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FUEL PRICING DEVIATION IN A LANDLOCKED STATE: THE IMPORT-TO-RETAIL MARKUP ANOMALY IN ARMENIA

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Abstract: This paper documents market dysfunction in Armenia's fuel sector, characterized by an 92.9% import-to-retail margin and persistent 21% price premium over neighboring Georgia. Using proprietary daily price data (2022-2025) and official customs statistics, we demonstrate that Armenian consumers face high fuel costs driven by systematic corruption at the Upper Lars border checkpoint (imposing an estimated 11-19 AMD/liter "corruption tax") and widespread quality enforcement failures (68% of stations engage in underfilling). We quantify welfare costs through price decomposition analysis and document macroeconomic consequences including 7.2% annual transport sector inflation. The findings contribute to literature on landlocked economies and border corruption costs while providing the first comprehensive empirical analysis of fuel pricing in an EAEU member state.

Keywords: fuel markets, border corruption, landlocked economies, price transmission, Armenia, AEU

JEL codes: D73, F14, L71, Q43

Research aims: To quantify the sources of Armenia's fuel price anomaly and estimate the welfare costs imposed by border corruption and regulatory failures.

Research novelty: First empirical estimate of corruption costs at Armenia-Georgia transit corridor; first comprehensive price decomposition analysis for EAEU fuel markets; quantification of quality enforcement failure impacts.

Introduction

Fuel markets in landlocked developing economies face structural constraints that generate price distortions and welfare losses. Geographic isolation, dependence on transit corridors controlled by neighboring states, and vulnerability to rent-seeking at border checkpoints create conditions fundamentally different from maritime economies (Faye et al. 2004). While theoretical work has established these vulnerabilities, empirical quantification remains limited, particularly for states within regional trade agreements that nominally ensure free trade.

This paper examines Armenia's fuel market, documenting three findings. First, Armenian consumers pay retail gasoline prices 21% higher than neighboring Georgia despite both countries sourcing fuel from identical Russian suppliers. Second, calculated import-to-retail margins reached 92.9% for petrol in December 2024 – a figure indicating systematic price manipulation. Third, official data confirms 68% of fuel stations engage in systematic underfilling, indicating quality enforcement failures.

These findings contribute to literature on trade costs in developing economies (Sequeira 2016) and provide empirical evidence quantifying corruption costs at a specific transit corridor. For policy, they demonstrate how regulatory failures generate consumer welfare losses and macroeconomic consequences. We provide analysis of fuel pricing in an EAEU member state, filling a research gap on regional trade integration outcomes. Our corruption cost quantification uses testimony from the July 2025 liquefied petroleum gas crisis, extending Sequeira (2016)'s methodology to transit corridor contexts.

Section 2 reviews relevant literature. Section 3 describes Armenia's institutional context. Section 4 presents data and methodology. Section 5 presents empirical findings. Section 6 concludes with policy implications.

Literature Review

Landlocked Economies and Transit Dependencies

Research on landlocked countries establishes that geographic isolation creates four key dependencies: infrastructure dependence on transit neighbors, vulnerability to cross-border political relations, exposure to regional instability, and susceptibility to administrative inefficiencies (Faye et al. 2004). Faye et al. (2004) document that landlocked countries exhibit systematically lower export performance and higher transport costs, with weak transit infrastructure imposing "direct costs on trade passing through a transit country."

Recent work on Armenia's economic vulnerabilities in the context of geopolitical uncertainty demonstrates how external

shocks propagate through small, landlocked economies with concentrated trade relationships (Ashot Tavadyan and Tavadyan 2023). The interval forecasting methodology developed in this research provides tools for analyzing economic dynamics when traditional point estimates fail to capture structural uncertainties – an issue particularly relevant for energy-dependent economies facing supply chain disruptions (Ashot Tavadyan and Tavadyan 2023).

Border Corruption and Trade Costs

Sequeira (2016) provides significant empirical evidence from African ports, demonstrating that systematic border corruption functions as a parallel tax system. Her analysis reveals traded quantities responded weakly to 30% tariff reductions because bribes had already reduced effective rates. Tariff liberalization reduced bribe frequency by 30% and amounts by 20%, but did not increase trade volumes as firms merely shifted from paying bribes to paying official tariffs. This challenges the premise that corruption serves as an efficiency mechanism – instead, it maintains high trade costs even when official barriers fall.

Dutt and Traca (2010) examine corruption's dual role as "extortion" (raising trade costs) and "evasion" (lowering tariffs). For landlocked countries dependent on transit through corrupt jurisdictions, this framework suggests exposure to extortionary corruption from officials who can credibly threaten delays.

Analysis of Russian oil export dynamics following 2022 Western sanctions provides relevant contextual data for the analysis of how sanctions reshape trade patterns and create new rent-seeking opportunities at transit points (Ashot Tavadyan and Tavadyan

2025). The redirection of 38.6% of Russian oil exports through India demonstrates how geopolitical constraints force exporters to accept discounted prices while creating opportunities for intermediary rent extraction – dynamics structurally analogous to Armenia's fuel import challenges.

Fuel Markets and Price Transmission

Kpodar and Liu (2022) demonstrate fuel price shocks generate "smaller but more persistent and broad-based" inflationary effects in developing economies, with impacts extending beyond one year versus six months in advanced economies. Specifically, studies using crude oil rather than retail fuel prices underestimate pass-through effects. Kojima (2013) analyzes pricing policies across 65 developing countries, documenting widespread quality dilution and smuggling where regulatory capacity is weak.

Recent research on inflation dynamics in Armenia documents the disproportionate impact of energy price fluctuations on middle-income households, who face the highest relative burden from fuel cost increases (Aghasi Tavadyan 2025). This distributional analysis demonstrates that fuel market dysfunction imposes regressive welfare costs, with lower-income consumers less able to absorb price shocks or access quality-premium options.

Institutional Context

Armenia's landlocked position creates material energy security constraints. Closed borders with Turkey and Azerbaijan leave Georgia as the single feasible transit corridor, generating high corridor dependence characteristic of vulnerable landlocked states.

Russia accounts for approximately 95% of Armenia's petroleum imports (World Integrated Trade Solution (WITS) 2022; Sokolova et al. 2022), stemming from 2015 EAEU accession providing duty-free access but constraining diversification.

The Upper Lars checkpoint on the Georgian-Russian border handles the majority of Russia-Armenia trade. Its mountainous location creates weather-related closures and chronic congestion (Government of the Republic of Armenia, n.d.; Arka.am, n.d.b). This intersection of strategic necessity and operational constraints creates conditions conducive to rent-seeking behavior. Historical allegations, including Russian customs leadership replacements in 2017 to address "corruption risks" (Azatutyun, n.d.), indicate chronic problems.

Armenia's domestic fuel retail market is moderately concentrated with international brands (Shell, BP) and local operators. The Market Surveillance Inspection Body enforces quality standards under EAEU technical regulations (Arka.am, n.d.a), though limited resources constrain effectiveness.

Data and Methodology

Data Sources

We combine three primary sources: (1) proprietary daily retail price data from multiple Armenian fuel stations (2022-2025); (2) UN ComTrade bilateral trade data providing monthly import volumes and values; (3) GlobalPetrolPrices.com regional benchmarks for Armenia, Georgia, and Russia; (4) government inspection reports documenting quality violations.

Price Decomposition

We decompose retail fuel prices to identify Armenia's price anomaly source:

$$P_{retail}=P_{import}+C_{transport}+T_{taxes}+M_{retail}+\epsilon$$

where P_{retail} is observed retail price, P_{import} is import cost per liter, $C_{transport}$ represents transport costs, T_{taxes} are taxes/duties, M_{retail} is retail margin, and ϵ captures measurement error.

Import Price Calculation

Converting import data requires density assumptions. Following EAEU regulations (GOST 32513-2013), gasoline density ranges 720-780 kg/m³ (MegaNorm 2023). Using midpoint ρ=0.75 kg/L:

$$P_{import}=\frac{V_{USD}}{W_{kg}}\times\rho\times E_{rate}$$

Margin Analysis

The implicit import-to-retail margin:

$$M_{implicit}=\frac{P_{retail}-P_{import}}{P_{retail}}\times 100\%$$

Normal margins range 15-25% with competitive retail, included taxes, and ~5-10 AMD/liter transport costs. Margins substantially exceeding this indicate dysfunction.

Corruption Cost Estimation

Following Sequeira (2016)'s approach for quantifying informal payments as tax equivalents:

$$C_{corruption}=\frac{B_{truck}}{Q_{tanker}}$$

where B_{truck} is reported bribe per truck (USD 1,200-1,500), Q_{tanker} is tanker capacity (30,000-40,000 liters).

Regional Comparison

Price premium relative to Georgia:

$$\Delta P_{ARM-GEO} = \frac{P_{retail}^{ARM} - P_{retail}^{GEO}}{P_{retail}^{GEO}} \times 100\%$$

Georgia serves as appropriate comparator because both source fuel from Russia, Georgia hosts Armenia's transit corridor, and development levels are comparable.

Empirical Findings

Regional Fuel Price Comparison

Armenia's fuel prices are anomalously high. As of September 2025, premium gasoline costs 554 AMD/liter (USD 1.45) versus approximately USD 1.19/liter in Georgia – a 21% premium (GlobalPetrolPrices.com 2025a, 2025b). Both countries source from identical Russian suppliers through the same supply chain.

Standard transportation economics suggest the additional 300-kilometer Tbilisi-Yerevan distance should add approximately 5-10 AMD/liter to fuel costs. This estimate accounts for direct fuel consumption (approximately 1 AMD/liter based on 40,000-liter truck capacity, 30 L/100km consumption, and 450 AMD/liter diesel costs), driver labor costs, vehicle depreciation and maintenance, normal border processing time, and transport company overhead and profit margins.

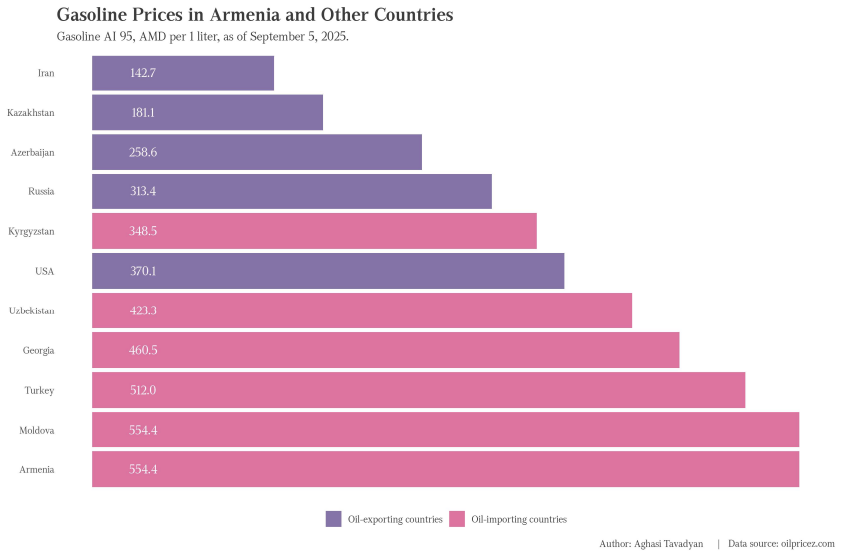

Figure 1. Gasoline Prices in Armenia and Other Countries (September 5, 2025)

Even using the upper bound of 10 AMD/liter for transportation costs, this accounts for only 11% of the observed 94 AMD/liter absolute difference between Armenian (554 AMD/liter) and Georgian (460 AMD/liter) retail prices. Furthermore, Russian domestic gasoline costs approximately USD 0.790/liter (Trading Economics, n.d.b), meaning Armenian consumers pay an 86% premium for Russian-origin fuel at the current exchange rate (382 AMD/USD). The magnitude of these differentials indicates substantial non-transparent cost components beyond legitimate transportation and operational expenses.

Import Price vs Market Price Analysis

Calculated import prices versus retail prices reveal the most striking dysfunction. For December 2024, calculated import price for petrol approached retail price, implying a 92.9% implicit margin. This is economically implausible. Typical fuel retail margins range 5-15%, with total distribution costs rarely exceeding 20-25% (Kojima 2013).

Possible explanations: (1) systematic undervaluation of imports at customs; (2) quality degradation post-import through dilution/adulteration; (3) cross-subsidization; (4) hidden costs (bribes, unofficial fees) not appearing in customs declarations. As EAEU members face zero tariffs on Russian fuel, undervaluation incentives are limited. Government data (below) confirms quality manipulation occurs systematically.

The persistence of implausibly high margins throughout 2023-2024 indicates structural problems beyond temporary fluctuations, suggesting systematic manipulation of customs valuation, widespread quality manipulation, or embedded corruption costs not reflected in official statistics.

Border Corruption: July 2025 LPG Crisis

The most direct corruption evidence emerged during July 2025 involving LPG transit. Armenian trucks were systematically blocked at Georgian-Russian border, creating supply crisis driving retail LPG prices from 120 to 180 AMD/liter – a 50% surge (OC Media, n.d.).

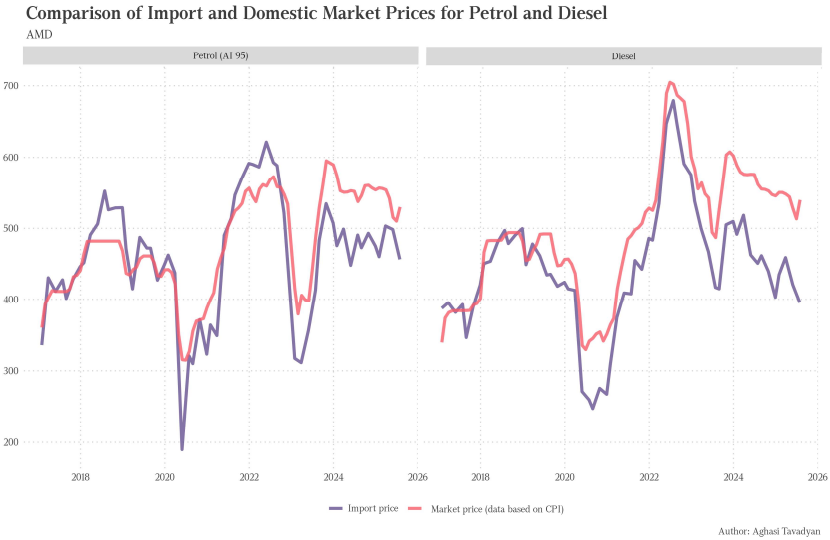

Figure 2. Comparison of Import and Domestic Market prices for Petrol and Diesel in Armenia

Drivers publicly alleged bribe demands of USD 1,200-1,500 per truck (OC Media, n.d.). RFE/RL reported the mechanism: payments to Armenian intermediaries who coordinated with border contacts to facilitate passage for designated vehicles. Drivers indicated other countries' vehicles faced no similar obstacles, suggesting Armenian cargo was specifically targeted.

These allegations follow historical patterns. 2017 reports of extortion by Russian customs officers were significant enough that Russia replaced Lars leadership twice that year to address "corruption risks" (Azatutyun, n.d.).

Georgian authorities categorically denied allegations while Armenian Economy Minister publicly acknowledged reports. This divergence reflects power dynamics: Georgia controls the route and

has incentives to deny corruption; Armenia cannot risk confrontation jeopardizing entire supply chain.

Quantification

Using reported bribes (USD 1,200-1,500) and tanker capacity (30,000-40,000 liters):

$$C_{corruption} = \frac{\$1{,}200 \text{ to } \$1{,}500}{30{,}000 \text{ to } 40{,}000\text{L}} \times 382\text{AMD/USD} = 11.4 \text{ to } 19.0\text{AMD/L}$$

This "corruption tax" represents 12-21% of the total Armenia-Georgia price differential (94 AMD/liter). The magnitude is consistent with Sequeira (2016)'s findings that corruption costs approximate tariff-level barriers. This estimate is conservative, capturing only direct bribes, not delay costs or multiple payment demands.

Quality Enforcement Failures

Official data confirms widespread quality manipulation. Market Surveillance Inspection Body inspection of 68 stations found 46 (68%) engaged in systematic underfilling (Arka.am, n.d.c). The same investigation found 38% of diesel samples showed unsatisfactory quality.

In December 2024, Competition Protection Commission imposed fines exceeding USD 1 million on six companies for substandard gasoline (BM.GE, n.d.). These actions confirm substandard fuel reaches consumers despite border quality controls.

Quality failures create bifurcated markets where consumers pay premiums for guaranteed integrity. International brands,

particularly Shell, command approximately 50 AMD/liter premiums above local competitors (Mkrtchyan 2025). This premium reflects not superior formulation but consumer trust in compliance.

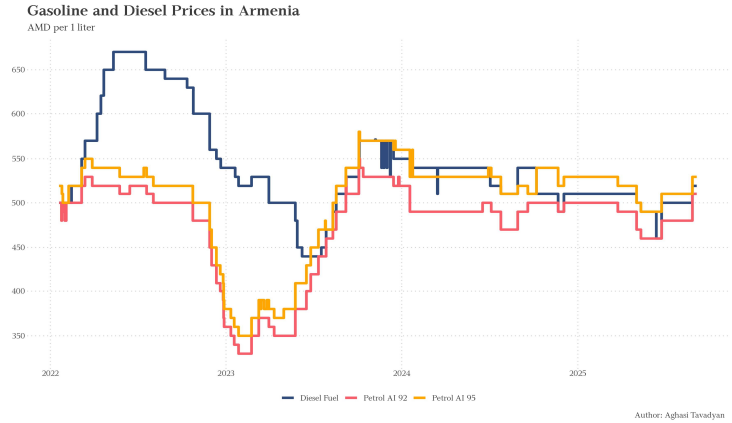

Figure 3. Gasoline and Diesel Prices in Armenia

Daily Fuel Price Trends

In properly regulated markets, all fuel under specific grade designations should meet consistent standards, eliminating quality-based premiums. Consumers effectively pay twice: for product and for assurance they receive what was purchased – a hallmark of regulatory failure.

Macroeconomic Consequences

Transport costs constitute 13.636% of Armenia's CPI weighting (CEIC, n.d.), ensuring fuel price volatility directly impacts headline inflation. July 2025 transport sector inflation reached 7.2% annually, significantly above overall inflation (Trading Economics, n.d.a).

Kpodar and Liu (2022) demonstrate fuel price shocks generate more persistent inflationary effects in developing economies, with transmission remaining significant beyond one year. Armenia's structural fuel market dysfunction ensures persistent rather than transitory inflation pressure. The Central Bank explicitly identifies fuel prices as key inflation variable (Central Bank of Armenia 2025).

Lower-income households face disproportionate impacts. Historical World Bank analysis highlights Armenia's vulnerability to energy price shocks and distributional consequences (World Bank Open Knowledge Repository, n.d.). Quality enforcement failures compound inequities: affluent consumers afford Shell's premium while lower-income consumers face elevated risk of substandard products.

Conclusion and Policy Implications

This paper documents severe dysfunction in Armenia's fuel market. Armenian consumers pay 21% premiums over Georgian prices despite identical supply sources, with calculated import-to-retail margins reaching 92.9%. We quantify corruption costs using July 2025 border crisis testimony, estimating an 11-19 AMD/liter "corruption tax" – representing 12-21% of Armenia's price premium. Official data confirms 68% of stations engage in underfilling, revealing pervasive enforcement failures.

We contribute quantitative evidence on single-corridor dependence enabling systematic corruption with measurable welfare costs, extending Sequeira (2016)'s port-focused analysis to transit corridors. The findings demonstrate EAEU tariff elimination provides limited benefits when non-tariff barriers remain

unaddressed. Macroeconomic consequences include 7.2% annual transport inflation with regressive distributional effects.

Policy Implications: Border transparency mechanisms (electronic tracking, third-party monitoring, grievance procedures) could reduce corruption opportunities. Enhanced domestic enforcement requires substantial budget increases for Market Surveillance Inspection Body and stronger penalties. Data transparency – monthly disaggregated import statistics – would enable independent monitoring. Strategic diversification through incremental Iranian import increases could provide competitive pressure and alternative supply, though infrastructure constraints limit near-term substitution potential.

Armenia's experience offers lessons for landlocked economies integrating into regional frameworks. Nominal tariff elimination necessitates complementary efforts to enhance border transparency, build regulatory capacity, and reduce rent-seeking opportunities. Without coordination, geographic constraints enable market dysfunctions imposing material welfare costs on vulnerable populations. The findings indicate that for small, landlocked EAEU member states, the promise of free trade within customs unions may be undermined by persistent non-tariff barriers – particularly corruption at critical transit nodes – that impose costs exceeding eliminated tariffs (Ashot Tavadyan and Aghasi Tavadyan 2023).

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ՑԱՄԱՔԱՅԻՆ ՊԵՏՈՒԹՅԱՆ ՎԱՌԵԼԻՔԻ ԳՆԱԳՈՅԱՑՄԱՆ ՇԵՂՈՒՄԸ. ՀԱՅԱՍՏԱՆԻ ՆԵՐՄՈՒԾՈՒՄ-ՄԱՆՐԱԾԱԽ ՄԱՐԺԱՅԻ ԱՆՈՄԱԼԻԱ

Աղասի Թավադյան
Հայաստանի պետական տնտեսագիտական համալսարան
տ.գ.թ., դոցենտ

Բանալի բառեր - վառելիքի շուկա, սահմանային կոռուպցիա, դեպի ծով ելք չունեցող պետություն, գների փոխանցում, Հայաստան, ԵԱՏՄ

Այս աշխատանքը ուսումնասիրում է Հայաստանի վառելիքի ոլորտում առկա շուկայական խնդիրները, որը բնութագրվում է

ներմուծման և մանրածախ գնի միջև արտասովոր 92.9% առևտրային տարբերությունով և հարևան Վրաստանի նկատմամբ գների կայուն 21% բարձր մակարդակով: Օգտագործելով գների օրական տվյալներ (2022-2025 թթ.) և պաշտոնական մաքսային վիճակագրությունը, համոզմունք ենք հայտնում, որ հայ սպառողները բախվում են վառելիքի անոմալ բարձր գների, որոնք պայմանավորված են՝ կոռուպցիայով Վերին Լարս սահմանային անցակետում (որը գնահատվում է որպես 11-19 դրամ/լիտրի չափով «կոռուպցիոն հարկի» կիրառում), և վառելիքի որակի նկատմամբ վերահսկողության համատարած ձախողումներով (բենզալցակայանների 68%-ը զբաղվում է թերալցումով):

Հոդվածում քանակային արժևորում է տրվում ազգաբնակչության բարեկեցության կորուստներին, գների վերլուծության միջոցով փաստագրելով մակրոտնտեսական հետևանքները, ներառյալ՝ տրանսպորտի ոլորտի գների տարեկան 7.2% գնաճը:

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