

Stock returns of family firms in China

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Extended Abstract (Preliminary)

This paper aims to study whether investors in the Chinese stock market earn higher returns by investing in family firms than in non-family counterparts. Over the past decade, China's stock market has grown tremendously, and today, its stock market capitalization ranks the second largest in the world. Among the listed firms, family firms have grown in significance with the numerous market-oriented economic reforms that have been taking place in China. The number of listed family firms now makes up more than half of the total number of listed firms in China's stock market.

On the one hand, Chinese family firms have higher senior management ownership than nonfamily firms. This characteristic implies that family firms have less severe agency problem between owners and managers than nonfamily ones. On the other hand, many Chinese controlling families use their high ownership to seek for their private benefits, thus expropriating minority shareholders and generating conflicts with them. These distinct characteristics of Chinese family firms motivate the investigation of their performance relative to the non-family ones. Whether family ownership is more or less valuable than non-family structure has been popularly studied in the literature. It can be noted that financial and stock market performance are related, as an investor's point of view depends on the firm's behavior. However, only a few studies in the literature take the perspective of the investor and analyze the stock returns of family firms, and surprisingly none for the case of China, to the best of our knowledge. Against this background, this paper aims to study the relative performance of family firms as compared to the non-family ones in China.

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Hypotheses

With the aim of studying the relative performance of Chinese family firms over non-family firms in terms of stock market returns, and how such performance can be influenced by different firm characteristics, this paper seeks to investigate three hypotheses.

In China, senior management often owns a large percentage of the shares of family firms, which tends to reduce Type I agency cost associated with the separation of shareholders and managers faced by Chinese family firms. Good corporate governance arising from better alignment of interests between owners and managers has positive effect on stock returns for these firms. Therefore, we would expect stock returns to be higher for family firms than non- family firms. In addition, according to the theory of behavioral agency, family businesses care most about the family's socio-emotional wealth, and may maximize the families' interests at the expense of the other outside shareholders. This may make the Type II agency problem between the major and minority investors become more serious in family firms. As a result, higher stock returns of family firms may be needed to compensate investors for this risk exposure. The two effects combined lead to:

Hypothesis 1: Family firms outperform non-family firms in stock returns. Generally, size (measured by the market value) and value (measured by the book-to-market ratio, BM) are two important factors explaining cross-sectional returns. We hypothesize that firms of different sizes have heterogeneous effects on stock returns between family and non- family firms.

Smaller family firms tend to suffer from less agency cost because of higher decision-making efficiency. Smaller family firms are more concentrated in ownership and family members are more concerned about firm performance than smaller non-family firms. This is because smaller family firms strive for better firm performance to increase family socio- emotional wealth. In addition, higher levels of uncertainty tend to exist in smaller companies due to greater financial problems and some operational inefficiencies. Better firm performance, coupled with uncertainty compensation for investors, result in higher stock returns for smaller family firms than smaller non-family ones. By contrast, in larger family firms, family ownership may be less concentrated, and they tend to be more



opportunistic in behavior. They also tend to have higher administrative complexities. Thus, larger family firms tend to present similar performance as larger non-family firms.

It is also expected that BM affects stock returns of family firms versus non-family firms. First, in our sample of data, MV and BM are found to be positively correlated, with a correlation coefficient of 0.628. Thus, lower BM firms are more often smaller firms and, as discussed above, smaller family firms tend to outperform their non-family counterparts. When BM becomes higher, the size of the firm also becomes larger, and the difference between family firms and non-family firms diminishes. Second, low BM firms are growth firms with high earning potential whereas high BM firms are value firms with low earning potential. For family firms with low BM and high growth, family members try their best to give good ideas, make changes and take the business to the next stage of development which needs future financing. Under these circumstances, high growth Chinese family firms are prone to distribute more dividends as a friendly treatment to minority shareholders. The above suggests that stock returns of family firms with low BM tend to be higher than those of non-family ones. Therefore, we have:

Hypothesis 2a: Smaller-sized family firms outperform smaller-sized non-family firms in stock returns.

Hypothesis 2b: Family firms with low book-to-market ratio outperform their non-family firm counterparts in stock returns.

The separation of family ownership and control is expected to be another influential factor affecting the difference in returns between family and non-family businesses since such separation is prevalent among family firms. Family owners usually have excessive control over low ownership through enhanced control mechanisms such as cross-shareholdings, pyramidal structures and dual equity, thus allowing a family to use a small amount of cash flow to control the business group. The extent of separation between cash flow rights and voting rights is higher in China than in the US through the use of pyramid structures. In our sample of data, this separation is found to be higher in family-controlled firms than in other firms. When family control is high enough, the family affects the main decisions, while the ownership is low and the benefits of depriving minority shareholders outweigh the costs. In such circumstances, the family owner may ask the family chief executive to help expropriate minority shareholders because the owner and manager usually have some kinship.

Therefore, the family decisions are more likely to be for the benefit of the family, which may violate the interests of minority shareholders. The family with great separation of control from ownership has more incentive to tunnel capital and resources away from minority shareholders, thus more likely to lead to Type II agency problem to overshadow Type I agency problem. Consequently, we derive:

Hypothesis 3: The stock return performance of family firms is influenced by the separation of family ownership and control.

Data and methodology

All the stock returns and accounting data of listed firms used in this paper are extracted from the China Stock Market & Accounting Research Database. Our sample covers monthly data from January 2006 to December 2016. We focus on A-share stocks traded on the stock exchange. In analysis, we exclude financial firms, firms with missing data, firms under special treatment (ST or *ST), and firms with negative book equity. We then use three conditions to identify a family firm: (a) The firm is ultimately controlled by a family or natural person. (b) The ultimate controller is the firm's largest shareholder. (c) The control right of the largest shareholder is no less than 10%. In analysis, we winsorize the return variable at the 1% level to minimize the effect of outliers.

To provide empirical evidence for the above hypotheses, the following general econometric model is set up:

rit = ai + biXit + ciZit + eit (1)

where*rit* isthereturnsadjustedfordividendsforfirmiinmontht. Theindependentvariables are *Xit* and *Zit*. *Xit* is the vector consisting of our main variables of interest, whereas *Zit* is a vector of control variables that stands for some firm characteristics. These firm characteristics may influence the difference in stock returns. It is important to control for them since family firms possess peculiarities not shared by non-family firms.

Under Hypothesis 1, *Xit* in (1) contains a single variable, a dummy variable indicating whether the firm is a family or non-family one. It takes on the value of one when it is a family firm and zero otherwise. Hypothesis 1 is thus supported when the estimated coefficient of the family firm dummy is positive and significant.

Under Hypothesis 2, we divide the sample into three groups of small, medium and large firms according to the market value percentile rank (0-33.3%, 33.3-66.7%, 66.7-100%) and also split all firms into three groups: low BM, medium BM and high BM firms by the BM ratio percentile rank (0-



33.3%, 33.3-66.7%, 66.7-100%). If the estimated coefficient of the family firm dummy differs in magnitude and level of significance across the different groups of firms, Hypothesis 2 is being supported.

To provide evidence for our Hypothesis 3, we capture the effect of the separation of family control from ownership with the use of the wedge ratio and the wedge dummy variable. The former is measured by the ratio of ultimate family control to ultimate family ownership. When wedge is close to one, the difference between the cash flow rights and voting rights of the controlling shareholder(s) becomes smaller. The latter variable equals one if the wedge ratio is higher than 0.841 (the average wedge ratio in the entire sample) and zero otherwise. Hypothesis 3 can be supported if the estimated coefficient of the interaction between the family firm dummy and the wedge dummy or the interaction between the family firm dummy and the wedge dummy or the interaction between the family firm.

Following the literature, we use both Fama and MacBeth (FMB) regression and the pooled panel ordinary least squares (POLS) method to provide empirical evidence for the above hypotheses. The FMB regression is applied with two steps. In the first step, cross-sectional regressions for each month is run, and in the second step, the coefficient estimates are determined based on the mean and statistical significance of the time series results from these monthly estimates. The Newey-West standard errors are used in assessing statistical significance to overcome autocorrelation and heteroscedasticity problems in the error terms in the regression models.

By using cross-sectional regression results in the time series analysis in the FMB regression, some valuable information present in the panel data set may be lost, thus giving rise to potential bias of the estimation results. Therefore, we also apply the POLS regression method to the analysis of the data. We use cluster standard errors to account for heteroscedasticity and autocorrelation problems. Notice that cross-sectional dependency is likely to be present in microeconomic panel data. Due to the highly unbalanced nature of our panel data set, the problem of cross-sectional dependency can be purged by the use of time dummies. We also control for industry effect by using industry dummies, since some firms can earn higher returns by centering on more profitable industries.

Results

We find from both the FMB and POLS results that the estimated coefficients of the family firm dummy are always positive and significant across all models. Therefore, we can draw a conclusion that family firms outperform non-family firms in Chinese stock market, and our Hypothesis 1 is supported.

When we divide the sample into small, medium and large firms, we find that Hypothesis 1 is only supported for small- and medium-sized firms, but not large-sized firms. Smaller family firms present better stock market performance than smaller non-family firms as stated in Hypothesis 2a. When we split all firms into three groups by value: low, medium and high BM, we can see that the estimated coefficient of the family firm dummy variable is positive and significant only in the low BM group.

Furthermore, the estimated coefficient gets smaller as BM increases. The results suggest that the firm's value has a negative effect on stock returns. That is to say, for growth firms with low BM, family firms outperform non-family ones. However, for value firms with high BM, the difference between family firms and non-family firms becomes small and nebulous. The results are supportive of our Hypothesis 2b.

Turing to the influence of separation of ownership and control on stock returns of family firms versus non-family ones, we find that the estimated coefficients of the family firm dummy are positive and significant, that is, stock returns of firms controlled by families are higher than those of non-family firms. This provide further evidence in support of our Hypothesis 1. As a whole, the two interaction terms related to the separation of ownership and control of family firms are found to be positive and significant to some degree. This implies that family firms with more concentrated portion of cash flows and voting rights, that is, less separation of ownership and control, have higher equity returns. Family firms are less efficient and suffer from higher agency cost when their family members have more excessive control and lower cash flow. So Chinese family firms with less separation of control from ownership have lower tunneling incentive, thus alleviating the conflicts between large and minority shareholders.

Conclusion

As an important organizational form, family firms are very prevalent around the world. In particular, family firms have grown in significance in stock market with the numerous market- oriented economic reforms taking place in China since 1978. However, the majority of researches on family firms has just focused on comparing the financial performance in terms of probability measured by



returns on assets and firm valuation measured by Tobin's Q between family and non-family firms. Not many studies in the literature take the perspective of the investor and analyze the stock returns of family firms, and none for China, to the best of our knowledge.

In this paper, we take the point of view of an investor and analyze whether and how family firms outperform non-family firms regarding Chinese stock market returns. To this end, we employ both the Fama and MacBeth regression and pooled panel ordinary least squares approach, control for certain firm characteristics, time and industry effects, and use robust standard errors, to provide empirically valid and robust results.

For a sample of Chinese family firms from 2006 to 2016, we find that stock returns of family firms are significantly higher than those of non-family ones. The result represents a very interesting investment opportunity for investors in China. An investor may obtain higher returns by holding a long position in family firms and a short position in non-family firms. We also provide evidence that smaller family firms present higher stock returns than their non- family counterparts. The superior performance of family firms over non-family firms is also evident for firms with lower BM rather than higher BM. These results suggest that family firms should remain small in size and maintain high growth by innovations to outperform non-family firms. Moreover, we find that the superior performance of family firms is influenced by the separation of family control from ownership. If the family has less separation between cash flow rights and voting rights, it will have less incentive to tunnel interest and benefit away from the minority stakeholders, thereby reducing Type II agency problem in Chinese family firms.

As a whole, results of this study corroborate the implications of agency theory and risk- return tradeoff. An investor can capture more investment opportunities when he/she takes into consideration the above findings in the Chinese A-share stock market. In turn, family firms will strive to improve their operation and management with greater attention paid by investors on them.

Keywords : family firms, size effect, stock returns, ownership structure, value effect JEL classifications : G10, G11, G32



The Effect of Green Announcements on Stock Returns of New Zealand Listed Companies

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ABSTRACT

This paper tests the relationship between green announcements among New Zealand listed companies and their stock market reaction. We find that the market does not have a significant reaction to such announcements. We conclude that New Zealand companies as a whole are already viewed to be quite green. This explains why there is not much of a surprise factor from additional green announcements in New Zealand.

JEL Classification: G10, G32

Keywords: Green announcements; Market reaction; Environment; Social responsibility

Introduction

With an increasing awareness of environmental problems in society, consumers and investors demand companies to take more social responsibilities for their business (Kruger, 2011). Under such external pressure, firms have to think about whether it is worth paying extra cost to go green. The debate of "is it worth being green" has been argued many times. Some people may still consider that going green is costly and will be harmful to firms' profit. For example, solar products may be more expensive than traditional products with similar functions. However, it is difficult to measure the cost of going green by exact dollar spent. The benefits could be found in many different areas and sustainable in the long term. A simple example in our daily lives is, an energy saving light bulb may cost a little bit more than a normal one, but it could save more energy cost and thus save your power bills for long term (Green Experience, 2011). Fortunately, many countries have realized the increasing importance of the environmental issue. Both the government and the public have been paying greater attention on environmental protection and reduction of harmful effects on the environment (UNIDO, 2010).

There are a several perspectives for companies' green activities. Some may believe it can improve the efficiency in operating and increase corporate reputation which could generate more benefits, while others may consider expenditures on the environment as a burden that would decrease companies' competitive advantage (Hart & Ahuja, 1996). In most situations, companies' green activities cost money directly and reduce revenues simultaneously, which may lead to a decrease in future cash flows. As the stock price is based on future cash flows, investors may worry about the negative impact on the stock price. However, even though the cash flow per unit may drop down, more people welcome corporate green behavior and are more likely to buy green products as they do not mind paying a little more for them. Thus, it is expected that total sales revenues would increase to the extent that it could more than cover the extra costs of going green.

This paper studies the effects of environmental components on New Zealand companies' equity value through testing stocks' abnormal returns for green announcements. The "green" here is not simply the substitution for things that are "environmental." It includes any issues that have a health effect on living things (Richmond, 2007). In our daily lives, everyone can go green easily. For example, driving less or using public transportation more



regularly can reduce the carbon emission which is harmful to humans and the global environment.

What is a green announcement? We define green announcements as those that are announced officially by company's CEO or top executive. It includes:

- 1. Announcements of emission/pollution reduction in air, water or land.
- 2. Announcements of waste reduction or recycling activities.
- 3. Announcements on the use of efficient alternative energy sources.
- 4. Announcements of investing or sponsoring green programs.
- 5. Announcements of signing of environmental agreements.

New Zealand is one of most eco-friendly countries in the world. People have strong environmental consciousness. It may reflect on the stock price change for the specific event of green announcements made by listed companies. Therefore, the relationship between green announcements and stock performance would be quite interesting to see.

The remainder of this article is organized as follows. Section 2 provides a review of the relevant literature and develops the hypotheses. Section 3 describes the sample data and the event study methodology. Section 4 presents the results and discusses the findings and their implications. The last section concludes.

Literature Review and Hypotheses

The corporate perspectives on environmental responsibility have achieved great progress over the last half a century. Hoffman (2000) defines four different historical stages about corporate environmentalism development: (1) Industrial environmentalism (1960-1970); (2) Regulatory environmentalism (1971 to 1981); (3) Environmentalism as social responsibility (1982 to 1989); and (4) Strategic environmentalism (1989 to 1999). In the first stage, environmental management cost almost equals pollution control management cost and is only a small portion of the total cost. In the second stage, the Environmental Protection Agency (EPA) starts to play the role of regulator. In the third stage, industry takes a more important role as an environmental and social responsibility regulation maker and supervisor. The positions of companies' environmental pressure not only comes from society and the government, other stakeholders such as investors and competitors become concerned as well. Environmental management has become increasingly important within corporations.

A survey made by Nation's Business (1993) documents that 86% of readers believe firmly the importance of ethics for a company's financial performance, 11% consider there are more or less important and only 3% doubt the importance of ethics to financial performance. The survey results imply that the public requires firms to behave ethically and that unethical behavior would somehow be costly to the firm. In fact, many companies do not consider 'green issues' as a cost term. Excellent pollution control and prevention tend to save installation and operating costs; it also leads to a more efficient production process (Young, 1991; Schmidheiny, 1992). However, it is complex to explain whether financial performance of companies is influenced by ethical or unethical behavior (Wood, 1994). Within the firm, production and process efficiency can be influenced by the ethical or unethical behavior of managers and employees (Sen, 1993; Hamilton & Strutton, 1994). Externally, stakeholders such as customers, suppliers, and debt holders could impact companies' financial performance as well.

Previous studies have investigated the effect of companies' environmental performance on their financial performance, especially in the U.S. market. Many studies show that there is some relationship between environmental announcements and market reactions in different ways. Jacobs, Singhal, and Subramanian (2008) classify two categories of announcements: (1) Corporate Environmental Initiatives (CEIs) which are self-reported announcements about companies' environmental performance and (2) announcements of Environmental Awards and Certifications (EACs) which are the events of achieving specific environmental awards or certifications. They conclude that both types of announcements do not have a significant effect on market value of the firms. However, they conclude that the market positively reacts to the announcements of environmental philanthropic gifts and ISO 14001 certifications in the U.S. Their work shows that different types of announcements may lead to different market reactions and that announcements which are friendly to the environment do not necessarily lead to better financial performance for the firms.

Hart and Ahuja (1996) focus on the relationship between emission reduction and corporate performance in the U.S. market. Emission reduction is an important part of the definition "Green". They indicate that efforts to prevent pollution and reduce emissions drop to the 'bottom line' within one to two years of initiation and those firms with the highest emission levels have the most to gain (Hart & Ahuja, 1996). They suggest that return on sales (ROS) and return on assets (ROA) will have a direct positive impact but return on equity (ROE) will have a lagged effect. Although we do not test ROE, ROS or ROA effect in this article, we will consider the time lag effect of green announcements on stock prices.

The positive environmental performance of firms does not equal to a higher stock price. Rao (1996) suggests a punishment on the market value of companies with a negative environmental performance. He selects 14 firms and uses monthly data to test the relationship between stock prices and unethical behaviors on the environment. They find that stocks have negative abnormal returns around the announcement date. He suggests that companies with unethical behaviors that are concerning to the environment and have been reported publicly have lower returns than the market average.

While the general expectation is that corporate actions which are of benefit to the environment will improve companies' financial performance, some empirical studies present inconsistent results (Corbett & Klassen, 2006). Jacobs et al. (2008) explain that these may be caused by a small sample size, controversial methodologies used or insufficient measures of companies' environmental or financial performance. Others, however, view that to be green is costly and time and uncertainty may affect a firm's inclusion in a study sample (Engardio et al., 2007). Friedman (1970) suggests that the extra cost on environmental improvements beyond legal requirements may be inconsistent with the objective of maximizing shareholders' wealth and would hurt companies' market value. On the other hand, Barnett and Salomon (2006) believe that companies with a high level of corporate social responsibility will attract more opportunities in the market and appeal to higher quality human resource.

It is also possible that the market does not react on such announcements. Gilley et al. (2000) do not find an overall effect on stock prices in regard to green initiatives in their full sample. However, when they divide the events into two different types (process-driven environmental initiatives and product-driven environmental initiatives), they find product-driven ones have stronger positive effects on stock prices than process-driven ones. Similarly, Videen (2010) collect and test the impact of both positive and negative announcements on listed companies from the Dow Jones Industrial Average. Putting all the announcements in a pool, he does not find that the events have any significant effect on the stock price. Moreover, after separating the announcements into positive and negative ones, he still finds no difference in the results of the positive and negative announcements. However, Filback & Gorman (2004) focus on some specific types of announcements. They find that announcements such as a company's achievement of environmental awards have a significant impact on the stock price.

It appears that the market reacts to different types of companies and announcements. According to Jacobs et al. (2008), the stock market is expected to have a greater reaction to a smaller company's announcements compared with larger ones; companies publishing announcements regularly are expected to have less impact than those that publish less frequently; announcements of companies with a higher environmental reputation have a smaller effect on the market. Rao (1996) uses the efficient market hypothesis to study the effect of published reports of environmental pollution on stock prices. He concludes that the market is efficient based on its reaction to such public announcements.

Based on the mixed findings of previous studies, this article investigates the following hypotheses:

Hypothesis 1: Green announcements have no effect on companies' stock price.

Hypothesis 2: Green announcements have positive effects on companies' stock price.

Hypothesis 3: Green announcements have negative effects on companies' stock price.

Data and Methodology

Sample and data selection

We search for the dates of any green announcements made by companies listed on the New Zealand Stock Exchange (NZSX) main board based on the following selection criteria:

- 1. Announcements must be first publicly reported by the CEO or top manager.
- 2. Third-party announcements are not included.



3. Stock must be trading during our pre-defined event window and estimation period.

The announcements are searched on the Newztext Plus article database, which covers newspapers, magazines, radio transcripts, and Newzindex (includes articles from many New Zealand news, business, and industry magazines such as FairFax, NZ Herald, Stuff) from 1980 to 2012. Some of the announcements are obtained from the companies' official website. Based on Jacob's (2008) key words used in his article, the following potential key words are used: Environment OR environmental OR green OR greener OR greenest OR greening OR greened OR emission OR carbon OR eco-friendly OR eco OR ecosystem OR ecological OR recycle OR recycles OR recycling OR energy OR reuse OR renewable OR waste OR pollution OR sustainable OR conserve OR conservation OR conservational OR resource OR social responsibility.

Green announcements selected must include at least one of the keywords from the above list. However, not all of the announcements with these keywords are considered green announcements. Only those that match our green announcement definition and satisfy the selection criteria are included. The daily stock price and index for all companies are collected from DataStream. The NZX All Index is used as a proxy for the market. The NZ All Index comprises all stocks listed on the New Zealand Stock Exchange Market. Although we search announcements from 1980 to 2012, all announcements effectively fall within 1998 to 2012. As a result, all the data are collected between 31st December 1996 and 8th August 2012.

Methodology

We use a standard event study methodology (Brown and Warner, 1985). First, we note the date of green announcements by the companies. We use a 61-day event window around the announcement day with 30 days before and after it. We then compute the average abnormal returns (AARs) and cumulative abnormal return (CAARs) relative to a 120-day estimation period prior to the event window and test their statistical significance. Day 0 is defined as the company's official announcement day. If an announcement occurs after the end of a trading day or during the weekend or a public holiday, the next trading day would be considered day 0.

We consider the market model

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + \varepsilon_{j,t}$$
⁽¹⁾

where R_{jt} is the return of stock j at day t, α_j is the constant term, β_j is the slope which measures stock j's sensitivity to a change in the market return, and ϵ_t is the error term on day t. The abnormal return of stock j on day t is defined as the difference between the actual and expected return:

$$AR_{j,t} = R_{jt} - \overline{R}_{j,t}$$
⁽²⁾

where AR_{jt} is the abnormal return of stock j on day t, R_{jt} is the actual return of stock j on day t, and \overline{R}_{jt} is the estimated return of stock j on day t. We compute the average abnormal return on day t as

$$AAR_{t} = \sum_{j=1}^{N} \frac{AR_{j,t}}{N}$$
(3)

where AAR_{jt} is the average abnormal return of N stocks on day t, The cumulative average abnormal returns (CAAR) is then defined as

$$CAAR_{ab} = \sum_{t=a}^{b} AAR_t \tag{4}$$

where CAAR_{ab} is the cumulative average abnormal returns from day a to day b. We use the following t-test to test the significance of AAR.

AAR.

(5)

where S is the estimated standard deviation of abnormal returns during the estimation period. To test the significance of the CAAR over any period from day a to day b before, around, and after the announcement day, the following test statistic is employed.

$$t_{ab} = \frac{CAAR_{ab}}{S\sqrt{X}} \tag{6}$$

where X is the number of days from day a to day b.



Results and Discussions

Tables 1 and 2 show the summary statistics of the event study and sample data. The sample includes 30 green announcements make by nine companies from eight different industries. Table 3 shows the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) with their corresponding t-statistics. It also provides the number of positive and negative AARs on each day. The abnormal return on announcement date is small, and both AAR and CAAR are not statistically significant.

The results in Table 4 confer with those in Table 3 where we see there is no statistical significance of the CAARs over various days surrounding the announcement day. These findings lead us to conclude that green announcements by listed firms in New Zealand do not have a significant impact on stock returns around the announcement day.

Such findings appear to be counter-intuitive. However, they could be explained. First, New Zealand companies, especially those that are listed on the main board, are already seen to be green to begin with. Their shareholders and other investors expect these companies to embrace green practices. Therefore, additional green announcements do not surprise investors. Conversely, the market sometimes may even have higher expectations of the companies that what were publicly announced. Hence, in some cases, green announcements which do not meet investors' expectations may have a reverse effect on stock returns.

Second, the value of going green are not always realized by public investors (Videen, 2008). Many environmental initiatives have a long term effect on cost savings, but may not benefit the firm in short term. Moreover, many investors in New Zealand believe that being green is a social responsibility of corporations, especially for those that are industry leaders. Besides, equity investors may be more concerned about announcements that have a more direct impact on the company's financial health. Some green announcements may even escape notice when they are not highlighted by the media.

Third, many investors may view green announcements as a negative signal on the companies' future cash flows. Oftentimes, green initiatives may increase a company's potential cost or decrease future sales revenue from customers. This partially explains the decreasing cumulative abnormal returns over the event window. For example, the announcement by "Trustpower in asking households to fork out an extra \$2 a week to help pay for a doubling in the size of its wind farm provides a clue for increasing billings. No doubt wind is more sustainable and greener than traditional energy but it is also more expensive than other forms of energy, at least at the current state of technology. However, two contrary perspectives may occur: those who are more price sensitive would consider moving their business to the competition that charge less; those that prefer greener energy sources are happy to pay more. It should be mentioned that most New Zealand companies are not able to achieve economies of scale compared to those in other developed countries such as the U.S.A. or Australia.

Conclusion

The purpose of this paper is to test the relationship between green announcements and the stock performance of listed companies in New Zealand. We find that the market does not have a significant reaction to such announcements. New Zealand companies as a whole are already viewed to be quite green. Thus, there is not much of a surprise factor from additional green announcements in New Zealand.



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Table 1: Descriptive Statistics

This table shows the summary descriptive statistics of this event study. It includes the basic statistics of abnormal returns within a 61-day event window, the number of announcements, and number of firms.

Mean in event window	-0.02%
Median in event window	-0.01%
Max in event window	0.60%
Min in event window	-0.54%
Standard deviation in event window	0.002356
No. of Announcements	30
No. of Firms	9



 Table 2: Sample Data

 This table shows sample companies name, industry, market capitalization (in NZD), and number of announcements for each company.

			Market	No. of
Ticker	Company name	Industry	Cap	Announcements
	Auckland International			
AIA	Airport	Air Services	3.46B	1
AIR	Air New Zealand	Air Services	1.24B	7
ANZ	ANZ Banking Group	Money Center Banks	81.29B	1
CEN	Contact Energy	Electric Utilities General Building	3.61B	4
FBU	Fletcher Building Limited	Materials	4.47B	2
NZR	New Zealand Refining Co	Oil & Gas Refining & Mktg	823.81M	1
TEL	Telecom	Wireless Communications	4.53B	3
TPW	Trust Power	Electric Utilities	2.51B	5
WHS	The Warehouse	Department Stores	882.79M	6



Table 3: AAR and CAAR of Green Announcements Around the Event Window

This table shows the AARs, CAARs, and their corresponding t-statistics. The number of positive and negative AARs on each day are also provided. *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively.

Dav	N	AAR	t(AAR)	CAAR	t(CAAR)	+:-
-30	30	-0.19%	-0.760	-0.19%	-0.760	14:16
-29	30	0.06%	0.287	-0.12%	-0.430	15:15
-28	30	-0.02%	-0.113	-0.15%	-0.451	17:13
-27	30	0.46%	1.623*	0.31%	0.622	19:11
-26	30	0.11%	0.479	0.42%	0.759	18:12
-25	30	0.04%	0.177	0.46%	0.726	15:15
-24	30	0.42%	1.536	0.88%	1.169	18:12
-23	30	-0.17%	-0.774	0.72%	0.040	14.10
-22	30	-0.01%	-0.037	0.71%	0.000	10.14
-21	30	-0.07%	-0.260	0.69%	0.321	16:13
19	30	-0.42%	-1 629*	0.00%	0.288	8.22
-18	30	-0.46%	-1.490*	-0.19%	-0.172	11:19
-17	30	-0.41%	-1.194	-0.59%	-0.457	11:19
-16	30	0.01%	0.019	-0.59%	-0.417	16:14
-15	30	0.25%	1.116	-0.34%	-0.252	15:15
-14	30	0.19%	0.769	-0.15%	-0.114	15:15
-13	30	-0.21%	-1.06	-0.37%	-0.285	12:18
-12	30	-0.41%	-1.499*	-0.78%	-0.560	10:20
-11	30	0.03%	0.113	-0.75%	-0.552	15:15
-10	30	-0.38%	-1 405*	-0.49%	-0.531	13.14
-8	30	0.00%	0 182	-0.82%	-0.552	17.13
-7	30	0.25%	0.754	-0.58%	-0.418	15:15
-6	30	-0.16%	-0.812	-0.73%	-0.521	15:15
-5	30	-0.10%	-0.386	-0.84%	-0.558	13:17
-4	30	0.49%	3.275***	-0.35%	-0.229	22:8
-3	30	0.17%	0.839	-0.18%	-0.117	18:12
-2	30	-0.24%	-1.224	-0.42%	-0.261	13:17
-1	30	0.14%	0.596	-0.28%	-0.184	17:13
1	30	0.01%	0.000	-0.20%	-0.160	10.1Z 15:15
2	30	-0.16%	-0 763	-0.12%	-0.175	11.10
3	30	0.02%	0.069	-0.26%	-0.165	21:9
4	30	0.01%	0.033	-0.26%	-0.165	16:14
5	30	-0.17%	-0.621	-0.42%	-0.273	14:16
6	30	0.07%	0.219	-0.35%	-0.237	17:13
7	30	0.12%	0.448	-0.23%	-0.150	14:16
8	30	0.11%	0.449	-0.13%	-0.083	13:17
9	30	-0.01%	-0.039	-0.13%	-0.089	15:15
10	30	-0.54%	-2.390 1.87/**	-0.00%	-0.420	21.0
12	30	-0.06%	-0 211	-0.00%	-0.001	13.17
13	30	0.01%	0.041	-0.13%	-0.083	13:17
14	30	-0.09%	-0.375	-0.23%	-0.14	16:14
15	30	-0.14%	-0.578	-0.37%	-0.211	16:14
16	30	-0.03%	-0.111	-0.39%	-0.211	15:15
17	30	-0.01%	-0.038	-0.41%	-0.215	17:13
18	30	-0.34%	-1.052	-0.74%	-0.389	11:19
19	30	-0.31%	-0.717	-1.05%	-0.486	13:17
20	30	-0.12%	-0.480	-1.17%	-0.536	14:10
22	30	-0.35%	-1 766**	-1 83%	-0.826	13.17
23	30	0.06%	0.261	-1.77%	-0.801	15:15
24	30	0.24%	1.14	-1.53%	-0.712	16:14
25	30	0.18%	0.59	-1.36%	-0.624	13:17
26	30	-0.01%	-0.066	-1.37%	-0.662	14:16
27	30	0.07%	0.277	-1.30%	-0.612	20:10
28	30	-0.14%	-0.928	-1.45%	-0.669	12:18
29 30	30 30	-0.10% በ በ1%	-0.414 0.037	-1.55% -1.54%	-0.711	19:11



Table 4: CAAR Over Various Periods Around the Announcement Day

This table shows the results of CAARs over different periods around the announcement day. *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively.

Day	CAAR	t-statistic
(-30,-2)	-0.42%	-0.261
(-5,+1)	0.61%	1.041
(-5,0)	0.47%	0.774
(-1,0)	0.16%	0.699
(-1,+1)	0.29%	0.942
(0,+1)	0.15%	0.483
(0,+5)	-0.15%	-0.231
(+1,+5)	-0.16%	-0.257
(+2,+30)	-1.42%	-0.853



Childhood Exposure and Household Stock Market Participation

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Abstract

This research studies the relation between childhood exposure and stock market participation. We find that individuals with rural childhoods are less likely to invest in the stock market, controlling for wealth, trust, social interaction, risk attitude, and financial literacy. Furthermore, we find evidence that the trait of openness mitigates the negative relation between rural childhood exposure and investing stocks, which is consistent with a cultural explanation.

JEL classification: D12; D14; Z19

Key Words: Childhood exposure; Stock market participation; Openness

1. Introduction

Limited stock market participation is today often a key issue in household finances (Campbell, 2006). Although standard theory has predicted universal participation, in empirical investigations many households fail to earn equity premiums. Existing literature turns to fixed participation costs, nonstandard preferences, beliefs, and a lack of trust to explain this issue (e.g., Vissing-Jørgensen, 2002a; Guiso, Sapienza, and Zingales, 2008).

This study examines the relation between childhood exposure and stock market participation. It is generally accepted that childhood environments have a durable impact on individual development including education attainment and long-run economic outcomes (Chetty et al., 2011; Chetty, Hendren, and Katz, 2016). Yet, the relation between childhood exposure and participate in stock market has been thus far ignored.

In this study, we ask whether tindividuals to invest in stocks vary when they with rural or not spending a childhood in rural areas affects the stock market participation of those individuals. We find that living in rural regions at an early age decreases the probability of stock market participation. This result holds true even after we control for personal differences in trust, social interaction, risk attitude, financial literacy, and a large set of households' demographic and economic characteristics. This rural childhood exposure also lessens the participation probability among those with above median wealth.

We then further investigate the mechanism by which childhood exposure affects stock market participation. We hypothesize that the influence of openness may be the underlying trait that mediates childhood exposure's effect on stock market participation. In our results, we find that a higher level of openness significantly mitigates the childhood exposure effect. In fact, we find that rural childhood exposure does not have an impact on stock market participation among people with higher levels of openness. These findings are consistent with cultural psychological theory predictions (Hoff and Stiglitz, 2015).

To rule out the possibility of a skill-based explanation, we explore whether the magnitude of the impact of childhood exposure varies with different levels of cognitive skills. We find that even among those with relatively high cognitive abilities, rural childhood exposure still decreases the probability of stock market participation.

Our study's main contribution is to consider childhood exposure as an underlying determinant of stock market participation. To the best of our knowledge, the childhood exposure effect on stock market participation has not been addressed by the existing literature. We show that people's decisions to hold stocks are influenced by the environments where they live during childhood. Moreover, our findings provide new evidence on the long-run effect of childhood exposure on individual economic decisions.

2. Literature Review and Institutional Background

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2.1. Literature review

This study directly relates to two strands of literature. First, our study is motivated by the literature on enduring childhood exposure effects. Psychologists and sociologists have been conducting studies on long-term childhood exposure effects for decades. Among these, Bronfenbrenner (1989) put forward the ecological systems theory. The theory perceives the process of human development as shaped by the interactions between the individual and what he or she is exposed to such as family, peers, neighborhoods, schools, and culture. This theory's implications have been confirmed by empirical findings of the childhood exposure effect on a wide range of social, emotional, and educational outcomes

Among recent work, there is a growing body of literature in economics and finance that focuses on prolonged childhood exposure effects. Chetty, Hendren, and Katz (2016) examine experimental data and find that moving to a lower-poverty neighborhood at an early age improves a child's college attendance rate and earnings in adulthood. In the finance literature, Cronqvist, Siegel, and Yu (2015) investigate the rearing environment's persistent effect on an individual's investment.

Second, we link childhood exposure to stock market participation, which can have a direct impact on earning equity premiums. Therefore, an understanding of the underlying determinants of this stock market participation may help explain the equity premium puzzle. Recent studies consider other factors such as social capital and trust (Guiso, Sapienza, and Zingales, 2004, 2008), the neighborhood and peers effect (Hong, Kubik, and Stein, 2004; Brown, Ivkovic, Smith, and Weisbenner, 2008), cognitive ability, and financial knowledge (Grinblatt, Keloharju, and Linnainmaa 2011; van Rooij, Lusardi, and Alessie, 2011). Our study adds to this line of work by considering the possibility that stock market participation is influenced by childhood exposure, which has been shown as an important factor in individual behavior by a number of theoretical and empirical studies in other contexts.

Our study also contributes to a growing body of literature, which emphasizes the effects of past experiences and exposure on human behaviors and economic outcomes. In their theoretical work, Hoff and Stiglitz (2015) recognize experiences and exposure as social determinants of human being's preferences and cognition. Empirical works show that life time experiences and exposure have an impact on political preferences (Alesina and Fuchs-Schündeln, 2007), expectations about future inflation (Malmendier and Nagel, 2016), risk taking behaviors (Malmendier and Nagel, 2011; Giannetti and Wang, 2014), and social trust. In this study, we highlight the effect of childhood exposure on people's stock market participation.

2.2. Institutional background

2.2.1. Rural-urban disparity in China

The separation of rural and urban sectors has existed in China over the past several decades (Kanbur and Zhang, 1999; Yang and Zhou, 1999). In China, growing up in a rural area is a totally different life experience in terms of living standards, education quality, and social culture. Moreover, there are differences in family living standards. Rural residents experience much lower levels of consumption and per capita disposable income than urban residents (Yang and Zhou, 1999). There is also a rural-urban educational gap in terms of primary and secondary education supply, participation, and attainment (Hannum, 1999). Cultural differences exist as well (Fei, 1992). Rural society often functions as a relatively static society with an unchanging culture. In contrast, urban society has seen greater influence from other cultures and hence, is more open to diversity.

2.2.2. The Household Registration System

The Household Registration System in China legally documents every individual's residential location status. The Chinese Household Registration (*Hukou*) System was established in 1955. In the system, registration status is clearly distinguished, essentially as "Agricultural" (*rural*) and "Non-agricultural" (*urban*) status for all Chinese households. The system's major function is to block ad hoc migration from rural to urban areas. Formal rural-urban migration and status conversion can only take place after government approval (Chan and Zhang, 1999). Undocumented rural migrants, called the "floating population," do not have legal rights of residency or welfare privileges (Yang and Zhou 1999). Registration status, thus, officially documents whether people live in rural or urban areas.²

2.2.3. Establishment of Chinese stock market

In the early 1990s, China transformed from a planned to a market economy and as part of this huge economic restructuring process, the establishment of the Shanghai Stock Exchange in 1990 and the Shenzhen Stock Exchange in 1991 served as key institutional developments (Hasan, Wachtel, and Zhou 2009). The establishment of the stock market also facilitated the partial privatization of certain state-owned enterprises (Sun and Tong, 2003; Liao, Liu, and Wang, 2014). It is not surprising then that the stock market appears novel to many Chinese households. It is a relatively recent development and

² More details of the Chinese Household Registration System are described in Chan and Zhang (1999).



thus new for Chinese people who have been exposed for most of their early lives to complete public ownership and a centrally planned economic system.

This brief review of the institutional situation in China highlights two facts. First, registration status at an early age can identify an individual's childhood exposure to a rural or urban area. Second, the stock market is part of an institutional arrangement of the market economy system. Thus, it requires people's willingness and skills to learn how to deal with the stock market. At the same time, people's preferences and cognition might already be shaped by the old institution and culture they have been exposed to for most of their early lives (Alesina and Fuchs-Schündeln, 2007).

3. Data and Variables

3.1. Data and sample

In this study, our main data source is the China Family Panel Studies (CFPS), launched by the Institute of Social Science Survey (ISSS) of Peking University. The CFPS collect nationwide survey data on Chinese individuals, households, and neighborhoods. The survey was first conducted in 2010 (Wave 1 of the survey or CFPS2010). Follow-up Waves 2 and 3 covering the same households were conducted in 2012 and 2014, respectively. We merged all the three Waves and focused on the respondents who were also the household heads. In this study, all dependent variables are based on the data collected in the CFPS2014. All time-variant independent variables are based on the information in the CFPS2012.

We also use data from the 2014 Chinese Survey of Consumer Finance (CSCF) sponsored by the China Center for Financial Research of Tsinghua University and also carried out by the ISSS. The survey covers a sub-sample of urban households that are also covered by the CFPS2014. The survey collects relevant variables that may drive stock market participation such as risk attitudes and financial literacy. We link the data from the CSCF to the data from the CFPS so that we can control for these two variables.

We collect 2,186 observations in our final sample. The sample has the same provincial coverage as the original sample covered by CFPS, which includes 25 provinces in China. The sample consists of current city dwellers with *non-agriculture* registration status. Since people's portfolio decisions are likely to involve the entire household, we include information for both individual and household characteristics.

3.2. Identifying childhood exposure

We focus on 12-year-old registration status to identify childhood exposure. The survey asks the question: *"What was your Registration Status at age 12?"*Our *Rural Childhood* dummy variable takes on the value one for respondents who answer "Agricultural" and zero otherwise (those who answer "Non-agricultural" or "I don't know").

For more clearly identify the relation between childhood exposure and the puzzling lack of stock market participation among people with a high level of wealth, the case must be made that rural childhood exposure will not decrease the probability of being among the wealthier. Table 1, Panel F shows the average level of rural childhood exposure by quartile of wealth. The pattern confirms the case. In the bottom and top wealth quartiles, 44.4 and 44.9 percent of the individuals, respectively, spent their childhood in rural areas.

3.3. Measuring key control variables

We use the survey questions to create proxies for other factors that may affect financial decisions. Urban residents who have rural childhoods might have difficulties in social interactions, which could in turn influence stock market participation (Hong, Kubik, and Stein, 2004). Thus, we include social interaction level. We measure this attribute with the following question: *"How much did your family spend on gifts to others last year?"* Our *Social interaction* dummy equals one for any expenditure on gifts and zero otherwise (for the respondents who answered "None").³

Rural childhood exposure might also be related to less general trust, which could influence equity investing (Guiso, Sapienza, and Zingales, 2008). We capture this through the answer to following question: "Generally speaking, do you think that most people can be trusted or do you have to be very careful in dealing with people?" Our Trust dummy is equal to one for "Most people can be trusted," and zero otherwise (for respondents who answer "One has to be very careful in dealing with people" or "I don't know").

We include risk preference in the control variables as well. The measurement question for this is: "Which of the following statements most closely reflects the amount of financial risk that you are willing to take when you make your financial investment? 1) Take substantial financial risks expecting to earn substantial returns; 2) Take above average financial risks expecting to earn above average returns; 3)

³ We use this proxy for social interaction according to Liang and Guo (2015), which is more suitable in China context. We also use whether



Take average financial risks expecting to earn average returns; 4) Not willing to take any financial risks." Our *Risk aversion* measurement is a categorical variable equal to one if respondents choose answer one (take substantial financial risks expecting substantial returns), two if answer two is chosen, three if answer three is chosen, and four for answer four.

We control for financial literacy, which is pivotal to understanding how stock markets function (van Rooij, Lusardi, and Alessie, 2011). There are 13 questions designed for financial knowledge in the survey. Our *Financial literacy* variable takes on the value based on the total number of correct answers out of the 13 questions.

3.4. Summary statistics

Table 1 reports the summary statistics both for the overall sample and the rural-childhood sample specifically, which consist of 2,186 and 1,030 observations, respectively. Panel A focuses on the dependent variables. The first row of Panel A shows that 12.2% of the households have *Direct participation*, defined as direct stock holdings. However, only 8.1% of the respondents with rural childhood exposure directly participate in the stock market by holding public shares. The second row also shows this pattern with 15.8% of households reporting *Participation through stocks or funds*, as defined by having investments in stocks or mutual funds, whereas only 11.7% of the respondents with rural childhood exposure report holding stocks or mutual funds.

[Insert Table 1 here]

Panel B focuses on the respondent's childhood exposure, *Social interaction*, and *Trust*. The first row shows that 47.1% of the respondents reported a *Rural childhood* in areas in China and later legally and permanently settled down in a city. The central interest of our study is to what extent their financial behaviors are influenced by their past childhood exposure in rural areas. The last two rows report average levels of *Social interaction* and *Trust*, which are quite similar.

Panel C reports the average level of *Risk aversion* and *Financial literacy*. These two measurements are based on the 2014 CSCF. The first row reflects that people with *Rural childhood* exposure are also a bit more risk-averse. The second row shows that people with *Rural childhood* exposure, in general, are also less financially literate. This latter point is not surprising, as rural areas have lacked access to financial services and financial infrastructure for a long time.

Panel D shows other individual-specific characteristics. In general, there are more male heads among the rural childhood-exposure sample. Respondents with *Rural childhood* exposure have, on average, lower *High school* completion rates,⁴ lower cognitive skills, and less personal income. The differences in age, self-reported health conditions, marital status, ratio of Han nationality, and ratio of financial industry employees between the two samples are not large. We controlled for all of these characteristics in the regressions.

Panel E focuses on the household's demographic and economic characteristics. The first row shows that households whose heads have *Rural childhood* exposure, on average, are of a bigger size. Interestingly, although the personal income of the respondents with rural childhood exposure is slightly lower, on average, they engage more in private business, accumulate more wealth, hold more real estate, and take on more debt.

4. Main results

4.1. The childhood exposure effect on direct participation

We first examine the childhood exposure effect on direct stock market investment. Table 2 reports the results. All results are obtained by probit estimates with the province fixed effects controlled. The dependent variable is the *Direct stock holding*, equal to one if a household invests directly (i.e., not through a mutual fund) in stocks and zero otherwise. In all regressions, *Rural childhood* is inserted along with *Age* and *Age square*; cognitive ability (*Cognitive skill*); the number of family members within the household (*Family size*); self-reported health condition (*Health*); as well as the dummy variables for sex (*Male*), nationality (*Han Nationality*), school level accomplishment (*High school*), marital status (*Married*), and financial industry occupation (*Fin_industry*). We also control for household *Wealth*, *Debt*, and *Income* (both in log linear and log linear squared form), and dummy variables for house ownership (*House*) and private business (*Self-employed*).

[Insert Table 2 here]

The first column of Table 2 reports the estimates of the basic specification. The coefficient estimates on the *Rural childhood* dummy are negative and highly statistically significant at the one percent level. The childhood exposure to rural environment lowers the probability of direct participation

⁴ Here, we use high school completion to proxy education attainment for two reasons. First, according to whether or not people have completed high school, we can have two subsamples with similar numbers of observation. Second, high school means more because high schools in cities are open to students with rural registration status, whereas rural students can only go to primary school and middle schools in their rural area. In fact, attending high school in urban areas is one of the possible channels to transfer to urban registration status for students with rural registration status.



in the stock market by 4.52 percentage points, all else being equal, which is equivalent to a 37% decrease in the unconditional probability of participation.

It could be speculated that rural-born individuals might have lower levels of social interaction when settling down in a new urban life (Greif and Tabellini, 2010; Friedmann, 2007). This possibility is reinforced by the results of Hong, Kubik, and Stein (2004) and Brown, Ivkovic, Smith, and Weisbenner (2008). We address this possibility by controlling for *Social interaction* in our regression. In column (2), we insert *Social interaction* in the specification. Of note for our central interest, the effect of *Rural childhood* exposure is still significantly negative, while *Social interaction* shows a positive coefficient as theory indicates.

It might also be speculated that trust could play a role. Immigrants might have lower levels of trust in general when they move to a new place. A lack of trust may also impede stock market participation (Guiso, Sapienza, and Zingales, 2004, 2008). We address this issue by controlling for *Trust* in the regression. In column (3), we insert both *Social interaction* and *Trust*. After controlling for these two factors, *Rural childhood* still shows a significantly negative coefficient.

We then tackle the impact of risk attitude. Risk attitude is recognized as being affected by the individual's past environment (Guiso and Paiella, 2008) and is closely associated with stock market participation (Arrow, 1970). We address the interpretation by controlling for *Risk aversion* as well as *Social interaction,* and *Trust.* Table 2, column (4) reports the results. The coefficient on the *Rural childhood* dummy is still significantly negative, although the marginal effect decreases. The *Risk aversion* variable shows coefficients that are consistent with the existing literature.

Finally, we take financial literacy into consideration. Financial literacy is an important determinant of stock market participation (van Rooij, Lusardi, and Alessie, 2011). The lack of financial infrastructure in rural Chinese areas over a prolonged period may have led to financial illiteracy and individuals with rural childhoods staying away from the stock market. We address this concern by controlling for *Financial literacy*, as well as *Social interaction*, *Trust*, and *Risk aversion*. Table 2, column (5) reports the results. Having a *Rural childhood* decreases the probability of holding stock by 2.75 percentage points, all else being equal, and the coefficient is statistically significant. The *Financial literacy* variable delivers a significantly positive coefficient that is consistent as expected.

Finally, we show in the last column that the effect of rural childhood exposure does not diminish with wealth. When we limit the sample to households with *Above-median Wealth*, the rural childhood exposure effect still exists. This implies that childhood exposure may explain why some wealthy individuals avoid the stock market even when they can afford to pay the fixed participation costs.

4.2. The childhood exposure effect on market participation through stocks or funds

Stock market participation is not limited to direct stock holdings. Some people may participate through mutual funds rather than directly investing in stocks. The reasons for this are many including: a lack of time for employees to deal with transactions; a potential conflict of interest among financial industry employees; and other inconveniences in directly purchasing stocks. These individuals can still earn an equity premium by holding market funds.

Hence, we expect that the childhood exposure effect will not be limited to direct stock holdings. The rural childhood exposure's effect may generalize to participation in stocks and funds. Table 3 shows this to be the case. In column (1), we run the baseline regression and the *Rural childhood* dummy shows a significantly negative coefficient. In columns (2) to (5), we insert *Social interaction*, *Trust, Risk aversion,* and *Financial literacy,* sequentially, and finally control for all four variables in one specification in column (5). The coefficient of the *Rural childhood* dummy is negative and statistically different from zero at the one percent level in all regressions.

[Insert Table 3 here]

While the general pattern is very similar to Table 2, the marginal effect of the *Rural childhood* variable is slightly larger at the absolute level (from 3.69% to 5.56%). The marginal effect remains notable compared to the unconditional probability of risky asset ownership (15.8%). As for those with above-median wealth, having a *Rural childhood* also decreases their probability of participation through stocks or funds by 5.37 percentage points.

5. Possible Mechanisms of the Effect

5.1. The effect and the influence of "openness"

In China, its rural society functions as a relatively static society with a nearly unchanged culture that is less open to new influences. Individuals living in rural areas have no necessity to interact with the world outside due to self-sufficient production and lifestyle (Fei, 1992). The stock market, an institution introduced by the market economy, might be more welcome among individuals with higher levels of "openness."

Openness is one of the "Big Five" personal traits frequently measured and referenced by psychologists. Openness, often defined as openness to experience, refers to the degree to which a

person seeks new intellectual stimulation, change, and variety (Borghans, Duckworth, Heckman, and ter Weel, 2008).⁵ People raised in rural areas experience less variety, less exposure to the exotic, and less intellectual stimulation in their early lives. A less open-minded characteristic may shape their mental models and restrain them from accommodating the unfamiliar, as suggested by Hoff and Stiglitz (2015). If a rural childhood has a relationship with an individual's openness, a tentative expectation is that an individual with a higher level of *Openness* as a personal trait is less likely to be negatively affected by rural childhood exposure in the context here. Hence, an implication is that the childhood exposure effect could vary based on the individual's openness trait.

We construct the *Openness to experience* variable and examine this implication. We measure this through the following question: "*Please rate the degree of importance of continuing the family ancestry (having a son to carry on the family name)*." Respondents are asked to answer on a scale of one to five, anchored by very minor and very important. We construct *Openness to experience* as a categorical variable set to one (the least open) if the answer is five (very important) and five (the most open) if the answer is one (very minor), with the other answers in sequence.

To examine the influence of openness, we start by analyzing the relationship between the impact of rural childhood exposure on direct stock market investment and the respondent's personal openness level. We use two methods. First, we insert the *Openness* variable and a product of the *Openness* variable and the *Rural childhood* dummy. If openness mitigates the rural childhood exposure effect on stock market participation, the interaction term will show a positive coefficient. In Table 4, the first column reports the result. The coefficient estimate on the interaction term is positive and statistically significant at the five percent level. While rural childhood exposure still significantly decreases the probability of holding stocks, people who have more willingness to accept new experiences may suffer less from this rural childhood effect.

[Insert Table 4 here]

Second, we try to explore whether or not people with higher levels of openness are influenced by the rural childhood exposure effect. We split the sample into two parts: those who are *Less Open* (with *Openness to experience* lower than or equal to two) and those who are *More Open* (with *Openness to experience* higher than or equal to three). We then run regressions on the two split samples. The following columns in Table 4 show the results. The estimate of the *Rural childhood* dummy is negatively significant at the one percent level in the *Less Open* group. The coefficient estimates for the *More Open* group are no different from zero. The marginal effects of the childhood exposure are -2.53% and -0.71%, respectively.

Mutual funds, as an alternative way to participate in the stock market, are also new to Chinese households. Hence, the influence of openness should generalize to participation through stocks or funds. Table 5 shows this to be the case. While rural childhood exposure still has a significant predictive power for holding stocks or mutual funds, openness can offset the effect significantly at the one percent level. Among people with relative higher levels of openness, the rural childhood exposure shows a coefficient no different from zero.

[Insert Table 5 here]

There are a number of potential explanations for the findings related to openness and the childhood exposure effect. One explanation is that openness reflects some non-cognitive abilities gained in childhood that matter in economic behavior. Consistent with such a view, Heckman, Strixrud, and Urzua (2006) emphasize the importance of personal traits in predicting risky behaviors; Anderson, Burks, De Young, and Rustichini (2011) find that the Big Five personal traits have predictive powers for several key economic preferences and outcomes. The explanation is also strengthened by Chetty et al. (2011), who find that the effects of kindergarten class quality on gains in non-cognitive ability persist; Cunha and Heckman (2007) find that childhood exposure plays a role in the process of personal trait formation. Another explanation is that in such a huge restructuring process of Chinese economic reform, those with higher openness may do better in adapting to a market economy. This explanation is supported by Wanberg and Banas (2000) and Ang, Van Dyne, and Koh (2006), who find that openness is crucial to people's capabilities to function effectively in diverse or changing cultural settings.

5.2. The effect and cognitive skills

One of the issues surrounding rural childhood exposure is whether it can influence simple cognitive ability. Therefore, we also examine the relationship between the childhood exposure effect

⁵ The other four traits are Conscientiousness, Extraversion, Agreeableness, and Neuroticism, also called Emotional Stability. For more information see Goldberg (1990) and Costa and McCrae (1992). It is also defined by terms like innovative, curious, perceptive, and insightful (Goldberg, 1990; Costa and McCrae, 1992). Recently, studies have shown that personal traits can be conceptualized and reliably measured (Borghans, Duckworth, Heckman, and ter Weel, 2008) and they are almost stable over peoples' life cycles after formation (Caspi, Roberts, and Shiner, 2005). Based on these properties, economists have begun to use these to explain social and economic outcomes.

and cognitive ability. Rural childhood exposure may lead to the lack of the cognitive skill needed to understand complicated stock markets. If this skill-based explanation holds, we expect that the rural childhood exposure effect will vary by personal cognitive ability. To test this prediction, we start by analyzing the childhood exposure effect on direct stock market participation and cognitive ability. We insert the product of the *Cognitive skill* variable and the *Rural childhood* dummy. If our assumption is not spurious, we expect that the product will have a significant positive coefficient. However, the first column of Table 6 does not show this to be the case. The insignificant coefficient on the interaction term implies that cognitive skills cannot significantly mitigate the rural childhood exposure effect.

[Insert Table 6 here]

We then split the sample between people with relative *Higher Cognitive Skill* and people with relative *Lower Cognitive Skill*. We re-estimate our basic specifications. The second two columns in Table 6 report the results. The estimate of the *Rural childhood* variable is negatively significant for individuals with lower cognitive abilities, while the coefficient for higher cognitive ability individuals is not statistically different from zero.

To further explore whether those with a higher cognitive ability are impacted, we examine the rural childhood exposure impact on participation in stocks or funds with respect to two split samples respectively. The last two columns of Table 6 show the result. Importantly, the estimate of the *Rural Childhood* dummy is negatively significant for those with higher cognitive abilities. The result implies that rural childhood exposure still significantly decreases the possibility of investing in stocks or funds among people with relative higher cognitive skills. Hence, a skill-based explanation is not well supported by the empirical results.

6. Discussion and Conclusion

Today, limited participation in the stock markets is of central interest in terms of a household's economic welfare (Campbell, 2006). A growing body of literature in finance and economics has studied this issue. We contribute to this stream of research by considering the childhood exposure effect, which has been shown to have predictive powers for labor market performance and economic outcomes in adulthood (Chetty et al., 2011; Chetty, Hendren, and Katz, 2016).

In this study, we shed light on the childhood exposure effect on individual financial behavior. We find that rural childhood exposure in China decreases the probability of stock market participation. Further, this rural childhood exposure also lessens the participation probability among those with above-median wealth. Importantly, we are able to rule out these alternative explanations that include lack of social interaction, lower trust levels, financial illiteracy, and higher levels of risk aversion. This finding is broadly consistent with Malmendier and Nagel (2011), who find that individual past experiences affect risk taking.

To further investigate what mediates the childhood exposure effect on financial behaviors, we highlight the role of certain personality traits. Specifically, we test the relationship between rural childhood exposure and the influence of openness. We find supporting evidence that the rural childhood exposure effect significantly varies with the individual trait of openness. In our results, we find that a higher level of openness significantly mitigates the childhood exposure effect. In fact, we find that rural childhood exposure does not have an impact on stock market participation among people with higher levels of openness. These findings are consistent with cultural psychological theory predictions (Hoff and Stiglitz, 2015).

A large number of studies in other contexts have already shown that personality traits have predictive powers for labor market performance and social behaviors (Heckman, Stixrud, and Urzua (2006)). Our findings contribute to the growing body of literature that emphasizes personality's explanatory power in financial risk taking behaviors (Anderson, Burks, De Young, and Rustichini, 2011), which is promising particularly for household financial issues (Guiso and Sodini, 2012).

In this study, we examine the childhood exposure effect on financial behavior focusing on China. During the past several decades, China has seen an increasing level of resident mobility, thereby providing us with the opportunity to examine this research question. In fact, this issue may also be important in other countries where social mobility has taken hold. Future research could examine how the pattern we present here compare with other countries.



Table 1 Summary Statistics

This table shows the summary statistics both for the overall sample and the rural-childhood sample, which consist of 2,186 and 1,030 observations, respectively. Panel A focuses on the *Direct stock holding* and *Indirect stock holding*. Panel B focuses on the respondent's *Rural childhood* exposure, *Social interaction,* and *Trust*. Panel C reports the average level of *Risk aversion* and *Financial literacy*. Panel D shows the respondent's individual-specific characteristics. Panel E focuses on household's demographic and economic characteristics. Panel F reports *Rural childhood* ratio by quartile of wealth.

	Mean		Mec	dian	_	
Variables	Overall	Rural childhoo d	Overall	Rural childhoo d	Explanation	
		Panel	A. Stock and	Risky As	set Holdings	
Direct participation	0.122	0.081	0	0	Binary: whether to directly hold stocks	
Participation through stocks or funds	0.158	0.117	0	0	Binary: whether to hold stocks or mutual funds.	
	Pa	nel B. Chil	dhood Expos	sure, Soci	al Interaction, Trust	
Rural childhood	0.471	N/A	0	N/A	Binary: respondent's 12-year-old Registration Status. (1=rural; 0=otherwise)	
Social interaction	0.822	0.815	1	1	expenditure on gifts last year	
Trust	0.610	0.617	1	1	speaking, do you think most people can be trusted or you have to be very careful in dealing with people" (1=most people can be trusted; 0=otherwise)	
		Panel C.	Risk Aversio	on and Fir	nancial Literacy	
Risk aversion	3.130	3.161	3	4	Categorical: 1=high risk/high return. 4= not willing to take on any risk	
Financial literacy	5.932	5.569	6	6	Number of correct answers out of 13 questions on financial knowledge (0 = none, 13 = most)	
		Pa	nel D. Individ	ual Chara	acteristics	
Male	0.615	0.665	1	1	Binary: sex of the respondent. (1=male; 0=female)	
Age	55.602	56.193	55	56	The age of the respondent	
High school	0.438	0.378	0	0	Binary: whether the respondent finished high school or above	
Cognitive skill	4.947	4.677	5	5	Categorical: number of immediate word recall (0=worst, 10=best)	
Health	2.636	2.673	3	3	Categorical: the respondent's self-reported	
Married	0.839	0.851	1	1	Binary: whether the respondent is married	
Fin_industry	0.011	0.012	0	0	Binary: whether the respondent works in the financial industry	
Han Nationality	0.962	0.962	1	1	Binary: whether the respondent is Han or not	
Income	2.462	2.339	2.0	1.9	Respondent's personal income last year (in ten thousand yuan)	
	Panel E.	Househol	ds' Demogra	phic and I	Economic Characteristics	
Family size	3.183	3.393	3	3	Number of family members in the household	
Self-employed	0.096	0.115	0	0	Binary: whether the household has own business	
Wealth	68.524	68.801	32. 6	33.2	Total wealth (worth of house with property rights and non-house assets) within	

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Rural childhood	0.444	ŀ	0.479	0.512	0.449	0.415	0.471
	Quar	tile I	Quartile II	Quartile	III Quartile IV	Top 5%	Average
		Panel F.	Rural Childhe	ood Expo	sure and Wealth		
House	0.857	0.891	1	1	(in ten thousand yuan) Binary: whether household has any houses with property rights		
Debt	2.397	2.718	0	0	Total financial de non-mortgages ir	bts (mortgag ncluded) with	ges and hin household
					household (in ter	thousand y	uan)



Table 2

The Effect of Childhood Exposure on Stock Participation

The table shows the relation between rural childhood exposure and stock market participation. The sample comprises respondents that can be traced through all the three waves of the Chinese Family Panel Survey (CFPS) conducted in 2010, 2012, and 2014. The respondents are now residing in cities with Non-agricultural Registration Status. Panel A presents results on direct stock market participation (holding stocks). The dependent variable is a dummy equal to one if the household reports direct stock holdings. Panel B presents results on indirect stock market participation (holding stocks or mutual funds). The dependent variable is a dummy equal to one if the household participates through stocks or mutual funds. The tables report the probit estimates with the province fixed effects controlled. The last row of the tables report the marginal effect of *Rural childhood* exposure on the dependent variable in each specification, computed at the average value of the other RHS (right-side) variables. We insert the *Social interaction, Trust, Risk aversion, and Financial literacy* variables in Columns (2) to (5). Column (6) reports estimates among those above-median *Wealth*. T-statistics are reported in parentheses. *** indicates the coefficient is different from zero at the 1% level, ** at the 5% level, and *at the 10% level.

		Above-Median Wealth				
	(1)	(2)	(3)	(4)	(5)	(6)
Pural childhood	-0.402***	-0.400***	-0.402***	-0.321***	-0.280***	-0.235*
Nulai chilunoou	(-4.423)	(-4.388)	(-4.412)	(-3.261)	(-2.780)	(-1.958)
Social interaction		0.297**	0.295**	0.230	0.202	0.276
Social Interaction		(2.280)	(2.266)	(1.629)	(1.403)	(1.604)
Trust			0.104	0.092	0.067	0.044
11030			(1.167)	(0.972)	(0.691)	(0.374)
Risk aversion				-0.420***	-0.332***	-0.385***
Nisk aversion				(-8.123)	(-6.047)	(-5.688)
Financial literacy					0.106***	0.095***
T mancial meracy					(5.570)	(4.238)
Malo	0.026	0.038	0.033	-0.036	-0.066	-0.080
Male	(0.290)	(0.411)	(0.358)	(-0.364)	(-0.652)	(-0.665)
Δαρ	0.059**	0.057**	0.056**	0.083***	0.088***	0.105***
Aye	(2.323)	(2.246)	(2.208)	(3.034)	(3.174)	(3.117)
Age ²	-0.001***	-0.001**	-0.001**	-0.001***	-0.001***	-0.001***
	(-2.660)	(-2.566)	(-2.545)	(-3.080)	(-3.111)	(-3.051)
High school	0.219**	0.214**	0.204**	0.125	0.039	0.149
riigii school	(2.347)	(2.279)	(2.163)	(1.241)	(0.370)	(1.149)
Cognitive skill	0.107***	0.103***	0.102***	0.096***	0.086***	0.081**
Oognave skii	(3.837)	(3.691)	(3.637)	(3.198)	(2.800)	(2.156)
Health	-0.114**	-0.118***	-0.124***	-0.131***	-0.118**	-0.162***
riounn	(-2.522)	(-2.587)	(-2.697)	(-2.629)	(-2.300)	(-2.585)
Family size	-0.019	-0.017	-0.017	-0.039	-0.035	-0.082*
	(-0.535)	(-0.499)	(-0.485)	(-0.987)	(-0.858)	(-1.664)
l n(Income)	-0.066	-0.062	-0.058	-0.027	-0.018	0.017
((-0.925)	(-0.866)	(-0.815)	(-0.349)	(-0.224)	(0.172)
Ln(Income) ²	0.009	0.008	0.008	0.005	0.004	0.001
((1.342)	(1.261)	(1.200)	(0.681)	(0.515)	(0.096)
Ln(Wealth)	1.230*	1.277*	1.255*	1.583**	1.120	0.522
	(1.704)	(1.726)	(1.698)	(1.973)	(1.462)	(0.219)
Ln(Wealth) ²	-0.032	-0.034	-0.033	-0.048	-0.032	-0.012
((-1.193)	(-1.229)	(-1.199)	(-1.577)	(-1.086)	(-0.142)
Ln(Debt)	-0.172**	-0.173**	-0.175**	-0.161*	-0.154*	-0.080
	(-2.104)	(-2.115)	(-2.133)	(-1.891)	(-1.789)	(-0.793)

Panel A. Rural Childhood and (Direct) Stock Market Participation

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$l n (Dobt)^2$	0.013*	0.013*	0.013*	0.012*	0.011	0.005
	(1.840)	(1.840)	(1.855)	(1.647)	(1.550)	(0.628)
House	-0.210	-0.214	-0.215	-0.159	-0.082	0.441
Tiouse	(-1.123)	(-1.142)	(-1.149)	(-0.786)	(-0.397)	(1.324)
Salf-omployed	-0.040	-0.049	-0.051	-0.044	-0.092	-0.141
Self-employed	(-0.263)	(-0.325)	(-0.340)	(-0.276)	(-0.577)	(-0.707)
Married	0.047	0.021	0.010	0.031	-0.008	0.211
Marrieu	(0.327)	(0.149)	(0.072)	(0.204)	(-0.052)	(1.053)
Fin industry	0.581*	0.582*	0.563*	0.408	0.299	0.319
T III_IIIdd3try	(1.766)	(1.759)	(1.701)	(1.251)	(0.902)	(0.832)
Han Nationality	0.254	0.265	0.262	0.152	0.171	0.034
Than Nationality	(0.922)	(0.954)	(0.942)	(0.538)	(0.599)	(0.108)
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,974	1,974	1,974	1,792	1,779	894
Pseudo R2	0.225	0.228	0.229	0.276	0.299	0.247
Rural childhood's marginal effects	-4.524%	-4.405%	-4.427%	-3.209%	-2.753%	-5.531%

1-E-3

Panel B. Childhood Exposure and Indirect Stock Market Participation (via Stocks	s or Funds)	
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	Whole Sample					Above-Median Wealth
	(1)	(2)	(3)	(4)	(5)	(6)
Dural shildhaad	-0.328***	-0.326***	-0.328***	-0.281***	-0.238***	-0.187*
Rurai chilanood	(-3.951)	(-3.925)	(-3.955)	(-3.145)	(-2.597)	(-1.659)
Social interaction	· · · ·	0.247**	0.246**	0.204	0.185	0.231
Social interaction		(2.099)	(2.093)	(1.604)	(1.414)	(1.436)
Truct		. ,	0.117	0.097	0.056	0.066
must			(1.426)	(1.116)	(0.627)	(0.586)
Dick aversion				-0.368***	-0.261***	-0.343***
RISK AVEISION				(-7.827)	(-5.193)	(-5.381)
Einancial literacy					0.126***	0.120***
Financial interacy					(7.100)	(5.554)
Malo	-0.051	-0.042	-0.047	-0.116	-0.152	-0.165
IVIAIC	(-0.609)	(-0.496)	(-0.549)	(-1.276)	(-1.634)	(-1.439)
Aco	0.053**	0.051**	0.051**	0.070***	0.077***	0.091***
Aye	(2.243)	(2.174)	(2.152)	(2.823)	(2.999)	(2.894)
Ace ²	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
Age	(-2.790)	(-2.706)	(-2.701)	(-3.103)	(-3.155)	(-3.021)
High school	0.221**	0.215**	0.204**	0.117	0.013	0.136
Thyn School	(2.572)	(2.497)	(2.355)	(1.268)	(0.131)	(1.115)
Cognitive skill	0.067***	0.064**	0.062**	0.055**	0.038	0.018
oognave skiii	(2.640)	(2.497)	(2.414)	(2.018)	(1.344)	(0.502)
Health	-0.084**	-0.086**	-0.092**	-0.105**	-0.091*	-0.118**
ricalin	(-2.029)	(-2.084)	(-2.217)	(-2.341)	(-1.956)	(-2.025)
Family size	-0.019	-0.018	-0.017	-0.043	-0.037	-0.078*
·	(-0.594)	(-0.580)	(-0.546)	(-1.208)	(-1.010)	(-1.728)
Ln(Income)	-0.078	-0.075	-0.071	-0.042	-0.032	0.074
	(-1.179)	(-1.128)	(-1.068)	(-0.594)	(-0.432)	(0.788)
Ln(Income) ²	0.012*	0.012*	0.011*	0.008	0.007	-0.002
	(1.924)	(1.856)	(1.786)	(1.262)	(1.041)	(-0.283)
Ln(Wealth)	0.399	0.397	0.392	0.517	0.300	0.342
, ,	(0.879)	(0.859)	(0.848)	(1.102)	(0.674)	(0.155)
Ln(Wealth) ²	-0.001	-0.000	-0.000	-0.006	0.001	-0.002
	(-0.029)	(-0.026)	(-0.013)	(-0.342)	(0.060)	(-0.027)
Ln(Debt)	-0.116*	-0.117*	-0.120*	-0.098	-0.094	-0.095
	(-1.654)	(-1.670)	(-1.704)	(-1.330)	(-1.252)	(-1.005)
Ln(Debt)2	0.008	800.0	800.0	0.006	0.006	0.006
	(1.324)	(1.331)	(1.361)	(1.030)	(0.945)	(0.793)
House	-0.307*	-0.310*	-0.314*	-0.317*	-0.252	0.386
	(-1.817)	(-1.838)	(-1.801)	(-1.762)	(-1.364)	(1.230)
Self-employed	0.054	0.045	0.041	0.025	-0.037	-0.143
	(0.402)	(0.330)	(0.302)	(0.174)	(-0.252)	(-0.752)
Married	-0.018	-0.030	-0.047	-0.047	-0.007	0.162
	(-0.140)	(-U.ZOT) 0.622**	(-0.309)	(-0.346)	(-0.020)	(0.972)
Fin_industry	(2 042)	0.000	0.014 (1 004)	0.401 (1 462)	U.342 (1 060)	0.007
	(2.043) 0 211	(2.001) 0.210	(1.904) 0.214	(1.403) 0.210	(1.009) 0.250	(1.001)
Han Nationality	(1 276)	0.318 (1 201)	(1 220)	0.219 (0.883)	(0.200	0.109
Province FE	Yes	Yes	Yes	Yes	Yes	Yes

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Observations	2,001	2,001	2,001	1,814	1,801	908
Pseudo R ²	0.219	0.221	0.222	0.259	0.291	0.255
Rural childhood's marginal effects	-5.558%	-5.487%	-5.517%	-4.614%	-3.692%	-5.365%

Table 3

This table presents how the openness influence the relation between rural childhood and stock market participation. The sample comprises respondents that can be traced through all the three waves of the Chinese Family Panel Survey (CFPS) conducted in 2010, 2012, and 2014. The respondents are now residing in cities with Non-agricultural Registration Status. Panel A presents results on direct stock market participation (holding stocks). The dependent variable is a dummy equal to one if the household reports direct stock holdings. Panel B presents results on indirect stock market participation (holding stocks or mutual funds). The dependent variable is a dummy equal to one if the household participates through stocks or mutual funds. We measure Openness to experience using the following question: "Please rate the degree of importance of continuing the family ancestry (having a son to carry on the family name)." Respondents answer on a scale of one to five, anchored by very minor and very important. Openness to experience is a categorical variable set to one (the least open) if the answer is five (very important) and five (the most open) if the answer is one (very minor), with the other answers in sequence. In the first column, we insert the Openness variable and the production of the Openness variable and the Rural childhood dummy. The estimate of the production's coefficient has implications for the relationship between childhood exposure effect and openness. The first column reports the results with the rest of the control variables included as in the fifth column in Table 2. We then split the sample into two parts: those who are Less Open (with Openness to experience lower than or equal to two) and those who are More Open (with Openness to experience higher than or equal to three). T-statistics are reported in parentheses. *** indicates the coefficient is different from zero at the 1% level, ** at the 5% level, and *at the 10% level. All are probit estimates with province fixed effects controlled. Panel A. Bural Childhood, Direct Stock Participation, and the Influence of Openness

Paner A. Rurai Childhood, Direct Stock Participation, and the initidence of Openness						
	Whole	Less C	Open	More Open		
	Sample	Coefficients	Marg. Effect	Coefficients	Marg. Effect	
Rural shildhood	-0.691***	-0.546***	-2.020%	-0.049	-0.708%	
Rulai Chilunood	(-3.121)	(-3.400)		(-0.347)		
0	-0.022					
Openness	(-0.500)					
Bural childhood Openness	0.165**					
Rurai childhood × Openness	(2.156)					
Province FE	Yes	Yes		Yes		
Observations	1,779	885		862		
Pseudo R ²	0.303	0.360		0.288		
Percel D. Dunel Childhead, Indirect Derticingtion (vie Stephener Funde), and the Influence of Operators						

Panel B. Rural Childhood, Indirect Participation (via Stocks or Funds), and the Influence of Openness

	W/bole	Less Open		More Open	
	Sample	Coefficient	Marg.Effec	Coefficient	Marginal .Effe
	Campic	S	t	S	ct
Rural childhood	-0.687** *	-0.537***	-5.000%	0.017	-0.708%
	(-3.450)	(-3.756)		(0.130)	
Openness	-0.035				
openness	(-0.850)				
Rural childhood ×	0.181***				
Openness	(2.608)				
Four Key variables, Controls, Province FE	Yes	Yes		Yes	
Observations	1,801	899		868	
Pseudo R ²	0.296	0.346		0.281	



Table 6

Rural Childhood, Stock Participation, and Cognitive Skills

The sample comprises respondents that can be traced through all the three waves of the Chinese Family Panel Survey (CFPS) conducted in 2010, 2012, and 2014. The respondents are now residing in cities with Non-agricultural Registration Status. The dependent variable is indicated on top of the column. In the first column, we insert the product of the *Cognitive skill* variable and the *Rural childhood* dummy. The estimate of the product's coefficient has implications for the relationship between the childhood exposure effect and cognitive skills. The rest of the control variables included are as in Table 2, column (5). In the following columns, we split the sample between people with *Higher Cognitive Skill* and people with *Lower Cognitive Skill*. We re-estimate the regressions on the split samples. The last row of the table reports the marginal effect of *Rural childhood* exposure on the dependent variable in parentheses. *** indicates the coefficient is different from zero at the 1% level, ** at the 5% level, and *at the 10% level. All are probit estimates with the province fixed effects controlled. In the second and the fourth columns, *Han Nationality* equal to zero predicts no participation perfectly and in the second column, occupation in *Fin_industry* predicts holding stocks perfectly.

	Direct participation			Participation via stocks or funds		
	Whole	Lower	Higher	Lower	Higher	
	sample	cognitive	cognitive	cognitive	cognitive	
	bampio	skill	skill	skill	skill	
Rural childhood	-0.768**	-0.669***	-0.179	-0.562***	-0.248*	
	(-2.267)	(-2.759)	(-1.163)	(-2.726)	(-1.751)	
Cognitive skill	0.059	0.185	0.103	0.095	0.021	
	(1.638)	(1.453)	(1.449)	(0.896)	(0.314)	
Rural childhood	0.090					
×Cognitive skill	(1.517)					
Four Key variables,						
Controls, Province FE	Yes	Yes	Yes	Yes	Yes	
Observations	1,801	551	673	599	687	
Pseudo R ²	0.291	0.376	0.275	0.351	0.263	
Rural childhood's marginal effects		-3.763%	-2.425%	-4.254%	-5.095%	



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