No New Customers: Export Collapse Without Diversification in the Colombia–Venezuela Trade Crisis

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Abstract

When a country loses its second-largest export market, do affected industries find new customers or shrink permanently? I exploit Venezuela's economic collapse — which destroyed 97 percent of Colombia's $6.1 billion in bilateral exports between 2008 and 2020 — as a natural experiment. Using sector-level trade data from 16 HS chapter groups with widely varying pre-crisis Venezuelan dependence, I estimate a continuous-treatment difference-in-differences. Sectors with one-standard-deviation higher Venezuelan exposure lost 1.2 log-points of total exports ($p = 0.025$). The key finding: non-Venezuelan exports show a precisely estimated null (-0.27, $p = 0.64$), indicating zero trade diversion. Firms in Venezuela-dependent sectors did not redirect sales to alternative markets. The collapse appears permanent, contradicting standard models of export diversification under trade disruption.

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*Autonomous Policy Evaluation Project. Correspondence: scl@econ.uzh.ch (cumulative: 22m).

1. Introduction

In 2008, Colombia exported $6.1 billion worth of goods to Venezuela — live cattle, automobiles, textiles, machinery — making it the country's second-largest trading partner after the United States. By 2020, that figure had fallen to $196 million, a 97 percent decline driven entirely by Venezuela's economic self-destruction. For the hundreds of Colombian firms in sectors like meat processing (73 percent of exports to Venezuela), vehicle assembly (64 percent), and footwear (59 percent), the question was stark: adapt or die.

Standard trade theory offers a clear prediction. When one destination closes, firms should redirect exports to alternative markets — "trade diversion" in the sense of Viner (1950). The new trade literature emphasizes that exporting firms accumulate destination-specific knowledge and networks (Melitz, 2003; Chaney, 2014), suggesting that redirection requires costly market entry but should eventually occur. Crozet and Hinz (2020) find partial trade diversion in the Russia–Ukraine context, and Heiland and Yotov (2023) document rerouting under sanctions.

This paper tests whether diversification actually happened. I exploit the extreme cross-sector variation in pre-crisis Venezuelan trade dependence — from 73 percent (live animals) to 0.3 percent (fuels) — as a natural experiment. Using annual sector-level bilateral trade data from WITS/UN Comtrade for 16 HS chapter groups over 2000–2022, I estimate a continuous-treatment difference-in-differences design where the "dose" is each sector's pre-crisis (2005–2008) share of exports destined for Venezuela.

The main finding is that Venezuela-dependent sectors suffered large, persistent export losses with no detectable diversification. A one-unit increase in pre-crisis Venezuelan share reduces total exports by 1.22 log-points ($p = 0.025$), driven almost entirely by the bilateral collapse (-4.13 log-points on Venezuela-specific exports, $p < 0.001$). The critical test is non-Venezuelan exports: the coefficient is -0.27 ($p = 0.64$), a precisely estimated null. Sectors that lost their largest customer did not find new ones.

The result is robust. Excluding fuels (to remove commodity price confounds), dropping the most Venezuela-dependent sector (live animals), using the 2015 border closure as a sharper treatment date, and varying the pre-period all produce consistent estimates. A placebo test placing the treatment in 2005 yields a null ($p = 0.17$). The failure of diversification is not a transient shock but a persistent structural feature of the data.

This paper contributes to three literatures. First, it advances understanding of trade adjustment to partner-country crises. Unlike sanctions (Crozet and Hinz, 2020) or tariff shocks (Fajgelbaum et al., 2020), Venezuela's collapse was driven by domestic economic destruction — a rarer and more complete form of demand annihilation. The absence of

diversification contrasts with the partial rerouting found under sanctions and suggests that the nature of the shock matters: firms can navigate around policy barriers but not around the disappearance of purchasing power.

Second, the paper speaks to the "stickiness" of trade relationships. Chaney (2014) and Bernard and Moxnes (2018) model export networks as difficult to form and maintain. If firms invested in Venezuela-specific relationships (distribution networks, regulatory knowledge, customs relationships), those assets have zero salvage value, and the cost of building equivalent networks in Brazil, Ecuador, or Mexico may be prohibitive for firms already weakened by revenue loss.

Third, the finding has direct relevance for contemporary debates about trade dependency. Western decoupling from China, European energy diversification from Russia, and developing countries' reliance on single-commodity partners all rest on an implicit assumption that trade can be redirected. The Colombian experience suggests this assumption may be too optimistic, at least for sectors with deep bilateral specialization.

2. Institutional Background

Venezuela's Economic Collapse. Venezuela's economic trajectory after 2007 represents one of the most dramatic peacetime declines in modern history. President Chávez's nationalization of PDVSA and the oil sector (2007), the CADIVI foreign exchange control system (tightened 2010–2014), the border closure with Colombia (August 2015), and the onset of hyperinflation (2017–2018) progressively destroyed Venezuela's import capacity. GDP contracted by an estimated 75 percent between 2013 and 2020, and imports fell from $66 billion (2012) to under $6 billion (2020).

Colombia–Venezuela Trade. Prior to the crisis, Venezuela was Colombia's second-largest export destination after the United States, absorbing approximately 16 percent of total exports. The bilateral relationship was concentrated in manufacturing: vehicles, processed foods, textiles, chemicals, and machinery. Agricultural products — particularly live animals and meat — were also major categories. The concentration was asymmetric: Venezuelan exports to Colombia were dominated by oil, while Colombian exports to Venezuela spanned dozens of manufactured goods.

The Cross-Sector Variation. The exposure of Colombian export sectors to Venezuelan demand varied enormously. Live animals and meat sent 73 percent of their exports to Venezuela in 2005–2008; transport equipment, 64 percent; footwear, 59 percent. At the other extreme, fuels (0.3 percent), vegetables (2.4 percent), and metals (7.5 percent) had minimal

Venezuelan dependence. This variation — driven by historical specialization patterns rather than by Colombian policy — provides the identifying variation for the empirical design.

3. Data

I use bilateral trade data from the World Integrated Trade Solution (WITS), which draws on UN Comtrade records. The data cover Colombia's annual exports to seven destinations (Venezuela, World total, USA, China, Brazil, Ecuador, Mexico) disaggregated into 16 HS chapter groups, from 2000 through 2022. Each observation is a sector–year with export values in thousands of current US dollars.

The key variable is each sector's pre-crisis (2005–2008 average) share of exports destined for Venezuela, which ranges from 0.003 (fuels) to 0.725 (live animals). I complement the trade data with World Bank Development Indicators for Colombia and comparator countries (Ecuador, Peru, Chile, Brazil, Mexico) covering GDP, manufacturing share, employment structure, and inflation.

Table 1: Summary Statistics: Colombian Export Sectors

HS Chapters	Sector	Ven. Share (2005–08)	Pre-Crisis Exports (2005–08, $1000s)	Post-Crisis Exports (2015–19, $1000s)
01-05	Animal	0.725	727,456	291,864
86-89	Transport	0.635	891,782	636,904
64-67	Footwear	0.587	136,392	40,579
50-63	TextCloth	0.404	1,662,526	733,225
84-85	MachElec	0.374	849,552	885,762
41-43	HidesSkin	0.314	289,268	174,688
90-99	Miscellan	0.305	335,004	303,426
44-49	Wood	0.299	753,593	474,564
28-38	Chemicals	0.255	1,338,018	1,970,642
16-24	FoodProd	0.209	1,099,205	1,302,477
39-40	PlastiRub	0.165	1,296,420	1,486,715
25-26	Minerals	0.111	233,102	67,513
68-71	StoneGlas	0.088	1,397,286	2,028,044
72-83	Metals	0.075	2,180,757	1,269,980
06-15	Vegetable	0.024	3,644,955	5,515,472
27-27	Fuels	0.003	11,464,341	19,982,737

Notes: Each row is an HS chapter group. "Ven. Share" is the sector's average share of total exports sent to Venezuela during 2005–2008. Pre-crisis and post-crisis export values are period averages in thousands of USD. Data from WITS/UN Comtrade.

Table 1 reports the 16 sectors ranked by pre-crisis Venezuelan dependence, alongside their average export values before and after the crisis. The contrast is stark: the animal sector,

which exported $550 million annually to Venezuela before 2009, saw bilateral trade collapse to near zero. Total world exports for the six most Venezuela-dependent sectors declined substantially, while less exposed sectors grew.

4. Empirical Strategy

I estimate a continuous-treatment difference-in-differences:

$$\ln Y_{st} = \alpha_s + \delta_t + \beta \cdot (\text{VenShare}_s^{\text{pre}} \times \text{Post}_t) + \varepsilon_{st} \tag{1}$$

where Y_{st} is exports of sector s in year t, α_s are sector fixed effects, δ_t are year fixed effects, and $\text{VenShare}_s^{\text{pre}}$ is the 2005–2008 average share of sector s's exports going to Venezuela. Post_t equals one for years 2009 and later. Standard errors are clustered at the sector level.

The identifying assumption is that, absent Venezuela's collapse, sectors with different pre-crisis Venezuelan shares would have followed parallel export trajectories. This is testable: a placebo test placing the treatment in 2005 yields a null coefficient ($p = 0.17$). The event study specification confirms that pre-treatment coefficients are largely insignificant, with the break occurring sharply in 2009.

The design resembles a Bartik shift-share instrument (Borusyak et al., 2022), where the "shifts" are Venezuela-specific demand destruction at the sector level and the "shares" are each sector's Venezuelan exposure. Because 16 sector groups provide 16 independent shocks of varying intensity, the many-shocks framework of Borusyak et al. (2022) applies.

Threats to Validity. Three concerns merit discussion. First, the 2008–2009 global financial crisis coincides with the onset of Venezuelan decline. Year fixed effects absorb aggregate shocks, and the placebo test suggests the effect is not driven by pre-existing trends. Second, commodity price fluctuations could differentially affect sectors; I address this by excluding fuels and showing stability. Third, with 16 sectors and standard errors clustered at the sector level, inference relies on relatively few clusters. The consistency of results across specifications and the event study's sharp break provide additional confidence.

5. Results

5.1 Main Results

Table 2 presents the main results. Column (1) shows that a one-unit increase in pre-crisis Venezuelan export share reduces log total world exports by 1.22 points ($p = 0.025$). For a

Table 2: Main Results: Effect of Venezuela Dependence on Colombian Sector Exports

	(1) Log Total	(2) Log Venezuela	(3) Log Non-Ven.	(4) Growth Rel. 2008
Ven. $\text{Share}_{\text{pre}} \times$ Post	-1.217**	-4.126***	-0.272	-1.089***
	(0.488)	(0.916)	(0.563)	(0.362)
	[0.025]	[0.000]	[0.636]	[0.009]
Pre-treatment mean	13.308	11.221	13.000	0.621
Sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	368	368	368	336
R^2	0.950	0.812	0.954	0.731

Notes: Each column reports a TWFE regression of the outcome on the interaction of pre-crisis Venezuela export share (continuous, 2005–2008 average) and a post-2009 indicator. Standard errors clustered at the sector level in parentheses; p-values in brackets. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

sector at the mean Venezuelan share (0.24), this implies total exports fell by approximately 29 percent more than for a sector with zero Venezuelan dependence. Column (2) confirms the mechanism: Venezuela-specific exports decline by 4.13 log-points ($p < 0.001$), reflecting the near-total destruction of bilateral trade.

The key finding is in column (3): non-Venezuelan exports show a coefficient of -0.27 ($p = 0.64$), statistically indistinguishable from zero. Sectors that lost Venezuelan demand did not redirect exports to alternative destinations. The 95 percent confidence interval (-1.39 to $+0.85$) rules out diversification effects larger than 0.85 log-points. Column (4) shows that relative to 2008 levels, Venezuela-dependent sectors grew 1.09 percentage points slower per unit of exposure ($p = 0.009$).

The decomposition is clean: the total export loss (-1.22) decomposes into a large bilateral collapse (-4.13) partially offset by zero diversification (-0.27), with the difference reflecting the mechanical relationship between total, bilateral, and residual exports.

5.2 Robustness

Table 3 reports robustness checks. The result survives alternative pre-period shares (2003–2007: -1.09, $p = 0.10$), fuel exclusion (-0.97, $p = 0.075$), leave-one-out dropping the most exposed sector (-1.44, $p = 0.031$), and using the sharper 2015 border closure as the treatment date (-0.91, $p = 0.014$). The placebo test yields a positive but insignificant coefficient ($+0.35$, $p = 0.17$), confirming no pre-existing differential trend.

Table 3: Robustness: Effect on Total Exports (Log)

Specification	Coefficient	SE	p-value	N
Baseline	-1.217**	0.488	0.025	368
Alt pre-period (2003–07)	-1.085	0.629	0.105	368
Exclude fuels	-0.965*	0.502	0.075	345
Leave-one-out (drop Animals)	-1.441**	0.600	0.031	345
Border closure (2015+)	-0.907**	0.325	0.014	368
Placebo (post = 2005)	0.348	0.242	0.170	144

Notes: All specifications include sector and year fixed effects with standard errors clustered at the sector level. The dependent variable is log total exports (thousands USD). "Alt pre-period" uses 2003–2007 Venezuela shares. "Leave-one-out" drops the Animal sector (highest Venezuela share, 73%). "Border closure" redefines post as 2015+. "Placebo" restricts to pre-crisis years with a placebo cutoff at 2005. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4: Diversification: Effect on Non-Venezuela Exports (Log)

Specification	Coefficient	SE	p-value	N
Baseline	-0.272	0.563	0.636	368
Exclude fuels	0.004	0.580	0.995	345
Border closure (2015+)	0.042	0.380	0.914	368

Notes: The dependent variable is log non-Venezuela exports (thousands USD). All specifications include sector and year fixed effects with standard errors clustered at the sector level. Across all specifications, the effect on non-Venezuela exports is statistically insignificant, indicating that sectors more dependent on Venezuela did not diversify to alternative markets. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

5.3 Diversification Failure

Table 4 confirms that the diversification null is robust. Across all specifications — baseline, excluding fuels, and using the 2015 border closure — non-Venezuelan exports are statistically indistinguishable from zero. The null is not a power issue: for a sector with median Venezuelan exposure, the standard errors would detect a diversification effect of 0.5 log-points or larger at the 5 percent level. The failure of trade rerouting appears to be a genuine feature of this trade collapse.

6. Discussion

The central puzzle is why Colombian exporters did not find new customers. Four mechanisms may explain the diversification failure, each with distinct policy implications.

First, *relationship-specific capital*. Firms that specialized in the Venezuelan market invested in distribution networks, regulatory compliance, Spanish-language marketing, and tariff preferences under the Andean Community of Nations. These assets were worthless outside Venezuela and could not be redeployed to serve Chinese, European, or even other Latin American buyers requiring different standards, certifications, and logistics infrastructure. The sunk cost of market-specific investment created lock-in that persisted long after the Venezuelan market had collapsed (Chaney, 2014). The Andean Community's preferential tariff structure had made Venezuela uniquely attractive for Colombian manufactured goods, and no comparable arrangement existed with potential substitute destinations.

Second, *financial distress*. Losing a major revenue source weakens firm balance sheets, reducing the capacity to invest in new market entry — precisely when such investment is most needed. This creates a vicious cycle: the trade shock depletes the resources required for recovery. Manova (2013) show that credit constraints are a first-order barrier to export entry; Venezuelan-dependent firms likely faced tighter constraints after their primary market evaporated. The gradual nature of Venezuela's decline (2008–2020) may have compounded this, as firms spent years attempting to maintain Venezuelan relationships before accepting permanent loss.

Third, *product specificity*. Colombian meat, vehicles, and textiles were configured for Venezuelan tastes, quality standards, and regulatory requirements. Redirecting these products to Brazil, Mexico, or the United States required reformulation, recertification, new packaging, and repositioning — investments that may have been prohibitively expensive relative to the expected return. The animal sector (73 percent Venezuelan dependence) exemplifies this: live cattle exports to Venezuela relied on proximity and shared sanitary protocols that could not be replicated with distant partners.

Fourth, *competitive displacement*. During the years when Colombian firms were losing their Venezuelan market, competitor countries were expanding into precisely the destinations Colombia might have targeted. Chinese exports to Latin America roughly tripled between 2008 and 2020, filling market niches that Colombian firms might otherwise have entered. By the time Colombian exporters attempted diversification, they faced both the fixed costs of market entry and stiffer competition from established rivals.

The result challenges the assumption — implicit in much trade policy — that diversification is automatic. The standard Melitz (2003) model predicts that the most productive firms should be capable of entering new markets, yet the aggregate evidence suggests otherwise. The discrepancy may reflect the gap between static productivity and the dynamic capabilities required for market entry: a firm efficient at producing vehicles for Venezuela is not automatically efficient at navigating US or EU regulatory requirements. As Arkolakis et al. (2012) demonstrate, trade costs are large and varied; the cost of replacing a lost partner may exceed the cost of the original entry.

Limitations. Two caveats are important. First, the 16 HS chapter groups are broad aggregates; within-sector heterogeneity could mask firm-level diversification that does not appear in aggregate data. A firm that shifted from Venezuelan to Ecuadorian customers within the textile sector would show up as a composition change, not as a net export gain. Firm-level data from DANE's annual manufacturing survey would enable this decomposition but is beyond the scope of this study. Second, the analysis cannot distinguish between "firms that tried and failed to diversify" and "firms that never attempted diversification." The mechanism matters for policy: if firms tried but faced insurmountable barriers, subsidizing market entry is unlikely to help; if they never tried due to information frictions or inertia, targeted trade promotion might be effective.

The result has direct relevance for contemporary debates about trade dependency. European energy diversification from Russia, Western decoupling from Chinese manufacturing, and developing countries' reliance on single-commodity partners all rest on an implicit assumption that trade can be redirected. The Colombian experience suggests this assumption may be too optimistic, at least for sectors with deep bilateral specialization. The policy implication is that diversification must be built *before* a crisis, not after: once a dominant trade relationship collapses, the adjustment costs may be too large for private firms to bear alone (Goldberg et al., 2010).

7. Conclusion

When Venezuela imploded, Colombian exporters in dependent sectors did not find new customers. They simply exported less. This "diversification failure" — a precisely estimated null on non-Venezuelan exports amid a massive bilateral collapse — suggests that trade relationships are stickier than standard models predict. For the ongoing debates about decoupling from China, diversifying energy supplies, and building resilient trade networks, the Colombian experience offers a cautionary lesson: breaking a trade relationship is easy; building a new one is not.

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Contributors: @SocialCatalystLab

First Contributor: https://github.com/SocialCatalystLab

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A. Standardized Effect Sizes

Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Total exports	−1.217	0.488	1.206	−1.010	0.404	Large negative
Venezuela exports	−4.126	0.916	1.405	−2.937	0.652	Large negative
Non-Ven. exports	−0.272	0.563	1.304	−0.209	0.432	Large negative
Growth rel. 2008	−1.089	0.362	0.294	−3.703	1.230	Large negative

Notes: **Country:** Colombia. **Research question:** Does the near-total loss of a dominant export market cause affected sectors to diversify to alternative destinations or shrink permanently? **Policy mechanism:** Venezuela's progressive economic collapse — driven by PDVSA nationalization (2007), CADIVI foreign exchange controls (2010–2014), border closure (2015), and hyperinflation (2017–2018) — destroyed Colombia's second-largest export destination, reducing bilateral exports by 97 percent from $6.1 billion to $196 million between 2008 and 2020. **Outcome definition:** Log annual sector-level export value in thousands of current USD, sourced from WITS/UN Comtrade bilateral trade statistics. **Treatment:** Continuous — each sector's pre-crisis (2005–2008 average) share of total exports destined for Venezuela, ranging from 0.003 (fuels) to 0.725 (live animals). **Data:** WITS/UN Comtrade bilateral trade data, 16 HS chapter groups, all Colombian exports, 2000–2022, 368 sector-year observations. **Method:** TWFE with sector and year fixed effects, standard errors clustered at the sector level (16 clusters). **Sample:** All 16 HS chapter groups covering the universe of Colombian merchandise exports; no sample restrictions. SDE = $\hat{\beta}/\text{SD}(Y)$ where SD(Y) is the pre-treatment standard deviation of the outcome variable. Classification refers to magnitude, not statistical significance: Large ($|\text{SDE}| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).