Informal institution meets child development: Clan culture and child labor in China☆

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ABSTRACT

Using a national representative sample, the China Family Panel Studies, this paper explores the influences of clan culture, a hallmark of Chinese cultural history, on the prevalence of child labor in China. We find that clan culture significantly reduces the incidence of child labor and working hours of child laborer. The results exhibit strong boy bias, and are driven by boys rather than girls, which reflects the patrilineal nature of Chinese clan culture. Moreover, the impact is greater on boys from households with lower socioeconomic status, and in rural areas. Clan culture acts as a supplement to formal institutions: reduces the incidence of child labor through risk sharing and easing credit constraints, and helps form social norms to promote human capital investment. We also employ an instrument variable approach and carry out a series of robustness checks to further confirm the findings.

1. Introduction

Child labor has many short- and long-term negative effects, such as reduction in human capital accumulation (Heady, 2003; Gunnarsson et al., 2006; Dumas, 2012; O'Donnell et al., 2005) and adverse effects on the future labor market outcomes (Emerson and Souza, 2011). Obviously, the welfare at both individual level and national level will be impeded by such negative impacts.

Understanding the factors behind child labor is an important topic in the literature. In this paper, we focus on the role of clan culture on child labor in China. Our study shows that clan culture acts as a supplement to formal financial market by reducing the incidence of child labor through risk sharing and easing credit constraints, which enriches the literature on the macro factors behind the incidence of child labor, such as the role of public policies, globalization and financial development (Dehejia and Gatti, 2005; Edmonds and Pavcnika, 2005; Dinopoulos and Zhao, 2007; Tang et al., 2020; Zhao et al., 2021).

An imperfect financial market in developing countries leads to high levels of child labor engagement for two reasons (Baland and Robinson, 2000; Ranjan, 2001; Udry, 2003). Firstly, the benefits of child labor come from the current wage earned by the child and the reduced cost of schooling. However, the cost of child labor is the future labor earnings impeded by involved in child labor. When facing credit constraints, a higher interest rate in an imperfect financial market leads to a lower present discounted value of the future labor earnings. Thus, the benefits would be higher relative to the cost, resulting in higher incidence of child labor (Udry, 2003). Secondly, decisions regarding child labor and schooling are generally made by parents, which raise the issue of agent problems. Agent problems become even more salient when they occur within imperfect financial markets (Udry, 2003). Even amongst altruistic parents, the proportion of child labor can produce a socially inefficient equilibrium, as imperfect financial markets prevent parents from fully internalizing negative effects (Baland and Robinson, 2000; Udry, 2003). Besides, as a part of the household's self-insurance strategy, child labor supply will increase when household facing negative shocks, especially when the insurance market is not well developed (Jacoby and Skoufias,1996; Beegle et al., 2006; De Janvry et al., 2006).

Culture is a vital informal institution, and is identified in emerging economies as a crucial determinant of many economic outcomes, especially when the formal institution is poorly developed (Guiso et al., 2006; Fernández, 2011; Voigtländer and Voth, 2012; Alesina and Giuliano, 2015). However, there are few economic studies focusing on the impact of culture on child labor. Thus, our study also contributes to the growing literature of cultural economics by examining the impact of clan culture on the incidence of child labor in China.

We focus on China for three reasons. Firstly, although the enrollment rates of primary and junior high schools are high in China,[1] approximately 7.74% of children aged between 10 and 15 years were engaged in child labor in 2010 (Tang et al., 2018). It is crucial to investigate how to reduce the child labor participation in China. Secondly, clan culture is a well-known hallmark of Chinese culture (Greif and Tabellini, 2010, 2017; Zhang, 2020). Whilst official clan organizations were largely abolished following the Chinese Communist Party's rise to power in 1949, the influences of clan culture are likely to persist and continue to have an important impact on the behavior of individuals in modern China (Greif and Tabellini, 2010, 2017). Thirdly, China is the largest transition and developing economy, but has yet to establish a well-developed financial market, legal system, and social safety system, particularly in rural areas. In such context, clan culture plays the role of formal institutions in promoting information and risk sharing, reducing transaction costs, overcoming financial constraints for enterprises, and easing credit constraints for its members (Weber, 1981; Peng, 2004; Greif and Tabellini, 2010; Cox and Fafchamps, 2007; Zhang, 2020). Besides, clans also provide public goods and services for clan members (Fei, 1946; Freedman, 1965; Tsai, 2007; Gerard et al., 2015).

Combing the theories of child labor determination and the functions of clan culture, we hypothesize that clan culture can influence the engagement of child labor. Clan culture, as a supplement to formal institutions, may reduce the labor supply of children from poor families by easing credit constraints and promoting risk sharing. Moreover, this impact is supposed to be biased toward boys due to the patrilineal clan nature.

To test our hypotheses, we use the indicator of whether a household has a genealogy book as a key measure of the strength of clan culture at the household level following existing literature (Peng, 2004; Chen et al., 2016; Greif and Tabellini, 2017; Zhang, 2020). Having a genealogy book means the household subscribing to a clan. Thus, this paper focuses on the differences between clan members and non-clan members, other than the impacts of clan culture to regional outcomes or all individuals. That is, rather than exploring the role of external cultural environment (Guiso et al., 2004), we pay more attention to the intergenerational cultural transmission of preferences and beliefs within families (Tabellini, 2008), social norm among clan members, and the effect of being a clan member.

Besides using a household level indicator, we also explore to measure the strength of clan culture by the surname concentration in the village following Peng (2004). Employing our two measures of clan culture, we attempt to separately identify the potential effects of external origins and family origins. On the one hand, concentration of the same surname reflects the strength of clan culture in the village, regardless of household norms. On the other hand, the genealogy books measures the importance of clan culture to a particular household, after controlling the village level indicator of clan culture.

Based on national representative data, the China Family Panel Studies, we find that clan culture can significantly reduce the incidence of child labor. The results are driven by boys rather than girls. The differential effects between boys and girls indicate a strong engrained bias towards boys within the clan culture since its patrilineal nature, which influences parents to allocate resources towards boys. Moreover, the impact is greater on boys from households with lower socioeconomic status, and in rural areas.

We investigate risk sharing, informal financial institution and social norm on promoting education as three mechanisms through which clan culture influences the incidence of child labor. Specifically, clan culture has a greater impact on reducing child labor engagement amongst boys when serious disasters occur. Additionally, clans are more likely to help fathers of boys, if they fall into difficulty. Finally, we provide evidence of how clan culture may increase study time and household educational expenditure on boys.

Our paper contributes to existing literature in several ways. Firstly, it enriches the literature of exploring the impacts of culture on economic development. As existing literature shows, culture can effectively influence labor participation decision, fertility decision, schooling decisions, academic performance, wage rate, and labor mobility (e.g., Fernández, 2007; Guiso et al., 2008; Fernández and Fogli, 2009; Giavazzi et al., 2013; Munshi and Rosenzweig, 2006; Pitt et al., 2012). However, seldomly do they focus on child labor participation. We emphasize that culture can also influence human capital accumulation and economic development through the child labor channel.

Secondly, we contribute to existing child labor determination literature (Dehejia and Gatti, 2005; Edmonds and Pavcnika, 2005;

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[1] The enrollment rate of children aged between 10 to 15 years is 97% in 2010, according to our calculation based on CFPS 2010.

Basu et al., 2010; Tang et al., 2018; Tang et al., 2020; Zhao et al., 2021) by identifying a new influencing factor: clan culture. Since formal institutions are weak in most developing countries, exploring the role of culture in child labor provides a new insight to understanding the determination and distribution of child labor.

Thirdly, this paper highlights the potential threat associated with reliance on informal institutions and culture, such as clans, to fill the void of under-developed formal institutions, since the informal institution and culture can be gender biased.

The remainder of the paper is organized as follows: Section 2 briefly introduces clan culture in China; Section 3 describes the data and outlines the empirical strategy; Section 4 presents and discusses the main results; Section 5 provides robustness checks; Section 6 conducts heterogeneity analyses; Section 7 explores potential mechanisms and possible interpretations of the main findings; Section 8 provides concluding comments.

2. Clan culture in China and related literature

Clan culture is a hallmark culture in China (Greif and Tabellini, 2010, 2017; Zhang, 2020). The clans are kinship-based patrilineal organizations made up of individuals with one common male ancestor. The earliest clan organizations appeared within the Zhou Dynasty (1046-256 BC) and they prevailed within the Song Dynasty (960-1279 CE) when large conflicts broke out frequently in northern China, which led to great population migration to the south; the present spatial distribution of clans was mainly formed at that time (Feng, 2013). Zhu Xi (1130–1200) was a fervent advocate of clans and provided detailed institutional designs for Chinese clan organizations, which became the standard social practices in the subsequent eight centuries (Cheng et al., 2021). For management convenience and stronger cohesiveness, a traditional clan typically had an elder board to administer clan affairs, an ancestral temple to offer sacrifices to ancestors, a genealogy book recording brief biographies of all descents from the apical ancestor, and a code of conduct to direct and constrain clan members. Besides, a typical clan usually has common properties that can be used to assist members in need.

Chinese clans have two basic features. Firstly, clans appreciate family values, obligations and loyalty (Fei, 1946; Liu, 1959; Peng, 2004). Due to the sense of duty, clan members are more inclined to make clan-oriented decisions. In return, clans also provide protection for loyal members. However, clan culture leads to strong boy preference. As cooperation organizations consisting of patrilineal households that trace their origin to a common male ancestor, clans emphasize patrilineal descent so that only males can pass on their family names to next generations and have the right to be clan leaders (Feng, 2013). Along with clan culture, the Chinese family system is patriarchal, patrilineal, and patrilocal (Harrell, 2002). These traits drive parents to allocate resources to boys within a household.

Chinese clans are historically believed to play a leading role in China's political and economic affairs (Watson, 1982). While official clan organizations were largely abolished after the Chinese Communist Party took power in 1949, the influence of clan culture, like other cultural traits, are likely to persist and continue to impact on the behavior of individuals in modern China (Nunn and Wantchekon, 2011; Voigtlander and Voth, 2012; Greif and Tabellini, 2010, 2017). In a number of ways the clan culture still plays an important role today, and partly fills the void of formal institution to promote economic development, since as of yet China has not established a well-developed financial market, legal system, and social safety system, especially in rural areas.

Firstly, clan culture has helped the development of private sectors. Peng (2004) emphasizes that kin solidarity and kin trust play an important role in protecting the property rights of private entrepreneurs and reducing transaction costs. Thus, kinship networks have large positive effects on the number of rural private enterprises and their workforce size, but insignificant effects on collective enterprises. Zhang (2020) showed that the clan culture helps privately owned enterprises overcome financing constraints, and escape from the "grabbing hand" of local governments, as well as shape individual values that are relevant for private business, thus significantly increasing the likelihood of entrepreneurship and the share of economy in the private sector.

Secondly, clan culture enhances the provision of public goods and services since unofficial rules and norms provided by encompassing and embedding solitary groups can help local officials establish and enforce their public obligations, especially when formal accountability is weak (Tsai, 2007). Gerard et al. (2015) showed that clan culture greatly enhances public goods provision, whilst Xu and Yao (2015) found that clans help local leaders overcome the collective problem of financing public goods.

Moreover, clan culture plays an important role in risk sharing. Cox and Fafchamps (2007) argued that households in developing countries depend on friends and relatives for their livelihood, and sometimes their survival; help exchanged within extended families and kin networks affects the distribution of economic well-being. Zhang (2019) indicated that cultural norms significantly influence arrangements for old-age support. Amongst older people in rural China, clan culture is positively related to birth rates and the likelihood of having a son, co-residence with adult or married sons, and receiving financial transfers from children who do not live together. Furthermore, clan culture has a significantly negative effect on social pension program enrollment.

3. Data and empirical strategy

3.1. Data

The data set used in this paper is from the China Family Panel Studies (CFPS). It was formally launched in 2010 after several years of

pre-testing by the Institute of Social Science Survey (ISSS) at Peking University in China. The CFPS is a nationally representative, longitudinal survey that collects rich information on communities, families and individuals.

In this study, due to data limitation, we can only use the first wave, i.e., the baseline survey of the CFPS in 2010.[2] It covers 25 provinces (including provincial-level municipalities and provincial-level autonomous regions), representing 95% of the Chinese population.[3] The 2010 baseline survey interviewed a total of 14,960 households and 42,590 individuals. Detailed information on the CFPS can be obtained from Xie (2012).

Definition of child labor. There is no consensus regarding the definition of child labor in existing literature (Edmonds, 2008). Most studies adopt a stringent definition and define child laborers as "children in wage work". Some researchers define them as "children who engage in economic production".[4] A few researchers define child labor as all non-school and non-leisure activities of children. From this perspective, child labor would include domestic chores, such as cooking, home cleaning or caring for family members. The definition of child labor officially provided by the International Labor Organization (ILO) depends on whether the work is harmful to a child's health or development, regardless of whether this work is economic or non-economic, market or non-market.

China has three relevant laws stipulating that state organs, social bodies, enterprises, institutions, non-governmental not-for-profit organizations and private businesses are prohibited from employing children under the age of 16; employment of children under the age of 16 is referred to as using child labor.[5] Employers who use child labor shall be fined by the labor protection authorities at the rate of 5000 Chinese yuan per month for each child laborer used (Regulations Banning Child Labor, Article 6).

This paper uses a stringent definition and defines child labor as "children who participate in economic activities".

The 2010 wave of CFPS has a child module, which collects detailed information on education, work experience, time use, inter-personal communications, daily life, health, and other information of children aged between 10 and 15 years in both urban and rural areas. Thus, for the purpose of our study, we restrict our analysis to children aged between 10 and 15 years (inclusive) from both rural and urban China. Our sample for the main analysis comprises of 3023 children.

In the child module, respondents are required to report their time spent in various non-vacation activities in the last month. The activities are divided into six categories: personal life (sleep, meals, personal hygiene, household chores, and taking care of family members); individual work; study; entertainment and social activities; transportation; and others. In this paper, we define the child labor indicator based on individual work, which refers to paid work (cash or in kind) outside the household, work in agriculture for the household, and work in a household business. Specifically, we code any child with positive time in individual work as a child laborer.

Besides using "child labor" dummy variable as one key outcome, we also use total of paid and unpaid working hours of child laborer as the other key outcome.

Measures of clan culture strength. We follow one strand of literature and adopt genealogy as a proxy of the strength of clan culture (Peng, 2004; Chen et al., 2016; Greif and Tabellini, 2017; Zhang, 2020). A genealogy book usually records the history of a clan, including brief biographies of all descents from the apical ancestor and descriptions of all mega events and honorable descents in the clan. It also records clan beliefs and codes of conduct, such as industry, frugality, and solidarity within the clan. Therefore, genealogy books reinforce consanguinity ties (Peng, 2004).

In this study, we use the indicator of whether a household has a genealogy book as a key measure of the strength of clan culture at the household level. Thus, this paper focuses on the differences between clan members and non-clan members, other than the impacts of clan culture to regional outcomes or all individuals.

Table 1 shows that households holding genealogy books have stronger consanguinity ties. They have a higher probability of participating in ancestor worship/tomb-sweeping, paying a visit to and chatting with relatives, contacting relatives and friends, giving food or gifts, and helping each other more frequently.

Fig. 1 shows a geographical distribution of clan culture strength measured by the proportion of households holding genealogy books at the province level. Clan culture concentrates in southern regions of China based on the CFPS 2010 data.[6] The proportion of households with genealogy ranges from 0.055 to 0.601, which presents a substantial variation across provinces.

Table 2 reports the summary statistics of variables used in this study. The percentage of children engaged in child labor in our study sample is 7.8%, which is consistent with Tang et al. (2018) who used the same data. Among all children in our sample, 28.9% come from a family with a genealogy book, 53.7% are boys, and 77.2% have rural *hukou*.[7] On average, fathers have 7.02 years of schooling, while mothers have 5.63 years of schooling. The average ages of a father and mother are 40.26 and 38.38, respectively. 75.8% of

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[2] While the CFPS have collected 2010, 2012, 2014, 2016, 2018 and 2020 six waves of data already, we can only construct child labor variable for the 2010 baseline survey from the time allocation questions in its child module, since this information is not available in other waves except for the 2010 wave, which unfortunately prevents us to utilize the panel structure of the CFPS. Therefore, we only use the CFPS 2010 data in the paper.

[3] Hong Kong, Macao, Taiwan, Xinjiang, Tibet, Qinghai, Inner Mongolia, Ningxia and Hainan are excluded.

[4] The production of economic goods and services is classified under the United Nations (UN) System of National Accounts (SNA). According to the SNA, "the production of economic goods and services includes all production and processing of primary products, whether for the market, barter, or personal consumption, the production of all other goods and services for the market and, in the case of households that produce such goods and services for the market, the corresponding production for personal consumption".

[5] The three relevant laws include the Labor Law of the People's Republic of China (Article 15) taking effect on 1st Jan. 1995, Regulations Banning Child Labor (Article 2) enacted on 1st Dec. 2002, and the Law of People's Republic of China on the Protection of Minors (Article 28) active on 1st Jan. 1992. The minimum age of employment is 15 years, which is the minimum age of completion of compulsory schooling (ILO, 1973).

[6] Shandong province as the hometown of Confucius is in northern region but have a relatively strong strength of clan culture.

[7] *Hukou* system is also known as household registration system in mainland China. Under this system, citizens are classified as agricultural or non-agricultural *hukou,* also referred to as rural or urban *hukou*.

Table 1
Strength of consanguinity ties.

Variables	(1)	(2)	(3)	(4)	(5)
	Households without genealogies		Households with genealogies		Difference
	Obs	Mean	Obs	Mean	
Participate in ancestor worship/tomb-sweeping activities last year (dummy)	11,378	0.676	3322	0.766	−0.090***
How often did the family do the following contacts with relatives and friends last month:					
Entertainment/ dine together	11,369	0.575	3319	0.723	−0.148***
Give food or gifts	11,374	0.381	3322	0.568	−0.187***
Help each other	11,371	0.384	3319	0.497	−0.114***
Pay a visit	11,368	0.742	3320	0.888	−0.146***
Chat	11,367	1.147	3321	1.287	−0.141***

Notes: 1. Frequencies of contacts are divided into 5 categories: 0, no contact at all; 1, once a month; 2, 2–3 times a month; 3, 2–3 times a week; 4, almost every day.

2. Authors' calculation based on the family questionnaire of CFPS2010.

3. T-test of difference between households with a genealogy book and without is reported in Column (5).

4. Results are weighted using sample weights provided in the data.5. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

(.261,.601]
(.198,.261]
(.158,.198]
[.0546,.158]
No data
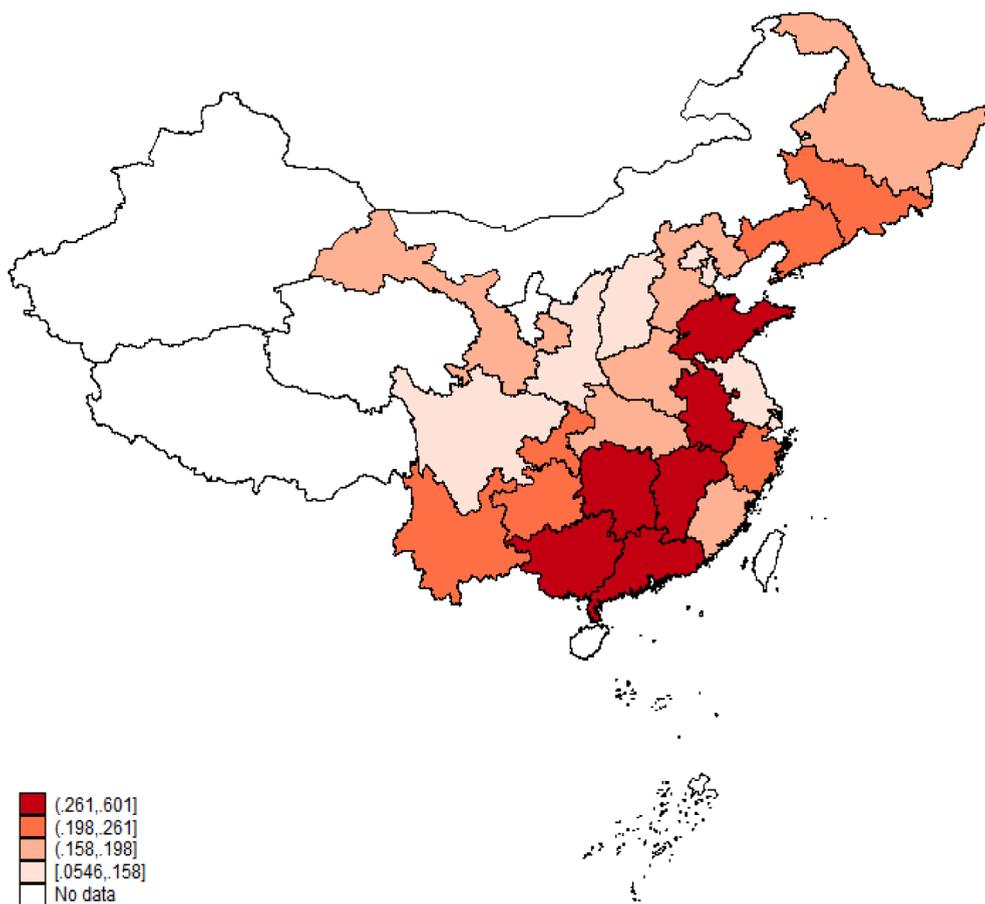
Fig. 1. Geographical distribution of clan culture.
Notes: 1. This figure shows the proportion of households holding genealogy books at province level;
2. Authors' calculation based on the family questionnaire of CFPS 2010.

household heads are male. The household net asset (family income excluded) in last year is on average 168,000 Chinese yuan (approximately US$2,4000). As a proxy of the scale of the extended family, the average number of relatives that visited last spring festival is 5.78.

In order to better understand the role of clan culture in China, we divide children into two groups according to whether he/she comes from a family with a genealogy book. Table 3 reports the comparison of characteristics between these two groups. Children from

Table 2
Summary statistics.

Variables	(1) Obs	(2) Mean	(3) Std. Dev.	(4) Min	(5) Max
Child labor (dummy)	3435	0.078	0.268	0	1
Genealogy (dummy)	3398	0.289	0.453	0	1
Age	3435	12.473	1.711	10	15
Han nationality (dummy)	3435	0.835	0.371	0	1
Boy (dummy)	3435	0.537	0.499	0	1
Rural *Hukou* (dummy)	3405	0.772	0.419	0	1
Interprovincial migrant (dummy)	3426	0.014	0.116	0	1
Education of father (year)	3356	7.015	4.288	0	19
Education of father (category)					
Illiteracy	3382	0.171	0.376	0	1
Primary School	3382	0.271	0.445	0	1
Junior High School	3382	0.374	0.484	0	1
Senior High School	3382	0.124	0.33	0	1
College and above	3382	0.06	0.238	0	1
Education of mother (year)	3357	5.625	4.563	0	22
Education of mother (category)					
Illiteracy	3386	0.3	0.458	0	1
Primary School	3386	0.273	0.446	0	1
Junior High School	3386	0.298	0.458	0	1
Senior High School	3386	0.083	0.276	0	1
College and above	3386	0.045	0.208	0	1
Age of father	3404	40.257	4.995	28	75
Age of mother	3389	38.375	4.619	24	72
Household head is male (dummy)	3426	0.758	0.428	0	1
Number of children	3431	1.824	0.926	1	7
Number of adults	3431	2.858	1.193	1	11
Household net assets (millions of CNY)	3238	0.168	0.470	−0.586	29.961
Non-agricultural activities by the family (dummy)	3428	0.1	0.299	0	1
Number of relatives visited last spring festival	3410	5.781	6.458	0	100
Average household net assets in the village/community (millions of CNY)	3428	0.170	0.224	−0.024	5.313
Average education year of adults in the village/community	3435	5.838	2.49	0.667	14.231
Population in the village/community	3378	4186.825	4663.566	170	51,139

Notes: 1. Authors' calculation based on the family questionnaire of CFPS 2010.
2. Results are weighted using sample weights provided in the data.

households with a genealogy book have a lower probability of engaging in child labor. Besides, clan culture seems to be more popular amongst the rural population and Han nationality. There is no significant difference by age and gender. However, children who are clan members tend to have better educated fathers, and come from larger households with a larger extended family, and are more likely to have a male household head.[8] Additionally, villages/communities of lower social economic status are more conductive to the spread of clan culture.

3.2. Baseline specification

We rely on a linear probability model (Angrist and Piscke, 2009) to examine the impact of clan culture on the incidence of child labor, and consider the following baseline empirical specification:

$$y_{ic} = \beta_0 + \beta_1 Genealogy_{ic} + \beta_2 X_{ic} + \mu_c + \in_{ic} \tag{1}$$

where y_{ic} is a binary variable that equals 1 if child *i* living in county *c* engages in child labor. The strength of clan culture, denoted by $Genealogy_{ic}$, is a dummy variable indicating whether a household keeps a genealogy book. β_1 is the parameter of interest that quantifies the effect of clan culture on incidence of child labor. X_{ic} is a vector of characteristics at individual, household, and village/community level that may be related to the incidence of child labor and the strength of clan culture.

When we choose which variables are included in X_{ic}, we mainly follow the practice in the child labor literature (e.g., Assaad et al., 2003; Tang et al., 2018; Emerson and Souza, 2007; Wahba, 2006; Basu, 2006; Knodel and Wongsith, 1991; Moehling, 2004; Bhalotra and Heady, 2003; Edmonds, 2008), as well as theoretical models which explore the factors behind child labor (e.g., Cigno and Rosati, 2005; Edmonds, 2008). Individual characteristics include: age; age squared; gender; ethnicity; *hukou* type. Household characteristics include: age and age squared of parents; educational levels of parents; gender of the household head; household net assets (household current incomes are excluded to avoid endogenous issue); number of adults and the number of children aged under 18 in the household; whether or not a household engages in non-agricultural activities. The number of relatives visited during the last spring

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[8] We use the number of relatives visited during last spring festival as a proxy.

Table 3

Summary statistics: by have a genealogy book or not.

Variables	Genealogy = 0		Genealogy = 1		Difference
	(1) Obs	(2) Mean	(3) Obs	(4) Mean	(5)
Child labor (dummy)	2501	0.091	897	0.046	−0.046***
Work hours per day	2501	0.618	897	0.302	−0.316***
Age	2501	12.494	897	12.433	−0.061
Han nationality (dummy)	2501	0.818	897	0.878	0.060***
Boy (dummy)	2501	0.532	897	0.553	0.021
Rural *Hukou* (dummy)	2477	0.755	893	0.816	0.061***
Education of father (year)	2439	6.839	881	7.409	0.570***
Education of mother (year)	2451	5.539	872	5.870	0.331
Age of father	2479	40.262	889	40.197	−0.065
Age of mother	2470	38.427	883	38.249	−0.178
Household head is male (dummy)	2501	0.728	895	0.831	0.103***
Number of children	2500	1.778	894	1.933	0.155***
Number of adults	2500	2.852	894	2.864	0.012
Household net assets (millions of CNY)	2355	0.161	857	0.186	0.025
Non-agricultural activities by the family (dummy)	2501	0.101	897	0.098	−0.002
Numbers of relatives visited last spring festival	2488	5.317	892	6.921	1.605***
Average household net assets in the village/community (millions of CNY)	2497	0.172	894	0.156	−0.016**
Average education year of adults in the village/community	2501	5.855	897	5.793	−0.062
Log Population in the village/community	2451	7.904	891	7.875	−0.029

Notes: 1. Authors' calculation based on the family questionnaire of CFPS2010.

2. T-test of difference between children from family with a genealogy book and without is reported in Column (5).

3. Results are weighted using sample weights provided in the data.

festival is a proxy of the scale of the extended family. Village/community characteristics include: average household net assets (family income excluded); average education level of adults; population size. County fixed effects μ_c are included to control for time-invariant characteristics of county that may be related to both the strength of clan culture at household level and the incidence of child labor. Additionally, provincial characteristics from China Statistical Year Books are also used in the analysis.

All models are estimated using the sample weights provided by the CFPS. In all regressions, standard errors are adjusted for clustering at the household level to account for any potential correlation within the same household (Bertrand et al., 2004).[9]

Although we only have cross-sectional data, culture is usually regarded as exogenous. The cultural traits transmit from generation to generation (Grief, 1994; Guiso et al., 2006), and influence economic outcomes through two potential channels: beliefs (i.e., priors) and values (i.e., preferences), which can only be reshaped in the long term (Guiso et al., 2006). Thus, culture can be regarded as persistent and stable. According to Becker (1996, p. 16): "Individuals have less control over their culture than over other social capital. They cannot alter their ethnicity, race or family history, and only with difficulty can they change their country or religion. Because of the difficulty of changing culture and its low depreciation rate, culture is largely a 'given' to individuals throughout their lifetimes."

Furthermore, whether a household holds a genealogy book is relatively exogenous to the household. A genealogy book usually records the history of a clan, including brief biographies of all descents from the apical ancestor and descriptions of all mega events and honorable descents in the clan. Compiling a genealogy requires detailed information on all extended-family members including previous generations and current generation. Therefore, whether a household holds a genealogy book is mostly determined by the extended-family other than an individual household.

4. Main results

In this section, we firstly present results from the baseline model, and then deal with the potential endogeneity issues. The main outcomes of interest are child labor dummy variable and sum of paid and unpaid of working hours of children.

4.1. Baseline results

Table 4 reports the baseline results. All regressions in Table 4 include individual characteristics, household characteristics, village/community characteristics, and county fixed effects. The estimated coefficients of clan culture strength are negative and statistically significant in Column (1), suggesting that clan culture helps combat child labor. Particularly, a child from a clan household is about 2.7% less likely to be a child laborer.

Since clans in China emphasize patrilineal descent, clan culture leads to a strong boy preference. Thus, we further explore whether clan culture has differential effects on boys and girls. The results are shown in Columns (2)–(4) in Table 4. We find that all the effects go through the interaction term of genealogy and boy; the coefficients of genealogy become insignificant in Column (2). In other words,

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[9] We also consider clustering standard error at the village/community level as robustness checks. The main empirical results are still hold.

clan culture helps combat child labor only for boys. We run separate regressions to quantify the differential impact on boys and girls, with the results for girls in Column (3) and boys in Column (4). Results show that clan culture significantly helps reduce the incidence of child labor for boys. However, it does not have a significant effect for girls.

Since there is no significant difference between the overall likelihood of child labor for boys and girls in China (Tang et al., 2018),[10] the stronger impact of clan culture on boys may not come from the different level of child labor incidence between boys and girls. When a family is faced with severe credit constraints, both sons and daughters may have to engage in economic activities. Clan culture may relax household credit constraints and lead to intra-household resource reallocation towards boys due to strong boy preference within clans (we will verify this hereinafter). Consequently, a relaxation of resource constraints by clans may create differential effects for boys and girls.

Besides economic activities, children also involve non-economic housework, such as taking care of the family and household chores. We also examine the children's non-economic housework participation. According to our calculation from the CFPS 2010, 51.34% of children participate in housework. On average, child laborers spend 6.72 h per day on individual work on average, whilst they only spend 0.847 h per day on housework. When we consider the impacts of clan culture on children's housework participation, we find no significant effects. In other words, clan culture helps reduce children's participation in economic activities, but has no impacts on their housework participation.[11]

4.2. Correcting for the potential endogenous bias

The endogeneity concerns may come from three aspects in this research: reverse causality, measurement error of clan culture, and omitted variables.

Since whether a household has a genealogy book is hard to be influenced by child labor engagement, reverse causality issue is not the main concern in our specification. As for measurement error of clan culture, it is possible for a household emphasizing clan culture do not keep a genealogy book, but seldomly would a non-clan household keep a genealogy book. Measurement error in this direction underestimates the impact of clan culture. Therefore, the major endogeneity concerns may come from omitted variables.

To assess the importance of potential omitted variable bias, we perform a test proposed by Oster (2019). This method analyzes the differences in coefficients of interest and the R-squared of the main regressions between excluding controls and including controls. If including controls increases the R-squared of the model while not affecting the coefficient of interest, it is less likely that including unobservables would bias the results. Oster (2019) assesses this potential bias by compute the relative importance of unobservables to observables (δ) that would be consistent with a coefficient of interest equal to zero ($\beta = 0$). That is, how important should the unobservables to be relative to the observables to eliminate the estimated effect.

For our baseline specification, the δ that matches $\beta = 0$ amounts to 2.208 for whole sample, 3.629 for girls and 1.871 for boys. It means that the importance of unobservables would have to be 2.208, 3.629 and 1.871 times higher than that of the observables for the coefficients to be zero. According to Oster (2019), the omitted variable bias would be less of a concern if the estimated δ exceeds one. The values of δ are far more than one in our tests, indicating that omitted variables bias is limited.

To further control for the possible endogenous issue and assess the importance of the potential endogenous bias, we adopt an instrument variable (IV) approach and carry out a Hausman test. Referring to Chen et al. (2021), we instrument clan culture with a city's shortest distance to the academic center where Zhu Xi (1130–1200 CE) developed and spread his philosophy.

Zhu Xi was a fervent advocate of clans and provided detailed institutional designs for Chinese clan organizations, which became the standard social practices in the subsequent eight centuries (Cheng et al., 2021). Zhu had set up 3 academies during his whole life, all of which were located in Nanping (in Fujian province) and the majority of Zhu's classical texts were completed there, such as Jiali (the Family Rituals) (Chan, 1987). In Jiali, Zhu not only elaborated on the importance of establishing clan common properties, such as ancestral halls, ancestral graveyards, and ritual land, but also laid out detailed instructions on the design of ancestral halls and the rules for family rituals like adult ceremonies, marriages, funerals, and ancestral offerings etc. (Cheng et al., 2021). Meanwhile, of the three academies Zhu built, the most important one is "Kaoting Academy", because most of his famous pupils attended him here from all over China and most of the recorded conversations took place here, forming the "Kaoting School" with great influence in history (Chan, 1987). In a word, Nanping was the academic center of spreading Zhu Xi's main ideas about clan culture. Thus, we expect that regions closer to Nanping were more exposed to Zhu Xi's influences historically and, thanks to cultural persistence, are more likely to preserve strong clan culture heritage today.

Besides, the location choice of the academic center where Zhu Xi (1130–1200 CE) developed and spread his philosophy is largely random. Zhu Xi chose to establish academies in Nanping because his father used to be a local government official there and his mother were buried there. Nanping was neither an economic center nor backward regions. Therefore, consistent with Chen et al. (2021) and Cheng et al. (2021), we argue that the IV does not affect the child labor decision through other channels than clan culture. So, it is reasonable to use a city's shortest distance to Nanping as an IV of the strength of clan culture.

The instrumental variable (IV) results are shown in the Table 5. These results reinforce our baseline conclusion: the negative effects of clan culture on the incidence of child labor are significant for the full sample and the boy sample.

Furthermore, we employ a Hausman specification test to examine whether it is necessary to adopt an IV approach (Hausman, 1978). The result from a robust Hausman test using bootstrap with 1500 replications shows Prob > chi2 = 0.23, which means that we

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[10] In the sample used in our analyses, 7.6% of girls and 7.9% of boys engaged in child labor.
[11] The results are available from the authors upon request.

Table 4
Impacts of clan culture on incidence of child labor.

Variables	(1) All	(2) Patriarchal and Patrilineal All	(3) Girl	(4) Boy
Genealogy*Boy		−0.039*		
		(0.021)		
Genealogy (dummy)	−0.027**	−0.006	−0.016	−0.039**
	(0.012)	(0.018)	(0.020)	(0.015)
Age	−0.089	−0.088	−0.134	−0.074
	(0.059)	(0.059)	(0.093)	(0.076)
Age squared	0.003	0.003	0.005	0.003
	(0.002)	(0.002)	(0.004)	(0.003)
Han nationality (dummy)	−0.035*	−0.035*	−0.066**	−0.001
	(0.021)	(0.021)	(0.033)	(0.027)
Boy (dummy)	−0.011	0.000		
	(0.011)	(0.013)		
Rural *Hukou* (dummy)	−0.006	−0.005	0.002	0.005
	(0.019)	(0.019)	(0.025)	(0.026)
Age of father	−0.006	−0.006	0.053**	−0.028
	(0.018)	(0.018)	(0.021)	(0.021)
Age of father squared	0.000	0.000	−0.001**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Age of mother	0.030**	0.029**	0.001	0.043***
	(0.014)	(0.014)	(0.028)	(0.015)
Age of mother squared	−0.000**	−0.000*	0.000	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Household head is male (dummy)	0.012	0.012	0.020	0.013
	(0.014)	(0.013)	(0.018)	(0.020)
Number of children	0.003	0.002	0.004	−0.004
	(0.010)	(0.010)	(0.014)	(0.013)
Number of adults	−0.009	−0.009	−0.012	−0.004
	(0.006)	(0.006)	(0.009)	(0.007)
Household net assets	0.003	0.004	−0.001	0.000
	(0.007)	(0.007)	(0.024)	(0.007)
Non-agricultural activities by the family (dummy)	−0.021	−0.022	0.000	−0.033*
	(0.015)	(0.015)	(0.027)	(0.018)
Number of relatives visited last spring festival	−0.001	−0.001	0.002	−0.006***
	(0.001)	(0.001)	(0.002)	(0.002)
Average household net assets in the village/community	−0.034	−0.033	−0.111	0.014
	(0.045)	(0.045)	(0.098)	(0.049)
Average education year of adults in the village/community	−0.014***	−0.014***	−0.002	−0.020***
	(0.005)	(0.005)	(0.009)	(0.006)
Log population in the village/community	0.025**	0.025**	0.019	0.019
	(0.010)	(0.010)	(0.016)	(0.013)
Constant	−0.021	−0.022	−0.438	0.157
	(0.376)	(0.376)	(0.638)	(0.464)
Observations	3023	3023	1509	1514
R-squared	0.251	0.252	0.323	0.321
County FE	Y	Y	Y	Y
Education of Mother (category)	Y	Y	Y	Y
Education of Father (category)	Y	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

cannot reject the null hypothesis that all explanatory variables are exogenous.

Since OLS is more efficient than IV approach if all explanatory variables are exogenous, and both test of Oster (2019) and Hausman test indicate that there is no significant endogenous bias, it is rational for us to choose OLS method as the main empirical strategy in this paper.[12]

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[12] It should be added that, in the OLS regressions we control for the county fixed effect. When it comes to the IV approach, since our instrument variable - a city's distance to Nanping - is a part of the county fixed effect, we cannot control for the county fixed effect anymore due to perfect collinearity. Thus, to execute the Hausman specification test, the regression equation of OLS we use here is the same as the regression equation of IV approach (without controlling for county fixed effect). According to Mundlak (1978), we can always find a linear projection to transfer a fixed effect model to a random effect model, so it is rational to transfer the OLS regression equation controlling for county fixed effect to an equation without controlling for county fixed effect.

Table 5
Results from instrumental variable approach.

Variables	(1) All First stage Genealogy	(2) Second stage Child labor	(3) Girl First stage Genealogy	(4) Second stage Child labor	(5) Boy First stage Genealogy	(6) Second stage Child labor
Genealogy (dummy)		−0.171*		−0.072		−0.237**
		(0.100)		(0.173)		(0.111)
Log of distance to Nanping	−0.120***		−0.098**		−0.152***	
	(0.032)		(0.040)		(0.045)	
Observations	2199	2199	1107	1107	1092	1092
R-squared		0.040		0.093		0.020
Individual char.	Y	Y	Y	Y	Y	Y
Household char.	Y	Y	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y	Y	Y
County char.	Y	Y	Y	Y	Y	Y
KP F-stat		13.56		6.051		11.27

Notes: 1. The dependent variable is children's labor force participation.

2. Estimates are weighted using sample weights provided in the data.

3. Robust standard errors in parentheses are clustered at household level.

4. County characteristics includes log of GDP and log of population.

5. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

4.3. Working hours

In this part, we go one step further to examine the effects of clan culture on working hours of children. Since a substantial proportion of children are observed with zero working hour, we use a Tobit model. Results in Table 6 show that clan culture significantly helps reduce children's working hours, and again this result is driven by boys other than girls.

Because a majority of children are not working, it is important and interest to investigate how the clan culture effects on the extensive margin (the participation of in the labor market) and on the intensive margin (working hours conditional on working) by McDonald and Moffitt's (1980) decomposition.

Table 7 reports the decomposition results. Panel A and B show results for the whole sample, while Panel C for girls and D for boys. Clan culture has reduced both the extensive and the intensive margin, but the effects are again significant for boys only. Panel D illustrates that clan culture reduces labor participation of boy by 2.6% at extensive margin and reduces working time by 0.24 h at intensive margin.

5. Robustness checks

In this subsection, we conduct a series of robustness checks for our baseline results: permutation test; sample restriction; alternative measure of the strength of clan culture; taking north-south difference into account; and consideration of different ethnic groups.

5.1. Permutation test

We adopt a permutation test of Rosenbaum (2007) to check whether the estimated results are really significant or just due to random chance. The permutation test makes no assumptions on the underlying distribution of the data. In the permutation test, the null hypothesis is that the clan culture has no effect on the odds of child labor. Under the null hypothesis, the estimated coefficient from the actual data can be considered a random sample from the permutation distribution. We can produce the permutation distribution of the estimated coefficients and use it for statistical inference. We randomly assign whether or not the family household has a genealogy book as the placebo treatment status for each child (Rosenbaum, 2007; Lu and Anderson, 2015). Specifically, the ratio of households having genealogy books in placebo treatment status is consistent with that in the actual data. We estimate the placebo treatment effect on the incidence of child labor. The distribution of placebo treatment effects from 4000 random assignments are displayed in Fig. 2. The dashed line shows the estimated treatment effect from the baseline analysis. The p value of the permutation placebo test is the proportion of placebo estimates that are equal to or larger in absolute value than the corresponding estimate from the baseline analysis. We find that the p value is 0.033, which rejects the null hypothesis of no effect, thus providing further support for our identification strategy and main findings.

5.2. Sample restriction

Clans emphasize patrilineal descent and have a strong boy preference. Thus, when we divide the whole sample into the subsamples of boys and girls, the classification may by endogenous. As families with sons may be more deeply influenced by clan culture, i.e., through fertility decisions, it is possible that the differential gender effects shown in the baseline results may not only capture the impact of clan culture on the incidence of child labor, but also include different strengths of clan culture between these two

Table 6
Clan culture on working hours: Tobit model.

Variables	(1) All	(2) All	(3) Girl	(4) Boy
Genealogy*Boy		−4.430***		
		(0.358)		
Genealogy (dummy)	−1.806***	0.434	−0.092	−2.325***
	(0.281)	(0.326)	(0.363)	(0.337)
Constant	−53.108***	−51.588***	−87.166***	−48.817***
	(0.380)	(0.378)	(0.479)	(0.426)
Observations	3023	3023	1509	1514
log pseudolikelihood	−31,200,000	−31,200,000	−13,300,000	−15,200,000
pseudo R-square	0.202	0.204	0.261	0.285
Individual char.	Y	Y	Y	Y
Household char.	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y
County FE	Y	Y	Y	Y

Notes: 1. The dependent variable is children's working hours per day.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 7
McDonald and Moffitt's decomposition.

Variables	(1) Unconditional	(2) Conditional	(3) Probability
Panel A: All			
Genealogy (dummy)	−0.149	−0.210***	−0.020**
	(0.098)	(0.047)	(0.009)
Observations	3023	3023	3023
Panel B: All			
Genealogy*Boy	−0.365	−0.514***	−0.050**
	(0.270)	(0.155)	(0.025)
Genealogy (dummy)	0.036	0.050	0.005
	(0.052)	(0.053)	(0.006)
Observations	3023	3023	3023
Panel C: Girl			
Genealogy (dummy)	−0.008	−0.009	−0.001
	(0.024)	(0.033)	(0.004)
Observations	1509	1509	1509
Panel D: Boy			
Genealogy (dummy)	−0.196	−0.237***	−0.026**
	(0.137)	(0.079)	(0.010)
Observations	1514	1514	1514

Notes: 1. The dependent variable is children's working hours per day.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

subsamples. As a robustness check, we restrict our analysis to the children from households with both sons and daughters. On the one hand, such families are more likely to have the same gender preference, but on the other hand, intra-household resource allocation between boys and girls is more relevant to families with both sons and daughters. The results are in Table 8: clan culture still significantly reduces the incidence of child labor for boys, but not for girls, and the differential gender effects are indeed stronger for such families.[13]

5.3. Alternative measures of the strength of clan culture

We then check if our results are sensitive to alternative measures of clan culture strength. Where clan culture is prevalent, extended family members tend to live in the same village. In reference to Peng (2004), we measure the strength of clan culture by the surname concentration in the village. Particularly, as shown in Columns (1)–(3) in Table 9, we adopt whether or not there is a surname shared

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[13] We also consider the impacts of interprovincial migrants to our results. Only 1.4% of our sample are interprovincial migrants. When we restrict our sample to local children, our main results do not change much. The results are available from the authors upon request.
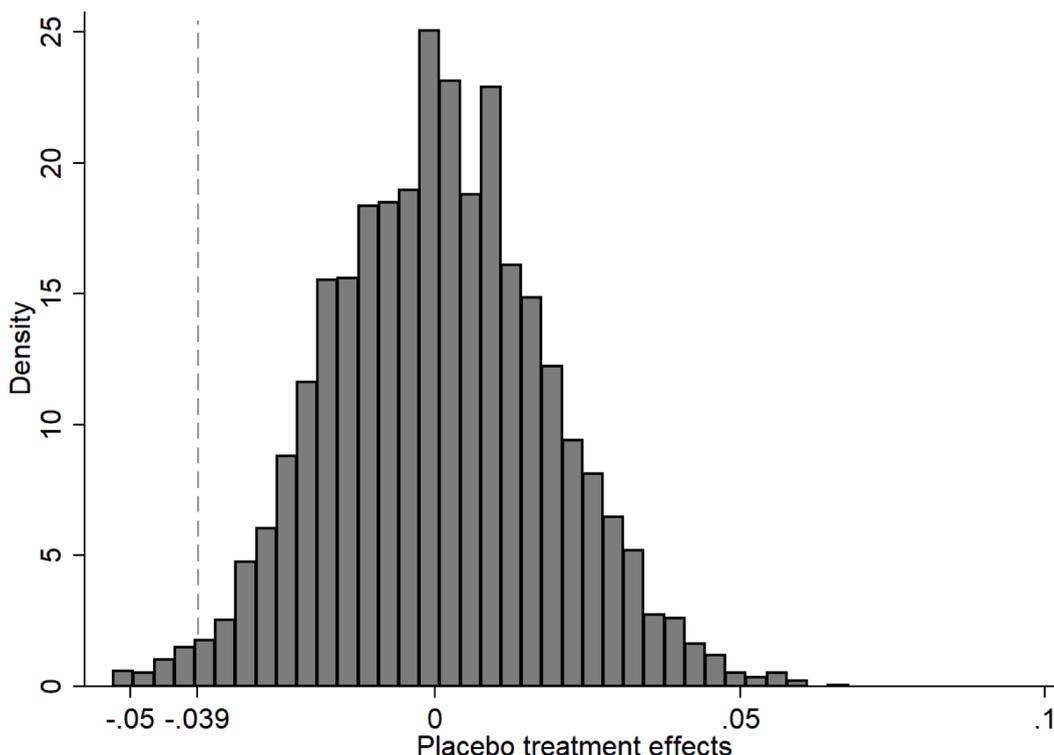
Fig. 2. Child labor engagement of boys, p-value = 0.033.

Note: Estimated coefficients from the permutation placebo tests. We randomly assign whether or not there is a genealogy book to the children's households as placebo treatment status for the same sample in the baseline analysis. These histograms display the distribution of placebo treatment effects from 4000 random assignments. The dashed line shows the estimated treatment effect from the baseline analysis. The p value of each permutation placebo test is the proportion of placebo estimates that are equal to or larger in absolute value than the corresponding estimate from the baseline analysis.

Table 8
Children from households with both sons and daughters.

Variables	(1) All	(2) Girl	(3) Boy
Genealogy (dummy)	−0.037**	−0.005	−0.069***
	(0.018)	(0.024)	(0.025)
Observations	1810	1009	801
R-squared	0.286	0.358	0.391
Individual char.	Y	Y	Y
Household char.	Y	Y	Y
Village/Community char.	Y	Y	Y
County FE.	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.

2. Estimates are weighted using sample weights provided in the data.

3. Robust standard errors in parentheses are clustered at household level.

4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

by over 10% of village households as an alternative measure of the strength of clan culture.[14] We exclude the urban sample in this part, as we do not have any information about surname prevalence at community level within urban areas. Using the alternative measure of clan culture strength does not alter our main finding: clan culture has a negative and significant effect on the incidence of child labor for boys.

Furthermore, some literature focuses on the intergenerational cultural transmission of preferences and beliefs within families (Tabellini, 2008), whilst others shed light on the role of external cultural environment (Guiso et al., 2004). Thus, an interesting

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[14] This indicator comes from a question of CFPS2010 in village/community module, which ask "In your village, was there any surname shared by over 10% of all the households?". There is no additional information available to use other cutoff.

question to consider is whether it is intergenerationally transmitted clan culture within families, or the area in which an individual lives that helps combat child labor. Employing our two measures of clan culture, we attempt to separately identify the potential effects of external origins and family origins. On the one hand, concentration of the same surname reflects the strength of clan culture in the village, regardless of household norms. On the other hand, the genealogy books measures the importance of clan culture to a particular household, after controlling the village level indicator of clan culture.

Specifically, we add clan culture measures of both village level and household level to the regressions and report the results in Columns (4)–(6) of Table 9. Interestingly, both indicators are significantly negative in the regression for boys. That is, clan culture does help reduce child labor participation of boys irrespective of whether it is transmitted within the family or prevalent in the village.

5.4. Consider difference in clan culture among ethnic groups

There are 56 ethnic groups in China, including the Han Chinese accounting for about 91.51% of the total population and rest are 55 other ethnic minorities.[15] Since different ethnic groups may hold different beliefs, we additionally check for robustness across different ethnic groups by controlling the interaction of the strength of clan culture and whether the village/residential community is a minority-concentrated area. The results are reported in Table 10. The estimated results are quite close to those obtained from baseline results. The coefficients of the dummy variable on whether a household belongs to Han Chinese, if a village/community is a minority-concentrated area, and the interaction term of clan culture and minority-concentrated area are all insignificant, which implies that clan culture plays an important role in reducing child labor amongst both the Han Chinese and minorities.

5.5. Take north-south difference into account

Fig. 1 shows clan culture concentrates in southern regions of China. The uneven distribution may imply different impacts of clan culture on child labor participation between northern and southern provinces. As shown in Table 11, columns (1)–(3) show the estimates for children living in Northern provinces whilst the estimates for children living in southern provinces are reported in Columns (4)–(6). We find that clan culture significantly reduces the incidence of child labor for children in southern provinces, especially for boys, but has no significant effect on the engagement of child labor for children in Northern provinces.[16]

6. Mechanisms and interpretations

6.1. A supplement to formal institutions

Since culture acts as a supplement to formal institutions, especially when the formal institution is not well developed (Alesina and Giuliano, 2015), the impact of clan culture on children's labor force participation may vary between urban and rural areas due to the different development of formal institution and economic level. We investigate rural-urban heterogeneity to test whether clan culture acts as a supplement to formal institutions and plays a much important role in rural China.

As shown in Table 12, Panel A presents the effects of clan culture by rural/urban hukou status, while Panel B refers to the effects of clan culture by rural/urban residence. Columns (1)–(3) show the estimates for urban children whilst the estimates for rural children with are reported in Columns (4)–(6). The results show that clan culture helps reduce the incidence of child labor for rural children, especially for rural boys, but has no significant effect on the likelihood of child labor amongst both urban girls and urban boys.

6.2. Risk-sharing and easing credit constraints

Children from households with lower socioeconomic status are more likely to engage in child labor because of financial constraints (Edmonds, 2005; Tang et al., 2018). Furthermore, they are more vulnerable in the face of negative shocks, leading to a higher increase in child labor engagement (Beegle et al., 2006). As mentioned above, clan culture has an informal institutional role to complement formal institution in promoting risk sharing, and in easing credit constraints (Cox and Fafchamps, 2007; Zhang, 2020). Thus, the effects of clan culture may differ for children in families with different socioeconomic status.

We use household net asset as a proxy for household socioeconomic status. The estimates of clan culture by the level of household net asset are reported in Table 13. Columns (1)–(3) show the estimates for children from poor households, i.e., households in the bottom third of the net asset distribution, whilst Columns (4)–(6) report the results for those from the middle third, and the estimates for children from rich households (with net asset in the top third) are reported in Columns (7)–(9). Results show that clan culture only significantly reduces the odds of child labor for children from poor households, especially for boys. However, it does not have any significant effect on labor force participation for children from richer households.

As mentioned above, an imperfect financial market can lead to high levels of child labor engagement for the reason of credit constraints (Baland and Robinson, 2000; Ranjan, 2001; Udry, 2003). Besides, as a part of the household's self-insurance strategy, child

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[15] Data source: 2010 National Census of China.
[16] Northern China includes Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Shandong, Henan, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang. Southern China includes Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Hubei, Hunan, Guangdong, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan, and Tibet.

Table 9
Alternative measures of the strength of clan culture.

Variables	(1) All	(2) Girl	(3) Boy	(4) All	(5) Girl	(6) Boy
Whether or not there is a surname shared by over 10% of all the households in the village (dummy)	−0.055**	0.017	−0.174***	−0.054**	0.015	−0.172***
	(0.026)	(0.033)	(0.048)	(0.026)	(0.034)	(0.048)
Genealogy (dummy)				−0.024*	−0.011	−0.040**
				(0.014)	(0.022)	(0.018)
Observations	2334	1166	1168	2318	1158	1160
R-squared	0.275	0.365	0.336	0.275	0.365	0.339
Individual char.	Y	Y	Y	Y	Y	Y
Household char.	Y	Y	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y	Y	Y
County FE.	Y	Y	Y	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 10
Considering different ethnic groups.

Variables	(1) All	(2) Girl	(3) Boy
Genealogy (dummy)	−0.024*	−0.014	−0.044***
	(0.012)	(0.019)	(0.016)
Genealogy* The village/community is a minority-concentrated area	−0.010	−0.008	0.033
	(0.036)	(0.063)	(0.043)
The village/community is a minority-concentrated area (dummy)	0.053*	0.048	0.043
	(0.031)	(0.047)	(0.041)
Observations	3023	1509	1514
R-squared	0.252	0.324	0.322
Individual char.	Y	Y	Y
Household char.	Y	Y	Y
Village/Community char.	Y	Y	Y
County FE.	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 11
North-south difference.

Variables	(1) North	(2) North & Girl	(3) North & Boy	(4) South	(5) South & Girl	(6) South & Boy
Genealogy (dummy)	0.007	0.029	−0.028	−0.045**	−0.031	−0.045**
	(0.016)	(0.024)	(0.019)	(0.018)	(0.027)	(0.022)
Observations	1589	805	784	1434	704	730
R-squared	0.172	0.280	0.235	0.299	0.367	0.378
Individual char.	Y	Y	Y	Y	Y	Y
Household char.	Y	Y	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y	Y	Y
County FE.	Y	Y	Y	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

labor supply will increase when household facing negative shocks, especially when the insurance market is not well developed (Jacoby and Skoufias,1996; Beegle et al., 2006; De Janvry et al., 2006). Thus, we can hypothesize that as an informal institution, clan culture is likely to reduce the incidence of child labor through risk-sharing and easing credit constraints. In following paragraphs, we will test these two hypotheses separately.

Firstly, we explore how clan culture combats child labor when households face natural disasters. Specifically, we add natural

Table 12

Mechanism: a supplement to formal institutions.

Variables	(1) Urban	(2) Urban & Girl	(3) Urban & Boy	(4) Rural	(5) Rural & Girl	(6) Rural & Boy
Panel A: by Hukou Status						
Genealogy (dummy)	−0.024	0.007	−0.019	−0.025*	−0.014	−0.039**
	(0.030)	(0.040)	(0.033)	(0.014)	(0.021)	(0.019)
Observations	612	307	305	2411	1202	1209
R-squared	0.457	0.716	0.627	0.271	0.363	0.314
Panel B: by Residence						
Genealogy (dummy)	−0.040	−0.049	−0.035	−0.026*	−0.009	−0.044**
	(0.028)	(0.034)	(0.025)	(0.015)	(0.023)	(0.020)
Observations	724	362	362	2299	1147	1152
R-squared	0.399	0.659	0.533	0.273	0.368	0.323

Notes: 1. The dependent variable is children's labor force participation.

2. Estimates are weighted using sample weights provided in the data.

3. Robust standard errors in parentheses are clustered at household level.

4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

disaster losses (in units of 100 million Chinese Yuan) at province level in 2010 and its interaction with the strength of clan culture to Eq. (1).[17] Moreover, since the effects of provincial disaster losses will be absorbed by county fixed effects, we replace county fixed effects in Eq. (1) with geographic regional fixed effects.[18] In addition, provincial characteristics may affect the capability of a province to withstand risks as well as child labor participation, thus, we further control log population and log gross domestic product (GDP) in 2009 at provincial level.[19]

Table 14 clearly illustrates that disaster losses have significantly increased child labor participation. However, clan culture can partly offset the negative impact of disasters for boys, but not for girls. These results are consistent with our baseline results and indicate that clan culture can offer informal social insurance to smooth shock through risk-sharing when negative exogenous shocks occur.

Secondly, we check whether clan members can get more aids (in monetary or in kind) from relatives when they are in predicaments including borrowing money, children's schooling, seeing a doctor, job searching, and children's job searching. Specifically, based on Eq. (1), we replace the independent variable with a dummy variable of whether the father/mother of our observations (children aged between 10 and 15 years (inclusive)) has ever received aids from relatives when they are in any of the above-mentioned predicaments. The relevant results reported in Panel A of Table 15 show that fathers of boys are 8% more likely to get aid from relatives than the fathers of girls. Moreover, clan culture has insignificant effects on the likelihood of mothers of both boys and girls receiving aid. These results are consistent with the strong male-preference in clan culture that emphasizes paternal lineage; allocation of resources in clans is more likely to be bias toward males (both boys and fathers).

Furthermore, in order to identify whether clan culture is easing credit constraints or offering other in-kind aids, we divide the aids in Panel A into financial support and other non-financial aids. The results shown in Panel B and Panel C of Table 15 suggest that the effects mainly come from financial support. It is worth noting that the mothers of both boys and girls are less likely to receive financial support from the clan.

Overall, clan culture can reduce the incidence of child labor through easing credit constraints, but the effects can only be transmitted by paternal lineage.

6.3. Social norms

Social norms are patterns of behavior that are self-enforcing within a group: everyone conforms, everyone is expected to conform, and everyone wants to conform when they expect everyone else to conform (Young, 2015).

Clan culture helps form social norms to promote human capital investment within clan members. As a fervent advocate of clans, Zhu Xi emphasized in his family motto that "the learned must be respected" and "the descendant must be educated". Weber (1981) observed that the clan organization not only built ancestral halls but also ran schools. The norms to promote human capital investment may sustained in clans and therefore reduce the incidence of child labor.

In Table 16, we test whether the social norms to promote human capital investment have been formed in clans. Those norms are proxied by household educational expenditure on children and study time of children. The effects of clan culture on household educational expenditure on children are shown in Columns (1)–(3) and the effects of clan culture on children's study time are presented in Columns (4)-(6). Since 4.57% of children in our sample do not spend any time studying, we adopt a Tobit model in this analysis. Estimated results suggest that clan culture significantly increases the household educational expenditure on boys, indeed by

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[17] Data source of provincial disaster losses: 2011 China Statistical Yearbook.

[18] Six geographic regions in China: Northeast; Northwest; North China; Southwest; Central South; and East China, and each geographic region covers several provinces.

[19] We chose to control provincial characteristics in 2009 rather than in 2010 to be more exogenous.

Table 13

Mechanism: impacts of clan culture by household socioeconomic status.

Variables	(1) Net asset<1/3	(2)	(3)	(4) 1/3<=Net asset<2/3	(5)	(6)	(7) Net assets>=2/3	(8)	(9)
	All	Girl	Boy	All	Girl	Boy	All	Girl	Boy
Genealogy (dummy)	−0.084***	−0.053	−0.101***	0.004	−0.008	0.014	−0.003	−0.004	−0.024
	(0.021)	(0.038)	(0.030)	(0.026)	(0.042)	(0.038)	(0.024)	(0.042)	(0.030)
Observations	1004	510	494	1007	496	511	1007	502	505
R-squared	0.354	0.515	0.426	0.358	0.485	0.448	0.468	0.624	0.619
Individual char.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Household char.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE.	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.

2. Estimates are weighted using sample weights provided in the data.

3. Robust standard errors in parentheses are clustered at household level.

4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 14

Mechanism: risk-sharing.

Variables	(1) All	(2) Girl	(3) Boy
Genealogy (dummy)	0.025	0.034	0.015
	(0.024)	(0.039)	(0.030)
Disaster losses at province level	0.004***	0.004***	0.005***
	(0.001)	(0.001)	(0.001)
Genealogy* Disaster losses at province level	−0.003***	−0.003	−0.003**
	(0.001)	(0.002)	(0.001)
	(0.001)	(0.001)	(0.001)
Observations	3023	1509	1514
R-squared	0.111	0.113	0.144
Individual char.	Y	Y	Y
Household char.	Y	Y	Y
Village/Community char.	Y	Y	Y
Provincial char.	Y	Y	Y
Region FE	Y	Y	Y

Notes: 1. The dependent variable is children's labor force participation.

2. Estimates are weighted using sample weights provided in the data.

3. Robust standard errors in parentheses are clustered at household level.

4. Provincial characteristics includes log of GDP and log of population in 2009.

5. Six regions: Northeast, Northwest, North China, Southwest, Central South, and East China.

6. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

as much as 32%, thus significantly increasing their study time. However, the effects on study hours and household education expenditure for girls are both insignificant. Again, clan culture can promote human capital investment, but only for boys.

7. Conclusions

This paper investigates the impact of clan culture on the prevalence of child labor in China. As a hallmark of Chinese culture, clan culture is likely to supplement the financial market and social safety net to ease credit constraints and smooth negative shock, risk-share, especially when formal institutions are imperfect and under-developed. Thus, we hypothesized that clan culture can reduce the labor participation of children.

Our hypothesis is supported by the empirical results. Employing the China Family Panel Studies in 2010, we find that child labor incidence and working hours is less amongst children from a clan household, based upon measurements of whether or not the household keeps a genealogy book. Nonetheless, clan culture exhibits strong boy bias. The results are driven by boys rather than girls, which reflect the patrilineal nature of Chinese clan culture. When correcting potential bias due to endogeneity by instrumental variable approach, the results reinforce our baseline conclusion. Besides, the results are robust in permutation test and are robust for the subsample of children from households with both sons and daughters, with alternative measures of the strength of clan culture, after controlling for the possible difference in clan culture among ethnic groups, and after taking north-south difference into account.

Clan culture acts as a supplement to formal institutions: reduces the incidence of child labor through smoothing negative shocks by risk sharing, easing credit constraints by mutual financial support and forming social norms to promote human capital investment. However, all these channels are again only significant for boys.

Our results suggest that culture can help combat child labor in a developing country where formal institution has not been well

Table 15
Mechanism: easing credit constraints.

Variables	(1) Father All	(2) Girl	(3) Boy	(4) Mother All	(5) Girl	(6) Boy
Panel A: Getting aids from relatives						
Genealogy	0.023	−0.033	0.080*	−0.020	−0.070	0.001
	(0.035)	(0.050)	(0.048)	(0.033)	(0.046)	(0.045)
Observations	2245	1106	1139	2530	1264	1266
R-squared	0.207	0.305	0.266	0.204	0.305	0.265
Panel B: Financial support						
Genealogy	0.024	−0.042	0.079*	−0.054*	−0.089**	−0.038
	(0.035)	(0.049)	(0.048)	(0.030)	(0.040)	(0.042)
Observations	2221	1097	1124	2497	1251	1246
R-squared	0.209	0.314	0.273	0.219	0.317	0.258
Panel C: Aids on other affairs						
Genealogy	−0.034	−0.014	−0.044	0.021	−0.001	0.036
	(0.026)	(0.038)	(0.033)	(0.026)	(0.039)	(0.034)
Observations	2245	1106	1139	2530	1264	1266
R-squared	0.158	0.211	0.242	0.162	0.231	0.234

Notes: 1. The dependent variable is whether fathers/mothers receive aids for the following affairs: borrowing money; children's schooling; seeing a doctor; job searching; children's job searching.
2. Estimates are weighted using sample weights provided in the data.
3. Robust standard errors in parentheses are clustered at household level.
4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 16
Mechanism: social norms.

Variables	(1) Log educational expenditure (OLS) All	(2) Girl	(3) Boy	(4) Study time (Tobit) All	(5) Girl	(6) Boy
Genealogy (dummy)	0.222**	0.003	0.318**	0.286**	0.188	0.314*
	(0.103)	(0.159)	(0.130)	(0.143)	(0.217)	(0.169)
Observations	3007	1500	1507	3023	1509	1514
R-squared	0.367	0.437	0.404			
Individual char.	Y	Y	Y	Y	Y	Y
Household char.	Y	Y	Y	Y	Y	Y
Village/Community char.	Y	Y	Y	Y	Y	Y
County FE.	Y	Y	Y	Y	Y	Y
Log pseudolikelihood				−182,000,000	−83,800,000	−94,900,000
Pseudo R-square				0.0797	0.0952	0.0952

Notes: 1. The dependent variable in Columns (1)–(3) is log household educational spending, and in Columns (4)-(6) is hours spending on study. Estimates are weighted using sample weights provided in the data.
2. Robust standard errors in parentheses are clustered at household level.
3. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

established, which is a new link between culture and economic development. However, the role of clan culture may be limited as our work reveals that due to gender bias, only boys are beneficiaries, thus enlarging the gender gap.

Declaration of Competing Interest

None.

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