Falling Trade Barriers and Rising Crime? Evidence from Colombia*

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Abstract

Greater openness to trade can create benefits through lower prices, greater product diversity, and higher export earnings. But additional exposure to import competition may reduce income and employment in affected sectors. These negative consequences can increase crime by altering the net benefits of engaging in illicit activities. We analyze the impact of the U.S.-Colombia Free Trade Agreement on the growth of crime in Colombia from 2012 to 2017. Using panel data from 887 Colombian municipalities and a shift-share instrumental variables approach, we find that increased exposure to competition in staple crops led to more home burglaries and robberies of individuals, but fewer business robberies. Crime impacts were concentrated in the Andes and non-coca-producing regions. Our results suggest that trade liberalization should be accompanied by policies that mitigate negative effects on exposed sectors.

Keywords: Trade, crime, agriculture, shift-share, Bartik, instrumental variables, Colombia, Latin America, United States

JEL codes: O12, O13, O19, Q17, Q18

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1 Introduction

Increased openness to trade can bring about economic benefits in the form of lower consumer prices, greater product diversity, and increased exports from internationally competitive sectors (Feenstra 2018). Yet trade openness can also have detrimental consequences. For example, existing evidence suggests that the labor market may deteriorate in the sectors most exposed to increased import competition (Autor, Dorn, and Hanson 2013; Kovak 2013; Dix-Carneiro, Soares, and Ulyssea 2018). This deterioration of the labor market can have further unintended consequences in the form of greater crime, as the relative benefits of engaging in criminal activity increase (Lin 2008; Fougère, Kramarz, and Pouget 2009; Dix-Carneiro and Kovak 2015; Dell, Feigenberg, and Teshima 2019; Mir Mohamad Tabar and Noghani 2019; Khanna et al. 2021; Bignon, Caroli, and Galbiati 2017).

Available evidence on the effects of import competition on crime in developing countries largely focuses on non-agricultural sectors in Latin America, where employment is formal and concentrated in urban areas (Dell, Feigenberg, and Teshima 2019; Dix-Carneiro and Kovak 2015). The implications of rising import competition in agriculture are relatively unexplored, and particularly concerning, given that the poverty rate in Latin America and elsewhere in the developing world is much higher in rural areas than cities and 14% of the labor force in the region is engaged in agriculture (The World Bank 2024; FAO 2020). High poverty rates suggest weak ability to bear the costs associated with rising crime rates, as well as greater potential to use crime to meet basic needs following a negative shock.

We investigate the effect of heightened import competition on crime in Colombia resulting from the U.S.-Colombia Free Trade Agreement of 2012 (henceforth the FTA), one of several free-trade agreements signed between the US and Latin American countries over a 10-year period. The FTA was notable for its phased-in removal of trade protections for crops whose production is essential to the livelihoods of many Colombian smallholder farmers (DANE 2021). The result of reduced trade protections was the rapid growth of Colombian agricultural imports from the U.S., particularly corn. The quantity of Colombian imports of U.S. corn grew by nearly 2000% from 2012 to 2017, while total corn imports into Colombia

grew by 54% (UNCOMTRADE 2021). Imports of U.S. beans grew by 692% over this same time horizon although total bean imports were nearly unchanged. Given the importance of these crops to the livelihoods of rural Colombians, liberalization was seen as a potential threat to food security, labor markets, and social stability in rural areas (Garay, Gomez, and Landínez 2009; Espinosa, Laura, and Henao 2013), and was met with large-scale protests from smallholder producers (Sankey 2023). We explore whether the consequences of greater import competition for rural Colombians included rising crime.

We study the causal chain linking trade openness, economic activity, and crime. Our empirical analysis follows existing studies of import shocks (Autor, Dorn, and Hanson 2013; Dell, Feigenberg, and Teshima 2019; Dix-Carneiro, Soares, and Ulyssea 2018). We use a Bartik or "shift-share" two-stage least squares approach that exploits spatial variation in exposure to reduced trade protection across 887 Colombian municipalities from 2012 to 2017 (Bartik 1991; Goldsmith-Pinkham, Sorkin, and Swift 2020). Our first stage regression measures the effect of trade openness on economic activity by regressing the percent change in area planted with staples in each municipality on exposure to changes in import flows from 2012 to 2017. Our instrument specifies that exposure to changes in import flows for a given crop depends on area with the same crop in 2012. Our second stage regression links economic activity to crime by regressing the change in the crime rate for different offenses on the predicted percent change in area planted with staples.

We find that increased exposure to import competition has a significant negative effect on area planted with staples,[1] which in turn raises home burglaries and robberies of people by 16% and 6%, respectively. Interestingly, robberies of businesses decrease by 13%. We argue that the shock to agriculture led to a change in incentives faced by residents of affected municipalities which resulted in increasing property crimes, while likely also leading to the shuttering of businesses, and a corresponding reduction of business robberies.

[1] A one standard deviation increase in exposure to import competition reduces area planted with staples by 22% on average.

We provide further analyses that indicate the impacts of the FTA on crime are driven by effects on smallholder corn production, are concentrated in the Andean region, and largely fall outside of coca-producing areas. Smallholder corn producers were least able to compete with a flood of cheap corn imports from the U.S.,[2] and as a result, we see that area under so-called "traditional" corn production systems is highly correlated with changes in crime from 2012-2017, despite exhibiting no such correlation from 2007-2012. The increase in burglaries and robberies of people are significantly higher inside Andean municipalities than elsewhere. Rural areas, particularly the Andes, have historically been characterized by weak state presence and few economic alternatives to agriculture, which may have made them particularly susceptible to trade shocks (Arjona 2016) and insecurity (Dirección de Justicia, Seguridad y Gobierno 2015).

Finally, we see that impacts on home burglaries are significantly larger in absolute value outside of coca-producing regions than elsewhere. In coca-producing regions, economic activity is largely driven by the drug trade, and therefore we would not expect significant effects from shocks to legal crops unless rival factions (e.g., the FARC and right-wing paramilitary groups like the AUC (Gillin 2015)) compete for territory taken out of crop agriculture because of the FTA shock. The period we study overlaps with the continuation of a rapid decline in deaths from armed conflict in Colombia that began in the 2000s (Uppsala Conflict Data Program 2024). Our observed time horizon also coincides with initial steps by the Colombian national government to reach a political solution to internal conflict (Gómez Isa 2013; Norsk 2022). The combination of lesser reliance on legal crops, political stability, and long-term territorial control by rebel groups rather than conflict over territory suggest that coca-producing regions may have had the conditions needed to avoid the worst consequences of the FTA shock.

[2] As we note later, Colombia's major pre-FTA sources of corn imports (Argentina and Brazil) are subject to a tariff schedule that did not apply to the U.S. over our observed time horizon and face higher shipping costs than U.S. producers. The combination of these factors and U.S. productivity advantages over Colombian producers likely made imports from the U.S. far cheaper than domestic or international alternatives.

Unlike previous studies of import competition shocks in Latin America, we do not find strong evidence of impacts on homicides (Dell, Feigenberg, and Teshima 2019; Dix-Carneiro, Soares, and Ulyssea 2018), a result that is explained by Colombia's unique violence dynamics during the period --long established armed actors across the territory and government policies aimed at promoting the implementation of a peace process. The latter stands in strong contrast with the war on drug cartels in Mexico during the period studied by Dell, Feigenberg, and Teshima (2019), for example.We support our identification strategy by showing that area planted with staples was unrelated to changes in crime from 2007-2012, prior to when the FTA is likely to have had an effect on Colombian agriculture, and that repeating our two-stage least squares estimation for the period 2007-2012 yields null results.

We add to the existing literature on trade openness and crime. One strand of this literature focuses on access to export markets. In Mexican locations predicted to have drug-trafficking routes, for example, Hidalgo, Hornung, and Selaya (2022) find that the implementation of NAFTA increased homicides by 27%, relative to the pre-NAFTA mean. The authors argue that rising violence is driven by increased profitability for smugglers, caused by reduced costs of shipping goods. Erickson and Owen (2022) find that policy-driven changes in access to the U.S. avocado market strongly reduce homicides and reports of missing persons in Mexico. Erickson and Owen (2022) present evidence that impacts are explained by avocado producers pooling resources to boost security against the drug cartels.

Our work is closely related to a separate strand of literature studying the effects of greater import competition on crime. Beach and Lopresti (2019) as well as Che, Xu, and Zhang (2018) find that growth in exposure to Chinese import competition increased property crime in affected areas of the U.S., and that these impacts were mitigated by government transfers. Dell, Feigenberg, and Teshima (2019) also focus on growth in import competition from China, but in the case of Mexico, during a time of intense violence resulting from territorial disputes between cartels, as well as government action against the drug trade. These authors find that a one standard deviation increase in manufacturing import competition exposure increases drug-related homicides by over 33% relative to the sample average. This effect operates through

decreased employment in exposed manufacturing sectors, which likely reduces the opportunity cost of engaging in illicit activities for displaced workers. Dix-Carneiro, Soares, and Ulyssea (2018) study the effects of trade liberalization on homicides in Brazil, where reforms sharply reduced tariffs in the 1990s for non-agricultural sectors. They find that tariff reductions have a large positive effect on crime five years after trade liberalization was complete, and that impacts largely operate through the formal labor market. In related work, Dix-Carneiro and Kovak (2019) show that the long-run recovery of crime rates in Brazil following trade liberalization is driven by expanded informal employment. Formal employment never recovers from the initial policy shock, but movement to informal employment is sufficient to keep individuals away from crime.

We contribute to this literature in several ways. In contrast to previous work on import competition and crime, we focus on agriculture. Nineteen percent of the population in Latin America and the Caribbean lives in rural areas (The World Bank 2024), and high poverty in rural relative to urban areas could imply that rural households are closer to the margin of turning to crime in the wake of a shock and less able to cope with rising crime relative to urban households. Furthermore, the mechanisms linking trade policy to crime are likely different in agriculture relative to other industries. Prior studies focusing on non-agricultural sectors use formal employment as the main link in the causal chain connecting import competition and crime (Dell, Feigenberg, and Teshima 2019; Dix-Carneiro, Soares, and Ulyssea 2018; Dix-Carneiro and Kovak 2019). In Colombia, farm work is informal, part-time, and often supplied by unpaid family labor (Morkunas 2022), making it difficult to quantify and motivating our use of changes in planted area as the mechanism driving impacts on crime. To the extent that the labor market is a key mechanism linking agricultural import competition and crime, liberalizing trade in staple crops would potentially disrupt the informal labor market, weakening a key component of recovery from shocks identified by Dix-Carneiro and Kovak (2019).

In addition, we study the relationship between import competition and crime in a context that is quite different from other developing countries. Violent crime is more prevalent in rural areas of Colombia

(Vallejo, Tapias, and Arroyave 2018) while it was concentrated in urban areas of Brazil (Ceccato and Ceccato 2017) and Mexico (Dell, Feigenberg, and Teshima 2019) when the latter two countries were exposed to greater import competition, suggesting that shocks to agriculture might have the potential to exacerbate conflict in the Colombian context. At the same time, import shocks in Colombia occurred at a time of falling violence driven by a policy agenda of de-escalation with rebel groups, whereas in Mexico, for example, conflict was escalating because of aggressive government confrontation of drug cartels during the period studied by Dell, Feigenberg, and Teshima (2019). Our results suggest that the policy environment around conflict will influence the nature of economic shocks from trade openness. Finally, we go beyond the existing literature on import competition and crime in developing countries by examining effects on offenses other than homicides. Our results demonstrate how economic shocks can affect crimes that may be more likely to have clear economic motivations than violent offenses.

Our paper is organized as follows. In Section 2, we explain the context and background of the FTA. In Section 3, we describe our data and present descriptive statistics. In Section 4, we detail our identification strategy and econometric approach. Our results are given in Section 5 and are discussed in Section 6. We conclude in Section 7.

2 Background

After nearly two years of discussions from 2004 to 2006, the U.S.-Colombian FTA was approved by the Colombian Congress in July 2007 and the U.S. Congress in October 2011. The FTA was finally implemented in May 2012. Negotiations between Colombia and the U.S. were fraught with uncertainty regarding the completion of the agreement. This uncertainty was primarily because of significant opposition from various groups within Colombia, particularly smallholder farmers and small business owners (Pulecio 2005). Additionally, Democrats in the U.S. Congress played a crucial role in this uncertainty, as they opposed trade agreements without clauses protecting labor rights and the environment (Cristina Silva 2007; Cancino 2008). Consequently, the FTA took several years to implement and there was substantial uncertainty over whether it would ever be adopted.

The details of liberalization in agriculture took the longest to resolve during negotiations, as this sector was particularly sensitive for the Colombian government. Agriculture was recognized as key for the country's economic, social, and political stability at the time of negotiations, not just because of its importance for domestic consumption and employment, but also because of its close connection to internal conflict and the production of illegal crops (Arbeláez et al. 2019). As a result of these political concerns, agriculture had remained highly protected despite implementation of wide-ranging liberalization policies in the early 1990s (Garay, Gomez, and Landínez 2009; Arbeláez et al. 2019), and were protected in other FTAs such as the one between Colombia and Canada in 2010 (Josling et al. 2015).

The Colombian government viewed some agricultural products as more sensitive than others because they compete directly with leading U.S. agricultural export crops, they represented a large proportion of national food consumption and agricultural production, and they are essential to the smallholder farm economy (Garay, Gomez, and Landínez 2009). Colombia advocated for more permissive agricultural trade rules in the FTA, stating that liberalization would encourage smallholders to plant illegal crops because of an inability to compete with U.S. imports (Villarreal 2012). The result of negotiations was an agreement that included immediate elimination of tariffs for some commodities and the phase-out of tariffs and quotas over as many as 19 years for some crops, especially if deemed particularly sensitive by the Colombian government, such as corn, beans, and rice. These crops represent a large portion of planted area in Colombia (75% of harvested area in annual crops and 30% of all crops in 2007) and exhibit large productivity gaps when comparing U.S. and Colombian farmers (Garay, Gomez, and Landínez 2009; Espinosa, Laura, and Henao 2013; Gómez et al. 2021).

The structure of tariff reduction over time as established by the FTA is outlined in Table 1. For more than 77% of agricultural products, tariffs were entirely removed upon implementation (commodity bundle A). Other products were assigned a tariff scheduled to be gradually phased-out, sometimes in combination with a tariff-free quota (bundles B through V and Quotas). Corn, rice, and beans are included in the "Quotas" group along with several other commodities.

[TABLE 1 HERE]

Tariffs, quotas, and scheduled phase-out for corn, rice, and beans are given in Table 2. Corn is divided into white and yellow. The yellow corn quota is much larger than total national production, suggesting the potential for a major shock to domestic producers. Government sources indicate that yellow corn imports largely go to animal feed, whereas the majority of white corn imports are used for human consumption; since most domestic production is for human production, white corn imports may represent the largest threat to domestic producers (Ministry of Agriculture and Rural Development 2021). Regardless, corn farmers seem to have gotten poorer terms than rice or bean producers. The terms for white corn include a lower tariff and a quota that is substantially larger, relative to domestic production in 2012, as compared to rice and beans. The combination of FTA implementation in 2012 and low commodity prices led to a surge in U.S. imports beginning in 2014, especially corn. Although Colombia was already a partner to the MERCOSUR trade agreement prior to the FTA, which gave large corn producers (Brazil and Argentina) preferential access to Colombian markets, Colombia applies a price band to imports from MERCOSUR countries that includes a tariff higher than the out-of-quota duty on U.S. corn whenever prices fall below the floor of the price band, as they did beginning in 2014 (Rau and Gomez 2018). The MERCOSUR countries also face much higher transportation costs than U.S. exporters (Rau and Gomez 2018). As a result, U.S. white corn exports to Colombia grew by 313% from 2012 to 2018, accounting for all white corn import growth, while Colombian consumption per capita of white corn was virtually unchanged (FENALCE 2024). The ratio of U.S. white corn imports to domestic production grew from 8% to 42% over the same time period (FENALCE 2024).

[TABLE 2 HERE]

Imports of U.S. beans also expanded rapidly from 2012 to 2017, with the ratio of U.S. imports to domestic production growing from 34% to 43%. Production of beans in Colombia fell by 16% over this same time horizon. But Colombian producers planted over twice as much area in white corn than beans in 2012, suggesting that the potential shock from white corn imports to rural communities was greater

(FENALCE 2024). In the case of rice, producers have a strong national interest group (FEDEARROZ) that was able to effectively lobby the Colombian government for more forgiving terms under the FTA, which likely softened the potential for heightened import competition (Díaz Valencia 2012; Granados Sánchez 2005). The ratio of US. rice imports to Colombian production grew from 2% in 2012 to 14% in 2017 (UNCOMTRADE 2021; Ministry of Agriculture and Rural Development 2019). Colombian rice production grew by 30% over this time horizon.

Differences in FTA terms and the growth of U.S. imports relative to domestic production suggest that corn producers were likely to suffer the strongest impacts of the FTA. The Government of Colombia divides corn production systems into two types: *tradicional* and *tecnificado* ("traditional" and "modern") (Salgar 2005). Traditional systems are characterized by plots under five hectares, planting a mixture of crops, more intensive use and reliance on family labor, use of animal draft power, limited use of modern seeds, and are commonly found in the hilly terrain of the Andean region. Modern systems rely on larger plots of corn monoculture, incorporate mechanization, are more likely to use hybrid seed, and are commonly found in the plains (Salgar 2005). Yields from modern production systems are typically more than twice that of traditional systems, but still attain only about 50% of U.S. levels (Rau and Gomez 2018). The combination of variation in FTA terms for different staple crops, the lower relative productivity of traditional corn systems, and the fact that U.S. corn was not subject to the tariff schedule applied to Latin American competitors suggest that the import competition shock from the FTA was likely to be largest for smallholder corn producers in Colombia. Correspondingly, area planted with traditional corn fell by 8.3% from 2012-2017 while area under modern systems grew by 29% (Ministry of Agriculture and Rural Development 2019). When comparing changes in planted area by corn production system across municipalities, the percent change in area planted with traditional corn and the percent change in area planted with modern corn from 2012 to 2017 have a correlation coefficient of 0.037. These results suggest that the decline of smallholder corn production is not the result of farm consolidation within municipalities. Rather, modern corn production expanded in the plains of Colombia while traditional systems contracted in hillier areas.

3 Data

We rely on two data sources. Our first source is a panel of Colombian municipalities from the Universidad de Los Andes, created by collating data sets from different government ministries. These data include municipality-level crop planted area, harvested area, and production from the Ministry of Agriculture and Rural Development; crime data from the Ministry of National Defense, data on socioeconomic characteristics and access to government services from the National Administrative Department of Statistics (DANE), information on coca cultivation from the Integrated Illicit Crop Monitoring System (SIMCI), and additional information from the Economic Development Study Center (CEDE) from the Universidad de Los Andes, all from 2007-2018. Note that we study the period from 2012-2017 because the data collected in 2018 only includes area planted at the beginning of that year. Using 2017 as our endpoint, we study changes over a six-year time horizon (2012-2017), and then conduct a placebo analysis where we repeat our analysis using a six-year pre-FTA time horizon (2007-2012). In this way, our robustness checks mimic our main analysis, making the former a more convincing test of the latter. We limit our sample to municipalities outside of major metropolitan areas that had non-zero planted area in corn or beans every year from 2007-2011, reducing the sample from 1,122 to 887. Limiting the sample in this way excludes municipalities that may have been primarily affected by the FTA through non-agricultural channels (e.g., increased manufacturing export opportunities) and allows us to focus on rural areas most likely to be affected by agricultural trade liberalization. Second, we use the United Nations COMTRADE database to obtain information on exports from the U.S. into Colombia and elsewhere in Latin America over the same time horizon.

Table 3 presents summary statistics on exposure to imports of corn and beans from the U.S. in panel A, changes in crime per 100,000 residents in panel B, and covariates used in our regression models in panel C. As in our empirical approach described below, we use flows of U.S. exports in constructing an instrumental variable, and for the purpose of maintaining exogeneity of the instrument, we proxy U.S. exports to Colombia with U.S. exports to other Latin American countries that were also signatories to U.S. FTAs. Exports of corn and beans from the U.S. to other Latin American countries are highly correlated

with shipments to Colombia from 2012-2017 (see Figure 1 below). We see that exposure to corn imports is much higher than exposure for beans. In panel B, we observe that homicides fell while property crimes rose.

[TABLE 3 HERE]

The covariates summarized in panel C include access to services (water network coverage, government expenditure per capita), development indicators (infant mortality, school enrollment, GDP per capita, population density, multidimensional poverty index, distance to the nearest major food market, the Gini coefficient), agricultural characteristics (shares of national planted area in coffee and rice, total planted area, number of agricultural loans), an indicator for the presence of coca production, and geographic indicators (indicator for the Andean region, altitude, distance to state capital). When possible, covariates are measured in 2012, although there are exceptions because of data availability. We expect access to services and development indicators to be strongly associated with crime, and potentially associated with exposure to trade shocks through correlation with the importance of agriculture to the local economy. We include area in coffee because the FTA represented a boon to Colombian coffee producers,[3] and area in rice because it was subject to the FTA and exhibits correlations with changes in crime prior to the FTA for some offenses. Total planted area will partly capture the importance of agriculture to the local economy. The indicator for coca production is correlated with the importance of legal crops to the local economy and is also associated with certain criminal offenses (homicides, in particular). Geographic indicators and market access measure the degree of integration with surrounding areas, which could be important factors in mediating the link from trade shocks to changes in crime. Note that for completeness, we present summary statistics for the pre-FTA period (2007-2012) in Appendix Table A.

[3] The U.S. has consistently been the largest market for Colombian coffee exports, and the total volume of Colombia coffee exports increased by over 80% from 2012-2017. See the source link at https://www.statista.com/statistics/1018292/coffee-exports-volume-colombia/.

4 Empirical Strategy

To estimate our causal effects of interest, we use a two stage instrumental variables approach. The change in area planted with corn and beans from 2012-2017 relative to area in 2012 is modeled as a function of import competition exposure in a first-stage regression, and the change in crime per 100,000 residents is then modeled as a function of predicted planted area in the second stage, where predicted planted area is the fitted value obtained from the first-stage regression. In constructing our instrument, we use an approach similar to that of Dell, Feigenberg, and Teshima (2019) and Autor, Dorn, and Hanson (2013). The change in international competition exposure is given by:

$$\Delta ICP_{it} = \frac{1}{P_{i0}} \sum_{j} \frac{P_{ij,0}}{P_{j,0}} \Delta M_{jt} \tag{1}$$

where ΔICP_{it} is the change in exposure to import competition per planted hectare in municipality *i* from 2012 to 2017, P_{i0} is total planted area in municipality *i* in 2012, $P_{ij,0}$ is the area planted to crop *j* in municipality *i* in 2013, $P_{j,0}$ is area planted in crop *j* in municipality *i* in 2012, and ΔM_{jt} is the change in the Colombian import quantity (in tons) from the U.S. for crop *j* from 2012 to 2017. The summation term in equation (1) indicates that exposure to heightened import competition from a specific crop is increasing in a municipality's initial share of national planted area in that crop, and then the total change in exposure to import competition for municipality *i* is transformed into a per hectare measure through normalization by P_{i0}.

To identify the effect of trade exposure on area planted with corn and beans as well as the effect of the latter on crime, our measure of trade exposure must satisfy an exclusion restriction. That is, the instrument cannot be correlated with crime rates except through its correlation with area in corn and beans. But Colombian imports from the U.S. may be correlated with unobservable import demand shocks driven by underlying economic conditions that are also associated with crime, such as growth in non-agricultural sectors. To avoid this potential problem, we follow an approach similar to Autor, Dorn, and Hanson (2013),

who instrument flows of exports from China to the U.S. using Chinese exports to eight other developed countries while allowing exposure to trade flows to vary with initial local sectoral mix. We take advantage of the fact that several Latin American countries have implemented FTAs with the U.S. with agricultural tariffs and quotas similar to those of the Colombian FTA around the same time. Rather than using exports from the U.S. to Colombia in our measure of trade exposure competition, we use the total change in corn and bean exports from the U.S. to seven other Latin American countries that were included in FTAs with the U.S. from 2012-2017. These countries are Chile, El Salvador, Guatemala, Honduras, Nicaragua, Panamá, and Perú. In Table 4, we briefly describe corn trade terms under each respective FTA.

Figure 1 depicts the combined value of corn and bean imports into Colombia from U.S. as well as the Latin American countries used to construct our instrumental variable. Prior to 2007, exports from the U.S. to Colombia and U.S. exports to other Latin American countries tracked one another closely. From 2007-2012, the trends diverged as the U.S. entered into FTAs with several of Colombia's Latin American neighbors in 2006 (see Table 4) while Colombia relied on the MERCOSUR countries for corn imports. After the U.S.-Colombia FTA was implemented in 2012, the flow of corn and beans from the U.S. into Colombia closely tracked the flow of these same crops into other Latin American countries that were signatories of FTAs with the U.S.

[FIGURE 1 HERE]

Our revised international competition exposure variable incorporating flows of corn and beans from the U.S. to other Latin American countries is given in equation (2), where ΔM_{jt}^{O} is the change in other Latin American countries' import quantity from the U.S. for crop *j* from 2012 to 2017:

$$\Delta ICP_{it}^{O} = \frac{1}{P_{i0}} \sum_{j} \frac{P_{ij,0}}{P_{j,0}} \Delta M_{jt}^{O} \tag{2}$$

As noted, we estimate our effects of interest using a two-stage least squares approach. The first and second stage regressions are given by equations (3) and (4), respectively.

$$\Delta PA_{it} = \alpha_0 + \alpha_1 \Delta ICP_{it}^{O} + X_i'\gamma + u_{it} \quad (3)$$

$$\Delta Crime_{it} = \beta_0 + \beta_1 \Delta \widehat{PA_{it}} + X_i'\Gamma + e_{it} \quad (4)$$

where ΔPA_{it} is the change in area planted with corn and beans from 2012 to 2017 as a proportion of area in these same crops in 2012 (scaled by 100 for ease of interpretability) and X_i is a vector of covariates summarized in panel C of Table 3 above. In the first stage, the change in exposure to import competition per hectare is used to predict the change in the area planted with corn and beans relative to area in the initial year (2012). In the second stage, the predicted relative change in the area planted with sensitive crops is used to explain the change in the crime rate, where the latter is measured as reported incidents (not necessarily leading to an arrest) per 100,000 people.

Equations (3) and (4) represent the causal chain linking international trade exposure to crime. We standardize ΔICP_{it}^{O} to have a mean of zero and a standard deviation of one prior to estimation so that the parameter α_1 represents the average causal effect of a one standard deviation change in U.S. corn and bean import competition on the percent change in area planted with corn and beans. The parameter β_1 measures the average causal effect of a one percent change in area planted with corn and beans on the change in the crime rate per 100,000 individuals between 2012 and 2017. We separately estimate causal effects on homicides, house burglaries, vehicle thefts, business robberies, and robberies of people, weighting each municipality by its share of national planted area in corn and beans in 2012.

5 Results

5.1 Main results

Our main results are presented in Table 5. The first-stage regression results (panel C) show a negative relationship between area planted with corn and beans and exposure to U.S. import competition. The first-stage F-statistic suggests that instrument strength is sufficient (Angrist and Kolesár 2023). Panel B shows

the estimated reduced form regression, i.e., the effect of exposure to U.S. corn and beans on crime. The reduced form captures the direct effect of import competition on crime. In addition, the reduced form provides a test of the null hypothesis that the percent change in area planted with corn and beans had no effect on crime, which is robust to weak instruments and valid when the exclusion restriction holds (Chernozhukov and Hansen 2008). We observe precisely estimated reduced-form effects for home burglaries and business robberies, while the effect on robberies of people is significant at the 10% level. According to the reduced-form results, a one standard deviation increase in exposure to U.S. corn and bean imports increases home burglaries by 16%, decreases business robberies by 13%, and increases robberies of individuals by 6%, all relative to 2012 population-weighted mean crime rates across our 887 municipalities. Panel A completes the estimated causal chain by presenting the second-stage regression results. A 10% reduction in planted area would result in approximately 4 additional home burglaries, two fewer business robberies, and three additional robberies of persons per 100,000 residents, on average across the municipalities in our data set.

[TABLE 5 HERE]

5.2 Treatment effect heterogeneity

We next assess treatment effect heterogeneity by examining results inside and outside of coca producing areas of Colombia, as well as inside and outside of the Andes. Note that these areas have limited overlap, as only 6% of the municipalities in our estimation sample had coca production in 2012 and were located in the Andes. As discussed in the introduction, in coca producing regions the social order is likely to be heavily influenced by the presence of rebel groups. The implications of rebel group control for crime are ambiguous. Since the period we examine was one of relative stability in areas controlled by rebel groups as well as ongoing peace talks between the government and the FARC, coca-producing regions may not be particularly susceptible to economic shocks. On the other hand, the Colombian state is relatively weak in coca-producing regions, and this may lead to an inability to control crime in the wake of an economic shock from trade liberalization. Similarly, the government is relatively weak in rural areas of the Andes, potentially

leading to stronger effects on crime from the U.S. import shock. Impacts in the Andes may be further exacerbated by a lack of alternatives to agricultural production, and a high reliance on small-scale, labor-intensive, traditional family farming, But greater poverty in the Andes may imply a lack of opportunity to commit crimes for economic reasons, which we would expect to be the main motivating factor in the wake of an economic shock.

Table 6 presents results obtained by splitting the sample into municipalities with and without coca production in 2012. We see a significant impact of the trade shock on home burglaries outside of coca regions, and this effect is significantly larger than the corresponding impact in coca-producing areas. Inside and outside of coca regions, the trade shock resulted in significant decreases in business robberies, with no detectable difference in effect size (because instrument strength is adequate outside of coca areas but weak in coca-producing municipalities, we rely on the reduced-form regression results for inference in coca-producing areas). Other outcomes exhibit no significant differences by coca production status.

Table 7 shows results for municipalities inside and outside of the Andes. Once again, we confirm heterogeneous effects, suggesting that the trade shock is more relevant for land planted with corn and beans inside the Andes relative to outside. The results suggest that impacts on crime are driven by effects in the Andes. While there is a positive impact coefficient on homicides outside the Andes, it is only significant at the 10% level, and all other effects outside the Andes are imprecisely estimated. We obtain significant impacts of the trade shock on home burglaries and robberies of individuals in the Andes, with both estimates suggesting the trade shock increased crime, and both effects are significantly stronger in the Andes than elsewhere in Colombia.

5.3 Vulnerability of smallholder corn producers

In Section 2 we argue that smallholder corn production is likely to be most susceptible to the growth of cheap corn imports from the U.S. following implementation of the FTA. We test this hypothesis by regressing changes in crime from 2012-2017 on 2012 municipality-level shares of national planted area in traditional corn systems, modern corn systems, and beans, controlling for covariates. The change in each type

of crime is regressed on the share of national planted area in each crop individually as well as on all the crop shares at once. The results are given in Table 8, and they strongly suggest that impacts on crime are increasing in area under traditional corn systems. Note that the crop share variables are scaled by 100 prior to estimation, so that the resulting coefficients should be interpreted as the average partial effect of a 1% change in the share of national planted area for a given crop, averaged across the municipalities in our data. Other than business robberies, all types of crime exhibit strong associations with the share of traditional corn national planted area, and this holds regardless of whether the traditional corn share is used on its own (with covariates) or in a model with modern corn and beans. Relative to sample average crime rates, a 1% increase in a given municipality's share of national planted area in traditional corn results in an average increase of 35-36% for homicides, 28-31% for home burglaries, 22-24% for vehicle thefts, and 34-38% for robberies of people, depending on whether we consider the model with traditional corn area on its own or traditional corn area alongside modern corn and beans. The other crops show inconsistent associations with crime and tend to be significantly related to crime only when conditioning on shares of the other two crops.

In the Appendix we present a variety of placebo analyses to assess our empirical approach. These checks include repeating our two-stage least squares estimation and regressing changes in crime on shares of national planted area in corn and beans for the pre-FTA time horizon (2007-2012). Our goal in carrying out placebo analyses is to see whether we obtain null results prior to the shock brought about by the FTA. If we were to find significant effects on crime pre-FTA, then this would suggest that area planted with corn and beans would have been associated with changes in crime even in the absence of the trade agreement. Overall, the results of our placebo analyses strongly support our empirical approach, but there is suggestive evidence of exclusion restriction violations in coca-producing regions. We conclude that in general our results are highly robust, although results in coca-producing regions should be interpreted cautiously.

6 Discussion

Our results present clear evidence for increasing property crime because of the increase in agricultural (corn and beans) imports from the U.S. into Colombia in the wake of the U.S.-Colombia FTA. We show that

these negative effects were concentrated in areas reliant upon smallholder corn production. Our results consistently show impacts on home burglaries, robberies of businesses, and robberies of individuals. While home burglaries and robberies of individuals rose in response to the trade shock, business robberies appear to have fallen. Although we do not have the data to test this, we speculate that an economic shock to agriculture that caused some businesses to fail, would reduce the potential for business robberies through a reduction in the number of targets.

We present strong evidence that the most negatively affected areas in the country were Andean municipalities with predominantly smallholder traditional corn production. These results confirm pre-agreement fears that these farmer segments stood to lose the most from the FTA due to technological, infrastructure, and productivity weaknesses that seemed insurmountable (Garay, Gomez, and Landínez 2009; Espinosa, Laura, and Henao 2013). Our findings further suggest that government policies aimed at mitigating the effects of the FTA on the agricultural sector (Plan Colombia Siembra), fell short of compensating losers in this region of the country. In fact, the Ministry of Agriculture strategic focus was on boosting the production of modern yellow corn in municipalities with significant existing production, irrigation districts, and the potential to produce large volumes of crops with homogeneous quality (Ministry of Agriculture and Rural Development 2016).

The absence of strong evidence for impacts on homicides in our context stands in contrast to the results of Dell, Feigenberg, and Teshima (2019) for Mexico and Dix-Carneiro, Soares, and Ulyssea (2018) in Brazil, where trade liberalization caused rising violence in urban areas. Instead, our results more closely parallel findings from the developed world, where changes in labor market opportunities tend to affect property crimes, but have mixed results in terms of more violent crimes (Mustard David 2010). These results are consistent with a large body of literature arguing that Becker's (1968) insights on the economics of crime are more applicable to economic crime than to violent crime, given that the latter may be driven or mediated by different dynamics (Draca and Machin 2015). In Colombia, as in other Latin American countries, homicides have historically been concentrated in areas subject to armed group conflict and illicit

crop production (Mejia and Restrepo 2013; Diaz and Sanchez 2004). But unlike other countries in the region since 2005 violent crime in Colombia has drastically fallen, likely because of two main factors. First, the Justice and Peace Law of Colombia (Law 975 of 2005) was approved by Congress, which facilitated the demobilization of armed paramilitary groups. Second, dialogue between the government and FARC insurgents took place between 2012 and 2016 and led to the implementation of a peace agreement after 2016 (Centro de Memoria Histórica 2013). These events established a context where the areas in Colombia we might expect to be most susceptible to rising violence, i.e., areas controlled by rebel groups, were relatively stable and able to tolerate the shock generated by rising imports from the U.S. following the FTA. In contrast to the policies implemented in Colombia, the post-FTA era analyzed in the Brazil and Mexico studies mentioned above, was marked by conflict between gangs disputing illicit drug production and trafficking routes, as well as aggressive government policies frontally attacking the drug business (Dube, García-Ponce, and Thom 2016).

In addition, our results are consistent with the fact that in Colombian coca-growing, rebel-controlled areas, corn and beans are relatively less important crops, since coca has been substituted for food crops (Ibáñez, Muñoz-Mora, and Verwimp 2013). Thus, these areas are unlikely to have been exposed to a strong degree of increased trade competition in the agricultural sector. For the time horizon we study, the relative importance of coca as compared to corn and beans grew in coca-producing regions, from a ratio of 2.5:1 hectares of corn to hectares of coca in 2012 to a 1:1 ratio in 2017. Importantly, though, we find no evidence that the trade shock boosted coca cultivation (see Appendix Table R). Rather, the growth in the importance of coca to corn and beans in coca-producing regions appears to have followed the same trajectory that we would have observed in the absence of the FTA, and this growth in the importance of coca may have shielded these areas from the worst effects of the trade shock.

Our study underscores the importance of examining disaggregaed crime data, distinguishing between violent and economic or other minor crimes. Because data on violent deaths is most readily available, most of the crime increases documented, particularly in developing countries, are in terms of

homicide rates. However, the use of homicides to represent the overall incidence of crime may obscure the impact of economic schocks on less extreme forms of violence that are typically more prevalent. In addition, economic crimes might be more adequate categories to analyze the response of crime to deteriorations in economic conditions. Finally, while it is possible that greater import competition increased crime in urban areas in Colombia, as in the Mexican and Brazilian cases, our results show that the effects of trade openness on crime extend to rural areas.

7 Conclusion

Greater trade openness creates winners and losers. Consumers gain by paying lower prices for goods, internationally competitive industries and their employees benefit from greater exports, while workers in less-competitive industries exposed to heightened import competition can suffer from deteriorating economic opportunities. The negative economic consequences of exposure to import competition can decrease the opportunity cost of participating in criminal activities (Becker 1968). A small empirical literature on trade and crime has found evidence that openness to imports boosts criminal activity (Dell, Feigenberg, and Teshima 2019; Dix-Carneiro, Soares, and Ulyssea 2018). We add to this literature by studying the case of the Colombia-U.S. FTA, exploiting variation in exposure to greater agricultural import competition. Using an instrumental variables approach, we find that more exposure to import competition in the agricultural sector increases home burglaries and robberies of people, while reducing business robberies. We find no clear evidence for impacts on homicides, in contrast to previous literature from other middle-income countries (Dell, Feigenberg, and Teshima 2019; Dix-Carneiro, Soares, and Ulyssea 2018).

Our results underscore the need for policies to help cushion the blow of heightened competition from greater trade openness. For example, active labor market policies (e.g., job training) have been somewhat successful in Latin America, though whether they could effectively combat increased crime from trade openness is unclear, particularly in rural areas with higher poverty levels. On the one hand, women appear to benefit more on average than men from active labor market policies in Latin America (Aedo and Pizarro

2006; Attanasio, Kugler, and Meghir 2011), but women are less likely to commit crimes (Ramakers, Aaltonen, and Martikainen 2020). On the other hand, active labor market policies are most successful in Latin America when targeting poor individuals (Escudero et al. 2019), and poor households are frequently the first to be pushed towards economically-motivated property crimes when conditions deteriorate. Other safety net programs, e.g., cash transfers (Watson, Guettabi, and Reimer 2020) or unemployment insurance (Britto, Pinotti, and Sampaio 2022), might reduce economically-motivated crimes. Colombia has a cash transfer program but it is for households with children, while the national unemployment insurance program pays a small benefit and coverage only extends to the formal labor market (Asenjo and Pignatti 2019). How to design the social safety net to best offset the concentrated costs of exposure to trade competition, particularly in rural areas, is a subject for future research.

References

Aedo, C, and M Pizarro. 2006. “Rentabilidad Económica Del Programa de Capacitación Laboral de Jóvenes Chile Joven. En Evaluación Por.” *Cuadernos de Economía*.

Angrist, Joshua, and Michal Kolesár. 2023. “One Instrument to Rule Them All: The Bias and Coverage of Just-ID IV.” *Journal of Econometrics*, February. https://doi.org/10.1016/j.jeconom.2022.12.012.

Arbeláez, Maria, Sebastián Higuera, Roberto Steiner, and Sandra Zuluaga. 2019. “The Political Economy of Protection of Some ‘Sensitive’ Agricultural Products in Colombia.” Fedesarrollo. http://hdl.handle.net/11445/3718.

Arjona, Ana. 2016. *Rebelocracy: Social Order in the Colombian Civil War*. 1st ed. Cambridge University Press. https://doi.org/10.1017/9781316421925.

Asenjo, Antonia, and Clemente Pignatti. 2019. *Unemployment Insurance Schemes around the World: Evidence and Policy Options*. International Labour Office.

Attanasio, Orazio, Adriana Kugler, and Costas Meghir. 2011. “Subsidizing Vocational Training for Disadvantaged Youth in Colombia: Evidence from a Randomized Trial.” *American Economic Journal: Applied Economics* 3 (3): 188–220.

Autor, David H., David Dorn, and Gordon H. Hanson. 2013. “The China Syndrome: Local Labor Market Effects of Import Competition in the United States.” *American Economic Review* 103 (6): 2121–68. https://doi.org/10.1257/aer.103.6.2121.

Bartik, Timothy J. 1991. *Who Benefits from State and Local Economic Development Policies? Who Benefits from State and Local Economic Development Policies?* W.E. Upjohn Institute. https://doi.org/10.17848/9780585223940.

Beach, Brian, and John Lopresti. 2019. “Losing by Less? Import Competition, Unemployment Insurance Generosity, and Crime.” *Economic Inquiry* 57 (2): 1163–81.

Becker, Gary S. 1968. “Crime and Punishment: An Economic Approach.” *Journal of Political Economy* 76 (2): 169–217. https://doi.org/10.1086/259394.

Bignon, Vincent, Eve Caroli, and Roberto Galbiati. 2017. “Stealing to Survive? Crime and Income Shocks in Nineteenth Century France.” *The Economic Journal* 127 (599): 19–49.

Britto, Diogo GC, Paolo Pinotti, and Breno Sampaio. 2022. “The Effect of Job Loss and Unemployment Insurance on Crime in Brazil.” *Econometrica* 90 (4): 1393–1423.

Cancino, Adriana. 2008. “The Negotiation Process for the Free Trade Agreement between Colombia and the United States.” Master’s, FLACSO Mexico. https://repositorio.flacsoandes.edu.ec/bitstream/10469/1153/1/TFLACSO-2008ARCC.pdf.

Ceccato, Vania, and Heloise Ceccato. 2017. “Violence in the Rural Global South: Trends, Patterns, and Tales From the Brazilian Countryside.” *Criminal Justice Review* 42 (3): 270–90. https://doi.org/10.1177/0734016817724504.

Centro de Memoria Histórica. 2013. “Basta Ya! Colombia: Memoria de Guerra y Dignidad.”

Che, Yi, Xun Xu, and Yan Zhang. 2018. “Chinese Import Competition, Crime, and Government Transfers in Us.” *Journal of Comparative Economics* 46 (2): 544–67.

Chernozhukov, Victor, and Christian Hansen. 2008. “The Reduced Form: A Simple Approach to Inference with Weak Instruments.” *Economics Letters* 100 (1): 68–71.

Cristina Silva, Laura. 2007. “The FTA Negotiation Process between Colombia and the United States (El Proceso de Negociación Del TLC, Entre Colombia y Estados Unidos).” *Colombia Internacional* 65 (January/June): 112–33.

DANE. 2014. “Methodology: Multidimensionsal Poverty Index (Metodología: Índice de Pobreza Multidimensional (IPM)).” https://www.dane.gov.co/files/operaciones/PM/met-IPM.pdf.

———. 2021. “Encuesta Nacional Agropecuaria.”

Dell, Melissa, Benjamin Feigenberg, and Kensuke Teshima. 2019. "The Violent Consequences of Trade-Induced Worker Displacement in Mexico." *American Economic Review: Insights* 1 (1): 43–58. https://doi.org/10.1257/aeri.20180063.

Diaz, Ana Maria, and Fabio Sanchez. 2004. "A Geography Of Illicit Crops (Coca Leaf) And Armed Conflict In Colombia." CEDE.

Díaz Valencia, Gustavo Adolfo. 2012. "Impact of the FTA with the United States on the Colombian Agricultural Sector, More Risks than Opportunities (the Case of Rice) (Impacto Del TLC Con Estados Unidos En El Sector Agrícola Colombiano, Más Riesgos Que Oportunidades (Caso Arroz))." *Revista CIFE: Lecturas de Economía Social* 14 (20): 55–82.

Dirección de Justicia, Seguridad y Gobierno. 2015. "Territorial Vulnerability Index: Results 2008-2012 (Índice de Vulnerabilidad Territorial: Resultados 2008-2012)." Departamento Nacional de Planeación.

Dix-Carneiro, Rafael, and Brian Kovak. 2015. "Trade Reform and Regional Dynamics: Evidence From 25 Years of Brazilian Matched Employer-Employee Data." Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w20908.

Dix-Carneiro, Rafael, and Brian K. Kovak. 2019. "Margins of Labor Market Adjustment to Trade." *Journal of International Economics* 117 (March):125–42. https://doi.org/10.1016/j.jinteco.2019.01.005.

Dix-Carneiro, Rafael, Rodrigo R. Soares, and Gabriel Ulyssea. 2018. "Economic Shocks and Crime: Evidence from the Brazilian Trade Liberalization." *American Economic Journal: Applied Economics* 10 (4): 158–95. https://doi.org/10.1257/app.20170080.

Draca, Mirko, and Stephen Machin. 2015. "Crime and Economic Incentives." *Annual Review of Economics* 7 (1): 389–408. https://doi.org/10.1146/annurev-economics-080614-115808.

Dube, Oeindrila, Omar García-Ponce, and Kevin Thom. 2016. “From Maize to Haze: Agricultural Shocks and the Growth of the Mexican Drug Sector.” *Journal of the European Economic Association* 14 (5): 1181–1224.

Erickson, Megan, and Lucas Owen. 2022. “Blood Avocados? Trade Liberalization and Cartel Violence in Mexico.” https://bpb-us-e1.wpmucdn.com/sites.uw.edu/dist/0/7926/files/2022/10/Blood_avocados_2022.pdf.

Escudero, Verónica, Jochen Kluve, Elva López Mourelo, and Clemente Pignatti. 2019. “Active Labour Market Programmes in Latin America and the Caribbean: Evidence from a Meta-Analysis.” *The Journal of Development Studies* 55 (12): 2644–61.

Espinosa, Andrés, Fenwarth Laura, and Pasculli Henao. 2013. “Visión Agrícola Del TLC Entre Colombia y Estados Unidos: Preparación, Negociación, Implementación y Aprovechamiento.” CEPAL.

FAO. 2020. “Rural Poverty Reduction: Highlights of FAO Support in Africa (2018-2020).” Food and Agriculture Organization of the United Nations. https://www.fao.org/3/cb0482en/cb0482en.pdf.

Feenstra, Robert C. 2018. “Restoring the Product Variety and Pro-Competitive Gains from Trade with Heterogeneous Firms and Bounded Productivity.” *Journal of International Economics* 110 (January):16–27. https://doi.org/10.1016/j.jinteco.2017.10.003.

FENALCE. 2024. “History of Area, Production, and Yield: Cereals, Legumes, and Soy (Histórica de Área, Producción y Rendimiento: Cereales, Leguminosas Y Soya).” FENALCE. https://app.powerbi.com/view?r=eyJrIjoiM2FiYzM5ZTAtNjFmNi00MGQyLWFiYzYtNGI0YTJiZTcwZWQwIiwidCI6IjU2MmQ1YjJlLTBmMzEtNDdmOC1iZTk4LThmMjI4Nzc4MDBhOCJ9.

Fougère, Denis, Francis Kramarz, and Julien Pouget. 2009. “Youth Unemployment and Crime in France.” *Journal of the European Economic Association* 7 (5): 909–38. https://doi.org/10.1162/JEEA.2009.7.5.909.

Garay, Luis Jorge, Fernando Barberi Gomez, and Iván Cardona Landínez. 2009. “Impact of the US-Colombia FTA on the Small Farm Economy in Colombia.” *Bogotá: Oxfam*.

Gillin, Joel. 2015. “Understanding Colombia’s Armed Conflict: The Role of Drugs,” January 14, 2015. https://colombiareports.com/understanding-colombian-conflict-drugs/.

Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. 2020. “Bartik Instruments: What, When, Why, and How †.” *American Economic Review* 2020 (8): 2586–2624. https://doi.org/10.1257/aer.20181047.

Gómez Isa, Felipe. 2013. “Justice, Truth and Reparation in the Colombian Peace Process.” Norwegian Peacebuilding Resource Centre. https://www.files.ethz.ch/isn/163462/5e7c839d7cf77846086b6065c72d13c5.pdf.

Gómez, Miguel, Sergio Puerto, Steven Zahniser, and Jie Li. 2021. “U.S. Agricultural Exports to Colombia: Rising Sales in Response to Trade Liberalization and Changing Consumer Trends.” https://www.ers.usda.gov/webdocs/outlooks/102838/aes-118-01.pdf?v=3251.7.

Granados Sánchez, Miguel. 2005. “The Participation of Colombian Business Associations in the Negotiations for the Free Trade Agreement with the United States: Organization, Sectorization, Agreement (La Participación de Los Gremios Empresariales Colombianos En Las Negociaciones Del Tratado de Libre Comercio Andino Con Estados Unidos: Organización, Sectorización y Concertación).” Universidad de los Andes. https://repositorio.uniandes.edu.co/server/api/core/bitstreams/ce775095-25ef-4f77-8c3a-a2ffc357a0ae/content.

Hidalgo, Eduardo, Erik Hornung, and Pablo Selaya. 2022. “NAFTA and Drug-Related Violence in Mexico.” *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4241621.

Ibáñez, Ana M, Juan Muñoz-Mora, and Philip Verwimp. 2013. “Abandoning Coffee under the Threat of Violence and the Presence of Illicit Crops: Evidence from Colombia.” *Documento CEDE*, no. 2013–35.

Josling, Tim, Mechel Paggi, John Wainio, and Fumiko Yamazaki. 2015. “Latin American Agriculture in a World of Trade Agreements.” *American Journal of Agricultural Economics* 97 (2): 546–67. https://doi.org/10.1093/ajae/aau116.

Khanna, Gaurav, Carlos Medina, Anant Nyshadham, Christian Posso, and Jorge Tamayo. 2021. “Job Loss, Credit, and Crime in Colombia.” *American Economic Review: Insights* 3 (1): 97–114. https://doi.org/10.1257/AERI.20190547.

Kovak, Brian K. 2013. “Regional Effects of Trade Reform: What Is the Correct Measure of Liberalization?” *American Economic Review* 103 (5): 1960–76. https://doi.org/10.1257/aer.103.5.1960.

Lin, Ming-Jen. 2008. “Does Unemployment Increase Crime? Evidence from U.S. Data 1974-2000.” 2. *Source: The Journal of Human Resources*. Vol. 43.

Mejia, Daniel, and Pascual Restrepo. 2013. “Bushes and Bullets: Illegal Cocaine Markets and Violence in Colombia.” *Documento CEDE,* no. 2013–53.

Ministry of Agriculture and Rural Development. 2016. “Strategic Document: Colombia Planting Strategy (Documento Estratégico: Estrategia Colombia Siembra).” MINAGRICULTURA. https://fao-lex.fao.org/docs/pdf/col178896.pdf.

———. 2019. “Municipal Agricultural Evaluations EVA (Evaluaciones Agropecuarias Municipales EVA).” https://www.datos.gov.co/Agricultura-y-Desarrollo-Rural/Evaluaciones-Agropecuarias-Municipales-EVA/2pnw-mmge/about_data.

———. 2021. “Soy-Maize: National Project (Soya-Maíz: Proyecto Nacional).”

Mir Mohamad Tabar, S. Ahmad, and Mohsen Noghani. 2019. “Unemployment and Crime in Developing Countries: A Meta-Analysis in Iran.” *Crime, Law and Social Change* 72 (3): 327–38. https://doi.org/10.1007/s10611-019-09823-y.

Morkunas, Mangirdas. 2022. “Measuring the Cohesion of Informal Economy in Agriculture in New European Union Member States.” *Economies* 10 (11): 285.

Mustard David, B. 2010. “How Do Labor Markets Affect Crime? New Evidence on an Old Puzzle.” *Handbook On The Economics Of Crime. Elsevier*.

Norsk, Les På. 2022. “The Peace Process in Colombia.” Government of Norway. https://www.regjeringen.no/en/topics/foreign-affairs/peace-and-reconciliation-efforts/norways_engagement/peace_colombia/id2522231/.

Office of the United States Trade Representative. 2012. “Colombia TPA: Final Text, Appendix I.” Office of the United States Trade Representative. https://ustr.gov/sites/default/files/uploads/agreements/fta/colombia/asset_upload_file348_10183.pdf.

———. 2024. “Free Trade Agreements.” https://ustr.gov/trade-agreements/free-trade-agreements.

Pulecio, Jorge. 2005. “The Uribe Strategy for Negoation of the FTA (La Estrategia Uribe de Negociación Del TLC).” *Colombia Internacional* 61 (January/June): 12–32.

Ramakers, Anke, Mikko Aaltonen, and Pekka Martikainen. 2020. “A Closer Look at Labour Market Status and Crime among a General Population Sample of Young Men and Women.” *Advances in Life Course Research* 43:100322.

Rau, Benjamin, and Lady Gomez. 2018. “Colombia Grain and Feed Annual 2018.” USDA Foreign Agricultural Service.

Salgar, Lina María. 2005. “The Cultivation of Maize in Colombia (El Cultivo de Maíz En Colombia).” Grupo Semillas Colombia. https://semillas.org.co/es/el-cultivo-de-maz-en-colombia#:~:text=%C2%B7%20El%20sistema%20tecnificado%20hace%20referencia%20a%20los,uso%20de%20semillas%20mejoradas%2C%20fertilizantes%20y%20plaguicidas%20qu%C3%ADmicos.

Sankey, Kyla. 2023. “We, Campesinos: The Potentials and Pitfalls of Agrarian Populism in Colombia’s Agrarian Strike.” *Journal of Agrarian Change* 23 (1): 131–48. https://doi.org/10.1111/joac.12516.

The World Bank. 2024. “LAC Equity Lab: Poverty - Poverty Rate.” https://www.worldbank.org/en/topic/poverty/lac-equity-lab1/poverty/head-count.

UNCOMTRADE. 2021. “UN Comtrade | International Trade Statistics Database.”

Uppsala Conflict Data Program. 2024. “Colombia.” https://ucdp.uu.se/country/100.

Vallejo, Katherine, Jose Tapias, and Ivan Arroyave. 2018. “Trends of Rural/Urban Homicide in Colombia, 1992-2015: Internal Armed Conflict and Hints for Postconflict.” *BioMed Research International* 2018.

Villarreal, M. Angeles. 2012. “The US-Colombia Free Trade Agreement: Background and Issues.” Library of Congress, Congressional Research Service.

Watson, Brett, Mouhcine Guettabi, and Matthew Reimer. 2020. “Universal Cash and Crime.” *Review of Economics and Statistics* 102 (4): 678–89.

Figures

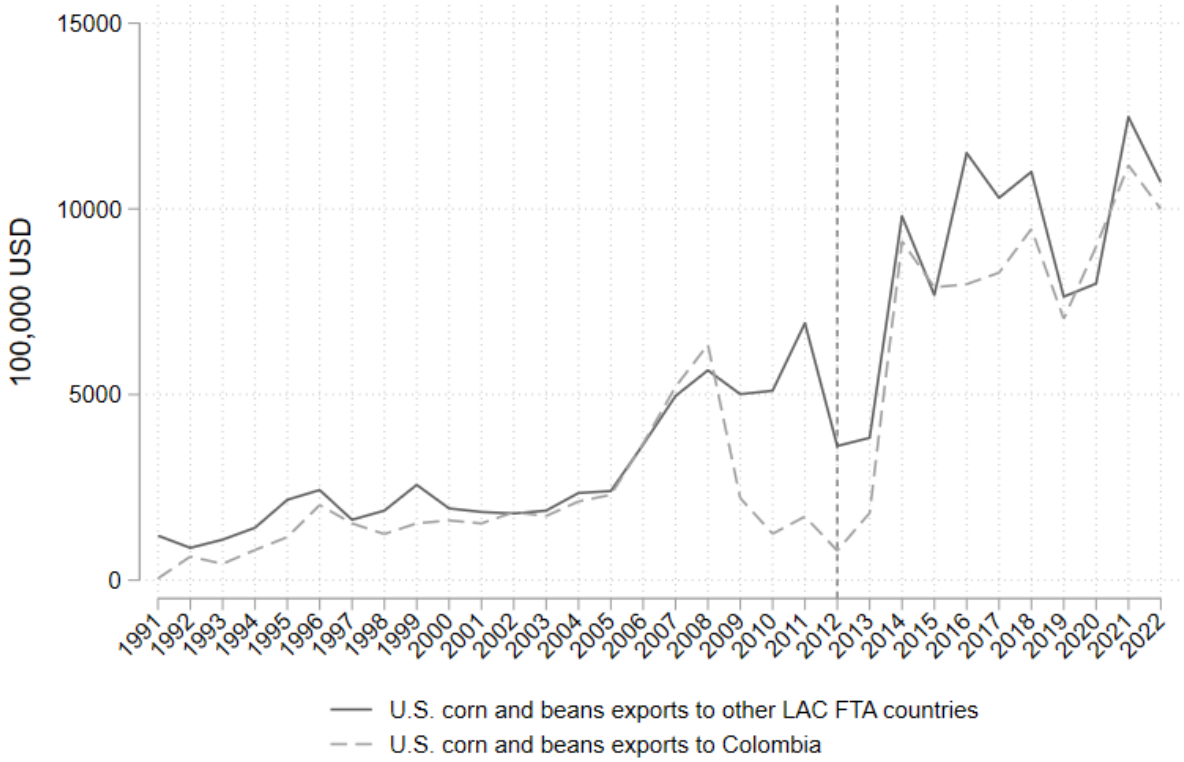

Figure 1. Exports of corn and beans from the U.S. to Colombia and other Latin American and Caribbean countries with free trade agreements

Tables

Table 1. Structure of Colombian tariffs on U.S. food and agricultural products under the FTA

Commodity bundle	Number of tariff items	Percent of total tariff items	Mean	Minimum	Maximum	Years to zero tariff
A	820	77.5%	0%	0%	0%	0
B	136	12.9%	22%	5%	36%	5
C	23	2.2%	23%	15%	38%	10
D	6	0.6%	39%	28%	47%	15
H - V	9	0.9%	32%	15%	80%	7 - 15
Quotas	64	6.0%	50%	10%	164%	10 - 19
Total	1,058	100%				

Notes: Bundles A, B, and C include many diverse commodities. Bundle D includes cane or beet sugar in solid form and glucose and glucose syrup. Bundles H to V include processed and preserved corn and beans, yeasts, and other sugars. The Quotas category includes butter, cheese, processed dairy products, dried beans, yellow corn, white corn, sorghum, glucose, pet food, balanced animal feed, crude soybean oil, rice, beans, and chicken parts. Source: Colombian Ministry of Commerce, Industry and Tourism.

Table 2. Tariffs and quotas under the U.S.-Colombia FTA for staple crops

Staple crops	Tariff under FTA	Years to zero tariff	Deregulation modality	Duty-free quota	Annual quota growth	Colombian production 2012
Yellow corn	25%	12	Linear	2,100	5%	1,050
White corn	25%	12	Linear	137	5%	820
Rice	80%	19	Linear after six years	79	4.5%	2,533
Beans	60%	10	33% year one, then linear	15	5%	137

Notes: Quota and production are in thousands of tons. Sources: FTA terms are from the Office of the U.S. Trade Representative (2012), white and yellow corn production are from FENALCE (2024), rice and beans production are from Ministry of Agriculture (2019).

Table 3. Summary statistics

	Mean and standard deviation	Year measured
A. Change in import exposure		
Corn (tons/hectare)	1,473.74	2012-2017
	(2,683.81)	
Beans (tons/hectare)	9.14	2012-2017
	(16.65)	
B. Change in crime per 100,000 residents		
Homicides	-8.24	2012-2017
	(29.01)	
Home burglaries	18.39	2012-2017
	(47.02)	
Car and motorcycle thefts	7.92	2012-2017
	(38.41)	
Business robberies	18.93	2012-2017
	(32.89)	
Robberies of people	35.71	2012-2017
	(68.93)	

Table 3 Continued		
C. Covariates		
Infant mortality rate	21.93	2012
	(7.54)	
Water network coverage	55.40	2012
	(27.86)	
Share of rice national planted area	0.26	2012
	(0.59)	
Share of coffee national planted area	0.13	2012
	(0.29)	
Planted area (hectares)	9056.65	2012
	(9192.61)	
Population density	83.36	2012
	(118.64)	
Coca production (0/1)	0.21	2012
	(0.41)	
Government expenditure (1,000 pesos per capita)	327.40	2012
	(137.36)	
Number of agricultural loans	358.87	2012
	(414.25)	
GDP (pesos per capita)	7.14	2009
	(5.25)	
Gini coefficient	0.45	2005
	(0.03)	
School enrollment	61.36	2005
	(6.93)	
Poverty index	73.39	2005
	(14.24)	
Andes region (0/1)	0.39	2012
	(0.49)	
Distance to nearest major food market (km)	66.84	2012
	(60.65)	
Altitude (meters)	684.26	2012
	(916.70)	
Distance to state capital (km)	88.45	2012
	(69.02)	
Observations	887	

Notes: Source for trade data is COMTRADE, source for crime and covariate data is University of the Andes. Means and standard deviations estimated while weighing each municipality by its 2012 share of national planted area in corn and beans, as in our regression models. The poverty index is calculated using the methodology described in DANE (2014). School enrollment includes ages 5-24 years. The infant mortality rate is deaths per 1,000 live births under one year of age. The population density is residents per square kilometer. Water network coverage is share of population covered by water network.

Table 4. Tariffs and quotas on U.S. corn under Latin American trade agreements

Country	Initial year	Initial agreement tariff	Years to zero tariff	Quota	Annual quota increase	Production in initial year	Quota/ initial production
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Colombia	2012	25%	12	2,130	5%	1,318	162%
Chile	2004	6%	10	0	0%	1,320	0%
El Salvador	2006	15%	15	368	5%	742	50%
Guatemala	2006	35%	10	525	5%	1,490	35%
Honduras	2006	45%	20	214	5%	502	43%
Nicaragua	2006	15%	15	73	5%	502	15%
Panama	2012	40%	15	299	3%	118	254%
Peru	2009	25%	12	500	6%	1,560	32%

Notes: Trade agreement terms are from the Office of the United States Trade Representative (2024). Quota and production are in thousands of tons. Production data are from FAOSTAT.

Table 5. Post-FTA two-stage least squares results, full sample

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	-0.055	-0.368**	0.047	0.227**	-0.334*
	(0.116)	(0.160)	(0.089)	(0.091)	(0.190)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	1.226	8.165***	-1.050	-5.032***	7.418*
	(2.620)	(2.692)	(1.987)	(1.739)	(3.974)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	-22.195***	-22.195***	-22.195***	-22.195***	-22.195***
	(6.296)	(6.296)	(6.296)	(6.296)	(6.296)
First-stage F-stat	12.43	12.43	12.43	12.43	12.43
Mean crime rate	36.599	52.403	52.706	38.533	129.803
Observations	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Table 6. Post-FTA two-stage least squares results, municipalities with and without coca production

	Homicides			Home burglaries			Car and motorcycle thefts			Business robberies			Robberies of people		
	Coca	No coca	Difference	Coca	No coca	Difference	Coca	No coca	Difference	Coca	No coca	Difference	Coca	No coca	Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
A. Second stage	The dependent variable is the change in the crime rate														
Change in planted area	-0.133	0.031	-0.16	0.045	-0.699**	0.74**	-0.083	0.087	-0.17	0.178**	0.338**	-0.16	-0.186	-0.420	0.23
	(0.103)	(0.204)	(0.23)	(0.065)	(0.284)	(0.29)	(0.080)	(0.157)	(0.18)	(0.078)	(0.163)	(0.18)	(0.155)	(0.313)	(0.35)
B. Reduced form	The dependent variable is the change in the crime rate														
Change in import competition	7.991	-0.413	8.40	-2.678	9.303***	-11.98**	4.989	-1.157	6.15	-10.690***	-4.499***	-6.19	11.185	5.590	5.59
	(5.820)	(2.720)	(6.59)	(4.144)	(2.973)	(5.17)	(3.989)	(2.056)	(4.59)	(4.064)	(1.723)	(4.54)	(8.830)	(4.343)	(10.09)
C. First stage	The dependent variable is the percent change in area planted with corn and beans														
Change in import competition	-59.985**	-13.317***	-46.67	-59.985**	-13.317***	-46.67	-59.985**	-13.317***	-46.67	-59.985**	-13.317***	-46.67	-59.985**	-13.317***	-46.67
	(27.460)	(3.568)	(28.73)	(27.460)	(3.568)	(28.73)	(27.460)	(3.568)	(28.73)	(27.460)	(3.568)	(28.73)	(27.460)	(3.568)	(28.73)
First-stage F-stat	4.77	13.93		4.77	13.93		4.77	13.93		4.77	13.93		4.77	13.93	
Mean crime rate	56.813	30.504		36.965	57.058		36.138	57.702		32.388	40.386		76.892	145.757	
Observations	168	719	887	168	719	887	168	719	887	168	719	887	168	719	887

Notes: *** p<0.01, ** p<0.06, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses.

Table 7. Post-FTA two-stage least squares results, Andean and non-Andean municipalities

	Homicides			Home burglaries			Car and motorcycle thefts			Business robberies			Robberies of people		
	Andes	Non-Andes	Difference	Andes	Non-Andes	Difference	Andes	Non-Andes	Difference	Andes	Non-Andes	Difference	Andes	Non-Andes	Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
A. Second stage	The dependent variable is the change in the crime rate														
Change in planted area	0.212	-0.144*	0.36	-1.742***	-0.084	-1.66***	0.100	-0.108	0.21	0.303	0.130	0.17	-1.563***	-0.057	-1.51***
	(0.335)	(0.085)	(0.270)	(0.632)	(0.096)	(0.47)	(0.185)	(0.120)	(0.21)	(0.225)	(0.106)	(0.21)	(0.594)	(0.187)	(0.49)
B. Reduced form	The dependent variable is the change in the crime rate														
Change in import competition	-2.985	3.060*	-6.05	24.513***	1.788	22.73***	-1.408	2.285	-3.69	-4.265	-2.761	-1.50	21.997***	1.206	20.79***
	(4.527)	(1.706)	(3.89)	(5.342)	(1.938)	(4.53)	(2.661)	(2.275)	(3.49)	(3.087)	(2.050)	(3.44)	(6.571)	(4.085)	(7.04)
C. First stage	The dependent variable is the percent change in area planted with corn and beans														
Change in import competition	-14.075***	-21.211**	7.14	-14.075***	-21.211**	7.14	-14.075***	-21.211**	7.14	-14.075***	-21.211**	7.14	-14.075***	-21.211**	7.14
	(3.870)	(8.951)	(11.90)	(3.870)	(8.951)	(11.90)	(3.870)	(8.951)	(11.90)	(3.870)	(8.951)	(11.90)	(3.870)	(8.951)	(11.90)
First-stage F-stat	13.23	5.62		13.23	5.62		13.23	5.62		13.23	5.62		13.23	5.62	
Mean crime rate	32.977	39.091		59.352	47.621		37.590	63.109		42.355	35.902		138.423	123.871	
Observations	475	412	887	475	412	887	475	412	887	475	412	887	475	412	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses.

Table 8. Crime and share of national planted area in traditional corn, modern corn, and beans, post-FTA

	Homicides				Home burglaries				Car and motorcycle thefts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Traditional corn share	13.061***			12.942***	14.523**			16.084**	11.804*			12.531*
	(4.171)			(4.244)	(6.746)			(6.348)	(6.505)			(6.923)
Modern corn share		-2.013		-0.341***		1.604		2.806**		-1.064		0.673*
		(2.927)		(2.684)		(3.026)		(2.591)		(2.639)		(2.390)
Beans share			1.742	2.047***			-9.209	-8.051**			2.875	3.413*
			(3.427)	(2.940)			(6.165)	(5.846)			(3.546)	(3.879)
Mean crime rate	36.599	36.599	36.599	36.599	52.403	52.403	52.403	52.403	52.706	52.706	52.706	52.706
Observations	887	887	887	887	887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Table 8 continued

	Business robberies				Robberies of people			
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Traditional corn share	-7.033			-10.822	44.255***			48.756***
	(6.426)			(6.662)	(9.846)			(9.404)
Modern corn share		-4.044**		-5.194		2.658		7.215***
		(1.625)		(1.479)		(5.525)		(4.744)
Beans share			2.870	1.293			-16.544	-13.345***
			(2.355)	(2.272)			(11.537)	(10.211)
Mean crime rate	38.533	38.533	38.533	38.533	129.803	129.803	129.803	129.803
Observations	887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

A Appendix

We present summary statistics for the pre-FTA period in Appendix Table A below. Then, we present a variety of robustness checks on our empirical approach. First, for the main sample as well as the sub-samples created by splitting according to location in the Andes and the presence of coca production, we replicate our two-stage least squares estimates but for 2007-2012. If our identification strategy is valid, then we should find no effects of imports or planted area on crime in the pre-FTA time horizon. These results are found in Appendix Table B, Appendix Table E, Appendix Table H, Appendix Table K, and Appendix Table N. We obtain null results except for coca-producing regions.

Next, we follow a suggestion from Goldsmith-Pinkham et al. (2020) and regress changes in crime on the crop share variables used to construct our import competition exposure instrument, before and after implementation of the FTA. For our empirical approach to be valid, we must assume that area in corn or beans would have been uncorrelated with changes in crime in the absence of the FTA, i.e., a "common trends" assumption must hold for changes from 2012-2017 in crime across municipalities that vary with respect to area in corn and beans in 2012. Although we cannot test for violations of common trends during the post-FTA time horizon, we can check whether common trends are violated in the pre-FTA period by regressing the changes in crime pre-FTA (from 2007 to 2012) on the municipality-level share of national planted area in corn and beans. In addition, running these same regressions post-FTA can lend further support to the idea that area in corn is driving impacts on crime from the trade shock.

Results obtained by regressing changes in crime on each municipality's share of national planted area in corn and beans post-FTA are shown in Appendix Table C, while pre-FTA results are given in Appendix Table D. The post-FTA results underscore our conclusion that area in corn is driving impacts on crime following implementation of the FTA, while the pre-FTA estimates lend support to our identification strategy. There is no relationship in the overall sample between changes in crime and area in corn or beans prior to the FTA. We repeat these same models for the subsamples formed by splitting based on coca production status and Andean location. These results are found in Appendix Table F and Appendix Table G

(for coca-producing regions), Appendix Table I and Appendix Table J (for non-coca regions), Appendix Table L and Appendix Table M (for the Andes), and Appendix Table O and Appendix Table P (outside the Andes). The post-FTA results lend strong support to the hypothesis that the importance of corn farming is driving effects on crime in the post-FTA era and suggest that the effects are concentrated in the Andes as well as outside of coca areas. The pre-FTA results for the various sub-samples support our identification strategy, although there is evidence of pre-FTA common trends violations in coca-producing regions, despite the null results we obtained in our placebo instrumental variables analysis for those municipalities (see Appendix Table E).

In Appendix Table Q, we repeat our regressions of changes in crime on municipality-level share of national area in traditional corn, modern corn, and beans for 2007-2012. The results strongly suggest that area in these three crops was not associated with changes in crime prior to trade shocks brought about by the FTA. Overall, we conclude that areas reliant upon smallholder corn production bore the brunt of rising crime resulting from growth of cheap U.S. crop imports, and that our identification strategy appears to be valid.

Finally, as noted in the main text, not all covariates for our main models are measured in 2012. Similarly, not all covariates for our placebo analyses are measured in 2007. Ideally, we would estimate the "same" models in our main analysis and placebo analysis, e.g., covariates measured in 2012 and 2009 in the main analysis would be measured in 2007 and 2004 in our placebo analysis. This was not possible with our selected covariates. To check robustness to using a covariate set for which the timing of measurement is consistent across the main analysis and placebo checks, we re-estimated our main models using only those covariates measured in 2012 and ran our placebo models using covariates measured in 2007. Our results are very similar across both sets of covariates. The major difference between the set of results is that the first stage F-statistic from the two-stage least squares estimates obtained from the whole sample is below accepted standards when using the smaller covariate set ($F = 8.22$ with the smaller covariate set versus $F = 12.43$ for the models presented in Table 5 of the main text). For this reason, our preferred results come from the models with the larger covariate set. Because of the large number of additional tables required, we have

made the alternative set of results available in an Excel file downloadable here: https://www.dropbox.com/scl/fi/y0fkv59qgguwqg0axgt38/tables_FTA_simpler3.xlsx?rlkey=9wbnjf8vwqm4m1wkkioj6wvni&dl=0

Appendix Table A. Pre-FTA summary statistics

	Mean and standard deviation	Year measured
A. Change in import exposure		
Corn (tons/hectare)	-560.91	2007-2012
	(966.31)	
Beans (tons/hectare)	2.23	2007-2012
	(3.84)	
B. Change in crime per 100,000 residents		
Homicides	-10.70	2007-2012
	(34.58)	
Home burglaries	13.88	2007-2012
	(35.97)	
Car and motorcycle thefts	15.79	2007-2012
	(34.77)	
Business robberies	11.60	2007-2012
	(23.54)	
Robberies of people	19.86	2007-2012
	(60.69)	
C. Covariates		
Infant mortality rate	24.36	2007
	(7.29)	
Water network coverage	63.20	2005
	(21.92)	
Share of rice national planted area	0.16	2007
	(0.39)	
Share of coffee national planted area	0.12	2007
	(0.24)	
Planted area (hectares)	7772.03	2007
	(7598.56)	
Population density	69.22	2007
	(94.16)	
Coca production (0/1)	0.22	2007
	(0.41)	
Government expenditure (1,000 pesos per capita)	181.52	2007
	(89.91)	
Number of agricultural loans	208.12	2007
	(295.22)	
GDP (pesos per capita)	6.88	2007
	(5.09)	
Gini coefficient	0.46	2005
	(0.03)	

School enrollment	60.99	2005
	(6.87)	
Poverty index	73.87	2005
	(13.82)	
Andes region (0/1)	0.40	2007
	(0.49)	
Distance to nearest major food market (km)	67.32	2007
	(57.08)	
Altitude (meters)	701.78	2007
	(1012.31)	
Distance to state capital (km)	95.97	2007
	(71.82)	
Observations	887	

Notes: Source for trade data is COMTRADE, source for crime and covariate data is University of the Andes. Means and standard deviations estimated while weighing each municipality by its 2007 share of national planted area in corn and beans, as in our regression models. The poverty index is calculated using the methodology described in DANE (2014). School enrollment includes ages 5-24 years. The infant mortality rate is deaths per 1,000 live births under one year of age. The population density is residents per square kilometer. Water network coverage is share of popula-tion covered by water network.

Appendix Table B. Pre-FTA two-stage least squares results, full sample

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	-0.031	-0.023	0.061	0.001	0.133
	(0.091)	(0.092)	(0.078)	(0.073)	(0.151)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	-0.629	-0.466	1.248	0.020	2.701
	(1.883)	(1.885)	(1.589)	(1.494)	(3.103)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	20.349***	20.349***	20.349***	20.349***	20.349***
	(3.374)	(3.374)	(3.374)	(3.374)	(3.374)
First-stage F-stat	36.38	36.38	36.38	36.38	36.38
Observations	887	887	887	887	887
Mean crime rate	43.884	32.283	25.274	22.973	72.314

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table C. Crime and share of national planted area in corn and beans, post-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	7.613		18.162***		8.735		-17.129***		49.696***	
	(5.899)		(6.747)		(6.689)		(5.658)		(12.917)	
Effect of initial year beans share		1.742		-9.209		2.875		2.870		-16.544
		(3.427)		(6.165)		(3.546)		(2.355)		(11.537)
Mean crime rate	36.599	36.599	52.403	52.403	52.706	52.706	38.533	38.533	129.803	129.803
Observations	887	887	887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Appendix Table D. Crime and share of national planted area in corn and beans, pre-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	6.63		-2.297		-2.209		-7.966		-4.287	
	(6.693)		(6.672)		(5.702)		(6.371)		(13.266)	
Effect of initial year beans share		0.470		0.548		-0.335		-0.768		3.158
		(1.560)		(2.998)		(2.303)		(2.547)		(7.025)
Mean crime rate	43.884	43.884	32.283	32.283	25.274	25.274	22.973	22.973	72.314	72.314
Observations	887	887	887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table E. Pre-FTA two-stage least squares results, coca-producing regions

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	0.175	-0.016	0.215***	-0.049	0.201**
	(0.187)	(0.132)	(0.078)	(0.095)	(0.102)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	5.573	-0.494	6.853***	-1.554	6.399
	(5.704)	(4.470)	(2.595)	(3.076)	(3.873)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	31.814***	31.814***	31.814***	31.814***	31.814***
	(9.590)	(9.590)	(9.590)	(9.590)	(9.590)
First-stage F-stat	11.00	11.00	11.00	11.00	11.00
Observations	160	160	160	160	160
Mean crime rate	71.226	19.464	17.381	11.333	51.000

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table F. Crime and share of national planted area in corn and beans for coca-producing regions, post-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	-11.963		-17.509		-17.763		-63.366**		44.496	
	(33.721)		(17.823)		(19.821)		(24.333)		(37.617)	
Effect of initial year beans share		5.691		13.107		8.851		10.886		2.314
		(13.804)		(11.084)		(10.032)		(10.103)		(16.942)
Mean crime rate	56.813	56.813	36.965	36.965	36.138	36.138	32.388	32.388	76.892	76.892
Observations	168	168	168	168	168	168	168	168	168	168

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Appendix Table G. Crime and share of national planted area in corn and beans for coca-producing regions, pre-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	5.150		-11.485		-29.195**		-10.565		-24.297*	
	(16.857)		(14.858)		(13.475)		(14.082)		(12.293)	
Effect of initial year beans share		-5.755		-6.542		-5.057*		-4.802**		-4.661**
		(4.932)		(4.501)		(2.884)		(2.011)		(2.330)
Mean crime rate	71.226	71.226	19.464	19.464	17.381	17.381	11.333	11.333	51.000	51.000
Observations	160	160	160	160	160	160	160	160	160	160

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table H. Pre-FTA two-stage least squares results, outside of coca-producing regions

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	-0.122	-0.019	0.053	0.022	0.095
	(0.096)	(0.124)	(0.115)	(0.097)	(0.224)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	-1.941	-0.310	0.845	0.359	1.522
	(1.523)	(2.007)	(1.839)	(1.552)	(3.581)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	15.939***	15.939***	15.939***	15.939***	15.939***
	(3.595)	(3.595)	(3.595)	(3.595)	(3.595)
First-stage F-stat	19.65	19.65	19.65	19.65	19.65
Observations	727	727	727	727	727
Mean crime rate	36.670	35.665	27.356	26.044	77.937

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table I. Crime and share of national planted area in corn and beans outside of coca-producing regions, post-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	4.855		20.882***		11.401		-13.401***		45.579***	
	(5.842)		(7.482)		(7.197)		(4.462)		(16.115)	
Effect of initial year beans share		1.612		-12.491**		2.610		3.736		-21.485*
		(3.556)		(5.530)		(3.682)		(2.694)		(11.287)
Mean crime rate	30.504	30.504	57.058	57.058	57.702	57.702	40.386	40.386	145.757	145.757
Observations	719	719	719	719	719	719	719	719	719	719

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Appendix Table J. Crime and share of national planted area in corn and beans outside of coca-producing regions, pre-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	2.133		0.311		-0.557		-8.153		0.012	
	(5.433)		(8.842)		(7.312)		(7.904)		(17.920)	
Effect of initial year beans share		-0.328		5.371		1.385		3.416		12.078
		(2.349)		(6.760)		(4.696)		(6.268)		(15.699)
Mean crime rate	36.670	36.670	35.665	35.665	27.356	27.356	26.044	26.044	77.937	77.937
Observations	727	727	727	727	727	727	727	727	727	727

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table K. Pre-FTA two-stage least squares results, Andean region

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	-0.072	0.020	0.191	-0.098	0.395
	(0.126)	(0.169)	(0.135)	(0.147)	(0.278)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	-1.380	0.385	3.643	-1.868	7.547
	(2.461)	(3.287)	(2.464)	(2.748)	(5.279)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	19.102***	19.102***	19.102***	19.102***	19.102***
	(4.630)	(4.630)	(4.630)	(4.630)	(4.630)
First-stage F-stat	17.02	17.02	17.02	17.02	17.02
Observations	475	475	475	475	475
Mean crime rate	37.465	36.413	22.355	26.995	72.961

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table L. Crime and share of national planted area in corn and beans in Andean region, post-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	-7.876		51.655***		2.269		-16.841***		70.108***	
	(8.746)		(16.161)		(6.230)		(5.588)		(17.732)	
Effect of initial year beans share		-0.912		-19.328***		0.951		0.906		-25.303**
		(3.515)		(5.194)		(2.705)		(2.244)		(11.229)
Mean crime rate	32.977	32.977	59.352	59.352	37.590	37.590	42.355	42.355	138.423	138.423
Observations	475	475	475	475	475	475	475	475	475	475

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Appendix Table M. Crime and share of national planted area in corn and beans in Andean region, pre-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	5.531		-6.959		-2.668		-1.397		-38.050	
	(6.822)		(15.497)		(12.704)		(13.002)		(30.255)	
Effect of initial year beans share		-0.490		0.970		0.599		-0.799		2.068
		(1.704)		(3.115)		(2.111)		(2.886)		(6.639)
Mean crime rate	37.465	37.465	36.413	36.413	22.355	22.355	26.995	26.995	72.961	72.961
Observations	475	475	475	475	475	475	475	475	475	475

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table N. Pre-FTA two-stage least squares results, outside of Andean region

	Homicides	Home burglaries	Car and motorcycle thefts	Business robberies	Robberies of people
	(1)	(2)	(3)	(4)	(5)
A. Second stage	The dependent variable is the change in the crime rate				
Change in planted area	-0.025	-0.141	-0.011	-0.011	-0.020
	(0.120)	(0.105)	(0.101)	(0.072)	(0.139)
B. Reduced form	The dependent variable is the change in the crime rate				
Change in import competition	-0.557	-3.170	-0.248	-0.257	-0.450
	(2.777)	(2.440)	(2.318)	(1.657)	(3.177)
C. First stage	The dependent variable is the percent change in area planted with corn and beans				
Change in import competition	22.404***	22.404***	22.404***	22.404***	22.404***
	(4.646)	(4.646)	(4.646)	(4.646)	(4.646)
First-stage F-stat	23.26	23.26	23.26	23.26	23.26
Observations	412	412	412	412	412
Mean crime rate	48.402	29.376	27.328	20.142	71.858

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table O. Crime and share of national planted area in corn and beans outside of Andean region, post-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	21.095***		13.169		20.183**		-12.967		56.424***	
	(7.436)		(8.579)		(9.386)		(12.570)		(15.723)	
Effect of initial year beans share		8.641*		1.254		18.144		8.887		22.169
		(4.770)		(6.475)		(13.366)		(7.877)		(17.136)
Mean crime rate	39.091	39.091	47.621	47.621	63.109	63.109	35.902	35.902	123.871	123.871
Observations	412	412	412	412	412	412	412	412	412	412

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2012.

Appendix Table P. Crime and share of national planted area in corn and beans outside of Andean region, pre-FTA

	Homicides		Home burglaries		Car and motorcycle thefts		Business robberies		Robberies of people	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of initial year corn share	14.325		6.027		-5.678		-9.229		13.804	
	(12.974)		(10.786)		(10.619)		(7.156)		(14.331)	
Effect of initial year beans share		-2.066		-10.380		-11.890		-12.609**		-0.621
		(12.093)		(11.062)		(13.764)		(5.446)		(17.193)
Mean crime rate	48.402	48.402	29.376	29.376	27.328	27.328	20.142	20.142	71.858	71.858
Observations	412	412	412	412	412	412	412	412	412	412

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table Q. Crime and share of national planted area in traditional corn, modern corn, and beans, pre-FTA

	Homicides				Home burglaries				Car and motorcycle thefts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Traditional corn share	8.844			8.993	-2.129			-2.271	-0.359			-1.332
	(6.087)			(6.629)	(5.816)			(6.494)	(4.781)			(5.479)
Modern corn share		-1.360		-0.060		0.094		-0.220		-0.589		-0.787
		(1.545)		(1.627)		(1.460)		(1.615)		(1.612)		(1.775)
Beans share			0.470	0.914			0.548	0.428			-0.335	-0.428
			(1.560)	(1.505)			(2.998)	(3.096)			(2.303)	(2.449)
Mean crime rate	43.884	43.884	43.884	43.884	32.283	32.283	32.283	32.283	25.274	25.274	25.274	25.274
Observations	887	887	887	887	887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table Q continued

	Business robberies				Robberies of people			
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
-5.833			-7.677	1.917			0.354
(4.612)			(5.119)	(11.821)			(12.740)
	-0.292		-1.410		-2.190		-2.073
	(1.769)		(2.005)		(4.465)		(4.665)
		-0.768	-1.199			3.158	3.102
		(2.547)	(2.700)			(7.025)	(7.176)
22.973	22.973	22.973	22.973	72.314	72.314	72.314	72.314
887	887	887	887	887	887	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, an indicator for the presence of coca, share of the population covered by the water network, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012; the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009; and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses. Mean crime rates are for 2007.

Appendix Table R. Pre- and Post-FTA impacts on coca planted area, full sample

	Change in coca area, 2012-2017	Change in coca area, 2007-2012
	(1)	(2)
A. Second stage	The dependent variable is the percent change in coca planted area	
Change in planted area	0.001	-0.002
	(0.015)	(0.006)
B. Reduced form	The dependent variable is the percent change in coca planted area	
Change in import competition	-0.025	-0.037
	(0.333)	(0.117)
C. First stage	The dependent variable is the percent change in area planted with corn and beans	
Change in import competition	-22.195***	20.349***
	(6.296)	(3.374)
First-stage F-stat	12.43	36.38
Mean crime rate	52.884	107.726
Observations	887	887

Notes: *** p<0.01, ** p<0.05, * p<0.10. Covariates include the infant mortality rate, government expenditure per capita, number of agricultural loans, share of the population covered by the water network, total planted area, share of national rice planted area, share of national coffee planted area, and population density, all measured in 2012 for column (1) and 2007 for column (2); the Gini coefficient, school enrollment for individuals ages 5 to 24 years, and a multi-dimensional poverty index, all measured in 2005; GDP per capita in 2009 for column (1) and 2007 column (2); and geographic indicators for being in the Andes region, distance to the nearest major food market, altitude, and distance to the state capital. The estimates are weighted by each municipality's share of national area planted with corn and beans. Robust standard errors in parentheses.