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IDE DISCUSSION PAPER No. 794

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June 2020

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JEL Classification: F10, H54, G51

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The Impact of an International Bridge on Households: Evidence from Household Panel Data in Thailand[§]

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1. Introduction

The establishment of an international bridge can contribute to decreasing transportation costs for both goods and people between countries. Without such bridges, goods and people must be transported by ferry or ship. Such types of transportation are limited in terms of size and frequency, which results in higher shipping costs. The establishment of an international bridge enables smoother transportation because trucks and people do not have to wait for ferries or ships. It differs from unilateral trade liberalization effects (*e.g.*, the reduction of most favored nation tariff rates) because of a decrease in two-way trade costs. It also differs from regional trade agreement effects because they are not even between regions within a country. Furthermore, unlike tariff reductions, the construction of an international bridge dramatically increases people's ability to move. They may cross the bridge daily for work or to shop. The establishment of an international bridge might therefore not only reduce trade costs but also change the supply and demand

[§] We would like to thank Kyoji Fukao, Shujiro Urata, Takeshi Aida, Yuya Kudo, and the seminar participants in the Institute of Developing Economies and Keio University for their invaluable comments. This work was supported by JSPS KAKENHI Grant Number #18KK0050. All remaining errors are ours.
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of labor.

In this paper, we empirically investigate the impact of the establishment of the second Thai-Lao friendship bridge (hereafter, the "Second Bridge"). The Second Bridge between Thailand and Laos opened to car traffic in January 2007. In 2014, Laos was the 13th highest destination in terms of Thai exports. In 2014, exports to Laos totaled 3.5 billion United States (US) dollars, accounting for only 2% of the value of total exports, despite the fact that these two countries share a national border. One reason for this low export share is the small size of the Laotian economy, which is categorized as a "least developed country." Another reason might be the high transportation costs between the two countries. Except for a small portion of the national border, these two countries are mainly separated by the Mekong River. The maximum width of this river along the border between the two countries is 14 kilometers. Thus, international bridges play a crucial role in the transport of goods and people between Thailand and Laos.

The establishment of the Second Bridge seems to have dramatically increased the transportation of goods and people, including the volume of bus and truck traffic, between Thailand and Laos. As we see in the next section, international trade over this bridge also experienced a significant increase. This bridge is used not only for trade between Thailand and Laos but also between Thailand and China as well as Vietnam. Thailand is connected by land with China and Vietnam. As a result, more agricultural products, such as vegetables, are exported to China, Laos, and Vietnam. In addition, a large number of Laotian people cross the bridge to work due to the higher wages in Thailand. They also go to Thailand to shop and visit hospitals because of the higher quality of Thai products and services. In summary, the lives of the people in the border regions seem to have dramatically changed as a result of the establishment of the Second Bridge.

In this paper, we empirically examine how the construction of the Second Bridge affected household behavior, expenditures, and incomes in the border regions of Thailand. To this end, we employ data from the Household Socio-Economic Surveys in Thailand. This household survey is unique in that its data can be panelized on a household level over time. Since regular service on the Second Bridge started in early 2007, we conducted a difference-in-differences (DID) analysis on a household level by employing survey data for 2005, 2006, 2010, and 2012. Our identification strategy was to restrict the study only to those provinces with "similar" geographical characteristics as Mukdahan province, in which the Second Bridge is located on the Thai side. Then, we investigated how the incomes and expenditures of households in Mukdahan changed as compared with other provinces. We also conducted a placebo test to confirm that no geographical characteristics that affected the propensity for establishing bridges were related to the household activity observed in our study provinces. Furthermore, in our analysis, we controlled for various confounding factors.

In our analysis, we implicitly assume that only households in Mukdahan received the benefit of the Second Bridge's establishment. However, households in neighboring provinces apparently also enjoyed the benefits, to some extent. To investigate the decay of such effects according to distance from the Second Bridge, we exploit a continuous variable, that is, the direct or road distance from the bridge, instead of a dummy variable (*i.e.*, with a value of one for Mukdahan, zero otherwise). This analysis assumes that an international bridge has a larger effect on households located near the bridge and that these effects

decrease the farther away the household from the bridge. Significant results would indicate the existence of such a geographically based decay of the effects of an international bridge.

Our empirical results, which are heterogeneous according to type of household head, suggest that the expansion of agricultural production played a key role in the Second Bridge's impact on income. We found a significant increase in income, particularly farm income, in households with a male or a young head, who have an advantage in agricultural production, which requires hard physical work. These households significantly increased their amount of farmland and farm equipment. Also, as a result of the rise in income, various expenditures on items like housing, education, personal activity, and social activity also increased. In summary, incomes increased in households that succeeded in expanding production in the industry in which the border regions have a comparative advantage, *i.e.*, agricultural production. On the other hand, we found weak evidence of a decrease in income in households with a female head.

Our paper contributes to at least three strands of the existing literature. The first is studies regarding the impact on households of trade cost reductions. The effect of tariff reductions on consumer prices and wages were explored by Porto (2006), Nicita (2009), Marchand (2012), and Han, Liu, Marchand, and Zhang (2016) using household survey data. In these studies, consumer prices or wages were regressed on tariff rates. The study closest to our paper is that of Dai, Huang, and Zhang (2019), who investigated the impact of tariff reductions in China by her accession to the World Trade Organization and found that the decline in wages was relatively larger in regions more exposed to trade liberalization. While our paper also uses a household survey, we focus on the impact of physical infrastructure, *i.e.*, an international bridge. As explained above, the effects may differ from those of unilateral tariff reductions because an international bridge decreases two-way trade costs and costs for the movement of people. Indeed, we discovered a significant increase in the incomes in some types of households that were more exposed to such cost reductions.

The second strand of the literature includes studies on the economic impact of establishing physical infrastructure. This literature investigates the effect of railways (including high-speed railways) or roads (including highways).[1] There are at least two empirical studies on the economic impact of international bridges. Volpe Martincus, Carballo, Garcia, and Graziano (2014) studied the impact of transportation costs on firm exports using the closure of a bridge between Argentina and Uruguay. Akerman (2009) conducted a similar analysis on the closure of a bridge between Denmark and Sweden. While these studies examined the effect of an international bridge on firm activities (*e.g.*,

[1] For example, the effects of railways were examined by Donaldson (2018), Donaldson and Hornbeck (2016), Berger and Enflo (2017), Lin (2017), Mayer and Trevien (2017), and Ahlfeldt and Feddersen (2018). Examples of studies on highways or roads include Duranton and Turner (2011, 2012), Volpe Martincus and Blyde (2013), Duranton, Morrow, and Turner (2014), Faber (2014), Coşar and Demir (2016), Holl (2016), Volpe Martincus, Carballo, and Cusolito (2017), and Sotelo (2019). Morten and Oliveira (2018) investigated the relative effect of roads on goods and labor market migration. They found that the increase in welfare caused by road improvement can be attributed to reduced trade costs rather than reduced migration costs. We do not examine such a relative effect, but the international bridge decreases both trade and migration costs. Baum-Snow, Brandt, Henderson, Turner, and Zhang (2017) investigated the effects of both railways and roads.

productivity or exports), we explore their effect on households. In addition, agriculture is the main industry in our study area rather than manufacturing. Our analysis will contribute new evidence regarding the economic effects of an international bridge.[2]

In addition, although it focused on roads rather than bridges, Asher and Novosad (2020) and Shrestha (2020) investigated the effects on agriculture. These studies encountered contrasting results. The former demonstrated the movement of workers out of the agriculture industry in India, while the latter found an increase in land value, underpinned by the increased participation of households in agricultural markets and an increase in farm production and incomes in Nepal. Namely, in the latter study, road improvements contributed to the commercialization of agriculture. Our results for the international bridge contrast with those of Asher and Novosad (2020) and are closer to those of Shrestha (2020) because our study established an increase in farm incomes in households with a male head. One interpretation of this similarity is that Nepal's road networks might have improved geographical connectivity with India and decreased international trade costs as does the international bridge. On the other hand, the development of road networks in India mainly reduces transportation costs for intra-national transactions.

Finally, this paper contributes to literature on gender issues in trade liberalization. There are many studies on the effect of trade liberalization on the gender wage gap.[3] Most empirical studies have employed firm-level data (rather than household-level or individual-level data) and have focused on the manufacturing industry. For example, Juhn, Ujhelyi, and Villegas-Sanchez (2014) studied the effects of trade liberalization on gender inequality in Mexico. Their results demonstrated that tariff reductions lowered gender inequality by inducing technological upgrades and lowering the need for physically demanding skills. On the other hand, we found that the establishment of the international bridge increased incomes, especially agricultural incomes, in households with a male head but not in households with a female head. Gender inequality defined at the firm level is not necessarily comparable to inequality at a household level. Nevertheless, these differences in results might suggest that the effect on gender inequality depends on the development stage (*i.e.*, the main industry) and the type of reduced trade cost (*e.g.*, tariff or transportation cost).[4]

The remainder of this paper is organized as follows. Section 2 introduces the international bridges between Thailand and Laos. In Section 3, we explain our analytical framework, including the theoretical and empirical frameworks employed. Section 4 reports

[2] The impacts of *domestic* bridges are explored in Armenter, Koren, and Nagy (2014) and Brooks and Donovan (2020). Armenter, Koren, and Nagy (2014) investigated the effects on the spatial distribution of population, while Brooks and Donovan (2020) studied the impact of integration between rural Nicaraguan villages and outside labor markets. The latter study found that bridges eliminated market access uncertainties caused by floods and increased agricultural investment. Our results are similar in part, but the channel is different.

[3] See Oostendorp (2009) for a cross-country study on globalization and the gender wage gap.

[4] This is a simple intuition from the Stolper-Samuelson theorem. While Saure and Zoabi (2014) showed that this intuition does not always hold, our results are consistent with the findings of Keller and Utar (2018). They explored the effects of Chinese import competition on fertility rates and family structures and found that the negative impacts on earnings are concentrated on women, with gender inequality in earnings increasing.

our estimation results and discusses their implications. Lastly, Section 5 concludes.

2. Background

Mekong bridges are essential for land linkages in the Great Mekong Sub-Region (GMS), where the Mekong River flows north to south. In fact, all major economic corridors in the GMS program have a section spanning the Mekong River.[5] Since the early 1990s, many international and domestic Mekong bridges have either been constructed, are under construction, or are planned for future construction in Cambodia, Laos, Thailand, and Vietnam. Mekong bridges are especially crucial to international trade between Thailand and Laos because the Mekong River itself constitutes a major part of the border between the two countries (Figure 1).

=== Figure 1 ===

As of mid-2016, there were four international bridges, commonly known as the Thai-Lao Mekong Friendship Bridges. The First Bridge between Nong Khai, a province in the northeastern Thailand, and Vientiane, the capital of Laos, was built with grant assistance from the Australian government and opened on April 8, 1994 to facilitate the cross-border movement of people, goods, and investments. The other bridges were established after 2000. The Second Bridge between Mukdahan in northeastern Thailand and Savannakhet in Central Laos, which was financed by low-interest loans to Laos and Thailand from the Japanese government, was completed on December 20, 2006. Regular service began in early 2007. Regular service on the Third Bridge, funded unilaterally by the government of Thailand to connect the Nakhon Phanom province in northeastern Thailand with the Khammouan province in central Laos, commenced at the end of 2011. The Fourth Bridge between the Chiang Rai province in northern Thailand and the Bokeo province in northern Laos, was co-financed by the governments of Thailand and China and completed in June 2013.

Although these bridges make possible an on-land link over the Mekong River, their aims are different. In Thailand's context, the First Bridge connects the capital city of Thailand and the capital city of Laos. It is used to facilitate exports from Thailand to Laos' capital city and plays a small role in the transit trade between Thailand and Vietnam. Although the distance from the First Bridge to Hanoi is relatively short, the high mountain range in the northeast toward Vietnam makes transportation to and from Vietnam very difficult. The Second Bridge, a part of the East-West Economic Corridor, is aimed to link Bangkok, the capital city of Thailand, with Da Nang, central Vietnam's third largest city. On the contrary, the use of the Third Bridge facilitates transportation by providing a shorter land route between Bangkok and Hanoi, the capital of Vietnam. The Third Bridge was built to enhance Bangkok's connection with Hanoi and beyond. The Fourth Bridge aimed to link Thailand with China's southern province of Kunming via Laos.

[5] Major economic corridors in the GMS program include the North-South Economic Corridor (NSEC), the East-West Economic Corridor (EWEC), and the Southern Economic Corridor (SEC).

Figure 2 depicts trade value by bridge in Thailand. This includes transit trade. Before the completion of the bridges, goods crossed the Mekong River by truck ferries. Therefore, even before the completion of the bridges, these figures included transactions cleared at customs for which bridges would be established in the future. The data source for this figure is the Bank of Thailand. As illustrated in Figure 2, while exports over the First Bridge were comparable to the others (*i.e.*, the Second and the Third Bridges), imports through this route were minimal. While imports via the Second Bridge increased sharply in 2007, exports via the Second Bridge increased slowly over the first few years but surpassed those of the First Bridge within five years of its completion. In Figure 3, we take a closer look at the products exported from Thailand via the Second Bridge. These data were obtained from Thai customs. They indicate a dramatic increase in the transport of vegetable and food products. As shown in Figure 2, however, the growth in trade via the Second Bridge ceased after the completion of the Third Bridge. A significant portion of trade shifted from the Second Bridge to the Third Bridge in 2013.

=== Figures 2 & 3 ===

Next, we take a closer look at Mukdahan province, in which the Second Bridge is located on the Thai side. According to the Office of the National Economic and Social Development Board, in 2011, out of the 77 Thai provinces, Mukdahan province had the 72nd largest gross provincial product (GPP), totaling 19 billion Thai bhat (THB). The population is 346,000 and is the 67th largest. It has the 55th largest GPP per capita of 54,000 THB. Thus, Mukdahan is a relatively poor province in Thailand. According to the National Statistical Office, Thailand, in 2012, around 46% of Laotian migrants to Thailand resided in the northeastern region, which includes Mukdahan. In addition, Laotians account for the largest number of foreigners living in the northeastern area and Mukdahan. Most Laotians in Mukdahan are female, accounting for 74% of all Laotian migrants.

Figure 4 shows the share of GDP of each industry in Mukdahan during the 2004-2013 period, using data from the Office of the National Economic and Social Development Board, Thailand. It indicates a decrease in service industries and an increase in agricultural industries. In 2005, the share of agricultural industries was 20%, which rose to 30% in 2011. Therefore, the establishment of the Second Bridge seemed to boost the agricultural industry in Mukdahan. Indeed, this increase is also significant in terms of its absolute value. Figure 5 shows the change in the GDP of agricultural industries in Mukdahan compared with the national GDP of Thailand, in nominal and real terms. All figures were rescaled to 2005 values. It shows a dramatic increase in nominal values in Mukdahan. Although agricultural GDP for the whole country showed a similar rate of increase until 2008, it increased more in Mukdahan thereafter. In real terms, while GDP remained constant for Thailand, Mukdahan experienced a steady increase.

=== Figures 4 & 5 ===

Lastly, we provide an overview of agricultural production by reviewing some major products. Table 1 lists separately the production quantities for primary agricultural

products in Mukdahan, the northeastern provinces (Mukdahan is one of them), and for the entire kingdom. These data were obtained from the Agricultural Statistics of Thailand, Office of Agricultural Economics. Between 2005 and 2012, the growth rate of agricultural production was slightly higher in Mukdahan (87%) than in other regions. In particular, sugar cane, tomatoes, corn, and rubber experienced a relatively considerable increase in Mukdahan as compared with other areas. The establishment of the Second Bridge boosted agricultural industries, namely, sugar cane, tomatoes, corn, and rubber products, in Mukdahan. Some of these products might be exported to Laos, Vietnam, or China. Although there are no statistics on exports by province, product, and destination, our face-to-face interview with the Mukdahan Chamber of Commerce indicated that high-quality rice and sugar cane were exported to these countries.

=== Table 1 ===

3. Empirical Framework

This section discusses first our conceptual framework to consider the effects of the international bridge on household behaviors. Then, we present our empirical model and discuss some empirical issues.

3.1. Conceptual Framework

In this sub-section, we discuss the effects of the Second Bridge on Thai households. We consider the construction of the Second Bridge in terms of the subsequent reduction in trade and migration costs. Specifically, the bridge reduced the cost of crossing the border between Thailand and Laos. Throughout this paper, we assume that the construction of the bridge had a larger effect on households near the bridge and that the effects fade the farther away the location of the household.[6]

We first considered the effects of a reduction in trade costs. In standard trade models, a reduction in trade costs changes the domestic prices of tradable goods, at least in the short run. On the one hand, this decrease in import trade costs lowers the prices of import goods and increases domestic competition for those goods. On the other hand, a reduction in export trade costs improves market access to foreign countries and generates export opportunities, resulting in an increase in the domestic prices of exported goods. These reductions in trade costs stimulate a reallocation of production resources from import sectors to export sectors. Since the export sector in northeastern Thailand is agriculture, we should expect an expansion of agriculture after the construction of the Second Bridge. Indeed, this expectation is consistent with the trends observed in the previous section. In contrast, non-agricultural sectors (*e.g.*, the machinery industry) would shrink due to higher competition in both the output and factor markets.

According to the Stolper-Samuelson theorem, owners of the factors intensively used in the production of export goods gain more from trade liberalization due to an increase in

[6] Indeed, in the empirical analysis, we examined how the impacts are different according to distance from the Second Bridge.

factor demand. In the case of the Second Bridge, males are predicted to gain from the expansion of the agricultural sector. Males have an advantage in agricultural production compared with females because agricultural production requires physical work.[7] Indeed, the share of female laborers in the agricultural sector is relatively small, as demonstrated by Do, Levchenko, and Raddatz (2016).[8] On the other hand, females, who are intensively engaged in the non-agricultural sector, suffer from a decrease in the demand for labor due to the contraction of the non-agricultural sector.

The construction of the Second Bridge also reduced the migration costs between countries. An increase in the number of migrants yielded additional wage effects. We expect Laotians to migrate to Thailand because of its higher wages. The effect of immigration on wages depends on the detailed economic environment and the gender of the migrants. Suppose that Thailand is not a small economy (*i.e.*, relative to the Mekong region), so that Thai production and consumption might change the international prices of goods. In this case, the migration of females (as found in the previous section) decreases the prices of non-agricultural goods and the wages of female workers in Thailand.[9] Therefore, the migration of females from Laos results in further decreasing female wages in Thailand.[10]

In the discussion above, we considered the effects of the Second Bridge on the wages of male and female laborers. The same can be applied to the case of elderly and young laborers. While young laborers are intensively engaged in the agricultural sector, elderly laborers work in the non-agricultural sector. Applying the discussion above to this case, we should expect the construction of the Second Bridge to increase the wages of young laborers but lower the wages of elderly laborers in Thailand. In short, the theoretical discussion above suggests that the establishment of the Second Bridge increases the wages of males and the young and decreases those of females and the elderly.

3.2. Specification

This sub-section provides the empirical framework that we employ to examine the effects of the Second Bridge's construction on Thai households. As explained later, our observation years include 2005, 2006, 2010, and 2012. Our estimation equation on a household level is specified as follows:

$$\ln Y_{hrt} = \beta \times X_r \times After_t + \mathrm{u}_h + \mathrm{u}_t + \epsilon_{hrt} \qquad (1)$$

[7] It might be a result of women's limited access to the land market.

[8] Saure and Zoabi (2014) imposed a similar assumption in their theoretical model.

[9] Unlike Asher and Novosad (2020) and Brooks and Donovan (2020), the international bridge did not increase the integration of domestic labor markets in Thailand. Combined with the lower wages in Laos, therefore, the changes in wages were not covered by internal migration.

[10] On the other hand, if Thailand was a small economy and the prices of its goods were fixed, migration did not change wages. This is because the change in the output of the sectors perfectly absorbed the increase in factor endowment. A temporary fall in wages due to an increase in the labor supply would necessarily be followed by an increase in output, and wages should rebound to their original level. Nevertheless, the relative size of the sector is affected by migration. According to the Rybcyzinski theorem, the effect of migration on sector size depends on which gender of laborers increases more. If females (males) account for a majority of the migrants to Thailand, then the non-agricultural (agricultural) sector would expand more.

Y_{hrt} indicates various outcome variables of household h in year t who live in location r. In our empirical analysis, location is defined on a sub-district level, *i.e.*, *tambon*, which is a two-lower class than a province. The first and main outcome is total income, followed by farm income because agriculture is the most important industry in Thailand's border regions, as discussed in Section 2. We then examined various expenditures and several other measures of the economy. X_r captures the geographical position of location r in terms of the Second Bridge. The variable $After_t$ takes the value of one for the years after the establishment of the Second Bridge, *i.e.*, 2010 and 2012. u_h and u_t represent household fixed effects and year fixed effects, respectively. Since in our study, households do not include those who change their location during the study period, the household fixed effect also controls for location-specific elements. ϵ_{hrt} is a disturbance term.

As the first measure to capture geographical position, we use a dummy variable that takes the value of one if location r belongs to the province in which the Second Bridge is located, *i.e.*, Mukdahan province. This measure compares the outcomes of households in Mukdahan province with the other provinces. Namely, we conducted DID analysis according to household location and the year of the Second Bridge's construction. This analysis is based on the implicit assumption that only households in Mukdahan receive the benefit of the Second Bridge's establishment. This will reveal how behavior and economic performance changed in households in Mukdahan after the establishment of the Second Bridge.

However, households in neighboring provinces apparently enjoyed some extent of the benefits of the Second Bridge. To investigate the decay of such effects according to distance from the Second Bridge, we investigated using continuous variables, *i.e.*, the direct (*DDistance*) and the road distance (*RDistance*) from the Second Bridge. While the direct distance might account for the fact that people or bicycles can travel along unpaved roads, the road distance measures the travel of cars and trucks. We computed these distances on a sub-district level, *i.e.*, *tambon*. This analysis assumes that an international bridge has a larger effect on the households closest to the bridge and that the effects fade for households located farther away. Furthermore, the use of these continuous measures plays a vital role in increasing the statistical power of our results because the number of households in Mukdahan in our estimation is not very large, especially when we divided our study households into groups according to various dimensions.

The location of the Second Bridge was not randomly chosen. If its choice was related to economic conditions, the estimate of our interest variable, β, using the ordinary least squares (OLS) method will be biased. For example, if the government chose to construct the bridge in a rich or high-growth province, the error term would be positively correlated with our cross term, *i.e.*, $X_r \times After_t$, yielding an upward bias in its coefficient. Thus, if we expect positive impacts from the bridge, the magnitude of the results would be overestimated. In contrast, the government might establish a bridge in a poor province to enhance its economic growth. In this case, the coefficient for the cross term would suffer from a downward bias. Therefore, to determine the causal effects of the Second Bridge on households, we need to address this endogeneity issue.

Our identification strategy relied on the geographical characteristics of provinces. Some geographical requirements can be considered exogenous. For example, an

international bridge must be located along the Mekong River. By definition, provinces in the central area of Thailand cannot have a bridge to Laos. In addition, since the western side of the First Bridge connects to Laos by land, the Second Bridge will be established in the northeastern region, *i.e.*, the eastern side of the First Bridge. As a result, we focused on the provinces along the river in addition to provinces next to riverside provinces. The inclusion of the latter increased the number of study observations. However, Ubon Ratchathani was excluded because a portion of this province connects to Laos by land. Therefore, our observations for estimation included households in eight provinces: Bueng Kan, Nakhon Phanom, Mukdahan, Sakon Nakhon, Kalasin, Roi Et, Yasothon, and Amnat Charoen (Figure 6).

=== Figure 6 ===

Our estimate might still be biased if differences exist in the propensity of establishing bridges in these eight provinces and those differences are related to household activity. However, we believe that such differences are insignificant. After the establishment of the Second Bridge, some other study provinces have, or will also have, international bridges to Laos. As introduced in Section 2, the Third Bridge was established in Nakhon Phanom. Also, a fifth bridge is planned for construction in Buen Kan. Indeed, pre-household performance indicators are similar among these eight provinces, as demonstrated at the end of this section. Furthermore, household fixed effects control for potential *ex-ante* differences. We also control for various confounding factors, as discussed in Section 4.2, to control for the effects of changes in other economic conditions. In addition, we conduct a placebo test to confirm that no geographical characteristics that affect the propensity of establishing a bridge are related to household activity in our study provinces. With these observations, we estimated Equation (1) using OLS to demonstrate the causal impacts of the Second Bridge on households in Thailand.[11]

Our main data source is the Panel Household Socio-Economic Surveys (Panel SESs), conducted by the National Statistical Office (NSO) of Thailand. The first 2005 panel survey covers a sample size of 6,000 households across Thailand and collects information on household member characteristics, household income, expenditures, assets, and liabilities. Stratified two-stage sampling was adopted for this survey: while the primary sampling units consisted of blocks for municipal areas and villages for non-municipal areas, the secondary sampling unit was private households. Although we have data for 2005, 2006, 2007, 2010, and 2012, we do not use 2007 data due to the starting year of the Second Bridge's operation. In addition, the Third Bridge was established in November 2011 and may affect the economic influence of the Second Bridge by changing traffic flows. However, since border trade over the Third Bridge was not yet significant in 2012, as shown in Figure 3, we included data for the year 2012.

Before showing our estimation results, we will provide an overview of some statistics.

[11] Nevertheless, our estimates might not exclude "spillover effects." For example, the income changes of households in Mukdahan might indirectly affect incomes in neighboring regions. In this case, our estimates are underestimates.

Table 2 compares total income and expenditures on a monthly basis across the provinces for a year before the establishment of the Second Bridge, 2006. We group the provinces into three distinct groups—Mukdahan (*i.e.*, the province where the Second Bridge is located), the other study provinces, and the provinces not included in our analysis. The table shows that average income and expenditures in Mukdahan are not very different from those in the other study provinces but are rather different from those of the out-of-study provinces. In short, pre-household performance indicators are similar among our study provinces. Since the number of observations is not very large, we did not restrict the study observations to those in which all variables were available. As a result, the number differs across variables. Seventy percent of our study households have a male head. The average age of the heads is 54 years old. The average number of household members is 3.8.

=== Tables 2 & 3 ===

4. Empirical Results

In this section, we report our estimation results. After presenting our baseline results on income and expenditures, we show the results when controlling for confounding factors. Lastly, we also show the results for various outcome variables.

4.1. Baseline Results

Table 4 shows the estimation results for total income. As mentioned in the previous section, we used three measures to assess the main explanatory variable; the results are provided as Models (A), (B), and (C). We computed the standard errors clustered by province for Model (A) and by sub-district for Models (B) and (C) because the bridge dummy is defined on the province level while the two distance variables were defined on the sub-district level. Column (I) lists the estimates for all households and shows no significant results. Regardless of the measurement used, this indicates that the establishment of the Second Bridge did not have a significant effect on household income on average.

=== Table 4 ===

The impact may differ according to type of household. Next, we separately estimated our model for cases in which the household head was either a male or a female or was younger or older than 50. The results are shown in Columns (II) through (V) in Table 4. In Model (A), we found a significantly positive coefficient in male heads while the coefficient was significantly negative for female or elderly heads. Therefore, there is a contrasting effect of the Second Bridge on the incomes of male heads and of female and elderly heads, which is consistent with the theoretical expectation presented in Section 3.1. The income of households with a male head in Mukdahan is 58% higher (= exp (0.459) − 1) than corresponding households in other provinces after bridge construction. On the other hand, the incomes of the households with a female head in Mukdahan was much lower (about

90%) than corresponding households in other provinces after bridge construction. Although these significant effects on female/elderly heads were no longer found in Models (B) and (C), we still see significant coefficients in households with a male head. Those are estimated to be negative, indicating that total income increased more when households with a male head lived closer to the Second Bridge. Specifically, Models (B) and (C) show that incomes of households with a male head increased by 0.33% and 0.34%, respectively, as the location of the household is closer to the Second Bridge by 1%.[12]

Next, based on the importance of agriculture in Thailand's rural regions, we examined farm incomes. It was computed as "the values of agricultural products including both sale and not for sale products (*i.e.*, farmers' own consumption)" plus "income from lending agricultural equipment" minus "expenses for agricultural production." Thus, this measure might be considered as net profits from agricultural work. The results are listed in Table 5. Since farm income might be zero if households did not engage in any agricultural work, we employed the Poisson pseudo maximum likelihood (PPML) method without taking the logarithm of farm income.[13] Similar to the results for total income, households with a male head showed significant effects. The establishment of the Second Bridge significantly increased their farm incomes. We also see a significant increase in farm income in households with a young head. On the other hand, there were no robust or significant effects in households with a female or an elderly head. This result is consistent with our discussion in the previous section in which households headed by males and the young have an advantage in agricultural production as compared with those headed by females and the elderly.

=== Table 5 ===

The differences between households with a male head versus a female head are worth noting. In our study, households with a male head tend to have a spouse while there are few households with a female head that include a spouse. Namely, females tend to be the sole head of household if their spouses are not part of their family due to divorce or bereavement. This fact implies that one cause of the difference between the two kinds of households is likely the presence and contribution of the husband. Households with a male head potentially have not only a male worker (*i.e.*, himself) but also a female worker (*i.e.*, his spouse). Nevertheless, this does not affect our expectation that households with a male head have an advantage in agricultural production compared with those with a female head because of the likely absence of a male worker, *i.e.*, the husband, in the latter case (*i.e.*, households with a female head).

We also examined another aspect of household behavior, *i.e.*, expenditures. In Table 6, we estimated our model for total expenditures. We can see the significant effects in all

[12] Males near the Second Bridge might work in its construction and earn income. This possibility increases income *before* the establishment of the Second Bridge and might underestimate, not overestimate, the positive impact on income for households with a male head.

[13] In the analyses below, we use PPML if the outcome variables can be zero. PPML deals with the bias stemming from the non-linear transformation of the dependent variables.

columns in the case of Model (A). Specifically, the establishment of the Second Bridge increased total expenditures by households with a male head but decreased expenditures by those with a female head. However, we did not discover any significant effects on any type of household (including those with a male head) in Models (B) and (C). Therefore, we did not find significant and robust effects of the Second Bridge on total expenditures. On the other hand, Table 7 demonstrates the results for food expenditures, which indicate that it decreased significantly in households with a female or a young head. We did not find significant and robust effects in households with a male or an elderly head.

=== Tables 6 & 7 ===

In the analysis above, we investigated the effects on income and expenditures on a household level. However, the results above might indicate changes driven by a change in the number of household members over time. For example, as mentioned above, the number of household members is likely to be smaller in households with a female head because of the absence of a spouse. The lower agricultural production level of households with a female head might be attributable to a change in the number of household members. To control for this possibility, we computed the outcome variables on a per capita basis by dividing the outcome variables by the number of household members. The estimation results are shown in Table 8.[14] The robust results, which are significant for all three types of independent variables and similar to results listed in previous tables, are the increase in farm income of households with a male or a young head and the decrease in food expenditures of households with a young head. Therefore, the decrease in food expenditures of households with a female head seen in Table 6 might be due to a decline in the number of family members.

=== Table 8 ===

4.2. Confounding Factors and Placebo Tests

In this sub-section, we first consider several confounding factors regarding household behaviors. If those factors are related to geographical proximity to the bridge, our estimates do not show the pure effects of the bridge's construction. First, government policy on foreign direct investment (FDI) might affect household income. Specifically, the Thai government adopted a placed-based policy to attract FDI from foreign countries. In general, a longer tax exemption period is granted to foreign firms located in regions farther from Bangkok, *i.e.*, more rural regions. Thus, the difference in benefits from this placed-based FDI policy between areas might affect household income due to the increased entry of foreign firms or an increased number of job opportunities with higher wages. However, such a policy was set on a province level in Thailand and did not change during our observation period. Therefore, the household fixed effect contributed to controlling for this effect.

Second, a disparity in minimum wage rates between regions obviously yields a

[14] More detailed results are provided in Tables A2-A5 in the Appendix. The impact of the number of household members is explored in Section 4.3 and Table 15.

difference in average income. Furthermore, such a wage disparity would be related to geographical position relative to national borders. Although minimum wage rates are set on a province level as with FDI policy, they do change over time, even during our observation period. Thus, we controlled for the minimum wage, of which the data were obtained from the National Wage Committee's Notification under the Ministry of Labour, published in the Government Gazette. The results for the main explanatory variables are shown in Table 9.[15] As in the previous tables, we found a significant increase in income, especially of farm income, in households with a male head.

=== Table 9 ===

Third, trade liberalization naturally has the potential of affecting household behavior differently according to geographical position, as found in previous studies. As in Dai *et al.* (2019), we introduced regional tariff rates in Thailand into our model. Since most favored nation rates do not change over time during our observation period, we focused on the reduction of tariff rates for Association of Southeast Asian Nations (ASEAN) free trade agreement (*i.e.*, ATIGA rates), which is a regional trade agreement among ASEAN countries. We constructed regional tariffs in the same manner proposed by previous studies. Specifically, we first computed the simple average of the ATIGA rates on a four-digit level of the ISIC Revision 3 for each year. Then, using total manufacturing sales for 2006 by district and four-digit ISIC code as a weight, we took a weighted average of ATIGA rates by district and year. The data on tariff rates and total sales were obtained from Customs and the Manufacturing Census, respectively. Table 9 reports the estimation results and demonstrates a significant increase in farm income for households with a male or young head in addition to a significant decrease in food expenditures for households with a female or young head.[16]

=== Table 10 ===

Last, we consider the effects of the 2008/2009 financial crisis because it occurred during our observation period and should have an impact on households.[17] Specifically, export-intensive regions might suffer from larger negative effects of the crisis on income. Furthermore, export intensity might be related to geographical position against national

[15] In this sub-section, the results for additional variables are available in the Appendix. Tables A6 through A9 in the Appendix show that while most of the coefficients for the minimum wage rate are statistically insignificant, it has a significantly negative impact on farm incomes of households with male or young heads.

[16] Tables A10 through A13 in the Appendix show that while the tariff rate defined on a district level has statistically insignificant coefficients for most outcome variables, the reduction of the tariff rate has a positive impact on farm incomes of households with female or elderly heads. This result in tariffs contrasts with the case of the bridge construction.

[17] Klasen, Lechtenfeld, and Povel (2015) investigated the vulnerability of female-headed households in Thailand and Vietnam and found no significant difference between male-headed and female-headed households in Thailand.

borders. To control for this channel, we introduced the share of total exports of total sales in manufacturing in 2006 on a district level, in addition to its interaction terms, with annual dummy variables. This variable was computed using the Manufacturing Census. Table 11 reports the estimation results and shows a significant increase in farm income in households with male or young heads. The significant decrease in farm income can also be found in households with elderly heads. Furthermore, the table shows a significant reduction in food expenditures in households with female or young heads.[18]

=== Table 11 ===

Next, we conducted a placebo test. As discussed in Section 3.2, we believe that in our study provinces, no geographical characteristics that affect the propensity of establishing an international bridge are related to household activity. To check the validity of this argument, we examined the effects of direct and road distances from the Third Bridge, rather than the Second Bridge, by using interaction terms for those distances using a dummy variable that takes the value of one for 2010 and 2012 and the value of zero otherwise. Although the Third Bridge was completed at the end of 2011, its full use started in 2013, as noted in Figure 2. Therefore, we will not find any significant effects in the interaction terms. The results are listed in Table 12. As expected, no coefficients were significantly estimated. This result partly supports the argument that our results for the Second Bridge were not driven by geographical characteristics that affect the propensity of establishing an international bridge.

=== Table 12 ===

4.3. Other Indicators

In this last sub-section, we examine three sets of outcome variables. The first includes various types of expenditures, including those on housing, health, education, recreation, transportation, personal activity (*e.g.*, shopping), and social activity (*e.g.*, donations to charities or churches). Table 13 reports the estimation results. The significant and robust results are the following. Housing expenditures increase in households with a male or young head, but decrease in those with a female head. This is consistent with the results for farm income. Therefore, housing expenditures might be sensitive to farm income in our study regions. A significant increase in health expenditures can be found in all types of households.[19] Education expenditures increase significantly in households with a young head. Households with a male head significantly increase personal and social expenditures. Although some of these results are difficult to interpret in the context of an international

[18] In addition to these confounding factors, we also tried to control for government expenditure. However, before 2008, the provincial budget was part of a national ministries' budget, such as the Ministry of Interior. Therefore, it is difficult to identify the specific amount of the provincial budget for the early years of our observation period.

[19] The increase in health expenditures might be due to the rise in prices for private medical treatments. Indeed, the number of outpatient department visits dramatically increased in Mukdahan after the establishment of the Second Bridge (*i.e.*, from 461,710 in 2004 to 625,699 in 2012).

bridge, we found significantly heterogeneous effects in the detailed components of expenditures.

=== Table 13 ===

The second set includes agriculture-related items, including the agricultural land area, number of agricultural workers, number of tractors (*e.g.*, farm trucks, two-wheel tractors, or four-wheel tractors), and value of tractors. The estimation results are listed in Table 14. It indicates a significant increase in agricultural land area and in the value of tractors in households with a male or young head. In addition, a significant increase can be observed in the number of farmworkers and tractors in households with a young head. In Section 4.1, we found a significant increase in farm income in households with a male or young head. Such households might increase their agricultural production by expanding land area, increasing their number of workers, and expanding their facilities. Specifically, taking a closer look at the raw data for households with a young head, we can see that young female heads or the spouses of young male heads tend to contribute to agricultural work.[20]

=== Table 14 ===

The last set includes some other outcome variables, including the number of household members, the savings ratio (*i.e.*, savings divided by income), the debt ratio (*i.e.*, debt divided by income), and income/support from the government. Table 15 shows a significant decrease in the number of family members in households with a female head in addition to a significant increase in the savings and debt ratios in households with a young head. The former result is consistent with our findings discussed in Section 4.1. Indeed, taking a closer look at the raw data, we can observe that in households with a female head, their grandchildren tend to drop from their households. He or she might move to other areas (*e.g.*, Bangkok) for work.[21] In households with a young head, while the increase in the savings ratio might result from an increase in farm income, the increase in the debt ratio might be attributable to purchases of agricultural land or facilities, as listed in Table 14.[22]

=== Table 15 ===

[20] The labor participation of women is different from the "added worker effect," which is an increase in married women's labor supply in response to their husbands' unemployment (Stephens, 2002). Rather, women joined agricultural production to support their husbands and increase production.

[21] This migration of grandchildren is motivated by factors different from those in Kaplan (2012), which was demonstrated in the US, where co-residence of children with their parents is a valuable form of insurance, particularly for young people from poorer families. Grandchildren move to other areas for work to financially contribute to their families, although Antman (2013) found no significant change in financial contribution when one child migrated from Mexico to the US.

[22] It might be puzzling that both the savings and debt ratios increased in households with a young head. They might have gotten good mortgage rates on loans from Specialized Financial Institutions.

5. Concluding Remarks

The establishment of an international bridge contributes to decreasing transportation costs of both goods and people between countries. Namely, it might result in not only reducing trade costs but also in changing the potential labor supply and level of demand. In this paper, we investigated the impact of the establishment of the Second Bridge, which connects Thailand and Laos, on households in Thailand. Indeed, after the establishment of the Second Bridge, international trade and people's movement across this bridge increased significantly. The lives of people in the border regions of Thailand seemed to change dramatically after the establishment of the Second Bridge. Specifically, given that the border regions in Thailand have a comparative advantage in agricultural production, our theoretical discussion suggests that the Second Bridge should be expected to increase male income and decrease female income in the border regions.

We empirically examined how the Second Bridge affected household behaviors, expenditures, and incomes in Thailand's border regions using household survey data from Thailand. Our analyses demonstrated that the expansion of agricultural production played a key role in the impact of the bridge on income. We found that incomes, especially farm incomes, increased in households with a male or young head, who have an advantage in agricultural production. Indeed, they also increased farmland, the number of agricultural workers, and debt ratios, perhaps due to agricultural investment. On the other hand, incomes decreased in households with a female or an elderly head. In short, incomes only increased in households that succeeded in expanding production in the industry in which border regions had a comparative advantage, *i.e.*, agricultural production.

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Table 1. Agricultural Production by Major Product (Tons, %)

	Mukdahan			Northeast provinces			The Whole Kingdom		
	2005	2012	Growth	2005	2012	Growth	2005	2012	Growth
Food crops									
Sugarcane	559,889	1,191,323	113	18,784,025	37,209,173	98	49,586,360	98,400,465	98
Cassava	247,511	394,733	59	8,719,235	15,641,373	79	16,938,245	29,848,491	76
Rice	118,932	135,852	14	10,927,557	13,941,942	28	29,773,750	39,469,250	33
Oil crops									
Oil palm	174	422	143	17,930	60,787	239	8,162,703	11,312,301	39
Vegetables									
Tomatoes	825	1,783	116	144,103	70,274	-51	196,322	123,620	-37
Corn	3,683	4,844	32	84,277	73,845	-12	435,937	420,862	-3
Rubber	1,991	14,982	652	84,162	402,348	378	2,795,876	3,897,093	39
Total	933,005	1,743,939	87	38,761,289	67,399,742	74	107,889,193	183,472,082	70

Source: Authors' computation using the Agricultural Statistics of Thailand, Office of Agricultural Economics.

Table 2. Average of Household Monthly Income and Monthly Expenditures, 2006

	# of HHs		Income	Expenditure
Mukdahan	29	Mean	8,158	6,016
		S.D.	13,676	4,827
Other provinces in our study	386	Mean	6,025	5,301
		S.D.	10,310	3,996
The other provinces	5,192	Mean	17,159	11,212
		S.D.	33,313	11,346
Total	5,607	Mean	16,346	10,778
		S.D.	32,313	11,080

Source: Authors' computation using the Household Socio-Economic Surveys.
Notes: "S.D." refers to standard deviations. Income and expenditures are measured in Thai baht.

Table 3. Basic Statistics

	Unit	Obs	Mean	Std. Dev.	Min	Max
1 for Male head	0/1	1,685	0.7	0.5	0	1
Head's age	Number	1,640	54	13	20	97
Number of household members	Number	1,685	3.8	1.7	1	12.0
Income	THB	1,131	11,558	16,486	22.0	231,460
Farm income	THB	1,675	27,691	46,500	0	992,200
Expenditure	THB	1,672	6,532	6,929	5.0	114,409
Food expenditure	THB	1,646	2,994	3,042	5.0	66,000
Housing expenditure	THB	1,685	438	977	0	16,600
Health expenditure	THB	1,685	138	596	0	18,333
Education expenditure	THB	1,685	311	917	0	18,000
Recreation expenditure	THB	1,685	72	181	0	3,000
Transportation expenditure	THB	1,685	1,168	2,336	0	34,500
Personal activity expenditure	THB	1,685	429	695	0	12,259
Social activity expenditure	THB	1,685	297	588	0	16,700
Agricultural land area	Rai	1,685	11	15	0	420
Number of agricultural workers	Number	1,685	1.7	1.2	0	6
Number of tractors	Number	1,685	0.6	1.4	0	22
Value of tractors	THB	1,685	34,161	318,238	0	11,800,000
Saving ratio	THB/THB	1,131	0.4	3.2	0	102
Debt ratio	THB/THB	1,131	25	135	0	3,846
Income from government	THB	1,685	585	3,817	0	130,000

Source: Authors' computation using the Household Socio -Economic Surveys.
Notes: The number of observations differs by variable. Although some variables are taken in logs in the estimation, this table reports the values before taking the log. One Rai is equivalent to 1,600 square meters.

Table 4. Baseline Results for Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.184	0.459***	-2.291***	-0.226**	-0.228
		[0.123]	[0.118]	[0.158]	[0.092]	[0.135]
	Number of obs	1,055	740	271	536	450
	R-squared	0.5238	0.5451	0.4731	0.5468	0.5744
Model (B)						
	ln DDistance * After	-0.196	-0.423*	0.862	-0.038	-0.021
		[0.231]	[0.236]	[0.560]	[0.307]	[0.232]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5256	0.5501	0.463	0.5518	0.5709
Model (C)						
	ln RDistance * After	-0.18	-0.405*	0.618	-0.028	-0.034
		[0.220]	[0.227]	[0.530]	[0.296]	[0.226]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5255	0.5497	0.456	0.5518	0.5709

Notes: This table reports the estimation results for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge.

Table 5. Baseline Results for Farm Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.466***	0.610***	0.052	-0.342**	0.922***
		[0.132]	[0.093]	[0.189]	[0.148]	[0.141]
	Number of obs	1,488	1,016	410	878	529
	Log pseudolikelihood	-11357427.3	-6965849.4	-3544857.96	-6879574.48	-3296696.68
Model (B)						
	ln DDistance * After	-0.223	-0.372**	0.174	0.144	-0.525***
		[0.151]	[0.165]	[0.405]	[0.217]	[0.151]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11289422.7	-6960174.21	-3534787.23	-6799422.52	-3326196.98
Model (C)						
	ln RDistance * After	-0.157	-0.323*	0.377	0.207	-0.496***
		[0.162]	[0.171]	[0.354]	[0.211]	[0.152]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11316210.9	-6986796.16	-3518285.1	-6786878.36	-3336139.66

Notes: This table reports the estimation results for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge.

Table 6. Baseline Results for Total Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.118*	0.117*	-0.417***	0.234***	0.144**
		[0.055]	[0.056]	[0.087]	[0.057]	[0.049]
	Number of obs	1,660	1,122	485	998	587
	R-squared	0.4806	0.5106	0.4943	0.463	0.5076
Model (B)						
	ln DDistance * After	-0.08	-0.182	0.343	-0.099	-0.099
		[0.142]	[0.128]	[0.250]	[0.232]	[0.135]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4834	0.5147	0.5096	0.4693	0.5056
Model (C)						
	ln RDistance * After	-0.047	-0.153	0.32	-0.049	-0.077
		[0.131]	[0.122]	[0.222]	[0.200]	[0.135]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4831	0.5139	0.5098	0.4689	0.5052

Notes: This table reports the estimation results for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge.

Table 7. Baseline Results for Food Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.237**	-0.128	-1.402***	-0.208**	-0.237***
		[0.080]	[0.086]	[0.082]	[0.073]	[0.062]
	Number of obs	1,632	1,109	474	979	579
	R-squared	0.3747	0.4047	0.3715	0.3877	0.3968
Model (B)						
	ln DDistance * After	0.161	0.03	0.624**	0.098	0.206**
		[0.166]	[0.178]	[0.238]	[0.281]	[0.099]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.372	0.4039	0.3619	0.3855	0.3955
Model (C)						
	ln RDistance * After	0.189	0.072	0.533**	0.148	0.214**
		[0.149]	[0.170]	[0.205]	[0.238]	[0.101]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3732	0.4043	0.3586	0.3866	0.3962

Notes: This table reports the estimation results for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge.

Table 8. Incomes and Expenditures per Capita

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Income					
Bridge * After	0.229	0.497***	-1.964***	-0.284**	-0.22
ln DDistance * After	-0.166	-0.38	0.668	0.053	-0.01
ln RDistance * After	-0.145	-0.35	0.449	0.073	-0.026
Farm income					
Bridge * After	0.627***	0.740***	0.650***	0.269**	0.897***
ln DDistance * After	-0.252	-0.419***	0.052	0.03	-0.446***
ln RDistance * After	-0.185	-0.370**	0.215	0.087	-0.395**
Expenditure					
Bridge * After	0.156**	0.124**	0.064	0.343***	0.083
ln DDistance * After	-0.12	-0.187	0.074	-0.182	-0.054
ln RDistance * After	-0.085	-0.152	0.078	-0.12	-0.031
Food expenditure					
Bridge * After	-0.198**	-0.119	-0.919***	-0.098	-0.303***
ln DDistance * After	0.125	0.023	0.37	0.022	0.253**
ln RDistance * After	0.154	0.07	0.304	0.08	0.263**

Notes: This table reports the estimation results for variables on a per capita basis. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A2-A5 in the Appendix.

Table 9. Confounding Factor: Controlling Minimum Wages

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Income					
Bridge * After	0.185	0.443*	-2.295***	-0.243*	-0.274
ln DDistance * After	-0.209	-0.437*	0.874	-0.023	0.012
ln RDistance * After	-0.192	-0.418*	0.628	-0.012	-0.004
Farm income					
Bridge * After	0.382***	0.518***	-0.061	-0.382**	0.664***
ln DDistance * After	-0.131	-0.278*	0.194	0.188	-0.239
ln RDistance * After	-0.065	-0.225	0.381	0.25	-0.227
Expenditure					
Bridge * After	0.166***	0.160*	-0.338***	0.286***	0.185***
ln DDistance * After	-0.136	-0.247*	0.307	-0.172	-0.147
ln RDistance * After	-0.098	-0.213*	0.286	-0.114	-0.118
Food expenditure					
Bridge * After	-0.191**	-0.083	-1.363***	-0.156**	-0.228**
ln DDistance * After	0.119	-0.022	0.606**	0.036	0.211*
ln RDistance * After	0.152	0.026	0.516**	0.093	0.220*

Notes: This table reports the estimation results for only the main variables. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include the log of minimum wages in addition to household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A6-A9 in the Appendix.

Table 10. Confounding Factor: Controlling Tariffs

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Income					
Bridge * After	0.132	0.411**	-2.331***	-0.300**	-0.207
ln DDistance * After	-0.175	-0.400*	0.873	-0.011	-0.035
ln RDistance * After	-0.16	-0.382*	0.628	-0.001	-0.047
Farm income					
Bridge * After	0.533***	0.595***	0.426***	-0.272**	1.012***
ln DDistance * After	-0.247	-0.356**	-0.11	0.123	-0.567***
ln RDistance * After	-0.179	-0.307*	0.077	0.18	-0.533***
Expenditure					
Bridge * After	0.123*	0.128*	-0.404***	0.244***	0.135**
ln DDistance * After	-0.082	-0.187	0.337	-0.102	-0.094
ln RDistance * After	-0.048	-0.158	0.314	-0.052	-0.072
Food expenditure					
Bridge * After	-0.232**	-0.093	-1.411***	-0.189**	-0.240**
ln DDistance * After	0.158	0.016	0.631**	0.093	0.209**
ln RDistance * After	0.187	0.058	0.542**	0.142	0.217**

Notes: This table reports the estimation results for only the main variables. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include a log of tariffs in addition to household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A10-A13 in the Appendix.

Table 11. Confounding Factor: Controlling Export Structure

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Income					
Bridge * After	0.189	0.484***	-2.310***	-0.234**	-0.204
ln DDistance * After	-0.187	-0.398	0.833	-0.087	0.092
ln RDistance * After	-0.172	-0.38	0.608	-0.07	0.071
Farm income					
Bridge * After	0.511***	0.644***	0.19	-0.281*	0.975***
ln DDistance * After	-0.167	-0.324*	0.394	0.353**	-0.519***
ln RDistance * After	-0.104	-0.27	0.527	0.417***	-0.481***
Expenditure					
Bridge * After	0.126*	0.131*	-0.413***	0.245**	0.145**
ln DDistance * After	-0.061	-0.151	0.344	-0.065	-0.099
ln RDistance * After	-0.026	-0.122	0.32	-0.016	-0.076
Food expenditure					
Bridge * After	-0.231**	-0.119	-1.403***	-0.204**	-0.233**
ln DDistance * After	0.191	0.071	0.624**	0.135	0.225**
ln RDistance * After	0.22	0.112	0.535**	0.181	0.234**

Notes: This table reports the estimation results for only the main variables. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include the share of exports of total sales in 2006 and its interaction terms with year fixed effects, in addition to household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A14-A17 in the Appendix.

Table 12. Placebo Tests: Distances from the Third Bridge

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Income					
ln DDistance * After	-0.213	-0.226	-0.212	-0.136	-0.189
ln RDistance * After	-0.207	-0.247	-0.146	-0.115	-0.175
Farm income					
ln DDistance * After	-0.088	-0.191	0.258	0.106	-0.179
ln RDistance * After	-0.112	-0.231	0.28	0.107	-0.27
Expenditure					
ln DDistance * After	0.013	-0.043	0.088	-0.004	0.033
ln RDistance * After	0.014	-0.059	0.158	-0.001	0.024
Food expenditure					
ln DDistance * After	0.031	0.049	-0.002	0.028	0.055
ln RDistance * After	0.06	0.046	0.112	0.045	0.118

Notes: This table reports the estimation results for only the main variables. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon. All specifications include household fixed effects and year fixed effects. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the Third Bridge. "ln RDistance" is the log of the road distance from the Third Bridge. More detailed results are provided in Tables A18-A21 in the Appendix.

Table 13. Impacts on Various Expenditures

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Housing					
Bridge * After	0.744***	0.988***	-1.033***	-0.255*	1.312***
ln DDistance * After	-0.545**	-0.865***	0.654**	0.093	-1.097***
ln RDistance * After	-0.533**	-0.856***	0.565*	0.022	-1.067***
Health					
Bridge * After	2.285***	1.405***	4.490***	2.711***	2.284***
ln DDistance * After	-1.414***	-0.914***	-2.092***	-1.811***	-1.202***
ln RDistance * After	-1.335***	-0.884***	-1.980**	-1.719***	-1.125***
Education					
Bridge * After	0.242	0.153	-0.981***	0.151	0.691***
ln DDistance * After	-0.295	-0.098	-0.401	0.177	-0.838***
ln RDistance * After	-0.289	-0.08	-0.406	0.128	-0.823***
Recreation					
Bridge * After	-0.235**	-0.503***	1.234***	-0.209***	-0.658***
ln DDistance * After	-0.052	-0.032	-0.12	0.204	-0.091
ln RDistance * After	-0.044	-0.033	-0.078	0.222	-0.152
Transportation					
Bridge * After	-0.02	-0.045	-0.352**	-0.601***	0.584***
ln DDistance * After	0.028	0.023	-0.184	0.426*	-0.407
ln RDistance * After	0.046	0.014	-0.146	0.411*	-0.32
Personal activity					
Bridge * After	0.054	0.233**	-1.110***	0.313**	0.059
ln DDistance * After	-0.231*	-0.363***	0.419	-0.236	-0.315
ln RDistance * After	-0.189	-0.314**	0.357	-0.154	-0.334
Social activity					
Bridge * After	0.315**	0.474***	-0.367	0.146	0.481***
ln DDistance * After	-0.176	-0.454***	0.471	-0.015	-0.335
ln RDistance * After	-0.153	-0.430***	0.441	0.007	-0.339

Notes: ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A22-A28 in the Appendix.

Table 14. Impacts on Agricultural Variables

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Agricultural land area					
Bridge * After	0.328***	0.240**	0.405***	0.046	0.423*
ln DDistance * After	-0.269**	-0.267*	0.079	0.049	-0.697***
ln RDistance * After	-0.291**	-0.312**	0.117	0.059	-0.782***
Number of agricultural workers					
Bridge * After	0.095***	0.084***	0.046	0.207***	0.084***
ln DDistance * After	-0.018	-0.064	0.236	-0.01	-0.061
ln RDistance * After	0.004	-0.059	0.304*	0.022	-0.068*
Number of tractors					
Bridge * After	0.553***	0.676***	-0.087	0.228**	0.876***
ln DDistance * After	-0.297	-0.367	-0.078	-0.009	-0.535***
ln RDistance * After	-0.284	-0.353	-0.086	-0.045	-0.466**
Value of tractors					
Bridge * After	2.155***	2.521***	-1.570***	0.03	3.179***
ln DDistance * After	-1.204***	-1.516***	0.317	0.118	-2.155***
ln RDistance * After	-1.111**	-1.441***	0.254	0.112	-1.849***

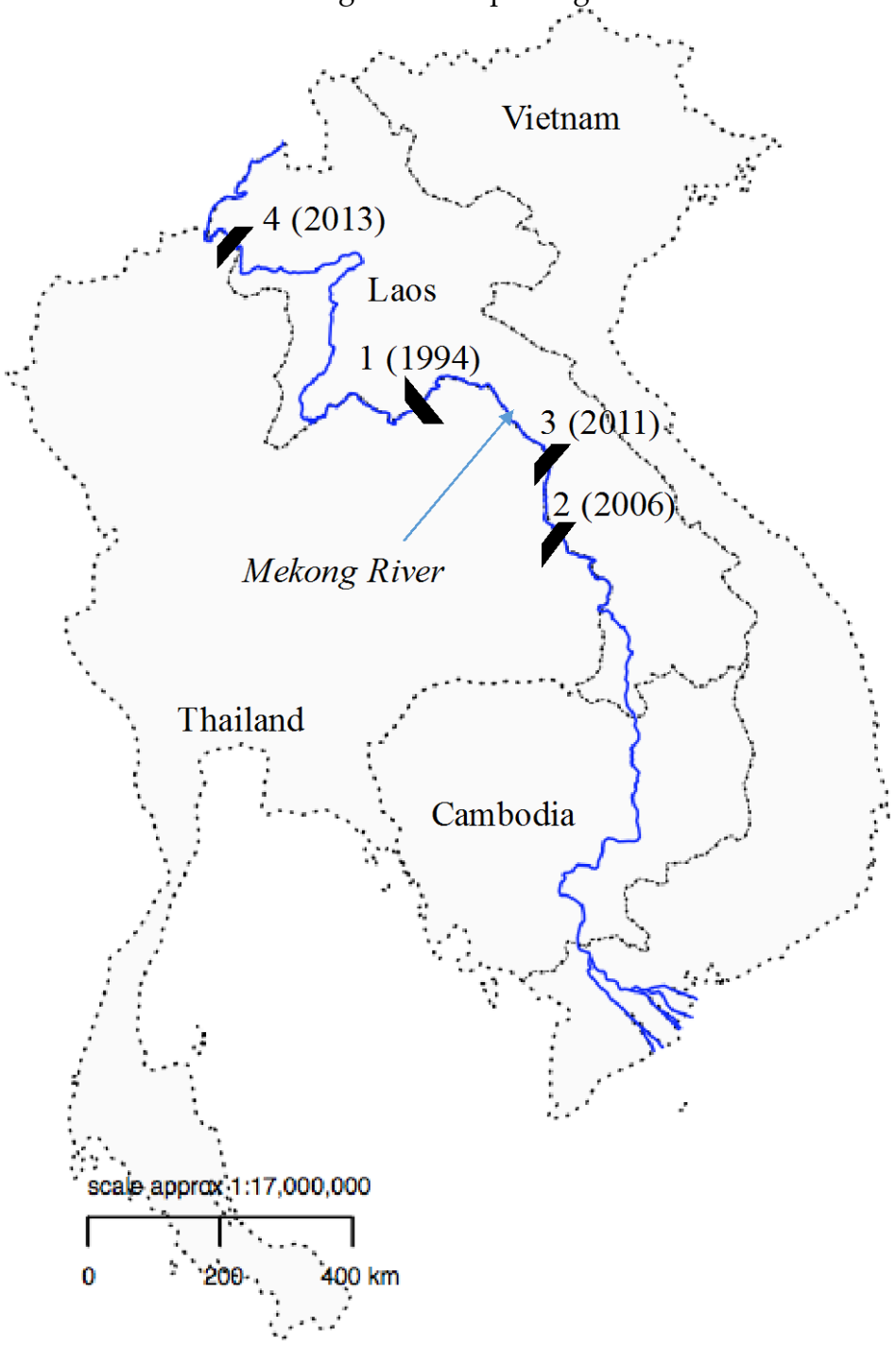
Notes: ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A29-A32 in the Appendix.

Table 15. Impacts on Other Indicators

	(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Number of household members					
Bridge * After	-0.033*	-0.005	-0.471***	-0.101***	0.061
ln DDistance * After	0.04	0.007	0.268**	0.084	-0.045
ln RDistance * After	0.041	0.002	0.246**	0.077	-0.047
Saving ratio					
Bridge * After	1.436***	1.419***	1.487***	1.171***	0.857***
ln DDistance * After	-0.07	0.223	-0.738	0.828	-0.553**
ln RDistance * After	-0.076	0.261	-0.695	0.693	-0.540**
Debt ratio					
Bridge * After	-0.237	-0.682**	2.552***	-0.227**	1.488***
ln DDistance * After	0.148	0.598	-0.873	0.854**	-1.008***
ln RDistance * After	0.093	0.561	-0.766	0.734**	-0.941***
Income from government					
Bridge * After	1.052***	0.831***	2.238***	1.022***	-0.504**
ln DDistance * After	-0.113	-0.335	0.165	-0.546	-0.022
ln RDistance * After	0.015	-0.379	0.545	-0.6	-0.038

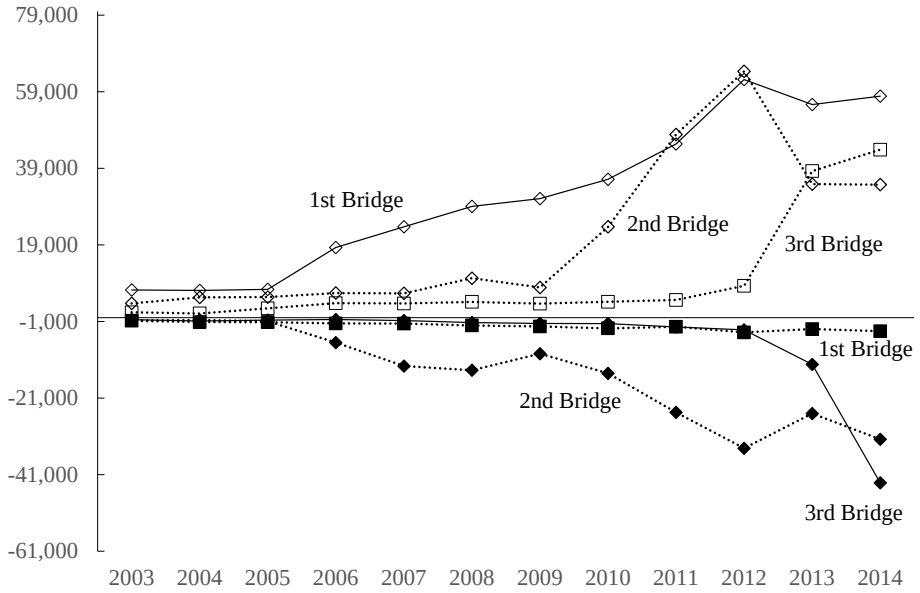
Notes: ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Standard errors are computed by clustering by tambon (province) when examining the interaction with the bridge (ln DDistance and ln RDistance). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in other provinces. "After" takes the value of one for 2010 and 2012 and zero for 2005 and 2006. "ln DDistance" is the log of the direct distance from the bridge. "ln RDistance" is the log of the road distance from the bridge. More detailed results are provided in Tables A33-A36 in the Appendix.

Figure 1. Locations of Thai-Lao Mekong Friendship Bridges



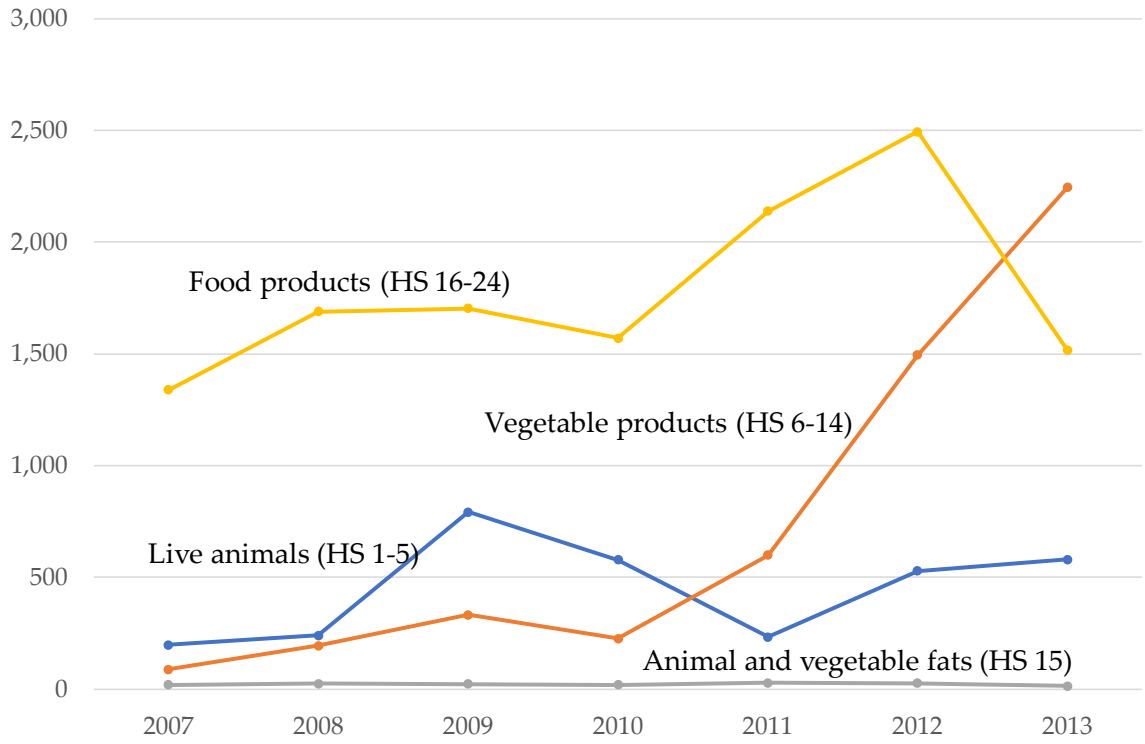
Source: Authors' compilation.
Note: The year of completion appears in parentheses.

Figure 2. Trade Values by Thailand across Thai-Lao Friendship Bridges (in millions of THB)



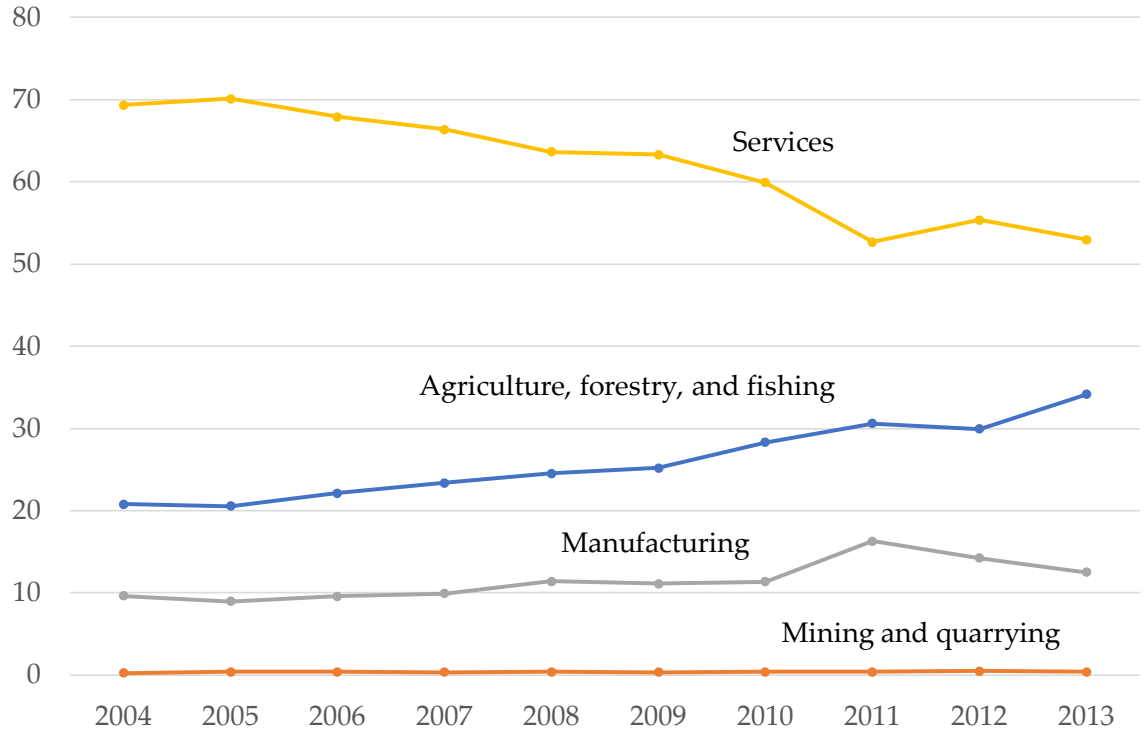
Source: Bank of Thailand.
Notes: The figures include transit trade values. Positive and negative values indicate exports and imports, respectively.

Figure 3. Exports of Agricultural Products from Thailand via the Second Bridge (in millions of THB)



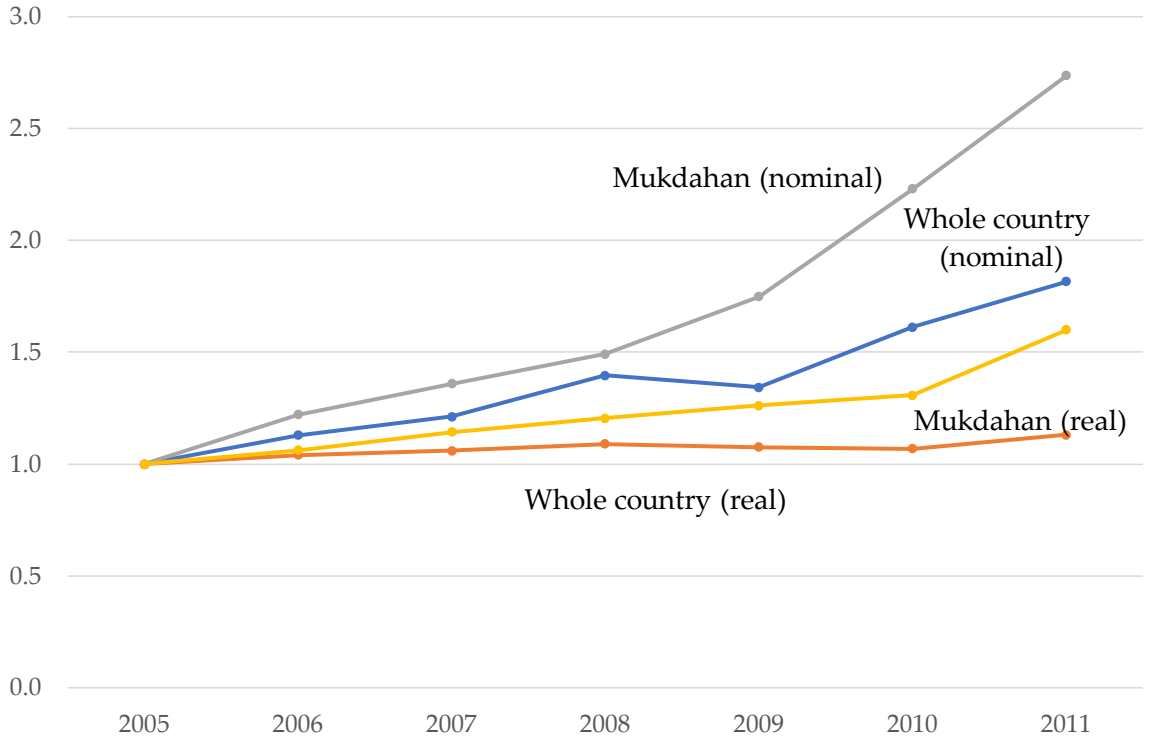
Source: Customs, Kingdom of Thailand.

Figure 4. GDP Share of Each Industry in Mukdahan Province (%)



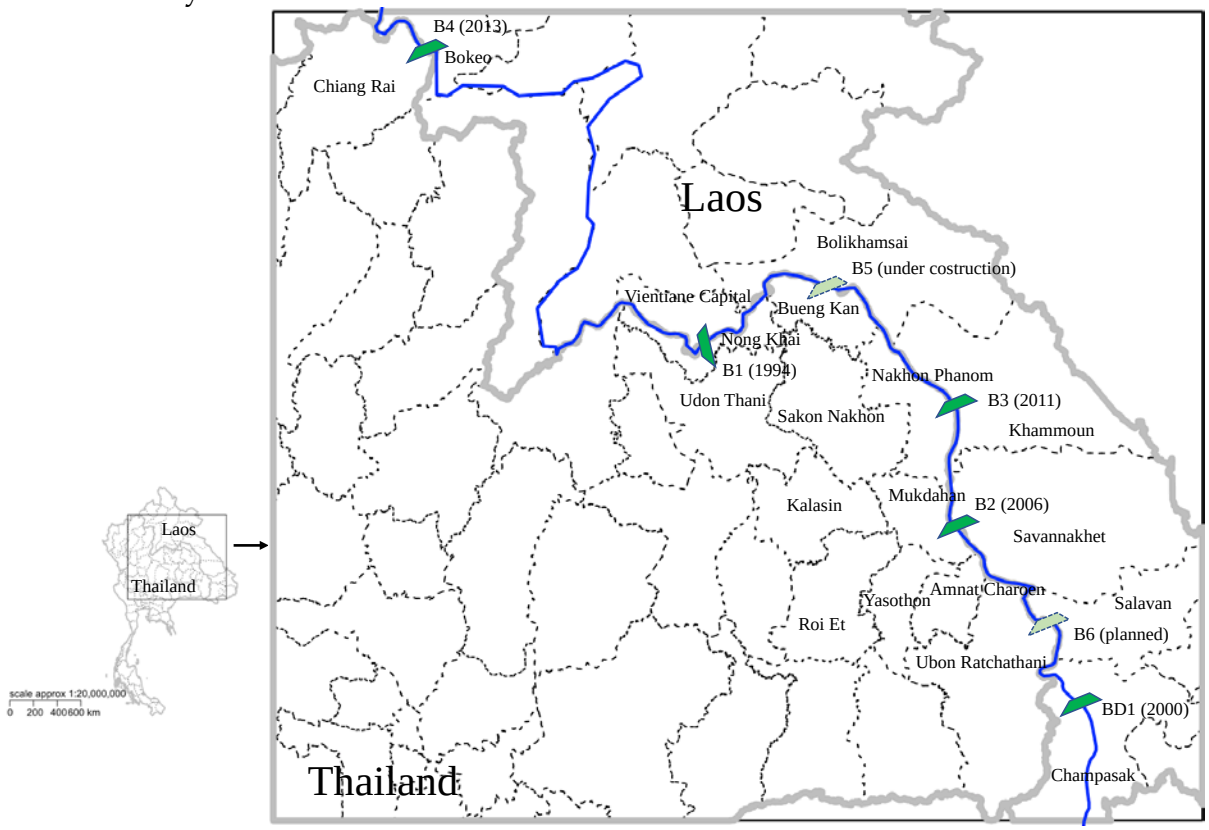
Source: Gross Regional and Provincial Product (GPP) by the Office of the National Economic and Social Development Board.

Figure 5. GDP in Agriculture



Source: Office of the National Economic and Social Development Board, Kingdom of Thailand.
Note: Figures are rescaled so that the value becomes one in 2005.

Figure 6. Our Study Provinces



Source: Authors' compilation

Online Appendix for "Impacts of International Bridge on Household: Evidence from Household Panel Data in Thailand"

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Appendix A. Tables

Table A1. Number of Household in Our Study

	2005	2006	2010	2012
Yasothon	50	51	48	48
Amnat Charoen	40	37	36	35
Roi Et	90	92	87	85
Kalasin	80	84	82	81
Sakon Nakhon	80	78	79	78
Nakhon Phanom	60	59	58	53
Mukdahan	30	29	28	27

Source: Authors' computation

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Table A2. Income per Capita

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.229	0.497***	-1.964***	-0.284**	-0.22
		[0.125]	[0.117]	[0.172]	[0.088]	[0.140]
	Number of obs	1,055	740	271	536	450
	R-squared	0.5208	0.5211	0.5334	0.5307	0.6021
Model (B)						
	ln DDistance * After	-0.166	-0.38	0.668	0.053	-0.01
		[0.236]	[0.237]	[0.554]	[0.304]	[0.213]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5207	0.522	0.5247	0.5345	0.5982
Model (C)						
	ln RDistance * After	-0.145	-0.35	0.449	0.073	-0.026
		[0.226]	[0.229]	[0.523]	[0.291]	[0.211]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5204	0.5212	0.5199	0.5346	0.5982

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A3. Farm Income per Capita

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.627***	0.740***	0.650***	0.269**	0.897***
		[0.139]	[0.098]	[0.218]	[0.134]	[0.184]
	Number of obs	1,488	1,016	410	878	529
	Log pseudolikelihood	-3443183.6	-2039792.8	-1144793.7	-2185076.5	-930047.77
Model (B)						
	ln DDistance * After	-0.252	-0.419***	0.052	0.03	-0.446***
		[0.161]	[0.157]	[0.414]	[0.258]	[0.159]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-3450203	-2053564.2	-1147456.5	-2168501.9	-945287.21
Model (C)						
	ln RDistance * After	-0.185	-0.370**	0.215	0.087	-0.395**
		[0.169]	[0.164]	[0.385]	[0.251]	[0.169]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-3458858.8	-2061646.1	-1145249.6	-2167470.5	-949691.91

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A4. Total Expenditure per Capita

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.156**	0.124**	0.064	0.343***	0.083
		[0.043]	[0.049]	[0.070]	[0.055]	[0.052]
	Number of obs	1,660	1,122	485	998	587
	R-squared	0.464	0.4928	0.4424	0.4144	0.5427
Model (B)						
	ln DDistance * After	-0.12	-0.187	0.074	-0.182	-0.054
		[0.122]	[0.128]	[0.213]	[0.207]	[0.166]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4677	0.4936	0.4576	0.4218	0.5412
Model (C)						
	ln RDistance * After	-0.085	-0.152	0.078	-0.12	-0.031
		[0.115]	[0.123]	[0.196]	[0.181]	[0.164]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4671	0.4925	0.4577	0.4206	0.541

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A5. Food Expenditure per Capita

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.198**	-0.119	-0.919***	-0.098	-0.303***
		[0.072]	[0.082]	[0.077]	[0.072]	[0.074]
	Number of obs	1,632	1,109	474	979	579
	R-squared	0.363	0.3819	0.3165	0.3441	0.4272
Model (B)						
	ln DDistance * After	0.125	0.023	0.37	0.022	0.253**
		[0.150]	[0.179]	[0.225]	[0.255]	[0.114]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.357	0.3742	0.31	0.3368	0.4254
Model (C)						
	ln RDistance * After	0.154	0.07	0.304	0.08	0.263**
		[0.136]	[0.170]	[0.202]	[0.218]	[0.114]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.358	0.3748	0.308	0.3374	0.4263

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A6. Controlling Minimum Wages: Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.185	0.443*	-2.295***	-0.243*	-0.274
		[0.157]	[0.196]	[0.129]	[0.120]	[0.166]
	ln Minimum wage	0.078	-2.64	-0.923	-3.532	-6.779
		[16.633]	[20.485]	[12.190]	[14.558]	[14.744]
	Number of obs	1,055	740	271	536	450
	R-squared	0.5231	0.5442	0.47	0.5457	0.5736
Model (B)						
	ln DDistance * After	-0.209	-0.437*	0.874	-0.023	0.012
		[0.234]	[0.241]	[0.570]	[0.297]	[0.236]
	ln Minimum wage	2.214	2.125	-3.008	-2.459	-5.168
		[8.288]	[13.253]	[19.481]	[13.455]	[10.294]
	Number of obs	1,050	735	271	534	447
	R-squared	0.525	0.5493	0.46	0.5506	0.5698
Model (C)						
	ln RDistance * After	-0.192	-0.418*	0.628	-0.012	-0.004
		[0.222]	[0.228]	[0.544]	[0.287]	[0.233]
	ln Minimum wage	2.121	1.898	-2.387	-2.588	-4.838
		[8.205]	[12.997]	[20.001]	[13.480]	[10.397]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5248	0.5489	0.4529	0.5506	0.5697

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A7. Controlling Minimum Wages: Farm Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.382***	0.518***	-0.061	-0.382**	0.664***
		[0.114]	[0.079]	[0.186]	[0.149]	[0.103]
	ln Minimum wage	-17.594	-17.067*	-24.726	-10.016	-41.675***
		[12.740]	[9.870]	[23.621]	[14.118]	[11.920]
	Number of obs	1,488	1,016	410	878	529
	Log pseudolikelihood	-11272805	-6908107.2	-3511476.8	-6863475.8	-3170210.5
Model (B)						
	ln DDistance * After	-0.131	-0.278*	0.194	0.188	-0.239
		[0.142]	[0.157]	[0.402]	[0.187]	[0.180]
	ln Minimum wage	-19.867*	-17.160*	-26.111	-11.105	-51.278***
		[11.147]	[9.740]	[26.084]	[13.972]	[15.153]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11192451	-6909851.2	-3498358.3	-6781033.7	-3166193.3
Model (C)						
	ln RDistance * After	-0.065	-0.225	0.381	0.25	-0.227
		[0.150]	[0.159]	[0.352]	[0.182]	[0.174]
	ln Minimum wage	-21.169*	-18.464*	-25.79	-11.842	-52.058***
		[10.950]	[9.578]	[26.056]	[13.727]	[15.035]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11205450	-6928236.3	-3482704.4	-6765864.5	-3167132.1

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A8. Controlling Minimum Wages: Total Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.166***	0.160*	-0.338***	0.286***	0.185***
		[0.031]	[0.070]	[0.086]	[0.031]	[0.039]
	ln Minimum wage	10.067**	8.568	16.523**	13.117**	6.489
		[3.895]	[5.827]	[5.167]	[3.654]	[5.904]
	Number of obs	1,660	1,122	485	998	587
	R-squared	0.4834	0.5126	0.5001	0.4672	0.5079
Model (B)						
	ln DDistance * After	-0.136	-0.247*	0.307	-0.172	-0.147
		[0.133]	[0.128]	[0.223]	[0.214]	[0.136]
	ln Minimum wage	10.970*	11.405*	14.483	14.376*	7.923
		[6.332]	[6.658]	[9.499]	[7.790]	[5.717]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4865	0.5181	0.5135	0.474	0.5064
Model (C)						
	ln RDistance * After	-0.098	-0.213*	0.286	-0.114	-0.118
		[0.127]	[0.126]	[0.201]	[0.190]	[0.138]
	ln Minimum wage	10.493	10.93	14.416	13.843*	7.289
		[6.326]	[6.707]	[9.567]	[7.756]	[5.739]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4858	0.5169	0.5137	0.4731	0.5056

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A9. Controlling Minimum Wages: Food Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.191**	-0.083	-1.363***	-0.156**	-0.228**
		[0.064]	[0.078]	[0.082]	[0.054]	[0.072]
	ln Minimum wage	9.794	9.127	8.087	13.117**	1.547
		[5.591]	[7.458]	[4.764]	[3.755]	[7.009]
	Number of obs	1,632	1,109	474	979	579
	R-squared	0.3775	0.4069	0.3715	0.3924	0.3954
Model (B)						
	ln DDistance * After	0.119	-0.022	0.606**	0.036	0.211*
		[0.170]	[0.196]	[0.236]	[0.283]	[0.119]
	ln Minimum wage	8.286	8.892	8.408	12.469	-0.872
		[8.733]	[11.322]	[9.591]	[9.513]	[10.845]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3736	0.4056	0.3618	0.3892	0.394
Model (C)						
	ln RDistance * After	0.152	0.026	0.516**	0.093	0.220*
		[0.155]	[0.186]	[0.204]	[0.244]	[0.119]
	ln Minimum wage	7.727	8.059	8.522	11.76	-0.973
		[8.649]	[11.138]	[9.608]	[9.355]	[10.761]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3746	0.4056	0.3586	0.3897	0.3946

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A10. Controlling Tariffs: Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.132	0.411**	-2.331***	-0.300**	-0.207
		[0.133]	[0.140]	[0.173]	[0.094]	[0.130]
	ln (1 + Tariff)	6.291	5.65	4.41	12.012	-3.178
		[5.702]	[5.921]	[7.669]	[7.334]	[4.585]
	Number of obs	1,055	740	271	536	450
	R-squared	0.5243	0.545	0.4706	0.5498	0.5733
Model (B)						
	ln DDistance * After	-0.175	-0.400*	0.873	-0.011	-0.035
		[0.229]	[0.224]	[0.573]	[0.290]	[0.230]
	ln (1 + Tariff)	6.152	5.853	3.027	11.454	-4.216
		[7.264]	[7.969]	[13.247]	[9.110]	[7.299]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5261	0.5502	0.4602	0.5545	0.57
Model (C)						
	ln RDistance * After	-0.16	-0.382*	0.628	-0.001	-0.047
		[0.219]	[0.216]	[0.540]	[0.280]	[0.224]
	ln (1 + Tariff)	6.223	5.921	2.771	11.48	-4.262
		[7.316]	[8.037]	[13.200]	[9.121]	[7.248]
	Number of obs	1,050	735	271	534	447
	R-squared	0.526	0.5498	0.4531	0.5545	0.57

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A11. Controlling Tariffs: Farm Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.533***	0.595***	0.426***	-0.272**	1.012***
		[0.136]	[0.128]	[0.101]	[0.109]	[0.189]
	ln (1 + Tariff)	-7.174*	1.697	-30.158***	-14.475***	-10.108
		[4.342]	[5.019]	[5.852]	[3.029]	[8.708]
	Number of obs	1,488	1,016	410	878	529
	Log pseudolikelihood	-11320269	-6964513.4	-3378288	-6799465.3	-3272260.6
Model (B)						
	ln DDistance * After	-0.247	-0.356**	-0.11	0.123	-0.567***
		[0.154]	[0.160]	[0.406]	[0.201]	[0.156]
	ln (1 + Tariff)	-5.381	4.315	-30.071**	-14.846**	-7.732
		[6.561]	[6.641]	[14.185]	[7.120]	[11.544]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11268063	-6951263.3	-3375229.6	-6714802.9	-3311936.7
Model (C)						
	ln RDistance * After	-0.179	-0.307*	0.077	0.18	-0.533***
		[0.164]	[0.166]	[0.365]	[0.195]	[0.156]
	ln (1 + Tariff)	-4.969	4.741	-28.801**	-14.597**	-7.228
		[6.640]	[6.780]	[14.269]	[7.113]	[11.514]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11297997	-6976010	-3375776.8	-6705229.2	-3323615.2

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A12. Controlling Tariffs: Total Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.123*	0.128*	-0.404***	0.244***	0.135**
		[0.063]	[0.057]	[0.086]	[0.062]	[0.049]
	ln (1 + Tariff)	-0.514	-1.255	-1.937	-1.4	1.229
		[5.022]	[6.907]	[3.564]	[5.865]	[2.245]
	Number of obs	1,660	1,122	485	998	587
	R-squared	0.4802	0.5101	0.493	0.4623	0.5065
Model (B)						
	ln DDistance * After	-0.082	-0.187	0.337	-0.102	-0.094
		[0.143]	[0.131]	[0.242]	[0.230]	[0.130]
	ln (1 + Tariff)	-0.431	-1.549	-1.46	-1.221	1.13
		[4.523]	[4.479]	[7.962]	[5.813]	[3.921]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.483	0.5143	0.5082	0.4686	0.5045
Model (C)						
	ln RDistance * After	-0.048	-0.158	0.314	-0.052	-0.072
		[0.132]	[0.125]	[0.213]	[0.199]	[0.129]
	ln (1 + Tariff)	-0.318	-1.504	-1.256	-1.16	1.287
		[4.525]	[4.539]	[7.855]	[5.840]	[3.941]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4827	0.5135	0.5084	0.4682	0.5041

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A13. Controlling Tariffs: Food Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.232**	-0.093	-1.411***	-0.189**	-0.240**
		[0.087]	[0.101]	[0.061]	[0.072]	[0.081]
	ln (1 + Tariff)	-0.536	-3.778	1.293	-2.769	0.38
		[5.975]	[8.466]	[4.506]	[5.703]	[6.590]
	Number of obs	1,632	1,109	474	979	579
	R-squared	0.3742	0.4049	0.3697	0.3873	0.3953
Model (B)						
	ln DDistance * After	0.158	0.016	0.631**	0.093	0.209**
		[0.171]	[0.179]	[0.237]	[0.279]	[0.096]
	ln (1 + Tariff)	-0.954	-4.478	1.961	-2.961	0.656
		[4.879]	[6.141]	[7.136]	[6.002]	[4.643]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3716	0.4045	0.3601	0.3852	0.394
Model (C)						
	ln RDistance * After	0.187	0.058	0.542**	0.142	0.217**
		[0.155]	[0.174]	[0.203]	[0.241]	[0.098]
	ln (1 + Tariff)	-0.757	-4.253	2.131	-2.74	0.686
		[4.786]	[6.171]	[7.032]	[5.983]	[4.635]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3728	0.4048	0.3569	0.3861	0.3946

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A14. Controlling Export Structure: Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.189	0.484***	-2.310***	-0.234**	-0.204
		[0.123]	[0.118]	[0.169]	[0.093]	[0.132]
	Export share	1.521***	-0.898	-8.404**	0.215	1.013**
		[0.264]	[1.945]	[2.939]	[2.066]	[0.322]
	Export share * Y2006	0.132	0.504	-1.905**	-0.258	0.761
		[0.297]	[0.410]	[0.595]	[0.375]	[0.400]
	Export share * Y2010	0.661	1.550***	-2.683***	-0.049	2.267***
		[0.500]	[0.253]	[0.249]	[0.519]	[0.416]
	Export share * Y2012	-0.517	-0.27	-1.874**	-1.853	1.601**
		[0.561]	[0.732]	[0.738]	[1.305]	[0.468]
	Number of obs	1,055	740	271	536	450
	R-squared	0.524	0.5493	0.4736	0.5469	0.5799
Model (B)						
	ln DDistance * After	-0.187	-0.398	0.833	-0.087	0.092
		[0.248]	[0.256]	[0.582]	[0.340]	[0.171]
	Export share	1.561***	-0.893	-10.917***	0.258	0.953***
		[0.245]	[1.415]	[3.149]	[1.572]	[0.294]
	Export share * Y2006	0.131	0.498	-1.924***	-0.268	0.775**
		[0.219]	[0.438]	[0.628]	[0.362]	[0.334]
	Export share * Y2010	0.465	1.077***	-2.329***	-0.122	2.403***
		[0.578]	[0.354]	[0.510]	[0.695]	[0.445]
	Export share * Y2012	-0.69	-0.704	-1.476**	-1.887	1.733**
		[0.754]	[1.061]	[0.722]	[1.559]	[0.805]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5255	0.5523	0.4614	0.5519	0.5769
Model (C)						
	ln RDistance * After	-0.172	-0.38	0.608	-0.07	0.071
		[0.236]	[0.246]	[0.548]	[0.323]	[0.171]
	Export share	1.584***	-0.888	-12.774***	0.255	0.944***
		[0.262]	[1.414]	[4.380]	[1.573]	[0.305]
	Export share * Y2006	0.131	0.497	-1.940***	-0.267	0.775**
		[0.219]	[0.437]	[0.629]	[0.362]	[0.333]
	Export share * Y2010	0.479	1.093***	-2.426***	-0.108	2.381***
		[0.574]	[0.345]	[0.528]	[0.692]	[0.451]
	Export share * Y2012	-0.678	-0.69	-1.556**	-1.872	1.711**
		[0.750]	[1.061]	[0.742]	[1.552]	[0.813]
	Number of obs	1,050	735	271	534	447
	R-squared	0.5254	0.552	0.4551	0.5519	0.5768

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A15. Controlling Export Structure: Farm Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.511***	0.644***	0.19	-0.281*	0.975***
		[0.118]	[0.092]	[0.168]	[0.145]	[0.127]
	Export share	-3.977	2.914***	0.000***	1.993**	-12.906***
		[2.714]	[0.515]	[0.000]	[0.873]	[2.990]
	Export share * Y2006	0.874	1.064	-37.821	1.548*	-0.965***
		[1.106]	[1.251]	[47.015]	[0.925]	[0.193]
	Export share * Y2010	2.060**	1.500***	5.345***	2.857***	-0.006
		[0.908]	[0.305]	[0.410]	[0.600]	[0.543]
	Export share * Y2012	1.724***	1.774***	4.172***	1.958***	1.375***
		[0.597]	[0.286]	[0.581]	[0.349]	[0.296]
	Number of obs	1,488	1,016	408	878	529
	Log pseudolikelihood	-11075955	-6842606.9	-3139960.9	-6603149.2	-3108268.6
Model (B)						
	ln DDistance * After	-0.167	-0.324*	0.394	0.353**	-0.519***
		[0.173]	[0.180]	[0.339]	[0.149]	[0.165]
	Export share	-4.044*	2.160***	0.000***	2.731***	-12.594***
		[2.156]	[0.512]	[0.000]	[0.465]	[2.574]
	Export share * Y2006	0.884	1.073	-31.052	1.522*	-0.980***
		[1.087]	[1.201]	[34.147]	[0.870]	[0.251]
	Export share * Y2010	1.868*	1.105**	5.496***	3.115***	-0.708
		[0.951]	[0.439]	[0.405]	[0.492]	[0.693]
	Export share * Y2012	1.517**	1.378***	4.309***	2.215***	0.649
		[0.650]	[0.401]	[0.495]	[0.310]	[0.409]
	Number of obs	1,458	996	404	857	520
	Log pseudolikelihood	-11056134	-6889949.6	-3114524.1	-6471069.3	-3167558.1
Model (C)						
	ln RDistance * After	-0.104	-0.27	0.527	0.417***	-0.481***
		[0.186]	[0.190]	[0.332]	[0.156]	[0.168]
	Export share	-4.034*	1.934***	0.000***	3.300***	-12.490***
		[2.150]	[0.644]	[0.000]	[0.499]	[2.593]
	Export share * Y2006	0.882	1.074	-25.471	1.519*	-0.982***
		[1.085]	[1.201]	[33.997]	[0.868]	[0.250]
	Export share * Y2010	1.910**	1.148**	5.516***	3.153***	-0.667
		[0.933]	[0.443]	[0.385]	[0.462]	[0.703]
	Export share * Y2012	1.563**	1.426***	4.327***	2.258***	0.687
		[0.633]	[0.403]	[0.472]	[0.290]	[0.419]
	Number of obs	1,458	996	404	857	520
	Log pseudolikelihood	-11074356	-6914497.1	-3093056.6	-6442914.3	-3180925.4

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A16. Controlling Export Structure: Total Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.126*	0.131*	-0.413***	0.245**	0.145**
		[0.063]	[0.061]	[0.088]	[0.067]	[0.051]
	Export share	0.049	-1.714	7.556***	-1.401	0.229
		[0.518]	[1.303]	[0.638]	[0.967]	[0.157]
	Export share * Y2006	-0.188	0.037	-1.378*	-0.268	0.056
		[0.266]	[0.093]	[0.624]	[0.303]	[0.132]
	Export share * Y2010	0.403	0.559	-0.424	0.447	0.390**
		[0.640]	[0.287]	[0.843]	[0.706]	[0.155]
	Export share * Y2012	0.017	0.510***	-0.963**	0.041	-0.087
		[0.118]	[0.100]	[0.344]	[0.283]	[0.494]
	Number of obs	1,660	1,122	485	998	587
	R-squared	0.4804	0.5108	0.4942	0.4624	0.5037
Model (B)						
	ln DDistance * After	-0.061	-0.151	0.344	-0.065	-0.099
		[0.156]	[0.142]	[0.251]	[0.259]	[0.146]
	Export share	0.045	-1.955**	6.806	-1.547	0.265
		[0.412]	[0.889]	[10.153]	[1.026]	[0.177]
	Export share * Y2006	-0.172	0.05	-1.362*	-0.241	0.058
		[0.335]	[0.165]	[0.791]	[0.442]	[0.185]
	Export share * Y2010	0.35	0.394	-0.282	0.409	0.264
		[0.566]	[0.379]	[0.781]	[0.778]	[0.262]
	Export share * Y2012	-0.057	0.344	-0.882	-0.032	-0.212
		[0.403]	[0.235]	[0.899]	[0.658]	[0.504]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.483	0.5135	0.51	0.4683	0.5016
Model (C)						
	ln RDistance * After	-0.026	-0.122	0.32	-0.016	-0.076
		[0.142]	[0.132]	[0.224]	[0.215]	[0.146]
	Export share	0.05	-2.033**	6.566	-1.496	0.276
		[0.411]	[0.916]	[10.844]	[1.083]	[0.187]
	Export share * Y2006	-0.172	0.05	-1.365*	-0.241	0.058
		[0.335]	[0.165]	[0.790]	[0.442]	[0.184]
	Export share * Y2010	0.382	0.421	-0.302	0.454	0.288
		[0.572]	[0.380]	[0.786]	[0.779]	[0.265]
	Export share * Y2012	-0.023	0.372	-0.901	0.016	-0.188
		[0.403]	[0.229]	[0.897]	[0.650]	[0.503]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.4828	0.5129	0.5102	0.4681	0.5011

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A17. Controlling Export Structure: Food Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.231**	-0.119	-1.403***	-0.204**	-0.233**
		[0.087]	[0.093]	[0.086]	[0.080]	[0.065]
	Export share	-1.195	-5.441***	-7.949***	-4.970***	-0.737**
		[1.123]	[0.311]	[0.815]	[0.359]	[0.284]
	Export share * Y2006	-0.379	-0.233	-1.188*	-0.503	-0.095
		[0.264]	[0.137]	[0.580]	[0.348]	[0.278]
	Export share * Y2010	0.179	0.381	-0.796	0.21	0.364
		[0.574]	[0.396]	[0.594]	[0.589]	[0.465]
	Export share * Y2012	-0.219	0.219	-1.605**	-0.215	-0.34
		[0.527]	[0.357]	[0.630]	[0.710]	[0.250]
	Number of obs	1,632	1,109	474	979	579
	R-squared	0.3749	0.4057	0.3712	0.3887	0.3934
Model (B)						
	ln DDistance * After	0.191	0.071	0.624**	0.135	0.225**
		[0.172]	[0.187]	[0.240]	[0.309]	[0.103]
	Export share	-1.199	-5.350***	-9.297	-4.792***	-0.801***
		[0.726]	[0.529]	[20.496]	[0.925]	[0.225]
	Export share * Y2006	-0.362	-0.217	-1.185	-0.474	-0.089
		[0.345]	[0.193]	[0.850]	[0.494]	[0.186]
	Export share * Y2010	0.378	0.461	-0.552	0.345	0.639
		[0.643]	[0.477]	[0.690]	[0.819]	[0.462]
	Export share * Y2012	0.005	0.316	-1.365*	-0.05	-0.061
		[0.658]	[0.511]	[0.698]	[0.963]	[0.226]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3729	0.4052	0.3613	0.3867	0.3928
Model (C)						
	ln RDistance * After	0.22	0.112	0.535**	0.181	0.234**
		[0.150]	[0.172]	[0.207]	[0.250]	[0.106]
	Export share	-1.197*	-5.201***	-9.597	-4.551***	-0.835***
		[0.697]	[0.609]	[21.652]	[1.020]	[0.232]
	Export share * Y2006	-0.361	-0.216	-1.188	-0.473	-0.089
		[0.345]	[0.193]	[0.849]	[0.494]	[0.187]
	Export share * Y2010	0.405	0.503	-0.599	0.386	0.651
		[0.648]	[0.476]	[0.703]	[0.812]	[0.469]
	Export share * Y2012	0.034	0.359	-1.410*	-0.006	-0.05
		[0.663]	[0.513]	[0.701]	[0.958]	[0.232]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.3743	0.406	0.3581	0.3879	0.3936

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A18. Placebo Test: Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (B)						
	ln DDistance * After	-0.213	-0.226	-0.212	-0.136	-0.189
		[0.137]	[0.201]	[0.209]	[0.190]	[0.145]
	Number of obs	1,050	735	271	534	447
	R-squared	0.6778	0.6934	0.6478	0.7083	0.7196
Model (C)						
	ln RDistance * After	-0.207	-0.247	-0.146	-0.115	-0.175
		[0.150]	[0.213]	[0.240]	[0.193]	[0.167]
	Number of obs	1,050	735	271	534	447
	R-squared	0.6776	0.6938	0.6463	0.708	0.7193

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by tambon. All specifications include household fixed effects and year fixed effects. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Third Bridge. "ln RDistance" is a log of road distance from the Third Bridge.

Table A19. Placebo Test: Farm Income

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (B)						
	ln DDistance * After	-0.088	-0.191	0.258	0.106	-0.179
		[0.195]	[0.204]	[0.425]	[0.237]	[0.316]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11338845	-7057133.9	-3527024.2	-6803414	-3444116.1
Model (C)						
	ln RDistance * After	-0.112	-0.231	0.28	0.107	-0.27
		[0.195]	[0.206]	[0.441]	[0.244]	[0.303]
	Number of obs	1,458	996	406	857	520
	Log pseudolikelihood	-11333969	-7044341.2	-3525910.1	-6803351.9	-3431529.7

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by tambon. All specifications include household fixed effects and year fixed effects. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Third Bridge. "ln RDistance" is a log of road distance from the Third Bridge.

Table A20. Placebo Test: Total Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (B)						
	ln DDistance * After	0.013	-0.043	0.088	-0.004	0.033
		[0.081]	[0.074]	[0.145]	[0.094]	[0.102]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.6212	0.6499	0.6579	0.6214	0.6617
Model (C)						
	ln RDistance * After	0.014	-0.059	0.158	-0.001	0.024
		[0.083]	[0.073]	[0.157]	[0.098]	[0.106]
	Number of obs	1,628	1,100	478	975	578
	R-squared	0.6212	0.6501	0.6591	0.6214	0.6616

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by tambon. All specifications include household fixed effects and year fixed effects. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Third Bridge. "ln RDistance" is a log of road distance from the Third Bridge.

Table A21. Placebo Test: Food Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (B)						
	ln DDistance * After	0.031	0.049	-0.002	0.028	0.055
		[0.115]	[0.107]	[0.146]	[0.129]	[0.137]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.5403	0.5748	0.5467	0.5638	0.5866
Model (C)						
	ln RDistance * After	0.06	0.046	0.112	0.045	0.118
		[0.114]	[0.105]	[0.140]	[0.127]	[0.122]
	Number of obs	1,601	1,087	468	957	570
	R-squared	0.5406	0.5747	0.5477	0.5639	0.5877

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by tambon. All specifications include household fixed effects and year fixed effects. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Third Bridge. "ln RDistance" is a log of road distance from the Third Bridge.

Table A22. Housing Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.744***	0.988***	-1.033***	-0.255*	1.312***
		[0.155]	[0.238]	[0.066]	[0.139]	[0.282]
	Number of obs	1,665	1,123	486	991	585
	Log pseudolikelihood	-324546	-214781	-71138	-197382	-91159
Model (B)						
	ln DDistance * After	-0.545**	-0.865***	0.654**	0.093	-1.097***
		[0.255]	[0.306]	[0.332]	[0.312]	[0.214]
	Number of obs	1,631	1,101	476	968	576
	Log pseudolikelihood	-304580	-208407	-57415	-182031	-87648
Model (C)						
	ln RDistance * After	-0.533**	-0.856***	0.565*	0.022	-1.067***
		[0.240]	[0.280]	[0.326]	[0.308]	[0.218]
	Number of obs	1,631	1,101	476	968	576
	Log pseudolikelihood	-304286	-207806	-57578	-182094	-87800

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A23. Health Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	2.285***	1.405***	4.490***	2.711***	2.284***
		[0.244]	[0.237]	[0.358]	[0.303]	[0.303]
	Number of obs	1,634	1,107	470	980	572
	Log pseudolikelihood	-153729	-77877	-40470	-107427	-31288
Model (B)						
	ln DDistance * After	-1.414***	-0.914***	-2.092***	-1.811***	-1.202***
		[0.354]	[0.281]	[0.720]	[0.404]	[0.313]
	Number of obs	1,600	1,085	462	955	563
	Log pseudolikelihood	-151542	-73822	-45178	-105965	-30901
Model (C)						
	ln RDistance * After	-1.335***	-0.884***	-1.980**	-1.719***	-1.125***
		[0.380]	[0.302]	[0.783]	[0.444]	[0.338]
	Number of obs	1,600	1,085	462	955	563
	Log pseudolikelihood	-152380	-73825	-46305	-106345	-31216

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A24. Education Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.242	0.153	-0.981***	0.151	0.691***
		[0.182]	[0.191]	[0.158]	[0.256]	[0.174]
	Number of obs	1,224	835	333	684	463
	Log pseudolikelihood	-291351	-192965	-72412	-189474	-77655
Model (B)						
	ln DDistance * After	-0.295	-0.098	-0.401	0.177	-0.838***
		[0.262]	[0.305]	[0.485]	[0.458]	[0.237]
	Number of obs	1,194	813	327	663	454
	Log pseudolikelihood	-280281	-188175	-66837	-179875	-74261
Model (C)						
	ln RDistance * After	-0.289	-0.08	-0.406	0.128	-0.823***
		[0.277]	[0.326]	[0.468]	[0.473]	[0.237]
	Number of obs	1,194	813	327	663	454
	Log pseudolikelihood	-280258	-188201	-66786	-179938	-74237

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A25. Recreation Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.235**	-0.503***	1.234***	-0.209***	-0.658***
		[0.097]	[0.112]	[0.224]	[0.073]	[0.209]
	Number of obs	1,455	959	413	869	478
	Log pseudolikelihood	-75949	-49407	-19937	-45009	-24003
Model (B)						
	ln DDistance * After	-0.052	-0.032	-0.12	0.204	-0.091
		[0.257]	[0.297]	[0.575]	[0.359]	[0.387]
	Number of obs	1,429	942	409	852	469
	Log pseudolikelihood	-75060	-48910	-20083	-44280	-24048
Model (C)						
	ln RDistance * After	-0.044	-0.033	-0.078	0.222	-0.152
		[0.272]	[0.297]	[0.572]	[0.379]	[0.385]
	Number of obs	1,429	942	409	852	469
	Log pseudolikelihood	-75062	-48910	-20087	-44267	-24033

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A26. Transportation Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.02	-0.045	-0.352**	-0.601***	0.584***
		[0.070]	[0.063]	[0.141]	[0.101]	[0.190]
	Number of obs	1,648	1,110	484	984	585
	Log pseudolikelihood	-536060	-309255	-136866	-316114	-172702
Model (B)						
	ln DDistance * After	0.028	0.023	-0.184	0.426*	-0.407
		[0.250]	[0.237]	[0.347]	[0.229]	[0.280]
	Number of obs	1,614	1,088	476	959	576
	Log pseudolikelihood	-529311	-304248	-136030	-311786	-169054
Model (C)						
	ln RDistance * After	0.046	0.014	-0.146	0.411*	-0.32
		[0.236]	[0.226]	[0.311]	[0.222]	[0.283]
	Number of obs	1,614	1,088	476	959	576
	Log pseudolikelihood	-529244	-304259	-136086	-311717	-169947

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A27. Personal Activity Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.054	0.233**	-1.110***	0.313**	0.059
		[0.089]	[0.091]	[0.152]	[0.133]	[0.074]
	Number of obs	1,667	1,121	494	1,005	587
	Log pseudolikelihood	-228895	-145354	-57875	-150933	-58862
Model (B)						
	ln DDistance * After	-0.231*	-0.363***	0.419	-0.236	-0.315
		[0.130]	[0.135]	[0.384]	[0.216]	[0.213]
	Number of obs	1,633	1,099	484	980	578
	Log pseudolikelihood	-215926	-136550	-55367	-142249	-54517
Model (C)						
	ln RDistance * After	-0.189	-0.314**	0.357	-0.154	-0.334
		[0.127]	[0.144]	[0.378]	[0.212]	[0.214]
	Number of obs	1,633	1,099	484	980	578
	Log pseudolikelihood	-216176	-136862	-55466	-142431	-54414

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A28. Social Activity Expenditure

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.315**	0.474***	-0.367	0.146	0.481***
		[0.141]	[0.110]	[0.290]	[0.154]	[0.143]
	Number of obs	1,671	1,125	494	1,009	587
	Log pseudolikelihood	-140315	-62492	-58261	-96584	-35494
Model (B)						
	ln DDistance * After	-0.176	-0.454***	0.471	-0.015	-0.335
		[0.191]	[0.129]	[0.332]	[0.271]	[0.213]
	Number of obs	1,637	1,103	484	984	578
	Log pseudolikelihood	-139329	-61323	-57439	-95824	-35174
Model (C)						
	ln RDistance * After	-0.153	-0.430***	0.441	0.007	-0.339
		[0.187]	[0.135]	[0.321]	[0.256]	[0.220]
	Number of obs	1,637	1,103	484	984	578
	Log pseudolikelihood	-139390	-61358	-57479	-95825	-35148

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A29. Agricultural Land Area

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.328***	0.240**	0.405***	0.046	0.423*
		[0.061]	[0.096]	[0.050]	[0.053]	[0.239]
	Number of obs	1,452	983	408	865	518
	Log pseudolikelihood	-5567	-3825	-1385	-3168	-1954
Model (B)						
	ln DDistance * After	-0.269**	-0.267*	0.079	0.049	-0.697***
		[0.124]	[0.147]	[0.224]	[0.099]	[0.265]
	Number of obs	1,422	963	404	844	509
	Log pseudolikelihood	-5409	-3740	-1378	-3051	-1852
Model (C)						
	ln RDistance * After	-0.291**	-0.312**	0.117	0.059	-0.782***
		[0.130]	[0.157]	[0.211]	[0.097]	[0.295]
	Number of obs	1,422	963	404	844	509
	Log pseudolikelihood	-5400	-3728	-1377	-3051	-1822

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A30. Number of Agricultural Workers

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.095***	0.084***	0.046	0.207***	0.084***
		[0.028]	[0.024]	[0.084]	[0.057]	[0.006]
	Number of obs	1,513	1,037	416	896	538
	Log pseudolikelihood	-2005	-1387	-544	-1174	-712
Model (B)						
	ln DDistance * After	-0.018	-0.064	0.236	-0.01	-0.061
		[0.053]	[0.062]	[0.179]	[0.121]	[0.039]
	Number of obs	1,483	1,017	412	875	529
	Log pseudolikelihood	-1965	-1358	-539	-1148	-699
Model (C)						
	ln RDistance * After	0.004	-0.059	0.304*	0.022	-0.068*
		[0.055]	[0.062]	[0.155]	[0.119]	[0.041]
	Number of obs	1,483	1,017	412	875	529
	Log pseudolikelihood	-1965	-1358	-539	-1148	-699

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A31. Number of Tractors

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	0.553***	0.676***	-0.087	0.228**	0.876***
		[0.064]	[0.079]	[0.102]	[0.088]	[0.140]
	Number of obs	799	573	198	466	292
	Log pseudolikelihood	-912	-648	-233	-546	-322
Model (B)						
	ln DDistance * After	-0.297	-0.367	-0.078	-0.009	-0.535***
		[0.182]	[0.250]	[0.395]	[0.269]	[0.203]
	Number of obs	771	553	192	445	285
	Log pseudolikelihood	-881	-626	-225	-521	-316
Model (C)						
	ln RDistance * After	-0.284	-0.353	-0.086	-0.045	-0.466**
		[0.181]	[0.246]	[0.363]	[0.263]	[0.229]
	Number of obs	771	553	192	445	285
	Log pseudolikelihood	-881	-626	-225	-521	-316

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A32. Value of Tractors

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	2.155***	2.521***	-1.570***	0.03	3.179***
		[0.199]	[0.162]	[0.330]	[0.123]	[0.477]
	Number of obs	799	573	198	466	292
	Log pseudolikelihood	-19349445	-10713477	-4139364	-7817520	-8833850
Model (B)						
	ln DDistance * After	-1.204***	-1.516***	0.317	0.118	-2.155***
		[0.431]	[0.509]	[0.860]	[0.243]	[0.414]
	Number of obs	771	553	192	445	285
	Log pseudolikelihood	-19302866	-10867474	-4085199	-7632991	-8672592
Model (C)						
	ln RDistance * After	-1.111**	-1.441***	0.254	0.112	-1.849***
		[0.467]	[0.538]	[0.821]	[0.260]	[0.534]
	Number of obs	771	553	192	445	285
	Log pseudolikelihood	-19464053	-10969545	-4086405	-7633207	-8938911

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A33. Number of Household Members

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.033*	-0.005	-0.471***	-0.101***	0.061
		[0.017]	[0.008]	[0.039]	[0.011]	[0.034]
	Number of obs	1,673	1,125	494	1,011	587
	R-squared	0.7225	0.7283	0.7780	0.7624	0.6984
Model (B)						
	ln DDistance * After	0.04	0.007	0.268**	0.084	-0.045
		[0.051]	[0.041]	[0.131]	[0.073]	[0.051]
	Number of obs	1,639	1,103	484	986	578
	R-squared	0.7206	0.7300	0.7743	0.7612	0.7006
Model (C)						
	ln RDistance * After	0.041	0.002	0.246**	0.077	-0.047
		[0.051]	[0.042]	[0.115]	[0.068]	[0.053]
	Number of obs	1,639	1,103	484	986	578
	R-squared	0.7207	0.7300	0.7743	0.7611	0.7007

Notes: This table reports the estimation result for households by the OLS. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A34. Saving ratio

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	1.436***	1.419***	1.487***	1.171***	0.857***
		[0.292]	[0.416]	[0.336]	[0.410]	[0.174]
	Number of obs	983	689	252	496	417
	Log pseudolikelihood	-585	-395	-153	-346	-183
Model (B)						
	ln DDistance * After	-0.07	0.223	-0.738	0.828	-0.553**
		[0.661]	[0.791]	[0.707]	[0.770]	[0.222]
	Number of obs	980	686	252	494	416
	Log pseudolikelihood	-587	-396	-153	-341	-183
Model (C)						
	ln RDistance * After	-0.076	0.261	-0.695	0.693	-0.540**
		[0.627]	[0.768]	[0.648]	[0.709]	[0.235]
	Number of obs	980	686	252	494	416
	Log pseudolikelihood	-587	-396	-152	-342	-183

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A35. Debt ratio

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	-0.237	-0.682**	2.552***	-0.227**	1.488***
		[0.148]	[0.267]	[0.060]	[0.114]	[0.167]
	Number of obs	977	692	239	476	435
	Log pseudolikelihood	-13854	-7258	-5246	-5194	-5240
Model (B)						
	ln DDistance * After	0.148	0.598	-0.873	0.854**	-1.008***
		[0.541]	[0.587]	[0.795]	[0.332]	[0.364]
	Number of obs	974	689	239	476	432
	Log pseudolikelihood	-13829	-7226	-5252	-5098	-5203
Model (C)						
	ln RDistance * After	0.093	0.561	-0.766	0.734**	-0.941***
		[0.514]	[0.571]	[0.704]	[0.317]	[0.355]
	Number of obs	974	689	239	476	432
	Log pseudolikelihood	-13834	-7237	-5253	-5116	-5208

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.

Table A36. Income from Government

		(I) All	(II) Head = Male	(III) Head = Female	(IV) Head's age ≥ 50	(V) Head's age < 50
Model (A)						
	Bridge * After	1.052***	0.831***	2.238***	1.022***	-0.504**
		[0.151]	[0.203]	[0.723]	[0.308]	[0.237]
	Number of obs	1,519	996	436	951	441
	Log pseudolikelihood	-430306	-227737	-114913	-226609	-42664
Model (B)						
	ln DDistance * After	-0.113	-0.335	0.165	-0.546	-0.022
		[0.473]	[0.490]	[0.634]	[0.474]	[0.692]
	Number of obs	1,496	986	428	934	435
	Log pseudolikelihood	-422344	-220509	-117734	-223251	-41757
Model (C)						
	ln RDistance * After	0.015	-0.379	0.545	-0.6	-0.038
		[0.509]	[0.480]	[0.674]	[0.436]	[0.694]
	Number of obs	1,496	986	428	934	435
	Log pseudolikelihood	-422434	-220354	-116863	-222931	-41756

Notes: This table reports the estimation result for households by the PPML. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the standard errors clustered by province (Model A) or tambon (Models B and C). All specifications include household fixed effects and year fixed effects. "Bridge" takes the value of one for households in Mukdahan and zero for those in the other provinces. "After" takes the value of one for years 2010 and 2012 and zero for years 2005 and 2006. "ln DDistance" is a log of direct distance from the Bridge. "ln RDistance" is a log of road distance from the Bridge.