Wage payments and fixed capital investment in imperfect financial and labor markets: The case of China

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Abstract

This paper examines how wage payments and fixed asset investments are determined, and their interrelationship, under China's imperfect financial and labor markets. We collect aggregate data on wages, the financial market, and fixed asset investments from several statistical yearbooks. The main results are: (1) although greater financial market maturity has led to rising wage levels for state-owned enterprises, this phenomenon is not observed in the nonstate sector; (2) in the private sector, there is a strong reliance on internal reserves that is not observed in the state-owned sector, suggesting that the private sector is treated differently in the financial market; and (3) in the state-owned sector, wage growth has a positive correlation with fixed assets, whereas in the nonstate-owned sector this relationship is not observed. This implies that in the nonstate-owned sector, the underpayment of wages may be used as a survival strategy to conduct business under financial constraints.

Key words: Imperfect financial market, Imperfect labor market, Wage determination, Fixed capital investment, Chinese economy

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1. Introduction

The Chinese economy has achieved high economic growth since its reform and opening policy began in 1978. According to the "China Statistical Yearbook" series, China's average per capita growth rate of gross domestic product (GDP) was 8.6% between 1978 and 2017. Thus, it is no exaggeration to say that China has experienced a miracle in terms of its economic growth.

However, China's rapid economic growth path has resulted in certain distinctive economic features. First, China's financial markets remain immature (Allen, Qian, and Qian 2005). In particular, although the state-owned sector can easily obtain loans, the private sector is often discriminated against and finds obtaining loans difficult (Guariglia, Liu, and Song 2011; Knight and Ding 2010; Poncet, Steingress, and Vandenbussche 2010). The second distinctive feature arising from China's rapid economic growth path is that fixed asset investment is very strong. Many studies have argued that China's economic growth is not due to total factor productivity growth but rather to external growth, supported by investment in factors such as capital (Islam, Erbiao, and Hiroshi 2006; Zheng and Hu 2006; Zheng, Bigsten, and Hu 2009). The third distinctive feature of Chinese economic growth is that the labor market is far from being in a state of perfect competition and remains immature, as evidenced by low wages for employees and the fact that wage growth has not kept pace with economic growth. For instance, Fleisher and Wang (2004), Fleisher, Hu, Li, and Kim (2011), and Dong and Putterman (1996, 2000, 2002) investigated the underpayment of labor wages in China. Fleisher, Hu, Li, and Kim (2011) provided a financial constraint-plus-monopsony explanation of the phenomenon of the marginal products of labor exceeding wages in China.

In contrast to the existing literature, the main hypothesis of this paper is that in a situation where private enterprises are unable to obtain loans in an imperfect financial market, as a survival strategy, they have created capital investment funds by underpaying wages and using the money saved for capital investment. We combine the imperfections of financial and labor markets into one fixed capital investment equation to investigate the interrelationship between wage payments and fixed asset investments. To our knowledge, this is the first study of the interrelationship between wage payments and fixed asset investments in imperfect financial and labor markets in China using unique merged provincial data.

To test our hypothesis, we collected aggregate data on labor wages, the financial market, and fixed asset investment at the provincial level and by ownership type from several statistical yearbooks. Because of the limited observations collected, and the quality of the Chinese economics data, we use a fixed effects estimation for our main

regression strategy. To consider the potential endogeneity problem, the first-differenced generalized method of moments (GMM) estimators and system GMM estimators were applied. The main findings are as follows. First, although the increase in financial market maturity has led to rising wage levels for state-owned enterprises, this phenomenon is not observed in the nonstate-owned sector. Second, in the private sector, there is a strong reliance on internal reserves that is not observed in the state-owned sector, suggesting that the private sector is treated differently in the financial market. Third, in addition to examining the interrelationship between financial and labor markets, we performed an estimation that includes previous wage growth in the fixed asset investment equation. In the state-owned sector, wage growth is positively correlated with fixed assets, whereas in the nonstate-owned sector, this relationship is not observed. This implies that the underpayment of wages may be a survival strategy for the nonstate-owned sector if the firms in this sector are operating under financial constraints in conducting their business.

The remainder of this paper is organized as follows. Section 2 presents a literature review. Section 3 explains the data sources and regression variables. Section 4 describes the estimation models. Section 5 discusses the regression results. In Section 6, the GMM estimation results are provided as a robustness check. Section 7 concludes the paper.

2. Literature Review and Hypothesis Development

Many empirical studies have found that corporations face borrowing constraints under imperfect financial markets, which therefore hinder corporate growth (Stein 2003; Hubbard 1998). With regard to the Chinese economy, Barnett and Brooks (2006) and Knight and Ding (2010) showed the importance of retained earnings and informal funds to Chinese enterprises by analyzing aggregated data. A number of studies have adopted a micro perspective and used firm-level data to study firms' capital investment behavior under imperfect financial markets. Ayyagari, Demirgüç-Kunt, and Maksimovic (2010) used the World Bank Investment Climate Survey data set and concluded that a relatively small percentage of firms in their sample obtained financing through the formal bank system, with the majority relying heavily on informal finance. Chow and Fung (1998) investigated the relationship between investment and cash flow using panel data on manufacturing firms operating in Shanghai. Using panel data on Chinese firms, Guariglia, Liu, and Song (2011) found evidence of discrimination in access to credit for private-sector firms. Poncet, Steingress, and Vandenbussche (2010) found that private Chinese firms depend more on internally generated funds for their investments than do state-owned firms.

Compared with the vast body of research on the relationship between financial frictions and firm-level investment, the literature linking imperfect financial markets with labor markets is sparse (Michaels, Beau Page, and Whited 2019). Pagano and Pica (2012) offered a simple model to explore the ways in which financial development can be expected to affect employment, wages, and the reallocation of jobs. Their model showed that although in normal times, financial development may foster output and employment growth, in a crisis it may exacerbate their contraction.

Michelacci and Quadrini (2005, 2009) built a long-term contract model to analyze how the financial conditions of the firm affect the compensation structure of workers, the size of the firm, and its dynamics. They found that firms offer long-term wage contracts when they are financially constrained. Thus, employees receive an increasing wage profile, involving lower wages today in exchange for higher future wages. Michelacci and Quadrini (2009) showed that the data support the key dynamic properties of their model. Other empirical studies on financing from employees include Garmaise (2008) and Guiso, Pistaferri, and Schivardi (2013). Sun and Xiaolan (2019) analyzed the firm's optimal decisions on intangible capital investment, employee compensation contracts, and financial leverage. A new channel of financing intangibles was introduced. The employee financing is conducted by deferring wage payments in the form of future obligations. They also showed that intangible capital investment is highly correlated with employee financing but not with debt issuance or regular equity refinancing.

Another closely related paper is Michaels, Beau Page, and Whited (2019), who attempted to explain how employment, wage setting, and financial frictions interact and, in particular, how firms' financial decisions spill over to affect wage payment. In their empirical exercise, they found a strong negative relation between leverage and average labor earnings, both in the cross section and within firms, and the sensitivity was larger for firms likely to face financial constraints.

In the Chinese economy case, Shao, Bao, and Ye (2013) examined the causal effect of firms' financial constraints on labor income based on a World Bank Enterprise Survey of Chinese manufacturing firms. Their main finding was that firms subject to greater borrowing constraints tended to pay lower wages to their employees. A closely related paper by Lin and Zhao (2015) investigated the influence of financial stress on the labor share of income. Their empirical results showed that financial stress significantly suppressed this share for nonstate and nonforeign firms, implying the existence of "ownership discrimination" in the Chinese economy. Furthermore, they found that the negative impact was more severe for smaller firms and for firms in traditional manufacturing sectors, indicating the possibility of both "scale discrimination" and

"sector discrimination."

Overall, three important points arise from the previous studies. First, it has been observed that employers are less likely to pay high wages under difficult financial conditions, such as when companies face borrowing constraints in imperfect financial markets. Second, it is acknowledged that capital investment depends heavily on internal reserves when financing is difficult, which again occurs when companies face borrowing constraints in imperfect financial markets. Third, if both the financial and labor markets are imperfect, companies can keep their wages low and use them to fund capital expenditures (borrowing from employees). Therefore, this paper examines the following three hypotheses.

H1. The development of the financial market improves the payment of wages.
H2. Owing to imperfect financial markets, firms strongly rely on internal reserves for fixed capital investment, especially in the case of private firms.
H3. Under imperfect capital and labor markets, the nonstate-sector firms will use the internal reserves, generated by reducing wage payments, for fixed capital investment.

To test these hypotheses, we collected aggregate data on labor wages, the financial market, and fixed asset investment at the provincial level and by ownership type from several statistical yearbooks. The details of the data are explained in the next section.

3. Data and Regression Variables

For our exercise, we require information on financial markets, fixed capital investments, and the labor market. To test the hypotheses discussed above, we collected data from several statistical yearbooks: the "Almanac of China's Finance and Banking," the "Statistical Yearbook of the Chinese Investment in Fixed Assets," the "China Labor Statistical Yearbook," the "China Industry Statistical Yearbook," and the "China Statistical Yearbook." All data are aggregate data at the provincial level. To examine the effects of ownership, we collected data from three categories of business units based on ownership: the state-owned sector, the collective sector, and the "other ownership" sector.[1] Details on how we collected and defined the variables are provided below.

3.1 Labor Wages

[1] In this paper, we interpret the "other ownership" sector as the private sector.

The average wage index includes the average wages of employees and of incumbent employees. This paper uses the average wage of incumbent employees. In the "China Labor Statistics Yearbook" series, ownership is classified into the state-owned sector, the collective sector, and the "other ownership" sector. All average wages were nominal variables, which we converted into real terms using the provincial-level urban consumer price index, with 2000 as the base year.

3.2 Fixed Asset Investments

Fixed asset investment data were extracted mainly from the "Statistical Yearbook of the Chinese Investment in Fixed Assets." We collected aggregate data by ownership at the provincial level. However, data were not available for 2014 because this yearbook was not published in 2014. Thus, we used the 2013 data for 2014, supplemented by the "China Statistical Yearbook." Fixed asset investment was converted into real terms using the provincial fixed asset investment price index, with 2000 as the base year.

3.3 Financial Market Development

For variables representing the development status of China's financial markets, we collected statistical data from the "Almanac of China's Finance and Banking," the "Statistical Yearbook of the Chinese Investment in Fixed Assets," the "China Industry Statistical Yearbook," and the "China Statistical Yearbook."

First, the main economic indicators of industrial enterprises are recorded in the "China Industry Statistical Yearbook," including interest expenditure, which indicates interest payments for loan funds. If this variable is large, we consider that dependence on external funds is high. To control for the scale of production in considering ease of access to the financial market, we use interest expenditure/sales for the estimation. In addition, the "China Industry Statistical Yearbook" has a statistical table for each type of company ownership, separated according to the state-, collective-, and private-owned sectors, and total ownership.

Next, the "Statistical Yearbook of the Chinese Investment in Fixed Assets" has data on the financing sources of capital investment funds. In this paper, we use self-raised funds as a proportion of total investment funds for the estimation. If the proportion of self-raised funds is large, it indicates that firms find it more difficult to access financial markets. Therefore, internal funds or funds raised through routes other than financial

markets are more important for capital investment.[2]

3.4 Other Control Variables

To capture the influence of factors other than the financial indicators on wage payments and fixed capital investments, we add three further control variables in this exercise: the total profit/sales value of industry (profit), the natural logarithm of real fixed assets/the number of enterprise units (fixed assets), and the total liabilities/total assets (liabilities). All data were collected from the "China Industry Statistical Yearbook." Table 1 reports the selected descriptive statistics. The full sample size for 2005–2015 is 341. Average fixed asset investments are largest for "other ownership" units, followed by state-owned units, and then collective-owned units. The average interest expense and real wage payments are higher in state-owned units than in "other ownership" units and collective-owned units.

4. Estimation Models

To test our hypotheses, we develop the following basic regression model:

$$Y_{i,t} = \alpha + \rho Y_{i,t-1} + \beta F_{i,t} + \boldsymbol{\gamma}' \boldsymbol{X}_{i,t} + Year_t + \eta_i + \varepsilon_{i,t}, \quad (1)$$

where subscript i indicates the province and t is the time index. $Year_t$ is a year dummy that controls time fixed effects, η_i is province-specific effects, and $\varepsilon_{i,t}$ is an idiosyncratic error term. $Y_{i,t}$ is the natural logarithm of the real wage or real fixed asset investment at the provincial level, and $F_{i,t}$ are financial indicators. We collected five indicators: interest expense/sales value of the industry (interest), self-raised funds/total funds (self-raised), own funds/total funds (own funds), total deposits/GDP (deposits), and total loans/GDP (loans). $\boldsymbol{X}_{i,t}$ are control variables, as discussed above. $Y_{i,t-1}$ is the lagged dependent variable.

The fixed effects estimation has been applied in this exercise. There are several advantages of using fixed effects estimation. The quality of China economic data has been

[2] We also collect the self-funded investments/total investment funds as a proxy variable of a financial market indicator. In addition, some major economic and financial statistics for provinces recorded in the "Almanac of China's Finance and Banking" show the development status of financial markets in the region. For our research, we extracted the deposit balances and loan amounts of all financial institutions to develop an index of financial market maturity. We use the deposit balance of financial institutions/GDP and the loan amounts of financial institutions/GDP in the estimation exercise. However, we only report the stable results of the interest expense/sales value of the industry (interest) and the self-raised funds/total of sources of funds (self-raised) in this paper.

criticized in previous studies. If the bias of the data is constant, then we can see it as an individual specific effect using the fixed effects estimation. Second, we can control the endogeneity problem that arises if some missing unobservable time-invariant components were correlated with the error term. For comparison purposes, we run a pooled ordinary least squares (OLS) estimation. As the pooled OLS estimation is known to be upward biased, and the fixed effects estimation is downward biased, we can confirm the degree to which the coefficient is affected by comparing the two estimations.

In another specification, we take the first difference of the dependent and independent variables:

$$\Delta Y_{i,t} = \alpha + \rho \Delta Y_{i,t-1} + \beta \Delta F_{i,t} + \boldsymbol{\gamma}' \boldsymbol{\Delta X}_{i,t} + Year_t + \eta_i + \varepsilon_{i,t}. \quad (2)$$

We run this specification for two purposes. First, the estimated β captures the extent of the relationship between the change (growth) in the financial indicator and the dependent variables. Second, using the fixed effects estimation can remove the individual trends among the observations.[3]

5. Estimated Results

Below, we report the results of the estimation. We first discuss the effects of financial development on wage payments (**H1**), then verify the impact of financial circumstances on fixed capital investment (**H2**). Finally, we investigate the interrelationship between wage payments and fixed asset investments in the imperfect financial and labor markets (**H3**).

5.1 The Effects of Financial Development on Wage Payments

Table 2 reports the estimation results of hypothesis **H1**. Interest indicates the interest expense/sales value of the industry, with a higher value indicating that more interest must be paid. In China, the financial institutions treat state-sector and nonstate-sector enterprises differently. In particular, financial institutions lend funds to the state sector more actively and cheaply, which means that the state sector pays more interest to the

[3] The following term controls the time-varying individual effect: $Y_{i,t} = \alpha + \rho Y_{i,t-1} + \beta F_{i,t} + \boldsymbol{\gamma}' \boldsymbol{X}_{i,t} + \eta_i + \tau_i t + \varepsilon_{i,t}$, where $\tau_i t$ is the individual trends term. Taking the first difference, we have $\Delta Y_{i,t} = \alpha + \rho \Delta Y_{i,t-1} + \beta \Delta F_{i,t} + \boldsymbol{\gamma}' \boldsymbol{\Delta X}_{i,t} + \tau_i + \Delta \varepsilon_{i,t}$. Therefore, the usual individual effect η_i is removed and τ_i becomes a new individual effect term. Running the normal fixed effects estimation solves the estimation bias problem arising from τ_i if this term is correlated with the idiosyncratic error term.

commercial banks than do the nonstate-sector firms, which take out fewer bank loans. Therefore, we expect that the coefficient on interest will be positive in the state sector, whereas it will be insignificant or negative in the nonstate sector. The results in Table 2 regarding the state sector confirm our prediction, as the coefficients of interest and Δ interest in Columns (6) and (8) are estimated to be significant and positive, meaning that easier access to financial markets has a positive impact on wage payments in the state sector. These results are consistent with previous studies, including Lin and Zhao (2015), Michaels, Beau Page, and Whited (2019), Pagano and Pica (2012), and Shao, Bao, and Ye (2013). However, in the collective and private sectors, except for Column (10) which has a significantly negative coefficient, there are no significant results. In the field of labor economics, the education levels of employees as human capital stock are considered to have a large effect on wage decisions. As a robustness check, we conducted estimations for all specifications that take into account the education levels in the total province case. The results are reported in the appendix.

5.2 The Impact of Financial Circumstances on Fixed Capital Investment

Table 3 reports the estimation results of hypothesis **H2** regarding the impact of self-raised funds on fixed asset investments. The results show that in the private sector, the estimated coefficients were significantly positive (Columns (14) and (16)). The estimation results indicate that China's financial market is imperfect and that the imperfections result in differences between the state and nonstate sectors in terms of their fixed asset investment behavior. Instead of bank loans, self-raised funds are the critical source of investment finance for the private sector. In line with the results of existing research, this finding reconfirms the importance of internal reserves for the private sector in China, based on both macro and micro evidence (Barnett and Brooks 2006; Knight and Ding 2010; Guariglia, Liu, and Song 2011; Poncet, Steingress, and Vandenbussche 2010).

5.3 The Interrelationship between Wage Payments and Fixed Asset Investments

In this subsection, we investigate hypothesis **H3**, concerning the interrelationship between wage payments and fixed asset investments in the imperfect Chinese financial and labor markets. In perfectly competitive factor markets, entrepreneurs optimally choose their levels of fixed capital and labor, taking the factor prices as given. As noted, many studies have highlighted the existence of imperfections in the capital and labor markets in China. One of the characteristics of the financial market imperfections is that although the state-owned sector has easy access to cheap loans, the nonstate-owned sector is treated differently, such that obtaining finance is difficult and lending costs are high. In

addition, China's labor market is far from completely competitive and the existing literature strongly indicates that underpayment of wages occurs, particularly in the private sector. In part, this underpayment of wages can be attributed to the poor bargaining power of employees in the imperfect labor market and the lack of protection for the basic rights of workers. However, a key question is whether there are any other factors explaining the underpayment of wages. Although private companies cannot obtain sufficient loans in an imperfect financial market, capital investment remains indispensable for continuing in business. If the labor market is imperfect, private entrepreneurs may reduce wages so that they can generate more internal funds for capital investment. Thus, in China, the state-owned sector enjoys easy access to financial loans in the financial market and is not under pressure to generate internal funds by reducing employee wage levels for business expansion. Conversely, the nonstate-owned sector is discriminated against in the financial market and finds it difficult to obtain finance. Thus, it has a motivation to keep wages lower to generate capital investment for business survival.

In line with these ideas, we estimate a new model, adding a wage fluctuation—based on the previous wage growth—into the fixed capital investment equation. The state-owned enterprises are not confronted with capital investment financing constraints, and wage growth is considered to have a positive correlation with the capital investment level (or its growth). However, in the nonstate sector, the growth rate of wages is considered to be irrelevant to the growth of capital investment because enterprises restrain wage levels when they face borrowing constraints (Michelacci and Quadrini 2005, 2009; Michaels, Beau Page, and Whited 2019). Furthermore, if the degree of borrowing restrictions is very strong, wages will be reduced even further to enable firms to survive, and a negative correlation between the wage growth rate and capital investment growth may be

observed.[4]

Table 4 shows the results for the fixed asset investment equation, including self-raised funds and previous wage growth. The wage growth in the state sector is positive at the 5% significance level when estimated using both the level and growth variables (Columns (6) and (8)). However, we do not find this result for the collective and private sectors. These results indicate that the employees in the state sector benefit from a more appropriate wage level than those in the nonstate sector. Ge and Yang (2014) used the unique Urban Household Surveys microdata and found a higher state-sector wage premium in the Chinese context. Nawakitphaitoon, Chen, and Ge (2016) argued that, on average, the state-sector workers earned much higher wages than their counterparts in the nonstate sector in the mid-2000s after the sectoral reform. The results here also imply that the nonstate sector may be forced to borrow from employees by keeping what should have been wage payments for fixed assets investment. After several robustness checks discussed below, the estimated coefficients of the wage growth term are only significantly positive in the state-sector firms, suggesting that there is some principle behind the wage formation under China's imperfect financial and labor markets. On the other hand, self-raised funds are significant and they positively affect capital investment only in the private sector. This confirms the hypothesis that the differences in access to financial markets lead to different wage and fixed capital investment formation in the state and nonstate sectors.

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[4] It is very difficult to directly determine the degree of wage underpayment from the aggregated data. Instead, in this paper, we use the previous wage growth term as a proxy variable for wage underpayment. We explain our ideas from two aspects, economic growth theory and the data generating process. According to growth theory, the origin of growth is technological progress, so the variables in the model grow by the technology factor in the steady state. On the empirical side, the aggregated data have a time trend according to the data generating process. In the simplest linear trend model, $Y_t = \mu + \delta t + u_t$, where t is the trend term, and the difference of the variable $E(\Delta Y_t) = \delta$ is the time trend effect. Here, δ can be seen as the technology growth. Therefore, in the perfect market environment, the economic variables growth is parallel owing to the time trend factor, and then the level and difference of the variables should have a positive relationship. However, if the market is not perfect, for example, if the labor market is a monopsony, wages are underpaid. Then, we have the underpaid variable as $\hat{Y}_t = \beta Y_t = \beta\mu + \beta\delta t + \beta u_t$; taking the difference $E(\Delta\hat{Y}_t) = \beta\delta$. $\beta \in (0,1)$ is the degree of the underpayment. If $\beta \to 0$, the degree of the underpayment becomes greater. Therefore, when wage underpayment is serious, the positive relationship of the level and difference of the variables may be overcome by a larger β. However, it cannot be denied that the discussion here is certainly ad hoc. A dynamic general equilibrium model should be constructed and the relationship supposed above should be verified with the simulation data. It is also necessary to investigate wages and investment with enterprise-level micro data. We intend to address these two challenges in future research.

6. Generalized Method of Moments Estimation

Although the fixed effects estimation that we employ has several advantages in this exercise, some concerns remain. One is that it does not eliminate dynamic panel bias (Nickell 1981); as the lagged dependent variable is correlated with the fixed effects in the error term, inconsistent estimators may be produced.[5] Furthermore, financial indicators and control variables may be correlated with idiosyncratic error terms, resulting in an endogeneity problem. Normally, it is difficult to find appropriate instrumental variables to handle the endogeneity. To address these issues, GMM panel estimators use lagged observations of the explanatory variables as instruments (internal instruments). Therefore, as a robustness check, we adopt a GMM estimation to reliably investigate the impact of the exogenous component of financial development on wages or fixed capital investment growth in China. This method has been applied widely in recent years, especially in the literature evaluating the impact of financial development on economic growth. The first-differenced GMM estimators and the system GMM estimators are applied in this paper.

Table 5 reports the GMM estimation results of hypothesis **H1**.[6] We find the same result from the first-differenced GMM (Column (3)), namely that interest is positive and significant only for the state sector. The Hansen test indicates no evidence of overidentifying restrictions, with the exception of Column (5). Moreover, the p-values of the difference-in-Hansen test for system GMM instruments and instruments based on lagged growth exceed the conventional significance levels substantially in most cases. In addition, all of the estimations pass the second-order serial correlation test (ar2p). Hence, the null hypothesis, that the error term is not serially correlated, cannot be rejected. In the later GMM estimations, the Hansen test, difference-in-Hansen test, and the second-order serial correlation test are passed at the conventional significance levels in most cases.

Table 6 reports the estimation results of the GMM estimation for the impact of self-raised funds on fixed asset investments. In the total province case, we have significantly positive estimates. Although collective enterprises and private enterprises lose significance, the estimates remain positive except the first-differenced GMM estimation

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[5] To eliminate dynamic panel bias directly, we run the regression excluding the lagged dependent variable ($Y_{i,t-1}$, $\Delta Y_{i,t-1}$), with the results shown in the appendix. The results are almost the same as those reported in the main text. They are available from the author upon request.

[6] When adopting the GMM estimation, the problem of "too many instruments" arises (Roodman 2009). The number of instruments grows easily when there is an increase in the time period T or in the explanatory variables. First, in constructing instruments, instead of using all available lags, we limit the lags to lags 2 through 4 of the levels for the transformed data, and lag 1 of the differences for the levels data, so the instrument count is linear in T. Second, we collapse instruments into smaller sets. We also run the regression by limiting the lags to lags 2 through 3 of the levels and lag 1 of the differences, and using the collapse technique. The results, shown in the appendix, are similar to those in the text and are available from the author upon request.

(Column (7)).[7]

Finally, the GMM estimation results on hypothesis H3 concerning the interrelationship between wage payments and fixed asset investments are reported in Table 7. Previous wage growth remains significantly positive in the system GMM for the state sector (Column (4)), but significantly negative in the collective and private sectors. Further, self-raised funds are estimated as significantly positive in the private sectors in the system GMM (Column (8)).

Overall, the results of the GMM estimation are largely consistent with the fixed effects regression, confirming that our finding is robust to any potential concerns regarding the dynamic panel bias and endogeneity problem.

7. Conclusion

In this paper, we examine how wage payments and fixed asset investments are determined under the imperfect financial and labor markets in China. Further, we investigate the interrelationship between wage payments and fixed asset investments in such circumstances. Although the rise in financial market maturity has led to rising wage levels for state-owned enterprises, this phenomenon is not observed in the nonstate sector. In the private sector, there is a strong reliance on internal reserves for capital investment that is not observed in the state-owned sector, suggesting that the two sectors are treated differently in the financial market. In the state-owned sector, previous wage growth is positively correlated with fixed asset investments, whereas this relationship is not observed in the nonstate-owned sector. This implies that the underpayment of wages may be used as a survival strategy in the nonstate-owned sector by businesses under financial constraints.

The results of this study have important policy implications. Labor market reform is indispensable for protecting the basic rights of employees and ensuring wages rise to an appropriate level. However, further improvement of the financial market is also essential. There is an urgent need to reduce funding costs, especially by promoting loans to the private sector, which would allow entrepreneurs to pay adequate wages to their employees. The construction and deepening of complete financial and labor markets are indispensable factors for ensuring the efficient growth of the Chinese economy.

There are several tasks reserved for future research. In this paper, we used aggregate

[7] Because we only have a very limited number of observations in this exercise, our GMM results may not be stable and not very appropriate in such an environment. This is the reason we prefer the fixed effects estimation as our main regression strategy.

provincial data. In future, an investigation based on micro-level data, especially firm-level data, is important. In addition, it would be interesting to examine our hypotheses using industry-level data, to determine whether there are different reactions between capital- and labor-intensive industries. Finally, we require a suitable theoretical framework to explain the optimal entrepreneurial behavior in imperfect financial and labor markets and to capture the interrelationship between wage payments and fixed asset investments.

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Table 1. Descriptive statistics (2005–2015)

	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
	Total					State-owned Units				
Log real fixed asset investment	341	3.781	1.039	0.486	5.811	341	2.672	0.810	0.260	4.208
Interest expense/sales value of industry	341	0.015	0.008	0.004	0.047	341	0.021	0.012	0.000	0.096
Log real wage	341	5.639	0.383	4.842	6.713	341	5.722	0.408	4.884	6.764
Previous wage growth	341	0.098	0.040	–0.079	0.352	341	0.099	0.045	–0.032	0.361
Total profit/sales value of industry (Profit)	341	0.075	0.036	–0.013	0.237	341	0.072	0.052	–0.186	0.291
Log (real fixed assets/number of enterprise units) (Fixed Assets)	341	–5.025	0.649	–6.458	–3.244	341	–3.242	0.538	–5.756	–2.011
Total liabilities/total assets (Liabilities)	341	0.577	0.070	0.229	0.760	341	0.597	0.088	0.182	0.765
	Collective–owned Units					Other Ownership Units				
Log real fixed asset investment	341	0.062	1.593	–4.458	3.128	341	3.309	1.215	–0.042	5.593
Interest expense/sales value of industry	322	0.006	0.004	0.001	0.036	340	0.009	0.005	–0.017	0.028
Log real wage	341	5.283	0.445	4.309	6.177	341	5.568	0.393	4.725	6.713
Previous wage growth	341	0.118	0.072	–0.173	0.519	341	0.100	0.101	–1.176	1.074
Total profit/sales value of industry (Profit)	334	0.061	0.045	–0.241	0.229	341	0.070	0.057	0.004	0.482
Log (real fixed assets/number of enterprise units) (Fixed Assets)	275	–6.875	0.642	–8.374	–4.494	341	–6.468	0.605	–7.584	–4.628
Total liabilities/total assets (Liabilities)	337	0.580	0.148	0.235	1.411	341	0.546	0.096	0.122	0.784
Financial market development status indicators										
Self-raised funds/total of sources of funds (Self-raised)	341	0.598	0.142	0.183	0.876					
Total deposits/GDP (Deposits)	341	1.632	0.712	0.822	5.587					
Total loans/GDP (Loans)	341	1.122	0.398	0.553	2.648					

Table 2. The effects of financial development on wage determination: Interest payment.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent variable:	Total Province				State				Collective				Other			
Wage	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects
	Level		Δ		Level		Δ		Level		Δ		Level		Δ	
Previous wage	0.967***	0.706***			0.969***	0.809***			0.953***	0.818***			0.885***	0.312*		
	(0.009)	(0.060)			(0.009)	(0.048)			(0.020)	(0.045)			(0.060)	(0.166)		
Interest	−0.111	0.592			0.629	1.961**			−2.260*	−4.068**			0.501	−1.351		
	(1.088)	(1.139)			(0.746)	(0.853)			(1.165)	(1.691)			(1.160)	(1.779)		
Profit	−0.073	0.087			−0.063	0.112			−0.027	0.242			−0.379	−0.219		
	(0.080)	(0.147)			(0.090)	(0.103)			(0.152)	(0.169)			(0.411)	(0.179)		
Fixed Assets	0.006	−0.013			−0.004	0.010			0.000	0.001			−0.028*	0.014		
	(0.007)	(0.015)			(0.008)	(0.013)			(0.007)	(0.012)			(0.016)	(0.026)		
Liabilities	0.006	0.122			−0.023	0.017			0.104**	0.182**			0.065	0.122		
	(0.108)	(0.109)			(0.080)	(0.095)			(0.040)	(0.068)			(0.069)	(0.119)		
Previous Δwage			0.105	0.015			0.060	−0.063			0.031	−0.174*			0.008	0.007
			(0.113)	(0.124)			(0.109)	(0.130)			(0.100)	(0.090)			(0.043)	(0.052)
Δinterest			3.244	3.592			2.825	3.003*			−2.958*	−2.179			0.059	0.015
			(3.549)	(2.671)			(2.078)	(1.574)			(1.738)	(2.415)			(2.320)	(2.112)
ΔProfit			0.109	0.080			0.189	0.181			0.054	0.046			−0.030	−0.022
			(0.207)	(0.179)			(0.152)	(0.111)			(0.129)	(0.139)			(0.079)	(0.090)
ΔFixed Assets			0.011	0.018			0.032	0.041			0.009	0.003			0.005	0.002
			(0.044)	(0.040)			(0.031)	(0.027)			(0.012)	(0.013)			(0.036)	(0.024)
ΔLiabilities			−0.174	−0.177*			−0.099	−0.073			0.110**	0.121**			0.193	0.193
			(0.233)	(0.096)			(0.143)	(0.050)			(0.053)	(0.054)			(0.159)	(0.134)
Constant	0.311***	1.426***	0.112***	0.123***	0.270***	1.078***	0.111***	0.124***	0.292***	0.868***	0.118***	0.150***	0.437**	3.547***	0.125***	0.125***
	(0.070)	(0.295)	(0.015)	(0.016)	(0.079)	(0.194)	(0.015)	(0.014)	(0.107)	(0.182)	(0.013)	(0.014)	(0.186)	(0.937)	(0.011)	(0.009)
Observations	341	341	310	310	341	341	310	310	264	264	203	203	340	340	308	308
R−squared	0.990	0.988	0.278	0.292	0.990	0.985	0.381	0.405	0.980	0.977	0.123	0.172	0.964	0.974	0.185	0.190
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effect		YES		YES		YES		YES		YES		YES		YES		YES
Number of provinces		31		31		31		31		31		31		31		31

Pool OLS and Fixed Effects denote the pooled OLS and fixed effects estimations, respectively. Total Province, State, Collective, and Other in the column headings indicate the total province case, state-owned units, collective-owned units, and other ownership units, respectively. The symbol Δ indicates the first log difference. Columns (1), (2), (5), (6), (9), (10), (13), and (14) report the regression results of equation (1), and Columns (3), (4), (7), (8), (11), (12), (15), and (16) report the regression results of equation (2). Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 3. The impact of financial circumstances on fixed capital investment: Self-raised.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent variable:	Total Province				State				Collective				Other			
Fixed asset investments	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects
	Level		Δ		Level		Δ		Level		Δ		Level		Δ	
Previous	0.964***	0.911***			0.969***	0.906***			0.954***	0.568***			0.932***	0.486***		
Fixed asset investments	(0.008)	(0.042)			(0.012)	(0.059)			(0.022)	(0.077)			(0.026)	(0.176)		
Self-raised	0.165***	–0.062			–0.072	–0.427*			0.401*	1.336			0.570***	0.873**		
	(0.045)	(0.167)			(0.059)	(0.229)			(0.212)	(0.852)			(0.139)	(0.382)		
Profit	–0.042	–0.100			0.037	–0.167			0.165	–0.183			0.143	0.291		
	(0.133)	(0.330)			(0.109)	(0.374)			(0.744)	(1.090)			(0.369)	(0.266)		
Fixed Assets	–0.019*	0.033			0.003	0.031			0.032	0.003			–0.083	0.033		
	(0.011)	(0.031)			(0.018)	(0.040)			(0.047)	(0.058)			(0.056)	(0.062)		
Liabilities	0.159**	0.134			0.221***	–0.316			–0.355	–0.108			0.189	0.265		
	(0.066)	(0.224)			(0.082)	(0.241)			(0.323)	(0.294)			(0.127)	(0.239)		
Previous			0.497***	0.328***			0.250***	0.137*			0.141**	0.043			–0.376*	–0.439***
ΔFixed asset investments			(0.069)	(0.088)			(0.070)	(0.077)			(0.062)	(0.071)			(0.209)	(0.094)
ΔSelf-raised			0.181	0.155			–0.212	–0.219			0.674	0.465			1.077**	0.870*
			(0.146)	(0.190)			(0.225)	(0.257)			(0.796)	(1.123)			(0.476)	(0.433)
ΔProfit			–0.024	0.049			0.334	0.418**			–0.504	–0.583			0.225	0.153
			(0.202)	(0.217)			(0.290)	(0.177)			(0.968)	(0.627)			(0.389)	(0.180)
ΔFixed Assets			–0.032	–0.052			0.047	0.036			–0.011	–0.045			0.048	0.020
			(0.036)	(0.047)			(0.044)	(0.048)			(0.059)	(0.053)			(0.081)	(0.045)
ΔLiabilities			0.007	–0.026			0.213	0.255			–0.256	–0.304			–0.192	0.000
			(0.189)	(0.240)			(0.186)	(0.165)			(0.395)	(0.364)			(0.428)	(0.322)
Constant	0.019	0.578**	0.101***	0.136***	0.139	0.873***	0.126***	0.146***	0.424	–0.386	–0.909***	–0.894***	–0.613	0.870	0.367***	0.386***
	(0.073)	(0.242)	(0.016)	(0.018)	(0.089)	(0.162)	(0.019)	(0.025)	(0.569)	(0.534)	(0.105)	(0.098)	(0.508)	(0.520)	(0.063)	(0.036)
Observations	341	341	310	310	341	341	310	310	273	273	212	212	341	341	310	310
R–squared	0.996	0.988	0.518	0.500	0.984	0.964	0.465	0.485	0.956	0.729	0.580	0.608	0.973	0.939	0.616	0.642
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effect		YES		YES		YES		YES		YES		YES		YES		YES
Number of provinces		31		31		31		31		31		31		31		31

Pool OLS and Fixed Effects denote the pooled OLS and fixed effects estimations, respectively. Total Province, State, Collective, and Other in the column headings indicate the total province case, state-owned units, collective-owned units, and other ownership units, respectively. The symbol Δ indicates the first log difference. Columns (1), (2), (5), (6), (9), (10), (13), and (14) report the regression results of equation (1), and Columns (3), (4), (7), (8), (11), (12), (15), and (16) report the regression results of equation (2). Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 4. The interrelationship between wage determination and fixed asset investment: Self-raised.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent variable:	Total Province				State				Collective				Other			
Fixed asset investments	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects	Pool OLS	Fixed Effects
	Level		Δ		Level		Δ		Level		Δ		Level		Δ	
Previous	0.963***	0.908***			0.967***	0.893***			0.953***	0.570***			0.932***	0.487***		
Fixed asset investments	(0.008)	(0.041)			(0.011)	(0.057)			(0.022)	(0.077)			(0.027)	(0.177)		
Previous Δwage	0.205*	0.203			0.552***	0.551**			−0.463	−0.145			0.012	−0.023		
	(0.121)	(0.176)			(0.181)	(0.247)			(0.384)	(0.239)			(0.154)	(0.054)		
Self-raised	0.158***	−0.044			−0.080	−0.375			0.442**	1.336			0.569***	0.865**		
	(0.044)	(0.165)			(0.057)	(0.226)			(0.212)	(0.855)			(0.140)	(0.385)		
Profit	−0.016	−0.071			−0.005	−0.212			0.286	−0.128			0.138	0.311		
	(0.136)	(0.327)			(0.114)	(0.383)			(0.752)	(1.101)			(0.412)	(0.281)		
Fixed Assets	−0.021*	0.031			0.004	0.016			0.029	0.003			−0.083	0.033		
	(0.011)	(0.031)			(0.017)	(0.040)			(0.046)	(0.058)			(0.055)	(0.062)		
Liabilities	0.160**	0.172			0.195**	−0.270			−0.310	−0.097			0.187	0.266		
	(0.070)	(0.223)			(0.089)	(0.240)			(0.318)	(0.297)			(0.130)	(0.239)		
Previous			0.488***	0.316***			0.235***	0.124			0.139**	0.043			−0.383*	−0.442***
ΔFixed asset investments			(0.072)	(0.089)			(0.070)	(0.077)			(0.061)	(0.070)			(0.208)	(0.094)
Previous Δwage			0.106	0.158			0.419**	0.487**			0.162	−0.014			0.177	0.108
			(0.106)	(0.144)			(0.170)	(0.180)			(0.440)	(0.437)			(0.191)	(0.104)
ΔSelf-raised			0.188	0.168			−0.195	−0.177			0.672	0.465			1.144**	0.913**
			(0.147)	(0.191)			(0.217)	(0.248)			(0.792)	(1.125)			(0.446)	(0.443)
ΔProfit			0.010	0.115			0.277	0.394**			−0.503	−0.582			0.101	0.083
			(0.211)	(0.222)			(0.282)	(0.158)			(0.968)	(0.621)			(0.413)	(0.217)
ΔFixed Assets			−0.031	−0.056			0.039	0.014			−0.014	−0.045			0.045	0.019
			(0.036)	(0.047)			(0.046)	(0.053)			(0.061)	(0.052)			(0.083)	(0.047)
ΔLiabilities			0.036	−0.001			0.225	0.227			−0.250	−0.304			−0.139	0.026
			(0.195)	(0.233)			(0.169)	(0.159)			(0.394)	(0.367)			(0.415)	(0.330)
Constant	−0.008	0.521**	0.090***	0.120***	0.110	0.730***	0.080***	0.094***	0.393	−0.382	−0.929***	−0.893***	−0.614	0.870	0.355***	0.378***
	(0.079)	(0.241)	(0.017)	(0.020)	(0.088)	(0.163)	(0.026)	(0.026)	(0.561)	(0.535)	(0.123)	(0.119)	(0.506)	(0.522)	(0.057)	(0.035)
Observations	341	341	310	310	341	341	310	310	273	273	212	212	341	341	310	310
R-squared	0.996	0.988	0.520	0.503	0.985	0.965	0.477	0.500	0.957	0.730	0.581	0.608	0.973	0.939	0.618	0.643
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effect		YES		YES		YES		YES		YES		YES		YES		YES
Number of id		31		31		31		31		31		31		31		31

Pool OLS and Fixed Effects denote the pooled OLS and fixed effects estimations, respectively. Total Province, State, Collective, and Other in the column headings indicate the total province case, state-owned units, collective-owned units, and other ownership units, respectively. The symbol Δ indicates the first log difference. Columns (1), (2), (5), (6), (9), (10), (13), and (14) report the regression results of equation (1), and Columns (3), (4), (7), (8), (11), (12), (15), and (16) report the regression results of equation (2). Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 5. The effects of financial development on wage determination (GMM estimation): Interest payment.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Total Province		State		Collective		Other	
Wage	DIF	SYS	DIF	SYS	DIF	SYS	DIF	SYS
Previous wage	0.986***	1.049***	0.900***	1.050***	0.683**	0.898***	0.816***	0.879***
	(0.138)	(0.082)	(0.234)	(0.059)	(0.250)	(0.150)	(0.194)	(0.132)
Interest	9.181	−0.920	6.526*	2.549	−1.727	−3.578	5.047	2.754
	(9.131)	(3.182)	(3.640)	(2.289)	(3.567)	(4.464)	(3.892)	(2.986)
Profit	0.489	−0.127	0.426	0.379	0.410	−0.734	0.065	0.265
	(0.606)	(0.138)	(0.282)	(0.275)	(0.369)	(0.612)	(0.814)	(0.433)
Fixed Assets	0.042	−0.008	−0.008	−0.004	0.009	−0.007	−0.025	−0.061**
	(0.074)	(0.029)	(0.086)	(0.020)	(0.037)	(0.026)	(0.045)	(0.023)
Liabilities	−0.348	0.521***	−0.209	0.220	0.124	0.200**	−0.313	−0.050
	(0.566)	(0.175)	(0.566)	(0.165)	(0.102)	(0.077)	(0.398)	(0.154)
Constant		0.000		−0.412		0.563		0.396
		(0.000)		(0.427)		(0.817)		(0.683)
Observations	279	310	279	310	173	234	277	309
Number of provinces	31	31	31	31	31	31	31	31
Instruments	24	30	24	30	21	28	24	30
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES
ar1p	0.015	0.134	0.003	0.057	0.034	0.002	0.028	0.007
ar2p	0.679	0.123	0.327	0.289	0.997	0.720	0.339	0.386
hansenp	0.141	0.177	0.128	0.179	0.046	0.521	0.274	0.308
A (p−value)		0.212		0.099		0.657		0.274
B (p−value)		0.299		0.320		0.869		0.273

DIF and SYS denote the first-differenced GMM and the system GMM, respectively. We limit lags to lags 2 through 4 of the levels as instruments for the transformed data and lag 1 of the differences for the levels data, and use a collapse technique to avoid the "too many instruments" problem. Ar1p and ar2p are the p-values of a test for first- and second-order serial correlation. Hansenp is the p-value for Hansen's overidentification restrictions test. In the last two rows, A (p-value) and B (p-value) represent the p-values of the difference-in-Hansen tests for system GMM instruments and instruments based on lagged growth, respectively. Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 6. The impact of financial circumstances on fixed capital investment (GMM estimation): Self-raised.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Total Province		State		Collective		Other	
Fixed asset investments	DIF	SYS	DIF	SYS	DIF	SYS	DIF	SYS
Previous	1.066***	0.962***	1.081***	0.994***	0.392	1.110***	0.505*	0.908***
Fixed asset investments	(0.116)	(0.049)	(0.095)	(0.064)	(0.291)	(0.068)	(0.255)	(0.123)
Self-raised	1.209*	0.355**	–0.751	–0.226	2.526	0.884	–0.809	0.491
	(0.610)	(0.143)	(0.644)	(0.173)	(2.916)	(1.224)	(0.696)	(0.308)
Profit	–0.027	–0.356	0.344	0.237	6.957*	3.011	0.284	2.539
	(0.681)	(0.429)	(0.475)	(0.415)	(3.428)	(2.569)	(1.438)	(1.545)
Fixed Assets	0.269	0.028	0.133*	0.147**	0.389	–0.314	–0.103	–0.223
	(0.167)	(0.048)	(0.071)	(0.058)	(0.264)	(0.315)	(0.178)	(0.233)
Liabilities	0.385	0.580**	–0.411	0.410	0.157	0.258	0.539	–0.040
	(0.340)	(0.214)	(0.460)	(0.353)	(0.641)	(0.636)	(0.825)	(1.024)
Constant		0.000		0.000		–2.765		–1.459
		(0.000)		(0.000)		(3.061)		(0.995)
Observations	279	310	279	310	182	243	279	310
Number of provinces	31	31	31	31	31	31	31	31
Instruments	24	30	24	30	21	28	24	30
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES
ar1p	0.023	0.010	0.001	0.002	0.196	0.009	0.076	0.138
ar2p	0.646	0.778	0.638	0.738	0.673	0.574	0.116	0.250
hansenp	0.090	0.045	0.440	0.409	0.065	0.128	0.300	0.116
A (p–value)		0.607		0.583		0.218		0.111
B (p–value)		0.109		0.316		0.036		0.114

DIF and SYS denote the first-differenced GMM and the system GMM, respectively. We limit lags to lags 2 through 4 of the levels as instruments for the transformed data and lag 1 of the differences for the levels data, and use a collapse technique to avoid the "too many instruments" problem. Ar1p and ar2p are the p-values of a test for first- and second-order serial correlation. Hansenp is the p-value for Hansen's overidentification restrictions test. In the last two rows, A (p-value) and B (p-value) represent the p-values of the difference-in-Hansen tests for system GMM instruments and instruments based on lagged growth, respectively. Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 7. The interrelationship between wage determination and fixed asset investment (GMM estimation): Self-raised.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Total Province		State		Collective		Other	
Fixed asset investments	DIF	SYS	DIF	SYS	DIF	SYS	DIF	SYS
Previous	0.967***	0.839***	0.990***	0.908***	0.469**	1.028***	–0.071	0.749***
Fixed asset investments	(0.122)	(0.073)	(0.098)	(0.071)	(0.173)	(0.050)	(0.133)	(0.114)
Previous Δwage	0.028	0.290*	0.213	0.513*	–1.101*	–1.254**	–0.867*	–0.226
	(0.202)	(0.150)	(0.286)	(0.268)	(0.596)	(0.586)	(0.454)	(0.144)
Self-raised	0.180	0.290	–1.010*	0.003	0.084	0.446	–2.176	1.319**
	(0.710)	(0.210)	(0.564)	(0.212)	(1.698)	(0.514)	(1.841)	(0.484)
Profit	–0.307	0.184	0.188	0.281	5.643*	4.530**	–2.926	0.685
	(0.688)	(0.529)	(0.600)	(0.514)	(2.775)	(1.784)	(2.732)	(0.867)
Fixed Assets	0.546	–0.151**	0.269*	0.110	–0.129	–0.134	0.556**	–0.306
	(0.326)	(0.065)	(0.144)	(0.082)	(0.141)	(0.160)	(0.257)	(0.220)
Liabilities	–0.395	0.883**	–0.694*	0.536	1.138**	0.784	1.877	–1.021
	(0.553)	(0.322)	(0.377)	(0.437)	(0.425)	(0.700)	(1.366)	(1.068)
Constant		–0.828**		0.000		–1.530		–1.396
		(0.326)		(0.000)		(1.584)		(0.890)
Observations	248	279	248	279	151	212	248	279
Number of provinces	31	31	31	31	31	31	31	31
Instruments	26	33	26	33	23	31	26	33
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES
ar1p	0.033	0.010	0.002	0.002	0.160	0.022	0.115	0.148
ar2p	0.605	0.893	0.873	0.902	0.556	0.518	0.457	0.203
hansenp	0.455	0.149	0.163	0.463	0.298	0.234	0.102	0.165
A (p–value)		0.432		0.994		0.688		0.634
B (p–value)		0.316		0.948		0.281		0.098

DIF and SYS denote the first-differenced GMM and the system GMM, respectively. We limit lags to lags 2 through 4 of the levels as instruments for the transformed data and lag 1 of the differences for the levels data, and use a collapse technique to avoid the "too many instruments" problem. Ar1p and ar2p are the p-values of a test for first- and second-order serial correlation. Hansenp is the p-value for Hansen's overidentification restrictions test. In the last two rows, A (p-value) and B (p-value) represent the p-values of the difference-in-Hansen tests for system GMM instruments and instruments based on lagged growth, respectively. Robust standard errors are shown in parentheses. The symbols ***, **, and * denote that $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.