

# National identity under economic integration

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**Abstract** This study empirically investigates how economic integration influences individuals' national identity. Due to historical reasons and unique cross-strait politics, some people in Taiwan identify themselves as Chinese while others identify themselves as Taiwanese. Using individual survey data with the outward investment data at the industry level from 1992 to 2009, we find that the rising investment in China has strengthened Taiwanese identity and has reduced the probability of voting for the Pan-Blue parties. The effects are much stronger for unskilled workers than for skilled workers, suggesting that outward investment in China may not only have economic impact on the economy but may also deepen the political polarization in Taiwan.

**Keywords** Identity · Economic integration · Voting behavior

**JEL classification** F50 · Z10 · D72

## 1 Introduction

The formation of national identity has attracted considerable research attention in fields such as sociology, political science, and economics (Akerlof and Kranton 2000; Bisin

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et al. 2011; Bodenhorn and Ruebeck 2003; Constant and Zimmermann 2013; Georgiadis and Manning, 2013; Manning and Roy 2009; Masella 2013). Many researchers in these domains have focused on the identity of immigrants and the influence of ethnic diversity.<sup>1</sup> In the context of the present study, the unique history of cross-strait relationships between China and Taiwan has resulted in certain sections of society in Taiwan identifying themselves as Chinese and others identifying themselves as Taiwanese. Although the ethnic composition in Taiwan has not changed considerably in recent decades (in part due to the regulation of the number of immigrants arriving from China), the proportion of people who identify themselves as Taiwanese increased rapidly from 25% in 1992 to 63% in 2009, as shown in Fig. 1. While these changing attitudes toward Taiwanese identity have attracted researchers in sociology (Huang et al. 2004), anthropology (Brown 2004), and political science (Wachman 1994), relatively few empirical studies have investigated how economic determinants affect this phenomenon. In light of this gap, we investigate the economic factors that influenced Taiwanese identity formation among people living in Taiwan from 1992 to 2009.

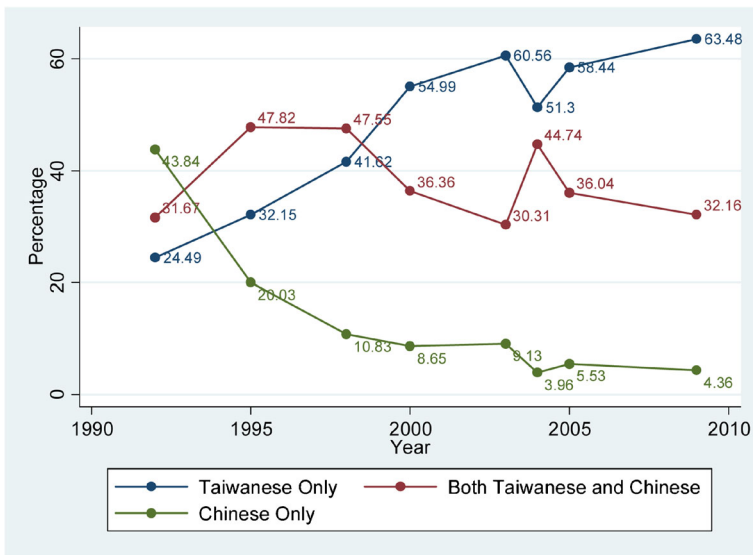
Taiwanese investment in China has grown rapidly over recent decades. Although some Taiwanese people have profited from investing in China, part of the population, especially unskilled workers, have suffered economic losses because of the decline in job opportunities in Taiwan (Tsou et al. 2013). Intuitively, while economic benefits tend to create a common identity, competition fosters separate identities. The economic conflicts and benefits attributable to the outward investment in China may have altered the way people identify themselves. In this paper, we examine the effects of Taiwanese investment in China in two aspects, namely, national identity and political party preferences.

By combining individual survey data with industrial-level outward investment data from 1992 to 2009, we study the effects of economic integration on national identity and voting behavior in Taiwan. We include year fixed effects and industry fixed effects to control for changes over time as well as differences in national identity among workers in various industries. Our estimation results suggest that increasing investment in China strengthens Taiwanese identity among unskilled workers but has minor effects on Taiwanese identity among skilled workers. Overall, outward investment in China results in more people identifying themselves as Taiwanese.

Second, we examine the effects of Taiwanese investment in China on voting behavior in presidential and legislative elections. Margalit (2011) finds that in the USA, trade- or offshoring-related job loss caused voters to be less likely to vote for the incumbent candidate. Taiwan has had two dominant political forces: the Pan-Blue coalition, which comprises the Kuomintang, the People First Party, and the New Party; and the Pan-Green coalition, which comprises the Democratic Progressive Party and the Taiwan Solidarity Union. The Pan-Blue coalition tends to prefer closer economic and political ties with China than does the Pan-Green coalition. We find that investment in China made it less likely for workers to vote for Pan-Blue coalition, and the effects are much stronger for unskilled workers than those for skilled workers. Overall, our

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<sup>1</sup> In recent studies, for example, Masella (2013) suggests that ethnic diversity does not necessarily weaken national identity. Georgiadis and Manning (2012) find that people who feel that they are treated with respect are more likely to identify with the wider society. Constant and Zimmermann (2013) provide comprehensive review and discussion of the formation and divergence/reconciliation of national and ethnic identities.



**Fig. 1** Trends of national identity in Taiwan

results suggest that economic integration with China may not only deepen economic inequality, but also amplify political polarization in Taiwan.

From the literature on endogenous national borders, fewer economic barriers and a larger market are considered as benefits of being a larger country, and thus incentives for unification between countries would be reduced when economic integration can be achieved without political integration (Alesina and Spolaore 1997; Alesina, Spolaore, and Wacziarg 2000). Bolton and Roland (1997) emphasize political conflicts over redistribution policy within a country and imply that individual attitudes toward unification depend on the income of those individuals. Empirically, studies have suggested that economic winners in the original economy are more likely to benefit from a larger free market (Tucker, Pacek, and Berinsky 2002; Herzog and Tucker 2010) and react more positively to EU membership (Vlachos 2004).

Our study also relates to the literature on political conflicts and economic resources. Previous studies have shown that competition for resources may instill political conflicts, such as wars between nations or civil conflicts between ethnic groups (Hauge and Ellingsen 1998; Brückner and Ciccone 2010). Miguel, Satyanath, and Sergenti (2004) find that a negative growth shock caused by bad weather increased the likelihood of major civil dissension in 40 sub-Saharan countries. Our study suggests that the economic impact of economic integration may change individual political attitudes, such as national identity and political party preferences.

This paper is organized as follows. Section “2” introduces background information on Taiwanese investment in China and national identity in Taiwan. Section “3” illustrates the data. Section “4” presents the empirical specifications and results. Section “5” illustrates the limitations of this study. Section “6” offers a conclusion.

## 2 Background and context

### 2.1 Taiwanese investment in China

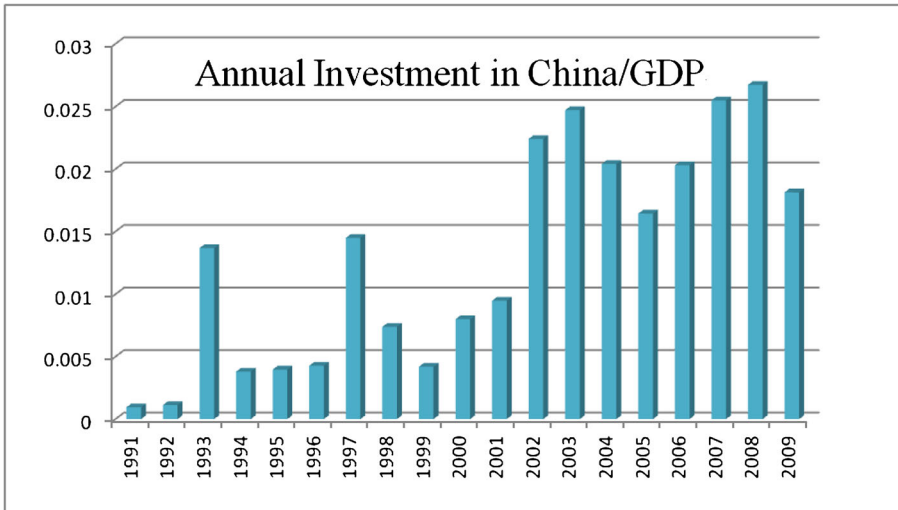
The Republic of China, led by the Kuomintang government, lost the Chinese Civil War in 1949 and retreated to Taiwan. There was no formal political or economic contact between Taiwan and China between that point and 1992, when Taiwanese investment in China was legalized. In 1996, the Taiwanese government adopted a “patience over haste” policy under which investment in China was highly regulated. In 2001, the government relaxed some of these restrictions, but investment in China by listed companies was still limited to 40% of company capital (raised to 60% in 2008). Figure 2 illustrates the significant growth in the ratio of Taiwan’s investment in China to Taiwan’s GDP over the past 20 years. The rising investment in China has raised concerns about potential negative impacts on the Taiwan’s economy. In theory, outward foreign investment does not necessarily hurt domestic employment and wages. By allocating their resources more efficiently through outward FDI and thus increasing their competitiveness globally, firms may avoid reducing domestic employment. Empirically, using firm-level data in Taiwan, researchers have found that outward FDI in low-wage countries (mainly China) had a negative impact on domestic investment, employment, and wages, especially for unskilled workers (Chen and Ku 2005; Liu et al. 2015).<sup>2</sup> Tsou et al. (2013) use employer-employee data of listed firms to reveal that investment in China reduced employment growth and increased worker separation, particularly for low-skilled workers; they also find that employment adjustments are highly associated with wage losses. While Yang et al., 2010 find a positive relationship between outward investment and R&D of parent firms, Tsou et al. (2013) find no evidence that investment in China contributes to skill upgrading at parent companies.

### 2.2 Formation of national identity in Taiwan

As shown in Fig. 1, people who identify as Taiwanese have increased over time. It is found that people of younger generations are less likely to identify themselves as Chinese and that the role of ethnicity in identity formation has gradually faded (Shen and Wu 2008). An anthropologist has argued that in Taiwan, Taiwanese/Chinese identity is shaped by social experience rather than culture or ancestry (Brown 2004). Harrison (2016) emphasizes the influence of political events such as political campaigning in elections and the 228 event on national identities in Taiwan. Recently, Chen et al. (2016) have argued that changes in textbook content also influenced the formation of national identity in the short run.

In terms of economic factors affecting the formation of national identity, Muryard (2012) documents the phenomenon of rising Taiwanese identity and increasing investment in China and argues that economic integration creates losers and dissatisfaction. In our study, we empirically examine the influence of economic integration on identities. Our hypothesis is that national identity can be considered a type of group identity, which would be influenced by perceived competition and

<sup>2</sup> Similar findings in Korea were presented by Debaere et al. (2010), who show that investing in a country less advanced than the home country has negative effects on employment.



**Fig. 2** Ratio of annual Taiwanese investment in China to GDP

cooperation.<sup>3</sup> Since investment in China is increasing, those who feel threatened by workers in China or the rising China economy would be more likely to identify themselves as Taiwanese than Chinese. Skilled workers may not feel threatened since, on the one hand, most firms have made investments in China to achieve a lower labor cost or larger market. On the other hand, investment in China made by Taiwanese firms may bring future opportunities for skilled workers. For example, professionals could make more money by working part-time in China, and managers could be paid more by helping to establish a new branch in China. We therefore estimate the differential effects of investment in China on skilled workers and unskilled workers.

The perception of these effects on unskilled workers and skilled workers could come from those workers' previous experiences, news reports,<sup>4</sup> or expectation based on private information. While we can try to estimate the effects of outward investment in China on national identities and political preferences, we will not be able to distinguish whether the channels are coming from news reports or private information.

### 3 Data

The data on approved investment in China employed in this study come from the Investment Commission in the Ministry of Economic Affairs (MOEA), which has regulated and monitored Taiwanese firms' investments in China since 1991. The investment data of the MOEA classify industries into 46 categories, which differs slightly from the classification scheme utilized for respondents' employment industries

<sup>3</sup> Esses et al. (2001) find that perceived group competition fosters a negative attitude toward immigrants. Chen and Li (2009) find that cooperation on task completion can induce group identity in experiments.

<sup>4</sup> For example, the article "China causes Taiwan brain drain" by the Financial Times on March 31, 2013, mentioned industrial "hollowing out," the wage stagnation of factory workers, and the brain drain of educated workers.

in the surveys used in this paper; we combine similar industries into one category when necessary, resulting in 35 industry categories, which are listed in the table in the [Appendix](#).

Using annual investment data, we calculate the accumulated Taiwanese investment by industry with a depreciation rate of 10% from 1992 and then generate the variable Investment in China<sub>jt</sub> by dividing accumulated investment by GDP in year  $t$  for industry  $j$  in Taiwan, which is coded 0 for non-workers.<sup>5</sup> The ratio of accumulated investment to GDP serves as a proxy for asset allocation in the industry, reflecting the relative potential job opportunities created by Taiwanese firms.<sup>6</sup>

Our individual survey data come from the Taiwan Social Change Surveys carried out in 1992, 1995, 1998, 2000, 2003, 2004, and 2005 and the Globalization Survey conducted in 2009. These surveys include information on national identity and the respondents' employment, including the industries in which they work. The survey question regarding national identity can be translated as follows: "There are several ways listed below to identify yourself. Which one do you think best describes you? (1) Taiwanese, (2) Both Taiwanese and Chinese, (3) Chinese, or (4) Other." We generate the dummy variable "Identify exclusively as Taiwanese" to indicate that the respondent chose option (1).

In certain years, the Taiwan Social Change Survey and the Globalization Survey asked respondents about their voting decisions in the most recent presidential or legislative elections, providing a sample that covers the legislative elections in 1989 and 1992 and the presidential elections in 2000, 2004, and 2008. Based on the respondents' voting records, we generate a dummy variable, "Voting Blue," which indicates whether the respondent voted for Pan-Blue parties in the most recent legislative or presidential election.

There are four major ethnic groups in Taiwan: Taiwanese, Hakka, Mainlander, and Aborigine. Taiwanese and Hakka are early immigrants who came from mainland China before WWII. Mainlanders are immigrants from mainland China from the late 1940s during the Chinese Civil War; members of this group are likely to identify themselves as Chinese. In Taiwan, approximately 74% of the population is Taiwanese, 12% are Mainlanders, 12% are Hakka, and the remaining 2% are Aborigines.

The education level and birth cohort of an individual may also contribute to the formation of national identity. History and geography are taught in high school, which may help students build attachments to China. We categorize each individual in the survey into one of three education levels: primary or middle school, high school, and some college education or above.

In previous studies, scholars defined skilled workers by occupation or by education level. We first define skilled workers based on occupation, including managers, professionals, semi-professional assistants, and workers with skills. When estimating

<sup>5</sup> Depreciation rate was set at 10% in the studies of Kydland and Prescott (1982) and Greenwood et al. (1988). According to Albonico et al. (2014), most capital depreciation rates estimated in studies are between 8 to 13%. In our section of robustness checks, we add results based on depreciation rate equal to 8% and depreciation rate equal to 12%.

<sup>6</sup> Ideally, we would like to construct our variable as cumulated outward investment over domestic capital stock at industry level. However, we do not find capital stock data by industry to match with our 35 industry categories.

the differential effects on skilled workers and unskilled workers, we also present analysis with an interaction term of investment in China and college graduates.

Other control variables include gender, age, county fixed effects, and birth cohort dummy variables. Based on respondents' birth year, we generate four dummy variables: born in the 1950s, born in the 1960s, born in 1970, and born in 1980. The reference group includes those who are born in 1940. Summary statistics of key variables are listed in Table 1.

## 4 Empirical specifications and results

We combine the industry-level investment data with these survey data to estimate the effects of Taiwanese investment in China. In general, investment decisions are made by the owners of firms and are constrained by the prevailing economic and political circumstances. However, pooled OLS estimators could be biased because of possible confounding factors. For example, events such as the 1996 missile tests in China might have frozen the investment plans of Taiwanese firms in China and strengthened Taiwanese identity, causing the effect of investment in Taiwanese identity to be underestimated. Moreover, people in different industries may have different lifestyles and attitudes regarding national identity. For example, people in the agricultural sector usually have a stronger attachment to their local communities and thus more strongly identify as Taiwanese. Therefore, we include year fixed and industry fixed effects to control for changes over time and differences in national identity among workers in

**Table 1** Summary statistics

Variable	Mean	Std. dev.
Taiwanese identity	0.501	0.500
Investment in China	0.049	0.135
Skilled worker	0.280	0.449
Work	0.649	0.477
High school	0.426	0.494
College	0.165	0.371
Male	0.505	0.500
Age	43.274	15.040
Taiwanese	0.724	0.447
Mainlander	0.121	0.326
Hakka	0.137	0.344
Aborigine	0.014	0.119
Voting Blue	0.472	0.499
Born in 1940	0.280	0.449
Born in 1950	0.253	0.435
Born in 1960	0.235	0.424
Born in 1970	0.157	0.364
Born in 1980	0.073	0.261

different industries. The baseline specification, estimated using a linear probability model, can thus be expressed as follows:

$$Y_{ijt} = \alpha + \beta \text{Investment in China}_{jt-1} + \text{Year}_t + \text{Industry}_j + rX_{it} + \varepsilon_{ijt}.$$

where  $Y_{ijt}$  represents the dummy variable *Identify exclusively as Taiwanese* of individual  $i$  in industry  $j$  in year  $t$ ; *Investment in China* $_{jt-1}$  is the ratio of accumulated investment to GDP of industry  $j$  in year  $t-1$ ;  $\text{Year}_t$  and  $\text{Industry}_j$  represent the year fixed and industry fixed effects; and  $X_{it}$  includes all other control variables such as gender, education, age, county fixed effects, birth cohort, and ethnic group variables.

#### 4.1 Results

Column 1 in Table 2 presents the results without the year fixed and industry fixed effects, while column 2 presents the results with the year fixed effects. The coefficient of *investment in China* in column 2 is smaller than the coefficient in column 1, indicating that part of the effect of investments in China in column 1 could be driven by a common time trend of national identity and investments. Column 3 presents the results with both the year fixed and the industry fixed effects. As shown in column 3, on average, probability of expressing Taiwanese identity increased by 1.9 percentage points, as investments in China by Taiwanese firms increased by 10 percentage points.

Although Taiwanese firms' investments in China may reduce job opportunities for unskilled workers in Taiwan, they may also create opportunities for skilled workers. In column 4, we add the interaction term of *Skilled Worker* and *Investment in China* to estimate the differential effects of investment on skilled and unskilled workers. As shown, the coefficient of the investment variable is 0.256, and the coefficient of the interaction term is  $-0.154$ . These results suggest that the effect of outward investment on Taiwanese identity among skilled workers is much smaller when compared with the effect among unskilled workers.

In terms of the role of other demographic variables, we find that compared with the Taiwanese, the Mainlanders are 36% less likely to identify exclusively as Taiwanese. People who are born in 1980 are 10% more likely to identify as Taiwanese than those born in 1940. Compared to people with elementary school education, people with high school degree or some college degree or above are around 10% less likely to express Taiwanese identity.

#### 4.2 Magnitude

The presented results suggest that changes in national identities are highly associated with increasing Taiwanese outward investment in China. To provide a sense of the magnitude of the effect of Taiwanese investments in China, Table 3 uses the estimation of column 3 of Table 2 to report the implied changes in proportion of people expressing Taiwanese identity from 1992 to 2009 in certain industries. For example, in the industry of plastic products manufacturing, the ratio of accumulated investment in China to industrial GDP in 2008 is 0.999. Based on the estimation results, on average, the



**Table 2** Investment in China and national identity

	Dependent variable: Identify exclusively as Taiwanese				
	(1)	(2)	(3)	(4)	(5)
Investment in China	0.266*** [0.054]	0.130* [0.066]	0.190*** [0.068]	0.256*** [0.065]	0.226*** [0.066]
Investment in China* Skilled worker				-0.145** [0.065]	
Investment in China* College					-0.188 [0.113]
Skilled worker	-0.039** [0.015]	-0.028* [0.016]	-0.027* [0.015]	-0.016 [0.018]	-0.027* [0.015]
Work	-0.000 [0.012]	0.015** [0.007]	0.057*** [0.007]	0.058*** [0.008]	0.058*** [0.007]
Male	-0.043*** [0.009]	-0.032** [0.013]	-0.037*** [0.012]	-0.036*** [0.012]	-0.037*** [0.012]
Age	0.012*** [0.001]	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]
High school	-0.112*** [0.014]	-0.144*** [0.013]	-0.130*** [0.014]	-0.131*** [0.014]	-0.128*** [0.011]
College	-0.111*** [0.012]	-0.131*** [0.011]	-0.127*** [0.011]	-0.128*** [0.011]	-0.121*** [0.014]
Mainlander	-0.345*** [0.031]	-0.317*** [0.025]	-0.315*** [0.026]	-0.315*** [0.026]	-0.315*** [0.026]
Haka	-0.094*** [0.019]	-0.094*** [0.019]	-0.094*** [0.020]	-0.093*** [0.020]	-0.093*** [0.020]
Aborigine	-0.037 [0.037]	-0.081* [0.041]	-0.079* [0.042]	-0.078* [0.043]	-0.079* [0.016]
Born in 1950	0.158*** [0.013]	-0.021 [0.016]	-0.022 [0.016]	-0.023 [0.016]	-0.066*** [0.023]
Born in 1960	0.227*** [0.024]	-0.063*** [0.022]	-0.065*** [0.023]	-0.066*** [0.023]	-0.028 [0.027]
Born in 1970	0.403*** [0.033]	-0.024 [0.027]	-0.029 [0.027]	-0.028 [0.027]	0.091*** [0.033]
Born in 1980	0.636*** [0.040]	0.095*** [0.032]	0.089** [0.033]	0.089** [0.033]	-0.023 [0.033]
Industry fixed effects	No	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes	Yes
Constant	-0.133 [0.084]	0.338*** [0.037]	0.317*** [0.036]	0.316*** [0.035]	0.316*** [0.036]
R-squared	0.149	0.182	0.186	0.186	0.186
Observations	11,270	11,270	11,270	11,270	11,270

Coefficients from the linear probability model are reported. Robust standard errors are in brackets and all standard errors are clustered at industry level. Other control variables include income categories and county fixed effects

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

**Table 3** Predicted changes in proportion of people with exclusive Taiwanese identity

Industry	Investment in China in 2008 <sup>a</sup>	Predicted changes in identities
Plastic products manufacturing	0.999	0.190
Fabricated metal products manufacturing	0.422	0.080
Electronic parts and components manufacturing/computers, electronic and optical products manufacturing/electrical equipment manufacturing machinery and equipment	0.372	0.071
Manufacturing/repair and installation of industrial machinery and equipment	0.187	0.036
Food, beverages and tobacco manufacturing	0.214	0.041

<sup>a</sup> Investment in China in 2008 is defined as accumulated investments divided by GDP in 2000 of the industry

associated increase in probability of expressing Taiwanese identity is 19 percentage points for workers in the industry of plastic products manufacturing from 1992 to 2009.

### 4.3 Robustness checks

Our investment measure would be affected by the value of depreciation rate we set. As robustness checks, we report the results based on different depreciation rates. Table 4 column 1 reports the results with an outward investment measure with a depreciation rate equal to 0.08, and column 2 reports the results with an outward investment measure with a depreciation rate equal to 0.12. While our estimated coefficients vary with the depreciation rate settings, we do not find significant changes in the estimation results.

In the above estimations, non-workers were included, and the investment variable for non-workers was coded as 0 for them.<sup>7</sup> However, if the underlying time trends of national identity among workers and non-workers are different, our estimation will be biased. We thus restrict the sample to workers and report the estimation results in Table 4 columns 3, 4, and 5. As shown, the average effect of investments in China on Taiwanese identity in column 3 is similar to the previous results, and the heterogeneous effects on identities in column 4 are slightly stronger than those in column 4 of Table 3. The coefficient of the investment variable is 0.276, and the coefficient of the interaction term of the investment variable and skilled worker is  $-0.185$ , slightly stronger than the effects in Table 2.

### 4.4 Effects of Investment in China on Chinese identity

As the number of people identifying as Taiwanese increased over time, fewer people identified themselves as Chinese. Therefore, we also estimate the effects of outward investment in China on Chinese identity. The dependent variable is a dummy variable

<sup>7</sup> Non-workers are mainly students, housewives, and retired people. Among non-workers, the proportion of middle-aged men is only around 5%. We estimated a model on non-workers with the “average” investment across all industries and other demographic variables. The effect of the average investment is not significant while the effects of other demographic variables are not far from the effects we find in Table 2.

**Table 4** Robustness checks

	Dependent variable: Identify exclusively as Taiwanese				
	(1)	(2)	(3)	(4)	(5)
Investment in China	0.172** [0.063]	0.207*** [0.073]	0.194*** [0.070]	0.276*** [0.064]	0.241*** [0.067]
Investment in China* Skilled Worker				-0.185*** [0.061]	
Investment in China* College					-0.235** [0.116]
Skilled worker	-0.027* [0.015]	-0.027* [0.015]	-0.023 [0.017]	-0.007 [0.018]	-0.023 [0.017]
Work	0.057*** [0.007]	0.057*** [0.007]			
Male	-0.037*** [0.012]	-0.037*** [0.012]	-0.025** [0.012]	-0.023* [0.012]	-0.025* [0.012]
Age	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]
High school	-0.127*** [0.011]	-0.127*** [0.011]	-0.121*** [0.013]	-0.121*** [0.013]	-0.121*** [0.013]
College	-0.130*** [0.014]	-0.130*** [0.014]	-0.122*** [0.018]	-0.122*** [0.017]	-0.106*** [0.015]
Mainlander	-0.315*** [0.026]	-0.315*** [0.026]	-0.284*** [0.017]	-0.283*** [0.017]	-0.284*** [0.017]
Haka	-0.094*** [0.020]	-0.094*** [0.020]	-0.074*** [0.017]	-0.074*** [0.017]	-0.073*** [0.017]
Aborigine	-0.079* [0.042]	-0.079* [0.042]	-0.058 [0.054]	-0.056 [0.054]	-0.058 [0.054]
Born in 1950	-0.022 [0.016]	-0.022 [0.016]	-0.030 [0.021]	-0.031 [0.021]	-0.031 [0.021]
Born in 1960	-0.065*** [0.023]	-0.065*** [0.023]	-0.074** [0.032]	-0.076** [0.032]	-0.075** [0.032]
Born in 1970	-0.029 [0.027]	-0.029 [0.027]	-0.040 [0.040]	-0.039 [0.040]	-0.039 [0.040]
Born in 1980	0.089** [0.033]	0.089** [0.033]	0.070 [0.049]	0.069 [0.049]	0.071 [0.049]
Depreciation rate	8%	12%	10%	10%	10%
Sample	ALL	ALL	Work	Work	Work
Constant	0.316*** [0.036]	0.317*** [0.036]	0.362*** [0.076]	0.362*** [0.076]	0.364*** [0.076]
R-squared	0.186	0.186	0.175	0.176	0.176
Observations	11,270	11,270	8266	8266	8266

Coefficients from the linear probability model are reported. Robust standard errors are in brackets and all standard errors are clustered at industry level. Other control variables include income categories, industry fixed effects, year fixed effects, and county fixed effects

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

indicating that the respondent identifies exclusively as Chinese. Estimation results are reported in Table 5. Consistent with previous results, the probability of expressing Chinese identity declined as investment in China by firms increased, and the effects are stronger for unskilled worker than those for skilled workers defined as college graduates.

#### 4.5 Effects of Investment in China on voting behavior

Outward investments in China made by Taiwanese firms may have changed the political preferences of workers. Since the Pan-Blue coalition tends to loosen regulations regarding investments in China, workers who would be hurt by such a policy could become less likely to vote for the Pan-Blue coalition. The Pan-Blue parties tend to have closer economic and political ties with China than do the Pan-Green parties. In fact, the Pan-Green parties have attempted to harness policies that would deepen economic relationships with China. For example, the Democratic Progressing Party (DPP) preferred strict regulations on investment in China and opposed the Economic Cooperation Framework Agreement, which lowered tariffs between China and Taiwan. Therefore, voters who vote for their own interests and would suffer from economic loss seem more likely to vote for the DPP than those who would gain from Taiwanese investments in China.

We use respondents' voting decisions, Voting Blue, from the most recent legislative or presidential elections in the survey as the dependent variable to estimate the effects of investment in China on voting decisions. Industrial outward investment in China is modified to correspond to the timing of the election. As expressed in Column 1 of Table 6, the average effects of Taiwanese investment in China on the probability of voting for Pan-Blue parties are not significant. After including the interaction term, the results presented in column 2 suggest that increasing investment in China is associated with reduction in the probability of voting for the Pan-Blue parties among unskilled workers. The results from restricting the sample to workers reported in columns 3 and 4 are consistent with the previous findings. The results indicate that the political preferences of skilled workers and unskilled workers diverge as Taiwanese firms' investments in China increase.

### 5 Discussion

We acknowledge some limitations of our study. One potential threat to our empirical specification is the possibility of some unobservable time-varying factors correlated with industrial investment in China and the identities of people who work in that industry. For example, one might think that owners with stronger anti-China sentiment shocks were less likely to invest in China and that the national identities of the owners and employees within an industry could be correlated. However, if this is the case, we would be more likely to observe negative correlations between outward investment in China and Taiwanese identity, meaning that our estimates on the effects of investment on Taiwanese identity are underestimated.

There might be some other industrial production shocks that caused firms to invest more in China. If such shocks also caused workers to be more likely to identify

**Table 5** Investment in China and Chinese Identity

	Dependent variable: Identify exclusively as Chinese			
	(1)	(2)	(3)	(4)
Investment in China	-0.136*** [0.045]	-0.122** [0.049]	-0.121** [0.056]	-0.147** [0.055]
Investment in China* Skilled worker		-0.030 [0.025]	-0.020 [0.025]	
Investment in China* College				0.087*** [0.030]
Skilled worker	0.016** [0.007]	0.018** [0.008]	0.014 [0.009]	0.012 [0.008]
Work	-0.087*** [0.010]	-0.087*** [0.010]		
Male	0.030*** [0.007]	0.030*** [0.007]	0.023*** [0.008]	0.023*** [0.008]
Age	0.002*** [0.001]	0.002*** [0.001]	0.001 [0.001]	0.001 [0.001]
High school	0.048*** [0.007]	0.048*** [0.007]	0.048*** [0.010]	0.048*** [0.010]
College	0.034** [0.013]	0.034** [0.013]	0.032* [0.017]	0.027 [0.017]
Mainlander	0.218*** [0.016]	0.218*** [0.016]	0.204*** [0.016]	0.204*** [0.016]
Haka	0.041*** [0.008]	0.041*** [0.008]	0.038*** [0.010]	0.038*** [0.010]
Aborigine	0.064** [0.024]	0.064** [0.024]	0.073** [0.031]	0.073** [0.031]
Born in 1950	0.012 [0.013]	0.012 [0.013]	-0.001 [0.018]	-0.001 [0.018]
Born in 1960	0.054** [0.021]	0.053** [0.021]	0.033 [0.031]	0.034 [0.031]
Born in 1970	0.054** [0.026]	0.054** [0.026]	0.024 [0.041]	0.024 [0.041]
Born in 1980	0.048 [0.035]	0.048 [0.035]	0.007 [0.052]	0.006 [0.052]
Sample	All	All	Work	Work
Constant	0.321*** [0.044]	0.321*** [0.044]	0.314*** [0.060]	0.313*** [0.060]
R-squared	0.198	0.198	0.205	0.206
Observations	11,270	11,270	8266	8266

Coefficients from the linear probability model are reported. Robust standard errors are in brackets and all standard errors are clustered at industry level. Other control variables include income categories, industry fixed effects, year fixed effects, and county fixed effects.

\*\* $p < 0.01$ ; \*\*\* $p < 0.05$ ; \* $p < 0.1$

**Table 6** Investments in China and voting preferences

	Voting Blue			
Investment in China	-0.141 [0.084]	-0.166* [0.085]	-0.250** [0.102]	-0.210** [0.080]
Investment in China* Skilled worker			0.180* [0.106]	
Investment in China* College				0.204 [0.123]
Skilled worker	0.012 [0.017]	0.008 [0.020]	-0.009 [0.017]	0.008 [0.020]
Work	-0.017 [0.014]			
Male	-0.084*** [0.015]	-0.096*** [0.015]	-0.098*** [0.015]	-0.096*** [0.015]
Age	0.001 [0.001]	0.003*** [0.001]	0.003*** [0.001]	0.003*** [0.001]
High school	0.090*** [0.014]	0.075*** [0.013]	0.075*** [0.013]	0.074*** [0.013]
College	0.078*** [0.016]	0.064*** [0.018]	0.066*** [0.019]	0.050** [0.021]
Mainlander	0.351*** [0.032]	0.312*** [0.018]	0.311*** [0.019]	0.312*** [0.019]
Hakka	0.092*** [0.016]	0.086*** [0.018]	0.086*** [0.018]	0.085*** [0.018]
Aborigine	0.239*** [0.042]	0.231*** [0.053]	0.228*** [0.053]	0.231*** [0.053]
Born in 1950	0.021 [0.030]	0.057** [0.021]	0.058** [0.021]	0.058** [0.022]
Born in 1960	0.056 [0.040]	0.106*** [0.032]	0.108*** [0.032]	0.107*** [0.032]
Born in 1970	0.028 [0.050]	0.095** [0.039]	0.096** [0.039]	0.095** [0.039]
Born in 1980	0.042 [0.058]	0.121** [0.050]	0.122** [0.051]	0.119** [0.050]
Constant	0.523*** [0.063]	0.579*** [0.063]	0.579*** [0.062]	0.579*** [0.063]
Sample	All	Workers	Workers	Workers
R-squared	0.206	0.191	0.192	0.192
Observations	8011	6131	6131	6131

Coefficients from the linear probability model are reported. Robust standard errors are in brackets and all standard errors are clustered at industry level. Other control variables include income categories, industry fixed effects, year fixed effects, and county fixed effects

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

themselves as Taiwanese (but not through the channel of outward investment impacts), then our estimates on the effects of investment on Taiwanese identity are overestimated.

Another issue is sample selection due to employment adjustments between industries. According to the yearbook of earnings and productivity, the job separation rate was around 2–3% in Taiwan. Some workers could have changed their jobs due to outward investment in China made by their firms. If workers who changed their jobs have very different national identities from those who did not change their jobs, then our estimates could be biased due to selection bias.

## 6 Conclusions

In theory, economic integration under globalization promotes efficiency and improves overall welfare. However, in reality, economic integration may harm certain sections of society while benefitting others. The economic conflicts caused by economic integration may even cause political conflicts between countries as well as political tension or polarization within a country. In this paper, we empirically investigated how Taiwanese investment in China influenced individuals' political attitudes, as expressed by national identity and preferences for political parties. We found that increasing investment in China increased the likelihood of expressing Taiwanese identity than Chinese identity, and reduced the probability of voting for the Pan-Blue parties. Our results suggest that economic integration with China may have increased political polarization in Taiwan.

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## Appendix

**Table 7** Table of industry categories

1	Agriculture, forestry, fishing and animal husbandry
2	Mining and quarrying
3	Food, beverages, and tobacco manufacturing
4	Textile mills
5	Wearing apparel and clothing accessory manufacturing
6	Leather, fur, and related products manufacturing
7	Wood and bamboo products manufacturing, non-metallic furniture manufacturing
8	Pulp, paper, and paper products manufacturing, printing
9	Chemical material manufacturing
10	Chemical products manufacturing/medical goods manufacturing

**Table 7** (continued)

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1	Agriculture, forestry, fishing and animal husbandry
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11	Petroleum and coal products manufacturing
12	Rubber products manufacturing
13	Plastic products manufacturing
14	Non-metallic mineral products manufacturing
15	Basic metal manufacturing
16	Fabricated metal products manufacturing
17	Machinery and equipment manufacturing/repair and installation of industrial machinery and equipment
18	Electronic parts and components manufacturing/computers, electronic and optical products manufacturing/electrical equipment manufacturing
19	Motor vehicles and parts manufacturing/other transport equipment manufacturing
20	Electricity and gas supply
21	Water supply and remediation services
22	Construction
23	Wholesale and retail trade
24	Transportation and storage
25	Information and communication
26	Financial and insurance
27	Real estate
28	Public administration and defense; compulsory social security
29	Education
30	Human health and social work services
31	Arts, entertainment, and recreation
32	Personal Services, repair, laundry and domestic services
33	Manufacturing not elsewhere classified
34	Accommodation and food services
35	Support services

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