Clean Money, High Costs?

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Abstract: A cornerstone of the law-and-finance literature is that stronger institutions reduce financial intermediation costs. Using global data on cross-border payment costs, I show this relationship can reverse in heavily regulated sectors. Anti-money laundering risks have larger cost effects in advanced economies with strong enforcement than in developing countries with weak enforcement, despite the former having lower underlying risks. This counterintuitive pattern reflects strong institutions operating through two channels: Directly reducing costs through risk mitigation and forcing risk-based pricing that eliminates cross-subsidization. The net results demonstrate that traditional studies can miss heterogeneity by not controlling for risk levels: Strong institutions benefit low-risk jurisdictions but force high-risk ones to pay higher costs for their risk profiles. Policy implications favor improving enforcement and lowering risks rather than treating these as substitutes. The findings have implications for emerging payment rails, such as regulated payment stablecoins, which face similar AML requirements.

Keywords: Cross-border payments, anti-money laundering, institutional quality, law enforcement, compliance costs, competitive forces, risk-based pricing, regulated payment stablecoins.

JEL Classifications: F20, F24, F30, G20, G21, G23, G28, G50.

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1   Introduction

The cornerstone of the law-and-finance literature is that stronger institutions—better legal systems, more effective contract enforcement, stronger property rights—reduce financial intermediation costs. Yet I show this relationship can reverse in heavily regulated sectors, with stronger institutions actually raising costs, especially for high-risk market participants. Using comprehensive data on cross-border payment costs faced by consumers, I find that anti-money laundering (AML) and related financial crime risks have significantly larger cost effects in advanced economies with strong enforcement than in developing countries with weak enforcement—despite advanced economies having lower underlying risk levels. For high-risk jurisdictions, strong institutions can increase financial intermediation costs rather than reduce them.

This counterintuitive pattern reflects a limitation in existing research: The law-and-finance literature typically does not separate the risk reduction effects of strong institutions from their risk pricing effects. For example, when Laeven and Majnoni (2005) find that judicial efficiency reduces loan spreads, this could reflect lower actual default risks (institutions deter moral hazard), more accurate risk assessment (institutions enable better pricing), or both. Without explicit controls for underlying risk levels, studies can conflate these distinct mechanisms and miss important heterogeneity in institutional effects.

I address this counterintuitive pattern by explicitly separating risk reduction from risk pricing effects using cross-border payments as a laboratory. This setting offers crucial advantages: Risk levels are measurable independently of cost outcomes through standardized AML risk indexes, enforcement intensity varies significantly across countries and time, costs are directly observable, and the regulatory frameworks have commonalities.[1]

My empirical strategy exploits variation in enforcement intensity across jurisdictions and time, interacting this with separately measured AML risk levels. I estimate multidimensional panel regressions with comprehensive fixed effects, explicitly modeling how enforcement affects both baseline costs and the sensitivity of costs to risks. This approach cleanly separates institutional effects on underlying risks from effects on risk assessment and pricing.

The results reveal that strong enforcement institutions operate through two distinct channels with economically significant but offsetting effects. The **risk reduction effect** is large and nega-

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[1]The standardized AML indexes cover multiple domains considered to contribute to a high money laundering risk, including countering the financing of terrorism and consumer protection frameworks.

tive: Increasing enforcement significantly reduces costs possibly through risk mitigation, credibility enhancement, and regulatory predictability. However, the **risk pricing effect** is positive: Enforcement significantly increases the cost effect of AML risks per unit of risk by making compliance requirements binding, requiring accurate risk assessment, and encouraging risk-based pricing.

The net effect depends critically on risk levels, creating winners and losers from strong institutions. For most countries in the sample, strong enforcement reduces costs as the risk reduction benefits dominate. However, for very high-risk jurisdictions, strong enforcement increases costs as the risk pricing effect dominates. These countries lose the cross-subsidization they enjoyed under weak enforcement regimes that pooled risks rather than pricing them accurately.

This finding challenges the conventional wisdom in a few ways. First, it shows that the traditional law-and-finance relationship holds for most but not all jurisdictions, with important distributional consequences that existing studies miss. Second, it demonstrates that institutional effects are complex, operating through multiple channels that can work in opposite directions. Third, it reveals that studies finding uniform benefits from strong institutions may be missing important heterogeneity by not controlling for underlying risk characteristics.

Additional findings further support the enforcement mechanism. The results hold consistently across different types of payment service providers (PSPs), with larger and more regulated institutions or those headquartered in advanced economies showing stronger risk-pricing responses. Money transfer operators (MTOs), whose one and only business is to move money, practice risk-based pricing, while banks, for whom remittances tend to be a marginal business, therefore, potentially lacking significant supervisory attention, do not. These findings strengthen the notion that regulatory enforcement plays a major role in payment pricing.

I further validate the enforcement mechanism using explicit regulatory actions—Financial Action Task Force (FATF) grey list decisions that place countries under enhanced monitoring for AML deficiencies.[2] These results reveal sophisticated PSP responses to regulatory information. Specifically, countries placed on FATF monitoring lists with credible reform commitments actually experience a reduction in costs, while those without commitment experience an increase in costs. This pattern reflects information revelation rather than risk discovery: PSPs already anticipate FATF investigations of risky jurisdictions, so the key signal comes from countries' revealed

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[2]The FATF is a G7-established intergovernmental organization that sets international standards to combat money laundering, terrorist financing, and the financing of weapons of mass destruction in the global financial system and promotes their implementation.

preferences for regulatory cooperation, which PSPs interpret as signals about future enforcement trajectories.

While enforcement intensity represents one key determinant of risk pricing, additional factors may also influence how PSPs respond to regulatory constraints. In this vein, I also examine how competitive dynamics within payment corridors further influence this pricing of risk—by preventing cross-subsidization and forcing transparent risk assessment.

The broader contribution extends the understanding of when and why institutional quality affects financial markets. While the law-and-finance literature has established that stronger institutions generally promote efficient financial services, I show this relationship is more nuanced than previously documented. Strong institutions create both risk reduction benefits that help everyone and risk pricing effects that redistribute costs from low-risk to high-risk market participants.

The study also advances understanding of how AML risks and enforcement affect payment costs, an area with limited empirical evidence. While sparse prior work reaches inconclusive results, I demonstrate that AML risks matter for pricing primarily when enforcement makes compliance binding. The findings also provide novel systematic evidence that strong enforcement can increase rather than decrease costs for high-risk participants by eliminating cross-subsidization.

In terms of policy implications, rather than viewing strong enforcement and affordable access as competing objectives, the results suggest they are complementary for most countries. An effective strategy is improving both enforcement capacity and underlying risk management, as it maximizes the benefits of the risk reduction channel while minimizing costs from the risk pricing channel. For high-risk countries that do face cost increases under strong enforcement, the appropriate response is addressing underlying risk factors rather than maintaining weak enforcement that enables cross-subsidization at the expense of overall market efficiency. The findings—including a quantitative one that reduced AML risks may account for a third of a reduction in remittance costs—also have immediate policy relevance given both G20 targets for payment cost reduction (see Financial Stability Board (2020)). Clean money can be cheap or at least cheaper.

The findings are relevant for stablecoin-based cross-border payments, which are gaining prominence (for example, Reuter (2025)). In the United States, the GENIUS Act subjects stablecoin issuers to the Bank Secrecy Act (AML regulations), and crypto exchanges are required to register with FinCEN as a money services business and to implement an effective AML program, creating the same institutional dynamics that affect traditional payment providers. In the European Union,

the Markets in Crypto-Assets Regulation (MICA) mandates AML for crypto asset service providers, which include both issuers and facilitators, such as custodians and exchanges. The results suggest that stablecoin systems could evolve toward risk-based pricing under strong enforcement, benefiting low-risk corridors while potentially raising costs for high-risk ones.

The remainder of the paper proceeds as follows. Section 2 reviews the literature and develops hypotheses. Section 3 describes the data. Section 4 presents baseline results showing the counterintuitive pattern. Section 5 addresses the finding by separating risk reduction from risk pricing effects and by examining heterogeneous effects by PSP size, headquarters domicile, and type. Section 6 analyzes information revelation about institutional trajectories. Section 7 examines heterogeneous effects by PSP competition. Section 8 discusses policy and research implications. Section 9 concludes.

2 Literature and hypothesis development

The law-and-finance literature has established a robust empirical relationship: Stronger institutions reduce financial intermediation costs. La Porta, de Silanes, Shleifer, and Vishny (1997, 2000) show that better investor protection and legal systems lead to larger, more liquid financial markets with lower costs of capital. In credit markets, Laeven and Majnoni (2005) demonstrate that judicial efficiency reduces bank lending spreads, while Djankov, McLiesh, and Shleifer (2007) find that stronger creditor rights expand credit availability and reduce borrowing costs. Beck, Demirguc-Kunt, and Levine (2003) provide comprehensive evidence that institutional quality is a primary determinant of financial development, with better institutions consistently predicting lower intermediation costs. Demirguc-Kunt, Laeven, and Levine (2004) suggest that a better overall institutional environment, including strong property rights, leads to a more efficient and lower-cost banking system.

The theoretical mechanism is straightforward: Stronger institutions reduce uncertainty, improve contract enforcement, and lower costs (Levine (1999)). In other words, we observe a negative relationship between institutional quality (or its particular dimensions) and financial costs because the former allows financial markets and intermediaries to operate more efficiently and offer services at lower prices.

Traditional law-and-finance research may be missing crucial insights by overlooking that higher

quality institutions require stronger enforcement and more robust compliance and that their effects on financial costs may be heterogeneous. I argue that stronger institutions affect financial costs through two potentially offsetting channels: **Risk reduction channel**—the traditional law-and-finance mechanism—that states that strong institutions reduce uncertainty and default risk, lowering fundamental intermediation costs and **risk pricing channel** that states that strong enforcement makes regulatory compliance requirements binding, forcing intermediaries to internalize substantial compliance costs passed through to consumers. Broader traditional studies measure the net effect of both channels, typically finding that stronger institutions reduce costs because risk reduction dominates. However, in heavily regulated sectors with extensive compliance requirements, the risk pricing channel may dominate, creating the opposite relationship.

To establish the importance of the two channels, I use cross-border payments as a laboratory. It is a heavily regulated sector with a history of enforcement and compliance actions, including large penalties for AML and other violations. This setting offers crucial advantages: Risk levels are measurable independently of cost outcomes through standardized AML risk indexes, enforcement intensity varies significantly across countries and time, costs to consumers are observable, and the regulatory framework have commonalities.

Despite policy importance, empirical evidence on how AML risks affect cross-border payment costs remains limited. Beck and Martinez Peria (2011) examine remittance pricing across 119 corridors but use cross-sectional data limiting causal identification. Beck, Janfils, and Kpodar (2022) provide a more comprehensive panel analysis but reach inconclusive results. They find that higher destination country AML risk raises costs while source country risk lowers costs in cross-sectional analysis, but these coefficients become insignificant in panel regressions, leading them to note results are "susceptible to model specifications." Existing work has a few limitations: Corridor-level rather than provider-level data limits control for unobserved heterogeneity; no distinction between risk reduction and risk pricing channels; no account for enforcement conditioningthat AML risks may matter for pricing only when enforcement makes compliance binding.

While I use similar data as Beck and Martinez Peria (2011) and Beck, Janfils, and Kpodar (2022), I impose a framework that distinguishes risk reduction from risk pricing effects in heavily regulated sectors. Consider PSPs operating across jurisdictions with varying AML risks and enforcement intensities. The key insight is that compliance investments are economically justified only when enforcement entails scrutiny and creates credible penalty threats. When enforcement is

weak, expected penalty costs are low, making minimal compliance investment optimal regardless of risk levels. When enforcement is strong, substantial compliance investments become necessary, scaled to risk levels. This generates the prediction that AML risks should affect payment costs only when enforcement is sufficiently strong to make compliance binding.

This framework lends itself to three hypotheses:

1. **Source country dominance**: AML risks in source countries will have larger effects on payment costs than destination country risks, despite source countries having lower absolute risk levels. Source countries are predominantly advanced economies with strong AML enforcement. Destination countries often have weaker enforcement, reducing PSP incentives for risk-based compliance investment and processes.

2. **Enforcement significance**: The effect of AML risks on payment costs will be significantly stronger in jurisdictions with strong enforcement institutions. I should observe positive interaction effects between AML risks and enforcement measures, with risks having minimal direct effects absent strong enforcement. In addition, PSPs that are subject to stronger enforcement will show greater sensitivity to AML risks. These PSPs include large PSPs and those under stricter regulatory jurisdiction. Large providers and those headquartered in strong enforcement countries face greater regulatory scrutiny, larger potential penalties, and have more sophisticated compliance infrastructure enabling risk-based pricing. In addition, MTOs will show stronger sensitivity to AML risks compared to banks. For banks, remittances often represent marginal business (Ratha and Riedberg (2005)), making it not worthwhile to tailor compliance processes not worthy. For MTOs, remittances represent core business justifying substantial compliance investments. Separately, costs of payments may reflect not only contemporaneous enforcement and AML risks, but also anticipatory institutional changes.

3. **Competition significance**: While enforcement intensity represents a key determinant of risk pricing, additional factors may also influence how PSPs respond to regulatory constraints. Competitive dynamics within payment corridors will further influence risk pricing in binding compliance environments, preventing cross-subsidization and forcing transparent risk assessment.

The hypotheses have direct implications for emerging payment technologies. For example, recent regulatory frameworks apply traditional AML requirements to emerging payment rails: The

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EU's MICA imposes comprehensive AML requirements on crypto-asset service providers and the U.S. GENIUS Act on stablecoin issuers. This regulatory continuity suggests our findings will extend to next-generation payment systems, making understanding of when institutional quality increases costs crucial for regulatory design balancing integrity with innovation objectives.

3   Data

I examine cross-border payment costs using three main datasets spanning 2012-23 across over 100 countries. The sample period begins before major AML enforcement actions against BNP Paribas (2014) and other large banks, as well as Western Union (2017) and other dominant MTOs, providing variation in both regulatory intensity and costs over time and payment corridors.

3.1   Payment costs

Payment cost data come from the World Bank's Remittance Prices Worldwide (RPW) database (World Bank (2025)), which tracks costs for standardized transfers ($200 and $500) across payment corridors, service types, and providers since 2008. This annual database represents the most comprehensive source of cross-border payment pricing information globally.

The RPW database employs mystery shopping and other techniques to collect real-time pricing data from PSPs worldwide. Data collectors pose as customers seeking to send specific amounts ($200 and $500) through various service channels, recording the total cost including fees, exchange rate margins, and any additional charges. This methodology captures the options available to consumers rather than actual transactions, following standard industry practice for regulatory monitoring. FXC Intelligence, the current data provider to the World Bank, also supplies cost data to the Financial Stability Board for monitoring progress towards the G20 payment cost reduction targets.

While the database encompasses payment options offered by various PSP types, banks and MTOs dominate the sample composition, together accounting for the vast majority of observations. Reflecting the evolving nature of the market structure, MTOs include both traditional financial institutions and fintech firms, such as Wise.

The dataset captures costs of payments primarily from advanced economies to emerging market economies, accurately reflecting global remittance flow patterns where approximately three-quarters

of transfers flow to developing countries. Figure 1 illustrates the comprehensive geographic coverage: 32 countries exclusively originate payments (including the United States, Germany, and the United Kingdom; dark blue shading), 86 countries only receive payments (including China and most African nations; dark red shading), and 19 countries both send and receive payments (such as South Africa and Brazil; light color shading). Using other sources, the World Bank estimates that three quarters of global remittances went to developing countries.
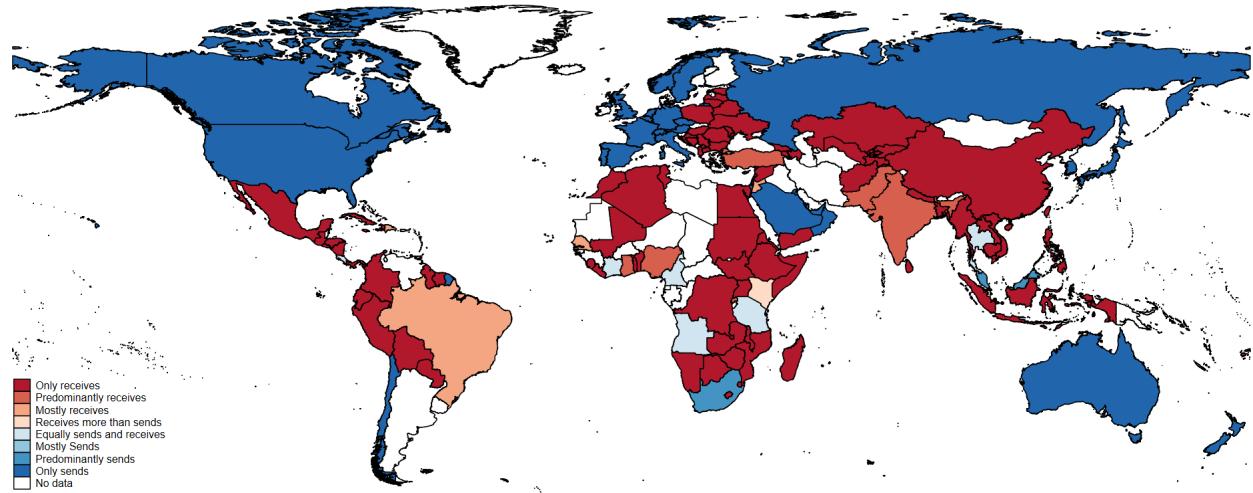
Figure 1: Map of origination and destination countries for 2020-21

Note. Based on the payment options covered in the RPW for the 2020-21 period. The map covers 137 countries, of which 32 only originate payments (for example, the United States), 86 only receive payments (China), and 19 both originate and receive payments (South Africa).

The RPW database standardizes collection procedures across countries and time periods, ensuring comparability. All costs are expressed as percentages of the transfer amount, facilitating cross-corridor and temporal comparisons.

One of the limitations is that the database focuses on remittances rather than broader cross-border retail payments. While remittances are approaching $1 trillion a year, they still represent a small segment of cross-border payments. And while remittances have meaningful similarities with broader cross-border retail payments, their peculiar geography and dominance of MTOs contrast to some extent with the features of cross-border retail payments. Ideally, one would use information about costs of cross-border payments in broader segments, but such information are available only in highly aggregated form for the past few years, severely limiting its usefulness for formal analysis (see, for example, Financial Stability Board (2024)).

3.2 AML risks

AML risk data come from Basel Institute on Governance (2024), which produces standardized country-level risk assessments—Basel AML Indexes and reports—based on publicly available information from multiple sources. The indexes combine quantitative indicators and expert assessments to gauge countries' AML and related financial crime risks. The index synthesizes information from over 20 international sources, including: The FATF mutual evaluation reports and follow-up assessments; Transparency International's Corruption Perceptions Index; World Bank governance indicators; United Nations Office on Drugs and Crime statistics; IMF assessments of financial sector supervision; and various academic and commercial databases on financial crime risks.

The index weights AML framework weaknesses (35 percent of the total score) and related risks including organized crime, corruption, financial transparency, and political stability (65 percent of the score). The indexes range between 0 and 10, with higher values indicating greater risk.
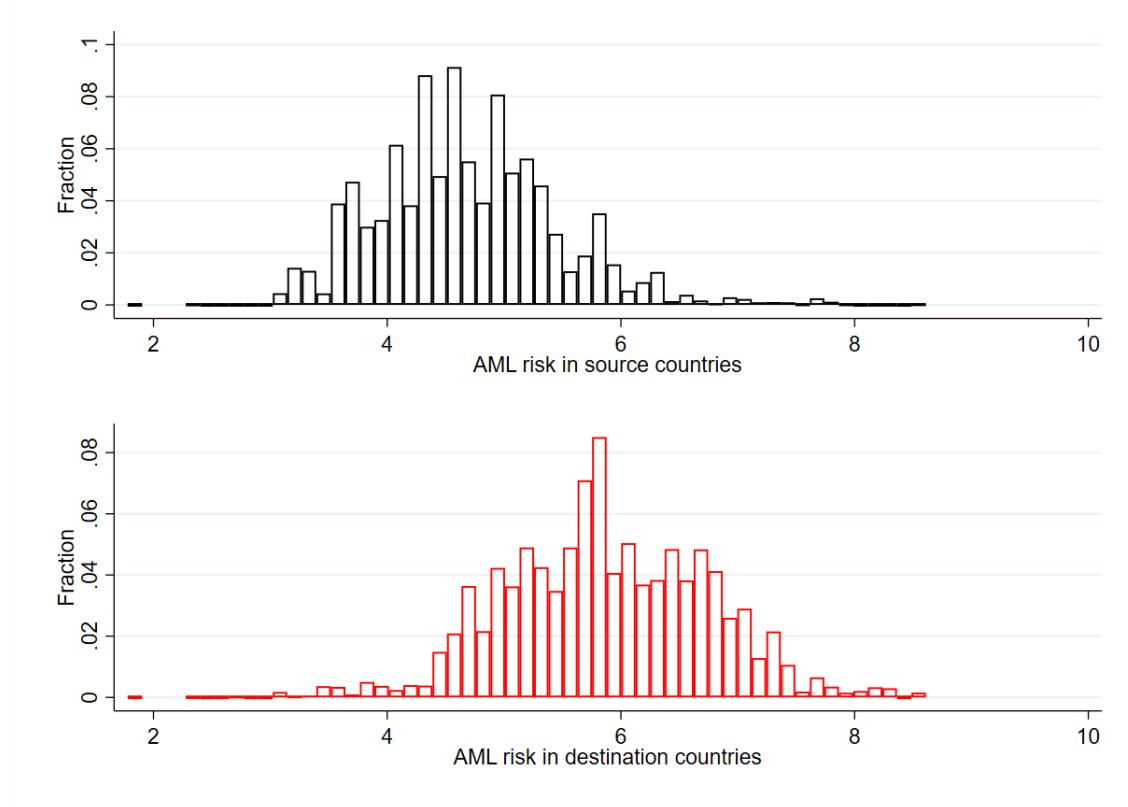

Figure 2: Histograms of AML indexes for source and destination countries

Note. Based on the Basel Institutes's AML indexes. The frequencies reflect the sample composition.

The Basel Institute publishes updated indexes for a large number of countries annually, incorporating new information as it becomes available. This temporal variation is crucial for panel identification in my empirical strategy.

The Basel AML Index has been validated against actual money laundering cases and regulatory enforcement actions, showing strong predictive power for future AML-related sanctions and regulatory interventions. The index correlates appropriately with other governance and institutional quality measures while maintaining distinct variation that reflects AML-specific risks.

Figure 2 shows substantial systematic differences between source and destination countries in my sample. Source countries (typically advanced economies) exhibit substantially lower AML risks than destination countries (emerging market economies), with source country upper percentiles corresponding to destination country lower-middle percentiles. This risk differential is crucial for identifying the channels through which institutional quality affects payment costs.

3.3   Enforcement intensity

I proxy enforcement intensity using rule-of-law indexes from the Varieties of Democracy dataset V-Dem (2025), which measures how transparently, impartially, and predictably laws are enforced across countries and time. The V-Dem aggregates information from expert surveys, citizen surveys, and objective indicators to construct institutional quality measures. For rule of law, the project surveys country experts—typically academics, journalists, and civil society activists with deep knowledge of their countries' political systems—asking detailed questions about law enforcement practices. V-Dem indexes are scaled 0–1, with higher values indicating stronger rule of law.

The V-Dem rule-of-law index captures several dimensions relevant to AML enforcement: The extent to which government officials comply with the law; judicial independence from political interference; transparency and predictability of legal processes; accessibility of justice to ordinary citizens; absence of corruption in law enforcement; and impartiality of bureaucratic implementation.

While AML-specific enforcement measures would be preferable, such measures are unavailable across countries and time periods with sufficient coverage for panel analysis. However, the rule-of-law index captures the broader institutional capacity required for effective AML enforcement, including judicial independence, bureaucratic competence, and commitment to legal processes—all prerequisites for credible AML enforcement programs.

The indexes employ item response theory and other advanced measurement techniques to ensure cross-country and temporal comparability, addressing common concerns about subjective governance measures.
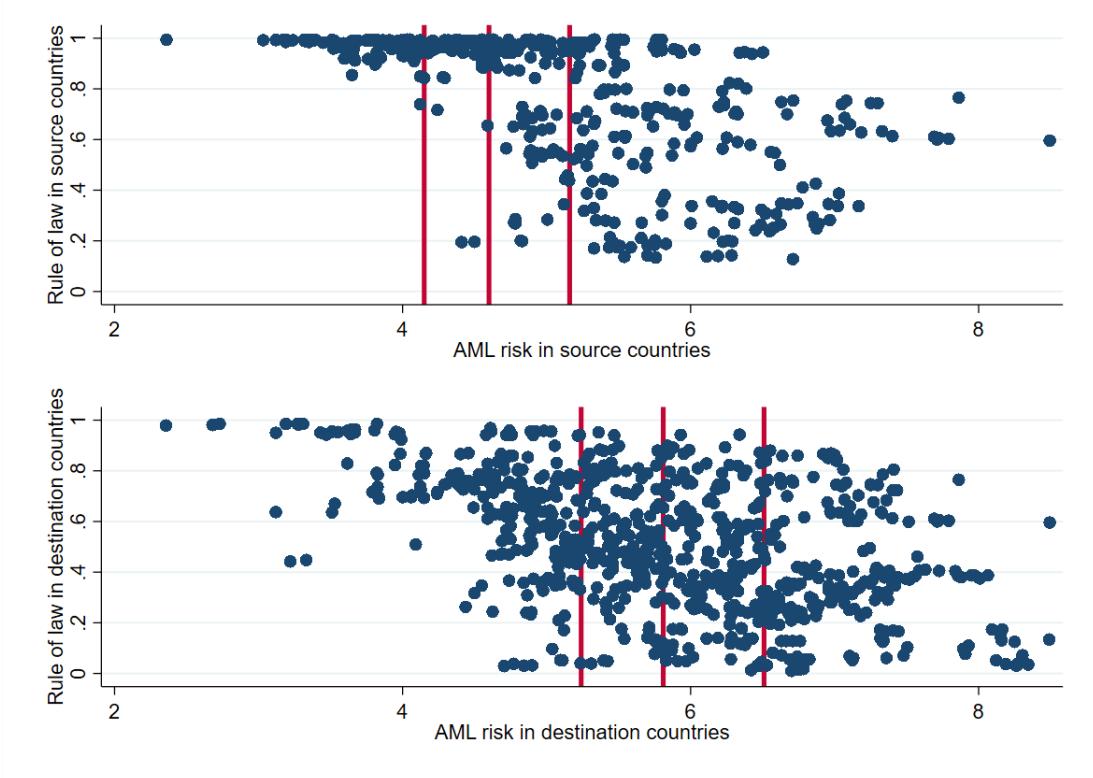
Figure 3: Scatter plots of rule of law and AML risk indexes

Note. In each panel, the first vertical line denotes the 25th percentile of the AML risk index, the second line the 50th percentile, and the third line the 75th percentile. Dots represent sample observations.

The enforcement measures exhibit substantial variation both across countries and within countries over time, providing identification for interaction effects with AML risks. Figure 3 demonstrates that this variation is "independent" of AML risk levels, particularly in destination countries where enforcement varies across the full 0-to-1 range for any given AML risk level. In the top panel for source countries, for AML risks in the 75th percentile (denoted by the third vertical line), enforcement intensity varies in a wide range (between 0.4 and 1) and, in the bottom panel for destination countries, for the 25 percentile AML risk index (which itself is a bit higher than than the 75th percentile of AML risks for source countries), the rule of law indexes span the entire range from 0 to 1.

3.4 FATF grey list decisions

I supplement the main analysis with data on Financial Action Task Force (FATF) "grey list" decisions and the specific reform commitments countries make to address AML deficiencies. These data derive from FATF public statements issued three times annually and enable testing whether PSPs respond to information about institutional trajectories beyond current risk levels.

The FATF maintains two categories of jurisdictions with AML/countering the financing of terrorism (CFT) weaknesses that provide useful empirical variation. Jurisdictions under Increased Monitoring (the grey list) are countries that have strategic deficiencies and that may be actively working with the FATF to address them within agreed timeframes. High-Risk Jurisdictions subject to Call for Action (the black list) face more severe designations due to serious strategic deficiencies, with FATF calling for enhanced due diligence or counter-measures.

The key empirical insight is that grey list placement distinguishes between countries making credible reform commitments and those failing to demonstrate adequate progress. The former signals that a country has committed to swift resolution of identified weaknesses and accepts enhanced monitoring. This distinction reveals information about institutional trajectories that extends beyond static risk assessments captured in the Basel AML Index. Since 2000, the FATF has reviewed 139 countries, publicly identifying over time 114 countries with deficiencies. Of these, 86 have subsequently implemented necessary reforms and been removed from monitoring, demonstrating the effectiveness of this reputational mechanism. Black list placements are rare and there is little variation in the countries on the black list for meaningful analysis.

For the empirical analysis, I construct indicator variables for countries under each category and track transitions between states over time. This variation allows identification of how PSPs process information about institutional development prospects independently of current risk levels.

4 Pricing of AML risks

I employ multidimensional panel regression models to explain cross-border payment costs as functions of AML risks and enforcement intensity in both source and destination countries. The panel structure enables comprehensive fixed effects control, including individual PSP effects, which is crucial for isolating the channels through which institutional quality affects pricing.. The baseline

specification is:

$$cost_{f,a,s,d,t} = \alpha + \eta AMT_a + \beta_s AML_{s,t} + \beta d AML_{d,t} + FE_f + FE_{s,d} + \epsilon_{f,a,s,d,t} \quad (1)$$

where $cost_{f,s,d,t}$ is the percentage cost of transferring amount a via provider f from source country s to destination d at time t. AMT_a indicates \$500 transfers (versus \$200), as these are the only two denominations available in the data. I omit other payment characteristics such as access points, payment instruments, payment pickup methods, and payment speed because, individually, they are either statistically or economically insignificant and, as a group, add little to explanatory power. Moreover, because these variables are not consistently available across corridors and time, including this group shrinks the sample size by a large margin. $AML_{s,t}$, $AML_{d,t}$ are source and destination AML risk indexes. The fixed effects FE include provider (f) and either separate source/destination country effects or corridor (country-pair) effects (s, d). Crucially, corridor fixed effects ensure identification comes from within-corridor variation over time rather than cross-sectional differences in corridor formation.[3] Standard errors are clustered by provider, source country, and destination country or by PSP and corridor to account for potential correlation in unobservables (Correia (2017)). I estimate this model for all PSPs and separately for banks or MTOs and large PSPs and small PSPs, as well as for specific payment options, such as cash payouts or bank account transfers.

Table 1 presents summary statistics. Average payment costs are 5.62 percent, with \$500 transfers costing 2.5 percentage points less than \$200 transfers apparently due to fixed cost components. Source country AML risks (mean 4.71) are substantially lower than destination risks (mean 5.87), consistent with advanced-to-emerging market flow patterns.

Table 1: Descriptive statistics

	mean	sd	p25	p50	p75
Cost of an average payment, pct	5.62	4.82	2.50	4.45	7.22
Cost of a \$200 payment	6.85	5.61	3.37	5.38	8.60
Cost of a \$500 payment	4.38	3.45	2.00	3.50	5.95
AML risk in source countries	4.71	0.72	4.24	4.65	5.18
AML risk in destination countries	5.87	0.87	5.26	5.81	6.52
Observations	304517				

Note. The split between the payments of \$200 and \$500 in the sample is nearly 50/50.

Table 2 shows baseline estimation results, where the first column includes only source AML

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[3] Providers select corridors based on expected profitability, which in part depends on regulatory costs and market characteristics. The corridor fixed effects specification addresses time-invariant selection factors by exploiting within-corridor variation over time rather than cross-sectional differences in corridor formation.

risks, the second column destination AML risks, and the remaining two both source and destination AML risks. Both source and destination AML risks boost costs. The striking finding is that source country AML risks have larger cost effects than destination risks, despite source countries having lower absolute risk levels. Based on a more stringent specification in column (4), a one-standard-deviation increase in source AML risk raises costs by 0.47 percentage point ($= 0.66 \times 0.72$), while destination risk effects at 0.15 percentage point ($= 0.17 \times 0.87$) are smaller and somewhat less robust. This pattern contradicts standard intuition that higher destination risks should drive costs.

Table 2: Regressions of costs on AML risks in source and destination countries

	(1)	(2)	(3)	(4)
Large payment dummy	-2.47***	-2.47***	-2.47***	-2.47***
	(-9.24)	(-9.23)	(-9.24)	(-13.50)
AML risk in source countries	0.71***		0.67***	0.66***
	(3.14)		(3.08)	(3.14)
AML risk in destination countries		0.29*	0.16	0.17**
		(1.94)	(1.40)	(2.11)
Num. of observ.	304517	304517	304517	304517
R-sq.	0.50	0.49	0.50	0.51
R-sq. within.	0.12	0.12	0.12	0.12
Root mean squared error	3.43	3.44	3.43	3.37
FE PSP	Y	Y	Y	Y
FE source	Y	Y	Y	N
FE destination	Y	Y	Y	N
FE corridor	N	N	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. Errors are clustered by PSP, source country, and destination country in columns (1) to (3) and by PSP and corridor in column (4).

To further gauge the economic significance of the findings, I do a back-of-the-envelope calculation in table 3 of the contribution of changes in AML risks to changes in costs over time. The magnitude of the contribution is substantial, but mostly attributable to the decline in AML risks in source countries. The 0.85 point decline in source AML risks between 2012-13 and 2022-23 accounts for nearly one-third of the observed 1.85 percentage point cost reduction over this period. The declines in source and destination AML risks jointly explain one-third of the decline in costs.

Table 3: Descriptive statistics for early and late sample years

	Early years mean	Late years mean	Change in means	Change $\times \beta$
Cost of an average payment, pct	6.99	5.14	-1.85	n/a
AML risk in source countries	5.13	4.28	-0.85	-0.56 ppt
AML risk in destination countries	6.09	5.74	-0.35	-0.06 ppt

Note. The early years are defined as 2012-13 and the late years as 2022-23.

I conduct some robustness checks to ensure the reliability of the baseline results. For example, I estimate the model on various sub-samples to ensure the results are not driven by particular

countries, PSPs, or time periods. The findings are robust to such exclusions. I also include additional control variables such as GDP per capita and exchange rate volatility. The results remain quantitatively similar.

5   Enforcement intensity and risk pricing

The baseline results reveal a striking pattern: AML risks in source countries (typically advanced economies) have larger effects on payment costs than risks in destination countries (typically developing countries). This pattern contradicts the intuition that higher-risk environments should generate larger cost effects. The key to understanding this pattern lies in recognizing that risk pricing depends not only on underlying risk levels but also on the institutional environment that determines whether and how risks are priced. This section develops a framework that distinguishes between the risk reduction benefits of strong institutions and their risk pricing effects, showing that these two channels can work in offsetting directions.

Before presenting the formal analysis, I illustrate these concepts using a comparative static exercise in in table 4. The top panel examines remittance costs from the United States to 42 destination countries in 2023. Costs, measured as a percentage of payment amount, are lowest for destinations with low AML risks (4.69 percent). Counterintuitively, costs peak for medium-risk destinations (5.23 percent) rather than high-risk ones (4.83 percent). This unexpected pattern reflects differences in law enforcement intensity: Medium-risk countries typically have stronger enforcement capabilities than high-risk countries, creating greater compliance burdens for payment providers. The bottom panel examines remittance costs to the Philippines from 14 source countries, revealing the inverse relationship. Costs are highest for payments originating from low AML-risk countries with strong law enforcement (3.35 percent), while costs decrease for payments from higher-risk countries with weaker enforcement (3.16 percent). This pattern suggests that strong law enforcement in source countries imposes additional compliance requirements on cross-border payment providers. Together, these findings demonstrate that payment costs depend on the interaction between AML risks and law enforcement capabilities in both source and destination countries, rather than AML risks alone.

Table 4: Costs of cross-border payments and AML risks in source and destination countries

	(1)	(2)	(3)
Costs of payments from the United States to 42 countries			
	AML risks in destination countries		
	Low	Medium	High
	AML ≤ 5.06	5.06< AML < 6.05	AML ≥ 6.05
Cost of payments, pct	4.69	5.23	4.83
Difference in cost over the safest payment, ppt	-	0.54	0.14
Rule of law in destination countries (mean)	0.62	0.45	0.36
Costs of payments to the Philippines from 14 countries			
	AML risks in source countries		
	Low	Medium	High
	AML ≤ 3.69	3.69< AML < 4.66	AML ≥ 4.66
Cost of payments, pct	3.35	3.16	3.16
Difference in cost over the safest payment, ppt	-	-0.19	-0.19
Rule of law in source countries (mean)	0.98	0.95	0.74

Note. Based on data for 2023 from the Basel Insitute on Governance, the World Bank, and V-Dem. Indexes for AML risks range from zero (lowest risk) to 10 (highest risk). Indexes for rule of law range from zero (lowest degree) to 1 (highest degree).

5.1 Two channels of enforcement intensity

The resolution lies in considering how enforcement intensity affects the translation of risks into costs. PSPs may only price AML risks when enforcement makes compliance binding. In jurisdictions with weak enforcement, PSPs can maintain minimal compliance programs and face little regulatory scrutiny, so underlying risk levels have limited effects on costs. By contrast, in jurisdictions with strong enforcement, PSPs must invest in sophisticated compliance processes and infrastructure and face examinations, making them highly sensitive to risk variations. Therefore, the same underlying risk level will have very different cost implications depending on whether enforcement makes compliance binding. Because enforcement is typically significantly stronger in advanced source countries than in developing destination countries, source country risks translate more directly into costs even though the absolute risk levels may be lower.

This mechanism has broader implications for understanding when institutional quality affects financial intermediation costs. Strong enforcement institutions create binding regulatory constraints that can increase costs through compliance channels, even as they reduce costs through risk reduction channels. The net effect depends on which channel dominates, which in turn depends on the intensity of regulation and the cost of compliance technology.

To test this enforcement mechanism, I modify the baseline specification to include explicit interactions between AML risks and enforcement intensity:

$$cost_{f,a,s,d,t} = \alpha + \eta AMT_a$$

$$+ \beta_s AML_{s,t} + \gamma_s ENF_s + \eta_s AML_{s,t} \times ENF_s$$

$$+ \beta_d AML_{d,t} + \gamma_d ENF_d + \eta_d AML_{d,t} \times ENF_d \qquad (2)$$

$$+ FE_f + FE_{s,d} + \epsilon_{f,a,s,d,x,t}$$

where ENF_s and ENF_d are dummy variables equal to 1 if enforcement intensity (measured by rule of law index) is above the 25th percentile of the distribution, and 0 otherwise. I use the 25th percentile threshold because it creates meaningful variation while ensuring sufficient observations in both categories. The remaining variables are as in the baseline model.

In this model, strong enforcement institutions operate through two distinct channels with offsetting effects. The **risk reduction effect** is negative (γ_s and γ_d are < 0): Increasing enforcement reduces costs possibly through risk mitigation, credibility enhancement, and regulatory predictability. The negative risk reduction effect is typical in the law-and-finance literature, albeit in credit or financial markets, not payments. The **risk pricing effect** is positive (η_s and η_d are > 0): Enforcement increases the cost impact of AML risks per unit of risk by making compliance requirements binding, requiring accurate risk assessment, and encouraging risk-based pricing. Moreover, costs may not reflect AML risks directly, unconditionally on enforcement (β_s and β_d are zero).

Before presenting results, I address a couple of potential endogeneity concerns. The first issue is potential reverse causality from costs to enforcement: Enforcement intensity could increase in corridors where costs are high. The data suggest a robust opposite pattern: High-risk countries typically have weak enforcement while low-risk countries have strong enforcement. Rather than threatening identification, this pattern validates the proposed mechanism. Under weak enforcement (typical in high-AML destinations), providers lack incentives for careful risk assessment and rely on cross-subsidization or crude screening. Under strong enforcement (typical in low-AML sources), even modest risk variations trigger compliance costs that get passed through to pricing. Separately, I measure enforcement with the index that captures broader rule of law applications, rather than payments-centered ones. In a later section, I explore a quasi-natural experiment of regulatory changes—FATF grey list decisions—to instrument for enforcement intensity. The second concern is about PSP selection and endogenous entry. PSPs could choose which corridors to enter based on expected profitability that reflects regulatory costs. Corridor-specific fixed effects help to address

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time-invariant selection issues. I also include provider fixed effects to control for business model differences.

Descriptive statistics in table 5 differ very little from those in 1 because the samples are very similar. While in regressions I use the dummies to measure rule of law, I show the statistics for the indexes on which the dummies are based in the table. Success of estimation rests on the ENF and AML variables having sufficient "independent" variation. As figure 3 illustrates, that is the case.

Table 5: Descriptive statistics

	mean	sd	p25	p50	p75
Cost of an average payment, pct	5.60	4.81	2.50	4.43	7.19
AML risk in source countries	4.72	0.72	4.25	4.66	5.18
Rule of law in source countries	0.89	0.19	0.90	0.97	0.98
AML risk in destination countries	5.88	0.87	5.28	5.81	6.52
Rule of law in destination countries	0.46	0.21	0.31	0.46	0.60
Observations	302265				

Note. The split between the payments of $200 and $500 in the sample is nearly 50/50.

Table 6 presents the results of estimating the enforcement interaction model. Column (1) uses source and destination country fixed effects, while column (2) uses more stringent corridor fixed effects for more stringent identification.

Table 6: Regressions of costs on AML risks and enforcement in source and destination countries

	(1)	(2)
Large payment dummy	-2.47***	-2.47***
	(-9.20)	(-13.49)
AML risk in source countries	-0.12	-0.11
	(-0.35)	(-0.31)
Enforcement in source countries	-4.61***	-4.51***
	(-2.74)	(-2.61)
AML risks X enforcement in source countries	0.95***	0.93***
	(2.79)	(2.64)
AML risk in dest. countries	-0.18	-0.10
	(-0.86)	(-0.79)
Enforcement in dest. countries	-2.22*	-1.66**
	(-1.79)	(-1.95)
AML risks X enforcement in dest. countries	0.36*	0.29**
	(1.87)	(2.20)
Num. of observ.	302265	302265
R-sq.	0.49	0.51
R-sq. within.	0.12	0.13
root mean squared error	3.42	3.36
FE PSP	Y	Y
FE source	Y	N
FE destination	Y	N
FE corridor	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. The results are based on the 25th percentile enforcement dummies. Errors are clustered by PSP, source country, and destination country in column (1) and by PSP and corridor in column (2).

The results strongly support the enforcement mechanism across both channels.

For the **risk reduction effect**, consistently with the traditional law-and-finance prediction, the coefficients on enforcement variables are negative and statistically significant, indicating that strong institutions reduce baseline payment costs in both source and destination countries. There could be numerous reasons for this significant negative effect. Strong enforcement could make large international banks more willing to provide correspondent services to PSPs in well-regulated jurisdictions, reducing the "de-risking" problem where banks cut ties with PSPs.[4]. Clear and consistently enforced rules could increase regulatory certainty and eliminate the need for over-investing in compliance, lower legal and consulting advice expenses, and reduce staffing costs. Strong enforcement could also reduce costly operational problems such as fraud and transaction disputes. Finally, it could reduce country risk premiums or markups that are unrelated to AML risks.

For the **risk pricing effect**, the interaction terms are positive and statistically significant for both source and destination countries, showing that AML risks only matter when enforcement is high. And the direct effects of AML risks are now small and statistically insignificant, suggesting that without binding enforcement, AML risks have minimal impact on costs.

Table 7: Marginal effects of enforcement on costs of remittances conditional on AML risk

	AML risk level		
	Low	Medium	High
Source country	-0.46	-0.07	0.42
Destination country	-0.13	0.02	0.25

Note. Each cell shows the marginal effects (in percentage points) of an increase in enforcement (from zero to one) for a given level AML risk in either source or destination countries. Low risk corresponds to the 25th percentile of AML risk, medium risk to the 50th percentile, and high risk to the 75th percentile.

To interpret these results economically, consider the net effect of enforcement under different AML risk regimes, see table 7. Because the risk reduction effect is negative and the risk pricing effect is positive, the net effect depends on risk levels, creating winners and losers from strong institutions. And, by construction, the interaction between risks and enforcement dummy creates

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[4]The FSB identified a variety of intertwined drivers for de-risking—the termination of banking services to remittance PSPs—including the perceived high AML/CFT risk, general poor supervision of remittance service providers and, in some jurisdictions, weak compliance with international AML/CFT standards (Financial Stability Board (2018)).

a non-linear relationship that explains cross-country variation in costs. High risk countries with increased enforcement and hence binding compliance requirements face the highest increases in costs (0.42 percentage point if source countries increase enforcement and 0.25 percentage point if destination countries do so). Low risk countries with increased enforcement enjoy declines in costs due to risk reduction without substantial compliance burdens (-0.46 percentage point and -0.13 percentage point, respectively).

As a robustness check, I experiment with alternative measures of enforcement intensity. Instead of using the 25th percentile threshold, I experiment with a 50th percentile and observe qualitatively similar but statistically weaker results. This pattern suggests that the beneficial effects of enforcement intensity could diminish with the intensity level.

5.2 Additional evidence on enforcement intensity

I validate the enforcement claims from another perspective that relies on widely accepted notions about law enforcement and research about regulatory and supervisory attention instead of rule-of-law or law-enforcement indexes: The enforcement mechanism can vary systematically across PSP types and domiciles, providing three validation opportunities.

Table 8: Regressions of costs on AML risks in source and destination countries for small network and large network PSPs

	Small network PSPs		Large network PSPs	
	(1)	(2)	(3)	(4)
Large payment dummy	-3.02***	-3.02***	-2.26***	-2.26***
	(-7.55)	(-13.32)	(-10.33)	(-12.98)
AML risk in source countries	0.10	-0.03	0.83***	0.86***
	(0.43)	(-0.19)	(3.24)	(3.58)
AML risk in destination countries	0.06	0.07	0.19	0.21***
	(0.30)	(0.39)	(1.63)	(2.73)
Num. of observ.	85083	85083	219434	219434
R-sq.	0.64	0.66	0.44	0.46
R-sq. within.	0.18	0.19	0.11	0.11
Root mean squared error	3.25	3.18	3.42	3.35
FE PSP	Y	Y	Y	Y
FE source	Y	N	Y	N
FE destination	Y	N	Y	N
FE corridor	N	Y	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. PSPs are grouped by the size of their networks. PSPs in the 90th percentile of the distribution of corridors/payment options are included in the large network PSP sample. The coefficient on AML risk in destination countries in column (3) is statistically significant at 15 percent. Errors are clustered by PSP, source country, and destination country in odd columns and by PSP and corridor in even columns.

First, large PSPs with extensive networks likely face greater regulatory scrutiny and reputational risks than smaller operators, while also being more likely to operate across multiple jurisdictions with varying enforcement intensity, requiring sophisticated compliance systems..[5] To examine this possibility, I estimate model (1) on a subset of the sample. I classify PSPs by network size using the distribution of payment corridors served. PSPs in the 90th percentile of the corridor distribution (serving 15 or more corridors) are classified as large network providers, while others are classified as small network providers. Table 8 shows that large network PSPs exhibit much stronger sensitivity to AML risks than small network providers. The coefficients for large PSPs are economically meaningful and statistically significant, while those for small PSPs are close to zero and insignificant. This finding supports the hypothesis that regulatory scrutiny affects pricing behavior. Large PSPs face greater visibility to regulators, higher reputational stakes, and more complex compliance requirements across multiple jurisdictions. They therefore have stronger incentives to price AML risks precisely.

Table 9: Regressions of costs on AML risks by PSP type

	Banks		MTOs	
	(1)	(2)	(3)	(4)
Large amount dummy	-5.42***	-5.42***	-1.74***	-1.74***
	(-8.59)	(-12.40)	(-14.31)	(-16.67)
AML risk in source countries	0.45	0.32	0.61**	0.65***
	(1.11)	(1.01)	(2.30)	(2.62)
AML risk in destination countries	0.01	0.07	0.19	0.20***
	(0.03)	(0.23)	(1.54)	(2.74)
Num. of observ.	60770	60770	243747	243747
R-sq.	0.65	0.67	0.38	0.41
R-sq. within.	0.28	0.29	0.09	0.09
Root mean squared error	4.33	4.22	2.91	2.84
FE PSP	Y	Y	Y	Y
FE source	Y	N	Y	N
FE destination	Y	N	Y	N
FE corridor	N	Y	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. The first two columns show results for the sample of banks and the other two for the sample of money transfer operators. Errors are clustered by PSP, source country, and destination country in odd columns and by PSP and corridor in even columns.

Second, I examine pricing differences between PSP types. I estimate the model separately for banks and MTOs. The results in table 9 reveal a prominent difference in pricing behavior across provider types. MTOs exhibit strong sensitivity to AML risks in both source and destination

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[5]By analogy with evidence that scrutiny increases with the size of financial institutions, especially when regulators and supervisors are resource constrained. For example, in the United States, larger banks receive more attention from supervisors, even after controlling for size, risk, complexity, and other characteristics (Hirtle, Kovner, and Plosser (2020) and Eisenbach, Lucca, and Townsend (2022)).

countries, while banks show no statistically significant risk-based pricing (even though the regression coefficients are positive). This pattern validates the enforcement mechanism, too: For banks, remittances typically represent marginal business (Ratha and Riedberg (2005)) that makes little money and possibly receives limited supervisory attention, reducing incentives for sophisticated risk-assessment infrastructure. MTOs, for whom remittances constitute core business, face intensive regulatory scrutiny justifying substantial compliance investments and precise risk pricing. That said, banks charge substantially higher fees than MTOs do in the same corridors, so they are likely adequately compensated for AML risks. On average, banks charge 3.78 percentage points more than MTOs for $200 transfers and 0.65 percentage points for $500 transfers.

Table 10: Regressions of costs on AML risks in source and destination countries by PSP headquarters country

	U.S. headquarters		AE headquarters		Other headquarters	
	(1)	(2)	(3)	(4)	(5)	(6)
Large payment dummy	-2.01***	-2.01***	-2.31***	-2.31***	-3.05***	-3.05***
	(-16.31)	(-19.77)	(-4.29)	(-4.26)	(-6.78)	(-12.32)
AML risk in source countries	1.04**	1.07***	0.61	0.60**	0.26	0.15
	(3.15)	(3.45)	(1.59)	(2.13)	(1.45)	(0.77)
AML risk in destination countries	0.20	0.22**	0.29	0.32*	-0.03	-0.02
	(1.81)	(2.71)	(1.51)	(1.79)	(-0.20)	(-0.11)
Num. of observ.	130479	130479	53536	53536	120502	120502
R-sq.	0.36	0.40	0.52	0.54	0.61	0.62
R-sq. within.	0.11	0.12	0.12	0.13	0.15	0.16
Root mean squared error	3.12	3.01	3.20	3.13	3.60	3.52
FE PSP	Y	Y	Y	Y	Y	Y
FE source	Y	N	Y	N	Y	N
FE destination	Y	N	Y	N	Y	N
FE corridor	N	Y	N	Y	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. AE stands for large advanced economies, such as the United Kingdom. Only the largest PSPs have been assigned headquarters countries. The PSPs in columns (1) and (2) are Western Union, MoneyGram, Ria, Remitly, Xoom, Walmart2World, Citibank,Sigue Money Transfers, Wells Fargo, Viamericas. The PSPs in columns (3) and (4) include WorldRemit, Small World, Azimo, Wise, Skrill, Ezremit, ANZ Bank, Westpac, Postbank, Banca Intesa SanPaolo, and others. Errors are clustered by PSP, source country, and destination country in odd columns and by PSP and corridor in even columns.

Third, PSPs subject to jurisdiction of countries with strong enforcement can face particularly intensive AML oversight and severe penalties for violations. For example, U.S. authorities have been particularly aggressive in pursuing AML violations and imposing significant penalties and activity restrictions, including cases involving MTOs (Western Union (2010, 2017) and MoneyGram (2012, 2018) with hundreds of million dollars in penalties) and even non-U.S. financial intermediaries (BNP Paribas (2014); Danske Bank (2022); and HSBC (2012)).[6] Such actions can create

[6]Neither firms involved in crypto payments are immune. In 2023, Binance, the worlds largest cryptocur-

strong incentives for precise risk assessment and pricing. To validate, I reestimate the model on a different subset of the sample. I classify PSPs by headquarters jurisdiction: U.S.-headquartered, other advanced economy headquarters (primarily the United Kingdom, Canada, Australia), and other locations. Table 10 shows that U.S.-headquartered PSPs exhibit the strongest sensitivity to AML risks, followed by other advanced economy PSPs, with the weakest response among PSPs headquartered elsewhere.

5.3 Understanding the source country dominance

The analysis provides strong evidence for enforcement significance, yet even after controlling for enforcement differences, source country effects remain substantially larger than destination country effects. Both the enforcement coefficient and the risk-enforcement interaction coefficient are two-to-three times larger in source countries than in destinations, suggesting additional institutional mechanisms beyond our measured enforcement variables.

This asymmetry may reflect hidden structural differences in how AML enforcement operates across the global payments system. While our enforcement measures capture broad formal institutional capacity, they may not fully reflect the actual regulatory pressure—or lack thereof—that PSPs experience in practice.

In source countries, the frameworks emphasize a risk-based approach to AML/CFT, meaning that financial institutions should focus resources on areas with the highest potential for illicit activity. Senders' identities, sources of funds, and reasons for transactions are crucial to this assessment. Thus, the response of PSPs may have evolved to place increasing emphasis on assessing the risk posed by senders of funds, alongside existing requirements related to receivers.

Destination countries may present more murky regulatory environments for compliance, particularly high-risk emerging economies that receive substantial remittance flows and face policy tensions between AML compliance and enabling critical capital inflows.[7] This tension could create environments where PSPs might face limited practical scrutiny even when formal enforcement indicators suggest otherwise, leading to minimal compliance investments despite potential risks. Source countries, by contrast, typically have more straightforward regulatory environments where

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rency exchange, pleaded guilty and agreed to pay over \$4 billion to resolve a U.S. Department of Justice investigation into AML and MTO registration and violations.

[7]Payment inflows respond positively to lower costs of remittances, see Kpodar and Amir Imam (2024).

formal enforcement measures better reflect actual compliance pressures.

6   Information about institutional trajectories

The analysis thus far treats AML risk indexes as measures of AML/CFT risks that affect PSP costs through compliance channels. However, regulatory announcements may affect costs through a different mechanism too: Information revelation about institutional trajectories.

Consider the FATF grey list process. PSPs already know which countries face significant AML risks (and I can control for this information in regressions)—that's precisely why FATF investigates them. The placement of a country on a monitoring list therefore provides little new information about current risk levels. Instead, the key information comes from how countries respond to FATF scrutiny.

When FATF places a country on its grey list, it distinguishes between countries that make credible political commitments to address deficiencies within agreed timeframes and those that do not make such commitments or fail to make sufficient progress. This distinction reveals important information about countries' future institutional trajectories that goes beyond current risk assessments.

Countries that commit credibly to reform signal a few several things to PSPs: (1) institutional capacity to implement changes, (2) political will to prioritize AML compliance, (3) engagement with international standards, and (4) likely improvement in risk profile over time. Countries that resist reform or fail to make progress signal the opposite: Limited institutional capacity, competing political priorities, resistance to international standards, and likely persistence or deterioration of risk profile.

This information revelation mechanism generates clear predictions about how FATF announcements should affect payment costs. Countries with credible reform commitments should experience cost reductions relative to countries not under FATF monitoring, as PSPs price in expected improvements. Countries without credible commitments should experience cost increases relative to the baseline, as PSPs price in expected deterioration or persistence of problems.

The FATF grey list analysis provides a quasi-natural experiment that addresses endogeneity concerns about enforcement intensity. FATF grey list decisions follow the organization's institutional assessment cycle rather than respond to developments in a given corridor. The key variation

comes not from the decision itself, which PSPs can anticipate, but from countries' responses to FATF scrutiny and international pressures to improve their frameworks. The outcomes of internal political processes is akin to an experiment where otherwise similar high-risk countries receive different "treatments" (credible reform commitments versus no such commitments). These commitment signals provide plausibly exogenous information about future institutional trajectories, allowing identification of how PSPs price institutional prospects independently of current enforcement levels.

To test this signaling mechanism, I estimate model (3) that includes FATF grey list variables alongside the baseline AML risk measures:

$$
\begin{aligned}
cost_{f,a,s,d,t} = {} & \alpha + \eta AMT_a \\
& + \beta_s AML_{s,t} + \beta_d AML_{d,t} \\
& + \gamma_c COMMIT_{d,t} + \gamma_n NONCOMMIT_{d,t} \\
& + FE_f + FE_{s,d} + \epsilon_{f,a,s,d,t}
\end{aligned}
\tag{3}
$$

where $COMMIT_{d,t}$ is an indicator equal to 1 if destination country d is on the FATF grey list with a credible reform commitment at time t and $NONCOMMIT_{d,t}$ is an indicator equal to 1 if destination country d is on the FATF grey list without a credible commitment at time t. (The omitted category is countries not under FATF monitoring.) I focus on destination country FATF status because the source countries in my sample, which are predominantly advanced economies, are rarely placed on FATF monitoring lists. The few source countries that have faced FATF scrutiny provide insufficient variation for reliable estimation.

The information revelation hypothesis predicts that commitment reduces costs ($\gamma_c < 0$) and that lack of commitment increases costs ($\gamma_n > 0$), both relative to countries not revealed to be under monitoring.

Table 11 provides descriptive statistics. The share of observations for countries with deficiencies in their regimes to counter money laundering, terrorist financing, and financing of proliferation is small in part because most countries do not stay on the grey list for too long. The specific timeframe for a country to resolve deficiencies depends on the nature and severity of the issues, as well as the country's commitment in implementing the agreed reforms. If a country fails to make sufficient progress within the agreed timeline, the FATF may impose stricter monitoring or countermeasures.

Countries that had deficiencies and showed political commitment include the Philippines, Pakistan, Sri Lanka, Morocco, Ghana, and many others. Countries that had AML deficiencies but no political commitment include Pakistan, Nigeria, and over a dozen of other countries. Some countries such as Turkey and Vietnam appeared on both lists over time.

Table 11: Descriptive statistics

	mean	sd	p25	p50	p75
Cost of an average payment, pct	5.62	4.82	2.50	4.45	7.22
AML risk in source countries	4.71	0.72	4.24	4.65	5.18
AML risk in destination countries	5.87	0.87	5.26	5.81	6.52
Defficiencies, committ.	0.14	0.33	0.00	0.00	0.00
Defficiencies, no committ.	0.02	0.13	0.00	0.00	0.00
Observations	304517				

Note. Countries that at some point had AML deficiencies and political commitment to address them include the Philippines, Pakistan, Vietnam, Sri Lanka, Morocco, Ghana, Turkey, and many others. Countries that at some point had AML deficiencies and no political commitment to address them include Pakistan, Vietnam, Turkey, Nigeria, and a dozen or so of other countries.

Table 12 presents the results of estimating the information revelation model for the full sample, banks only, and MTOs only.

The results strongly support the information revelation hypothesis. They demonstrate sophistication in how payment markets process regulatory information. First, including FATF variables does not diminish the effects of underlying AML risks. The coefficients on AML risk indexes remain similar to those in baseline regressions, suggesting that FATF decisions provide additional information beyond what is captured in the risk indexes. Second, deficiencies with commitment reduce costs materially. The statistically significant coefficient ranges from -0.32 to -0.36 across specifications, indicating that countries on FATF grey lists with credible reform commitments experience costs that are 0.3-0.4 percentage points lower than countries not under FATF monitoring. This effect is economically meaningful relative to the sample mean of costs. Third, deficiencies without commitment increase costs. The statistically and economically significant coefficient ranges from 0.38 to 0.57, indicating that countries on grey lists without credible commitments experience costs that are 0.4-to-0.6 percentage points higher than the baseline. Fourth, the pattern is strongest for MTOs. The effects are statistically significant and economically large for specialized MTOs, but smaller and often insignificant for banks. This is consistent with the earlier finding that MTOs are more responsive to AML considerations than banks.

All in all, rather than simply responding to regulatory announcements as negative news, PSPs

Table 12: Regressions of costs on AML risks in source and destination countries and FATF grey list inclusion

	All PSPs		MTOs	
	(1)	(2)	(3)	(4)
Large payment dummy	-2.47***	-2.47***	-1.74***	-1.74***
	(-9.24)	(-13.50)	(-14.31)	(-16.67)
AML risk in source countries	0.61***	0.59***	0.54**	0.58**
	(2.80)	(2.90)	(2.09)	(2.42)
AML risk in destination countries	0.15	0.17**	0.19	0.20***
	(1.39)	(2.08)	(1.60)	(2.82)
Deficiencies, commitment	-0.32**	-0.33***	-0.37**	-0.36***
	(-2.28)	(-2.84)	(-2.55)	(-3.14)
Deficiencies, no commitment	0.49**	0.57***	0.38*	0.44**
	(2.57)	(2.96)	(1.75)	(2.01)
Num. of observ.	304517	304517	243747	243747
R-sq.	0.50	0.51	0.38	0.41
R-sq. within.	0.12	0.12	0.09	0.09
root mean squared error	3.43	3.36	2.90	2.84
FE firm	Y	Y	Y	Y
FE source	Y	N	Y	N
FE destination	Y	N	Y	N
FE corridor	N	Y	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. The results in columns (1) and (2) are based on the sample of all PSPs and those in columns (3) and (4) on the sample of MTOs." Errors are clustered by PSP, source country, and destination country in odd columns and by PSP and corridor in even columns.

distinguish between different types of announcements based on the information they convey about future trajectories. PSPs appear to price expected future institutional quality rather than just current conditions. This creates powerful incentives for countries to engage constructively with international monitoring bodies, as credible reform commitments can improve market conditions immediately even before reforms are implemented.

Circling back to the endogeneity discussion earlier, the findings also demonstrate that PSPs respond to forward-looking institutional quality rather than reflecting reverse causality from market conditions to regulatory outcomes.

7 Competition and risk pricing

While enforcement intensity represents one key determinant of risk pricing, additional factors may also influence how PSPs respond to regulatory constraints. For example, competitive dynamics within payment corridors may further influence this pricing of risk. Competition may affect how PSPs price AML risks through two offsetting channels. On one hand, competitive pressure might force PSPs to price risks more precisely, as they cannot rely on market power to maintain margins when compliance costs increase. On the other hand, competition might limit PSPs' ability to pass

through compliance costs, forcing them to absorb these costs rather than charging higher fees.

To test these competing hypotheses, I estimate models that interact AML risks with measures of competition intensity. Following Beck, Janfils, and Kpodar (2022), I measure competition using the number of PSPs of both types (banks and MTOs) or the number of banks operating in each corridor.[8] However, I deviate from their methodology in two ways. First, my unit of observation is a cost of a given PSP in a given corridor and time, rather than the average of all costs in a given corridor and time. Second, I interact destination AML risks with a measure of PSP competition within a corridor.

Putting all the pieces together, I estimate the following model:

$$
\begin{aligned}
cost_{f,a,s,d,t} = {} & \alpha + \eta AMT_a + \beta_s AML_{s,t} \\
& + \gamma_{sd} NPSP_{s,d,t} + \beta_d AML_{d,t} + \eta_{sd} AML_{d,t} \times NPSP_{s,d,t} \\
& + FE_f + FE_{s,d} + \epsilon_{f,a,s,d,t}
\end{aligned}
\tag{4}
$$

where $NPSP_{s,d,t}$ is either the number of PSPs or the number of banks operating in corridor s, d at time t. The other variables are defined as before.

In this model, competition operates through two distinct channels. The **direct competition effect** is negative ($\gamma_{sd} < 0$): Increasing competition reduces costs possibly through lower mark-ups. The literature finds this effect to be negative, see Beck, Janfils, and Kpodar (2022) and Beck and Martinez Peria (2011). The sign of the novel **risk pricing effect** (ηsd) is uncertain as discussed earlier.

The descriptive statistics in table 13 for the costs and AML variable are very similar to those in the other tables. The statistics for the numbers of PSPs suggest that, on average, there are nearly a dozen PSPs per corridor, of which only a couple are banks.

Table 14 presents the estimation results: In columns (1) and (2) for all PSPs and in columns (3) to (6) only for MTOs. Starting with the results for all PSPs, consistently with the literature, the direct effect of competition is negative, indicating that more PSPs (or more bank PSPs) in a corridor reduces costs. The interaction coefficient between destination AML risks and the number of PSPs is positive and significant, suggesting that PSPs are more sensitive to AML risks in more competitive

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[8]Beck, Janfils, and Kpodar (2022) uses the share of banks within a corridor.

Table 13: Descriptive statistics

	All PSPs					MTOs				
	mean	sd	p25	p50	p75	mean	sd	p25	p50	p75
Cost of an average payment, pct	5.62	4.82	2.50	4.45	7.22	4.97	3.68	2.44	4.19	6.60
AML risk in source countries	4.71	0.72	4.24	4.65	5.18	4.66	0.69	4.23	4.60	5.11
AML risk in destination countries	5.87	0.87	5.26	5.81	6.52	5.84	0.88	5.19	5.80	6.48
Number of PSPs	11.19	5.03	8.00	10.00	13.00	11.00	5.07	8.00	10.00	13.00
Number of bank PSPs	2.37	2.35	0.00	2.00	4.00	1.83	2.02	0.00	1.00	3.00
Observations	304517					243747				

Note. The first 6 columns show information for the sample of all PSPs and the other 6 columns for the sample of MTOs only.

corridors. This coefficient for bank PSPs is positive too and nearly statistically significant. The results for MTOs are qualitatively similar and particularly robust when MTOs compete against bank PSPs. Further analysis suggests that costs of remittances set by banks do not respond to the interaction of AML risks and competition (not shown).

Table 14: Regressions of costs on AML risks and number of PSPs

	All PSPs		MTOs			
	(1)	(2)	(3)	(4)	(5)	(6)
Large payment dummy	-2.47***	-2.47***	-1.74***	-1.74***	-1.74***	-1.74***
	(-9.24)	(-9.24)	(-14.31)	(-16.67)	(-14.31)	(-16.67)
AML risk in source countries	0.66***	0.66***	0.61**	0.65**	0.61**	0.61**
	(2.95)	(3.15)	(2.23)	(2.54)	(2.27)	(2.49)
AML risk in destination countries	-0.06	-0.00	0.02	0.16	0.06	0.08
	(-0.59)	(-0.04)	(0.19)	(1.00)	(0.68)	(0.94)
Number of PSPs	-0.14***		-0.13***	-0.02		
	(-4.07)		(-3.51)	(-0.23)		
AML risk in dest. countries × Number of PSPs	0.02***		0.02**	0.00		
	(3.29)		(2.19)	(0.28)		
Number of bank PSPs		-0.45*			-0.47***	-0.36*
		(-1.70)			(-3.27)	(-1.78)
AML risk in dest. countries × Number of bank PSPs		0.07			0.08***	0.07**
		(1.57)			(2.98)	(2.16)
Num. of observ.	304517	304517	243747	243747	243747	243747
R-sq.	0.50	0.50	0.38	0.41	0.38	0.41
R-sq. within.	0.12	0.12	0.09	0.09	0.09	0.09
Root mean squared error	3.43	3.43	2.90	2.84	2.90	2.84
FE PSP	Y	Y	Y	Y	Y	Y
FE source	Y	Y	Y	N	Y	N
FE destination	Y	Y	Y	N	Y	N
FE corridor	N	N	N	Y	N	Y

t statistics in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$
Note. While the results in columns (1) and (2) are based on the sample of all PSPs and those in columns (3) to (6) on the sample of MTOs only. Errors are clustered by PSP, source country, and destination country in columns (1), (2), (3), and (5), and by PSP and corridor in the other columns.

The results show that competition enhances rather than reduces risk-based pricing. In more competitive corridors, PSPs cannot rely on market power to maintain margins when compliance costs increase, forcing them to price risks more precisely. Outside the countries with extreme AML levels, the net effect of a PSP entry is a wash as the direct effect is roughly offset by the opposite risk pricing effect.

8   Policy and research implications

The results may help frame policy discussions about financial regulation. Rather than viewing strong enforcement and affordable access as competing objectives, the findings suggest they are complementary for many countries. For these countries, strong enforcement reduces costs through the risk reduction channel. These countries could pursue stronger institutions without concern about affordability effects. The apparent trade-off only emerges for high-risk jurisdictions. For these countries, strong enforcement could increase costs by eliminating cross-subsidization. However, this reflects efficient pricing rather than market failure. The effective response could be pursuing strong enforcement institutions and addressing underlying risks. In addition, credible commitments to address institutional AML deficiencies improve payment terms immediately—even before reforms are implemented— creating powerful incentives for international regulatory cooperation.

The findings have immediate relevance for regulated stablecoin-based payment systems because emerging regulations like the EU MICA subject stablecoin issuers and facilitators to the same comprehensive AML frameworks that govern traditional payment providers. Stablecoin regulation that creates binding compliance requirements could promote efficient risk-based pricing, benefiting low-risk users and corridors while potentially raising costs for high-risk ones, which represents market efficiency rather than regulatory burden. The finding that competition reinforces risk-based pricing supports maintaining competitive stablecoin markets. The dominance of source country effects suggests that stablecoin regulation could be more effective when implemented by jurisdictions with strong enforcement capacity. While blockchain technology potentially offers superior transparency, automated monitoring capabilities, and programmable compliance compared to traditional payment rails, its advantages could enhance rather than eliminate risk-based pricing by enabling more precise risk assessment.

The methodology and findings have broader implications for financial regulation beyond cross-border payments. The approach of explicitly separating risk reduction from risk pricing effects could be applied to other strength-of-the-institutions contexts, including banking regulation. The results highlight the importance of analyzing distributional consequences of regulatory policies rather than focusing only on average effects. Strong institutions create winners and losers in predictable patterns.

9   Conclusions

Using global data on cross-border payment costs faced by users, I show the canonical relationship between institutional quality and financial development—stronger institutions reduce financial intermediation costs—can reverse for high-risk jurisdictions in heavily regulated sectors. AML risks have larger cost effects in advanced economies with strong enforcement than in developing countries with weak enforcement, despite the former having lower underlying risks. This counterintuitive pattern reflects strong institutions operating through two distinct channels that the literature can conflate: Directly reducing costs through risk mitigation while forcing risk-based pricing that eliminates cross-subsidization. The net effects reveal that traditional studies miss important heterogeneity by not controlling for risk levels: Strong institutions benefit low-risk jurisdictions but compel high-risk ones to pay higher costs commensurate with their risk profiles. Policy implications favor comprehensive institutional development—improving both enforcement capacity and underlying risk management—rather than treating these as substitutes. The findings have immediate relevance for emerging payment technologies, including regulated payment stablecoins, which face similar AML compliance requirements.

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