012]	[0.022]	[0.140]	[0.216]	[0.007]	[0.012]	[0.021]
#Observations	*28,874*	*28,874*	*9,124*	*9,124*	*9,124*	*28,874*	*28,874*	*28,874*	*28,874*	*27,454*	*27,454*	*28,874*

Table 4.4 continued in next page

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Panel D: 4-nearest-cities placebo treatment – Sample born<12 years before the reform (7,192 observations – 2,420 pseudo-treated individuals)												
	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
$\text{Placebo}_{\text{SEZ}^{cc}}^{\text{PR}}$	-0.081**	-0.038	-0.033	0.036	-0.021	-0.019	-0.075**	-0.204	-0.767**	-0.014	-0.036	-0.080*
	[0.038]	[0.030]	[0.061]	[0.053]	[0.049]	[0.030]	[0.031]	[0.322]	[0.336]	[0.015]	[0.023]	[0.042]
#Observations	*7,192*	*7,192*	*2,827*	*2,827*	*2,827*	*7,192*	*7,192*	*7,192*	*7,192*	*6,953*	*6,953*	*7,192*

Table 4.5

Robustness: Matched Control Group

This table reports estimates for a matched sample of individuals born in SEZ cities, and individuals with similar characteristics in the control group. Propensity score matching estimates with 2 nearest neighbours provided the matched groups, based on the following control characteristics: gender, marital status, household size, age, urbanisation of the parental residence, living in the same city as parents, years of education, the logarithm of the number of siblings, the logarithm of household income, the logarithm of per capita income in the city of residence, the province's consumer price index, and the following parental characteristics: years of education of the father and the mother, communist party affiliation of the mother and the father, business ownership status of the father and the mother, and managerial status of the father and the mother. Panel A presents estimates for the matched sample of 15,028 individuals who grew up in the 2 nearest neighbours SEZ&CC cities. Panel B present the estimates for those only grow up in the SEZ&CC cities. The specifications in Panels A follow column 3 of Table 4.1, and those of panel B follow column 6 of Table 4.1. The specifications for informal finance and informal to total finance ratio are for the sub-samples of individuals with access to any finance. The specifications for the ratios of the value of stocks to financial assets and the value of risky to financial assets, are for the sub-samples of individuals with any financial assets.

	Credit card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (Stocks)**	**Log (Risky assets)**	**Stocks-to-financial assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Panel A: Pooled sample (2 nearest neighbours Matching SEZ & CC together)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	-0.004	0.022*	-0.051	0.005	0.001	0.089	0.064	0.009	0.008	0.02	0.016	-0.004
	[0.021]	[0.013]	[0.044]	[0.017]	[0.019]	[0.201]	[0.225]	[0.010]	[0.012]	[0.026]	[0.039]	[0.021]
$Grow_{PR}$	-0.01	-0.024	-0.015	0.055	0.048	0.687	0.68	0.030*	0.046**	0.117**	0.159**	-0.01
	[0.041]	[0.030]	[0.061]	[0.035]	[0.037]	[0.418]	[0.449]	[0.017]	[0.019]	[0.053]	[0.074]	[0.041]
$SEZ^{CC} \times Grow_{PR}$	0.051*	0.049**	-0.058	0.036**	0.040**	0.337*	0.422**	0.013	0.019**	0.040*	0.073*	0.051*
	[0.028]	[0.024]	[0.043]	[0.016]	[0.019]	[0.185]	[0.199]	[0.009]	[0.009]	[0.023]	[0.040]	[0.028]
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*19.9%*	*31.6%*	*-9.0%*	*28.3%*	*17.5%*	*23.7%*	*16.9%*	*20.4%*	*15.9%*	*15.5%*	*21.8%*	*19.9%*
Linear prediction	*0.2547*	*0.1551*	*0.6442*	*0.1254*	*0.2308*	*1.4251*	*2.5038*	*0.0625*	*0.119*	*0.2584*	*0.3337*	*0.2547*
#Observations	*15,028*	*15,028*	*4,421*	*15,028*	*15,028*	*15,028*	*15,028*	*14,424*	*14,424*	*15,028*	*15,028*	*15,028*

Table 4.5 continued in next page

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Panel B: Grow^{PR} sample only

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
SEZ_{PR}^{CC}	0.015	0.056***	-0.097*	-0.065	0.037*	0.042*	0.405	0.528*	0.022*	0.032**	0.064**	0.103**
	[0.038]	[0.020]	[0.054]	[0.041]	[0.021]	[0.024]	[0.248]	[0.284]	[0.012]	[0.015]	[0.030]	[0.049]
% Effect: SEZ_{PR}^{CC}	*3.6%*	*23.6%*	*-18.0%*	*-16.7%*	*22.3%*	*12.7%*	*21.8%*	*15.2%*	*29.0%*	*21.1%*	*19.6%*	*22.8%*
Linear prediction	*0.4075*	*0.2379*	*0.5389*	*0.3911*	*0.1664*	*0.3324*	*1.8551*	*3.4687*	*0.0763*	*0.1516*	*0.3247*	*0.4519*
#Observations	*5,032*	*5,032*	*1,840*	*1,840*	*5,032*	*5,032*	*5,032*	*5,032*	*4,894*	*4,894*	*5,032*	*5,032*

Table 4.6

Robustness: Movers vs. Stayers, and Dropping Top Performers

This table reports estimates for the individuals who live in the same city since birth in Panel A, and those who live in a different city from the city in which they were born in Panel B. Living in the same city is identified via a question regarding the year in which they moved to their current residence, and it is complemented with information regarding the region of residence of their parents. Then, the estimates in Panel C are for the sub-sample that stems after dropping the 4 top performing SEZ cities, i.e., Shanghai, Guangzhou, Shenzhen, and Tianjin. All specifications are identical to column 3 of Table 4.1.

	Credit card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (Stocks)**	**Log (Risky assets)**	**Stocks-to-financial assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Panel A: Born and live in the same city	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$SEZ^{CC} \times Grow_{PR}$	0.100***	0.119**	-0.150***	-0.110***	0.043***	0.076***	0.437***	0.716***	0.016**	0.027**	-0.024	0.103***
	[0.025]	[0.053]	[0.045]	[0.037]	[0.013]	[0.019]	[0.145]	[0.187]	[0.007]	[0.011]	[0.056]	[0.029]
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*65.0%*	*86.7%*	*-19.2%*	*-17.5%*	*85.6%*	*66.4%*	*78.2%*	*61.2%*	*61.9%*	*49.2%*	*-1.3%*	*71.2%*
Linear prediction	*0.1534*	*0.1368*	*0.7841*	*0.6265*	*0.0498*	*0.1147*	*0.5587*	*1.1689*	*0.0264*	*0.0541*	*1.7949*	*0.1452*
#Observations	*21,591*	*21,591*	*7,476*	*7,476*	*21,591*	*21,591*	*21,591*	*21,591*	*20,384*	*20,384*	*21,591*	*21,591*
Panel B: Born and live in a different city	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$SEZ^{CC} \times Grow_{PR}$	-0.023	0.032	0.058	0.046	0.039	0.035	0.473	0.490	0.026	0.032*	-0.051	0.148***
	[0.043]	[0.040]	[0.062]	[0.047]	[0.025]	[0.035]	[0.308]	[0.322]	[0.017]	[0.017]	[0.056]	[0.053]
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*-7.6%*	*15.9%*	*11.6%*	*12.2%*	*25.7%*	*12.6%*	*27.9%*	*16.2%*	*35.5%*	*22.4%*	*-2.3%*	*37.0%*
Linear prediction	*0.3017*	*0.2004*	*0.5023*	*0.3765*	*0.1517*	*0.2797*	*1.698*	*3.0357*	*0.0729*	*0.1425*	*2.2114*	*0.4013*
#Observations	*9,757*	*9,757*	*2,499*	*2,499*	*9,757*	*9,757*	*9,757*	*9,757*	*9,486*	*9,486*	*9,757*	*9,757*
Panel C: Dropping top 4 SEZ cities	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
$SEZ^{CC} \times Grow_{PR}$	0.069**	0.126*	-0.116**	-0.077*	0.032	0.067***	0.346	0.641***	0.015*	0.029**	0.047	0.083***
	[0.032]	[0.066]	[0.047]	[0.045]	[0.019]	[0.024]	[0.210]	[0.237]	[0.008]	[0.013]	[0.033]	[0.030]
% Effect: $\text{SEZ}^{\text{CC}} \times Grow_{PR}$	*36.9%*	*81.1%*	*-16.0%*	*-13.4%*	*45.6%*	*44.5%*	*44.8%*	*41.0%*	*41.8%*	*40.0%*	*31.2%*	*42.5%*
Linear prediction	*0.1863*	*0.156*	*0.7249*	*0.5734*	*0.0693*	*0.1498*	*0.7724*	*1.5622*	*0.0352*	*0.073*	*0.1503*	*0.1961*
#Observations	*27,794*	*27,794*	*9,242*	*9,242*	*27,794*	*27,794*	*27,794*	*27,794*	*26,403*	*26,403*	*27,794*	*27,794*

Table 4.7

Robustness: Stacked DiD Design

This table report estimates by using stacked DiD design (Cengiz *et al.*, 2019; Deshpande and Li, 2019). In panel A, I present the related estimates for the pooled sample. In the panel B shows the sub-samples excluding the 14 coastal cities. And then excluding the special economic zone cities in panel D. Panels C and E repeat the latter two exercises for the non-stacked dataset.

	Credit card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (Stocks)**	**Log (Risky assets)**	**Stocks-to-financial assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Panel A: Pooled sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ_{PR}^{CC}	0.237***	0.204***	-0.289***	-0.310***	0.077***	0.174***	0.843***	1.728***	0.035***	0.076***	0.132***	0.223***
	[0.019]	[0.018]	[0.035]	[0.025]	[0.013]	[0.017]	[0.149]	[0.179]	[0.009]	[0.011]	[0.020]	[0.033]
#Observations	*129,216*	*129,216*	*42,824*	*42,824*	*129,216*	*129,216*	*129,216*	*129,216*	*122,738*	*122,738*	*129,216*	*129,216*
Panel B: Stacked SEZ cities	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
SEZ_{PR}^{CC}	0.202***	0.125***	-0.226***	-0.269***	0.111***	0.197***	1.256***	1.984***	0.058***	0.083***	0.147***	0.300***
	[0.029]	[0.023]	[0.049]	[0.045]	[0.022]	[0.028]	[0.252]	[0.292]	[0.014]	[0.016]	[0.030]	[0.057]
#Observations	*50,241*	*50,241*	*16,777*	*16,777*	*50,241*	*50,241*	*50,241*	*50,241*	*47,725*	*47,725*	*50,241*	*50,241*
Panel C: SEZ cities	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
SEZ_{PR}^{CC}	0.049	0.044***	-0.096**	-0.113***	0.073***	0.072***	0.843***	0.816***	0.043***	0.041***	0.104**	0.190***
	[0.030]	[0.014]	[0.040]	[0.039]	[0.021]	[0.023]	[0.231]	[0.267]	[0.008]	[0.012]	[0.046]	[0.042]
% Effect: SEZ_{PR}^{CC}	*26.2%*	*29.4%*	*-13.1%*	*-19.3%*	*101.3%*	*47.1%*	*104.0%*	*51.4%*	*116.9%*	*55.7%*	*5.5%*	*93.2%*
Linear prediction	*0.1860*	*0.1502*	*0.735*	*0.585*	*0.0725*	*0.152*	*0.8106*	*1.5876*	*0.037*	*0.0738*	*1.8993*	*0.2041*
#Observations	*26,155*	*26,155*	*8,712*	*8,712*	*26,155*	*26,155*	*26,155*	*26,155*	*24,874*	*24,874*	*26,155*	*26,155*
Panel D: Stacked Coastal cities	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
SEZ_{PR}^{CC}	0.262***	0.246***	-0.316***	-0.327***	0.062***	0.168***	0.651***	1.646***	0.024**	0.074***	0.129***	0.188***
	[0.023]	[0.024]	[0.043]	[0.027]	[0.016]	[0.021]	[0.177]	[0.218]	[0.011]	[0.014]	[0.025]	[0.040]
#Observations	*78,543*	*78,543*	*25,884*	*25,884*	*78,543*	*78,543*	*78,543*	*78,543*	*74,599*	*74,599*	*78,543*	*78,543*

Table 4.7 continued in next page

Table 4.7 continued from last page

Panel E: Coastal cities	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)
SEZ_{PR}^{CC}	0.087***	0.141***	-0.195***	-0.168***	0.029	0.064***	0.305	0.654***	0.012	0.037***	-0.052	0.096**
	[0.023]	[0.054]	[0.041]	[0.040]	[0.018]	[0.022]	[0.206]	[0.238]	[0.009]	[0.013]	[0.059]	[0.038]
% Effect: SEZ_{PR}^{CC}	*44.5%*	*90.2%*	*-27.3%*	*-29.7%*	*37.6%*	*39.5%*	*35.3%*	*38.6%*	*31.3%*	*46.8%*	*-2.7%*	*44.8%*
Linear prediction	*0.1946*	*0.156*	*0.7144*	*0.5648*	*0.0774*	*0.1608*	*0.8641*	*1.6927*	*0.0388*	*0.0798*	*1.9112*	*0.2141*
#Observations	*29,575*	*29,575*	*9,449*	*9,449*	*29,575*	*29,575*	*29,575*	*29,575*	*28,133*	*28,133*	*29,575*	*29,575*

Table 4.8

The Effect of Living Near a Bank – Fuzzy RDD Regressions (IV)

This table fives the estimated effect of living near a bank on various outcomes. In panel A uses pooled sample form CHFS2015, in panel B and panel C conduct the individuals of those who were grow up in the same region or not. All regressions estimated with linear regressions in line with Table 4.1.

	Credit card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (Stocks)**	**Log (Risky assets)**	**Stocks-to-financial assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Panel A: Pooled sample												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
≤1 km to bank	1.085**	1.675***	-1.431***	-1.268***	0.646**	0.993***	7.173**	10.542***	0.335***	0.560***	-0.121	1.900***
	[0.461]	[0.638]	[0.392]	[0.331]	[0.294]	[0.337]	[3.204]	[3.625]	[0.100]	[0.168]	[0.736]	[0.621]
No. of Observations	*31,348*	*31,348*	*9,975*	*9,975*	*31,348*	*31,348*	*31,348*	*31,348*	*29,870*	*29,870*	*31,348*	*31,348*
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Distance to bank (km)	-0.068**	-0.106**	0.074***	0.066***	-0.041*	-0.063**	-0.453*	-0.665**	-0.022**	-0.037**	0.008	-0.120**
	[0.034]	[0.051]	[0.025]	[0.021]	[0.022]	[0.026]	[0.239]	[0.291]	[0.010]	[0.017]	[0.046]	[0.049]
% Effect: Distance to bank (km)	*-34.3%*	*-67.5%*	*10.5%*	*11.8%*	*-49.9%*	*-37.7%*	*-49.5%*	*-38.0%*	*-54.0%*	*-45.2%*	*0.4%*	*-53.2%*
Linear prediction	*0.1997*	*0.1566*	*0.7093*	*0.5601*	*0.0816*	*0.1663*	*0.9146*	*1.752*	*0.0412*	*0.0823*	*1.925*	*0.2252*
No. of Observations	*31,348*	*31,348*	*9,975*	*9,975*	*31,348*	*31,348*	*31,348*	*31,348*	*29,870*	*29,870*	*31,348*	*31,348*
Panel B: Grew up in the same region												
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Distance to bank (km)	-0.088*	-0.119*	0.070***	0.062***	-0.046*	-0.068**	-0.488*	-0.681**	-0.024**	-0.037*	-0.002	-0.113**
	[0.047]	[0.066]	[0.026]	[0.021]	[0.025]	[0.033]	[0.267]	[0.329]	[0.012]	[0.020]	[0.044]	[0.055]
% Effect: Distance to bank (km)	*-57.6%*	*-86.9%*	*9.0%*	*9.9%*	*-91.4%*	*-59.2%*	*-87.4%*	*-58.3%*	*-89.9%*	*-68.9%*	*-0.1%*	*-77.5%*
Linear prediction	*0.1534*	*0.1368*	*0.7841*	*0.6265*	*0.0498*	*0.1147*	*0.5587*	*1.1689*	*0.0264*	*0.0541*	*1.7949*	*0.1452*
No. of Observations	*21,591*	*21,591*	*7,476*	*7,476*	*21,591*	*21,591*	*21,591*	*21,591*	*20,384*	*20,384*	*21,591*	*21,591*

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Panel C: Grew up in a different region												
	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
Distance to bank (km)	-0.008	-0.255	0.154	0.163	-0.130	-0.167	-1.734	-2.531	-0.083	-0.15	0.135	-0.540
	[0.129]	[0.248]	[0.123]	[0.133]	[0.126]	[0.179]	[1.642]	[2.295]	[0.082]	[0.127]	[0.294]	[0.424]
% Effect: Distance to bank (km)	*-2.7%*	*-127.5%*	*30.7%*	*43.3%*	*-85.5%*	*-59.9%*	*-102.1%*	*-83.4%*	*-113.7%*	*-105.6%*	*6.1%*	*-134.5%*
Linear prediction	*0.3017*	*0.2004*	*0.5023*	*0.3765*	*0.1517*	*0.2797*	*1.698*	*3.0357*	*0.0729*	*0.1425*	*2.2114*	*0.4013*
No. of Observations	*9,757*	*9,757*	*2,499*	*2,499*	*9,757*	*9,757*	*9,757*	*9,757*	*9,486*	*9,486*	*9,757*	*9,757*

Table 4.9

Causal Mediation Analysis

This table presents estimates from models that expand primary model with adding the candidate mediator, along with an interaction term between SEZ_{PR}^{CC} and the mediator, i.e., as described in equation (3) in section 4.3.2. The remaining specifications are identical to column 3 of Table 4.1, and the comments therein apply.

Mediator **Dep. variable**	*Educ. reform exposure*	*Father: Educated (≥9 years)*	*Parent: Business*	*Parent: Manager*	*Windfall gains*	*Disp. income*	*Savings rate*	*Wealth*	*Net financial wealth*	*Filial piety*	*Socializ-ation*	*Trust*	*Fin. risk tolerance*	*Fin. Literacy*
A) Credit card	(A_1)	(A_2)	(A_3)	(A_4)	(A_5)	(A_6)	(A_7)	(A_8)	(A_9)	(A_{10})	(A_{11})	(A_{12})	(A_{13})	(A_{14})
SEZ_{PR}^{CC}	0.068***	0.066***	0.065***	0.065***	0.056**	0.074***	0.067***	0.046*	0.073***	0.044**	0.075***	0.147***	-0.014	0.006
	[0.023]	[0.024]	[0.023]	[0.023]	[0.024]	[0.025]	[0.022]	[0.027]	[0.023]	[0.020]	[0.023]	[0.022]	[0.026]	[0.024]
Mediator	0.089***	0.130***	0.022	0.075***	0.095***	0.316***	0.004***	0.746***	0.065***	0.011***	0.001	-0.030***	0.048***	0.064***
	[0.021]	[0.016]	[0.014]	[0.014]	[0.009]	[0.030]	[0.001]	[0.050]	[0.010]	[0.003]	[0.001]	[0.002]	[0.003]	[0.004]
SEZ_{PR}^{CC} × Mediator	-0.002	-0.003	0.041	0.06	0.103***	-0.103*	0.003	-0.074	-0.026**	0.040**	-0.002	-0.038***	0.023***	0.039***
	[0.029]	[0.033]	[0.027]	[0.046]	[0.035]	[0.056]	[0.004]	[0.082]	[0.012]	[0.017]	[0.007]	[0.009]	[0.007]	[0.009]
B) Formal finance	(B_1)	(B_2)	(B_3)	(B_4)	(B_5)	(B_6)	(B_7)	(B_8)	(B_9)	(B_{10})	(B_{11})	(B_{12})	(B_{13})	(B_{14})
SEZ_{PR}^{CC}	0.048***	0.048***	0.039***	0.040***	0.034**	0.039**	0.049***	0.016	0.042***	0.036**	0.063***	0.119***	-0.019	-0.001
	[0.017]	[0.017]	[0.014]	[0.015]	[0.015]	[0.016]	[0.015]	[0.017]	[0.015]	[0.017]	[0.021]	[0.018]	[0.021]	[0.017]
Mediator	0.031	0.036**	-0.002	0.015	0.048***	0.196***	-0.010***	0.415***	-0.158***	0.011***	0.001	-0.011***	0.020***	0.026***
	[0.023]	[0.014]	[0.016]	[0.010]	[0.008]	[0.023]	[0.001]	[0.063]	[0.022]	[0.003]	[0.001]	[0.002]	[0.002]	[0.003]
SEZ_{PR}^{CC} × Mediator	-0.013	-0.012	0.072	0.098***	0.099***	0.005	-0.002	0.091	0.001	0.017	-0.007	-0.035***	0.018***	0.031***
	[0.032]	[0.028]	[0.045]	[0.029]	[0.031]	[0.037]	[0.003]	[0.076]	[0.024]	[0.015]	[0.006]	[0.005]	[0.004]	[0.005]
C) Stock ownership	(C_1)	(C_2)	(C_3)	(C_4)	(C_5)	(C_6)	(C_7)	(C_8)	(C_9)	(C_{10})	(C_{11})	(C_{12})	(C_{13})	(C_{14})
SEZ_{PR}^{CC}	0.060***	0.048***	0.051***	0.053***	0.042***	0.053***	0.055***	0.022**	0.062***	0.043***	0.043**	0.100***	-0.028	0.009
	[0.015]	[0.013]	[0.014]	[0.014]	[0.012]	[0.014]	[0.014]	[0.010]	[0.014]	[0.011]	[0.017]	[0.025]	[0.021]	[0.012]

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Mediator	0.044***	0.082***	-0.006	0.038***	0.054***	0.217***	0.003***	0.509***	0.133***	0.001	0.001	-0.019***	0.047***	0.043***
	[0.014]	[0.013]	[0.009]	[0.011]	[0.010]	[0.022]	[0.001]	[0.031]	[0.013]	[0.002]	[0.001]	[0.002]	[0.005]	[0.004]
SEZ_{PR}^{CC} × Mediator	-0.034	0.026	0.04	0.028	0.101***	-0.04	0.001	0.079**	-0.079***	0.019	0.005	-0.023***	0.022***	0.029***
	[0.025]	[0.024]	[0.036]	[0.031]	[0.034]	[0.045]	[0.004]	[0.038]	[0.014]	[0.012]	[0.005]	[0.007]	[0.008]	[0.007]
D) Risky asset ownership	(D_1)	(D_2)	(D_3)	(D_4)	(D_5)	(D_6)	(D_7)	(D_8)	(D_9)	(D_{10})	(D_{11})	(D_{12})	(D_{13})	(D_{14})
SEZ_{PR}^{CC}	0.083***	0.063***	0.067***	0.066***	0.060***	0.081***	0.069***	0.055***	0.085***	0.044***	0.055***	0.131***	-0.045*	0.027
	[0.018]	[0.017]	[0.017]	[0.017]	[0.017]	[0.019]	[0.018]	[0.017]	[0.018]	[0.016]	[0.017]	[0.025]	[0.023]	[0.018]
Mediator	0.099***	0.125***	0.031**	0.067***	0.098***	0.300***	0.014***	0.731***	0.183***	0.005**	0.001	-0.032***	0.062***	0.078***
	[0.018]	[0.015]	[0.014]	[0.010]	[0.011]	[0.025]	[0.002]	[0.041]	[0.014]	[0.003]	[0.001]	[0.002]	[0.005]	[0.005]
SEZ_{PR}^{CC} × Mediator	-0.062**	0.051**	0.067*	0.123***	0.104***	-0.114**	0.006	-0.1	-0.113***	0.048***	0.009	-0.029***	0.033***	0.028***
	[0.029]	[0.026]	[0.039]	[0.029]	[0.028]	[0.057]	[0.004]	[0.065]	[0.019]	[0.012]	[0.006]	[0.008]	[0.009]	[0.009]
E) Log(Stocks)	(E_1)	(E_2)	(E_3)	(E_4)	(E_5)	(E_6)	(E_7)	(E_8)	(E_9)	(E_{10})	(E_{11})	(E_{12})	(E_{13})	(E_{14})
SEZ_{PR}^{CC}	0.522***	0.950***	-0.075	0.431***	0.680***	2.889***	0.031***	6.783***	1.887***	-0.009	0.001	-0.224***	0.551***	0.495***
	[0.161]	[0.147]	[0.097]	[0.119]	[0.118]	[0.295]	[0.012]	[0.439]	[0.171]	[0.027]	[0.011]	[0.021]	[0.058]	[0.048]
Mediator	-0.43	0.319	0.421	0.538	1.139***	-0.477	0.003	0.940**	-0.974***	0.211	0.052	-0.263***	0.244***	0.326***
	[0.313]	[0.288]	[0.346]	[0.393]	[0.392]	[0.610]	[0.041]	[0.474]	[0.184]	[0.133]	[0.062]	[0.079]	[0.090]	[0.090]
SEZ_{PR}^{CC} × Mediator	0.522***	0.950***	-0.075	0.431***	0.680***	2.889***	0.031***	6.783***	1.887***	-0.009	0.001	-0.224***	0.551***	0.495***
	[0.161]	[0.147]	[0.097]	[0.119]	[0.118]	[0.295]	[0.012]	[0.439]	[0.171]	[0.027]	[0.011]	[0.021]	[0.058]	[0.048]
F) Log(Risky assets)	(F_1)	(F_2)	(F_3)	(F_4)	(F_5)	(F_6)	(F_7)	(F_8)	(F_9)	(F_{10})	(F_{11})	(F_{12})	(F_{13})	(F_{14})
SEZ_{PR}^{CC}	0.897***	0.669***	0.743***	0.725***	0.633***	0.867***	0.767***	0.496***	0.955***	0.541***	0.691***	1.527***	-0.441*	0.196
	[0.189]	[0.177]	[0.179]	[0.180]	[0.181]	[0.197]	[0.189]	[0.165]	[0.192]	[0.169]	[0.178]	[0.300]	[0.261]	[0.186]
Mediator	1.158***	1.402***	0.290*	0.759***	1.168***	3.977***	0.159***	9.800***	2.645***	0.046	0.002	-0.356***	0.727***	0.864***
	[0.218]	[0.174]	[0.148]	[0.108]	[0.141]	[0.338]	[0.020]	[0.540]	[0.193]	[0.028]	[0.015]	[0.028]	[0.065]	[0.060]
SEZ_{PR}^{CC} × Mediator	-0.604*	0.680**	0.686*	1.452***	1.403***	-1.227*	0.059	-0.84	-1.396***	0.440***	0.059	-0.353***	0.341***	0.372***
	[0.331]	[0.313]	[0.403]	[0.341]	[0.370]	[0.729]	[0.043]	[0.666]	[0.245]	[0.150]	[0.069]	[0.093]	[0.098]	[0.099]

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Table 4.9 continued from last page

G) Portfolio variance	(G_1)	(G_2)	(G_3)	(G_4)	(G_5)	(G_6)	(G_7)	(G_8)	(G_9)	(G_{10})	(G_{11})	(G_{12})	(G_{13})	(G_{14})
SEZ_{PR}^{CC}	0.139***	0.104***	0.123***	0.118***	0.098***	0.119***	0.127***	0.055**	0.143***	0.105***	0.116***	0.235***	-0.052	0.049*
	[0.035]	[0.033]	[0.032]	[0.031]	[0.029]	[0.035]	[0.032]	[0.024]	[0.033]	[0.027]	[0.032]	[0.047]	[0.056]	[0.028]
Mediator	0.093***	0.190***	-0.002	0.082***	0.142***	0.503***	0.007***	1.149***	0.270***	0.001	0.001	-0.047***	0.115***	0.113***
	[0.034]	[0.024]	[0.024]	[0.023]	[0.019]	[0.045]	[0.002]	[0.068]	[0.025]	[0.005]	[0.002]	[0.004]	[0.010]	[0.008]
SEZ_{PR}^{CC} × Mediator	-0.077	0.116**	0.057	0.158*	0.229***	-0.054	0.002	0.167	-0.166***	0.037	0.006	-0.053***	0.048**	0.047***
	[0.060]	[0.046]	[0.082]	[0.087]	[0.087]	[0.109]	[0.007]	[0.119]	[0.034]	[0.023]	[0.011]	[0.011]	[0.019]	[0.016]

Appendix 4A: Portfolio Variance

The proxy for portfolio variance is the standard deviation of the returns of the assets in the portfolio. I generate weights based on the shares of the different assets held in the CHFS database, i.e., the proportion of each asset in the total portfolio. Moreover, I calculate variances and convariances of daily returns for the period between 5th January and 31st December 2015. Returns data was obtained from the Wind database. The formula used for calculation of the portfolio variance for the seven financial assets, namely stocks, bonds, mutual funds, derivatives, wealth management products, foreign currency, and gold, considers not only the riskiness of individual assets, but also the correlation between each pair of assets in the portfolio, as follows:

$$\begin{aligned} Portfolio\ Variance = {} & \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + \omega_3^2\sigma_3^2 + \omega_4^2\sigma_4^2 + \omega_5^2\sigma_5^2 + \\ & + \omega_6^2\sigma_6^2 + \omega_7^2\sigma_7^2 + 2\omega_1\omega_2 Cov_{1,2} + 2\omega_1\omega_3 Cov_{1,3} + \\ & + 2\omega_1\omega_4 Cov_{1,4} + 2\omega_1\omega_5 Cov_{1,5} + 2\omega_1\omega_6 Cov_{1,6} + \\ & + 2\omega_1\omega_7 Cov_{1,7} + 2\omega_2\omega_3 Cov_{2,3} + 2\omega_2\omega_4 Cov_{2,4} + \\ & + 2\omega_2\omega_5 Cov_{2,5} + 2\omega_2\omega_6 Cov_{2,6} + 2\omega_2\omega_7 Cov_{2,7} + \\ & + 2\omega_3\omega_4 Cov_{3,4} + 2\omega_3\omega_5 Cov_{3,5} + 2\omega_3\omega_6 Cov_{3,6} + \\ & + 2\omega_3\omega_7 Cov_{3,7} + 2\omega_4\omega_5 Cov_{4,5} + 2\omega_4\omega_6 Cov_{4,6} + \\ & + 2\omega_4\omega_7 Cov_{4,7} + 2\omega_5\omega_6 Cov_{5,6} + 2\omega_5\omega_7 Cov_{5,7} + 2\omega_6\omega_7 Cov_{6,7} \end{aligned} \quad \text{(A1)}$$

where:

ω_i denotes the portfolio weight of each asset;

σ_i^2 denotes the variance in the returns of each of each asset;

$Cov_{i,j}$ denotes the covariance between two assets *i* and *j*, respectively. This is calculated as the product of $\rho_{i,j} \times \sigma_i\sigma_j$, where $\rho_{i,j}$ is the correlation coefficient between assets.

I calculate the standard deviation of the portfolio as the square root of the portfolio variance:

$$Portfolio\ Standard\ Deviation = \sqrt{Portfolio\ Variance} \quad \text{(A3)}$$

Table 4A1

The Standard Deviation and Covariance Matrix for the Returns of the Seven Asset Classes in China during 2015

This table presents the standard deviation of daily returns across seven assets classess during the period between between 5th January and 31st December 2015 in China (Column 1), along with the covariance of returns among the seven financial assets (Columns 2-8). The following indices were used: stocks – CSI 300, which is a capitalization-weighted stock market index designed to replicate the performance of the top 300 stocks traded on the Shanghai Stock Exchange and the Shenzhen Stock Exchange; bonds – China Bond Index: mutual funds – CSI300 ETF Index Returns, derivatives – CSI1000 ETF Index Returns, foreign exchange – USD-HKD index, gold – China Metal Index returns. For wealth management products – China Bank's wealth management product index and returns are computed via the monthly change. The returns data was obtained from the Wind database.

	(1) Standard Deviation	(2) Stocks	(3) Bonds	(4) Mutual Funds	(5) Derivatives	(6) Wealth Management Products	(7) Foreign Currency Assets	(8) Gold
Stocks	0.025364436	–	–	–	–	–	–	–
Bonds	0.001362588	-0.000001735	–	–	–	–	–	–
Mutual Funds	0.025832745	0.000612914	-0.000002157	–	–	–	–	–
Derivatives	0.008476596	0.000055659	-0.000000325	0.0000602612	–	–	–	–
Wealth Management Products	0.001932448	-0.000200545	0.0000108053	-0.000213356	-0.0000468367	–	–	–
Foreign Currency Assets	0.000194919	0.000000358	-0.000000005	0.0000002970	0.0000001121	-0.0000015838	–	–
Gold	0.010807585	0.000064858	-0.00000090943	0.0000685319	0.0000831801	-0.0000592107	0.0000001425	–

Appendix 4B: Placebo Treatments and Matched Control Groups

Table 4B1

Placebo-Treated Cities (Match #1 & Up to 4 Matches)

The superscript "F" denotes the Fujian province; "J" denotes the Jiangsu province, and; "Z" denotes the Zhejiang province.

Reform year	Treated city	#Obs.	#Treated	Placebo distance (km)	Placebo city	#Obs.	#Treated
1984	**Beihai**	**74**		**64.92**	**Qinzhou (#1)**	**73**	**19**
				178.08	*Nanning (#3)*	*266*	*74*
1984	**Dalian**	**444**		**165.53**	**Panjin (#1)**	**101**	**39**
				213.84	*Jinzhou (#3)*	*77*	*20*
				213.91	*Dandong (#4)*	*77*	*20*
1984	**Fuzhou^{F}**	**184**		**72.44**	**Putian (#1)**	**82**	**29**
				106.90	*Ningde (#2)*	*152*	*54*
				176.43	*Nanping (#4)*	*86*	*35*
1984	**Guangzhou**	**831**		**71.34**	**Yunfu (#1)**	**80**	**71**
				275.37	*Chenzhou (#4)*	*86*	*20*
1988	**Hainan**	**432**		**94.96**	**Sanya (#1)**	**81**	**19**
1984	**Lianyungang**	**65**		**116.85**	**Xuzhou (#1)**	**79**	**14**
				148.29	*Yancheng (#2)*	*334*	*48*
				192.01	*Suzhou_a (#4)*	*71*	*17*
1984	**Ningbo**	**532**		**110.03**	**Taizhou^{Z} (#1)**	**395**	**112**
				161.47	*Jinhua (#2)*	*145*	*36*
1984	**Qingdao**	**473**		**96.15**	**Rizhao (#1)**	**78**	**34**
				191.43	*Binzhou (#3)*	*89*	*41*
				237.71	*Jinan (#4)*	*534*	*181*
1984	**Qinhuangdao**	**162**		**104.38**	**Huludao (#1)**	**88**	**25**
				172.74	*Chaoyang (#2)*	*86*	*25*
1990	**Shanghai**	**1,134**		**79.75**	**Suzhou^{J} (#1)**	**87**	**12**
				178.95	*Changzhou (#2)*	*161*	*28*
				193.00	*Hangzhou (#4)*	*546*	*213*
				202.05	*Taizhou^{J} (#3)*	*96*	*9*
1981	**Shantou**	**91**		**55.35**	**Chaozhou (#1)**	**76**	**38**
				108.37	*Meizhou (#2)*	*158*	*46*
1980	**Shenzhen**	**772**		**77.97**	**Foshan (#1)**	**114**	**31**
1984	**Tianjin**	**817**		**125.19**	**Beijing (#1)**	**1,084**	**379**
				126.64	*Cangzhou (#2)*	*161*	*39*
				189.33	*Baoding (#3)*	*513*	*149*
1984	**Wenzhou**	**106**		**96.44**	**Lishui (#1)**	**83**	**18**
1980	**Xiamen**	**413**		**60.64**	**Quanzhou (#1)**	**329**	**202**
				76.01	*Zhangzhou (#2)*	*161*	*67*
1984	**Yantai**	**80**		**172.59**	**Weifang (#1)**	**160**	**19**
				132.94	*Zibo (#2)*	*177*	*51*
1984	**Zhanjiang**	**291**		**130.92**	**Maoming (#1)**	**172**	**57**
				143.05	Haikou (#2)	205	79
1980	**Zhuhai**	**65**		**38.79**	**Zhongshan**	**96**	**45**
	Total	6,966			Match #1	4,379	1,482
					Up to 4 Matches	7,439	2,415

Table 4B2

Placebo city matches #2 – #4

This table presents the placebo city matches results.

Reform year	Treated city	#2 Placebo distance (km)	#2 Placebo city	#Obs.	#Treated	#3 Placebo distance (km)	#3 Placebo city	#Obs.	#Treated	#4 Placebo distance (km)	#4 Placebo city	#Obs.	#Treated
1984	Beihai	171.35	Maoming	172	57	178.08	Nanning	266	74	234.28	Haikou	205	79
1984	Dalian	206.19	Huludao	88	25	213.84	Jinzhou	77	20	213.91	Dandong	77	20
1984	Fuzhou_f	106.90	Ningde	152	54	131.21	Quanzhou	329	202	176.43	Nanping	86	35
1984	Guangzhou	93.72	Zhongshan	96	45	187.79	Yunfu	80	31	275.37	Chenzhou	86	20
1988	Hainan	102.51	Qinzhou	73	19	338.73	Maoming	172	57	339.57	Qinzhou	73	19
1984	Lianyungang	148.29	Yancheng	334	48	149.71	Xuzhou	79	14	192.01	Suzhou_a	71	17
1984	Ningbo	161.47	Jinhua	145	36	193.00	Hangzhou	546	213	201.77	Suzhou_j	87	12
1984	Qingdao	132.94	Rizhao	78	19	191.43	Binzhou	89	41	237.71	Jinan	534	181
1984	Qinhuangdao	172.74	Chaoyang	86	25	235.96	Beijing	1,084	379	255.99	Jinzhou	77	20
1990	Shanghai	178.95	Changzhou	161	28	202.05	Taizhou_j	96	9	236.87	Hangzhou	546	213
1981	Shantou	108.37	Meizhou	158	46	146.79	Zhangzhou	161	67	270.96	Quanzhou	329	202
1980	Shenzhen	128.31	Yunfu	80	31	240.57	Chaozhou	76	38	262.52	Meizhou	158	46
1984	Tianjin	126.64	Cangzhou	161	39	189.33	Baoding	513	149	198.24	Binzhou	89	41
1984	Wenzhou	116.93	Taizhou_z	395	112	140.04	Ningde	152	54	142.91	Jinhua	145	36
1980	Xiamen	76.01	Zhangzhou	161	67	116.07	Putian	82	29	167.90	Chaozhou	76	38
1984	Yantai	237.19	Zibo	177	51	258.69	Zibo	177	51	262.33	Cangzhou	161	39
1984	Zhanjiang	143.05	Haikou	205	79	168.91	Qinzhou	73	19	254.86	Yunfu	80	31
1980	Zhuhai	102.49	Foshan	114	71	175.76	Meizhou	158	46	248.59	Maoming	172	57
Total #Obs.				2,836	852			4,210	1,493			3,052	1,106

Table 4B3

Propensity Score Matching Estimates

This table reports estimates of propensity score matching from a probit regression with 2 nearest neighbours. Coefficients and standard errors are presented, with the asterisks denoting the usual levels of significance. Columns 3–7 compare the extent of balancing between the two samples before and after having performed matching, Columns 3 and 4 present the sub-sample averages for the treated and control group, column 5 presents the standardised % bias is the % difference of the sample means in the matched treated and non-treated sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups (Rosenbaum and Rubin, 1985). Column 6 presents t-tests for equality of means in the two samples after matching. Column 7 presents the variance ratio (for continuous covariates) of treated over non-treated. At the bottom of the table, Rubins' B (the absolute standardized difference of the means of the linear index of the propensity score in the treated and (matched) non-treated group) and Rubin's R (the ratio of treated to (matched) non-treated variances of the propensity score index) are presented after the matching (before the matching in the parentheses). Rubin (2001) recommends that B be less than 25 and that R be between 0.5 and 2 for the samples to be considered sufficiently balanced.

	Coef.	[S.E.]	Treated	Control	%Bias	t-test	V(T)/V(C)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Male	-0.050***	[0.018]	51.2%	52.8%	-3.2%	-1.9	-
Married	0.055**	[0.027]	85.8%	85.9%	-0.3%	-0.2	-
Household size	-0.086***	[0.006]	3.42	3.48	-4.0%	-2.5 *	1.26*
Age	0.006***	[0.001]	47.28	47.03	2.0%	1.15	1.18*
Years of schooling	0.040***	[0.003]	10.50	10.27	2.4%	3.38 **	0.88*
Log(#Siblings)	-0.066***	[0.018]	1.20	1.23	1.6%	-3.2 **	1.06*
Log(Household disposable income)	0.023***	[0.004]	10.35	10.24	5.7%	2.56	1.38*
Log(Per capita income in the city)	-0.011***	[0.003]	8.22	8.24	-5.5%	-0.4	1.13*
Consumer prince index in the province	1.758***	[0.029]	102.19	102.21	4.1%	-3.4 **	0.74*
Living in same province since birth	0.108***	[0.026]	63.8%	63.0%	-0.7%	0.91	-
Parents: Urban region	0.041	[0.028]	49.2%	48.1%	-6.5%	1.37	-
Father: Years of education	0.010***	[0.003]	5.28	5.00	7.3%	4.16 **	0.97
Mother: Years of education	0.012***	[0.003]	6.18	5.74	11.1%	6.36 **	0.96
Father: Party member	-0.199***	[0.039]	5.9%	5.6%	1.0%	0.6	-
Mother: Party member	0.229***	[0.037]	9.1%	8.5%	2.4%	1.29	-

Table 4.B3 continued in next page

Table 4.B3 continued from last page

Father: Business owner	-0.091	[0.063]	2.9%	2.8%	0.8%	0.43	-
Mother: Business owner	0.368***	[0.061]	3.8%	3.3%	3.2%	1.7	-
Father: Manager	0.051	[0.056]	3.0%	2.9%	0.8%	0.48	-
Mother: Manager	-0.025	[0.054]	4.0%	4.0%	-0.3%	-0.2	-
#Observations	*31,385*	*Rubin's B*	*17.1*	*102.1**			
		Rubin's R	*0.85*	*17.1*			

Appendix 4C: Additional Results

Figure 4C1	The effects of the SEZ reform on access to finance in the [-24, 0] interval
Figure 4C2	The effects of SEZ reform on financial market participation in the [-24, 0] interval
Figure 4C3	The effects of SEZ reform on portfolio diversification in the [-24, 0] interval
Figure 4C4	The effects of the SEZ reform on access to finance in the [-18, -6] interval
Figure 4C5	The effects of SEZ reform on financial market participation in the [-18, -6] interval
Figure 4C6	The effects of SEZ reform on portfolio diversification in the [-18, -6] interval
Table 4C1	Weighted correlation matrix
Table 4C2	The effect of the SEZ reform on Log (number of shares)
Table 4C3	Regressions: sample restriction of 12-year band before the SEZ reform
Table 4C4	Regressions: sample restriction of 6-year band before the SEZ reform
Table 4C5	Subsample comparisons of born in the different timing before the reform
Table 4C6	Subsample comparisons of those born at the different timing before the reform (SEZ reform cities only-*Observations 6,966*)
Table 4C7	Gender differences – Male
Table 4C8	Gender differences – Female
Table 4C9	The effect of reform exposure in rural regions

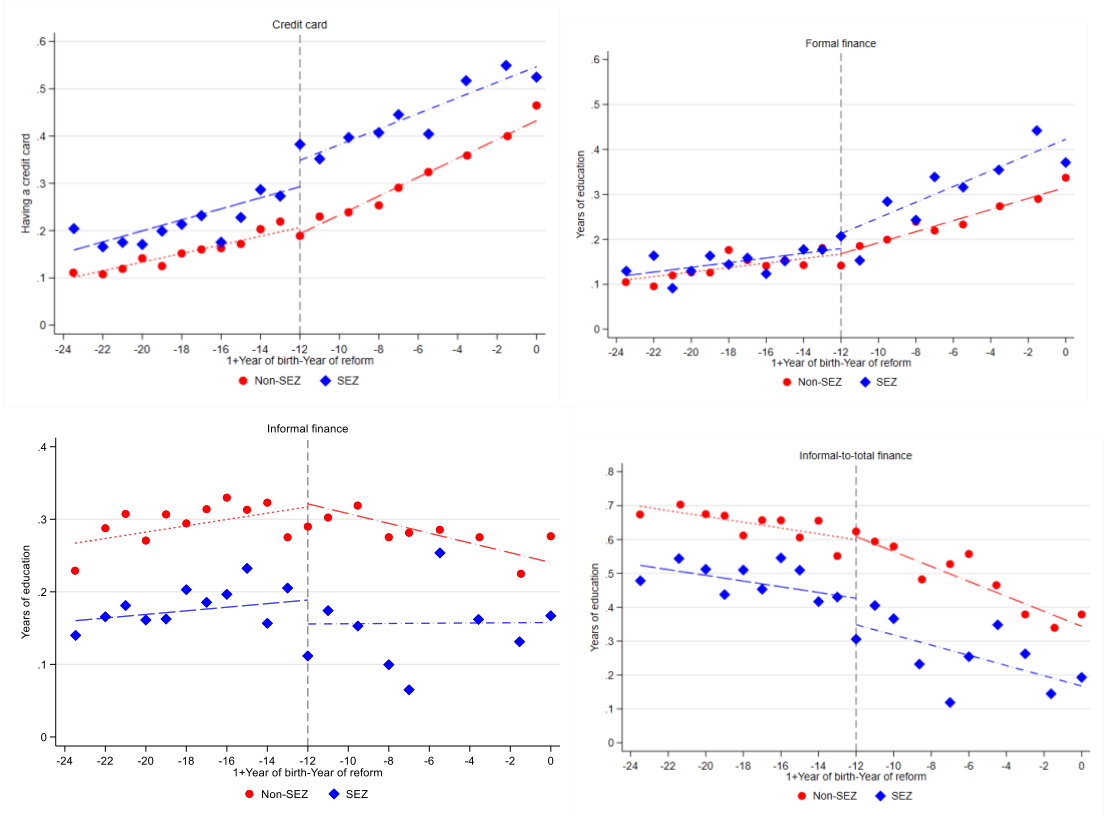


Figure 4C1

The effects of the SEZ reform on access to finance in the [-24, 0] interval

Each scatters graph of the impact of Special Economic Zone reform on access to finance, as varies of having a credit card, access to formal finance, using informal finance, the ratio of informal to total finance. The effects presented a visible jump if the individuals were born 12 years before the reform and grew up in the SEZ regions.

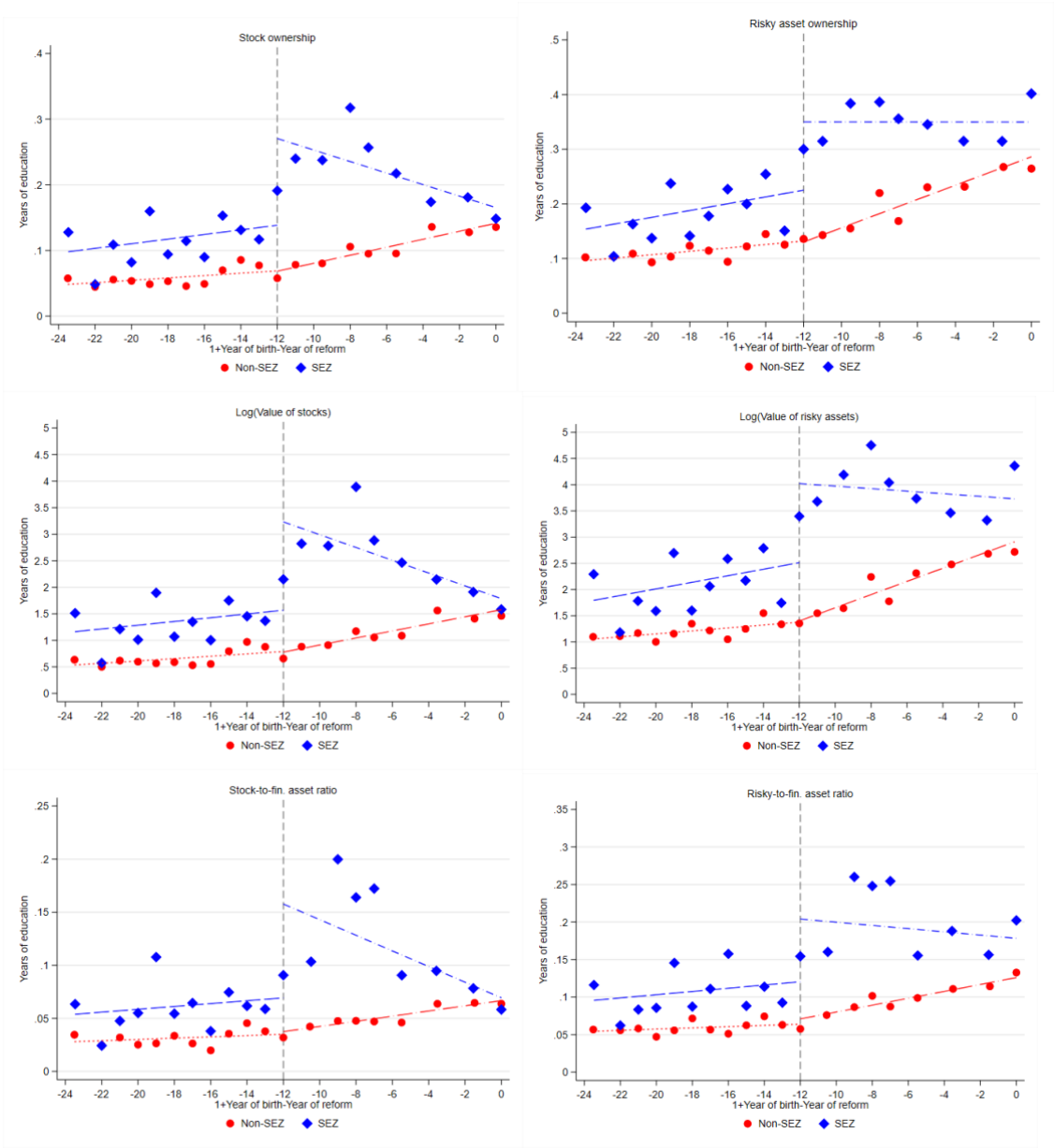


Figure 4C2

The effects of SEZ reform on financial market participation in the [-24, 0] interval

Each scatters graph of the impact of Special Economic Zone reform on financial market participation, as varies of stock ownership, risky asset ownership, the value of stocks, the value of risky assets, the ratio of stocks to financial assets, the ratio of risky assets to financial assets. The effects presented a visible jump if the individuals were born 12 years before the reform and grew up in the SEZ regions.

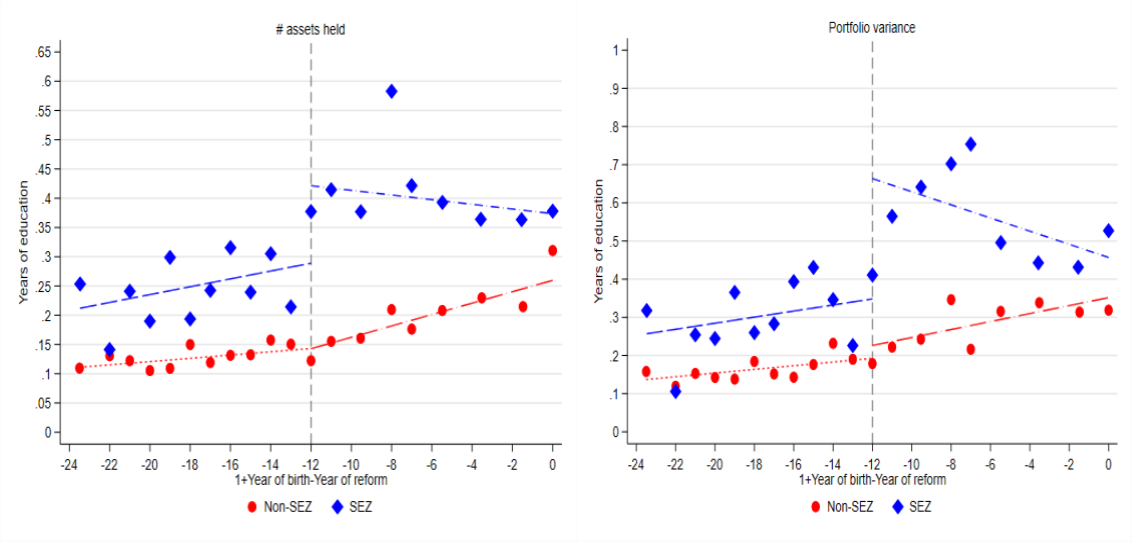


Figure 4C3

The effects of SEZ reform on portfolio diversification in the [-24, 0] interval

Each scatters the graph of the impact of Special Economic Zone reform on portfolio diversification, as it varies in the number of assets held, portfolio variance. The effects presented a visible jump if the individuals were born 12 years before the reform and grew up in the SEZ regions.

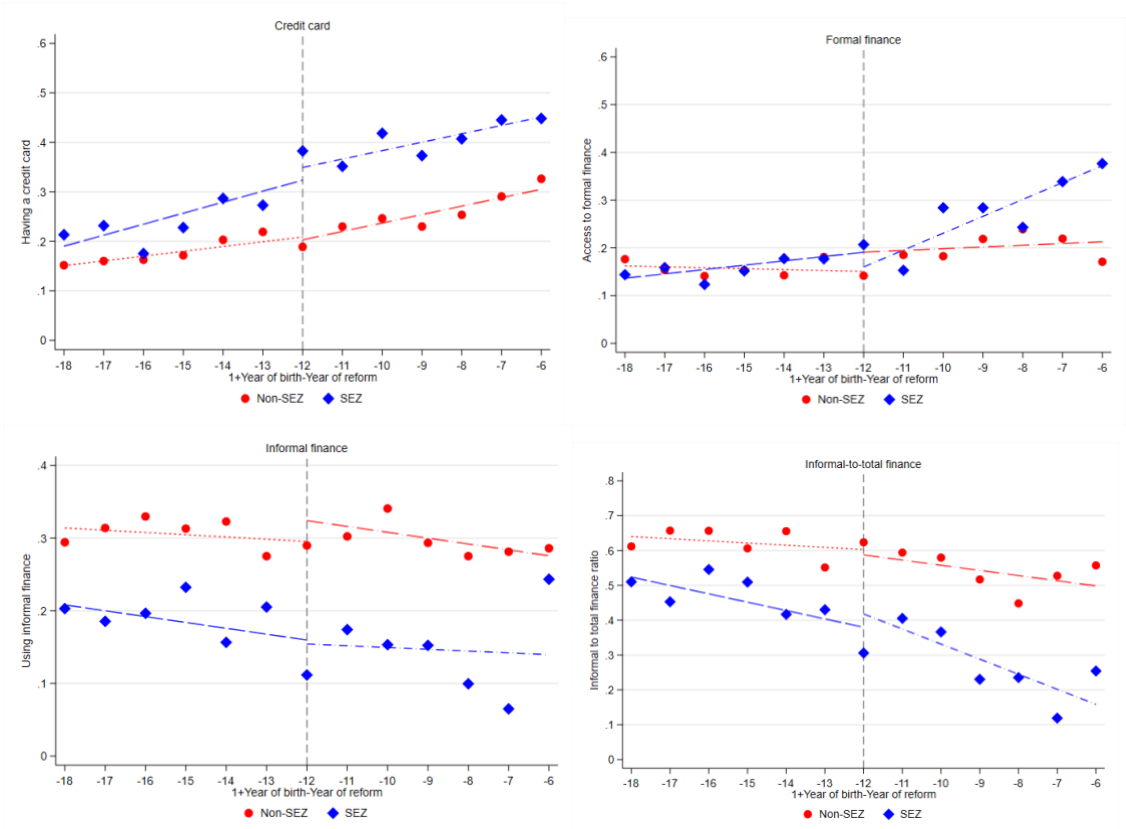


Figure 4C4

The effects of the SEZ reform on access to finance in the [-18, -6] interval

Each scatters graph of the impact of Special Economic Zone reform on access to finance, as varies of having a credit card, access to formal finance, using informal finance, the ratio of informal to total finance. The effects presented a visible jump if the individuals were born 6 years before the reform and grew up in the SEZ regions.

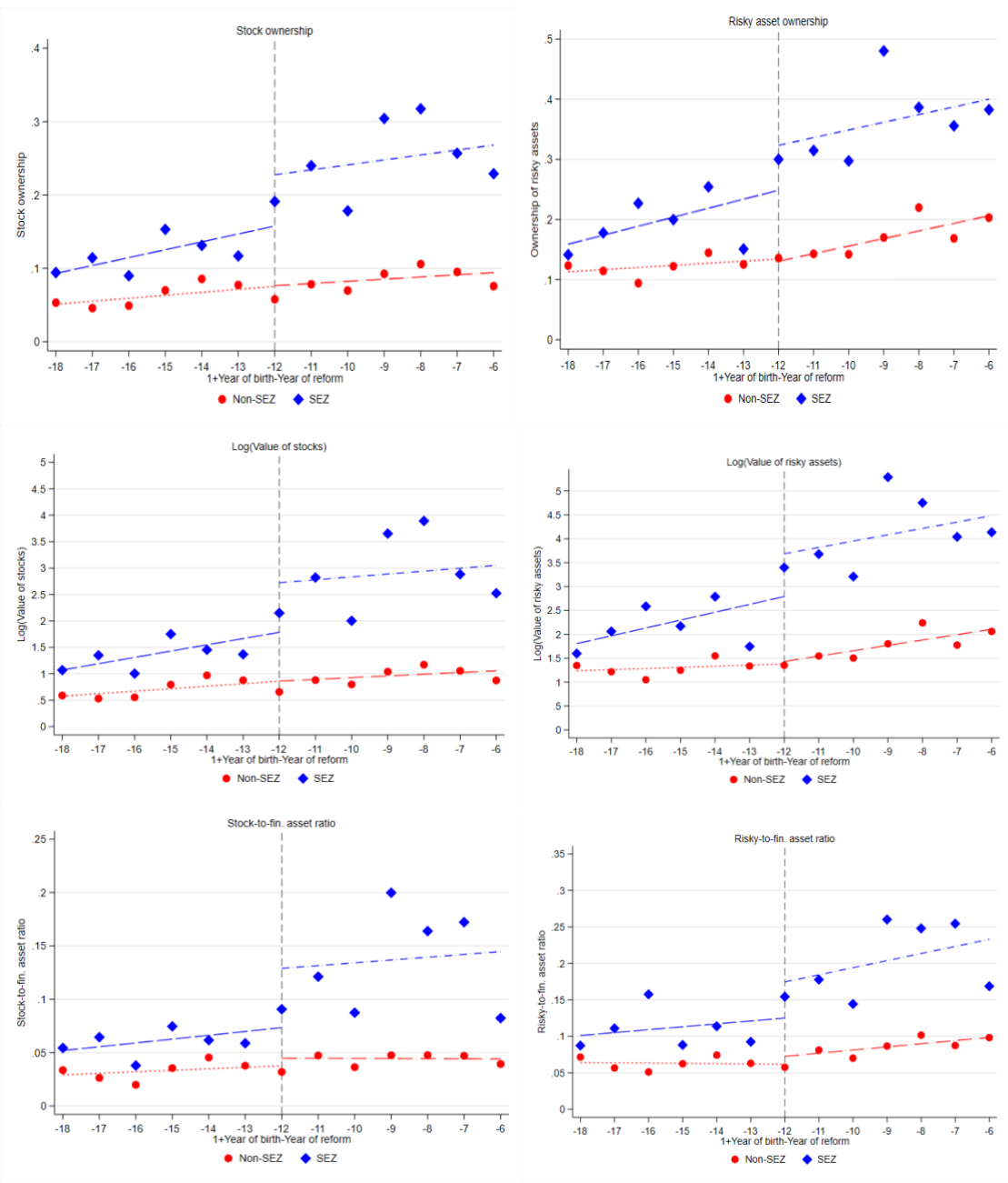


Figure 4C5

The effects of SEZ reform on financial market participation in the [-18, -6] interval

Each scatters graph of the impact of Special Economic Zone reform on financial market participation, as varies in stock ownership, risky asset ownership, the value of stocks, the value of risky assets, the ratio of stocks to financial assets, and the ratio of risky to financial assets. The effects presented a visible jump if the individuals were born 12 years before the reform and grew up in the SEZ regions.

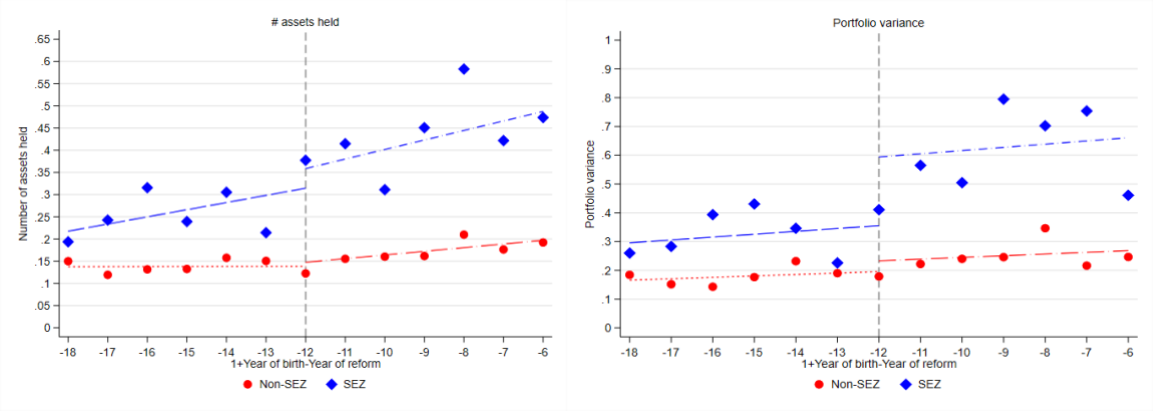


Figure 4C6

The effects of SEZ reform on portfolio diversification in the [-18, -6] interval

Each scatters the graph of the impact of Special Economic Zone reform on portfolio diversification, as it varies in the number of assets held, portfolio variance. The effects presented a visible jump if the individuals were born 12 years before the reform and grew up in the SEZ regions.

Table 4C1

Weighted correlation matrix

This table reports the correlation matrix for all individuals in the China Household Finance Survey. The asterisk denotes the following level of significance: *p<0.05.

	Growing up post-SEZ	Financial literacy	Distance to bank (km)	Having a credit card	Formal finance	Informal finance	Informal-to-total finance ratio	Ownership of stocks	Ownership of risky assets	Value of stocks	Values of risky assets	Stocks-to-financial asset ratio	Risky-to-financial asset ratio	#Assets held	Portfolio variance	Urban region	Male	Years of education	Wealth	Disposable household income
Growing up post-SEZ	1.00																			
Financial literacy	0.14*	1.00																		
Distance to bank (km)	-0.04*	-0.09*	1.00																	
Having a credit card	0.18*	0.29*	-0.09*	1.00																
Formal finance	0.12*	0.14*	-0.21	0.24*	1.00															
Informal finance	-0.20*	-0.30*	0.09	-0.36*	-0.71*	1.00														
Informal-to-total finance ratio	-0.21*	-0.31*	0.06	-0.38*	-0.83*	0.80*	1.00													
Ownership of stocks	0.11*	0.24*	-0.05*	0.30*	0.09*	-0.25*	-0.23*	1.00												
Ownership of risky assets	0.15*	0.33*	-0.07*	0.38*	0.13*	-0.34*	-0.31*	0.66*	1.00											
Value of stocks	0.04*	0.09*	-0.02*	0.12*	0.03*	-0.07	-0.07*	0.30*	0.20*	1.00										
Values of risky assets	0.05*	0.12*	-0.02*	0.15*	0.04*	-0.09	-0.09	0.29*	0.26*	0.87*	1.00									
Stocks-to-financial asset ratio	0.08*	0.19*	-0.06*	0.24*	0.08*	-0.21*	-0.19*	0.83*	0.55*	0.39*	0.32*	1.00								
Risky-to-financial asset ratio	0.11*	0.28*	-0.06*	0.33*	0.11*	-0.30*	-0.27*	0.69*	0.80*	0.30*	0.37*	0.74*	1.00							
#Assets held	0.10*	0.27*	-0.06*	0.34*	0.10*	-0.30*	-0.27*	0.75*	0.78*	0.28*	0.39*	0.56*	0.78*	1.00						
Portfolio variance	0.12*	0.25*	-0.06*	0.30*	0.09*	-0.25*	-0.23*	0.82*	0.74*	0.27*	0.25*	0.77*	0.69*	0.68*	1.00					
Urban region	0.02	0.31*	-0.14*	0.27*	0.10*	-0.36*	-0.32*	0.25*	0.31*	0.08*	0.10*	0.21*	0.28*	0.28*	0.26*	1.00				
Male	0.00	0.03*	0.07*	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	-0.09*	1.00			
Years of education	0.18*	0.46*	0.47*	0.40*	0.20*	-0.38*	-0.40*	0.28*	0.38*	0.10*	0.12*	0.23*	0.32*	0.32*	0.29*	0.48*	0.08*	1.00		

Wealth	0.22*	0.20*	-0.06*	0.29*	0.17*	-0.25*	-0.27*	0.28*	0.30*	0.34*	0.41*	0.24*	0.29*	0.33*	0.27*	0.20*	0.02*	0.27*	1.00
Disposable household income	0.10*	0.16*	-0.03*	0.22*	0.15*	-0.18*	-0.20*	0.20*	0.22*	0.33*	0.35*	0.17*	0.20*	0.24*	0.20*	0.14*	0.02*	0.20*	0.49*	1.00

Table 4C2

The effect of the SEZ reform on log number of stocks held

This table reports the effect of SEZ reform on log number of stocks held. The specifications are identical to those of Table 4.1.

Panel A: Log number of stocks held						
	(1)	(2)	(3)	(4)	(5)	(6)‡
SEZ^{CC}	0.011	0.013	-0.009	-0.021	-0.031*	0.04
	[0.021]	[0.021]	[0.020]	[0.019]	[0.017]	[0.029]
Grow^{PR}	–	0.093	0.083	0.076	0.092	–
		[0.072]	[0.069]	[0.064]	[0.074]	
$\text{SEZ}^{\text{CC}} \times \text{Grow}^{\text{PR}}$	–	–	0.053***	0.048**	0.068***	–
			[0.020]	[0.019]	[0.019]	
% Effect: $SEZ^{CC} \times Grow^{PR}$	*(8.8%)†*	*{76.4%}‡*	*44.0%*	*39.8%*	*55.9%*	*22.5%*
Linear prediction	*0.1214*	*0.1214*	*0.1214*	*0.1212*	*0.1212*	*0.1796*
#Observations	*31,348*	*31,348*	*31,348*	*31,303*	*31,303*	*9,666*
Panel B: Log number of stocks held among financial asset owners only						
	(7)	(8)	(9)	(10)	(11)	(12)‡
SEZ^{CC}	0.018	0.021	-0.008	-0.025	-0.042	0.063*
	[0.026]	[0.027]	[0.030]	[0.028]	[0.028]	[0.035]
Grow^{PR}	–	0.095	0.083	0.08	0.121	–
		[0.077]	[0.076]	[0.068]	[0.092]	
$\text{SEZ}^{\text{CC}} \times \text{Grow}^{\text{PR}}$	–	–	0.062**	0.037	0.058**	–
			[0.028]	[0.027]	[0.027]	
% Effect: $SEZ^{CC} \times Grow^{PR}$	*(9.9%)†*	*{50.9%}‡*	*33.5%*	*19.8%*	*31.1%*	*27.3%*
Linear prediction	*0.1866*	*0.1866*	*0.1866*	*0.1863*	*0.1863*	*0.2314*
#Observations	*20,592*	*20,592*	*20,592*	*20,562*	*20,562*	*7,470*

Table 4C3

Regressions: sample restriction of the 12-year band before the SEZ reform

This table reports the estimates for the sub-sample of individuals who were born within the time interval comprising of 12 years before or after the reform. Coefficients and robust standard errors are present for 12 dependent variables shown in the first line. Standard errors are clustered at the city level.

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial-assets	Risky-to-financial assets	#Assets held	Portfolio variance
Panel A: Sample of individuals born 12 years before												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.010	0.047**	-0.121***	-0.176***	0.012	0.010	0.180	0.186	0.012	0.018	0.034	0.027
	[0.030]	[0.020]	[0.036]	[0.039]	[0.017]	[0.020]	[0.201]	[0.235]	[0.009]	[0.012]	[0.030]	[0.041]
$Grow^{PR}$	-0.022	0.019	-0.07	-0.052	0.035	0.039	0.499	0.521	0.032*	0.035**	0.044	0.121*
	[0.030]	[0.031]	[0.071]	[0.059]	[0.027]	[0.031]	[0.342]	[0.343]	[0.019]	[0.016]	[0.031]	[0.064]
$SEZ^{CC} \times Grow^{PR}$	0.067***	0.081*	-0.108***	-0.051*	0.038**	0.062***	0.428**	0.714***	0.023*	0.042***	0.062**	0.105**
	[0.025]	[0.041]	[0.034]	[0.030]	[0.016]	[0.022]	[0.177]	[0.204]	[0.013]	[0.010]	[0.028]	[0.043]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*29.0%*	*43.6%*	*-15.3%*	*-9.3%*	*42.5%*	*37.4%*	*42.3%*	*40.1%*	*49.6%*	*48.6%*	*34.5%*	*43.1%*
Linear prediction	*0.2311*	*0.1849*	*0.7052*	*0.5459*	*0.0894*	*0.1666*	*1.0124*	*1.7805*	*0.0464*	*0.0856*	*0.1803*	*0.2439*
#Observations	*17,949*	*17,949*	*6,510*	*6,510*	*17,949*	*17,949*	*17,949*	*17,949*	*17,167*	*17,167*	*17,949*	*17,949*
Panel B: Sample of individuals born 12 years before the reform and growing up in the SEZ regions												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$Grow^{PR}_{SEZ^{CC}}$	0.069*	0.131**	-0.227***	-0.222***	0.057***	0.085***	0.730***	1.052***	0.047***	0.073***	0.116***	0.145***
	[0.036]	[0.052]	[0.057]	[0.057]	[0.021]	[0.028]	[0.251]	[0.306]	[0.017]	[0.018]	[0.036]	[0.048]
% Effect: $Grow^{PR}_{SEZ^{CC}}$	*19.9%*	*49.4%*	*-37.8%*	*-52.5%*	*44.6%*	*35.2%*	*50.9%*	*41.6%*	*74.2%*	*62.5%*	*48.0%*	*42.1%*
Linear prediction	*0.3475*	*0.2651*	*0.5994*	*0.4222*	*0.1271*	*0.2407*	*1.4352*	*2.5306*	*0.063*	*0.1175*	*0.2417*	*0.3451*
#Observations	*6,037*	*6,037*	*2,427*	*2,427*	*6,037*	*6,037*	*6,037*	*6,037*	*5,855*	*5,855*	*6,037*	*6,037*

Table 4C4

Regressions: sample restriction of the 6-year band before the SEZ reform

This table repeats Table B2, except it only includes in the sample individuals who were born at the time interval of 6 years before and after. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. Standard errors are clustered at the city level.

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial-assets	Risky-to-financial assets	#Assets held	Portfolio variance
Panel A: Sample of individuals born 6 years before												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.001	0.048*	-0.141***	-0.197***	0.018	0.019	0.237	0.313	0.016	0.027	0.041	0.061
	[0.037]	[0.025]	[0.040]	[0.040]	[0.023]	[0.029]	[0.276]	[0.336]	[0.014]	[0.019]	[0.042]	[0.064]
$Grow^{PR}$	0.003	0.054*	-0.029	-0.055	0.03	0.033	0.469	0.521	0.03	0.039*	0.055	0.12
	[0.036]	[0.028]	[0.074]	[0.065]	[0.029]	[0.035]	[0.373]	[0.401]	[0.024]	[0.021]	[0.043]	[0.082]
$SEZ^{CC} \times Grow^{PR}$	0.054	0.094*	-0.173**	-0.092*	0.079***	0.098***	0.928***	1.103***	0.054*	0.060***	0.098***	0.183***
	[0.036]	[0.048]	[0.077]	[0.049]	[0.025]	[0.031]	[0.309]	[0.297]	[0.028]	[0.018]	[0.037]	[0.062]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*23.9%*	*52.0%*	*-23.8%*	*-16.4%*	*89.0%*	*60.4%*	*92.4%*	*63.3%*	*115.3%*	*70.1%*	*54.3%*	*74.1%*
Linear prediction	*0.2274*	*0.1806*	*0.7249*	*0.5593*	*0.0884*	*0.1625*	*1.0044*	*1.7424*	*0.0466*	*0.085*	*0.1803*	*0.2469*
#Observations	*10,041*	*10,041*	*3,749*	*3,749*	*10,041*	*10,041*	*10,041*	*10,041*	*9,628*	*9,628*	*10,041*	*10,041*
Panel B: Sample of individuals born 6 years before the reform and growing up in the SEZ regions												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$Grow^{PR}_{SEZ^{CC}}$	0.060*	.136**	-0.335***	-0.306***	.125***	0.157***	1.541***	1.898***	0.092***	0.116***	0.187***	0.322***
	[0.036]	[0.059]	[0.077]	[0.078]	[0.036]	[0.041]	[0.449]	[0.448]	[0.034]	[0.032]	[0.057]	[0.100]
% Effect: $Grow^{PR}_{SEZ^{CC}}$	*20.7%*	*60.8%*	*-51.2%*	*-63.6%*	*107.9%*	*73.8%*	*116.8%*	*83.7%*	*153.0%*	*106.3%*	*84.0%*	*98.8%*
Linear prediction	*0.2922*	*0.2242*	*0.6553*	*0.4808*	*0.116*	*0.2131*	*1.3188*	*2.2668*	*0.0601*	*0.1094*	*0.2227*	*0.3257*
#Observations	*3,121*	*3,121*	*1,207*	*1,207*	*3,121*	*3,121*	*3,121*	*3,121*	*3,035*	*3,035*	*3,121*	*3,121*

Table 4C5

Subsample comparisons of born in the different timing before the reform

This table reports selected estimates of the determinants of different age intervals with the specifications are identical to Table3. The specification including incorporates different time interval categories between SEZ reform and birth year.

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial assets	Risky-to-financial assets	#Assets held	Portfolio variance
Born between before 21 years and 42 years of the reform (*11,700 observations*)												
SEZ^{CC}	0.021*	0.001	-0.03	-0.008	0.004	0.009	0.053	0.116	0.002	0.011	0.018	0.011
	[0.012]	[0.010]	[0.037]	[0.036]	[0.012]	[0.014]	[0.128]	[0.166]	[0.006]	[0.009]	[0.020]	[0.026]
% Effect: SEZ^{CC}	*26.6%*	*1.6%*	*-3.7%*	*-1.1%*	*8.1%*	*8.8%*	*8.9%*	*10.4%*	*8.2%*	*18.2%*	*14.2%*	*7.4%*
Born between before 18 years and 21 years of the reform (*3,062 observations*)												
SEZ^{CC}	0.022	-0.017	-0.093	-0.068	0.004	-0.021	0.071	-0.166	0.01	0.002	0.009	-0.015
	[0.031]	[0.023]	[0.077]	[0.078]	[0.019]	[0.024]	[0.223]	[0.285]	[0.014]	[0.020]	[0.039]	[0.052]
% Effect: SEZ^{CC}	*16.5%*	*-13.9%*	*-11.5%*	*-10.1%*	*6.1%*	*-18.6%*	*10.3%*	*-13.7%*	*30.9%*	*2.8%*	*6.9%*	*-9.1%*
Born between before 15 years and 18 years of the reform (*2,566 observations*)												
SEZ^{CC}	0.027	0.072*	-0.129**	-0.183***	0.006	0.01	0.076	0.174	0.004	0.031	0.024	0.075
	[0.052]	[0.043]	[0.058]	[0.065]	[0.031]	[0.039]	[0.355]	[0.446]	[0.019]	[0.028]	[0.064]	[0.083]
% Effect: SEZ^{CC}	*16.3%*	*46.0%*	*-16.7%*	*-29.4%*	*10.7%*	*8.4%*	*11.6%*	*12.9%*	*12.6%*	*44.6%*	*15.7%*	*40.7%*
Born between before 12 years and 15 years of the reform (*2,729 observations*)												
SEZ^{CC}	-0.02	0.059**	-0.114*	-0.178***	-0.003	-0.016	-0.035	-0.083	0.007	0.002	0.001	-0.041
	[0.038]	[0.028]	[0.063]	[0.067]	[0.027]	[0.032]	[0.318]	[0.383]	[0.020]	[0.021]	[0.047]	[0.062]
% Effect: SEZ^{CC}	*-9.7%*	*36.6%*	*-15.1%*	*-30.4%*	*-4.0%*	*-11.3%*	*-3.7%*	*-5.6%*	*15.9%*	*2.1%*	*0.6%*	*-19.0%*
Born between before 9 years and 12 years of the reform (*2,339 observations*)												
SEZ^{CC}	-0.011	0.041	-0.326***	-0.201***	0.051	0.063	0.614	0.717	0.036	0.025	0.037	0.133
	[0.056]	[0.042]	[0.090]	[0.045]	[0.042]	[0.056]	[0.497]	[0.583]	[0.024]	[0.027]	[0.064]	[0.115]
% Effect: SEZ^{CC}	*-4.4%*	*23.3%*	*-43.5%*	*-35.1%*	*57.3%*	*38.1%*	*61.1%*	*40.9%*	*75.5%*	*30.5%*	*20.8%*	*52.4%*
Born between before 6 years and 9 years of the reform (*1,877 observations*)												
SEZ^{CC}	0.032	0.118	-0.343***	-0.373***	0.151***	0.190***	1.889***	2.324***	0.134**	0.169***	0.228***	0.441***
	[0.041]	[0.079]	[0.120]	[0.101]	[0.049]	[0.048]	[0.600]	[0.526]	[0.058]	[0.051]	[0.059]	[0.136]
% Effect: SEZ^{CC}	*11.4%*	*49.8%*	*-56.1%*	*-82.3%*	*117.1%*	*85.0%*	*128.3%*	*97.1%*	*193.6%*	*142.2%*	*98.6%*	*125.6%*

Table 4C5 continued in the next page

Table 4C5 continued from the last page

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own Risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial assets	Risky-to-financial assets	#Assets held	Portfolio variance
Born between at reform year and 6 years before the reform (*3,010 observations)*												
SEZ^{CC}	0.120**	0.185***	-0.183***	-0.229***	0.013	0.033	0.216	0.466	0.013	0.040**	0.081	-0.007
	[0.051]	[0.054]	[0.058]	[0.057]	[0.021]	[0.034]	[0.234]	[0.335]	[0.012]	[0.017]	[0.051]	[0.053]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*30.9%*	*64.5%*	*-32.4%*	*-58.8%*	*9.6%*	*12.8%*	*14.4%*	*17.3%*	*19.9%*	*33.5%*	*32.5%*	*-2.0%*
Born between at reform year and 18 years after the reform (*4,065 observations)*												
SEZ^{CC}	0.075*	0.165***	-0.187***	-0.158***	0.007	0.03	0.043	0.314	-0.006	0.025*	0.022	0.069*
	[0.041]	[0.043]	[0.053]	[0.057]	[0.024]	[0.028]	[0.257]	[0.266]	[0.012]	[0.013]	[0.029]	[0.037]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*19.1%*	*63.8%*	*-35.5%*	*-44.6%*	*5.6%*	*9.0%*	*3.3%*	*9.6%*	*-11.6%*	*18.8%*	*8.3%*	*19.2%*

Table 4C6

Subsample comparisons of those born at the different timing prior to the reform (SEZ reform cities only-*Observations 6,966*)

This table presents the reform effects on individuals born at different timing in SEZ and Coastal cities since the year of reform, 6 years before the reform, 12 years before the reform, 15 years before the reform, 18 years before the reform, 21 years before reform. All the specifications are identical to Table 4.3.

	Credit Card	**Formal finance**	**Informal finance**	**Informal-to-total finance ratio**	**Own stocks**	**Own risky assets**	**Log (stocks)**	**Log (risky assets)**	**Stocks-to-financial-assets**	**Risky-to-financial assets**	**#Assets held**	**Portfolio variance**
Born at the year of reform	0.029	-0.052	-0.130	-0.074	0.042	-0.011	0.634*	0.039	0.024	-0.005	0.003	0.118
	[0.042]	[0.044]	[0.095]	[0.061]	[0.030]	[0.046]	[0.326]	[0.455]	[0.018]	[0.027]	[0.034]	[0.078]
%Effect	*9.7%*	*-27.0%*	*-24.5%*	*-19.1%*	*27.8%*	*-4.3%*	*37.4%*	*1.4%*	*32.1%*	*-4.0%*	*1.0%*	*30.4%*
Born<6 years before reform	-0.003	0.002	-0.044	-0.027	-0.035	-0.055	-0.243	-0.444	0.016	0.012	-0.057	-0.091
	[0.038]	[0.051]	[0.054]	[0.054]	[0.031]	[0.038]	[0.368]	[0.373]	[0.016]	[0.020]	[0.047]	[0.063]
%Effect	*-1.1%*	*0.9%*	*-8.3%*	*-6.8%*	*-23.2%*	*-20.7%*	*-14.3%*	*-15.4%*	*21.9%*	*8.6%*	*-19.5%*	*-23.3%*
Born<9 years before reform	-0.061**	0.037	0.029	0.003	-0.049*	-0.088*	-0.454	-0.778*	-0.008	-0.004	-0.079*	-0.133*
	[0.029]	[0.037]	[0.097]	[0.076]	[0.024]	[0.044]	[0.278]	[0.422]	[0.017]	[0.025]	[0.043]	[0.064]
%Effect	*-20.6%*	*19.2%*	*5.5%*	*0.8%*	*-33.0%*	*-33.0%*	*-26.7%*	*-27.0%*	*-10.2%*	*-3.2%*	*-26.9%*	*-34.3%*
Born<12 years before reform	-0.031	0.077	-0.16	-0.111	0.115**	0.090*	1.571**	1.309**	0.112**	0.110***	0.108**	0.332**
	[0.031]	[0.048]	[0.137]	[0.098]	[0.053]	[0.044]	[0.716]	[0.601]	[0.043]	[0.036]	[0.049]	[0.129]
%Effect	*-10.6%*	*40.3%*	*-30.3%*	*-28.6%*	*77.1%*	*33.7%*	*92.6%*	*45.5%*	*150.9%*	*80.3%*	*36.8%*	*85.2%*
Born<15 years before reform	0.013	0.039	-0.061	-0.059	0.078	0.034	1.033*	0.631	0.048	0.041	0.057	0.15
	[0.048]	[0.034]	[0.068]	[0.087]	[0.048]	[0.062]	[0.584]	[0.677]	[0.031]	[0.032]	[0.057]	[0.126]
%Effect	*4.3%*	*20.6%*	*-11.5%*	*-15.1%*	*52.0%*	*12.6%*	*60.8%*	*21.9%*	*65.3%*	*29.8%*	*19.5%*	*38.6%*
Born<18 years before reform	0.017	0.002	0.023	-0.035	0.047	0.057	0.515	0.742	0.021	0.034	0.09	0.119
	[0.029]	[0.020]	[0.078]	[0.065]	[0.060]	[0.074]	[0.690]	[0.850]	[0.043]	[0.050]	[0.109]	[0.161]
%Effect	*5.6%*	*0.8%*	*4.4%*	*-9.1%*	*31.3%*	*21.4%*	*30.3%*	*25.8%*	*28.2%*	*24.7%*	*30.8%*	*30.5%*
Born<21 years before reform	0.03	0.006	-0.019	-0.03	0.031	0.054**	0.331	0.628**	0.017	0.029	0.084*	0.112**
	[0.028]	[0.025]	[0.055]	[0.063]	[0.023]	[0.026]	[0.235]	[0.294]	[0.014]	[0.021]	[0.048]	[0.050]
%Effect	*10.3%*	*3.3%*	*-3.6%*	*-7.8%*	*20.8%*	*20.3%*	*19.5%*	*21.8%*	*23.2%*	*21.0%*	*28.5%*	*28.7%*

Table 4C7

Estimates for male sub-sample

This table reports OLS estimates of the effect of reform exposure by gender. All specifications include the birth cohort and province fixed effects. Standard errors clustered by the cities are reported in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own Risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial assets	Risky-to-financial assets	#Assets held	Portfolio variance
Panel A: Male												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.027	0.018	-0.067*	-0.070**	-0.002	-0.013	0.003	-0.097	0.001	0.006	0.021	-0.006
	[0.021]	[0.018]	[0.038]	[0.032]	[0.014]	[0.019]	[0.164]	[0.212]	[0.008]	[0.011]	[0.054]	[0.031]
$Grow^{PR}$	-0.02	0.013	-0.068	-0.034	0.070	0.048	0.968	0.686	0.058	0.044	0.138	0.182*
	[0.035]	[0.032]	[0.066]	[0.064]	[0.045]	[0.048]	[0.594]	[0.626]	[0.035]	[0.040]	[0.085]	[0.107]
$SEZ^{CC} \times Grow^{PR}$	0.047*	0.089**	-0.121**	-0.088**	0.034**	0.059***	0.389**	0.598**	0.024***	0.035**	-0.066	0.121***
	[0.027]	[0.045]	[0.047]	[0.043]	[0.016]	[0.021]	[0.190]	[0.239]	[0.009]	[0.017]	[0.054]	[0.030]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*24.1%*	*55.7%*	*-16.8%*	*-15.5%*	*41.0%*	*36.0%*	*41.4%*	*34.7%*	*56.5%*	*43.9%*	*-3.4%*	*53.7%*
Linear prediction	*0.1968*	*0.1602*	*0.7169*	*0.565*	*0.0835*	*0.163*	*0.9405*	*1.7228*	*0.0417*	*0.0787*	*1.9607*	*0.2249*
#Observations	*16,134*	*16,134*	*5,288*	*5,288*	*16,134*	*16,134*	*16,134*	*16,134*	*15,467*	*15,467*	*16,134*	*16,134*
Panel B: Male (SEZ reform cities only)												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$Grow^{PR}_{SEZ^{CC}}$	0.082**	0.111***	-0.220***	-0.163**	0.027	0.042	0.378*	0.543*	0.020*	0.053***	0.013	0.113**
	[0.033]	[0.041]	[0.070]	[0.075]	[0.018]	[0.026]	[0.220]	[0.277]	[0.012]	[0.017]	[0.062]	[0.047]
% Effect: $Grow^{PR}_{SEZ^{CC}}$	*22.5%*	*41.1%*	*-38.4%*	*-40.6%*	*18.6%*	*13.8%*	*23.5%*	*17.4%*	*28.9%*	*40.1%*	*0.6%*	*28.4%*
Linear prediction	*0.3667*	*0.2711*	*0.5727*	*0.4008*	*0.1446*	*0.305*	*1.6061*	*3.1186*	*0.0688*	*0.1327*	*2.2513*	*0.3975*
#Observations	*4,766*	*4,766*	*1,884*	*1,884*	*4,766*	*4,766*	*4,766*	*4,766*	*4,642*	*4,642*	*4,766*	*4,766*

Table 4C8

Estimates for female sub-sample

This table reports OLS estimates of the effect of reform exposure by gender. All specifications include the birth cohort and province fixed effects. Standard errors clustered by the municipality are reported in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1

	Credit Card	Formal finance	Informal finance	Informal-to-Total finance	Own stocks	Own risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial assets	Risky-to-financial assets	#Assets held	Portfolio variance
Panel A: Female												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	-0.002	0.045***	-0.125***	-0.161***	0.01	0.025	0.143	0.35	0.011	0.027**	0.027	0.032
	[0.023]	[0.017]	[0.042]	[0.046]	[0.016]	[0.019]	[0.185]	[0.229]	[0.009]	[0.013]	[0.075]	[0.043]
$Grow^{PR}$	-0.007	0.003	-0.067	-0.048	0.008	0.008	0.143	0.209	0.014	0.032**	0.072	0.072
	[0.037]	[0.034]	[0.074]	[0.058]	[0.017]	[0.026]	[0.179]	[0.247]	[0.012]	[0.014]	[0.055]	[0.047]
$SEZ^{CC} \times Grow^{PR}$	0.081***	0.084*	-0.058	-0.033	0.037*	0.058***	0.349	0.542**	0.008	0.014	-0.001	0.087*
	[0.027]	[0.046]	[0.052]	[0.050]	[0.021]	[0.022]	[0.231]	[0.237]	[0.009]	[0.013]	[0.081]	[0.045]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*40.1%*	*55.0%*	*-8.3%*	*-6.0%*	*45.9%*	*34.4%*	*39.3%*	*30.4%*	*20.6%*	*16.3%*	*-0.1%*	*38.6%*
Linear prediction	*0.203*	*0.1527*	*0.7005*	*0.5545*	*0.0796*	*0.1699*	*0.8864*	*1.7838*	*0.0406*	*0.0863*	*1.8862*	*0.2256*
#Observations	*15,214*	*15,214*	*4,687*	*4,687*	*15,214*	*15,214*	*15,214*	*15,214*	*14,403*	*14,403*	*15,214*	*15,214*
Panel B: Female (SEZ reform cities only)												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
$Grow^{PR}_{SEZ^{CC}}$	0.064**	0.164***	-0.196***	-0.219***	0.044**	0.078**	0.462*	0.827***	0.028**	0.044***	0.004	0.104**
	[0.031]	[0.052]	[0.048]	[0.045]	[0.021]	[0.031]	[0.236]	[0.313]	[0.013]	[0.014]	[0.081]	[0.047]
% Effect: $Grow^{PR}_{SEZ^{CC}}$	*18.0%*	*66.5%*	*-34.2%*	*-54.7%*	*41.8%*	*31.1%*	*39.7%*	*32.8%*	*56.7%*	*39.0%*	*0.2%*	*34.1%*
Linear prediction	*0.3573*	*0.2465*	*0.5739*	*0.3999*	*0.1046*	*0.2499*	*1.1648*	*2.5205*	*0.0488*	*0.1115*	*2.1063*	*0.304*
#Observations	*4,900*	*4,900*	*1,794*	*1,794*	*4,900*	*4,900*	*4,900*	*4,900*	*4,727*	*4,727*	*4,900*	*4,900*

Table 4C9

Estimates for the subsamples who live (or parents live) in rural regions

This table reports estimates for the sub-sample of individuals who live in rural regions in Panel A, and those whose parents live in rural regions in Panel B. All specifications include cohort and province fixed effects.

	Credit Card	Formal finance	Informal finance	Informal-to-total finance	Own stocks	Own risky assets	Log (stocks)	Log (risky assets)	Stocks-to-financial assets	Risky-to financial assets	#Assets held	Portfolio variance
Panel A: Individuals living at a rural region												
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
SEZ^{CC}	-0.017	0.016	-0.025	-0.052	-0.006	-0.024**	-0.071	-0.235*	-0.017	-0.004	0.001	-0.017
	[0.014]	[0.020]	[0.031]	[0.035]	[0.006]	[0.012]	[0.068]	[0.124]	[0.014]	[0.006]	[0.061]	[0.015]
$Grow^{PR}$	0.001	0.022	-0.091	-0.051	0.017	-0.006	0.28	0.132	0.001	0.028*	0.068	0.051
	[0.030]	[0.029]	[0.059]	[0.053]	[0.021]	[0.021]	[0.262]	[0.243]	[0.030]	[0.015]	[0.061]	[0.046]
$SEZ^{CC} \times Grow^{PR}$	0.127***	0.119*	-0.189***	-0.137***	0.046***	0.098***	0.531***	0.889***	0.127***	0.036**	-0.005	0.112***
	[0.027]	[0.067]	[0.065]	[0.051]	[0.013]	[0.024]	[0.143]	[0.228]	[0.027]	[0.016]	[0.054]	[0.035]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*123.9%*	*96.8%*	*-22.7%*	*-20.4%*	*229.8%*	*157.6%*	*240.1%*	*148.8%*	*123.9%*	*147.8%*	*-0.3%*	*171.7%*
Linear prediction	*0.1024*	*0.1231*	*0.8366*	*0.6722*	*0.0199*	*0.062*	*0.221*	*0.5972*	*0.1024*	*0.0246*	*1.6904*	*0.0652*
#Observations	*17,124*	*17,124*	*6,340*	*6,340*	*17,124*	*17,124*	*17,124*	*17,124*	*17,124*	*16,048*	*17,124*	*17,124*
Panel B: Parents living at a rural region												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SEZ^{CC}	0.004	0.029	-0.066*	-0.080**	0.007	-0.004	0.101	0.005	0.009	0.009	0.032	0.014
	[0.015]	[0.020]	[0.035]	[0.036]	[0.009]	[0.014]	[0.107]	[0.158]	[0.006]	[0.008]	[0.062]	[0.022]
$Grow^{PR}$	0.002	0.039	-0.116	-0.09	0.008	-0.014	0.123	-0.016	0.016**	0.024***	0.065	0.035
	[0.034]	[0.035]	[0.088]	[0.073]	[0.012]	[0.022]	[0.117]	[0.204]	[0.006]	[0.008]	[0.056]	[0.030]
$SEZ^{CC} \times Grow^{PR}$	0.102***	0.141**	-0.148***	-0.124***	0.033***	0.082***	0.328**	0.663***	0.017	0.025*	-0.037	0.086***
	[0.026]	[0.067]	[0.046]	[0.040]	[0.012]	[0.021]	[0.152]	[0.207]	[0.012]	[0.014]	[0.064]	[0.027]
% Effect: $SEZ^{CC} \times Grow^{PR}$	*82.2%*	*103.1%*	*-18.3%*	*-19.2%*	*104.2%*	*101.5%*	*93.5%*	*83.1%*	*102.5%*	*71.1%*	*-2.1%*	*89.8%*
Linear prediction	*0.1239*	*0.1368*	*0.8091*	*0.6433*	*0.0319*	*0.0806*	*0.3512*	*0.7983*	*0.0162*	*0.0349*	*1.7283*	*0.0954*
#Observations	*18,798*	*18,798*	*6,876*	*6,876*	*18,798*	*18,798*	*18,798*	*18,798*	*17,650*	*17,650*	*18,798*	*18,798*

Appendix 4D: Causal Mediation Analysis in an OLS framework

The measurement of causal effect of policy (in this case, special economic zoning reform) intervention. I perform causal mediation analysis framework as in Imai *et al.*, (2010). That is, I focus on the causal mechanism by which the treatment variable causally affects outcomes (in this case, credit card, formal finance, stock ownership, risky asset ownership, logarithm value of stocks, logarithm value of risky assets, portfolio variance) through mediators (in this case, educational reform, schooling year more than 9 years of father, parental business, parent manager, windfall gains, disposable income, savings rate, household wealth, net financial wealth, filial piety, socialization, trust, financial risk tolerance, financial literacy, inter alia). The table below shows the effect of the treatment variable on each candidate mediator, which is the second step of causal mediation analysis, with the first step being the primary estimates presented in the first tables of this essay, and the third step being the estimates in Table 4.9.

Table 4D1

The effect of growing up with finance on each candidate moderator

This table presents the coefficient of SEZ_{PR}^{CC} on each candidate mediating variable of Table 4.9. The estimates are from 14 separate weighted linear probability models with robust standard errors, clustered at the city level. An additional 4 estimates are presented at the bottom of the table for additional candidate, not used in the analysis. All 18 specifications include control variables for urbanisation (4 categories), along with cohort and province fixed effects.

Regression	**Dependent variable**	SEZ_{PR}^{CC}	
(1)	Educ. reform exposure	0.021	[0.031]
(2)	Father: ≥9 years of education	0.031*	[0.016]
(3)	Parent: Business	0.038***	[0.010]
(4)	Parent: Manager	0.007	[0.008]
(5)	Windfall gains	0.021**	[0.008]
(6)	Disp. income	0.036***	[0.008]
(7)	Savings rate	0.031	[0.061]
(8)	Wealth	0.045***	[0.010]
(9)	Net financial wealth	-0.029	[0.018]
(10)	Filial piety	-0.010	[0.032]
(11)	Socialization	-0.006	[0.053]
(12)	Trust	-0.123*	[0.064]
(13)	Fin. risk tolerance	0.096*	[0.055]
(14)	Fin. Literacy	0.104***	[0.034]
(*)	Mother: ≥9 years of education	0.070***	[0.020]
(*)	Subsidy receivership	0.006	[0.014]
(*)	Social expenditure	0.344***	[0.088]
(*)	Earnings uncertainty	-0.002	[0.006]
		31,348	

Chapter 5

Financial Inclusion and Well-being in China

5.1 Introduction

The importance of financial inclusion is widely recognized in academic and practitioner studies (Sarma, 2008; Gretta, 2017; Damodaran, 2013), and there is research consensus over its influential impacts on eradicating poverty and inequality by improving access to formal financial products and services for all households (Park and Mercado, 2015). This study expands on this well-established, mainstream viewpoint and critically explores the relationship between financial inclusion and happiness in Chinese households, utilizing microdata from the 2015 Chinese Household Finance Survey (CHFS) to investigate the effects of financial inclusion on subjective well-being/happiness. This study incorporates a range of regional macroeconomic indicators with emphasis on relative income and proxies for formal and informal finance to differentiate Chinese households by financially included and excluded groups, which enables a more comprehensive understanding of how financial inclusion affects subjective happiness. This study examines 32,541 Chinese household data samples that include 23,562 financially included and 8,979 financially excluded households. I perform baseline, ordinal, OLS, and instrumental-variable regressions with instrumental-variable causal mediation analysis to explore how financial inclusion affects the subjective happiness of Chinese households.

The main thematic contributions of this study add to existing household economics, income, wealth, investment, and portfolio management studies, providing new insights on how various macroeconomic aspects of financial inclusion affect the happiness of Chinese households. This is especially important for the academic field of household finance, contributing new insights beyond traditional mainstream economics and the influential role of households in finance's relationships with inequality (Guiso and Zaccaria, 2021) and economic growth (Alieva, 2021). The findings on the relationship between financial inclusion and happiness contribute to the emerging field of Chinese household finance studies, addressing the research gap regarding China's rapidly changing financial environment since its 1978 economic reform, particularly in relation to how subsequent financial developments affected financial

inclusion and happiness in Chinese households. Additionally, this study adds to the academic debate over the measurement of happiness, as illustrated by Easterlin's (1974) happiness paradox and the Van *et al.* (2004) satisfaction calculus approach; it also supports the measurement of happiness in Clark *et al.* (2008) in relation to relative income and socioeconomic status by extensively measuring the relationship between happiness and financial inclusion factors.

In addition, this study addresses the unresolved question over whether and how financial inclusion directly affects the subjective well-being/happiness of Chinese households. Numerous empirical studies examine the relationship between financial inclusion and subjective well-being in other countries, such as in Martinez *et al*. (2020), which measures how financial inclusion via job stability, income, and financial products/services consumption patterns affects mental health and subjective well-being in Columbian households. Mukong and Amadhila (2021) measure how location- and gender-based financial inclusion constructs affect the subjective well-being of Namibian households, and Storchi (2020) measures how financial inclusion affects the material, relational, and subjective well-being of Kenyan households. Furthermore, this study addresses the research gap in the relationship between financial inclusion and happiness in Chinese households, especially in recent years, after three decades of rapid financial infrastructure developments that substantially enhanced financial inclusion in previously excluded Chinese regions. This study develops a financial-inclusion proxy under formal and informal financial ratio components, performs an OLS regression analysis to determine baseline specifications, and performs an instrumental variables regression analysis to examine the correlation between key financial inclusion instruments and the subjective well-being/happiness of Chinese households. Furthermore, this study addresses the research gap in the relationship between financial inclusion and happiness in Chinese households, especially in recent years, after three decades of rapid financial infrastructure developments that substantially enhanced financial inclusion in previously excluded Chinese regions. This study develops a financial-inclusion proxy under formal and informal financial ratio components, performs an OLS regression analysis to determine baseline specifications, and performs an instrumental variables regression analysis to examine the correlation between key financial inclusion instruments and the subjective well-being/happiness of Chinese households.

This study uses information from the financial-inclusion questions in the 2015 China Household Finance Survey (CHFS), which was administered to a representative sample of more

than 30,000 Chinese households. The survey includes questions on subjective well-being, alongside a set of individual characteristics, such as income, wealth, education, age, gender, marital status, number of children, and financial risk attitudes.[43] In order to capture subjective well-being, I use a standard self-assessed happiness scale and group the answers into five categories (1-"Very unhappy," 2-"Somewhat unhappy," 3-"Neither happy nor unhappy," 4-"Somewhat happy," and 5-"Very happy"). Financial inclusion information is measured in a comprehensive survey that incorporates an extensive range of questions related to financial behavior, status, and access to financial products/services categorized as formal or informal. Individual household characteristics including income, wealth, education, age, gender, marital status, number of children, and financial risk attitudes enable a thorough breakdown by individual/household characteristics.

I find that financial inclusion does affect the subjective well-being/ happiness of Chinese households, identifying a highly significant positive relationship ($p<0.01$). Further, it finds that financially included Chinese households are on average 17% more likely to be happier than financially excluded Chinese households. The access to formal finance is approximately 9% lower for financially excluded Chinese households, whereby access to informal finance is on average 26% higher than in financially included Chinese households, reinforcing the hypothesis that better access to formal finance mediates the relationship between financial inclusion and subjective happiness. I also find significant positive relationships between subjective happiness and gender (male), age, years of education, marital status (cohabiting/ married), number of children, sociability, and physical conditions. Under the determinants of financial inclusion, this study finds highly significant relationships among household relative income, wealth, net worth, and subjective happiness, especially among Chinese households in the highest income, wealth, and net worth distribution deciles. By applying regional macroeconomic indicators, this study finds highly significant relationships among subjective happiness, disposable household income, gross regional product per capita, inflation, and sunshine; it also finds significant relationships among subjective happiness, unemployment, social expenditures, and water emissions per

[43] The China Household Finance Survey (CHFS) is a nationwide sample survey project by the China Household Finance Survey and Research Centre (CHFSRC). It collects information on household finances at the micro level, including home equity and financial wealth, debt and credit constraints, income and consumption, social security and insurance, intergenerational transfer payments, demographic characteristics and employment, and payment habits, in order to provide high-quality micro-level household finance data for academic research and government policy-making, providing a comprehensive and detailed picture of household economic and financial behaviour.

capita. These relationships increase as the predictor variables of province fixed effects, individual characteristics, and net worth increase.

This study identifies a clear relationship between financial inclusion and happiness in Chinese households, developing the assumption that financially included Chinese households on average are happier than financially excluded Chinese households. Based on the identified financial-inclusion effects, I assume that household income, net worth, wealth, socialization, risk tolerance, trust and illiquid asset rates are the best predictors of subjective happiness among financially included and excluded Chinese households. In terms of financial resilience, the casual mediation analysis suggests that liquid asset ownership rates have strong predictive power over the relationship between financial inclusion and subjective happiness. The findings of the instrumental variable regression identify bank account and credit card ownership as the proxy for financial inclusion; I identify access to formal banking/financial institutions as access to formal finance and any alternative forms of access as access to informal finance. The findings assume that these criteria represent the best fit for determining a proxy for financial inclusion, formal finance, and informal finance, drawing from the measurement constructs in empirical studies that offer the most pragmatic approach in research instrument design.

To start with, I perform OLS regression to estimate happiness with individual characteristics and wealth, gradually with controlled macroeconomic environment measures including gross regional product per capita, income inequality, unemployment, inflation, social expenditure, sunshine, and water emissions per capita. The results identified significant relationships with gross regional product per capita, unemployment, sunshine, and water emissions per capita, demonstrating positive regression coefficients when applied with province fixed effects, individual characteristics, and net worth controls. Alternative proxies for financial inclusion incorporate formal-finance-to-total-finance and informal-to-total-finance ratios, identifying highly significant relationships among happiness and the baseline results of formal finance and informal finance, as well as demonstrating positive regression coefficients with individual characteristics and province fixed effects when controlled with household income and net worth. The instrumental variable regression measures coefficient regression on subjective well-being/happiness across three panels that include financial inclusion, formal finance, and informal finance. The selection of dummy variables, including living near a bank (NB), distance between home and banks (DtB), and financial literacy (FL), finds various statistically significant relationships with subjective happiness across all three panels.

I check the robustness of this study findings by examining how core regression coefficient estimates behave when I change input values (Rosenhead, 2002). This occurs when designing the instrumental variable regression analysis that measures the effects of proxies for financial inclusion, formal finance, and informal finance on subjective well-being/happiness. The use of NB, DtB, and FL as mentioned produces relatively statistical dispersion with effects on financial inclusion (19.7%, 11.9%, and 9.7%), formal finance (23.7%, 20%, and 35.8%), and informal finance (-31.7%, -30.4%, and -33%). Applying Lewbel's (2012) (LBW) method without any traditional instruments and with two instruments within Lewbel's framework (DtB and FL) also reinforces the strong robustness of regression results, identifying marginal statistical dispersion effects on financial inclusion (2.3% and 2.6%), formal finance (3.1% and 3.7%), and informal finance (-3.3% and -3.9%), respectively. The robustness testing indicates high robustness and reliability of data sets in spite of mimicked extreme environmental conditions, reflecting sufficient robustness to outliers, non-normality, and nonconstant variance/heteroskedasticity, which enhances the validity of the research findings. The highly robust findings also reflect the strength of statistical testing throughout the regression processes, generating valuable insights despite potential alteration of fundamental assumptions (McKean, 2004).

The findings in this study contribute to the literature on Chinese household finance, financial inclusion, and subjective well-being/happiness. This is the first study to establish a large significant positive effect of financial inclusion on happiness in China. I expand the work of Funke *et al.* (2022) and find that financial resilience among Chinese households mediates the relationship between financial inclusion and happiness. The direct policy inference is that financial sector development that caters to strengthening the financial resilience of the Chinese population is likely to have lasting welfare-enhancing effects.

The remainder of this study is organized as follows. *Section 2* provides the conceptual details of measuring happiness and reviews the relevant literature. *Section 3* presents the data and summary statistics. *Section 4* presents the empirical strategy, and *Section 5* provides the results of the estimation. *Section 6* describes conclusions.

5.2 Background and Literature

Happiness is a vital element of living and offers practical value in the design of public policies (Johns and Ormerod, 2007). According to the happiness paradox in Easterlin (1974), happiness measured at a point in time varies directly with income both among and within nations, challenging the idea that happiness over time is not positively correlated with the continuous growth of income. Easterlin (1974) proposes that there is a contradiction in the measurement of happiness at a point in time via a cross-sectional time-horizon approach and in a longitudinal time-series approach. Many scholars criticize Eaterlin's (1974) happiness paradox, and Stevenson and Wolfers (2008) argue that the paradox fails to isolate statistically significant relationships between happiness and economic growth over time. Their study finds a positive statistical correlation between happiness and income. Sacks *et al.*, (2012) also criticizes the happiness paradox, stating that the measured data on happiness should differ by person and country, highlighting the influence of other social, cultural, and political factors that directly affect happiness beyond the economic approach in Easterlin (1974).

According to the review of empirical literature on measuring happiness, many studies find positive correlations between individual income and happiness. in Clark *et al.* (2008), which further expand on the measurement of happiness in relation to income to suggest that it is more accurate to measure income relative to others under the concept of social comparison, or to oneself in a previous stage in the past under the concept of habituation, the findings contribute to the emerging economics of happiness literature, where one's current income level is a strong predictor of happiness, highlighting the role of current labor market environments, employment status, and economic growth. Kahnman and Deaton (2010) challenges the idea that low-income individuals have a higher likelihood of unhappiness due to nonfinancial factors such as divorce, ill health, and loneliness, whereby high-income individuals are able to buy life satisfaction but not real happiness. *Figure 5.1* plots the distribution of subjective well-being around the world in the year 2015. Among the 147 countries from the world, which shows the average scores form responses in the Cantril scale ranging between 0 and 10 presented. Whereas China presented in an average level.

[Insert Figure 5.1 about here]

5.2.1 Income and happiness

Paul (2022) examines the effects of subjective well-being on income, proposing direct and indirect linkages between subjective well-being and income levels in areas of stimulated work efficiency and the allocation of time for paid work. Paul (2022) utilizes data from the Australian HILDA panel survey between 2001 and 2014, finding that subjective well-being has a positive and significant effect on one's capability to generate more income and reduce time spent on paid work. The relationship between income and happiness has long been studied across economic, psychologic, and social science realms. For example, Easterlin (1995), Frijters *et al.* (2004), and Stevenson and Wolfers (2008) find various relationships among income and experienced levels of happiness. Despite a lack of consistent findings when measuring how income affects happiness, the reversing effects of happiness on one's income is highly consistent and positive in nature. The reverse causality effect is explained under the assumption that when happiness increases, self-esteem increases, thereby increasing one's creativeness, discipline, and cognitive abilities, which in turn improve economic and strategic performance (decision-making), resulting in increases income and fulfillment of personal or career ambitions (Paul, 2022). Cummins (2000) also explores the relationship between income and subjective well-being under the homeostatic theory; that study argues that subjective well-being traditionally stays within a narrow range determined by one's personality. Cummins (2000) also finds a positive and significant relationship between personal income and subjective well-being, to the extent that external resources permit the optimal functioning of a homeostatic subjective well-being system.

McBride (2001) proposes that one's subjective well-being largely depends on their relative income levels, finding sufficient micro-level evidence supporting the hypothetical assumption and that relative income has a profound and positive effect on one's subjective well-being. Moreover, McBride (2001) finds that the relationship between relative income and subjective well-being strengthens when relative income levels increase, and it weakens for people at lower relative income levels despite apparent correlations between relative income and subjective well-being. Chang (2013) reinforces McBride (2001) and the economics identity model proposed in Akerlof and Kranton (2000), arguing that an increase in relative income levels results in a subsequent increase in one's positional identity, thus raising his/her subjective well-being due to the occurrence and importance of social comparisons. The importance of social comparisons and self-expectations behind the relationship between relative income and subjective well-being is further elaborated in China. Wang et al. (2019) find that Chinese people, especially those in urban regions, are highly influenced by relative income based on perceived

social comparisons and self-expectations. Wang et al. (2019) utilizes 4,857 samples from individual surveys in the 2015 Chinese General Social Survey, finding that relative income is a strong predictor of subjective well-being. Asadullah *et al.*, (2018) echoes this, whereby data from the 2005-2010 Chinese General Social Survey indicates a positive and significant relationship between relative income and subjective well-being, especially for women despite being poorer on average than men.

As more research explores the relationship between income and happiness/subjective well-being, an emerging branch explores the relationship between happiness and poverty (Rojas, 2004; Lever, 2004; Benfield, 2008). According to Rojas (2004), the well-being of humans measured under a subjective (subjective well-being) approach often adopts an inferential approach in the literature, whereby studying subjective well-being requires participants to declare their subjective well-being and does not require researchers to make actual assessments of participants' subjective well-being. Therefore, it is inevitable that studies of subjective well-being require participants to assess their own happiness or satisfaction with life accurately, which poses key limitations in research design, as inherent subjectiveness is involved and dictates one's perceived subjective well-being (Rojas, 2004). Subsequently, Rojas (2004) argues that subjective well-being and socioeconomic positions represent fundamentally different subjects, and thus correlation between the two is not justified. However, Benfield (2008) challenges Roka's critique of subjective well-being research designs, arguing that despite the potential occurrence of households classifying themselves in the objectively defined determinants of poverty, the subsequent outcomes on their evaluations of life satisfaction, happiness, and subjective well-being do not differ. According to Benfield (2008), a household's perception of its vulnerability, adaptive expectations, educational attainment, and labor market illustrates more meaningful and objective approaches to poverty measurement, whereby objective perceptions of poverty should not be undermined by the potential drivers behind self-proclaimed poverty status for economic gains.

Lever (2004) studies poverty's relationship with subjective well-being in Mexico and finds that poor and moderately poor Mexican households show only a low correlation between income and subjective well-being, indicating that social surroundings, personal development, and nonfinancial couple relationships predict socioeconomic status; it thus does reveal a clear (strong) relationship between poverty and lower subjective well-being. Main (2014) further explores the relationship between poverty and subjective well-being among children in England.

It utilizes school-based surveys and measures poverty under a child-derived index of material deprivation and the number of children living in the same household to qualify for lesser privileged, minimum income levels. Main (2014) finds that poverty is an important predictor of subjective well-being among children, but the child-derived index has far more predictive power for subjective well-being, reinforcing Cummins (2000), which acknowledges that the relationship between income and subjective well-being is confounded by other mediating factors. Asadullah and Chaudhury (2012) measure the relationship between relative poverty and subjective well-being in rural Bangladesh, finding that households with lower incomes than their neighbors are more likely to report lower life satisfaction and thus lower subjective well-being. In consideration of all Bangladeshi households that are objectively defined as poor, the differences in subjective well-being are lower than in regions where poor households are living among middle-class or affluent households (Asadullah and Chaudhury, 2012), further highlighting the mediating role of social comparison, as Akerlof and Kranton (2000) mention.

In the context of China, Wang *et al.*, (2011) measured the relationship between absolute poverty and subjective well-being amongst the elderly population in China, finding that over 16% and 11.5% of the Chinese elderly population to rate their life satisfaction as poor or very poor, positing a strong predictor of Chinese elderlies who are in poverty. Wang *et al*., (2011) challenged the lack of absolute poverty emphasis in the social policies of China, highlighting on the importance for establishing a policy system that addresses poverty and elderly care which represent two predictors of poor subjective well-being. The findings of Wang *et al*., (2011) study reinforces the previous findings of Zhang *et al*., (2008) study, which founded that elderly individuals in economically depressed regions of China are more likely to have low subjective well-being, self-rated health and received social support. Zhao and Xia (2021) study utilized survey data from 633 households across China's poorest central and western rural regions, finding that village poverty governance has a positive and significant relationship on the subjective well-being of non-poor households, substantially higher than the insignificant impacts identified on the poorest households. Wu and Tang (2022) also studied the relationship of poverty and subjective well-being in the high poverty concentrated agro-pastoral economic regions of norther China (Duolun Country, Inner Mongolia, China), finding a weak relationship between poverty and subjective well-being as other factors better predict subjective well-being including health, formal education and age. In general, numerous studies have attempted to explore the relationship between poverty and subjective well-being in China, especially amongst

rural regions where poverty is most concentrated. However, there is an identified research gap where a lack of studies have been conducted on measuring poverty against subjective well-being in poverty households of urban cities, illustrating a key gap for future studies to contribute to.

5.2.2 Finance and happiness

The concepts of happiness and subjective well-being can be measured from macroeconomic perspectives. As Di Tella *et al.*, (2003) shows, happiness is influenced by monotonic increases in income. Prior to Di Tella *et al.*, (2003), there was a research gap regarding the relationship between subjective well-being and macroeconomic environments, as the majority of empirical studies measure individual and community feelings rather than the wider macroeconomic environment (using the inflation rate of unemployment). Dolan *et al.*, (2008) reinforce this via a systematic review of economic literature about subjective well-being, finding that many economists measure subjective well-being with discrepant constructs such as "employed versus unemployed," "single versus in a relationship," "higher education versus no higher education," etc. Therefore, the literature does not adequately explore the relationship between macroeconomic situations and happiness/subjective well-being. Nonetheless, according to Di Tella *et al.* (2003), there is strong evidence that subjective well-being has a negative relationship with inflation and unemployment. Also, there is a common structure of well-being across different countries, whereby individuals who are unemployed, widowed, separated, or not married are more likely to have lower subjective well-being, and individuals in the highest income brackets are most likely to have the highest subjective well-being.

Di Tella *et al.*, (2003) provided importance foundation to future studies that attempted to explore the relationship between finance and subjective well-being from a macroeconomic perspective, as shown in the study of Ng and Diener (2014) that found financial satisfaction as a key predictor to one's subjective well-being and postmaterialist needs. According to Ng and Diener (2014), financial satisfaction represents the strongest predictor for one's life evaluation, whereby one's perceived levels of respect represented the strongest predictor for positive feelings as both measures also predicted negative evaluation/ feelings. The relationship between financial satisfaction and subjective well-being is also addressed in Ngamaba *et al.*, (2020) meta-analysis of empirical studies, finding a significant and positive relationship across 24 studies conducted on the overall association between financial satisfaction and subjective well-being. As for the country context of China, Li *et al.*, (2022) study utilized data from 49,097

participants in the 2017 to 2020 World Values Survey, finding that highly restrained societies (measured by Hofstede's (2011) cultural dimension model's indulgence vs restraint level) like China are highly influenced by the mediating effects of financial satisfaction on one's subjective well-being levels. Additionally, it is founded that the ability to savor the moment amongst Chinese people would not only result in higher subjective well-being, but it is also highly amplified by the mediation impacts of financial satisfaction, insinuating a strong, positive correlation between one's satisfaction over financial statuses and their capability to enjoy life, savor the moment and to reach higher subjective well-being (Li *et al*., 2022).

Smith *et al*., (2005) test the hypothesis that financial status affects subjective well-being using a cross-sectional approach; they find that financial status buffers perceived well-being especially after becoming disabled. Smith *et al*., (2005) utilize data from health and retirement surveys and find that research participants with above-median net worths have smaller declines in well-being after discovering a disability than do research participants with below-median net worths. Smith *et al*., (2005) opens up new insights on how other conditions mediate the relationship between finance and subjective well-being despite a positive correlation between finance and subjective well-being. However, Gardarsdottir *et al.*, (2009) argue that there is a lack of consistent evidence to validate the relationship between finance and subjective well-being, especially given the multifaceted nature of financial goals/statuses and accomplishments. According to Gardarsdottir *et al*., (2009), which studies 145 students and 261 professional employees from the UK, there is some evidence of a positive relationship between financial goals (an indicator of financial success) and subjective well-being, but the link becomes nonsignificant with the inclusion of money motives. Alternatively, Gardarsdottir *et al.* (2009) propose that financial pursuits aimed at improving subjective well-being negatively predict actual well-being, thereby distinguishing the role of money from the pursuit of well-being, as happiness and success motives better predict subjective well-being.

According to Mukong and Amadhila (2021), financial inclusion facilitates inclusive growth, enhanced livelihoods, and poverty reduction, providing a clear rationale for the assumption that financial inclusion increases subjective well-being. Mukong and Amadila (2021) measure the relationship between financial inclusion and household well-being utilizing data from the 2017 Namibia Financial Inclusion Survey and identify a positive and significant relationship, especially among households with higher education levels (financial literacy) and access to financial services that could enhance their investments in productive assets and benefit

from asset growth. Sakyi-Nyarko *et al*., (2022) also measure the predictive power of financial inclusion on subjective well-being via four dimensions of financial availability, accessibility, usage, and quality; they find a positive correlation with subjective well-being irrespective of a performed control testing for endogeneity; they also identify positive correlations among financial inclusion and food accessibility, medical treatment availability, cash income, and school attendance. Sakyi-Nyarko *et al*., (2022) argue that financial inclusion involves more than one specific financial product or service, as the research design of studies measuring financial inclusion impacts are required to incorporate defined features in financial services delivery.

Meng and Xiao (2022) attempted to measure financial inclusion's relationship with subjective well-being under the lens of digital finance, utilizing data from the China Household Financial Survey and the Peking University Digital Financial Inclusion Index to measure the impacts of digital finance on happiness. The findings of Meng and Xiao's (2022) study indicated that digital finance is negatively associated to one's happiness levels, indicating that improved access to digital finance services have increased one's financial risks via high debt burdens and overspending behaviours, which translates into lower happiness and subjective well-being. Similarly, Wu *et al*., (2022) also attempted to explore the relationship between financial inclusion and subjective well-being under a digital lens, focusing on the mobile payment sphere whereby drastic improvements in the financial system and information communication technology system infrastructures have fostered higher financial inclusiveness amongst rural Chinese households. The mobile payment usage rates in rural regions of China are measured against the subjective well-being of rural residents, finding a positive correlation between mobile payment usage and subjective well-being particularly amongst socially vulnerable individuals/ groups namely the elderlies, poorer educated and low-income households (Wu *et al.*, 2022). The positive effects of mobile payment are found to be partially explained by subjective well-being of rural residents in China, as the mediating roles of reduced transaction costs, consumption upgrades and facilitated improvements in social networks are found to have greater effects on subjective well-being (Wu *et al.*, 2022). Similarly, despite numerous studies conducted to explore the relationship of financial inclusion and subjective well-being in rural Chinese regions, there lacks sufficient studies conducted on measuring financial inclusiveness in urban Chinese cities and its impacts on subjective well-being of previously financially excluded individuals/ communities.

5.3 Empirical Strategy

Starting with the notable variation in the descriptive statistics with the dataset of CHFS, the survey includes specific questions regarding inquired geographic residence about respondents' housing basis in detail to city [44]. Hence, I generate a proxy for precisely tracking individuals growing up path based on locating their residential housing. I examine the relationship between subjective well-being and financial inclusion using regression analysis. I perform regression analysis of subjective well-being based on the following general empirical model:

$$WB_i = \alpha + \beta_1 FI_i + \beta_2 W_i + \beta_3 X_i + \varepsilon_i \quad (1)$$

where WB_i denotes household subjective well-being, which is an ordered variable taking values from 1-5; FI presents a series of financial indicators such as the financial inclusion of household, formal finance and ratio of informal to total finance; W refers to household income and household wealth; X is a vector of control variables that may influence subjective well-being of household, I also include province fixed effects in the model to control for regional differences within China. Since fixed effects are included, I employ linear probability models with city-level clustered standard errors. The parameter of core interest is β_1, which denotes the effect of financial inclusion on subjective well-being. The primary estimation model is OLS which assumes WB is a linear variable. I also estimate ordered probit models for robustness, which accounting for ordinal subjective well-being. In addition to the basic specification in Equation (1), I estimate specifications that include controls for individual income and wealth characteristics. As we will see in the following section, the estimates are quite robust to the precise choice of specification.

5.3.1 Instrumental variable regressions for well-being

Moreover, I use instrumental variable (IV) regressions to assess the impact of financial inclusion on subjective well-being. The first-stage equation is described by equation (2), with equation (3) describing the second-stage equation:

[44] The depictive of the questions were: (1) "*Is this housing in [all provinces list] provinces and ____ city?*". (2) "*is the house in ____ city _____ province?*".

$$FI_i = \varphi_0 + \varphi_1 Z_i + \theta_i + \gamma_i + \delta_i + \epsilon_i \quad (2)$$

$$WB_i = \gamma_0 + \gamma_1 \widehat{FI_i} + \theta_i + \gamma_i + \delta_i + \epsilon_i \quad (3)$$

where Z represents the list of variables used to instrument financial inclusion. I experiment with 2 main variables, namely financial literacy and living near a bank, both as a dummy variable (i.e., within one kilometer) and as a continuous variable capturing distance from home to bank in kilometers. Financial literacy is captured via the standard Big 3 questions of inflation, interest compounding and the understanding of financial risk (Lusardi and Mitchell, 2014; Klapper *et al.*, 2015). Intuitively, I anticipate that the more financially literature and those living nearer to a bank are more likely to be financially included. Furthermore, I applied the method proposed by Lewbel (2012) which is differential with traditional instruments. I expect that the two instruments are not correlated with the unobserved determinants of subjective well-being.

I assert that districts with economically developed area may also have better financial development, so that average financial inclusion will tend to be higher subjective well-being where there has less distance to bank. I instrumented them two and one is used in two versions. These instrumental variables are likely to be associated with financial inclusion in terms of exposure to financial institution and financial knowledge. The parameter captures the causal effect of financial inclusion on subjective well-being.

5.3.2 Causal mediation analysis model

In the final section, I examine the likely mediators of the relationship between financial inclusion and subjective well-being. Therefore, I employ causal mediation analysis to study the potential mediating channels. Following Dippel *et al.* (2021). I expand the instrumental-variables model with the equations below[45]:

$$M_i = \omega_0 + \omega_1 \widehat{FI_i} + \theta_i + \gamma_i + \delta_i + \epsilon_i \quad (4)$$

$$WB_i = \rho_0 + \rho_1 \widehat{M_i} + \widehat{FI_i} + \theta_i + \gamma_i + \delta_i + \epsilon_i \quad (5)$$

[45] Appendix 5B presents an overview and an illustration of causal mediation analysis following Dippel et al. (2021).

The Appendix 5B presents the causal mediation analysis model in greater detail. As previously discussed in Chapter 2, the list of mediating variables *M* includes household income, net worth, wealth, socialization, financial risk tolerance, trust, filial piety, financial resilience, liquid asset rate, and the illiquid asset rate. These variables are included as a mediator in the specification of equation (5) one at a time. The coefficient of primary interest is ρ_1, i.e., a significant mediating variable that renders the effect of financial inclusion on subjective well-being insignificant.

5.4 The Effect of Financial Inclusion on Happiness

According to previous research by scholars, financial inclusion raises residents' income which will have an impact on residents' happiness, which is a crucial element of the battle against poverty and the goal of inclusive development (as a precondition for well-being and happiness), which has led to a greater emphasis on financial inclusion policies and initiatives. In order to formulate policies and assess the efficacy of programmes, it is essential to have data covering the key aspects of sustainable development and financial inclusion (GPFI, 2016).

5.4.1 Does Financial Inclusion Affect the Subjective Well-being?

Table 5.1 presents baseline estimates of the relationship between financial inclusion and subjective well-being, which reported a significant effect[46]. I perform an ordinary least squares (OLS) regression with the subjective well-being that ranging between 1 (very unhappy) and 5(very happy) as the dependent variable. As the results shown in column (1), financial inclusion is positively and significantly associated with subjective well-being. The coefficient is 0.17 and is statistically significant at the 1% level, which only controls for financial inclusion. These results remain statistically significant when controlled for province fixed effects in column (2), which denote 0.183. Then specification of column (3) adheres additional controls for the individual characteristics.[47] Moreover, in column (4) add household disposable income to the

[46] In the *Appendix Table 5A1*, it is also shown the associations are also confirmed in the weighted correlation matrix.

[47] I control for individual characteristics including age, marital status, number of children, single-child status, proximity to parents, years of education, sociability, physical condition, labour market status, and urbanization.

specification of column (3). Despite becoming smaller in magnitude compared to the baseline effects, the coefficient of 0.09 is statistically significant at the 1% level. In column (5), include household net worth as a control variable in column (4) as additional variable, which remain the effect in of economically significant at the 1% level. In column (6) of Table 5.2, which incorporate control all the variables in the regression.

The results indicate that males have significantly lower levels of well-being than females, which may be related to traditional divisions of labor in China, where the average male resident is under more pressure in life. In addition, there is a significant U-shaped relationship between age and happiness, which may occur if middle-aged people feel more pressure from family and work, making their happiness lower. Furthermore, a significant increase in the number of children may affect happiness, and good social relationships can enhance the happiness of residents. The impact of household income and net worth suggests that increases in income produce increases in happiness and the positive impact relative to income is greater[48].

[Insert Table 5.1 about here]

In *Table 5.2*, I present the marginal effects of the three distinctive financial inclusion proxies, namely financial inclusion, formal finance and informal finance on subjective well-being. Robust standard errors, clustered at the city level are presented in brackets. The marginal effects presented correspond to the 5 response categories or the original dependent variable for subjectively well-being, which ranges from 1 (very unhappy) to 5 (very happy). Panel A presents marginal effects stemming from the coefficients of an ordered probit model. Panel B presents marginal effects from a generalized ordered probit model, which removes the parallel line assumption for the effect of the financial inclusion proxy across the 5 response categories. Columns A_1 to A_5 of each Panel report estimates measuring the changes in the probability of being in each category ("Very unhappy" "Somewhat unhappy" "Neither happy nor unhappy" "Somewhat happy" "Very happy"), and also report the ratio between the average marginal effect of each financial inclusion proxy divided by the predicted probability of the model for each response category. Moreover, I present the plots of the marginal effects of financial inclusion, formal finance and informal to total ratio in *Figure 5.2*. The estimates in both panels of *Table 5.2* for all 3 sets of models-proxies reinforce the robustness of previous findings, providing us

[48] *Appendix table 5A2* presents all the control variables.

with an informative additional insight regarding the magnitude of the effects of financial inclusion on each happiness category.

[Insert Figure 5.2 about here]

The marginal effects reveal that the financially included are -29.6% less likely to be in the bottom happiness category in column A1 or -39.4% less likely in column B1 for the generalized ordered probit model. The marginal effects of the other financial inclusion proxies are of similar magnitudes, i.e., minus 35.6%-36.1% for formal finance, and minus 41.1%-47.3% for informal to total finance ratio. Accordingly, the financially included are 6.5%-18% more likely to be in the top happiness category. The effects for formal finance are in magnitudes of 8.7%-24.2%, and for the informal to total finance ratio are in the magnitude of minus 17.6-27.5%. The changes in the magnitudes of the marginal effects for the intermediate categories are non-linear, but the magnitudes are meaningful and the effects are intuitive. Thus, the estimates confirm the robustness of findings in Table 5.2, as financially included individuals are more likely to be in the top happiness categories and less likely to be in the bottom happiness categories.

[Insert Table 5.2 about here]

To provide an interpretation of the relationship between income and subjective well-being at both the micro and macro levels, consistent with Clark *et al*. (2008), who stated that an increase in income places an individual in a better position relative to others, and that the individual perceives this improvement positively (i.e., happy with change). Therefore, I conduct an exercise to confirm the relationship between financial inclusion and well-being, by gradually adding control variables that approximate relative income via the average disposable household income across 168 cities, by urbanisation and gender, employment status (10 categories), and age (5 groups). I compute the average income across these categories and include it as an additional control in column 1 of Table 5.3. Then, in column 2 compute and include the average wealth based on these criteria. In column 3, which perform the same exercise using relative net worth, based on the same characteristics. In columns 4-6, include controls for the rank of the individual in the relative income distribution. I use relative income rank in column 4, i.e., income decile by city of residence. Then, I use relative wealth rank, i.e., household wealth decile by city of residence, in column 5. Finally, in column 6, I use the net worth rank, i.e., the decile of the difference between household wealth minus household liabilities, by city.

In *Table 5.3*, it presents the ordinary least squares (OLS) estimates for happiness, controlling for the three distinctive relative income proxies and the three respective relative rank proxies. All specification control for province fixed effects and individual characteristics, i.e., those of Table 5.1. As shown in the first three columns of Table 5.3, the estimates for composite proxies of relative income are positive, and similar in magnitudes to those of the primary income proxy. If both household income and the relative income increase, a positive impact would deliver on happiness. Hence, individuals in China appear to be happier if their peers are better off. That might have to do with the quality of the surrounding environment, e.g., if individuals are living in better neighbourhoods. It could also be related to the 'tunnel effect' (Hirshman, with Rothschild, 1973), in which in emerging markets in particular (Senik, 2004; 2008) individuals might see the progression of their peers as conducive to prospects of own upward mobility according to the POUM hypothesis (Bénabou and Tirole, 2002; 2003).

[Insert Table 5.3 about here]

In contrast as Huang *et al.*, (2015) found the positive association of absolute in come with the happiness whereas relative incomes in negatively associated with happiness. The estimates presented in column (2) that household wealth have a statistically significant effects on well-being. Moreover, I conduct the relative net worth as the independent variable in the column (3), and the association between the well-being and relative net worth is still positive, but weaker than relative wealth and relative income. Furthermore, compared with relative income, relative wealth and relative net worth, I show the estimates of income decile by city of residence in column (4), wealth decile by city in column (5), and net worth decile by city in column (6), respectively. In particular, the regression results of household income decile by city, net worth decile by city and net worth by city are denote the positively statistical significant of well-being, to compare with the results in column (1), (2) and (3), which suggest the association between income (as well as wealth and net worth) and well-being demonstrated positively relationship with subjective well-being. However, the association is weaker between wealth and association than association between income and well-being. Overall, it shows that financial inclusion does it has actually lowered the barriers to accessing financial services, thereby increasing the well-being while financial inclusion enhanced.

Furthermore, I am performing another regression in *Table 5.4* by controlling a series of macro-economic variables. According to Nili *et al* (2015), subjective well-being is influenced

by a range of macroeconomic factors that highlights apparent differences in age, gender and social environmental perceptions toward the stimulated levels of subjective well-being. As expected from the previous experiments, Columns (2) and (4) of Table 5.4 replicate the well-established specification in column (1) and column (3) that the financial inclusion is associated with well-being in the state of the macroeconomy (gross regional product per capita, income inequality that defined as the standard deviation of disposable household income by city, inflation, social expenditure[49] (i.e., unemployment insurance expenses as a percentage of the gross regional product) and additionally add environment variables (i.e., monthly sunshine hours (divided by 1,000) of major cities in each province; tons of total waste water discharged per capita in each province (multiplied by 100)). All estimates denote positively statistical significant effect on well-being, which emphasized the relevance of the macro-economic variables and environmental variables.

[Insert Table 5.4 about here]

The estimates in *Table 5.5*, confirm a positive relationship between formal finance and subjective well-being, informal-to-finance ratio is negatively associate with subjective well-being. The relationship is economically and statistically significant at the 1% level. Specifically, as shown in column (1) and column (4), without control variables, formal finance and informal-to-total finance ratio are associated with well-being. When individual characteristics and province fixed effects are controlled in column (2) and column (5), the results are still remained significant. In column (3) and column (6), I add marco-economic variables and environmental variables in control list, and both the results are robust. The findings indicate that both formal finance and informal-to-total finance ratios have a highly significant relationship with subjective well-being, as indicated in row 1 and 2 where all coefficients fall within the 1% level of significance. In column 1 and 4, the baseline regression results of formal and informal-to-total finance ratios are shown as column 2 and 5 exerts specification controls with the inclusion of household income, net worth, individual characteristics and province fixed effects, column 3 and 6 incorporated additional macroeconomic variables previously used in table 5.5. The relationship between disposable household income and subjective well-being is found to be statistically significant when applied with macroeconomic variables for both formal and

[49] When thinking about the way unemployment and inflation affect the economy I could start by citing the former President of the USA, Gerald Ford: "*After all, unemployment affects only 8 percent of the people while inflation affects 100 percent*" (Hibbs, 1979: 708).

informal-to-total finance ratios, reinforcing D'Ambrosio *et al*s' (2020) recognised effects from disposable household income to subjective well-being.

[Insert Table 5.5 about here]

To establish a causal relationship between financial inclusion and subjective well-being I employ an instrumental variable approach. I first examine whether the living near a bank (<1 km), the logarithm of the distance to a bank (in kilometres), and financial literacy exert association with financial inclusion proxies, these results are presented in the *Appendix Table 5A3*[50]. Panel A presents the estimates for financial inclusion, panel B present the estimates for formal finance, and panel c presents the estimates for the ratio of informal to total finance. The first three columns show the effect of each of the instruments one at a time on financial inclusion, controlling for several characteristics. Then the 4th column of each panel uses financial literacy and the logarithm of the distance to bank simultaneously as instruments. While the distance to bank is intuitively a reasonable instrument for financial inclusion, the motivation to use financial literacy stems from the literature. Namely, Xu *et al*., (2020) show a more frequent lack of formal credit accessibility amongst financially illiterate individuals in China, along with a higher likelihood to access informal finance. Klapper, et al. (2013) show similar findings for Russia.

The estimates in the Appendix Table 5A3 confirm that the instrumental variables have a significant effect on financial inclusion, according to expectations, both when used one at a time and simultaneously. Indicatively, living near a bank exerts a 6.4% effect on the probability of financial inclusion, and financial literacy exerts a 8.3% effect, as calculated by the division of the respected coefficients with the linear prediction of each linear probability model.

Table 5.6 shows the second stage of the IV estimates for the CHFS sample. The instruments used involve living near a bank, the logarithm of the distance to bank, and financial literacy. In the *Appendix Table 5A4* we present the full estimates of Table 5.6, along with the

[50] In the *Appendix Table 5A3*, present results of the first stage IV regression for these three financial inclusion proxies.

tests for instrument validity. The latter tests at the bottom of the table show that, apart from being intuitively appealing, the instruments used are also statistically valid instruments[51].

Panel A of Table 5.6 presents the estimates for financial inclusion and Panel B for formal finance, and Panel C for informal-to-total finance ratio. In all three panels, Column A_1, B_1 and C_1 use a dummy variable for living near a bank (less than 1 kilometre) as the instrument for financial inclusion. Column A_2, B_2 and C_2 utilise the logarithm of the distance (in kilometres) between the home and the bank as the instrument for the two proxies for financial inclusion and the one proxy for financial exclusion, in each panel respectively. In columns A_3, B_3 and B_3 the instrument used is financial literacy. The results show a significant relationship effect of my three financial inclusion proxies on subjective well-being in China. Both financial inclusion and formal finance exert significant positive effects of large magnitudes in all three columns. The ratio of informal to total finance exerts a significant negative effect of large magnitude.

In Column 4, I use both financial literacy and the logarithm (distance to bank) as instruments for financial inclusion. Moreover, in columns 5 and 6, I present IV estimates Lewbel's (2012) method, with and without instruments, respectively. This technique allows the identification of structural parameters in regression models with endogenous or mismeasured regressors in the absence of traditional identifying information such as external instruments or repeated measurements. Identification is achieved in this context by having regressors that are uncorrelated with the product of heteroskedastic errors, which is a feature of many models where error correlations are due to an unobserved common factor. The greater the degree of scale heteroskedasticity in the error process, the higher will be the correlation of the generated instruments with the included endogenous variables which are the regressands in the auxiliary ('first stage') regressions. Using this form of Lewbel's method, instruments may be constructed as simple functions of the model's data. This approach may be (a) applied when no external instruments are available, or, alternatively, (b) used to supplement external instruments to improve the efficiency of the IV estimator.

[Insert Table 5.6 about here]

[51] I show the longer version of 2nd stage which represent instrumental-variable regression estimates in the *Appendix Table 5A4*. The battery of tests confirms that the instruments are strong, i.e. the F-test of the excluded instruments is well above the rule of thumb of 10 and the Kleibergen-Paap rk Wald statistic is large.

When using 2 instruments in column A_4, financial inclusion exerts a positive effect of 19.7% on subjective well-being, as denoted by the division of the coefficient of 0.383 with the linear prediction of the model of 3.6613. The effect is significant at the 1% level, and it remains significant at that level when using Lewbel's method, both without and with instruments in columns A_5 and A_6. Expectedly, the effect magnitude becomes smaller when using Lewbel's method, which is intended to primarily establish robustness in terms of significance. In column B_4, access to formal finance exerts an effect of 26.7% on happiness, significant at the 1% level. The effect remains positive and significant at the 5% level when using Lewbel's method in columns B_5 and B_6. In column C_4, an increase in the ratio of informal-to-total finance by 10 percentage points exerts an effect of -3.2% on happiness, significant at the 1% level. The effect remains positive and significant at the 5% level when using Lewbel's method in columns C_5 and C_6.

5.4.2 Causal Mediation Analysis

I have found that, inclusive finance can reduce the cost of financial services, optimise social financial resources and boost household income and consumption, while also reducing financial exclusion and informal financial participation, creating a fairer and more relaxed financial environment, increasing people's confidence in their future lives and ultimately realising the happiness effect of finance. In the estimates, I have established that financial literacy and living near bank are positively correlated with financial inclusion and effect on subjective well-being. In this section, I try to identify the potential mechanics of these relationship in the CHFS sample, by presenting IV mediating specification, in the context of equation (5). IV mediation model to assess the causal mechanisms behind the financial inclusion and subjective well-being, which following Pinto *et al.*, (2019). In the *appendix Table 5A5*, I show the second step out of the three steps required for causal mediation analysis, as illustrated in the *Appendix 5B*. The specification also includes province fixed effects and a constant term.

In *Table 5.7*, I conduct the exercise to test proposed mediator in the context of household income, net worth, household wealth, socialization, financial risk tolerance, trust, filial piety, financial resilience, liquid asset and illiquid asset. The coefficient reports the causal effect of financial inclusion adjustments mediators on subjective well-being, Relatively, the results

suggest that financial resilience, liquid assets exert mediating effect on happiness[52]. The estimate indicates that 1% drop in total financial resilience increases subjective well-being by 0.56 percentage point, which show the mediating effect is 1.14, which reaffirming Jayasinghe *et als*' (2020) argument that financial resilience plays a vital role in determining perceived life satisfaction levels. Moreover, liquid asset rate is found to have a highly significant relationship with household income, demonstrating strong mediation effect (1.08) on happiness and supports La Cava and Wang (2021) findings where liquid household assets is positively correlated to disposable income. Nonetheless, this also contributes to financial inclusion and subjective well-being literature as it is found to have strong mediating effects to predicting subjective well-being. Alternatively, illiquid asset rate is found to have a highly significant relationship with financial inclusion, conforming to Chen and Jin (2017) argument that financially included Chinese households have a preference of purchasing illiquid real estate assets and debt instruments, representing strong mediating effects between financial inclusion and subjective well-being/ happiness.

[Insert Table 5.7 about here]

5.5 Concluding Remarks

This study explores the relationship between household finance and happiness using a cross-sectional sample of Chinese residents from the 2015 China Household Finance Survey (CHFS). I find that financial inclusion improves individuals' subjective well-being. Individuals with higher levels of financial inclusion are significantly more likely to report greater levels of subjective well-being, especially among rural, low-income, and low-education groups, and they are less likely to report experiencing a formal finance engagement. The results are robust when using an IV model. The results reveal that greater financial literacy moderates how financial inclusion affects subjective well-being. The analysis also shows that living near a bank is associated with effects on financial inclusion that are economically and statistically important and robust. Examining the causal mediation of the established relationships, I apply a novel

[52] In the *Appendix Table 5A6*, I present all results that for the effect of 10 candidate mediator variables on well-being.

methodology developed by Pinto *et al.* (2019). I find that the effect of financial resilience and ratio of liquid asset exert a mediating effect.

The findings have several financial policy implications. First, further increasing the macro supply of inclusive finance improves residents' subjective well-being. Therefore, the policy-makers should continue to strengthen the construction of financial infrastructure and improve the inclusiveness of financial services. This will reduce financial risk, lower the costs of financial products, raise awareness about financial products, and thereby enhance the financial welfare of residents. Second, the policy-makers should improve credit resources for socially disadvantaged groups and alleviate credit exclusion. The policy-makers should accelerate the development of financial credit businesses, improve the construction of the personal credit system, and reduce the financial exclusion of disadvantaged groups by formal financial institutions. The policy makers should also improve the utilization of financial services, reduce the cost of financial services, and continuously expand the breadth and depth of financial services to improve the quality of financial services so they can benefit more households. Last, the policy makers should strengthen the dissemination of financial knowledge by developing an inclusive financial development system to enhance financial literacy, promote household financial market participation, optimize the allocation of social financial resources, and realize finance's effect on happiness by improving inclusion in the financial system.

The findings enable a clear inference regarding how inclusive finance can improve the well-being of the population. Therefore, policy makers should continue to support financial sector development aiming for greater financial inclusion of the population in China. This is also likely to lower the costs of financial products, raise awareness about financial products, and support the financial resilience of citizens, minimizing reliance to costly informal sources of finance, especially in times of need or emergency. Moreover, the policy makers can consider the availability of financial resources for socially disadvantaged groups in order to minimize reliance on informal finance providers. Affiliation with the latter provides is shown to exert a negative impact on well-being. Moreover, the generation of the personal and social credit system might entail the potential to reduce the financial exclusion of disadvantaged groups by formal financial institutions, especially if designed with that aim.

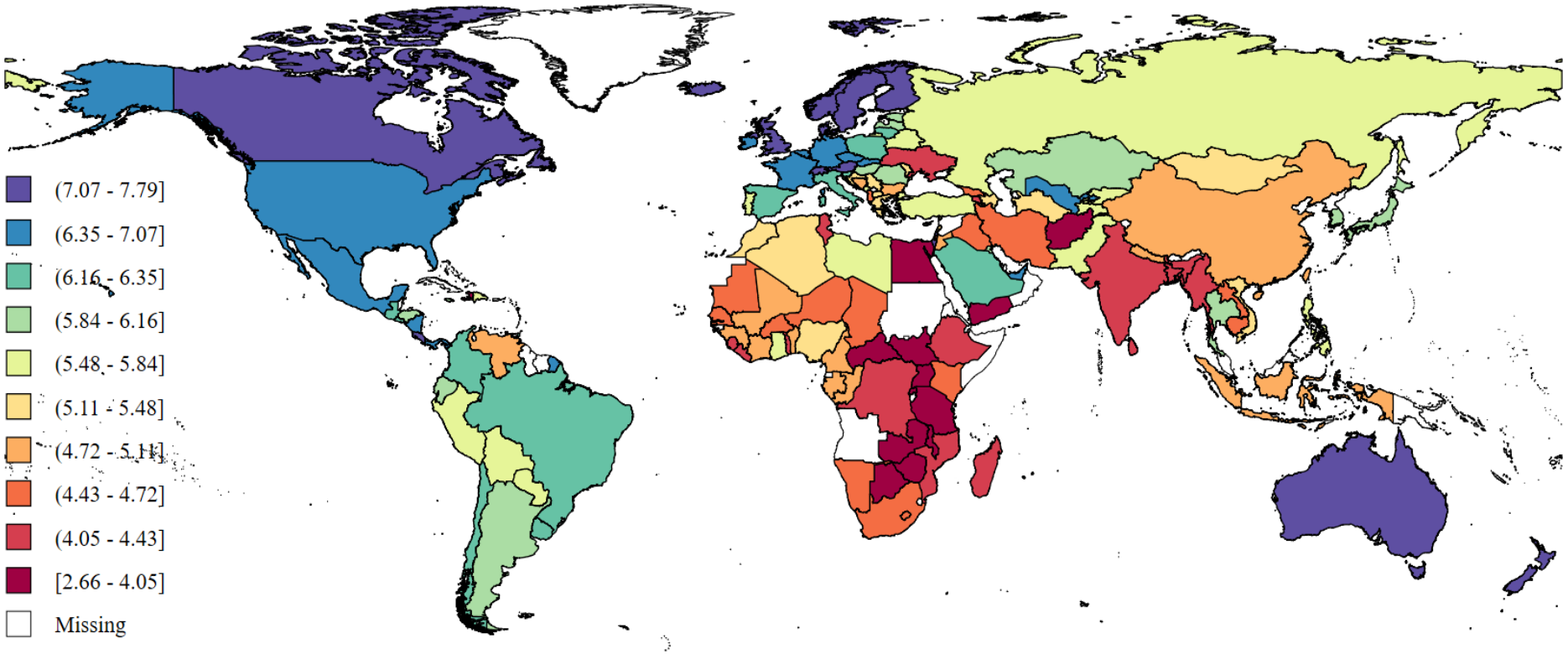
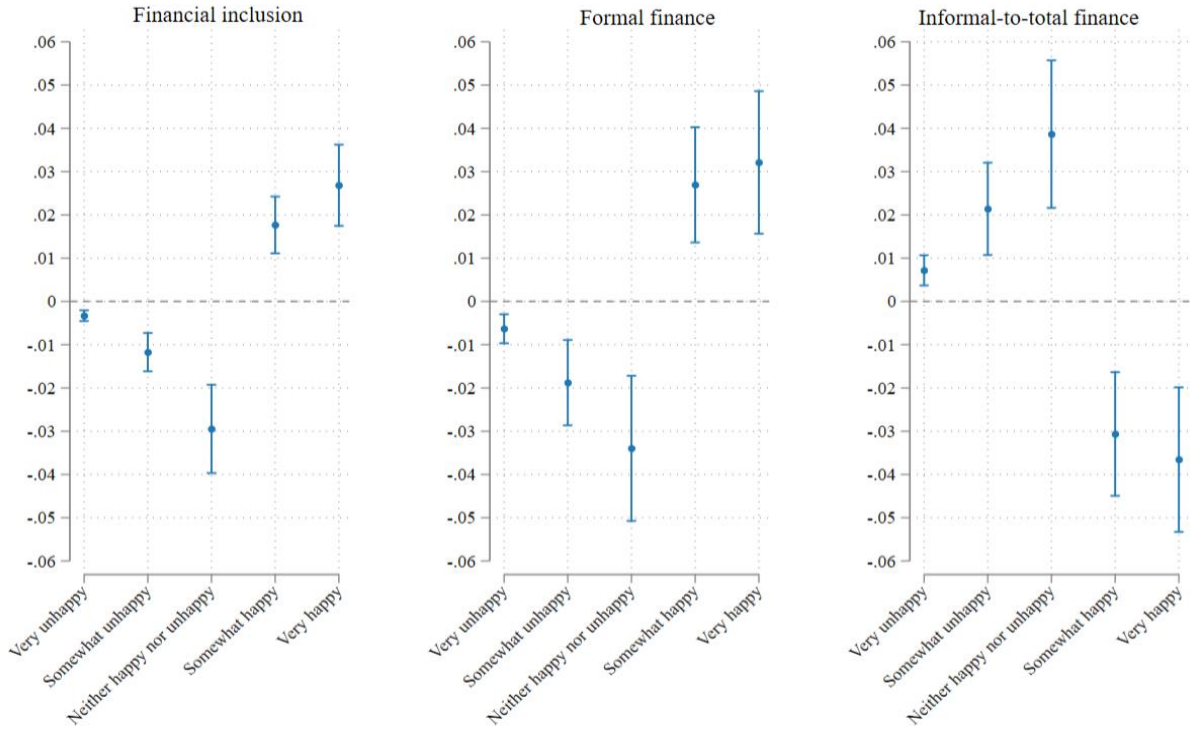


Figure 5.1
Distribution of happiness around the world in 2015

This figure presents the distribution of subjective well-being around the world in the year 2015. The deciles of the scores of 147 countries from the World Happiness Report (2022) are presented. Average scores from responses in the Cantril scale ranging between 0 and 10 are presented. The data is available at: https://worldhappiness.report/ed/2022/#appendices-and-data

Panel A: Ordered probit model



Panel B: Generalized Ordered probit model

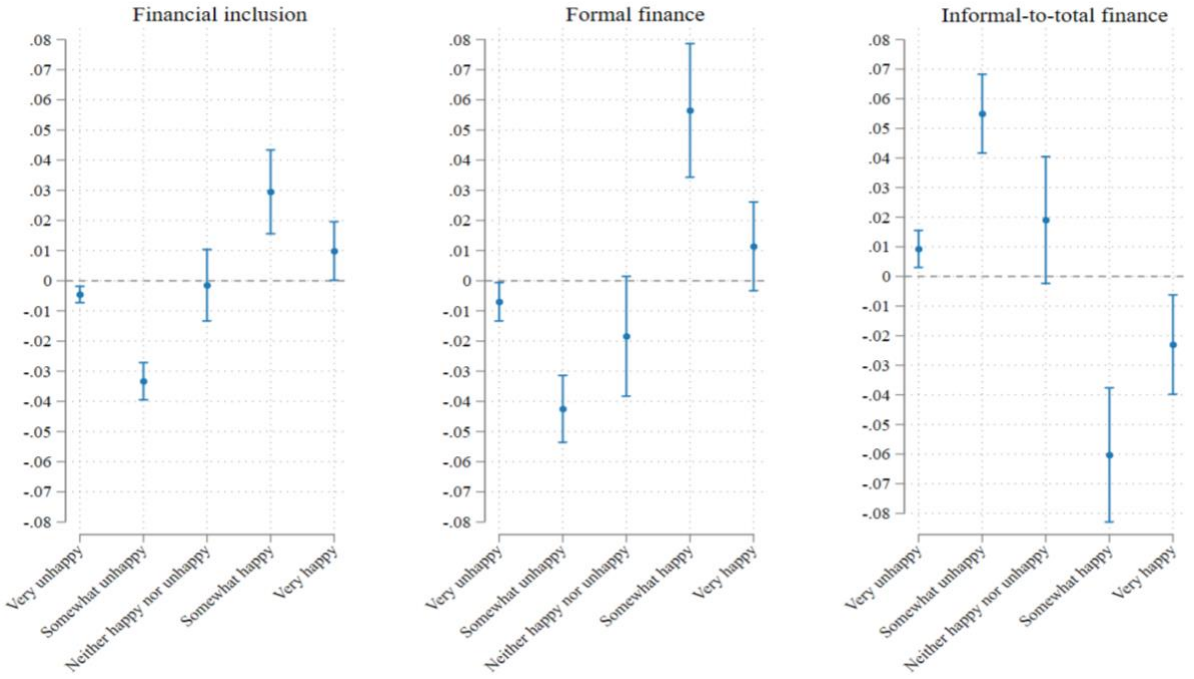


Figure 5.2

Marginal effects from models with ordinal subjective well-being

This figure shows the marginal effects and 95% confidence intervals for each financial inclusion proxy (i.e., financial inclusion, formal finance, informal-to-total finance ratio) for each of the 5 categories of the ordinal dependent variable for subjective well-being. An ordered probit model is used in the estimates of panel A, and a generalized ordered probit model is used in panel B. The latter frees the financial inclusion proxy from meeting the parallel-lines assumption.

Table 5.1

The determinants of subjective well-being in China

This table reports estimates from weighted linear happiness regressions, along with robust standard errors clustered at the city level [in brackets]. The dependent variable is subjective well-being, ranging between 1 (very unhappy) and 5 (very happy). The specification in column 1 only controls for financial inclusion, and that in column 2 adheres province fixed effects. The specification of column 3 adheres a rich list of controls for individual socioeconomic characteristics. In column 4, I adhere disposable household income to the specification of column 3, along with net worth in column 5. The specification of column 6 includes 5th order polynomials in income and net worth to that of column 3. The full list of estimates of all columns is shown in the *Appendix Table 5A2*. The asterisks denote the following levels of significance at the ***: 1% **: 5%, and *: 10%.

	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion	0.170***	0.183***	0.095***	0.090***	0.088***	0.065***
	[0.017]	[0.017]	[0.017]	[0.016]	[0.016]	[0.016]
Disposable household income	–	–	–	0.218***	0.117***	1.432***
				[0.032]	[0.030]	[0.271]
Net worth	–	–	–	–	0.047***	0.189***
					[0.008]	[0.033]
Male	–	–	-0.048***	-0.048***	-0.050***	-0.046***
			[0.014]	[0.014]	[0.014]	[0.015]
Age	–	–	-0.040***	-0.040***	-0.039***	-0.037***
			[0.006]	[0.006]	[0.006]	[0.006]
Age squared/1,000	–	–	0.479***	0.473***	0.466***	0.442***
			[0.059]	[0.059]	[0.059]	[0.059]
Years of education	–	–	0.013***	0.012***	0.011***	0.008***
			[0.002]	[0.002]	[0.002]	[0.002]
Marital status: Cohabiting/married	–	–	0.336***	0.331***	0.335***	0.324***
			[0.032]	[0.032]	[0.032]	[0.033]
-"-: Widowed/Separated/Divorced	–	–	0.005	0.005	0.009	0.017
			[0.044]	[0.044]	[0.044]	[0.044]
-"-: Single	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Number of children	–	–	-0.023**	-0.025**	-0.024**	-0.034***
			[0.011]	[0.011]	[0.011]	[0.011]
Single child	–	–	0.087***	0.080***	0.076***	0.067**
			[0.027]	[0.028]	[0.027]	[0.027]
Same province as parents	–	–	0.049***	0.051***	0.040***	0.029**
			[0.014]	[0.014]	[0.014]	[0.014]
Sociable person	–	–	0.026***	0.025***	0.025***	0.026***
			[0.009]	[0.009]	[0.009]	[0.009]
Physical condition: Good	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-"-: Fair	–	–	-0.318***	-0.316***	-0.314***	-0.301***
			[0.020]	[0.020]	[0.020]	[0.020]
-"-: Poor	–	–	-0.605***	-0.604***	-0.602***	-0.590***
			[0.059]	[0.059]	[0.059]	[0.059]
Urbanisation: Urban-Urban	–	–	-0.050***	-0.055***	-0.061***	-0.073***
			[0.018]	[0.018]	[0.018]	[0.018]
-"-: Rural-Urban	–	–	-0.016	-0.021	-0.031	-0.057*
			[0.032]	[0.031]	[0.030]	[0.031]
-"-: Urban-Rural	–	–	0.051	0.052	0.021	0.018
			[0.119]	[0.118]	[0.121]	[0.118]
-"-: Rural-Rural	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Province fixed effects	–	+	+	+	+	+

Table 5.1 continued in next page

Table 5.1 continued from last page

Individual characteristics	–	–	+	+	+	+
Income & Net worth	–	–	–	+	+	+
Net worth	–	–	–	–	+	+
5^{th} polynomials in income and net worth	–	–	–	–	–	+
Linear prediction	*3.6614*	*3.6614*	*3.6606*	*3.6606*	*3.6606*	*3.6606*
No. of Observations	*32,439*	*32,439*	*32,272*	*32,272*	*32,272*	*32,272*

Table 5.2

Ordinal Happiness Regressions – Marginal Effects

This table reports marginal effects for the 5 response categories of the ordinal dependent variable for subjective well-being. The estimation method is a weighted ordered probit model in panel A, and a generalised ordered probit model in panel B. The specification is that of column 4 of Table 5.1. Standard are robust and clustered at the city level. The marginal effects are plotted in ***Figure 5.2***.

	Panel A: Ordered Probit					**Panel B: Generalised Ordered Probit**				
	(A_1)	(A_2)	(A_3)	(A_4)	(A_5)	(B_1)	(B_2)	(B_3)	(B_4)	(B_5)
Financial inclusion	-0.003***	-0.012***	-0.029***	0.018***	0.027***	-0.005***	-0.033***	-0.001	0.029***	0.010**
	[0.001]	[0.002]	[0.005]	[0.003]	[0.005]	[0.001]	[0.003]	[0.006]	[0.007]	[0.005]
%Effect	*-29.6%*	*-20.4%*	*-8.7%*	*4.0%*	*18.0%*	*-39.4%*	*-56.4%*	*-0.4%*	*6.6%*	*6.5%*
Predicted probability	*0.0112*	*0.0577*	*0.3398*	*0.4419*	*0.1495*	*0.0116*	*0.0591*	*0.3337*	*0.4438*	*0.1518*
No. of Observations	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*
	(A_6)	(A_7)	(A_8)	(A_9)	(A_{10})	(B_6)	(B_7)	(B_8)	(B_9)	(B_{10})
Formal finance	-0.006***	-0.019***	-0.034***	0.027***	0.032***	-0.007**	-0.042***	-0.018*	0.056***	0.011
	[0.002]	[0.005]	[0.009]	[0.007]	[0.008]	[0.003]	[0.006]	[0.010]	[0.011]	[0.008]
%Effect	*-36.1%*	*-23.9%*	*-9.2%*	*6.7%*	*24.2%*	*-35.6%*	*-53.1%*	*-5.1%*	*13.8%*	*8.7%*
Predicted probability	*0.0175*	*0.0786*	*0.3693*	*0.4018*	*0.1328*	*0.0196*	*0.08*	*0.3614*	*0.408*	*0.1311*
No. of Observations	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*
	(A_{11})	(A_{12})	(A_{13})	(A_{14})	(A_{15})	(B_{11})	(B_{12})	(B_{13})	(B_{14})	(B_{15})
Informal-to-total finance ratio	0.007***	0.021***	0.039***	-0.031***	-0.037***	0.009***	0.055***	0.019*	-0.060***	-0.023***
	[0.002]	[0.005]	[0.009]	[0.007]	[0.009]	[0.003]	[0.007]	[0.011]	[0.012]	[0.009]
%Effect	*41.1%*	*27.2%*	*10.5%*	*-7.6%*	*-27.5%*	*47.3%*	*68.8%*	*5.3%*	*-14.8%*	*-17.6%*
Predicted probability	*0.0175*	*0.0787*	*0.3693*	*0.4018*	*0.1328*	*0.0196*	*0.0799*	*0.3613*	*0.408*	*0.1312*
No. of Observations	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*	*10,268*

Table 5.3

Happiness and Relative Income

This table reports selected estimates of the effect of financial inclusion on happiness, controlling for 6 distinctive relative income proxies. Weighted linear models with robust standard errors, clustered at the city level, are presented. The proxies used in each column are the following: (1) Average disposable household income by city (168), urban region, gender, employment status (10 categories), and age group (5 categories); (2) average wealth by the same criteria as before; (3) average net worth by the same criteria; (4) income decile by city of residence; (5) wealth decile by city; (6) and net worth decile by city. The specification is that of column 4 of Table 5.1. Standard errors are robust and clustered at the city level.

	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion	0.090***	0.087***	0.087***	0.071***	0.063***	0.067***
	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]
Household disposable income	0.179***	0.117***	0.116***	0.086***	0.131***	0.136***
	[0.035]	[0.033]	[0.030]	[0.031]	[0.032]	[0.030]
Wealth	–	0.029***	–	–	0.013	–
		[0.010]			[0.009]	
Net worth	–	–	0.036***	–	–	0.016**
			[0.010]			[0.008]
Relative income	0.156*	–	–	–	–	–
	[0.081]					
Relative wealth	–	0.041**	–	–	–	–
		[0.018]				
Relative net worth	–	–	0.038**	–	–	–
			[0.019]			
Income decile by city	–	–	–	0.026***	–	–
				[0.003]		
Wealth decile by city	–	–	–	–	0.024***	–
					[0.003]	
Net worth decile by city	–	–	–	–	–	0.023***
						[0.003]
Province fixed effects	+	+	+	+	+	+
Individual characteristics	+	+	+	+	+	+
Linear prediction	*3.6606*	*3.6606*	*3.6606*	*3.6606*	*3.6606*	*3.6606*
No. of Observations	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*

Table 5.4

Happiness and Regional Macroeconomic Indicators

This table reports estimates from weighted linear regressions of happiness, with additional control variables for regional macroeconomic and environmental indicators at the provincial level. The latter data is from China's Statistical Yearbook (2015). Columns 1 and 3 add gross regional product per capita, income inequality (defined as the standard deviation of disposable household income by city), inflation, social expenditure (i.e., unemployment insurance expenses as a percentage of the gross regional product). Columns 2 and 3 adhere monthly sunshine hours (divided by 1,000) of major cities in each province, along with tons of total waste water discharged per capita in each province (multiplied by 100). Columns 1 and 2 do not include province fixed effects, while columns 3 and 4 do. The list of individual characteristics is that used in all previous tables.

	(1)	(2)	(3)	(4)
Financial inclusion	0.074***	0.080***	0.088***	0.088***
	[0.016]	[0.016]	[0.016]	[0.016]
Disposable household income	0.119***	0.122***	0.118***	0.119***
	[0.030]	[0.030]	[0.030]	[0.030]
Gross regional product$_{\text{per capita}}$	0.217***	0.215*	0.236	0.967**
	[0.053]	[0.110]	[0.200]	[0.407]
Income inequality	-0.190*	-0.087	-0.097	-0.073
	[0.097]	[0.101]	[0.099]	[0.104]
Unemployment	-0.112	-0.035	0.030	0.821**
	[0.115]	[0.093]	[0.217]	[0.387]
Inflation	-0.142***	-0.090***	-0.084	0.188
	[0.035]	[0.031]	[0.088]	[0.120]
Social expenditure	0.253*	0.316**	2.334**	0.449
	[0.146]	[0.153]	[1.151]	[1.576]
Sunshine	–	0.102***	–	0.198**
		[0.020]		[0.079]
Water emissions per capita	–	-0.129	–	-0.565**
		[0.138]		[0.282]
Individual characteristics	+	+	+	+
Income and Net worth	+	+	+	+
Province fixed effects	–	–	+	+
Linear prediction	*3.6606*	*3.6606*	*3.6606*	*3.6606*
No. of Observations	*32,272*	*32,272*	*32,272*	*32,272*

Table 5.5

Happiness and Alternative Proxies for Financial Inclusion

This table reports estimates of subjective well-being using alternative proxies for financial inclusion (i.e., formal finance and informal-to-total finance ratio). All models are weighted linear models with robust standard errors, clustered at the city level. The specifications of columns 1 and 4 control only for each of the two financial inclusion proxies, respectively. In column 2 and 5, I adhere controls for household income, net worth, individual characteristics, and province fixed effects. In Columns 3 and 6, I adhere macroeconomic and environmental variables from China's Statistics Yearbook (2015).

	(1)	(2)	(3)	(4)	(5)	(6)
Formal finance	0.300***	0.117***	0.117***	–	–	–
	[0.030]	[0.032]	[0.032]			
Informal-to-total finance ratio	–	–	–	-0.346***	-0.134***	-0.137***
				[0.032]	[0.032]	[0.033]
Disposable household income	–	0.100	0.105*	–	0.103*	0.109*
		[0.061]	[0.061]		[0.062]	[0.062]
Net worth	–	0.043***	0.045***	–	0.043***	0.045***
		[0.015]	[0.015]		[0.015]	[0.015]
Male	–	-0.098***	-0.092***	–	-0.097***	-0.090***
		[0.029]	[0.030]		[0.029]	[0.030]
Age	–	-0.035***	-0.038***	–	-0.035***	-0.037***
		[0.009]	[0.009]		[0.009]	[0.009]
$Age^2/1{,}000$	–	0.430***	0.448***	–	0.426***	0.444***
		[0.095]	[0.096]		[0.096]	[0.098]
Years of education	–	0.013***	0.012**	–	0.014***	0.012***
		[0.005]	[0.005]		[0.005]	[0.005]
Marital status: Cohabiting/married	–	0.257***	0.282***	–	0.255***	0.279***
		[0.061]	[0.061]		[0.061]	[0.061]
-"-: Widowed/Divorced/Separated	–	-0.148*	-0.118	–	-0.151*	-0.121
		[0.088]	[0.089]		[0.088]	[0.089]
-"-: Single	–	{Ref.}	{Ref.}	–	{Ref.}	{Ref.}
Number of children	–	-0.007	-0.012	–	-0.007	-0.012
		[0.015]	[0.014]		[0.015]	[0.014]
Single child	–	0.048	0.046	–	0.047	0.045
		[0.056]	[0.056]		[0.056]	[0.056]
Same province as parents	–	0.039	0.056*	–	0.038	0.055
		[0.033]	[0.034]		[0.033]	[0.034]
$GRP_{per\ capita}$	–	–	0.346**	–	–	0.343**
			[0.148]			[0.150]
Income inequality	–	–	-0.041	–	–	-0.047
			[0.147]			[0.148]
Unemployment	–	–	-0.034	–	–	-0.029
			[0.152]			[0.152]
Inflation	–	–	-0.067*	–	–	-0.066*
			[0.040]			[0.040]
Social expenditure	–	–	0.315	–	–	0.304
			[0.267]			[0.268]
Sunshine	–	–	0.075***	–	–	0.077***
			[0.028]			[0.028]
Water emissions per capita	–	–	-0.426**	–	–	-0.426**
			[0.169]			[0.171]
Individual characteristics	–	+	+	–	+	+
Province fixed effects	–	+	–	–	+	–
Linear prediction	*3.5537*	*3.5533*	*3.5533*	*3.5537*	*3.5533*	*3.5533*
No. of Observations	*10,307*	*10,268*	*10,268*	*10,307*	*10,268*	*10,268*

Table 5.6

Instrumental-Variable Regressions

This table report selected coefficients from IV regressions for subjective well-being. All models are weighted, and robust standard errors clustered at the city level are presented in brackets. Panel A uses bank account or credit card ownership as the proxy for financial inclusion. Panel B uses access to formal finance from a bank or financial institution as the proxy for the sub-sample of individuals with any access to finance (formal or informal). Panel C uses the ratio between the amount of informal finance to total finance received as the proxy for financial inclusion for individuals with any access to finance. In all 3 panels, column 1 uses a dummy variable for living near (<1km) a bank (*NB*) as the instrument for financial inclusion. Column 2 uses the logarithm of the distance (in kilometers) between the home and the bank (*DtB*) as the instrument. Column 3 uses financial literacy (*FL*) as an instrument for financial inclusion. Column 4 uses both financial literacy and the log(distance to bank) as instruments. Column 5 presents IV estimates using Lewbel's (2012) method (*LBM*), without any traditional instruments. Then, column 6 uses the two instruments of column 3 within Lewbel's framework. The remaining specification in all panels and columns is that of column 5 of Table 5.1, and the comments therein apply.

Instrumental variables	*NB*	*DtB*	*FL*	*DtB & FL*	*LBM: –*	*LBM: DtB & FL*
Panel A: Financial inclusion	**(A_1)**	**(A_2)**	**(A_3)**	**(A_4)**	**(A_5)**	**(A_6)**
Financial inclusion	0.721**	0.435**	0.353***	0.384***	0.084***	0.094***
	[0.345]	[0.174]	[0.134]	[0.105]	[0.027]	[0.026]
Disposable household income	0.077**	0.096***	0.102***	0.100***	0.120***	0.119***
	[0.038]	[0.031]	[0.029]	[0.029]	[0.029]	[0.029]
Net worth	0.041***	0.044***	0.045***	0.044***	0.047***	0.047***
	[0.008]	[0.007]	[0.007]	[0.007]	[0.008]	[0.008]
Male	-0.063***	-0.056***	-0.054***	-0.055***	-0.047***	-0.048***
	[0.016]	[0.015]	[0.015]	[0.015]	[0.014]	[0.014]
%Effect: Financial inclusion	*19.7%*	*11.9%*	*9.7%*	*10.5%*	*2.3%*	*2.6%*
Linear prediction	*3.6613*	*3.6613*	*3.6613*	*3.6613*	*3.6613*	*3.6613*
No. of Observations	*32,362*	*32,362*	*32,362*	*32,362*	*32,362*	*32,362*
Panel B: Formal finance	**(B_1)**	**(B_2)**	**(B_3)**	**(B_4)**	**(B_5)**	**(B_6)**
Formal finance	0.842***	0.710*	1.272**	0.947***	0.110**	0.131**
	[0.319]	[0.377]	[0.525]	[0.325]	[0.055]	[0.053]
Disposable household income	-0.027	-0.003	-0.104	-0.046	0.106*	0.102*
	[0.067]	[0.076]	[0.099]	[0.066]	[0.061]	[0.061]
Net worth	0.030*	0.033*	0.023	0.029	0.043***	0.043***
	[0.017]	[0.017]	[0.021]	[0.017]	[0.015]	[0.015]
Male	-0.075**	-0.079**	-0.062*	-0.072**	-0.098***	-0.097***
	[0.031]	[0.033]	[0.033]	[0.032]	[0.029]	[0.029]
%Effect: Formal finance	*23.7%*	*20.0%*	*35.8%*	*26.7%*	*3.1%*	*3.7%*
Linear prediction	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*
No. of Observations	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*
Panel C: Informal finance	**(C_1)**	**(C_2)**	**(C_3)**	**(C_4)**	**(C_5)**	**(C_6)**
Informal-to-total-finance ratio	-1.126**	-1.081*	-1.173***	-1.143***	-0.118**	-0.140**
	[0.455]	[0.581]	[0.448]	[0.370]	[0.059]	[0.057]
Disposable household income	-0.02	-0.014	-0.026	-0.022	0.111*	0.108*
	[0.064]	[0.079]	[0.068]	[0.057]	[0.062]	[0.062]
Net worth	0.027	0.028	0.026	0.027	0.043***	0.043***
	[0.019]	[0.019]	[0.020]	[0.019]	[0.015]	[0.015]
Male	-0.061*	-0.062	-0.059*	-0.060*	-0.097***	-0.096***
	[0.035]	[0.040]	[0.033]	[0.034]	[0.029]	[0.029]
%Effect: +10pp. Informal-to-total finance	*-3.17%*	*-3.04%*	*-3.30%*	*-3.22%*	*-0.33%*	*-0.39%*
Linear prediction	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*
No. of Observations	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*

Table 5.7

Causal Mediation Analysis for the Effect of Financial Inclusion on Happiness in China

This table reports estimates from instrumental variable regressions on happiness. All models are weighted, and robust standard errors clustered at the city level are presented in brackets. The variable instrumented in each column is the candidate mediator shown at the top of each column. The instruments used are financial literacy and the log(distance to bank). The specification also controls for financial inclusion, along with a rich list of individual characteristics, as below.

Mediator	Household income	Net worth	Wealth	Sociali-zation	Risk tolerance	Trust	Filial piety	Financial resilience	Liquid asset rate	Illiquid asset rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial inclusion	0.038*	0.049**	0.051***	0.083***	0.064***	0.083***	0.029	-0.070	-0.041	0.065***
	[0.023]	[0.019]	[0.019]	[0.014]	[0.015]	[0.014]	[0.024]	[0.047]	[0.040]	[0.025]
Mediator variable	4.579***	0.494***	0.440***	0.04	0.097***	0.040**	-0.355***	0.564***	0.155***	0.018
	[1.624]	[0.138]	[0.122]	[0.066]	[0.028]	[0.019]	[0.110]	[0.164]	[0.046]	[0.017]
Household income	–	-0.828***	-0.857***	0.091***	0.061**	0.088***	0.068**	0.135***	0.236***	0.382
		[0.295]	[0.303]	[0.030]	[0.031]	[0.031]	[0.033]	[0.034]	[0.056]	[0.284]
Net worth	-0.274**	–	–	0.053***	0.045***	0.053***	0.035***	0.039***	0.019	-0.033
	[0.126]			[0.006]	[0.007]	[0.006]	[0.009]	[0.007]	[0.012]	[0.083]
Social person	0.030***	0.021**	0.020**	–	0.016*	0.031***	0.048***	0.017**	0.014	0.022**
	[0.011]	[0.009]	[0.009]		[0.008]	[0.009]	[0.012]	[0.008]	[0.009]	[0.009]
Individual characteristics	+	+	+	+	+	+	+	+	+	+
Province fixed effects	+	+	+	+	+	+	+	+	+	+
Direct effect	*0.0377*	*0.0488*	*0.0512*	*0.0835*	*0.0637*	*0.0827*	*0.0289*	*-0.0699*	*-0.0408*	*0.0649*
Indirect effect	*0.4615*	*0.4905*	*0.4881*	*0.4097*	*0.4288*	*0.4097*	*0.4635*	*0.5624*	*0.5333*	*0.4275*
Total effect	*0.4991*	*0.5393*	*0.5393*	*0.4932*	*0.4924*	*0.4924*	*0.4924*	*0.4924*	*0.4924*	*0.4924*
Mediation effect	*0.9246*	*0.9095*	*0.9051*	*0.8307*	*0.8707*	*0.832*	*0.9412*	*1.142*	*1.0829*	*0.8682*
# Observations	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*

Appendix 5A: Additional Results

Table 5A1

Weighted pairwise correlation matrix

This table reports the weighted pairwise correlation matrix for all individuals in the Chinese Household Finance Survey. The asterisk denotes the following level of significance: *p<0.05.

	Happiness	Financial inclusion	Formal finance	Informal-to-total finance ratio	Disposable household income	Net worth	Male	Age	Years of education	Married/cohabiting	Number of children	Urban Region	Financial Literacy	Living near a bank	Distance to bank	Financial resilience	$GRP_{per\ capita}$	Income inequality	Unemployment	Inflation	Social expenditure
Happiness	1.00																				
Financial inclusion	0.09*	1.00																			
Formal finance	0.03*	0.11*	1.00																		
Informal-to-total finance ratio	-0.17*	-0.27*	-0.84*	1.00																	
Disposable household income	0.08*	0.14*	0.15*	-0.20*	1.00																
Net worth	0.11*	0.16*	0.08*	-0.20*	0.46*	1.00															
Male	-0.01	0.03*	0.01	0.02	0.02	0.02	1.00														
Age	-0.02	-0.22*	-0.21*	0.30*	-0.12*	0.13*	0.06*	1.00													
Years of education	0.12*	0.35*	0.20*	-0.40*	0.20*	0.25*	0.08*	-0.42*	1.00												
Married/cohabiting	0.10*	-0.02	0.04*	-0.03	0.02	0.03*	0.01	0.17*	-0.07*	1.00											
Number of children	-0.05*	0.00	0.06*	0.08*	0.02*	0.04*	-0.01	-0.13*	-0.09*	0.23*	1.00										
Urban region	0.06*	0.25*	0.11*	-0.33*	0.15*	0.19*	0.10*	-0.04*	0.49*	0.07*	-0.17*	1.00									
Financial literacy	0.09*	0.29*	0.15*	-0.31*	0.16*	0.19*	0.03*	-0.30*	0.46*	0.04*	-0.07*	0.37*	1.00								
Living near a bank	0.06*	0.26*	0.09*	-0.28*	0.12*	0.16*	0.07*	-0.03*	0.41*	0.04*	-0.14*	0.81*	0.27*	1.00							
Distance to bank	-0.07*	-0.27*	-0.08*	0.27*	-0.13*	0.17*	0.06*	0.03*	-0.41*	0.05*	0.15*	-0.79*	-0.27*	-0.89*	1.00						
Financial resilience	0.08*	0.31*	-0.01	-0.19*	0.05*	0.10*	0.05*	-0.09*	0.22*	-0.01	-0.09*	0.16*	0.21*	0.14*	-0.15*	1.00					
$GRP_{per\ capita}$	0.08*	0.08*	0.02*	-0.18*	0.10*	0.22*	0.04*	-0.01	0.14*	-0.01	-0.13*	0.13*	0.12*	0.11*	-0.12*	0.09*	1.00				
Income inequality	0.04*	0.14*	0.02*	-0.18*	0.16*	0.27*	0.03*	-0.12*	0.21*	0.06*	-0.08*	0.17*	0.16*	0.12*	-0.15*	0.09*	0.37*	1.00			
Unemployment	0.00	0.03*	-0.01	0.00	0.03*	0.06*	-0.01	-0.03*	0.08*	0.04*	0.01	0.09*	0.04*	0.08*	-0.08*	-0.01	0.17*	0.13*	1.00		
Inflation	-0.02*	0.10*	0.02	-0.09*	0.07*	0.11*	0.01	0.00	0.02	0.03*	0.01	0.08*	0.04*	0.04*	-0.06*	0.04*	0.36*	0.21*	0.05*	1.00	
Social expenditure	0.04*	0.05*	0.01	-0.12*	0.04*	0.09*	-0.02	0.04*	0.04*	-0.01	-0.10*	0.10*	0.07*	0.09*	-0.11*	0.08*	0.34*	0.13*	0.03*	0.34*	1.00

Table 5A2

Happiness Regressions – All results

This table reports the complete list of estimates corresponding to the selected results presented in Table 5.2. The comments therein apply.

	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion	0.170***	0.183***	0.095***	0.090***	0.088***	0.065***
	[0.017]	[0.017]	[0.017]	[0.016]	[0.016]	[0.016]
Male	–	–	-0.048***	-0.048***	-0.050***	-0.046***
			[0.014]	[0.014]	[0.014]	[0.015]
Age	–	–	-0.040***	-0.040***	-0.039***	-0.037***
			[0.006]	[0.006]	[0.006]	[0.006]
Age squared/1,000	–	–	0.479***	0.473***	0.466***	0.442***
			[0.059]	[0.059]	[0.059]	[0.059]
Years of education	–	–	0.013***	0.012***	0.011***	0.008***
			[0.002]	[0.002]	[0.002]	[0.002]
Marital status: Cohabiting/married	–	–	0.336***	0.331***	0.335***	0.324***
			[0.032]	[0.032]	[0.032]	[0.033]
-"-: Widowed/Separated/Divorced	–	–	0.005	0.005	0.009	0.017
			[0.044]	[0.044]	[0.044]	[0.044]
-"-: Single	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Number of children	–	–	-0.023**	-0.025**	-0.024**	-0.034***
			[0.011]	[0.011]	[0.011]	[0.011]
Single child	–	–	0.087***	0.080***	0.076***	0.067**
			[0.027]	[0.028]	[0.027]	[0.027]
Same province as parents	–	–	0.049***	0.051***	0.040***	0.029**
			[0.014]	[0.014]	[0.014]	[0.014]
Sociable person	–	–	0.026***	0.025***	0.025***	0.026***
			[0.009]	[0.009]	[0.009]	[0.009]
Physical condition: Good	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-"-: Fair	–	–	-0.318***	-0.316***	-0.314***	-0.301***
			[0.020]	[0.020]	[0.020]	[0.020]
-"-: Poor	–	–	-0.605***	-0.604***	-0.602***	-0.590***
			[0.059]	[0.059]	[0.059]	[0.059]
Disposable household income	–	–	–	0.218***	0.117***	1.432***
				[0.032]	[0.030]	[0.271]
Disposable household income^2	–	–	–	–	–	-2.313***
						[0.683]
Disposable household income^3	–	–	–	–	–	1.364***
						[0.501]
Disposable household income^4	–	–	–	–	–	-0.326**
						[0.137]
Disposable household income^5	–	–	–	–	–	0.027**
						[0.013]
Net worth	–	–	–	–	0.047***	0.189***
					[0.008]	[0.033]
Net worth^2	–	–	–	–	–	-0.055***
						[0.013]
Net worth^3	–	–	–	–	–	-0.002
						[0.001]
Net worth^4	–	–	–	–	–	0.002***
						[0.000]
Net worth^5	–	–	–	–	–	-0.0001***
						[0.00003]

Table 5A2 continued in next page

Table 5A2 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
Labour market status: Sefl-employed	–	–	-0.056	-0.057	-0.049	-0.054
			[0.035]	[0.035]	[0.035]	[0.035]
-"-: Employed	–	–	0.076**	0.066**	0.067**	0.043
			[0.032]	[0.032]	[0.032]	[0.034]
-"-: Farmers	–	–	-0.025	-0.026	-0.021	-0.008
			[0.036]	[0.035]	[0.035]	[0.035]
-"-: Casual workers	–	–	0.048	0.045	0.045	0.048
			[0.079]	[0.079]	[0.079]	[0.078]
-"-: Students	–	–	0.078**	0.077**	0.085***	0.083**
			[0.033]	[0.033]	[0.032]	[0.033]
-"-: Homemakers	–	–	0.036	0.034	0.037	0.045
			[0.033]	[0.033]	[0.033]	[0.033]
-"-: Retired, Inactive, Other			{Ref.}	{Ref.}	{Ref.}	{Ref.}
-"-: Unemployed	–	–	-0.255***	-0.249***	-0.241***	-0.213***
			[0.047]	[0.047]	[0.047]	[0.046]
Urbanisation: Urban-Urban	–	–	-0.050***	-0.055***	-0.061***	-0.073***
			[0.018]	[0.018]	[0.018]	[0.018]
-"-: Rural-Urban	–	–	-0.016	-0.021	-0.031	-0.057*
			[0.032]	[0.031]	[0.030]	[0.031]
-"-: Urban-Rural	–	–	0.051	0.052	0.021	0.018
			[0.119]	[0.118]	[0.121]	[0.118]
-"-: Rural-Rural	–	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Province: Anhui	–	-0.188***	-0.122***	-0.116***	-0.084***	-0.074***
		[0.028]	[0.025]	[0.026]	[0.026]	[0.027]
City: Beijing	–	{Ref.}	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Province: Fujian	–	-0.135*	-0.072	-0.071	-0.052	-0.057
		[0.069]	[0.045]	[0.044]	[0.040]	[0.038]
-"-: Gansu	–	-0.186***	-0.072	-0.061	-0.028	-0.009
		[0.047]	[0.062]	[0.062]	[0.062]	[0.063]
-"-: Guangdong	–	-0.164***	-0.113***	-0.114***	-0.105***	-0.095***
		[0.049]	[0.036]	[0.033]	[0.028]	[0.025]
-"-: Guangxi	–	-0.356***	-0.253***	-0.243***	-0.208***	-0.181***
		[0.057]	[0.049]	[0.049]	[0.047]	[0.049]
-"-: Guizhou	–	-0.365***	-0.204***	-0.200***	-0.169***	-0.150***
		[0.071]	[0.047]	[0.044]	[0.043]	[0.040]
-"-: Hainan	–	-0.166***	-0.068**	-0.052*	-0.019	0.022
		[0.048]	[0.030]	[0.030]	[0.028]	[0.026]
-"-: Hebei	–	-0.045*	0.001	0.010	0.038	0.056*
		[0.023]	[0.028]	[0.028]	[0.028]	[0.031]
-"-: Henan	–	-0.113***	-0.045	-0.037	-0.006	0.013
		[0.036]	[0.032]	[0.033]	[0.034]	[0.035]
-"-: Heilongjiang	–	-0.064***	-0.005	0.003	0.039	0.048
		[0.018]	[0.025]	[0.026]	[0.027]	[0.033]
-"-: Hubei	–	-0.301***	-0.215***	-0.210***	-0.178***	-0.171***
		[0.042]	[0.031]	[0.030]	[0.030]	[0.029]
-"-: Hunan	–	-0.254***	-0.155***	-0.149***	-0.117***	-0.104**
		[0.040]	[0.043]	[0.042]	[0.042]	[0.042]
-"-: Jilin	–	-0.008	0.071***	0.081***	0.117***	0.130***
		[0.033]	[0.024]	[0.024]	[0.025]	[0.025]

Table 5A2 continued in next page

Table 5A2 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
-"-: Jaingsu	–	-0.056*	-0.022	-0.02	0.003	-0.012
		[0.033]	[0.032]	[0.032]	[0.032]	[0.032]
-"-: Jiangxi	–	-0.292***	-0.194***	-0.187***	-0.154**	-0.140**
		[0.070]	[0.063]	[0.064]	[0.064]	[0.063]
-"-: Liaoning	–	-0.035	0.005	0.014	0.045*	0.053**
		[0.027]	[0.023]	[0.024]	[0.023]	[0.026]
-"-: Neimenggu	–	0.037	0.106	0.113	0.144*	0.162*
		[0.090]	[0.082]	[0.083]	[0.087]	[0.083]
-"-: Ningxia	–	-0.154*	-0.027	-0.02	0.014	0.02
		[0.078]	[0.078]	[0.079]	[0.079]	[0.080]
-"-: Qinghai	–	-0.141***	0.015	0.019	0.052	0.063
		[0.048]	[0.074]	[0.073]	[0.072]	[0.074]
-"-: Shandong	–	0.100**	0.100**	0.108**	0.139***	0.143***
		[0.042]	[0.046]	[0.046]	[0.048]	[0.052]
-"-: Shanxi	–	-0.080***	-0.013	-0.001	0.034	0.059*
		[0.025]	[0.028]	[0.028]	[0.028]	[0.031]
-"-: Shaanxi	–	-0.227***	-0.173***	-0.162***	-0.128***	-0.111***
		[0.020]	[0.014]	[0.015]	[0.016]	[0.017]
City: Shanghai	–	-0.038***	-0.057***	-0.061***	-0.055***	-0.073***
		[0.000]	[0.004]	[0.004]	[0.004]	[0.006]
Province: Sichuan	–	-0.167***	-0.086***	-0.079***	-0.049*	-0.037
		[0.030]	[0.027]	[0.028]	[0.028]	[0.032]
City: Tianjin	–	-0.003*	0.009**	0.014***	0.035***	0.021**
		[0.002]	[0.004]	[0.004]	[0.006]	[0.008]
Province: Yunnan	–	-0.263***	-0.149***	-0.138***	-0.106**	-0.084*
		[0.042]	[0.043]	[0.043]	[0.042]	[0.043]
-"-: Zhejiang	–	-0.095*	-0.071	-0.076*	-0.07	-0.089**
		[0.055]	[0.045]	[0.045]	[0.043]	[0.040]
City: Chongqing	–	-0.287***	-0.201***	-0.193***	-0.159***	-0.143***
		[0.002]	[0.008]	[0.008]	[0.010]	[0.012]
Constant term	3.539***	3.658***	4.085***	4.074***	4.028***	3.972***
	[0.021]	[0.015]	[0.109]	[0.108]	[0.107]	[0.106]
Linear prediction	*3.6614*	*3.6614*	*3.6606*	*3.6606*	*3.6606*	*3.6606*
No. of Observations	*32,439*	*32,439*	*32,272*	*32,272*	*32,272*	*32,272*

Table 5A3

Instrumental-Variable Regressions – First Stage

This table reports the 1st stage estimates for IV regressions, the 2nd stage of which is presented in Table 5.7. Columns A_1-A_4 present the estimates with financial inclusion as the dependent variable, Columns B_1-B_4 present estimates for formal finance as the dependent variable, which those of C_1-C_4 use informal-to-total finance ratio as the dependent variable. The specification also includes province fixed effects and a constant term (not shown).

Dependent variable	**Financial inclusion**				**Formal finance**				**Informal-to-total finance ratio**			
	(A_1)	(A_2)	(A_3)	(A_4)	(B_1)	(B_2)	(B_3)	(B_4)	(C_1)	(C_2)	(C_3)	(C_4)
Near bank	0.046***	–	–	–	0.093***	–	–	–	-0.069***	–	–	–
	[0.010]				[0.017]				[0.016]			
Log(Distance to bank)	–	-0.042***	–	-0.040***	–	-0.034***	–	-0.033***	–	0.022***	–	0.022***
		[0.005]		[0.005]		[0.008]		[0.008]		[0.008]		[0.007]
Financial literacy	–	–	0.060***	0.058***	–	–	0.035***	0.034***	–	–	-0.038***	-0.037***
			[0.004]	[0.004]			[0.007]	[0.008]			[0.007]	[0.007]
Household income	0.068***	0.066***	0.060***	0.058***	0.173***	0.175***	0.176***	0.171***	-0.124***	-0.125***	-0.124***	-0.121***
	[0.018]	[0.018]	[0.017]	[0.017]	[0.037]	[0.037]	[0.038]	[0.036]	[0.033]	[0.034]	[0.034]	[0.033]
Net worth	0.010**	0.010**	0.009**	0.008*	0.018**	0.017**	0.017**	0.016**	-0.016**	-0.016**	-0.015**	-0.015**
	[0.005]	[0.005]	[0.004]	[0.004]	[0.008]	[0.008]	[0.008]	[0.008]	[0.007]	[0.007]	[0.007]	[0.007]
Male	0.025***	0.025***	0.022***	0.022***	-0.030**	-0.031**	-0.034***	-0.034***	0.035***	0.036***	0.040***	0.039***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.013]	[0.013]	[0.013]	[0.013]	[0.010]	[0.010]	[0.010]	[0.010]
Age	-0.001	-0.001	-0.001	-0.001	-0.006	-0.006	-0.006	-0.006	0.008**	0.008**	0.008**	0.008**
	[0.002]	[0.002]	[0.002]	[0.002]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Age squared/1,000	-0.023	-0.024	-0.028	-0.028	0.032	0.031	0.034	0.032	-0.05	-0.049	-0.052	-0.05
	[0.027]	[0.026]	[0.026]	[0.026]	[0.046]	[0.047]	[0.048]	[0.047]	[0.038]	[0.038]	[0.038]	[0.038]
Years of education	0.020***	0.019***	0.017***	0.016***	0.019***	0.019***	0.018***	0.017***	-0.014***	-0.013***	-0.012***	-0.011***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.003]	[0.003]	[0.003]	[0.002]	[0.002]	[0.002]	[0.002]
Marital status: Cohabiting/married	0.054***	0.052***	0.050***	0.046***	0.094**	0.092**	0.087*	0.087**	-0.101***	-0.100**	-0.094**	-0.094**
	[0.014]	[0.014]	[0.014]	[0.014]	[0.044]	[0.045]	[0.044]	[0.044]	[0.038]	[0.039]	[0.039]	[0.039]
-"-: Widowed/Separated/Divorced	0.030	0.029	0.03	0.029	0.007	0.003	-0.002	0.002	-0.032	-0.028	-0.025	-0.027
	[0.019]	[0.018]	[0.018]	[0.018]	[0.051]	[0.052]	[0.050]	[0.051]	[0.046]	[0.046]	[0.045]	[0.046]
-"-: Single	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
Number of children	0.006	0.007	0.008*	0.009*	-0.001	0.001	0.001	0.002	0.001	0.001	-0.001	-0.001
	[0.005]	[0.005]	[0.005]	[0.005]	[0.009]	[0.009]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]

Table 5A3 continued in next page

Table 5A3 continued from last page

	(A_1)	(A_2)	(A_3)	(A_4)	(B_1)	(B_2)	(B_3)	(B_4)	(C_1)	(C_2)	(C_3)	(C_4)
Single child	-0.011	-0.011	-0.013	-0.013	0.034**	0.036**	0.032**	0.033**	-0.043***	-0.044***	-0.040***	-0.040***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.014]	[0.014]	[0.014]	[0.014]	[0.015]	[0.015]	[0.015]	[0.015]
Same province as parents	0.015	0.014	0.015	0.013	0.001	0.003	0.007	0.004	-0.009	-0.012	-0.015	-0.013
	[0.012]	[0.013]	[0.012]	[0.013]	[0.019]	[0.019]	[0.019]	[0.019]	[0.016]	[0.016]	[0.016]	[0.016]
Sociable person	0.022***	0.023***	0.016***	0.020***	0.002	-0.002	-0.007	-0.004	-0.002	0.001	0.005	0.003
	[0.004]	[0.005]	[0.004]	[0.005]	[0.009]	[0.009]	[0.009]	[0.009]	[0.008]	[0.008]	[0.008]	[0.008]
Physical condition: Good	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Fair	-0.082***	-0.082***	-0.076***	-0.075***	-0.089***	-0.090***	-0.086***	-0.086***	0.095***	0.096***	0.091***	0.091***
	[0.014]	[0.014]	[0.014]	[0.014]	[0.018]	[0.018]	[0.018]	[0.018]	[0.014]	[0.013]	[0.014]	[0.013]
-"-: Poor	-0.137***	-0.132***	-0.135***	-0.128***	-0.095***	-0.092***	-0.098***	-0.092***	0.125***	0.124***	0.128***	0.123***
	[0.027]	[0.027]	[0.026]	[0.027]	[0.026]	[0.026]	[0.027]	[0.027]	[0.026]	[0.026]	[0.026]	[0.026]
Labour market status: Self-employed	-0.001	-0.001	0.002	0.002	0.001	0.001	0.003	0.004	0.006	0.006	0.002	0.002
	[0.014]	[0.014]	[0.014]	[0.014]	[0.032]	[0.032]	[0.032]	[0.032]	[0.030]	[0.031]	[0.030]	[0.031]
-"-: Employed	0.059***	0.056***	0.053***	0.050***	0.145***	0.145***	0.144***	0.141***	-0.177***	-0.177***	-0.175***	-0.173***
	[0.013]	[0.012]	[0.012]	[0.012]	[0.026]	[0.027]	[0.026]	[0.027]	[0.026]	[0.027]	[0.026]	[0.027]
-"-: Farmers	-0.057***	-0.047**	-0.055***	-0.041**	-0.024	-0.019	-0.029	-0.014	-0.024	-0.026	-0.022	-0.032
	[0.019]	[0.018]	[0.018]	[0.018]	[0.030]	[0.030]	[0.029]	[0.030]	[0.030]	[0.030]	[0.030]	[0.030]
-"-: Casual workers	-0.017	-0.018	-0.017	-0.02	0.035	0.04	0.043	0.041	-0.098	-0.102	-0.104	-0.103
	[0.041]	[0.042]	[0.043]	[0.044]	[0.083]	[0.084]	[0.087]	[0.087]	[0.088]	[0.089]	[0.093]	[0.092]
-"-: Students	0.124***	0.123***	0.121***	0.116***	0.045	0.052	0.047	0.045	-0.071*	-0.077*	-0.071*	-0.069*
	[0.017]	[0.017]	[0.017]	[0.017]	[0.037]	[0.038]	[0.037]	[0.037]	[0.041]	[0.042]	[0.039]	[0.040]
-"-: Homemakers	-0.026*	-0.028*	-0.023	-0.025*	-0.003	-0.004	-0.002	-0.002	-0.017	-0.016	-0.019	-0.018
	[0.015]	[0.015]	[0.015]	[0.015]	[0.027]	[0.028]	[0.027]	[0.027]	[0.024]	[0.024]	[0.024]	[0.024]
-"-: Retired, Inactive, Other	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Unemployed	-0.075**	-0.076**	-0.076**	-0.074**	0.025	0.023	0.013	0.022	0.006	0.008	0.014	0.009
	[0.033]	[0.033]	[0.033]	[0.032]	[0.053]	[0.052]	[0.052]	[0.052]	[0.049]	[0.049]	[0.050]	[0.050]
Urbanisation: Urban-Urban	0.069***	0.026**	0.064***	0.017	0.118***	0.094***	0.126***	0.089***	-0.104***	-0.090***	-0.108***	-0.084***
	[0.011]	[0.013]	[0.010]	[0.012]	[0.022]	[0.025]	[0.021]	[0.025]	[0.019]	[0.022]	[0.019]	[0.021]
-"-: Rural-Urban	0.024	-0.018	0.022	-0.023	0.145***	0.120***	0.150***	0.114***	-0.103***	-0.087***	-0.105***	-0.081***
	[0.017]	[0.018]	[0.016]	[0.018]	[0.029]	[0.030]	[0.029]	[0.029]	[0.031]	[0.031]	[0.031]	[0.031]

Table 5A3 continued in next page

Table 5A3 continued from last page

	(A1)	(A2)	(A3)	(A4)	(B1)	(B2)	(B3)	(B4)	(C1)	(C2)	(C3)	(C4)
-"-: Urban-Rural	-0.077	-0.083	-0.072	-0.082	0.251**	0.246**	0.266**	0.255**	-0.082	-0.079	-0.096	-0.089
	[0.077]	[0.078]	[0.076]	[0.078]	[0.120]	[0.121]	[0.116]	[0.124]	[0.128]	[0.128]	[0.126]	[0.128]
-"-: Rural-Rural	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
%Effect	*6.4%*	*-5.9%*	*8.3%*	*8.1%*	*22.0%*	*-8.0%*	*8.2%*	*8.1%*	*-12.3%*	*3.9%*	*-6.7%*	*-6.6%*
Linear prediction	*0.7183*	*0.7183*	*0.7183*	*0.7183*	*0.4223*	*0.4223*	*0.4223*	*0.4223*	*0.5636*	*0.5636*	*0.5636*	*0.5636*
No. of Observations	*32,396*	*32,396*	*32,396*	*32,396*	*10,296*	*10,296*	*10,296*	*10,296*	*10,296*	*10,296*	*10,296*	*10,296*

Table 5A4

Instrumental-Variable Regressions – All Results of the Second Stage

This table reports all 2nd stage results of the IV regressions, selected estimates of which were shown in Table 5.7. The dependent variable is subjective well-being. In Columns A_1-A_4 financial inclusion is instrumented by the variables shown at the second row. In Columns B_1-B_4 formal finance is instrumented by the same instruments, and in C_1-C_4 the instrumented financial inclusion proxy is informal-to-total finance ratio. The specification also includes province fixed effects and a constant term (not shown). (a) denotes under identification tests, (b) weak identification test, (c) denotes weak-instrument-robust inference (tests of joint significance of endogenous regressors in main equation), and (d) denotes overidentification tests. Stock-Yogo weak ID test critical values: 10% maximal IV size: 19.93.

Financial inclusion proxy	**Financial inclusion**				**Formal finance**				**Informal-to-total finance ratio**			
Instrumental variable	*DtB*	*FL*	*DtB & FL*	*LBM: DtB & FL*	*DtB*	*FL*	*DtB & FL*	*LBM: DtB & FL*	*DtB*	*FL*	*DtB & FL*	*LBM: DtB & FL*
	(A_1)	(A_2)	(A_3)	(A_4)	(B_1)	(B_2)	(B_3)	(B_4)	(C_1)	(C_2)	(C_3)	(C_4)
Financial inclusion proxy	0.435**	0.353***	0.384***	0.094***	0.710*	1.272**	0.947***	0.131**	-1.081*	-1.173***	-1.143***	-0.140**
	[0.174]	[0.134]	[0.105]	[0.026]	[0.377]	[0.525]	[0.325]	[0.053]	[0.581]	[0.448]	[0.370]	[0.057]
Household income	0.096***	0.102***	0.100***	0.119***	-0.003	-0.104	-0.046	0.102*	-0.014	-0.026	-0.022	0.108*
	[0.031]	[0.029]	[0.029]	[0.029]	[0.076]	[0.099]	[0.066]	[0.061]	[0.079]	[0.068]	[0.057]	[0.062]
Net worth	0.044***	0.045***	0.044***	0.047***	0.033*	0.023	0.029	0.043***	0.028	0.026	0.027	0.043***
	[0.007]	[0.007]	[0.007]	[0.008]	[0.017]	[0.021]	[0.017]	[0.015]	[0.019]	[0.020]	[0.019]	[0.015]
Male	-0.056***	-0.054***	-0.055***	-0.048***	-0.079**	-0.062*	-0.072**	-0.097***	-0.062	-0.059*	-0.060*	-0.096***
	[0.015]	[0.015]	[0.015]	[0.014]	[0.033]	[0.033]	[0.032]	[0.029]	[0.040]	[0.033]	[0.034]	[0.029]
Age	-0.040***	-0.040***	-0.040***	-0.041***	-0.031***	-0.028***	-0.030***	-0.035***	-0.027***	-0.027***	-0.027***	-0.035***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.009]	[0.010]	[0.009]	[0.008]	[0.010]	[0.010]	[0.010]	[0.009]
Age squared/1,000	0.487***	0.485***	0.485***	0.478***	0.410***	0.391***	0.402***	0.429***	0.378***	0.374***	0.375***	0.426***
	[0.062]	[0.062]	[0.062]	[0.059]	[0.096]	[0.104]	[0.098]	[0.092]	[0.106]	[0.105]	[0.104]	[0.094]
Years of education	0.004	0.006**	0.005**	0.011***	0.001	-0.010	-0.004	0.013**	0.001	-0.001	-0.001	0.013***
	[0.004]	[0.003]	[0.003]	[0.002]	[0.009]	[0.011]	[0.008]	[0.005]	[0.010]	[0.008]	[0.007]	[0.005]
Marital status: Cohabiting/married	0.307***	0.311***	0.310***	0.326***	0.187**	0.136	0.165**	0.241***	0.145	0.136	0.139	0.239***
	[0.034]	[0.033]	[0.033]	[0.033]	[0.078]	[0.105]	[0.084]	[0.062]	[0.095]	[0.100]	[0.093]	[0.063]
-"-: Widowed/Separated/Divorced	-0.009	-0.007	-0.008	0.001	-0.163*	-0.163	-0.163*	-0.164*	-0.192*	-0.194*	-0.193*	-0.167*
	[0.045]	[0.044]	[0.044]	[0.045]	[0.094]	[0.107]	[0.098]	[0.088]	[0.102]	[0.104]	[0.103]	[0.088]
-"-: Single	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
Number of children	-0.028**	-0.027**	-0.027**	-0.025**	-0.007	-0.006	-0.006	-0.007	-0.006	-0.006	-0.006	-0.007
	[0.011]	[0.011]	[0.011]	[0.011]	[0.016]	[0.018]	[0.017]	[0.015]	[0.016]	[0.016]	[0.016]	[0.015]

Table 5A4 continued in next page

Table 5A4 continued from last page

	(A_1)	(A_2)	(A_3)	(A_4)	(B_1)	(B_2)	(B_3)	(B_4)	(C_1)	(C_2)	(C_3)	(C_4)
Single child	0.012	0.011	0.011	0.008	-0.007	-0.027	-0.015	0.014	-0.029	-0.033	-0.032	0.013
	[0.017]	[0.017]	[0.017]	[0.017]	[0.035]	[0.043]	[0.036]	[0.032]	[0.044]	[0.045]	[0.042]	[0.032]
Same province as parents	0.035**	0.036**	0.035**	0.040***	0.037	0.033	0.035	0.04	0.026	0.024	0.025	0.039
	[0.015]	[0.015]	[0.015]	[0.014]	[0.033]	[0.037]	[0.034]	[0.032]	[0.036]	[0.037]	[0.036]	[0.032]
Sociable person	0.019**	0.021**	0.020**	0.025***	0.035**	0.038**	0.036**	0.032**	0.035**	0.035**	0.035**	0.032**
	[0.009]	[0.010]	[0.009]	[0.009]	[0.015]	[0.017]	[0.016]	[0.013]	[0.016]	[0.016]	[0.016]	[0.013]
Physical condition: Good	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Fair	-0.286***	-0.293***	-0.290***	-0.314***	-0.238***	-0.187***	-0.216***	-0.290***	-0.198***	-0.189***	-0.192***	-0.288***
	[0.025]	[0.023]	[0.022]	[0.020]	[0.056]	[0.061]	[0.052]	[0.037]	[0.074]	[0.057]	[0.055]	[0.037]
-"-: Poor	-0.555***	-0.566***	-0.562***	-0.601***	-0.554***	-0.499***	-0.531***	-0.611***	-0.486***	-0.474***	-0.478***	-0.606***
	[0.064]	[0.064]	[0.062]	[0.059]	[0.106]	[0.116]	[0.106]	[0.088]	[0.135]	[0.120]	[0.118]	[0.089]
Labour market status: Self-employed	-0.051	-0.051	-0.051	-0.051	-0.016	-0.015	-0.015	-0.016	-0.009	-0.009	-0.009	-0.015
	[0.036]	[0.035]	[0.035]	[0.035]	[0.078]	[0.084]	[0.080]	[0.077]	[0.086]	[0.088]	[0.087]	[0.078]
-"-: Employed	0.046	0.051	0.049	0.067**	0.081	-0.002	0.046	0.167**	-0.008	-0.024	-0.019	0.161**
	[0.035]	[0.032]	[0.032]	[0.032]	[0.095]	[0.114]	[0.092]	[0.072]	[0.137]	[0.113]	[0.106]	[0.073]
-"-: Farmers	0.001	-0.004	-0.002	-0.02	0.053	0.072	0.061	0.033	0.011	0.009	0.01	0.026
	[0.037]	[0.039]	[0.038]	[0.035]	[0.077]	[0.084]	[0.078]	[0.075]	[0.083]	[0.083]	[0.083]	[0.075]
-"-: Casual workers	0.052	0.051	0.052	0.047	0.241	0.217	0.231	0.265*	0.159	0.149	0.153	0.256*
	[0.086]	[0.084]	[0.085]	[0.078]	[0.159]	[0.181]	[0.166]	[0.149]	[0.192]	[0.191]	[0.188]	[0.151]
-"-: Students	0.040	0.05	0.046	0.083**	0.209**	0.179*	0.196**	0.240***	0.163	0.155	0.158	0.236***
	[0.042]	[0.035]	[0.035]	[0.032]	[0.086]	[0.101]	[0.090]	[0.081]	[0.105]	[0.105]	[0.102]	[0.081]
-"-: Homemakers	0.044	0.042	0.043	0.035	0.073	0.076	0.074	0.071	0.053	0.051	0.052	0.068
	[0.033]	[0.034]	[0.034]	[0.033]	[0.075]	[0.075]	[0.075]	[0.078]	[0.076]	[0.076]	[0.076]	[0.078]
-"-: Retired, Inactive, Other	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Unemployed	-0.214***	-0.220***	-0.218***	-0.241***	-0.222**	-0.230*	-0.225**	-0.214**	-0.197*	-0.196	-0.197	-0.210**
	[0.050]	[0.049]	[0.048]	[0.047]	[0.109]	[0.122]	[0.114]	[0.103]	[0.118]	[0.121]	[0.120]	[0.103]
Urbanisation: Urban-Urban	-0.083***	-0.077***	-0.079***	-0.057***	-0.134**	-0.208**	-0.165***	-0.057	-0.164**	-0.174***	-0.171***	-0.056
	[0.025]	[0.022]	[0.022]	[0.018]	[0.067]	[0.081]	[0.063]	[0.039]	[0.081]	[0.067]	[0.062]	[0.039]
-"-: Rural-Urban	-0.043	-0.041	-0.042	-0.033	-0.083	-0.171*	-0.120*	0.007	-0.092	-0.102	-0.099	0.012
	[0.032]	[0.031]	[0.031]	[0.030]	[0.076]	[0.099]	[0.071]	[0.056]	[0.079]	[0.076]	[0.067]	[0.055]

Table 5A4 continued in next page

Table 5A4 continued from last page

	(A_1)	(A_2)	(A_3)	(A_4)	(B_1)	(B_2)	(B_3)	(B_4)	(C_1)	(C_2)	(C_3)	(C_4)
-"-: Urban-Rural	0.048	0.042	0.044	0.023	-0.672***	-0.817***	-0.733***	-0.524***	-0.583***	-0.591***	-0.589***	-0.502***
	[0.129]	[0.123]	[0.125]	[0.120]	[0.137]	[0.213]	[0.148]	[0.079]	[0.152]	[0.160]	[0.155]	[0.079]
-"-: Rural-Rural	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
(a) Kleibergen-Paap rk LM statistic χ^2	*43.6****	*60.63****	*70.9****	*116.5****	*15.5****	*17.7****	*32.2****	*87.5***	*8.6**	*21.5****	*43.12****	*72.56**
(a) Stock-Wright: χ^2	*69.5****	*178.2****	*222.6****	–	*16.8****	*21.9****	*43.2****	–	*8.6**	*28.7****	*43.51****	–
(b) F-Test of excluded instruments	*69.0****	*176.9****	*110.4****	*103.1****	*16.6****	*21.7****	*21.4****	*12.5****	*8.5**	*28.4****	*22.28****	*6.78****
(c) Anderson-Rubin Wald test: χ^2	*7.2***	*6.8****	*7.2****	*214.8****	*3.42*	*8.3***	*4.9**	*3.9****	*3.4*	*8.3**	*11.30**	*2.63****
(c) Stock-Wright LM S-statistic	–	–	*12.8****	–	–	–	*11.5****	–	–	–	*11.5****	–
(d) Hansen J statistic χ^2	*0.000*	*0.000*	*0.150*	*0.000*	*0.000*	*0.000*	*0.793*	*0.000*	*0.000*	*0.000*	*0.012*	*0.000*
%Effect	*11.9%*	*9.7%*	*10.5%*	*2.6%*	*20.0%*	*35.8%*	*26.7%*	*3.7%*	*-3.04%*	*-3.30%*	*-3.22%*	*-0.39%*
Linear prediction	*3.6613*	*3.6613*	*3.6613*	*3.6613*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*	*3.5542*
No. of Observations	*32,362*	*32,362*	*32,362*	*32,362*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*	*10,289*

Table 5A5

The Effect of Financial Inclusion on the Candidate Mediating Variables

This table reports instrumental variable regressions for the effect of financial inclusion on each of the candidate mediator variables in analysis. This is the second step out of the three steps required for causal mediation analysis, as illustrated in the Appendix 5B. The specification also includes province fixed effects and a constant term (not shown).

	Household income	**Net worth**	**Wealth**	**Sociali-zation**	**Risk tolerance**	**Trust**	**Filial piety**	**Financial resilience**	**Liquid asset rate**	**Illiquid asset rate**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial inclusion	0.085***	0.687***	0.791***	-0.224*	2.963***	3.276***	-1.001***	0.778***	2.703***	5.561**
	[0.022]	[0.134]	[0.145]	[0.115]	[0.275]	[0.474]	[0.220]	[0.079]	[0.335]	[2.428]
Household income	–	2.105***	2.424***	0.034	0.147**	-0.233**	-0.039	-0.119***	-1.055***	-16.400***
		[0.161]	[0.170]	[0.030]	[0.061]	[0.093]	[0.055]	[0.027]	[0.126]	[1.476]
Net worth	0.078***	–	–	0.003	0.051***	-0.039	-0.016	0.012**	0.190***	4.459***
	[0.007]			[0.006]	[0.012]	[0.026]	[0.012]	[0.005]	[0.032]	[0.493]
Age	-0.001	0.009	0.013	-0.004	0.143***	-0.034	0.184***	0.005	0.041	-0.27
	[0.003]	[0.013]	[0.014]	[0.015]	[0.030]	[0.039]	[0.021]	[0.010]	[0.041]	[0.308]
Age squared/1,000	-0.001	-0.013**	-0.015***	-0.007	-0.034***	-0.016	-0.015**	0.003	-0.006	-0.259***
	[0.001]	[0.005]	[0.006]	[0.004]	[0.009]	[0.012]	[0.008]	[0.003]	[0.016]	[0.085]
Age	0.01	0.164***	0.181***	0.044	0.211**	0.384***	0.179**	-0.007	0.292*	3.675***
	[0.009]	[0.055]	[0.058]	[0.045]	[0.096]	[0.130]	[0.079]	[0.031]	[0.171]	[0.893]
Years of education	0.001	0.006	0.005	0.011***	-0.019**	-0.062***	-0.051***	0.003	0.003	-0.022
	[0.001]	[0.004]	[0.005]	[0.003]	[0.007]	[0.010]	[0.005]	[0.002]	[0.009]	[0.057]
Marital status: Cohabiting/married	0.021***	-0.115*	-0.067	0.056**	-0.269***	-0.396***	0.001	-0.061***	-0.053	-2.128***
	[0.006]	[0.060]	[0.061]	[0.027]	[0.056]	[0.093]	[0.058]	[0.022]	[0.099]	[0.772]
-"-: Widowed/Separated/Divorced	0.004	-0.102*	-0.051	0.084***	-0.105	-0.405***	-0.091	-0.089***	0.001	-0.823
	[0.006]	[0.058]	[0.060]	[0.032]	[0.074]	[0.106]	[0.071]	[0.030]	[0.128]	[0.864]
-"-: Single	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
Number of children	0.009***	-0.019	-0.015	0.021**	-0.033*	-0.017	0.063***	-0.042***	-0.289***	-1.194***
	[0.002]	[0.014]	[0.015]	[0.009]	[0.020]	[0.025]	[0.014]	[0.006]	[0.026]	[0.224]
Single child	0.018**	0.121***	0.129***	-0.025	0.069	0.216**	-0.008	0.030*	-0.036	0.382
	[0.009]	[0.047]	[0.047]	[0.024]	[0.045]	[0.088]	[0.051]	[0.016]	[0.059]	[0.526]
Same province as parents	-0.028***	0.235***	0.238***	-0.008	0.001	0.101	-0.121***	-0.006	0.028	4.224***
	[0.004]	[0.032]	[0.033]	[0.018]	[0.043]	[0.085]	[0.033]	[0.012]	[0.048]	[0.422]

Table 5A5 continued in next page

Table 5A5 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sociable person	-0.001	-0.012	-0.009	–	-0.001	-0.241***	0.084***	-0.005	-0.010	-0.064
	[0.002]	[0.010]	[0.010]		[0.019]	[0.030]	[0.014]	[0.006]	[0.026]	[0.196]
Physical condition: Good	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Fair	0.001	0.013	0.024	0.013	0.150***	0.235***	-0.027	0.014	-0.042	-1.249***
	[0.002]	[0.018]	[0.019]	[0.020]	[0.042]	[0.066]	[0.036]	[0.013]	[0.058]	[0.457]
-"-: Poor	0.008*	0.049	0.066*	0.119***	0.513***	0.460***	-0.052	0.034	0.092	-2.301***
	[0.004]	[0.034]	[0.035]	[0.045]	[0.101]	[0.148]	[0.075]	[0.026]	[0.119]	[0.645]
Labour market status: Self-employed	0.020***	-0.174***	-0.180***	0.014	0.001	-0.065	0.073	0.112***	-0.272***	-1.924***
	[0.006]	[0.032]	[0.033]	[0.025]	[0.053]	[0.072]	[0.049]	[0.015]	[0.098]	[0.704]
-"-: Employed	0.032***	-0.05	-0.005	0.039	0.04	-0.133**	-0.003	0.040**	-0.583***	-4.157***
	[0.006]	[0.039]	[0.039]	[0.024]	[0.054]	[0.060]	[0.044]	[0.016]	[0.081]	[0.662]
-"-: Farmers	0.018***	-0.070**	-0.059*	0.065***	0.236***	0.587***	0.222***	0.189***	0.379***	1.421*
	[0.006]	[0.030]	[0.032]	[0.024]	[0.064]	[0.094]	[0.048]	[0.017]	[0.093]	[0.734]
-"-: Casual workers	0.011	0.007	0.01	-0.03	0.189	0.508*	0.054	0.112**	-0.101	-2.453*
	[0.015]	[0.088]	[0.088]	[0.075]	[0.207]	[0.278]	[0.122]	[0.047]	[0.167]	[1.272]
-"-: Students	0.005	-0.248***	-0.262***	0.02	-0.239***	-0.404***	-0.054	-0.038*	0.132	-6.744***
	[0.005]	[0.044]	[0.045]	[0.029]	[0.062]	[0.076]	[0.056]	[0.023]	[0.139]	[0.865]
-"-: Homemakers	0.012**	-0.038	-0.023	-0.037	0.077	0.158*	0.066	0.071***	-0.074	-1.573**
	[0.006]	[0.035]	[0.035]	[0.027]	[0.059]	[0.082]	[0.057]	[0.018]	[0.087]	[0.771]
-"-: Retired, Inactive, Other	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Unemployed	-0.006	-0.116***	-0.100**	-0.070*	0.258*	-0.143	0.047	-0.018	-0.172	-2.255***
	[0.006]	[0.038]	[0.039]	[0.037]	[0.140]	[0.165]	[0.080]	[0.031]	[0.134]	[0.849]
Urbanisation: Urban-Urban	0.003	0.071**	0.074**	0.047**	-0.082*	-0.469***	-0.446***	0.047***	0.233***	1.487***
	[0.004]	[0.034]	[0.035]	[0.022]	[0.047]	[0.056]	[0.039]	[0.012]	[0.058]	[0.566]
-"-: Rural-Urban	-0.005	0.205***	0.262***	0.036	0.017	-0.314***	-0.322***	0.028	-0.014	4.215***
	[0.008]	[0.045]	[0.049]	[0.027]	[0.082]	[0.100]	[0.060]	[0.020]	[0.074]	[0.897]
-"-: Urban-Rural	-0.052**	0.708***	0.672**	-0.144	-0.35	-0.23	-0.278	-0.007	-0.17	-7.182***
	[0.023]	[0.269]	[0.268]	[0.125]	[0.229]	[0.389]	[0.203]	[0.080]	[0.209]	[1.391]
-"-: Rural-Rural	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
No. of Observations	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*	*32,306*

Table 5A6

Causal Mediation Analysis – All Results

This table reports instrumental variable regressions for the effect of 10 candidate mediator variables on well-being. The dependent variable is happiness, and each of the candidate mediators in the first row is instrument by financial literacy and log(distance to bank). These are the complete estimates of the specifications reported in Table 5.8. The specifications also include province fixed effects and a constant term (not shown).

Mediating variable	Household income	Net worth	Wealth	Sociali-zation	Risk tolerance	Trust	Filial piety	Financial resilience	Liquid asset rate	Illiquid asset rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial inclusion	0.038*	0.049**	0.051***	0.083***	0.064***	0.083***	0.029	-0.070	-0.041	0.065***
	[0.023]	[0.019]	[0.019]	[0.014]	[0.015]	[0.014]	[0.024]	[0.047]	[0.040]	[0.025]
Mediating variable	4.579***	0.494***	0.440***	0.04	0.097***	0.040**	-0.355***	0.564***	0.155***	0.018
	[1.624]	[0.138]	[0.122]	[0.066]	[0.028]	[0.019]	[0.110]	[0.164]	[0.046]	[0.017]
Household income	–	-0.828***	-0.857***	0.091***	0.061**	0.088***	0.068**	0.135***	0.236***	0.382
		[0.295]	[0.303]	[0.030]	[0.031]	[0.031]	[0.033]	[0.034]	[0.056]	[0.284]
Net worth	-0.274**	–	–	0.053***	0.045***	0.053***	0.035***	0.039***	0.019	-0.033
	[0.126]			[0.006]	[0.007]	[0.006]	[0.009]	[0.007]	[0.012]	[0.083]
Age	-0.058***	-0.053***	-0.055***	-0.055***	-0.075***	-0.057***	-0.011	-0.062***	-0.077***	-0.056***
	[0.015]	[0.014]	[0.013]	[0.012]	[0.013]	[0.012]	[0.019]	[0.013]	[0.014]	[0.013]
Age squared/1,000	-0.039***	-0.045***	-0.044***	-0.049***	-0.046***	-0.048***	-0.053***	-0.051***	-0.048***	-0.045***
	[0.006]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]	[0.005]	[0.004]	[0.004]	[0.006]
Age	0.471***	0.505***	0.500***	0.561***	0.546***	0.546***	0.618***	0.577***	0.521***	0.503***
	[0.062]	[0.055]	[0.056]	[0.042]	[0.043]	[0.043]	[0.053]	[0.044]	[0.047]	[0.073]
Years of education	-0.002	-0.001	-0.001	0.009***	0.006**	0.009***	-0.014*	0.003	0.003	0.009***
	[0.005]	[0.004]	[0.004]	[0.002]	[0.002]	[0.002]	[0.008]	[0.003]	[0.003]	[0.002]
Marital status: Cohabiting/married	0.190***	0.385***	0.355***	0.330***	0.335***	0.338***	0.303***	0.343***	0.328***	0.355***
	[0.072]	[0.039]	[0.035]	[0.030]	[0.030]	[0.030]	[0.035]	[0.030]	[0.032]	[0.041]
-"-: Widowed/Separated/Divorced	-0.064	0.059	0.026	0.006	0.008	0.015	-0.043	0.044	0.011	0.007
	[0.060]	[0.046]	[0.042]	[0.038]	[0.038]	[0.038]	[0.046]	[0.041]	[0.040]	[0.041]
-"-: Single	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
Number of children	-0.060***	-0.007	-0.011	-0.016*	-0.015**	-0.016**	0.006	0.003	0.022*	0.005
	[0.019]	[0.009]	[0.009]	[0.008]	[0.008]	[0.008]	[0.011]	[0.009]	[0.013]	[0.022]

Table 5A6 continued in next page

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Single child	0.002	-0.010	-0.006	0.041*	0.045**	0.038*	0.071***	0.044*	0.058**	0.037
	[0.048]	[0.031]	[0.030]	[0.021]	[0.022]	[0.021]	[0.026]	[0.022]	[0.024]	[0.024]
Same province as parents	0.169***	-0.091**	-0.079*	0.040**	0.035**	0.034**	-0.004	0.034**	0.036**	-0.04
	[0.055]	[0.045]	[0.042]	[0.016]	[0.016]	[0.016]	[0.023]	[0.016]	[0.016]	[0.078]
Sociable person	0.038*	0.049**	0.051***	0.083***	0.064***	0.083***	0.029	-0.070	-0.041	0.065***
	[0.011]	[0.009]	[0.009]		[0.008]	[0.009]	[0.012]	[0.008]	[0.009]	[0.009]
Physical condition: Good	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Fair	-0.313***	-0.309***	-0.315***	-0.332***	-0.325***	-0.328***	-0.330***	-0.317***	-0.308***	-0.313***
	[0.021]	[0.020]	[0.020]	[0.018]	[0.019]	[0.018]	[0.021]	[0.019]	[0.020]	[0.027]
-"-: Poor	-0.464***	-0.455***	-0.460***	-0.473***	-0.477***	-0.474***	-0.466***	-0.439***	-0.432***	-0.425***
	[0.047]	[0.046]	[0.046]	[0.046]	[0.045]	[0.045]	[0.051]	[0.046]	[0.047]	[0.065]
Labour market status: Self-employed	-0.122***	0.060	0.051	-0.031	-0.028	-0.030	0.010	-0.084***	0.029	0.005
	[0.046]	[0.039]	[0.037]	[0.024]	[0.024]	[0.024]	[0.031]	[0.029]	[0.032]	[0.043]
-"-: Employed	-0.086	0.079***	0.060**	0.074***	0.055**	0.071***	0.069***	0.037	0.156***	0.148**
	[0.064]	[0.024]	[0.024]	[0.022]	[0.022]	[0.022]	[0.025]	[0.025]	[0.034]	[0.075]
-"-: Farmers	-0.096**	0.039	0.030	-0.022	-0.025	-0.036	0.087**	-0.091***	-0.032	-0.031
	[0.040]	[0.032]	[0.030]	[0.024]	[0.023]	[0.024]	[0.044]	[0.031]	[0.025]	[0.027]
-"-: Casual workers	-0.023	0.024	0.029	0.058	0.043	0.048	0.057	-0.011	0.036	0.09
	[0.142]	[0.085]	[0.082]	[0.078]	[0.078]	[0.077]	[0.084]	[0.081]	[0.083]	[0.087]
-"-: Students	-0.012	0.164***	0.152***	0.063**	0.052**	0.063**	0.017	0.052*	0.001	0.157*
	[0.043]	[0.043]	[0.040]	[0.025]	[0.025]	[0.025]	[0.033]	[0.026]	[0.036]	[0.095]
-"-: Homemakers	-0.005	0.049*	0.041	0.031	0.033	0.029	0.085***	0.015	0.068**	0.067
	[0.039]	[0.029]	[0.028]	[0.026]	[0.026]	[0.026]	[0.032]	[0.026]	[0.031]	[0.044]
-"-: Retired, Inactive, Other	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
-"-: Unemployed	-0.133***	-0.116**	-0.127***	-0.179***	-0.180***	-0.170***	-0.130***	-0.141***	-0.104**	-0.134**
	[0.051]	[0.046]	[0.044]	[0.041]	[0.042]	[0.041]	[0.048]	[0.043]	[0.048]	[0.060]
Urbanisation: Urban-Urban	-0.087***	-0.099***	-0.093***	-0.042***	-0.053***	-0.033**	-0.222***	-0.088***	-0.092***	-0.071**
	[0.026]	[0.024]	[0.023]	[0.016]	[0.016]	[0.016]	[0.058]	[0.021]	[0.022]	[0.033]

Table 5A6 continued in next page

Table 5A6 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-"-: Rural-Urban	0.042	-0.138***	-0.135***	0.001	-0.001	0.009	-0.147***	-0.023	-0.003	-0.077
	[0.042]	[0.052]	[0.051]	[0.026]	[0.026]	[0.026]	[0.054]	[0.027]	[0.027]	[0.082]
-"-: Urban-Rural	0.292**	-0.071	-0.031	0.145	0.179	0.149	0.115	0.112	0.144	0.181
	[0.144]	[0.167]	[0.157]	[0.110]	[0.110]	[0.108]	[0.116]	[0.107]	[0.123]	[0.119]
-"-: Rural-Rural	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*	*{Ref.}*
No. of Observations	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*	*32,272*

Appendix 5B: Causal Mediation Analysis in an IV framework

I use a mediation model to assess the causal mechanisms behind the financial inclusion effect on subjective well-being. Mediation models consist of a treatment variable FI (in this case, financial inclusion and its proxies), a final outcome WB (in this case, subjective well-being) and a mediating variable M (here, household income, net worth, wealth, socialization, financial risk tolerance, trust, filial piety, financial resilience, liquid asset rate, illiquid asset rate) that represents a mechanism through which FI affects WB. In the model, which basically differentiates the 'total effect' into 'direct effect' and 'indirect effect' of *FI* on *WB* through *M*. Hence, I employ instrumental variables *Z (*here, financial literacy, distance to bank) which could be added to cope with the endogeneity of both *FI* and *M.* I capture the coefficient of direct effect (DE= β_{WB}^{FI}) of *FI* on *WB* which is independent of *M.* Then multiplying the coefficients of *M* and *FI* by the coefficients of *WB* gives the indirect effect through *M*, denoted by IE=$\beta_{\mathrm{M}}^{\mathrm{FI}} * \beta_{WB}^{M}$. Regarding this mechanism, the total effect can be calculated by summing up these two terms, total effect (TE)= β_{WB}^{FI} + $\beta_{\mathrm{M}}^{\mathrm{FI}} * \beta_{\mathrm{WB}}^{\mathrm{M}}$.

Basically, I have generated three model equations, which are illustrated graphically in *Table B*. As model 1 estimating the causal effect of *FI* on *M* and model 2estimating the causal effect of *FI* on *WB* that are both estimating by using the standard IV models, where *FI* is endogenous and *Z* is introducing instrumental variables. Model III is causal mediating equation identified with instrumental variables *Z*. $M = f_M(FI, \epsilon_M)$ and $Y = f_{WB}(FI, M, \epsilon_{WB})$, which means *FI* through *M* indirectly and directly causing *WB.* Hence, in the regression of *WB* on *FI* and *M*, there are two potentially endogenous variables, but only one instrumental variables, *Z*, addresses their endogeneity. The approach that proposed by Dippel *et al.*, (2021), Causal mediation is described in terms of the following 3 equations:

$$FI = \beta_{FI}^{Z} * Z + \epsilon_{FI} \qquad \text{(I)}$$

$$M = \beta_{M}^{FI} * FI + \epsilon_{M} \qquad \text{(II)}$$

$$WB = \beta_{WB}^{FI} * FI + \beta_{WB}^{M} * M + \eta_{WB} \qquad \text{(III)}$$

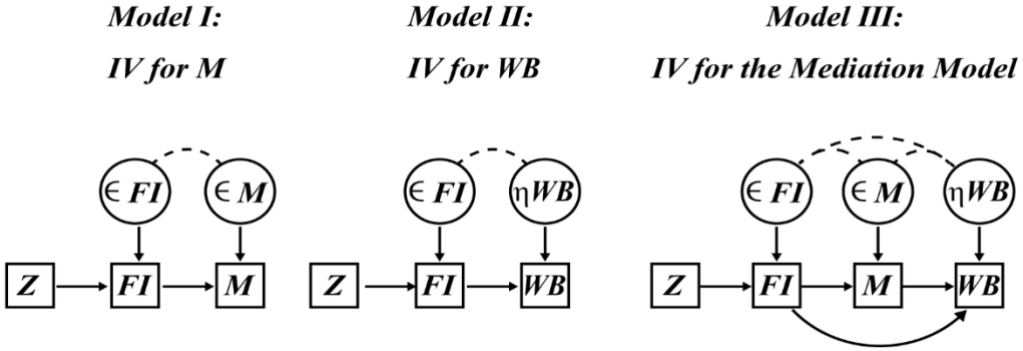

Figure 5B1
Graphical description of causal mediation analysis

Chapter 6

Conclusion

This thesis has engaged in the study of the important role of China's economic, social and financial reform toward shaping the financial decision making among Chinese households, in terms of formal financial market participation, risky asset market participation, and related behaviours in terms of asset allocation and reallocation, and portfolio choice. Moreover, it has engaged in an inquiry aiming to highlight the impact of related household financial behaviours on individual subjective well-being. The findings of this thesis are in accordance with the consensus that developments in economic, social and financial environments shaped by policy changes can exert a great impact on behavioural change, welfare and the well-being of household and their members. The insight aim to inform academic research and policy making in China and internationally.

The first essay examined the effects of education on financial market participation and portfolio choice amongst Chinese households, drawing upon the major educational reform in the 1980s, which overlapped with the initiation of the one-child policy. The reform increased the number of compulsory schooling years, conditional on compliance with the one-child policy for schooling to be available for free. The inquiry finds a positive causal effect from free compulsory schooling to participation in stock and risky asset markets, as well as on the amounts invested and the diversification of household portfolios. The findings confirm the causal effect of education on household financial outcomes, in the sui generis setting of modern China, which had not received attention in the past.

The second essay examined the effect of early life exposure to locally developed financial markets on household financial inclusion and risky asset market participation. The inquiry identified cities using the CHFS dataset of 2015 in a novel fashion, in a manner that enables examining whether individuals who were still at compulsory schooling age in special economic zones or coastal cities have better household financial outcomes several years after the reform took place, i.e., in 2015. The findings of the second essay highlight the early life exposure to an environment that encourages the formation of additional cognitive skills and induces behavioural change can have a positive impact on behaviours that are conducive to wealth accumulation throughout the lifecycle.

The insights of both two essays are of relevance to policy makers who aim to design policies related to knowledge formation, socialization, and behavioural change that can impact household finance behaviours. The findings highlighted significant mediating relationships arising from basic financial knowledge, behavioural change that might be conducive to embracing financial risk. Such behaviours can be encouraged by both formal education, without exclusions, and by experiential learning via leaving in an environment that fosters the formation of related skills and attitudes. Both channels can become drivers of endogenous growth, via greater financial sector development. Such growth can become more welfare enhancive, sustainable, inclusive, and equal, spurring its benefits to the entirety of the Chinese society.

This third essay further reinforced the notion that a more developed and inclusive financial sector can have welfare-enhancing effect, by examining the impact of financial inclusion and formal financial-institutional affiliation to subjective well-being. The findings find large effects of financial inclusion on well-being, controlling for income, relative income, and wealth, along with several other socioeconomic and macroeconomic characteristics. Importantly, the third essay finds that the mediator of the effect of financial inclusion on well-being is the enhancement of the financial resilience of Chinese household, via enabling the possession of liquid assets that can serve as emergency funds for a period of time. Hence, a more developed and inclusive financial sector can induce positive changes to the well-being of the Chinese population via the strengthening of the financial resilience of households and the alleviation of extreme financial constraints in instances of economic shocks. Hence, policies that aim for more inclusive financial sector development can achieve improvements in the well-being of Chinese households.

This thesis has attempted a number of methodological innovations, in terms of utilizing existing microeconomic data from the CHFS in a novel way. In the first essay, I employ an identification strategy that uses the exogenous variation in years of compulsory schooling that arose from a major reform in the late 1980s, combined with the overlapping single-child policy of 1980, which applied financial constraints on school attendance for noncompliant households. I utilise the 2013 wave of the CHFS, as it is the only wave that can enable the identification of households of Han ethnicity for the entire sample. In follow-up waves of the CHFS, such as that of 2015 and 2017, identifying ethnicity is only possible for a sub-sample, i.e., the individuals who were also present in the 2013 wave. That feature, along with the availability of detailed data on provinces enables identifying exposure to the

compositive reform of free compulsory schooling arising from the two overlapping reforms. Moreover, I am able to decipher whether individuals were born and live in the same region or whether they have moved via comparing and contrasting the regions in which the parents live. I also utilise information related to the year in which they moved to their current address.

- The first essay shed light on the causal effect of higher educational attainment due to the conditional free-schooling reform on financial market participation, asset allocation, and portfolio diversification.
- It found significant positive effects of large magnitudes to all the desirable asset allocation outcomes of interest.
- The effects are significant for both males and females, although the magnitude of the effects is higher for males.
- The results are not significant for residents of rural regions. It seems that the residents of urban regions are the ones that benefitted the most from the additional years of free compulsory schooling.
- The causal moderation analysis indicates that the moderate increase in financial literacy and the decrease in Confucian norms of filial piety are likely the plausible transmission channels through which increased schooling affects financial participation.
- The strong mediating role of financial literacy and behavioural change, jointly with the finding that the effect is significant for residents of urban regions primarily suggests that the external environment is likely to entail additional enabling factors which can interact with more years of schooling in a manner that can have positive impacts on household financial outcomes.
- This latter interpretation provided the motivation for the second essay, which aims to examine if reforms related to the external environment, such as the special economic zone and coastal city reform could impacts on distinctive types of financial behaviour.

Hence, the labour income and wealth of Chinese households has increased over the last decades as a result of significant economic development and increasing savings rates. However, the transformation of this higher disposable income into higher accumulated wealth for older generations, and resulting lower inequality, is limited by low financial knowledge, financial exclusion, limited financial market participation, and low portfolio diversification.

Hence, the second essay in this thesis investigated the impact of early life exposure to locally developed financial markets on household financial outcomes later in life. Using a difference-in-differences approach, it was found that growing up in a special economic zone or coastal city was found to exert a significant positive impact on financial inclusion and access to formal finance, and large positive effects on the likelihood of holding stocks, risky assets, and the diversification of household portfolios. The robustness of the findings is reinforced by the contrast of the effects between individuals who were born and grew up in special economic zones, compared to those who live in those cities but did not grow up there. Moreover, it is reinforced when a fuzzy regression discontinuity design was implemented, instrumenting the distance from home to a local bank with growing up with finance. The results further hold in placebo tests, stacked difference-in-difference designs which account for the implementation of the special economic zoning reform and a battery of robustness exercises. The evidence adheres to the literature in the socialization of finance, regarding the specifics of adaptive learning and potential social transmission mechanisms, such as the one that occurred in a unique and policy-relevant situation, i.e., China's special economic zone and coastal city reform. Some of the highlights of the essay involve the following:

- The difference-in-differences empirical design implemented interacts two variables capturing the timing of the reform across the 18 special economic zones and coastal and being aged ≤12 at the year of the reform, i.e., being still at compulsory schooling age.
- The double difference aims to capture the different exposure of the young population to a local environment that involves the early elements of financial development via the availability of new set of institutions and instruments.
- The identification strategy is enabled by a unique feature in the CHFS 2015 dataset, i.e., the availability of three distinctive questions that enable identifying the city of residence of the individual, along with whether this was the city in which he or she was born.
- I found that individuals who were exposed to more developed local financial markets are more likely to engage with formal financial institutions and allocate larger fractions of their wealth in more diversified risky assets several years after the reform took place.
- The results are significant for individuals who grew up and still leave in a special economic zone or coastal city, compared to the ones who did not grow up in a more developed local financial market and might live in one at present.
- The distance from home to bank is found to exert a similar significant impact, when instrumented by growing up with finance.

- Accounting for the different timing of the reform across cities between 1980-1990 does not alter the direction and significance of the estimates.
- Greater financial literacy among individuals growing up with finance mediates the reform's effect on household financial assets allocation.
- Greater financial risk tolerance among those who grew up with finance also appears to exert a moderating impact, somewhat smaller than that of financial literacy.

Hence, as China's experiment of opening up to financial development through the special economic zones and coastal cities appears to have exerted positive significant impacts to household financial outcomes, apart from any anticipated positive trade and economic development effects it might have had at the regional and national level. There appear to have been knowledge and attitudinal spillover effects from the reform, which can be key attributes of the transformation of financial sector development into endogenous growth. The policy relevant inferences suggest that expanding upon the liberalization of the financial sector in more cities and provinces is very likely to generate positive effects on household financial outcomes. This can be conducive to wealth accumulation, inequality reduction, and increased well-being of the Chinese population. The latter argument provides the conceptual link to the penultimate essay in this thesis.

Hence, the relationship between financial market participation and well-being becomes the topic of inquiry of the third and final essay. I examine the effect of financial inclusion on subjective well-being using three distinctive proxy variables for financial inclusion and utilizing both linear cardinal models and ordered probit models. I find large effects of financial inclusion on subjective well-being, and those effects are robust to specifications with regional macroeconomic indicators, relative income as well as alternative proxies capturing the affiliation with formal and informal financial institutions. The essay concludes by performing causal mediation analysis in an IV setting, and it is found that financial resilience mediates the effect of financial inclusion on subjective well-being. Some of the highlights of the study involve:

- I utilize data from the 2015 wave of the CHFS. Its unique feature is the identification of cities, which allows us to cluster the standard errors at that level.
- I employ three proxies for financial inclusion, namely account ownership, access to finance from formal financial institutions, and the ratio of the amount borrows from

informal borrows to the total amount borrowed from both formal and informal borrowers. The latter proxies exist for the sub-samples of individuals with any access to finance.

- I estimate both linear cardinal models, ordered probit models, and instrumental variable models for subjective well-being as a cardinal variable.
- The instruments used for financial inclusion involve financial literacy and the distance between an individual's home and the bank. Both are conceptually and statistically valid instruments.
- Causal mediation analysis is employed at an IV setting testing several potential mediating mechanisms.
- The mediating factor of the effect of financial inclusion on well being appears to be financial resilience, defined as the availability of liquid assets worth at least three months of an individual's annual income.

The findings enable a clear inference regarding how inclusive finance can improve the well-being of the population. Therefore, policy makers should continue to support financial sector development aiming for greater financial inclusion of the population in China. This is also likely to lower the costs of financial products, raise awareness about financial products, and support the financial resilience of citizens, minimizing reliance to costly informal sources of finance, especially in times of need or emergency. Moreover, the policy makers can consider the availability of financial resources for socially disadvantaged groups in order to minimize reliance on informal finance providers. Affiliation with the latter provides is shown to exert a negative impact on well-being. Moreover, the generation of the personal and social credit system might entail the potential to reduce the financial exclusion of disadvantaged groups by formal financial institutions, especially if designed with that aim.

Overall, this thesis has contributed to the existing literature on household finance, social finance, the economics of happiness and well-being, socioeconomics, among several other branches of the finance, accounting and economics literature. Due to present economic circumstances and policymakers' growing interest in well-being metrics, it has never been more important to comprehend the link between a household's financial status and well-being. There have been considerable changes in the structure of family finances during the last four decades, as a result of legislative reforms, the deregulation of the banking and financial industry in many nations, and the availability of new and more complex financial products and instruments. Since the late 1970s, these changes to the financial markets intended to foster competition and decrease entrance barriers to the banking industry. They have boosted the range of financial products

available for consumers to invest in and also made it easier to get credit and accrue debt. The household's financial situation has the potential to have a substantial influence at both the macroeconomic level, via increased savings and their transformation into investment in riskier assets, the efficacy of monetary policy, and ultimate well-being at the individual level. At the macro level, household liquidity constraints and rising debt levels may have a substantial effect on aggregate demand. Through household liquidity constraints and the related responsiveness to changes in interest rates, the status of household finances may also impact the efficacy of monetary policy. At the micro level, the household's financial situation may impact an individual's spending, which in turn affects their happiness levels across the lifecycle.

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