Patronage Hierarchies, Corruption, and Tax Collection*

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June 2026

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Why are developing country bureaucracies ineffective despite repeated modernization efforts? Patronage (hiring on partisanship rather than merit) is often thought to undermine public sector performance, yet it is difficult to measure and usually studied either among frontline agents or supervisors separately, rather than across hierarchical layers. I emphasize patronage hierarchies, instances where layers of the bureaucracy have patronage hires, and measure how they affect state performance. I study this problem using comprehensive data on around 300,000 shipments inspected by Paraguayan customs and develop a method for identifying patronage hires based on political appointment cycles. My findings suggest that patronage inspectors monitored by a patronage port administrator (patronage pairs) exhibit compounded underperformance. They detect less customs fraud and more often fail to detect fraud subsequently identified by headquarter audits, while also deviating more frequently from prescribed random assignment of inspectors to shipments. Additionally, their fraud detection decreases further when dealing with high shipment volumes at their port, as high workloads can mask lower inspection effort. Finally, patronage pairs make smaller tax adjustments than non-patronage pairs, even among comparable products with similar tax evasion risks. Shipments handled by patronage pairs generate around 11% less tax revenue, undermining state capacity.

*Previously circulated as "Patronage Hierarchies and Tax Collection." I thank my advisors Melissa Dell, Alisha Holland, Anders Jensen, Horacio Larreguy, and Vincent Pons for their guidance and support. I also thank Feyaad Allie, Pierre Bachas, Augustin Bergeron, Sima Biondi, Emily Breza, Peter Buisseret, Peter Calcagno, Daniel Carpenter, Stephen Chaudoin, Juan Dodyk, Rocio Duarte Recalde, Benjamin Enke, Ray Fisman, Frances Hagopian, Shanon Hsu, Callan Hummel, Edward Glaeser, Shao-Yu Jheng, Asim Khwaja, Nicholas Kuipers, Lukas Leucht, Steven Levitsky, Kaixiao Liu, Alexey Makarin, Mashail Malik, John Marshall, Lucy Martin, Benjamin Marx, Konstantinos Matakos, Joaquim Meira, Hector Mendoza, Andrew O'Donohue, Laura Paler, Konstantin Poensgen, Bokai Qi, Pia Raffler, Reed Rasband, Bob Rijkers, Daniel T. Roberts, Tara Slough, Julio Solis, Marco Tabellini, Jorge Tamayo, Felipe Valencia, and Jaya Wen and participants at the Zurich Conference on Public Finance in Developing Countries, the Pacific Conference for Development Economics, APSA 2025, the Northeast Workshop in Empirical Political Science, the Latin American Political Economy Network (REPAL) Annual Meeting, multiple Harvard workshops (Development Economics, Comparative Politics, Political Economy, Latin America Discussion Group, Political Economy of Development, and Political Economics and Culture) and seminars (Development Economics and Alberto Alesina Seminar on Political Economy), and the Institute for Humane Studies Political Economy Workshop and Junior Fellowship Convenings for helpful inputs, comments, and feedback provided. I thank Pierpaolo Fuster for research assistance. I thank the Institute for Humane Studies for research funding under grant no. IHS018614. Refine.ink was used to check the paper for consistency and clarity. This research was approved by the Harvard University-Area Committee on the Use of Human Subjects under Protocol IRB23-0332.

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1 Introduction

Developing country governments adopt new technologies, pass regulations, and restructure agencies, yet weak enforcement and service delivery persist. These persistent shortcomings raise a broader question about the political and organizational roots of state capacity. Why do state agencies in developing countries often underperform despite repeated investments in institutional reform, digital infrastructure, and legal modernization?

Patronage—recruitment based on political connections rather than merit—is frequently linked to state underperformance, yet most research on patronage focuses on a single layer within bureaucracies (Oliveros, 2021; Xu, 2018; Colonnelli et al., 2020). Such single-layer studies can identify performance issues stemming from the selection of less competent or low-effort individuals but misses how patronage across multiple bureaucratic layers facilitates collusion between supervisors and agents. Building on Tirole (1986), I introduce a conceptual framework where shared patronage ties between agents and their immediate supervisors—what I call patronage hierarchies—weaken oversight and enable collusion. This conceptual shift from isolated patronage to vertically-aligned patronage networks reveals how informal loyalties compromise organizational performance even when formal oversight structures are in place. This perspective highlights why traditional reforms, focusing solely on digitization or incomplete anti-corruption enforcement at single organizational layers, may fail by overlooking incentive alignments across bureaucratic hierarchies.

I study this problem within customs, a key revenue source in developing countries and a natural setting for examining patronage hierarchies between supervisors and inspectors. Customs authorities collect an average of 37% of developing countries' tax revenue (WCO, 2020). Many countries have introduced reforms such as evasion risk-based inspection systems, electronic documentation, periodic rotations, and randomized assignments of inspectors to shipments, yet customs authorities still frequently underperform (IMF, 2022), undermining fiscal strength and economic development. Paraguay provides an ideal case for studying this phenomenon given its entrenched patronage system (Schuster, 2021), high reliance on customs revenue (40-45% of tax revenues),

and granular administrative data. I combine detailed trade transaction records with appointment data to examine how patronage affects inspectors' ability and incentives to detect customs fraud, which constitutes misrepresenting information to customs to evade taxes or regulations.

My study draws on extensive fieldwork conducted over several years at Paraguayan customs. These include in-depth interviews with customs brokers, importers, and officials at all organizational levels—from frontline inspectors and port administrators to directors, human resource managers, and IT specialists—as well as direct observation of inspections. This fieldwork revealed specific appointment periods during which patronage hiring surged and mechanisms through which corruption manifests at customs, shaping my theoretical framework and empirical strategies.

A key challenge in studying the effects of patronage is measurement. I identify patronage hires based on appointment dates. Using granular data on thousands of inspected shipments, I examine the effectiveness of customs officials appointed during election cycles or under authoritarian regimes. I operationalize patronage through two distinct appointment cycles: election-cycle hires, referring to individuals appointed to customs shortly after elections and the start of a new administration, and dictatorship hires, referring to those appointed based on political connections during Paraguay's dictatorship (up to 1989). I argue that in contexts where public sector jobs are routinely exchanged for electoral support or allocated without merit-based criteria, appointments during these cycles plausibly reflect patronage. Empirical support for this assumption comes from observing that patronage inspectors have significantly lower educational attainment, while patronage administrators (who supervise inspectors) exhibit significantly greater political involvement based on a comprehensive political engagement index discussed further in Section 4. With this measure, around half of customs inspectors and administrators in my data are patronage hires.

Crucially, I can identify whether both the customs inspector and administrator are patronage hires. I exploit variation from periodic rotations of inspectors and administrators across customs ports, which generates different combinations of inspector–administrator dyads over time. My empirical strategy includes inspector and administrator fixed effects, which absorb all time-invariant

differences in inspection ability and monitoring style at the individual level. As my patronage proxy (appointment timing) is fixed for each official, the fixed effects absorb the individual-level patronage indicators. What remains is the coefficient on the interaction term identifying *patronage pairs*. This captures whether outcomes shift beyond the individual contributions of patronage inspectors and administrators. In additional triple-difference specifications, I separate dyads with a single patronage hire from patronage pairs, showing compounding results.

As the fixed effects absorb time-invariant unobservables at the inspector or administrator level, my results are not driven by unilateral selection of patronage inspectors or administrators into shipments. To bias my estimates, endogeneity would have to operate jointly and in a time-varying way at both levels (e.g., if patronage inspectors and administrators systematically rotated together into specific ports at specific times). To further probe the mechanisms underlying their fraud detection, I sequentially add controls that consider shipment composition. I introduce product chapter (HS 2-digit) fixed effects to ensure comparisons are made across shipments with similar goods. I also control for a comprehensive tax evasion risk index capturing shipment-level heterogeneity in incentives for fraud and enforcement. Comparing baseline estimates to these specifications shows whether patronage pairs underperform due to handling different shipments or because they detect less fraud even for similar goods with comparable evasion risk.

Empirically, I find that patronage pairs consistently underperform across key operational dimensions. They detect less customs fraud, particularly on days when officials' ports receive many shipments concurrently and inspectors have cover for lower detection performance. Fraud omitted by patronage pairs on these high-workload days is significantly more likely to be later uncovered by audits conducted by a separate team at customs headquarters.[1] These pairs are also more likely to deviate from random assignment (of inspectors to shipments) prescribed by official rules, as administrators handle the inspector assignment to shipments and can distort it. The deviations

[1]These audits provide a credible benchmark for undetected fraud as the team is based at headquarters, operates independently from ports, and has access to information (such as importer tax and banking records) not available to port inspectors. They also avoid repeated local interactions with brokers and importers that can foster collusion.

involving patronage pairs stand out because the same inspectors repeatedly match with specific customs brokers, generating significant "excess inspection shares" (*suspect assignments*).[2] These signal collusion with brokers, leading inspectors to flag less fraud, although some is subsequently uncovered by headquarter audits. Finally, on the intensive margin, patronage pairs impose fraud value adjustments that are 9% lower, even for comparable products with similar evasion risk.

Notably, although shipments handled by patronage officials yield higher average revenues, this is due to their assignment to higher-value shipments rather than superior fraud detection performance. I estimate the tax revenue loss from patronage hires by comparing actual tax yields to counterfactual yields that would have been collected had shipments been handled by non-patronage officials, using a conservative benchmark based on internal reference prices. Losses are largest when both the inspector and administrator are patronage hires, reducing tax revenue on shipments by up to 11%, with a shortfall across all inspected shipments of 5%. Taken together, the evidence points to corruption: patronage pairs appear to gain from misdetection deals with importers.

While prior work investigates patronage within specific bureaucratic layers—either frontline agents (Oliveros, 2021) or high-level administrators (Xu, 2018)—I show how multi-level patronage compounds governance failures by enabling collusion. Thus, their underperformance is not only due to lower human capital. I develop a new appointment-cycle-based approach for identifying patronage hires that is applicable in both one-party dominant regimes and fragmented democracies. I also contribute to the growing evidence on favoritism in public employment, including nepotism (Riaño, 2023), providing a tractable way to measure connected hiring and quantify its governance and fiscal consequences. Finally, by linking these patronage dynamics to revenue outcomes, this study helps explain why customs revenue collection remains low in developing countries, despite customs taxes being theoretically simpler to enforce than domestic taxes (Baunsgaard and Keen, 2010). Patronage hierarchies enable coordination among bureaucrats that erodes organizational performance, helping explain why institutional reforms often fail to improve state capacity.

[2]Excess inspection shares measure positive deviations from prescribed random assignment, constructed following the methodology introduced by Chalendard et al. (2023). See Section 4 for details.

2 Ineffective Oversight of Patronage Pairs

2.1 Conceptual framework

I propose a framework illustrating how political patronage weakens oversight and performance within hierarchical bureaucracies by affecting bureaucrats' competence and integrity. Following Tirole (1986), consider a three-tiered bureaucracy comprising a principal, supervisor, and agent. The principal delegates oversight to the supervisor, who monitors the agent responsible for policy implementation. When both supervisors and agents are hired based on political ties—forming *patronage pairs*—shared political loyalties compromise organizational performance in two primary ways. First, patronage hires typically exhibit lower competence due to selection based on political loyalty rather than merit (Colonnelli et al., 2020; Dessein and Garicano, 2023; Moreira and Pérez, 2024). Second, shared political backgrounds foster mutual trust and aligned incentives, reducing supervisors' willingness to penalize politically aligned agents and diminishing overall enforcement integrity.[3] Weak oversight arising from these compromised factors risks significant government revenue and service quality losses across diverse contexts with a similar structure, including customs (Moreira and Pérez, 2024), tax collection (Dzansi et al., 2022), agricultural extension (Dal Bó et al., 2021), and public procurement (Celhay et al., 2024).

Mutual political loyalties foster trust and align interests, lowering the costs of bargaining and collusion (see Appendix Section A for a formal treatment). Trust emerges rationally from shared expectations of loyalty (Gambetta, 1988), informed by joint political engagement (Leucht, 2023; Lachi and Rojas-Schaffer, 2018). Thus, patronage pairs face reduced collusion costs compared to non-patronage pairs, enabling easier coordination to circumvent oversight. In contrast, non-patronage hires have less information about each other and face a higher bargaining costs.

Patronage supervisors impose less discipline on patronage agents, lowering the probability of punishment ($\underline{p}_S$), whereas non-patronage pairs experience stricter oversight ($\overline{p}_S$). Supervisors and agents face an additional risk of detection by a higher-level principal who periodically conducts

[3] This dynamic parallels evidence showing that vertically homogeneous worker-supervisor pairs (e.g., in terms of ethnicity) exert less effort due to weaker oversight (Marx et al., 2021).

audits of the work performed by the pair. This principal-level audit probability, denoted as p_R, captures the likelihood of re-inspection and fraud being identified.[4] I model supervisors' punishment probabilities as endogenous to collusion costs and patronage ties, reflecting their close monitoring and discretion. In contrast, principals conduct lower-frequency, audit-based inspections constrained by distance. These differences justify treating p_S and p_R as distinct in the framework.

Agents decide whether to exert effort or collude with citizens they interact with. Effort incurs personal costs but yields formal rewards from detecting non-compliance. Collusion generates immediate informal benefits through bribes or favors, at the risk of penalties if caught. Lower detection may thus stem from reduced effort or deliberate misreporting in exchange for bribes.

Initially, the organization's human resources division determines whether hires are patronage-based and assigns their posting locations. The game unfolds as follows. In period 0, a citizen interacts with an agent during inspection or service provision. The citizen attempts a violation valued at ϕ, while external conditions—such as workload spikes or weather shocks—introduce a masking factor δ granting agents plausible deniability and reducing the probability of penalties from supervisors or principals. In period 1, the agent chooses either honest effort or collusion. Collusion yields an immediate informal benefit (b) but carries potential penalties (μ) if detected by the supervisor or principal. Conversely, honest effort incurs a cost (e) but offers formal rewards $\alpha\phi$, where $\alpha \in (0, 1)$, upon successful violation detection with probability p_F. In period 2, supervisors observe the agent's behavior. Patronage supervisors are less likely to impose penalties ($\underline{p}_S$) on patronage agents compared to non-patronage supervisors ($\overline{p}_S$), given their lower bargaining costs of collusion. Finally, in period 3, a higher-level principal conducts audits or re-inspections with probability p_R, penalizing any detected collusion. A formal extensive-form representation of this game and analysis of detailed payoff structures are presented in Appendix Section A.

[4] In an extended framework considered in the Appendix, I posit that the principal should endogenously choose p_R^{ij} for each dyad based on observable risk (see Appendix Section A.3). One could also consider an extension of the framework where patronage pairs face a lower expected penalty from reinspections due to their political connections (such that a lower $\underline{p}_R < p_R$ applies to them). However, in the main settings I consider there is less evidence to suggest that the ineffective oversight extends to the principal.

Patronage pairs face lower collusion costs ($\underline{c}$) than non-patronage pairs ($\overline{c}$), reducing the probability patronage supervisors punish patronage agents ($p_S(\underline{c}) < p_S(\overline{c})$). Consequently, patronage supervisors and agents achieve higher expected payoffs from collusion, particularly when there is a higher masking factor (δ) as penalties become less likely. Additionally, as patronage agents have lower detection probabilities ($\underline{p}_F$) compared to non-patronage agents ($\overline{p}_F$), their payoff from honest effort is lower. Thus, patronage agents supervised by patronage hires will gain greater expected utility from collusion than honest effort, whereas non-patronage agents will find honest effort more rewarding, as their higher detection rates yield greater expected benefits than collusion.

This framework highlights a nested accountability problem: aligned interests between patronage supervisors and agents undermine local oversight, while principals face informational constraints that hinder timely intervention. As a result, patronage-driven bureaucracies systematically underperform merit-based structures, perpetuating inefficiency and corruption. This framework generalizes beyond customs, offering insights for regulatory and public service contexts characterized by similar oversight hierarchies and patronage dynamics.[5]

2.2 Application to customs

Customs agencies are well suited to studying oversight failures in multi-tiered bureaucracies. They exhibit a clear hierarchy in which a central authority delegates monitoring responsibilities to local supervisors, who in turn oversee frontline agents—mirroring the principal–supervisor–agent framework introduced above. Customs agencies are also high-stakes institutions: they not only enforce trade and tariff policy, but in many developing countries, they account for a large share of government revenue (Besley and Persson, 2009). The high discretion involved in valuation, classification, and inspection decisions makes customs a fertile ground for discretion and collusion.

To clarify how the framework maps to customs, the agent corresponds to the customs inspector, who can collude with their supervisor (the port administrator) against the objective of the princi-

[5] While this framework emphasizes the negative implications of patronage, a recent literature highlights exceptions where patronage may yield positive outcomes. For example, patronage can leverage private information effectively to identify high-potential candidates, as documented historically in the British Royal Navy (Voth and Xu, 2022). Similarly, when patronage appointees are held accountable for performance outcomes, as in certain Brazilian bureaucracies, patronage may improve monitoring, align incentives, and foster trust within bureaucratic hierarchies (Toral, 2024a).

pal (customs headquarters), which can send in a post-clearance audit (PCA) team to reinspect shipments. Citizens are importers represented by customs brokers who attempt shipment undervaluation.[6] During the period of my study data, inspectors uncovering fraud can impose fines equal to the attempted fraud value, retaining 50% as a performance bonus, with the remainder collected by the customs authority as a penalty fee (ABC Color, 2025).

Masking occurs when ports receive an unusually high volume of shipments to be inspected compared to their typical levels. Since the arrival timing of ships, planes, and trucks is beyond the control of customs officials, these deviations are exogenous. However, inspectors can exploit high-workload days to strategically reduce effort on certain shipments, potentially lowering fraud detection. Anecdotal evidence suggests that when inspector workloads spike, they justify spending less time per shipment to ensure all inspections are completed on schedule. This allows inspectors to claim plausible deniability if shipments they cleared are later revealed to involve customs fraud.

In applying the framework to my setting, two theoretical predictions naturally emerge. First, patronage pairs should collude more frequently than non-patronage pairs, leading to lower customs fraud detection (**prediction I**). Second, patronage pairs should detect less customs fraud when faced with high workloads, as these offer plausible deniability for reduced effort (**prediction II**).

3 Context

3.1 Modernization and persistent corruption at Paraguayan customs

Paraguayan customs provides a compelling setting for studying how political patronage compromises oversight and performance in hierarchical bureaucracies. It is an important revenue collection institution, generating 40–45% of total tax revenues annually. It has implemented multiple modernization reforms aimed at improving performance and reducing discretion. These include the adoption of a rules-based risk management system, the rollout of a dynamic inspection algo-

[6] In Paraguay, importers almost universally rely on customs brokers. These are private sector individuals who manage interactions with the customs authority, including shipment tracking, filing shipment declarations, witnessing customs inspections, and paying duties. In most countries they have to register with the customs authority and pass some examination to earn a license and become part of the profession. Only shipments with very low commercial value and other uncommon exceptions can be exempted from having a customs broker managing the import logistics.

rithm proposed by the International Monetary Fund (IMF) in 2020, and the formalization of shipment assignment procedures through customs' software. Customs documentation and clearance have also been digitized and tracked electronically. International organizations, including the IMF, World Bank, and the United States Agency for International Development (USAID), have supported these initiatives through technical assistance and capacity-building programs. For example, Paraguay was the first country in the Western Hemisphere to implement the Millennium Challenge Account Threshold Program, with a focus on combating Paraguay's "systemic corruption problems" (U.S. Embassy of Asunción, 2007). Yet, as my findings show, these reforms have not fully mitigated entrenched informal practices like patronage-based hiring and assignment manipulation, which continue to distort inspection outcomes despite formal oversight mechanisms.

Despite its modernization reforms and low regulatory barriers,[7] customs corruption persists (InSight Crime, 2020; U.S. Treasury, 2021).[8] Using the mirror analysis methodology (Fisman and Wei, 2004), I find substantial "evasion gaps" (discrepancies between the value of exports reported by the exporting country and the value of imports reported by the importing country for the same goods and time period), reaching hundreds of millions of US dollars (USD) for particular products. For instance, in 2018, the rest of the world reported exporting 893 million USD of cellphones to Paraguay, while Paraguayan customs reported 611 million USD, revealing a trade gap of 282 million USD. Such discrepancies persist, with cellphone trade gaps exceeding 200 million USD in recent years (2021-2024).[9] This environment benefits colluding importers, customs brokers, and customs officials, while the state loses revenue, and non-colluding brokers and importers are at a disadvantage. The latter face unfair competition, as they may need to charge higher prices for the same goods (due to paying higher taxes), while colluding importers can offer lower prices.

[7] Paraguay ranks among the top countries in Latin America and the Caribbean for "trade freedom," with low average tariffs and minimal non-tariff barriers (Heritage Foundation, 2024).

[8] During the dictatorship, customs corruption in Paraguay was top-down and centralized, but more recent corruption has been decentralized: linked to specific officials acting independently (Franks et al., 2005; U.S. Treasury, 2021), which is consistent with the literature on political modernization (Huntington, 1968; Shleifer and Vishny, 1993).

[9] Other products with significant trade gaps in recent years include vehicles, clothing, electronic cigarettes, cigarettes, and beer. The top five products represent an estimated annual revenue loss of about 50 million USD.

3.2 Patronage and dominant-party politics in Paraguay

Paraguay also illustrates patronage in an understudied context of a dominant party. It has two major clientelistic parties: the Colorado Party and the Liberal Party, with the former being the most influential (Abente Brun, 2007; Lachi and Rojas-Schaffer, 2018; Mandl, 2021). During the dictatorship of Alfredo Stroessner (1954–1989), the Colorado Party solidified its control through extensive patronage networks (Abente Brun, 2007; Painter, 1983; Mandl, 2021). These practices persisted during the country's democratic transition, notably with key state institutions such as Paraguayan customs, which has historically been associated with politically-driven hiring practices.[10] Stroessner infamously claimed that "contraband is the price of peace", justifying the proliferation of contraband and economic privileges for political allies (Última Hora, 2013). Customs positions have been highly sought after, given their association with opportunities for graft and illicit enrichment schemes (Última Hora, 2013; ABC Color, 2018). This system of patronage has perpetuated the party's dominance, allowing it to stay at the center of Paraguayan politics despite occasional challenges from the Liberal Party and other opposition forces (Abente Brun, 2007).

The Colorado Party has maintained near-continuous control since 1947, with a brief interruption from 2008 to 2013 when a center-left coalition, which included the Liberal Party, won the presidential election.[11] Its dominance relies on its historical and ongoing ability to leverage clientelism, vote-buying (Finan and Schechter, 2012; Duarte et al., 2025; New York Times, 2023), and patronage (Painter, 1983; Setrini, 2025). Yet even when the dominant Colorado Party wins consecutive elections, internal factional conflicts persist (Rizova, 2007).[12]

Scholars such as Schuster (2021) describe patronage as "the defining feature of Paraguay's

[10] This echoes what Schwartz (2023) describes in Guatemala, where entrenched informal networks from an authoritarian past continued to undermine state institutions such as the customs administration under democracy.

[11] This period of opposition rule was marked by instability, culminating in a 2012 impeachment of President Fernando Lugo, orchestrated by the Liberal and Colorado Party. This maneuver allowed the Liberal Party to hold the presidency from 2012 to 2013 before the Colorado Party swiftly regained control.

[12] Although Colorado Party primaries are often fiercely contested, factions typically reconcile before general elections through a process known as the "republican hug" (Goroso, 2023; Última Hora, 2023b), named after the party's official name: National Republican Association. Factional alignment is fluid and shifts with changes in political power (Última Hora, 2022), and notably, no faction has won multiple elections up to the period covered by this study.

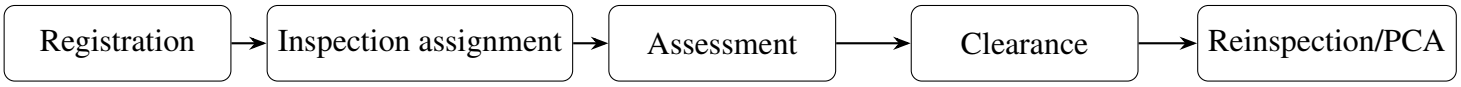
public personnel management," and customs is no exception (Mandl, 2021). In practice, patronage hires tend to be drawn from the ruling party and the ruling faction within it. After elections, the party rewards members that contributed to its victory while demoting—or, in rare cases, dismissing—those aligned with its losing party faction.[13] During my study period, the Colorado Party's most recent vote share was 49%, yet over 95% of inspectors and administrators belonged to it, underscoring the patronage-driven character of customs. While most customs inspectors and administrators could be considered patronage hires, my operationalization of patronage can be viewed as a dosage measure, where the most politically connected hires (those hired at the start of new administrations and those hired during the dictatorship) receive the highest hiring prioritization.[14]

3.3 Customs clearance process and inspections

Paraguay is a member of the South American Mercosur trade bloc alongside Brazil, Argentina, and Uruguay. Mercosur eliminates import tariffs for goods with Mercosur origin and applies a Common External Tariff (CET) to others, which averages 11.5% but can reach 35% for some products. Paraguay, however, applies lower tariffs than its neighbors—exempting nearly 650 items from the CET—resulting in an average import tariff of around 3.5% (Mandl, 2021).

Despite being landlocked, Paraguay receives imports through 31 customs ports via the Paraguay and Parana Rivers (which drain into the Atlantic), as well as two main airports and several land crossings. These ports which are part of my data, include both public and privately managed terminals, though the customs authority maintains its own infrastructure and personnel at all locations.

Figure 1: Customs Clearance Process



Next, I elaborate on the main steps that make up the import clearance process as shown above:

1. **Registration:** first the customs broker acting on behalf of the importer submits an import

[13] Firings are rare due to stringent public employment laws. Most staff gain tenure after a few years of continuous service through a process known as "deprecarization," in which temporary hires transition to tenured status. With tenure, employees cannot be dismissed without "just cause" and, in the event of dismissal, are entitled to compensation based on seniority. In my dataset, over 90% of inspectors and administrators already hold tenure.

[14] In Paraguay, hiring later in an executive's term is more likely to reflect institutional staffing needs and allows for more thorough oversight from the Ministry of Economy, reducing the influence of political favoritism.

declaration online on customs' web platform. This declaration includes all the relevant documentation: the invoice provided by the exporter, the bill of lading, a document authorizing the broker to act on behalf of the importer, a certificate of origin, a value declaration document, and any authorization documents for products that are regulated (e.g., agrochemicals require a permit from the Ministry of Agriculture).

2. **Inspection assignment by risk management unit:** shipments are assigned to either a green (no inspection), orange (documentary inspection), or red (documentary and physical inspection) channel.[15] All shipments start as "green," but customs' risk management unit can assign a higher level of inspection for three main reasons. They are sequentially: (i) mandatory inspection laws for certain products (e.g., weapons, used cars, agrochemicals), (ii) risk scores generated by a rules-based system considering shipment characteristics (called the SBR score) and a dynamic importer-based algorithm proposed by the IMF (called the SAS/SGIR score), and (iii) random assignment.[16] The highest risk level from these criteria determines the channel. Inspectors are supposed to be assigned randomly to shipments conditional on having the same workload. That is, if all inspectors at a port have the same number of pending shipments to inspect, then a random number generator within customs' software randomly picks the inspector for the next shipment. While this is how the assignment system is intended to work at many customs authorities, I show it can be manipulated.
3. **Assessment by inspectors:** is based on the documentation submitted by the broker. For orange channel shipments, visual inspectors review the documentation for accuracy. Red channel shipments additionally involve physical inspections to verify shipment contents.[17] In addition, a valuation inspector assesses red channel shipments on whether their values declared show irregularities. The visual and valuation inspectors are always different individuals and there is no rotation between these roles. Based on the information they gather,

[15] The frequency of each has hovered around a third for each channel during the time period of my data.
[16] Random assignment is determined based on a random number generator on customs' risk management software.
[17] See Figure C1 for an illustration of a physical inspection.

the inspectors make any necessary adjustments to the declared import value, quality, product classification, and/or country of origin. Finally, inspectors may make tax adjustments and recommend fines if fraud is uncovered (with inspectors receiving 50% of the fine). Port administrators are the most important authority at each port, among their duties they manage inspectors and determine whether fines are applied or exempted after fraud detection.

4. **Clearance:** on this last step, the broker pays relevant taxes, duties, and fines on behalf of the importer (who then compensates the broker), and the products are released for the importer.
5. **Reinspection or post-clearance audit (PCA):** after clearance, some shipments may still be subject to a reinspection or PCA by a small, specialized team (called *fiscalización*) based at customs headquarters. This team can leverage importers' tax and banking data for cross-checks, giving them an informational advantage. Partly due to this advantage, the PCA team uncovers customs fraud not flagged by port inspectors, although some omissions by port inspectors arise from collusion with brokers. At the same time, the team's limited size (10–20 employees) restricts its audits to just 1–2% of all imports annually.

3.4 Customs fraud detection

Inspectors are tasked with detecting customs fraud, primarily focusing on four methods that importers or their brokers can commit: product misclassification (towards lower-tariff goods), underreporting quantities, incorrect product origin declaration (usually towards tariff-exempt Mercosur countries), and undervaluation. Misclassification, underreporting, and origin fraud can typically be detected by visual inspectors, whereas undervaluation is harder to identify. The World Trade Organization (WTO) stipulates that the values submitted on invoices constitute the primary basis for customs valuation. However, anecdotal evidence from customs officials and the press indicates that invoices submitted are often falsified to show lower values (Torres Romero, 2019; Última Hora, 2023a). Exporters abroad may even abet this evasion by not responding to inquiries from Paraguayan customs and even providing altered invoices (U.S. Treasury, 2021).

In equilibrium, importers and their brokers should aim to commit fraud through less detectable

methods. The fraud handled by visual inspectors is more easily detectable, often requiring collusion and informal payments. Hence, they prefer undervaluation due to its complexity and lower detectability, particularly if invoices are forged. In addition, if their scheme is uncovered they can still attempt to bargain with the valuation inspector on the extent (intensive margin) of undervaluation. Figure 2 is consisten with undervaluation as the predominant fraud method, as valuation inspectors detect fraud in 27.1% of assessed shipments compared to 0.6% by visual inspectors.[18] Given the paucity of customs fraud flagged by visual inspectors, I focus on valuation inspectors.[19]

There is an inherent tension at Paraguayan customs between the patronage bureaucracy and the executive's goal of efficient revenue collection, creating a Janus-faced institution with some "pockets of effectiveness" (Geddes, 1994; Brierley, 2021). The latter occurs as Paraguayan customs collects a substantial share of annual tax revenues (40–45% over the past decade), attracting oversight from the relatively technocratic Ministry of Economy and Finance. International organizations including the IMF, World Bank, and Inter-American Development Bank support capacity-building initiatives at customs. The U.S. government also supported customs via USAID. Diplomatic cables from the U.S. Embassy in Paraguay show their efforts at building the customs authority's capacity, including vetting officials for training (U.S. Embassy of Asunción, 2006), monitoring the perception of customs and other institutions through surveys (U.S. Embassy of Asunción, 2005), and highlighting successes (U.S. Embassy of Asunción, 2008b,a).[20]

Port inspectors are more vulnerable to capture than PCA team members as inspectors typically live near their assigned ports, fostering close relationships with customs brokers—a phenomenon observed in similar settings (Blundo et al., 2008; Ndonga, 2013; Olimpieva, 2010). PCA team members are instead based in the capital and are more highly compensated, so they face lower

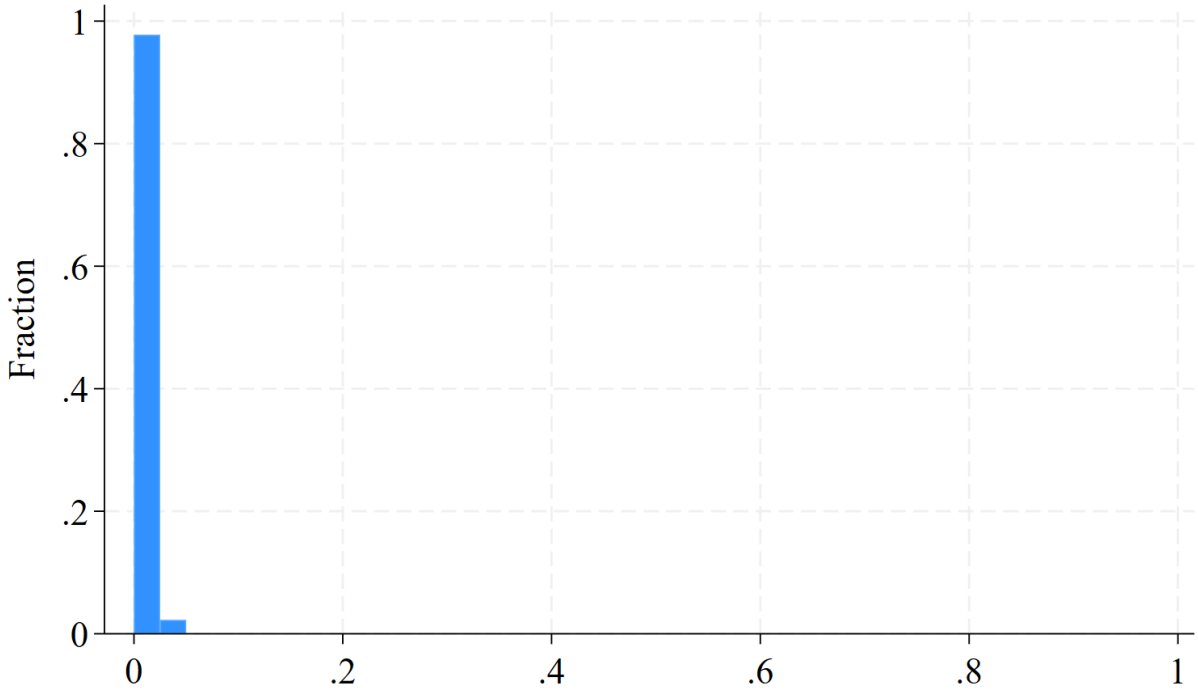
[18] As documented in the customs evasion literature, undervaluation is the dominant form of customs evasion (Javorcik and Narciso, 2008; Rijkers et al., 2017; Leone et al., 2022; Anne et al., 2023; Madsen et al., 2025).

[19] Appendix Figure C2 shows the fraud detection rate of visual inspectors on red channel shipments, confirming similarly low detection rates (1.1%). This suggests that the disparity in detection rates between visual and valuation inspectors is not simply due to valuation inspectors handling only higher-risk (red channel) shipments.

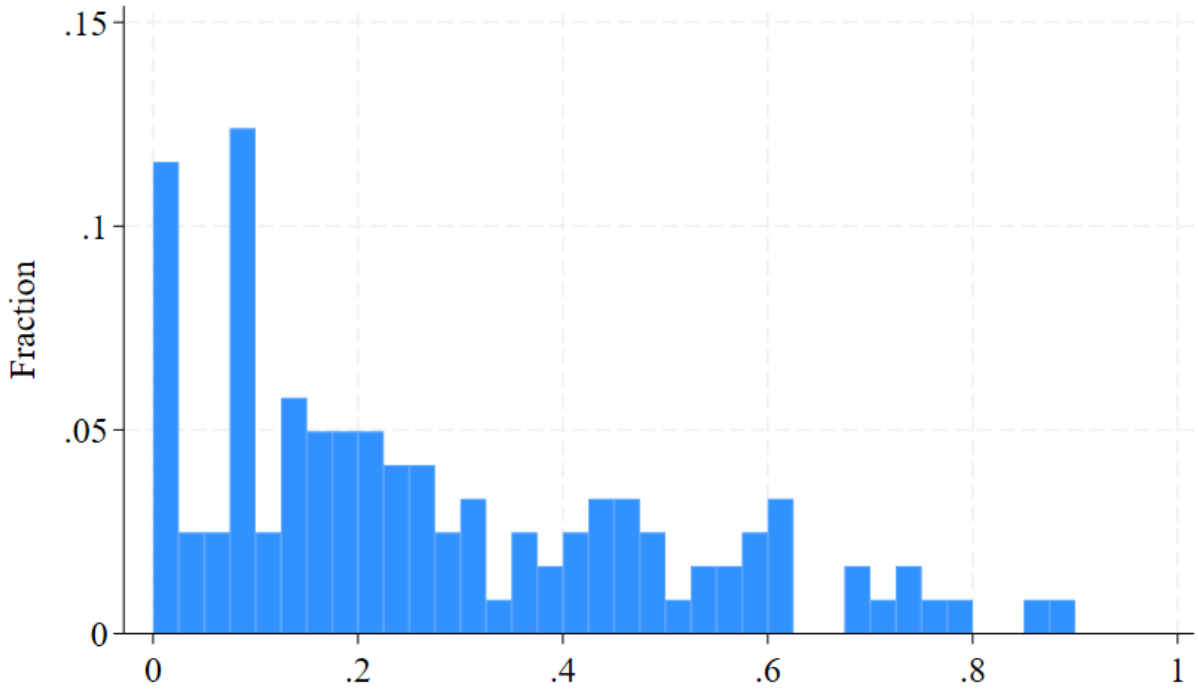
[20] Their interest partly stems from concerns that customs tax evasion in Paraguay facilitates trade-based money laundering linked to financing terrorist groups (U.S. Treasury, 2021; Madureira, 2022).

Figure 2: Fraud detection rate for visual and valuation inspectors

(a) Visual inspectors



(b) Valuation inspectors



Notes: Each histogram shows the distribution of fraud detection rates across visual and valuation inspectors, calculated as the number of shipments with detected fraud divided by the total number of shipments inspected by each inspector. Hence, the unit of observation is the inspector. The width of the bars is 0.025 (2.5%).

monitoring costs and reduced capture risks (Mastrorocco and Teso, 2023).[21]

A more technical PCA team coexists with potentially corrupt inspectors because, although PCA audits accurately uncover fraud (approximately 88% of audited shipments in 2023), their findings rarely convert fully into additional revenue. Importers can appeal, and due to the weak rule of law they often prevail in court against customs. Among PCA team audits that uncovered fraud in 2023, only about 12% resulted in additional revenue by 2024. Anecdotally, some port inspectors deliberately omit fraud detection due to collusion with importers and brokers.[22] PCA findings thus serve as an informative benchmark to measure undetected fraud by local inspectors.

4 Empirical Strategy and Hypotheses

4.1 Characteristics of patronage hires based on appointment cycles

My definition of patronage hires attempts to measure the hiring prioritization of patronage-driven governments (Schuster, 2021). This logic is reflected in how Paraguayan customs fills positions: hiring remains deeply embedded in partisan networks and largely bypasses formal meritocratic procedures. Qualitative accounts and news reports link customs corruption to patronage appointments (ABC Color, 2023; Última Hora, 2014a). Mandl (2021) describes Paraguayan customs as a "prize for individuals with political connections," noting that winning parties "dispensed government jobs in return for political favors."[23] Among the roles that turn over with new executive administrations is the head of human resources, who can make new appointments.[24]

[21] Proximity may increase state performance in other settings: Toral (2024b) finds that Brazilian prosecutors embedded locally engage more effectively against corruption. However, Brazilian prosecutors differ from officials in my setting as they are hired through competitive examinations, are promoted based on merit, and have greater autonomy.

[22] While cases where customs fraud is identified by the PCA team after being omitted by local port inspectors may result in sanctions, firings are rare (ABC Color, 2019b). Inspectors may have plausible deniability in failing to detect customs fraud without collusion or ill intent. Common sanctions include reassignment to desk duties at customs headquarters ("being sent to the freezer"), unpaid suspensions, and port rotations. An exception occurred in 2023 when several officials were fired and legally charged for a collusion scheme at the country's main airport (https://www.observador.com.py/subadministrador-y-secretario-de-aduana-imputados-por-importacion-de-celulares-declarados-como-autopartes/).

[23] These include political brokers of the incumbent Colorado party (Última Hora, 2014b), who later become customs officials and continue to work as brokers during subsequent elections.

[24] The majority of public sector hires in Paraguay are politically appointed without competitive exams (Schuster, 2021). Although tenured roles technically require public contests, many institutions bypass this by hiring on temporary contracts later converted to tenure through deprecarization (Última Hora, 2024). The civil service ministry (now part

The recent literature has operationalized patronage through various proxies: high-level bureaucratic appointments (Xu, 2018; Voth and Xu, 2022; Toral, 2024a), temporary hires (Robinson and Verdier, 2013; Oliveros, 2021), political donors and candidates (Colonnelli et al., 2020), and bureaucrats connected to higher-level officials via promotion patterns (Jiang, 2018; Jiang and Zhang, 2020). My measure defines patronage hires as customs officials appointed in the first year of new executive administrations or during the dictatorship period. The focus on the first year is motivated by the fact that hiring budgets are set on an annual basis (ABC Color, 2024), making this discrete cutoff empirically salient. Election-cycle hires reflect observed patronage hiring spikes shortly after elections as political debts are paid (Geddes, 1994; Remmer, 2007; Akhtari et al., 2022).[25] In addition, historical accounts show that dictatorship-era (1954–1989) appointments consistently served as political rewards within a long-standing patronage regime (Abente Brun, 2007; Mandl, 2021). Although this proxy likely underestimates the true prevalence of patronage—biasing results toward zero—it remains particularly suited to dominant-party regimes. Appendix Figure C3 shows a concentration of appointments in the first year of executive terms during democracy.[26]

Table 1 compares characteristics of patronage and non-patronage hires. Patronage valuation inspectors typically have about one education level lower, averaging below a college degree. Indeed, patronage inspectors are 31 percentage points less likely to have a college degree than non-patronage inspectors. This difference highlights a potential selection channel for lower performance among patronage hires. Both tables indicate that patronage hires tend to be older, partly due to the inclusion of dictatorship hires.[27] The relatively high age of customs officials reflects

of the Ministry of Economy) posts competitions for public sector jobs online (https://www.paraguayconcursa.gov.py/sicca/seleccion/buscarConcurso/adjudicados/adjudicados.seam) and customs held only eight public "merit contests" and two "public opposition competitions" since 2014, yet none were for customs inspectors or port administrators.

[25] As a scope condition, conditioning on copartisanship may be needed in competitive democracies. I emphasize post-election hires, as pre-election hires could be easily fired before acquiring tenure if a differing administration takes power (Robinson and Verdier, 2013; Oliveros, 2021).

[26] Although the first year is a salient cutoff, in Appendix Section C.1 I show results have similar or just slightly smaller coefficient magnitudes when identifying the election-cycle hires as those hired during the first year and a half. Similarly, Appendix Figure C4 plots kernel density estimates of the first appointment date during the dictatorship.

[27] Excluding dictatorship hires reduces, but does not eliminate, significant differences in age among valuation inspectors (see Appendix Table C1).

their frequent refusal to retire, with some appealing to the Supreme Court to retain their positions (ABC Color, 2019a). These legal actions underscore the desirability of customs positions.

I construct a "political engagement index" adding indicators for various types of political engagement by customs officials through matching on their national IDs or names. These are: affiliation with the incumbent party, roles as poll workers, poll watchers or party representatives in recent elections,[28] leadership roles in the incumbent Colorado Party,[29] local party headquarters (*seccional*) leadership,[30], local representatives to incumbent party conventions, voting participation at general elections, candidacy for office, and family connections to politicians.[31] This index aims to capture formal political service provided to the incumbent party and the recency of some of these services highlights ongoing political engagement even after appointment to customs positions. This electoral work likely enables patronage hires to identify one another in the workplace.

Patronage administrators are significantly more politically involved than their non-patronage counterparts, consistent with their older age and higher likelihood of attaining party positions. By contrast, inspectors show no significant difference in measured political activity, though the appointment cycles I use likely capture latent informal ties not observed directly. The index captures only formal political activity and omits informal roles such as lower-level political brokering (Duarte et al., 2025). While local *seccional* leaders are political brokers, they hold limited elected posts higher in the party hierarchy, and no systematic data exist for lower-level brokers nationwide.

Although nearly all customs officials are affiliated with the incumbent party, making simple partisanship uninformative, the political engagement index still differentiates hiring priorities based on connections and services provided for administrators (Mandl, 2021; Schuster, 2021).

[28] Digitized data on these electoral campaign roles are available from the election authority starting from 2013. Duarte and Carrizosa (2023) explore the effect of partisan poll workers in elections.

[29] These are elected positions published in the incumbent party's website or books (Delvalle Castillo, 2008).

[30] Previous research on Paraguayan politics has emphasized the role of local party headquarter leaders as political brokers and local politicians (Dosek, 2019; Bandiera et al., 2025). Data on these leaders is available on Delvalle Castillo (2008) and archived versions of the incumbent party's website.

[31] Individual-level digitized turnout data from the election authority for general elections is available from 2008 onward. Data on officials that were political candidates and politicians' relatives were manually collected from media mentions by newspapers of record in Paraguay which cover customs extensively: ABC Color and *Última Hora*.

Given significant differences in age and education among patronage inspectors, my regression specifications control for interactions with these variables.

Table 1: Comparison of patronage and non-patronage officials

(a) Valuation inspectors

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Education level	54	3.41	62	4.47	116	-1.06***
		(0.22)		(0.19)		
College degree	54	0.44	62	0.76	116	-0.31***
		(0.07)		(0.05)		
Age	54	54.24	62	45.08	116	9.16***
		(1.27)		(1.00)		
Political engagement index	54	3.81	62	3.76	116	0.06
		(0.13)		(0.13)		

(b) Port administrators

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Education level	43	4.67	32	4.53	75	0.14
		(0.21)		(0.28)		
College degree	43	0.81	32	0.75	75	0.06
		(0.06)		(0.08)		
Age	43	56.95	32	50.84	75	6.11***
		(0.93)		(1.51)		
Political engagement index	43	4.67	32	4.12	75	0.55*
		(0.23)		(0.19)		

Notes: The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). The "political engagement index" aggregates indicators for various types of political involvement that the customs official has taken part in, which are: (i) being affiliated with the incumbent party, (ii) having been a poll worker in recent elections (2013 or 2018), (iii) having been a poll watcher or party representative in recent elections (2013 or 2018), (iv) having a leadership role in the incumbent Colorado party since 2006, (v) being a local party headquarter (*seccional*) leader (Dosek, 2019; Bandiera et al., 2025) sometime between 2006 and 2022, (vi) being a local representative to party authorities sometime between 2006 and 2022, and (vii) having voted in the most recent general elections for my data's time period (2008, 2013, or 2018), (viii) having been a political candidate, and (ix) being a politician's relative.

Besides demographics on officials, I conducted a tailored survey in 2023–2024 with 149 visual and valuation inspectors across 21 customs ports, achieving an 80% response rate.[32] Responses were obtained from 80 visual and 69 valuation inspectors, of which 65 and 63, respectively, overlap with inspectors from my 2017–2021 data period. Among valuation inspectors (the focus of this study), 29 were patronage hires and 34 were non-patronage. Most responses to the 56-question survey were statistically similar between these groups (see Appendix Tables C2 to C6).[33] Still, patronage inspectors differed significantly in four ways: they were 20% more likely to have relatives working at customs, they said receiving detailed shipment-risk information (which could enhance their fraud detection and make them more accountable) would make them feel more monitored, and reported they more often need additional time with inspections and more often receive threats.

4.2 Hypotheses and methods for measuring performance in customs

Having described the patronage hires, I now outline my empirical methods based on my general hypotheses outlined in Section 2. I aim to demonstrate how, despite the standardized inspection process at Paraguayan customs, informal practices among customs officials may undermine state effectiveness. My methods are informed by the literature and validated through qualitative interviews, site visits, and media reports.

Despite rules mandating random assignment of inspectors to shipments, I uncover plausible evidence that this system is manipulated at Paraguayan customs. This allows certain inspectors to frequently inspect particular customs brokers, where collusion can arise through repeated interactions (Leone et al., 2022; Lameke et al., 2023). From what I could gather through qualitative interviews, administrators can override the random assignment algorithm by temporarily marking certain inspectors as absent, given that the algorithm works by randomly assigning shipments to inspectors among those marked as "present." Therefore, to direct a shipment to preferred inspec-

[32]The survey covered all active ports except four small, remote locations with fewer than three inspectors each (Pilar, Saltos del Guaira, Pedro Juan Caballero, and Santa Helena).

[33]The questions spanned: inspector characteristics, effort, motivation, promotion prospects, institutional environment, their thoughts on customs' evasion risk management system, and varied questions on their time preferences, altruism, and importance of the different communities they are part of.

tors, the port administrator can set as "present" specific inspectors and mark all other inspectors as absent momentarily. After a relevant shipment is matched, administrators can change who is present again to all inspectors (patronage and non-patronage) that are truly present. This deviation from prescribed random assignment has no legitimate justification, as inspectors do not specialize in certain products, which would provide an innocuous explanation for non-random matching.[34]

I follow the statistical simulation methodology developed by Chalendard et al. (2023) to identify excess inspection shares between inspectors and brokers, which is further explained in Appendix Section B. To gauge its validity, I examine the extreme tail (inspector–broker and inspector–importer pairs with the highest cumulative excess shares) because persistent matchings are precisely where collusive ties are most likely to form. The inspector-broker pair with the highest cumulative excess interactions over several semesters operated in Ciudad del Este, involving a customs broker implicated in a $570 million fraud scheme sanctioned by the U.S. Treasury (U.S. Treasury, 2021; El Trueno, 2021; El Observador, 2022). Additionally, the inspector in this pair had previously been implicated in a contraband tires scheme.[35] Moreover, the importer with the greatest cumulative excess interactions across all inspectors and semesters is a used car importer connected to invoice forgery for undervaluation (Torres Romero, 2019). Similar patterns emerge among several customs brokers, inspectors, and importers with the most suspect assignments.

I hypothesize that these suspect assignments (deriving from significant excess inspection shares) are more frequent with patronage pairs due to their lower collusion costs. In addition, I expect lower fraud detection on shipments with patronage pairs and inspectors with suspect assignments towards the customs broker on the relevant shipment.[36] Thus, prediction I above translates to:

Hypothesis 1: significant excess inspection shares (*suspect assignments*) occur more

[34]Customs headquarters was previously unaware of these deviations as they do not keep records of assignment patterns and lacked tools to analyze them statistically. I reconstructed shipment assignments and implemented the methodology from Chalendard et al. (2023), after obtaining their R code to detect significant deviations. In addition, the paper introducing this methodology was only published in 2023, while my data spans imports from 2017 to 2021.

[35]Per my data use agreement with Paraguayan customs, I cannot name individual customs officials in this paper.

[36]As excess inspections are caused intentionally, lower fraud detection combined with excess inspections suggests corruption rather than merely lower capacity.

frequently with patronage pairs.

Hypothesis 2: patronage pairs with suspect assignments detect less customs fraud.

As mentioned above, after shipments clear customs they can still be re-inspected or audited up to five years after they clear customs. These post-clearance audits and re-inspections often uncover fraud omitted by local port inspectors, partly due to inspectors' corruption rather than solely the PCA team's informational advantage. Thus, I expect patronage pairs to be disproportionately involved in cases where PCA teams detect fraud missed at the local level.

Building on insights from the literature on workload and performance (Ponticelli and Alencar, 2016; Alquezar-Yus, 2023; Freedman et al., 2021; Shurtz et al., 2022), I examine the impact of workload fluctuations on fraud detection. Specifically, I calculate the daily number of red channel shipments (requiring valuation inspection) at each customs port, divided by the number of inspectors stationed at each customs port. This adjustment accounts for differences in port capacities, which I then standardize to measure deviations from inspectors' typical workload. That is:

$$shipments\_on\_port\_per\_day_{pd} = \frac{\text{Total red channel shipments at port } p \text{ on day } d}{\text{Number of valuation inspectors at port } p \text{ on day } d}$$

I expect patronage inspectors to justify and mask lower inspection effort when many shipments arrive at their port, which could be leveraged strategically to detect lower fraud on declarations that are actually fraudulent.[37] Therefore, prediction II becomes:

Hypothesis 3: patronage pairs detect less customs fraud under high workloads.

A useful feature of leveraging shipment volumes is that while inspectors may influence *which* shipments they inspect (as evidenced by the excess inspection shares), they appear to have no control over *how many* shipments they are assigned, particularly during periods of high volume. Port administrators must assign shipments to all inspectors present, and inspectors cannot control the timing of ships, planes, or trucks arriving at customs ports.[38] Thus, the number of shipments an inspector gets assigned per day is exogenous for the inspector.

[37] Alternatively, lower fraud detection may be due to cognitive overload as inspectors may struggle to process an unusually high volume of shipments, suggesting capacity constraints beyond corruption.

[38] Appendix Table C18 shows there is no correlation between patronage pairs and workload deviations, and Ap-

In the Appendix, I further validate this approach by using exogenous variation in the water level of the Paraguay River—the country's main waterway—as an alternative proxy for workload fluctuations. Water level reductions affect the size of vessels that can navigate the river, which are regulated by the General Naval Prefecture, thus influencing shipment volumes at river ports.[39] Following Ignatenko (2024), I exploit unexpected deviations from average monthly water levels and vessel drafts (vessel sizes) to capture changes in shipment volumes. Appendix Tables C74 and C75 demonstrate that higher workload (proxied by water level and vessel draft deviations) correlate with lower fraud detection among patronage pairs.

In summary, suspect assignments—where specific inspectors repeatedly assess shipments from certain brokers—should occur more frequently with patronage pairs. This is because administrators manage the inspector assignment to shipments and can prevent the default random assignment from taking place. As argued in Section 2, given that port administrators monitor the inspectors, incentives are altered if both the supervisor and agent are aligned, which can lead to ineffective oversight and consequently lower effort by the agent (Vannutelli, 2022; Raffler, 2022). Furthermore, fraud detection should decrease when inspectors accumulate suspect assignments towards customs brokers, as excess inspections are linked to collusion in customs (Chalendard et al., 2023; Leone et al., 2022). I also hypothesize that when workloads spike, detection falls further for patronage pairs than for non-patronage pairs. Finally, post-clearance audits and reinspections should reveal more undetected fraud for shipments handled by patronage pairs.

Additionally, I hypothesize that patronage pairs make smaller fraud value and tax adjustments, even on shipments with similar products based on Harmonized System (HS) product code chapters, which is consistent with bargaining leading to partial undervaluation.[40] To test this, I examine

pendix Table C19 shows that total shipments per inspector each day at each port predicts inspectors' workload tally (the number of shipments they have pending to inspect). Hence, when more shipments arrive at a customs port, all inspectors present are expected to have a higher workload. While patronage inspectors have slightly lower workloads overall (Appendix Tables C20 and C21), this difference is not statistically significant after controlling for administrator fixed effects, which are consistently included in the empirical analyses.

[39] Appendix Table C69 confirms these effects.

[40] The HS is a standardized system for classifying goods developed by the World Customs Organization.

valuation adjustments across all shipments in which fraud is flagged, controlling for product fixed effects at the HS two-digit (chapter) level to ensure comparisons are made within similar product categories. Hence, applying prediction I from Section 2 at the intensive margin turns to:

Hypothesis 4: when patronage pairs flag fraud, they make lower value adjustments.

4.3 Regression specifications

To test my hypotheses outlined above, I leverage highly detailed shipment imports data from Paraguayan customs from 2017–2021.[41] These include the valuation and product code (HS codes) of shipment items, the dates and times of registration, inspection, and clearance of shipments, shipments' inspection channel (green, orange, or red), IDs of agents associated to each shipment (importer, broker, inspector, and administrator), port inspection results by inspectors, and re-inspection and audit results from the post-clearance audit (PCA) team at customs.

My baseline regression specification is:

$$\begin{aligned} y_{sij} = &\alpha_i + \rho_j + \beta_1 PatronInsp_i \times PatronAdm_j \\ &+ \gamma_1 PatronAdm_j \times InspEduc_i + \gamma_2 PatronAdm_j \times InspAge_i + \varepsilon_{sij}, \end{aligned} \tag{1}$$

where y_{sij} are my dependent variables which indicate fraud detection for shipment s by either the port inspector or by the PCA team (when the inspector does not flag fraud) respectively,[42] α_i and ρ_j are inspector and administrator fixed effects (FEs), $PatronInsp_i$ and $PatronAdm_j$ are indicator variables for patronage inspectors and administrators, and $PatronInsp_i \times PatronAdm_j$ identifies patronage pairs.[43] Patronage pairs are found on around 20.8% of all red channel shipments in my data.[44] Standard errors are clustered at the inspector-administrator pair level, as the treatment of

[41] The years correspond to when my data use agreement was signed and for which data was obtained and cleaned.

[42] While the PCA team may reinspect shipments on which fraud was detected (as they may expect to uncover greater fraud), I focus on PCA-detected fraud on which inspectors did not flag fraud to make this distinction clear.

[43] Each inspector-administrator pair processed an average of 297 shipments in my data, providing a substantial number of observations. While one could consider using a "patronage index" aggregating whether the inspector and administrator are patronage hires to test if having both or just one leads to different results, the inspector and administrator fixed effects absorb values of 1 in this index, such that only the coefficient for patronage pairs remains.

[44] This proportion happens to match what we would expect under independent matching on shipments, as patronage administrators and inspectors are on 55% and 37.9% of red channel shipments respectively.

interest is at this level (Abadie et al., 2023). The coefficient of interest, β_1, tests my prediction that patronage pairs detect *less* fraud but are associated with *more* PCA-detected fraud (that they omit).

As patronage inspectors differ significantly in age and education, I control for these traits by interacting with inspector education and age ($InspEduc_i$, $InspAge_i$). I use inspector and administrator fixed effects, which absorb all time-invariant individual characteristics (including each official's patronage status) and leaves identified the interaction term for patronage pairs.[45] The fixed effects thus absorb unobserved heterogeneity in inspectors' competence, integrity, or propensity to detect fraud, as well as administrators' discretion in shipment assignment or enforcement. Identification comes from officials' rotations: the same inspector (or administrator) is observed with different counterparts over time, so coefficients are identified within inspector and within administrator. These fixed effects matter because patronage inspectors tend to inspect shipments with higher value and tax liability (Appendix Table C12), which can lead to higher incentives for tax evasion.[46] On the other hand, Table C13 demonstrates that once we run specification (1), patronage pairs are not associated with shipments having significantly higher value or tax liability.[47]

We can then ask: (i) do patronage pairs underperform because they face a different mix of shipments, or (ii) conditional on similar shipments, do they still detect less fraud? To separate these, I hold product mix constant with product chapter fixed effects (θ_c) and control for shipment-level evasion incentives using a tax "evasion risk index." The index is the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items (Javorcik and Narciso,

[45] Given my theoretical arguments that both electoral cycle and dictatorship hires are patronage-based, my main results focus on both types. In the Appendix I present results isolating electoral cycle and dictatorship pairs by excluding the other type of patronage inspector. Results tend to go in my hypothesized direction for patronage hires overall, yet they sometimes lack statistical power due to the lower number of observations.

[46] This finding aligns with Chalendard et al. (2023), who show inspectors deemed the most corrupt (based on excess inspections) are disproportionately assigned to the highest-value shipments with the greatest expected tax revenue.

[47] Appendix Tables C14 to C17 also show the main results are robust to controlling for "high-value" ports.

2008), shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products (Hummels and Schaur, 2013), and an indicator for registration outside normal operating hours at the port.[48] The unit price gap is computed at the item level (declared FOB value divided by quantity minus the median unit price for the same eight-digit product code and country of origin), then aggregated at the shipment level with product weights. The time-sensitive share captures the proportion of items classified as such, which anecdotally motivate customs brokers to speed up their shipment clearance through informal payments. Finally, the after-hours indicator captures anecdotal and empirical evidence that reduced staffing outside normal operating hours facilitates collusion, as reflected in its positive correlation with subsequent PCA fraud detection.

To align signs across components so that higher values reflect greater evasion risk, I reverse the sign of the unit price gap, since undervaluation (declaring below the median price) signals higher evasion. I then standardize all variables into z-scores. Following Marx et al. (2024), the index for each shipment is the average of available z-scores, dividing by the number of non-missing components. This adjustment accounts for customs risk scores that are missing when shipments are mandatorily inspected due to laws and regulations (so risk scores are not calculated). Finally, I re-standardize the resulting index so it can be interpreted in terms of standard deviations.

To analyze if suspect assignments (significant excess inspector-broker interactions) occur more often with patronage pairs, I run:

$$y_{ptbi} = \alpha_i + \eta_b + \rho_j + \beta_1 PatronInsp_i \times PatronAdm_j + \varepsilon_{ptbi}, \tag{2}$$

where y_{ptbi} is a binary suspect assignments share measure (for significant excess inspection shares on 90% or more of the simulations) for the inspector i and broker b pair at port p and semester t,[49]

[48] Besides using this index to more comprehensively control for shipments' evasion risk, Appendix Table C22 shows how patronage pairs correlate with these covariates in my main regression. Four of the ten variables are significantly related to patronage pairs, and in Appendix Section C.5 I show all my main results are also robust to just controlling for these variables that significantly correlate with patronage pairs.

[49] For each port-semester combination, I (i) construct 99% confidence intervals for inspectors' productivities (ship-

and η_b indicates customs broker FEs. If multiple administrators were posted at the same port in the same semester due to rotations, I consider the administrator linked to most shipments for that inspector-broker pair in that semester-port. I expect my coefficient of interest (β_1) to be positive.

Next, to examine how patronage pairs handle suspect assignments,

$$\begin{aligned} y_{sij} =& \alpha_i + \rho_j + \eta_b + \beta_1 SES_{ptbi} + \beta_2 PatronInsp_i \times PatronAdm_j \\ &+ \beta_3 SES_{ptbi} \times PatronInsp_i + \beta_4 SES_{ptbi} \times PatronAdm_j \\ &+ \beta_5 SES_{ptbi} \times PatronInsp_i \times PatronAdm_j \\ &+ \gamma_1 PatronAdm_j \times InspEduc_i + \gamma_2 PatronAdm_j \times InspAge_i \\ &+ \nu_1 SES_{ptbi} \times InspEduc_i + \nu_2 SES_{ptbi} \times InspAge_i + \varepsilon_{sij}, \end{aligned} \tag{3}$$

where y_{sij} is fraud detection for shipment s (by the inspector or PCA team), and SES_{ptbi} is the share of significant excess inspection shares in simulations (ranging from 0 to 1) for inspector i and broker b pair at port p in semester t. I expect patronage hires and suspect assignments lead to *lower* fraud detection by inspectors, which is offset by *higher* fraud detection by the PCA team.[50]

The regression testing if higher workload deviations lower fraud detection is similar to equation (3) except I remove the broker fixed effects and interact with $WorkDev_{pd}$ instead, which is the standardized total number of red channel shipments arriving at port p on day d (divided by the number of inspectors present at port p on day d). I expect patronage hires to detect *less* fraud locally but trigger *more* PCA-detected fraud under heavier workloads.

Finally, I study the *intensive margin*: conditional on fraud detection, do patronage pairs impose smaller fraud value and tax adjustments? I estimate a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006) on the subsample of shipments with detected

ments handled) using the method from Sison and Glaz (1995); (ii) draw productivity distributions from those intervals; and for each draw (iii) simulate random allocations of shipments to inspectors under multinomial assignment, holding the total number of shipments fixed. For each inspector-broker pair, I compare the observed share to the simulated distribution and set $y_{ptbi} = 1$ if the observed share exceeds the 99$^{\text{th}}$ percentile in at least 90% of the productivity draws. Full details are in Appendix Section B.

[50] In the Appendix I show my main results are robust to excluding inspector-broker pairs with suspect assignments. The coefficients maintain their significance and direction.

fraud (one observation per shipment s):

$$\begin{aligned} y_{sij} = &\alpha_i + \rho_j + \theta_c + \beta_1 PatronInsp_i \times PatronAdm_j \\ &+ \gamma_1 PatronAdm_j \times InspEduc_i + \gamma_2 PatronAdm_j \times InspAge_i + \varepsilon_{sij}, \end{aligned} \tag{4}$$

where y_{sij} is fraud value detected (penalties and additional taxes paid by the broker on the importer's behalf) and θ_c are product chapter fixed effects.[51] I expect $\beta_1 < 0$, indicating that patronage pairs make lower fraud value adjustments. Coefficients in PPML are interpreted as semi-elasticities: β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of y.

In the Appendix, I run several robustness checks, including testing whether my results reflect low capacity or generic homophily rather than patronage collusion. On Tables C28 to C31 I show my results hold when controlling for interactions with officials having lower capacity, proxied by having a below-median education (a college degree). I also replace the patronage pair indicators with two alternative affinities (shared gender and having similar age, defined as an age gap of at most 10 years), which could plausibly correlate with patronage and facilitate collusion.[52] If the mechanism were simply "similar people collude," these proxies should reproduce the main effects. They do not: their coefficients are weaker or have the opposite sign across my main specifications (Tables C32–C41). These results highlight the unique explanatory power of patronage ties.

5 Analysis

Table 2 assesses patronage pairs' fraud detection at the extensive margin. Columns (1) and (5) report the specification without covariates for completeness, while columns (2) and (6) report equation (1).[53] Column (2) indicates patronage pairs detect fraud 47% less often than the sample mean, and columns (3)-(4) shows the gap remains at 13% even within product chapters and controlling for shipments' evasion risk. Following Oster (2019), we can assess how strong selection on unobserved variables would need to be to explain away this estimated effect. Using the Stata command

[51] Conditioning on detection helps separate the intensive from the extensive margin, with the caveat it is endogenous as it depends on officials' behavior. I therefore treat these estimates as more suggestive. As a robustness check, Appendix Table C27 re-estimates equation (4) on *all* shipments (setting $y_{sij} = 0$ when no fraud is detected), showing the result holds on all shipments after controlling for product chapter FEs and the evasion risk index.

[52] These affinity matches are common, covering 59.1% and 52% of red-channel shipments, respectively.

[53] Appendix Tables C45 to C49 additionally report tables without the inspector and administrator FEs instead.

proposed by Oster, I calculate the implied selection ratio (δ) required for the coefficient on patronage pairs to be reduced to zero. I find $\delta = 1.18$, meaning unobserved confounders would need to be 18% stronger than the included covariates (excluding the inspector and administrator fixed effects used for identification) in predicting both treatment assignment and the outcome to eliminate the estimated effect of joint patronage. This exceeds the standard ($\delta = 1$) threshold proposed by Oster, supporting this main result's robustness to omitted variable bias under the proportional selection assumption. Columns (5)–(8) report coefficients in the expected direction (greater detection by the PCA team) but lack statistical precision.[54] The extensive-margin results for fraud detection by the port inspector establish the baseline: patronage pairs flag less fraud overall.

Next, I examine intentional manipulation of the shipment assignment process. Patronage administrators can override random assignment rules, leading inspectors to repeatedly inspect the same brokers ("suspect assignments"). If patronage pairs are more likely to generate such patterns, it provides evidence of collusion rather than mere capacity limits. Table 3 shows patronage pairs are 38% more likely than average to have suspect assignments, indicating that vertical patronage alignment substantially increases manipulation of the assignment system. To link suspect assignments to performance, I examine whether manipulated matches reduce inspectors' fraud detection and increase PCA detections.[55] Column (2) of Table 4 shows suspect assignments reduce detection by 43% overall, with an additional 25% reduction for patronage pairs (sum of coefficients for patronage pairs and the interaction of patronage inspector with suspect assignments relative to the sample mean).[56] In columns (3)-(4), the patronage hire indicators marginally lose significance

[54] The PCA indicator's relatively high mean reflects high hit rates (see Section 3), even though only ∼1–2% of shipments receive audits. Appendix Tables C50 to C53 display the main results with covariate coefficients. Appendix Table C42 has similar results for pairings of distinct patronage types (i.e., a dictatorship administrator paired with an electoral-cycle inspector, and vice versa). Appendix Table C43 examines how fraud detection varies with inspectors' tenure, showing patronage pairs with longer-serving inspectors have slightly more undetected fraud flagged by the PCA team. Results are similar or more pronounced for *concurrent hires*, defined as inspector-administrator pairs appointed during the same executive administration, a proxy for shared factional alignment (Appendix Table C44).

[55] As suspect assignments correlate with the treatment, the estimates should not be read as causal effects however.

[56] Appendix Table C51 displays all covariates from Table 4, showing that inspectors with an additional educational level forming part of inspector-broker pairs with fully deviant excess inspections are expected to detect more fraud, yet the coefficient is only about 8% of the coefficient for inspector-broker pairs with fully deviant excess inspections.

Table 2: Patronage hires and customs fraud detected

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector × Patronage administrator	-0.0705**	-0.1294***	-0.0356**	-0.0356**	0.0036	0.0045	0.0028	0.0028
	(0.0317)	(0.0349)	(0.0155)	(0.0153)	(0.0038)	(0.0056)	(0.0056)	(0.0055)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2608	0.2628	0.5751	0.5766	0.0217	0.0218	0.0316	0.0317

Notes: All regressions include inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

when we control for product chapters, which may be due to the correlation between suspect assignments and patronage pairs shown on Table 3. Still, suspect assignments (which are driven by patronage pairs) lead to around 31% lower detection even after controlling for product chapters and evasion risk. Conversely, column (6) shows fraud later uncovered by the PCA team is far higher, even when controlling for product chapters: about 5.6 times the average (3.5 times higher when an inspector-broker pair has significant excess interactions and an additional 2.1 times higher for patronage pairs with an inspector-broker pair with significant excess interactions).[57] As suspect assignments reflect intentional efforts to circumvent prescribed random assignment, the results point to corruption rather than merely lower capacity as a driver of patronage underperformance.

Workload shocks offer another way to probe patronage pairs' underperformance relative to non-patronage pairs. If they strategically reduce effort when workloads spike, this would strengthen the interpretation from Section 2 that lower detection reflects collusion or *masking*. Table 5 builds up the results, first showing specifications without covariates in columns (1) and (5). Column (2) shows that each additional standard deviation (SD) increase in workload reduces fraud detection by about 65% for patronage pairs, on top of a baseline reduction of 37% per workload deviation.[58] Results remain significant when we control for product chapter FEs and shipments' evasion risk: patronage pairs' fraud detection falls 29% overall per SD increase in workload. Column (6) indicates that patronage pairs also become twice as likely to have fraud later uncovered by the PCA team. These results do not change when we control for product chapter FEs and shipments' evasion risk. Hence, workload shocks appear to provide cover for inspectors' strategic effort reduction.[59]

Thus, inspectors with higher education are still expected to detect less fraud if they have significant excess inspections.

[57] Appendix Table C51 shows that inspectors with an additional educational level forming part of inspector-broker pairs with fully deviant excess inspections are expected to have less undetected fraud uncovered by the PCA team, yet the coefficient size is a tenth of the coefficient for inspector-broker pairs with fully deviant excess inspections and 16-18% of the coefficient for the triple interaction.

[58] Appendix Table C52, which shows all covariates from Table 5, shows that inspectors with workload deviations and an additional educational level are expected to detect more customs fraud, but the coefficient is about a tenth of the coefficient for patronage pairs and a quarter of the triple interaction coefficient. Thus, inspectors with higher education (a proxy for inspectors' capacity) are still expected to detect less fraud when they are part of a patronage pair.

[59] Appendix Tables C57 and C58 show the results go through for both large and small customs brokers respectively, where broker size is determined by total shipment value handled by the broker over the time period of my data.

Table 3: Patronage pairs and suspect assignments

	Binary significant excess inspection share (1)
Patronage inspector	0.0031*
× Patronage administrator	(0.0018)
Mean of Dependent Variable	0.0082
Observations	77,955
R^2	0.0394

Notes: The regression includes inspector, administrator, and customs broker fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The sample covers all possible non-singleton pairings of valuation inspectors and customs brokers at all semesters and ports.

Table 4: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	0.0149	-0.1179**	-0.0833*	-0.0833*	0.0121**	0.0525**	0.0530**	0.0529**
insp. share	(0.0143)	(0.0488)	(0.0442)	(0.0442)	(0.0059)	(0.0238)	(0.0236)	(0.0236)
Patronage inspector ×	-0.0079	-0.0245**	-0.0106	-0.0107	0.0009	0.0006	0.0005	0.0004
Patronage administrator	(0.0097)	(0.0115)	(0.0091)	(0.0091)	(0.0039)	(0.0057)	(0.0057)	(0.0057)
Patronage inspector ×	-0.0291	-0.0429*	-0.0301	-0.0300	-0.0079	-0.0124	-0.0126	-0.0124
Significant excess insp. share	(0.0214)	(0.0237)	(0.0185)	(0.0185)	(0.0099)	(0.0107)	(0.0108)	(0.0108)
Patronage administrator ×	0.0036	-0.0092	-0.0050	-0.0049	-0.0026	-0.0048	-0.0045	-0.0043
Significant excess insp. share	(0.0181)	(0.0185)	(0.0172)	(0.0172)	(0.0075)	(0.0071)	(0.0071)	(0.0070)
Patronage inspector × Patronage	-0.0026	0.0123	0.0048	0.0048	0.0276*	0.0301**	0.0293*	0.0293*
administrator × Significant excess insp. share	(0.0280)	(0.0286)	(0.0246)	(0.0246)	(0.0155)	(0.0151)	(0.0150)	(0.0151)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,041	292,033	292,033	292,033	294,041	292,033	292,033	292,033
R^2	0.6667	0.6677	0.7118	0.7118	0.0671	0.0677	0.0745	0.0749

Notes: All regressions include inspector, administrator, and customs broker fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table 5: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	0.0144	-0.1005***	-0.0347**	-0.0342**	-0.0031***	0.0051	0.0022	0.0023
	(0.0094)	(0.0348)	(0.0168)	(0.0167)	(0.0012)	(0.0070)	(0.0069)	(0.0069)
Patronage inspector ×	-0.0791**	-0.1372***	-0.0384**	-0.0385**	0.0071*	0.0076	0.0059	0.0059
Patronage administrator	(0.0318)	(0.0352)	(0.0159)	(0.0157)	(0.0037)	(0.0054)	(0.0054)	(0.0053)
Patronage inspector ×	0.0064	0.0056	0.0014	0.0019	-0.0053*	-0.0061*	-0.0060*	-0.0059*
Workload deviations	(0.0132)	(0.0145)	(0.0071)	(0.0071)	(0.0027)	(0.0033)	(0.0032)	(0.0032)
Patronage administrator ×	0.0124	0.0109	0.0095	0.0100*	0.0009	0.0008	0.0013	0.0013
Workload deviations	(0.0144)	(0.0137)	(0.0059)	(0.0059)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Patronage inspector × Patronage	-0.0530***	-0.0397**	-0.0149*	-0.0154*	0.0213***	0.0208***	0.0202***	0.0201***
administrator × Workload deviations	(0.0177)	(0.0173)	(0.0080)	(0.0080)	(0.0053)	(0.0050)	(0.0049)	(0.0049)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2625	0.2653	0.5755	0.5769	0.0262	0.0265	0.0360	0.0362

Notes: All regressions include inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

So far, the results show patronage pairs underperform on the extensive margin—detecting fewer fraudulent shipments, especially under high workloads and in manipulated assignments. I now turn to the intensive margin: even when patronage pairs flag fraud, they impose smaller tax adjustments, meaning the additional tax payments required of importers are systematically lower. As shown in Table 6, these adjustments are about 10% lower, even after controlling for inspector covariates and product chapter fixed effects to ensure comparisons across similar goods. Even after we control for shipments' evasion risk (which almost doubles the model fit as measured by the pseudo R^2), patronage pairs' adjustments are about 9% lower.[60]

Together, the results show that patronage pairs detect less fraud, manipulate shipment assignment of inspectors more often, omit more fraud later uncovered by audits, and impose smaller tax adjustments—even when handling similar goods. The findings suggest that the underperformance of patronage pairs may not simply reflect administrative failure, but rather a broader political calculus by executive administrations. While patronage hiring undermines the customs authority's revenue collection goals, it aligns with the executive's political objective of rewarding loyal supporters and consolidating electoral coalitions. As a result, administrations face competing priorities: securing political support through appointments while still maintaining enough revenue to govern effectively.[61] As the next section quantifies, the fiscal costs of patronage are substantial, but potentially politically rational under current institutional incentives.

6 Tax revenue loss from patronage hires

This section estimates potential tax revenue losses due to patronage using a measure of hypothetical tax revenue losses analogous to that proposed by Chalendard et al. (2023). We can estimate

[60] While this specification is estimated using Poisson pseudo-maximum likelihood (`ppmlhdfe`), Oster's method applies to linear models. To approximate the robustness of this result to omitted variable bias, I estimate an analogous log-linear specification using `reghdfe`, where the dependent variable is the log of the outcome. In this specification, I find that the implied selection strength is $\delta = 2.46$. That is, unobserved confounders would need to be more than twice as predictive as the included covariates (excluding fixed effects) to fully explain away patronage pairs' negative effect. This comfortably exceeds Oster's robustness threshold ($\delta = 1$), further supporting the credibility of this finding.

[61] As in other developing contexts, political leaders may rationally weaken the state's economic performance to maintain political coalitions and control (Bates, 2014). A similar dynamic is presented by Albertus et al. (2016) with the authoritarian survival of the PRI in Mexico during the past century.

Table 6: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector ×	-0.1112***	-0.1080*	-0.0976*
Patronage administrator	(0.0425)	(0.0618)	(0.0576)
Mean of Dependent Variable	13,511,141	13,505,530	13,505,530
HS2-product FE	X	X	X
Interactions w/ insp. char.		X	X
Evasion risk index			X
Observations	79,709	79,589	79,589
Pseudo R^2	0.1659	0.1662	0.3099

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects. Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

hypothetical tax revenue loss for each shipment as the difference between (the natural log of) hypothetical and actual tax yield. As the hypothetical tax yield is unobserved, it is difficult to measure. I take as a reference price for each shipment item their median unit price (value-to-quantity ratio) reported by Paraguayan importers with the same eight-digit product code, country of origin, and year.[62] This reference price is multiplied by the item's quantity and its tax rate (based on the item's product code at the eight-digit level) to estimate an item-level hypothetical yield. Summing across all items within shipments provides a shipment-level hypothetical yield. This approach is conservative, as it assumes median unit prices are not underreported.[63]

To ensure an unbiased estimate of the overall impact of patronage on tax revenue, Chalendard et al. (2023) exclude controls that are potentially endogenous to corruption, which in our case correspond to the inspector and administrator fixed effects.[64] Thus, I estimate the following equation controlling only for variables plausibly exogenous to corruption as indicated by Chalendard et al. (2023): the tax rate, a mixed-shipment indicator (whether it has products from multiple six-digit product codes), the value share of differentiated products, origin country fixed effects, product chapter (HS 2-digit product code) fixed effects, and month-year fixed effects:

$$\begin{aligned} y_{sij} =& \beta_1 PatronInsp_i + \beta_2 PatronAdm_j + \beta_3 PatronInsp_i \times PatronAdm_j \\ &+ \beta_X X_s + \theta_c + \kappa_o + \tau_m + \varepsilon_{sij}, \end{aligned} \tag{5}$$

where y_{sij} is the hypothetical tax revenue loss on shipment s, X_s is the vector of exogenous shipment characteristics, while θ_c, κ_c and τ_m represent the product chapter, origin country, and month-year fixed effects respectively. The core inputs for computing this back-of-the-envelope calculation are β_1, β_2, and β_3. Without the fixed effects, the interaction is not significant, but

[62] Chalendard et al. (2023) calculate internal reference prices using median kilogram prices (value-to-weight ratios). However, as not all goods are measured in kilograms, a unit price-based measure is likely more accurate. Unit prices adjust to the appropriate quantity metric for each good, yielding a more precise reference price.

[63] Chalendard et al. (2023) also use external reference prices based on kilogram prices from UN COMTRADE data on exports to the country they study (Madagascar). However, given that COMTRADE data only disaggregates to six-digit product codes, they do not allow us to calculate as similar of a counterfactual.

[64] For their regressions they exclude inspector and customs broker FEs, which are used in the rest of their analyses.

we still observe an additive effect from each layer. Hence, after exponentiating the significant coefficient estimates, we find that shipments handled by patronage inspectors and administrators are linked to tax revenue losses of roughly 7.3% and 3.5%, respectively. In contrast, the interaction is not significant here. Still, patronage pairs account for an estimated 10.8% increase in revenue losses, showing how patronage pairs compound the effect additively here.

Table 7: Patronage hires and tax revenue losses

	Hypothetical tax revenue losses based on internal reference prices using importer unit prices
	(1)
Patronage inspector	0.0702*
	(0.0383)
Patronage administrator	0.0346*
	(0.0180)
Patronage inspector ×	-0.0614
Patronage administrator	(0.0499)
Mean of Dependent Variable	-0.0094
Exogenous shipment characteristics	X
Month-year FE	X
HS2-product FE	X
Origin country FE	X
Observations	294,040
R^2	0.0365

Notes: The regression includes fixed effects for: origin country, product chapter (HS 2-digit product code), and month-year. It also controls for the following exogenous shipment characteristics: the tax rate, a mixed-shipment dummy (whether the shipment has products from multiple product subheadings), and the value share of differentiated products within the shipment. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is a hypothetical tax revenue loss variable generated by subtracting a shipment's actual tax yield from their hypothetical tax yield if we use internal reference prices based on unit prices for other imports of the same product, country of origin, and year. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to non-singleton shipment observations. The sample covers all red channel shipments.

Using the coefficient estimates from Table 7, I estimate the counterfactual tax revenue in the absence of patronage hires for each shipment as: $T^{NP} = T \times \exp(\widehat{\beta}_1 \cdot PatronInsp + \widehat{\beta}_2 \cdot PatronAdm + \widehat{\beta}_3 \cdot PatronInsp \times PatronAdm)$, where T denotes the actual tax yield. This expression follows from the log-linear regression model in equation (5), which estimates the log difference between hypothetical and actual tax yields. Exponentiating the predicted difference from the significant coefficients provides a multiplicative adjustment factor to scale the actual yield up to its estimated counterfactual value in the absence of patronage. That is, we are asking how much more tax revenue would have been obtained if shipments were handled by non-patronage hires instead. Further details on the derivation can be found in Appendix Section D.

I then compute the additional tax revenue that would have been collected on shipments if they were handled by non-patronage hires. Table 8 reports average values for red channel shipments across four types: those involving patronage inspectors, patronage administrators, patronage pairs, and all shipments. Table 8 summarizes the results: shipments handled by patronage inspectors, administrators, or both yield more revenue on average—\$8,934, \$9,133, and \$8,794, respectively—than the overall average of \$8,530. However, had these shipments been processed by non-patronage officials, tax revenue would have increased by 7.3%, 3.5%, and 11%, respectively—amounting to \$650, \$322, and \$972 per shipment. Two results can be highlighted from this exercise. First, while patronage hires may appear to collect more revenue, this reflects their assignment to higher-value shipments rather than superior fraud detection. Second, restricting attention to patronage inspectors alone would miss around 7.3 percentage points in underperformance, roughly two-thirds of the total loss when both tiers are patronage, while focusing solely on administrators would miss approximately 3.5 percentage points (about one-third). Overall, tax revenue across all red channel shipments would have been 5% higher.[65] This estimate is likely a lower bound, as not all shipments handled by patronage hires are necessarily subject to evasion and my patronage hire measure is an imperfect proxy.

[65] If we expect the average loss to hold for each shipment, we get a total estimated loss of \$124 million USD.

Table 8: Cost of Patronage

	Patronage Inspector		Patronage Administrator		Patronage Pair		All shipments	
	Tax yield	% Increase	Tax yield	% Increase	Tax yield	% Increase	Tax yield	% Increase
Actual tax yield	\$8,934	–	\$9,133	–	\$8,794	–	\$8,530	–
Additional counterfactual yield:	\$650	7.3%	\$322	3.5%	\$972	11.0%	\$423	5.0%

Notes: Tax losses are defined as the difference between the counterfactual tax yield—estimated in the absence of patronage hires—and the actual tax yield. The estimates are converted from the local currency (Paraguayan Guaranis, PYG) to US dollars (USD) using daily exchange rate data. The USD-PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. Counterfactual yields are derived using a hypothetical tax loss measure based on internal reference prices. It is generated by subtracting a shipment's actual tax yield from their hypothetical tax yield if we use internal reference prices based on unit prices for other imports of the same product, country of origin, and year. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The first two columns report red channel shipments handled solely by patronage inspectors, the next two by patronage administrators only, the following two by both patronage inspectors and administrators, and the final two include all red channel shipments.

7 Conclusion

This study investigates and highlights how patronage alignment between multiple bureaucratic layers magnifies inefficiencies and weakens organizational oversight. In contrast to single-layer analyses, my approach additionally captures how vertically-aligned patronage facilitates collusion between supervisors and agents. I develop a method to identify patronage hires based on bureaucrats' appointment dates—capturing politically motivated hiring both shortly after elections and during authoritarian rule. This approach allows me to trace the long-run consequences of short-term political incentives on public sector performance (Geddes, 1994; Akhtari et al., 2022; Barbosa and Ferreira, 2023), as these bureaucrats outlast the administration that originally hired them.

By examining the Paraguayan customs authority where patronage is prevalent, I find results suggesting that customs officials hired through patronage are less effective in terms of competence and integrity. My empirical evidence indicates that patronage pairs, where both the customs inspector and administrator are patronage hires, are 38% more likely to deviate from the prescribed random assignment of inspectors to shipments. Overall, patronage pairs detect about 47% less fraud, and 13% less when comparing shipments within the same product code chapters and among shipments with similar evasion risk. At the same time, some of this undetected fraud is later uncovered by a separate team at customs headquarters, and this team's fraud detection on shipments handled by patronage pairs is 5.6 times higher when inspectors have suspect assignments from excess interaction with a customs broker. As deviations from random assignment result from intentional decisions facilitated by the port administrator, they likely constitute corruption.

In addition, patronage pairs detect less fraud when an exogenously high number of shipments arrive at the officials' customs port. On days with a standard deviation higher of shipments per inspector, fraud detection by patronage pairs is 29% lower and twice as likely for the PCA team, where the latter uncover undetected fraud by patronage pairs. These results align with anecdotal evidence suggesting that high-workload days offer inspectors greater plausible deniability, allowing them to justify reduced scrutiny, while also creating opportunities for discretionary selection

of shipments for inspection. Patronage pairs impose fraud value adjustments that are 10% lower than those applied by non-patronage pairs on shipments with similar products, and this gap persists at 9% even after accounting for a comprehensive tax evasion risk index. Using internal reference prices, I find that patronage hiring significantly depresses tax collection, especially when both the inspector and administrator are patronage hires—leading to revenue losses of 11% per shipment. About two-thirds of the 11% revenue gap is attributable to patronage inspectors and one-third to administrators. Overall, replacing patronage officials with non-patronage staff could have increased total tax revenue from inspected shipments by 5%, highlighting the fiscal cost of patronage hires.

These results reflect a breakdown of nested accountability: when both an agent and their supervisor are patronage hires, oversight weakens and collusion becomes more feasible. Supervisors fail to discipline agents, and higher-level principals may lack the information needed to intervene effectively on all instances. This aligns with recent work such as Sánchez de la Sierra et al. (2024), which shows the role of state officials' managers in corruption. They also concur with findings from Moreira and Pérez (2024) on the U.S. customs service after the Pendleton Act, where patronage persisted through exempted supervisory roles for port administrators (district collectors).

More broadly, the effectiveness of tariff policy depends not only on formal rules but on how bureaucrats enforce them. When officials are embedded in patronage hierarchies, they may selectively enforce regulations in ways that serve private interests. Such discretionary enforcement can distort competition by granting certain firms preferential treatment unrelated to their productivity (Atkin et al., 2022), thus making bureaucratic discretion, not policy design, the binding constraint.

The dynamics uncovered in this study are not unique to Paraguay, as patronage hierarchies in customs administrations have historically undermined oversight and enabled corruption in other contexts as well. In the 1800s, the New York Custom House—then the largest U.S. federal office—was rife with the "spoils system" (patronage). Samuel Swartwout, a patronage appointee of President Andrew Jackson, embezzled over $1.2 million (about $35 million today), as "checks and balances designed to account for all funds failed" (U.S. Customs and Border Protection, 2019).

Later investigations revealed a system of bribery and political contributions tied to appointments (Hartman, 1953; Rao, 2019; Hoogenboom, 1959). More recently, in Guatemala, the 2015 *La Línea* scandal exposed a patronage network that facilitated large-scale customs fraud and implicated top government officials (Schwartz, 2023). Similar dynamics are documented in Bolivia, where customs roles were used to finance political parties through siphoned state resources (Gingerich, 2013). These cases echo that patronage hierarchies weaken accountability and enable collusion.

My findings suggest reducing political patronage could enhance tax collection efficiency. My framework additionally suggests that principals should allocate oversight resources strategically by targeting high-risk dyads, especially vertically-aligned patronage pairs. Over the medium term, selective task assignment could reduce workload-driven discretion, while longer-run improvements require shifting toward merit-based recruitment to address structural incentives for collusion. Beyond other revenue collection contexts, the dynamics examined here may also extend to other public services featuring a principal-supervisor-agent framework: agricultural extension (Dal Bó et al., 2021), public procurement (Celhay et al., 2024), irrigation systems (Wade, 1982), among others. Future research could investigate patronage hierarchies across these and other sectors.

Policymakers should actively work toward reforms aimed at merit-based hiring and more carefully weigh the adverse effects of patronage, even where it offers electoral advantages. Still, these efforts often confront deep institutional resistance. Moreira and Pérez (2024) show how the 1883 Pendleton Act, which mandated exams for recruiting certain employees in the largest US customs districts, did not improve performance as it led to hiring in exam-exempted positions. Similar challenges are expected in contexts where public employees benefit from the status quo (Klitgaard, 1988). In addition, the transition from political discretion to bureaucratic autonomy in hiring introduces its own challenges, as agencies often need to build reputations and support networks to sustain reforms (Carpenter, 2002; Rao, 2019) and bureaucratic managers may introduce their own hiring biases (Hassan et al., 2025). The literature would benefit from further work on civil service reforms that tackles the countervailing and entrenched practices of patronage bureaucracies.

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Appendix

A Model

Consider a hierarchical bureaucracy comprising a principal, supervisor, and agent. The agent chooses between exerting effort to perform their duties effectively—such as rigorous inspections or diligent assistance—and colluding with citizens (e.g., taxpayers, business owners, or program beneficiaries) subject to government oversight. The agent can exert effort at cost e, leading to success with probability p_F. Patronage agents have lower human capital (Colonnelli et al., 2020; Dessein and Garicano, 2023; Moreira and Pérez, 2024) and thus have a lower probability of non-compliance detection ($\underline{p}_F$) compared to non-patronage hires ($\overline{p}_F$). Thus, $p_F \in \{\underline{p}_F, \overline{p}_F\}$. Collusion with citizens provides an informal payoff b, but risks penalties from either the supervisor or principal (μ). When an agent detects non-compliance by an inspected citizen, they impose a penalty fine equal to the violation's value ϕ, and get to keep a fraction α of ϕ as a performance bonus.

Model Setup:

Let $c \in \mathbb{R}_+$ denote the collusion cost of agent-supervisor pairs. The probability that a supervisor punishes an agent, denoted $p_S(c)$, is increasing in the cost of collusion: $p'_S(c) > 0$. Let:

- $e \in (0,1)$: effort cost of the agent.
- $b \in (0,1)$: benefit from collusion, obtained by agent and supervisor.
- $\mu \in (0,1)$: penalty if caught, for both agent and supervisor (the latter if caught by the principal).
- $\phi \in (0,1)$: the value of the violation committed by the citizen.
- $\alpha \in (0,1)$: the share of ϕ that is provided to the agent as a bonus for successful effort.

- $p_S(c) \in (0,1)$: probability the supervisor punishes an agent, as a function of the collusion cost of agent-supervisor pairs (c).
- $p_R \in (0,1)$: probability the principal detects misconduct.
- $\delta \in (0,1)$: masking factor; where $\delta \uparrow$ implies reduced detectability of misconduct.

In this section, we take p_R as given to characterize the agent's incentive constraints. In the next subsection, we also consider that the principal could optimize p_R^{ij} across dyads (see Section A.3).

Game periods:

Period 0: Patronage vs. non-patronage hires and their postings are predetermined by the organization's human resources division. A citizen and agent interact during inspection or service provision, on a day with masking factor δ, and we assume the citizen attempts a violation worth ϕ, where ϕ.

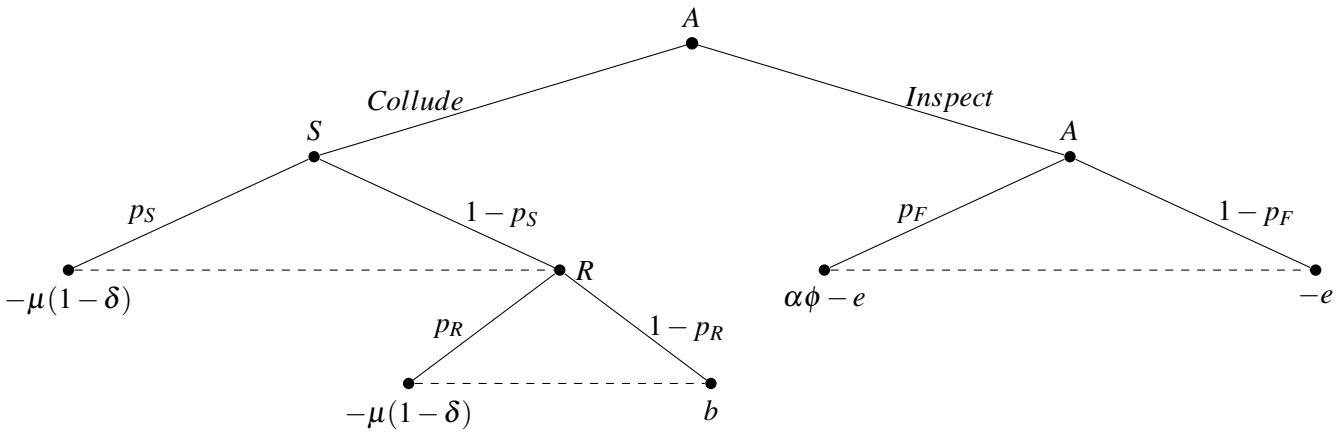
Period 1: the agent chooses either to honestly exert effort or to collude. If the agent colludes with the citizen, they receive a bribe b but face a potential penalty μ if caught by either the supervisor or principal. If the agent chooses to collude, they omit exerting effort. Alternatively, the agent can exert effort at cost e, successfully detecting the citizen's violation with probability p_F. If the agent successfully detects the violation, they apply a penalty fine equal to ϕ and receive a share $\alpha\phi$ of the fine as a formal reward, while the remaining portion $(1-\alpha)\phi$ of the fine is collected by the principal authority as a penalty fee. The expected payoff to an agent for honest inspection effort is thus:

$$\underbrace{p_F(\alpha\phi - e)}_{\text{successful inspection}} + \underbrace{(1-p_F)(0-e)}_{\text{unsuccessful inspection}} = p_F\alpha\phi - e$$

Period 2: Supervisors monitor agent behavior. Patronage supervisors penalize patronage agents less often ($\underline{p}_S$) compared to non-patronage supervisors ($\overline{p}_S$) due to their lower bargaining costs for collusion. The masking factor (δ) further reduces the supervisor's likelihood of detecting misconduct.

Period 3: A higher-level principal may randomly or selectively conduct audits or re-inspections, and detects the agent's collusion with probability p_R and penalizes the agent with penalty $\mu \in (0,1)$. The masking factor (δ) similarly reduces the principal's detection probability.

Figure A1: Extensive-form game of ineffective oversight



Notes: The agent's utility is mentioned below the terminal nodes of the game.

A.1 More detailed comparison of patronage and non-patronage hires:

As mentioned above, the probability that a supervisor punishes an agent, $p_S(c)$, is an increasing function of the collusion cost c, such that $p'_S(c) > 0$. Patronage pairs face a lower collusion cost ($\underline{c}$) than non-patronage pairs ($\overline{c}$), implying $p_S(\underline{c}) < p_S(\overline{c})$. This structure endogenizes the complementarity between patronage ties and the feasibility of collusion. A more formal treatment of this framework is developed in the next Appendix Subsection.

A patronage supervisor's payoff from colluding with a patronage agent is:

$$\Pi_{C\underline{S}} = \underbrace{(1-p_R)b}_{\text{supervisor not caught}} - \underbrace{p_R(1-\delta)\mu}_{\text{supervisor caught by principal}} - \underline{c}$$

A patronage supervisor's payoff from colluding with a non-patronage agent is:

$$\Pi_{C\overline{S}} = \underbrace{(1-p_R)b}_{\text{supervisor not caught}} - \underbrace{p_R(1-\delta)\mu}_{\text{supervisor caught by principal}} - \overline{c}$$

Given that $\overline{c} > \underline{c}, \implies \Pi_{C\underline{S}} > \Pi_{C\overline{S}}$

A patronage agent's payoff from colluding with a citizen when monitored by a patronage supervisor is:

$$\Pi_{C\underline{A}} = \underbrace{[1-p_S(\underline{c})][1-p_R]b}_{\text{agent not caught}} - \underbrace{\mu p_S(\underline{c})[1-\delta]}_{\text{agent penalized by supervisor}} - \underbrace{[1-p_S(\underline{c})]p_R[1-\delta]\mu}_{\text{agent caught by principal}}$$

A patronage agent's payoff from colluding with a citizen when monitored by a non-patronage supervisor is:

$$\Pi_{C\overline{A}} = \underbrace{[1-p_S(\overline{c})][1-p_R]b}_{\text{agent not caught}} - \underbrace{\mu p_S(\overline{c})[1-\delta]}_{\text{agent penalized by supervisor}} - \underbrace{[1-p_S(\overline{c})]p_R[1-\delta]\mu}_{\text{agent caught by principal}}$$

Given that $p_S(\underline{c}) < p_S(\overline{c}), \implies \Pi_{C\underline{A}} > \Pi_{C\overline{A}}$

These payoffs indicate how an increase in the masking factor (δ)—such as higher workload or unpredictable external conditions—raises agents' utility from collusion by reducing the likelihood of punishment.

Conversely, if the agent exerts honest effort, their expected payoff is: $p_F\alpha\phi - e$

Patronage agents are assumed to have a lower detection probability ($\underline{p}_F$) than non-patronage agents ($\overline{p}_F$), such that:

$$\overline{p}_F\alpha\phi - e > \underline{p}_F\alpha\phi - e$$

These conditions together highlight the collusion complementarity between patronage agents and patronage supervisors. Patronage agents attain higher expected benefits from colluding when monitored by supervisors who share their patronage ties, particularly during periods with a higher

masking factor (δ), which lowers the expected penalty for reduced effort. Thus, it becomes more likely that:

$$\Pi_{C\underline{A}} > \overline{p}_F \alpha\phi - e > \underline{p}_F \alpha\phi - e$$

On the other hand, this setup also clarifies how it is more likely that non-patronage agents derive greater utility from exerting honest effort rather than colluding:

$$\overline{p}_F \alpha\phi - e > \Pi_{C\overline{A}}$$

Below, we go over the agent's expected utility from their choices in more detail and derive comparative statics.

Agent's Expected Utility from Colluding

The expected utility of the agent from collusion, given punishment probabilities, is:

$$\begin{aligned}\Pi_A(c) &= [1-p_S(c)][1-p_R]b - p_S(c)[1-\delta]\mu - [1-p_S(c)]p_R[1-\delta]\mu \\ &= [1-p_S(c)][1-p_R]b - \mu[1-\delta]\{p_S(c) + [1-p_S(c)]p_R\}\end{aligned}$$

Agent's Outside Option (Expected Utility from Honest Effort)

Let $p_F \in (0,1)$ denote the probability of detection from honest effort, $\alpha\phi$ the reward from detection, and e the disutility of effort:

$$\Pi_A^H = p_F \alpha\phi - e$$

Collusion Decision (Incentive Compatibility)

The agent colludes if the utility from collusion is higher than that of exerting effort, that is:

$$\Pi_A(c) \geq \Pi_A^H$$

Let $\Delta(c) = \Pi_A(c) - \Pi_A^H$. Define a cutoff c^* where $\Delta(c^*) = 0$

A.1.1 Incentive-compatibility frontier

$$\Pi_A(c) = [1 - p_S(c)][1 - p_R]b - \mu[1-\delta]\{p_S(c) + [1 - p_S(c)]p_R\}, \tag{A.1}$$

$$\Pi_A^H = p_F\,\alpha\phi - e, \tag{A.2}$$

$$\Delta(c) = \Pi_A(c) - \Pi_A^H \tag{A.3}$$

Setting $\Delta(c^*) = 0$ and writing $q \equiv p_S(c^*)$ gives

$$q \;=\; \frac{(1-p_R)b - \mu(1-\delta)p_R - p_F\alpha\phi + e}{(1-p_R)[b+\mu(1-\delta)]} \tag{A.4}$$

Because p_S is monotone, the collusion-cost cutoff satisfies

$$c^* \;=\; p_S^{-1}\left(\frac{(1-p_R)b - \mu(1-\delta)p_R - p_F\alpha\phi + e}{(1-p_R)[b+\mu(1-\delta)]}\right) \tag{A.5}$$

A.2 Comparative statics

a) Effect of collusion cost c:

$$\begin{aligned}\frac{d\Pi_A}{dc} &= -p_S'(c)[1-p_R]b - \mu[1-\delta]\{p_S'(c)[1-p_R]\} \\ &= -p_S'(c)\{[1-p_R]b + \mu[1-\delta][1-p_R]\}\end{aligned}$$

Since $p'_S(c) > 0$, $\frac{d\Pi_A}{dc} < 0$ as all remaining components are positive. That is, both $[1-p_R]b$ and $\mu[1-\delta][1-p_R]$. Hence, an increase in c reduces the agent's incentive to collude.

b) Effect of masking factor δ:

$$\frac{d\Pi_A}{d\delta} = \mu\{p_S(c) + [1-p_S(c)]p_R\} > 0$$

As all components are positive, $\frac{d\Pi_A}{d\delta} > 0$. Thus, a higher masking factor reduces expected penalties, raising the agent's incentive to collude. This result is analogous to **Prediction II** which I highlight in the main text.

c) Effect of patronage via lower c:

If $c = \underline{c}$ for patronage and $c = \overline{c} > \underline{c}$ for non-patronage, then:

$$\Pi_A(\underline{c}) > \Pi_A(\overline{c}) \Rightarrow \text{Collusion more likely among patronage pairs}$$

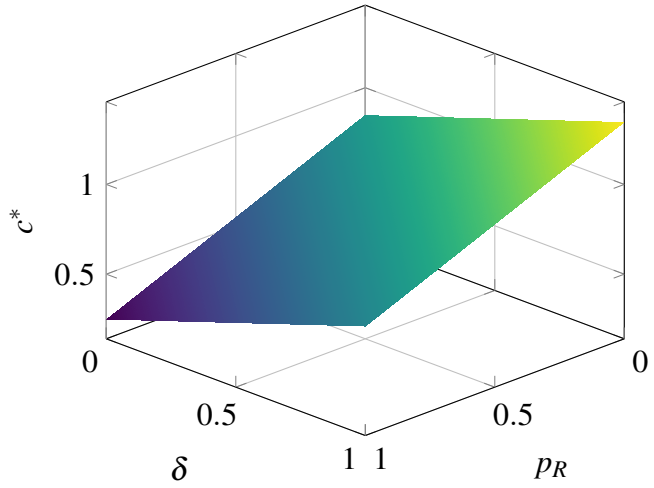
This result is analogous to **Prediction I** which I highlight in the main text.

Proposition 1 (Equilibrium Collusion Cutoff) *Let c^* denote the collusion cost threshold such that the agent prefers to collude if and only if $c < c^*$. Then:*

1. $\frac{\partial c^*}{\partial \delta} > 0$*: As the masking factor δ increases, the agent's expected punishment decreases, raising the incentive to collude and increasing the threshold c^*.*
2. $\frac{\partial c^*}{\partial p_R} < 0$*: As the principal's detection probability p_R increases, the expected cost of collusion rises, lowering the incentive to collude and reducing c^*.*

More agent-supervisor pairs will collude when oversight is weak (p_R low) or when collusion is harder to detect (δ high), especially among patronage pairs due to their lower collusion cost.

Figure A2: Equilibrium threshold c^* as a function of principal monitoring probability p_R and masking factor δ



Notes: The figure above shows a 3D surface plot of the equilibrium cutoff c^* with a stylized linear functional form of c^*, which is decreasing in p_R and increasing in δ. Lighter colors on the surface plot indicate a higher equilibrium collusion cost threshold.

A.3 Principal's audit allocation problem under scarce capacity

In the baseline model, we took the principal's monitoring technology as given. Here I extend the setup to clarify how a higher-level principal (e.g., a post-clearance audit unit) would allocate scarce audits endogenously across agent–supervisor dyads. This extension also resolves a timing issue in the customs mapping: local inspector detection generates revenue immediately at the port, while principal audits are re-inspections that primarily target violations that were not detected (or were concealed) locally.

Two distinct detection channels. Consider a dyad ij (agent i, supervisor j). Let r_{ij} denote an observable risk index (composed of, for example, patronage pair indicator, a higher masking factor δ, etc.). Let $H_{ij}(a_{ij}; r_{ij}) \in [0,1]$ denote the probability that the agent behaves honestly (exerts effort) in dyad ij when the principal assigns audit intensity a_{ij}. Assume H_{ij} is twice continuously

differentiable in (a, r). In the binary version of the game, $H_{ij}(a_{ij}; r_{ij}) = \mathbb{1}\{\Pi_A^H \geq \Pi_A(c_{ij}, a_{ij}, \delta)\}$, but allowing for heterogeneity in bribes or violations yields a smooth $H_{ij}(\cdot)$.

Conditional on exerting effort, the violation is detected locally with probability p_{F_i}. Thus, the unconditional probability of local detection is $H_{ij}(a_{ij}; r_{ij})\, p_{F_i}$, generating net revenue to the principal equal to $R^L(\phi) = (2-\alpha)\phi$, since the principal recoups the evaded amount ϕ and applies a penalty fine of ϕ, while the detecting official receives a bonus share $\alpha\phi$ (as defined in the baseline model).

If the violation is not detected locally (with probability $1 - H_{ij}(a_{ij}; r_{ij}) p_{F_i}$), the shipment may be audited. Let $a_{ij} \in [0,1]$ denote the probability a locally-cleared shipment handled by dyad ij is audited. Conditional on auditing, the audit detects the underlying violation with probability $\pi \in (0,1)$ and yields recoverable revenue $R^A(\phi) = \kappa \cdot 2\phi$, where $\kappa \in (0,1)$ captures imperfect conversion of assessed amounts into collected revenue (e.g., due to appeals). Any fine-sharing with auditors can be absorbed into κ.

In practice, audit intensity is constrained not only by a hard staffing cap, but also by increasing marginal administrative and political costs of intensifying audits on a given dyad (case complexity, legal follow-up, and disruption). A convex cost is a parsimonious reduced form for these increasing marginal costs and generates interior audit intensities (smooth targeting) rather than knife-edge cutoffs. Accordingly, we can let the per-dyad cost of audit intensity be quadratic:

$$C(a_{ij}) = \frac{\lambda}{2} a_{ij}^2, \qquad \lambda > 0.$$

Principal's objective and audit-capacity constraint. Normalizing the mass of dyads to one, the principal chooses $\{a_{ij}\}$ to maximize expected net revenue:

$$U_P = \int \left[H_{ij}(a_{ij}; r_{ij})\, p_{F_i} R^L(\phi) + (1 - H_{ij}(a_{ij}; r_{ij}) p_{F_i})\, a_{ij}\, \pi R^A(\phi) - \frac{\lambda}{2} a_{ij}^2 \right] dF(ij), \tag{A.6}$$

subject to a scarce audit-capacity constraint:

$$\int a_{ij}\, dF(ij) \;\leq\; \bar{A}, \qquad \bar{A} \in (0,1), \tag{A.7}$$

which captures that only a small fraction of shipments can be audited (empirically, I find this to be on the order of 1–2% of all shipments per year).

Link to collusion parameters. Audit intensity enters the agent's collusion payoff through the probability of being caught by the principal. In particular, we can replace the baseline principal-detection term with an *effective* detection probability $a_{ij}\,\pi\,(1-\delta_{ij})$, so that masking (higher δ_{ij}) attenuates audit effectiveness. Thus, dyads with lower collusion costs c_{ij} (e.g., patronage pairs) or higher masking factor δ are both (i) more likely to collude absent audits and (ii) potentially more responsive to targeted oversight, shifting $H_{ij}(a_{ij}; r_{ij})$.

Proposition 2 (Targeted audits under scarce capacity) *Assume $H_{ij}(a; r_{ij}) \in [0,1]$ is the probability that the local dyad ij behaves honestly (i.e., the agent exerts effort in inspecting), and H_{ij} is weakly increasing in audit intensity (a). Let r_{ij} be an observable risk index (e.g., patronage-pair indicator, higher masking factor δ, suspect assignments), and let p_{F_i} denote agent i's detection ability conditional on effort. Suppose: (i) $H_{ij}(a; r_{ij})$ is weakly decreasing in r_{ij}, so the stock of locally-missed cases $1 - H_{ij}(a; r_{ij})\, p_{F_i}$ is weakly increasing in r_{ij}; and (ii) audits are (weakly) more deterrent for higher-risk dyads, i.e. $\frac{\partial^2 H_{ij}(a; r_{ij})}{\partial a\, \partial r_{ij}} \geq 0$. Then, in any interior optimum of* (A.6)–(A.7)*, the optimal audit intensity a^*_{ij} is weakly increasing in r_{ij} (up to the bounds $a^*_{ij} \in [0,1]$).*

Proof: Let $L \equiv R^L(\phi) = (2-\alpha)\phi$ and $A \equiv \pi R^A(\phi) = \pi\kappa 2\phi$. Fix any dyad ij and suppress subscripts for ease of notation. Let the per-dyad expected gross revenue be

$$V(a; r) \;\equiv\; L H(a; r)\, p_F \;+\; a A (1 - H(a; r)\, p_F),$$

so that the marginal benefit of audit intensity is:

$$V_a(a;r) = A(1 - H(a;r)p_F) + H_a(a;r)\, p_F(L - aA) \;\equiv\; MB(a;r),$$

where H_a is the derivative of H with respect to audit intensity a. Consider the principal's Lagrangian (including the quadratic audit-cost term and a linear capacity constraint),

$$\mathscr{L} = \int \Big(V_{ij}(a_{ij};r_{ij}) - \frac{\lambda}{2}a_{ij}^2\Big)\, dF(ij) + \nu\Big(\bar{A} - \int a_{ij}\, dF(ij)\Big) + \int \underline{\eta}_{ij} a_{ij}\, dF(ij) + \int \overline{\eta}_{ij}(1 - a_{ij})\, dF(ij),$$

where $\underline{\eta}_{ij} \geq 0$ and $\overline{\eta}_{ij} \geq 0$ are the Karush–Kuhn–Tucker (KKT) multipliers on the bounds $a_{ij} \geq 0$ and $a_{ij} \leq 1$. Let a_{ij}^* be an interior optimum, so the KKT bound multipliers are zero. The first-order condition is

$$MB_{ij}(a_{ij}^*;r_{ij}) \;=\; \lambda\, a_{ij}^* \;+\; \nu. \tag{A.8}$$

Define the net marginal gain function (G) from increasing audit intensity for dyad ij as:

$$G(a;r) \equiv MB(a;r) - \lambda a - \nu,$$

so that (A.8) is $G(a^*(r);r) = 0$.

Step 1: $G_r(a;r) \geq 0$**.** Differentiate $MB(a;r)$ with respect to the risk index r (holding p_F fixed):

$$\frac{\partial MB(a;r)}{\partial r} = -A\, p_F\, H_r(a;r) \;+\; p_F\,(L - aA)\, H_{ar}(a;r).$$

Assumption (i) gives $H_r(a;r) \leq 0$, so the first term is weakly nonnegative. Assumption (ii) gives $H_{ar}(a;r) \geq 0$. We also assume $L - a_{ij}A \geq 0$ on the feasible set (equivalently $a_{ij} \leq \frac{L}{A}$), so that increasing honesty shifts cases from "missed then potentially audited" to "caught locally" without reducing expected revenue. This is expected as audit intensity is small due to scarce resources (so that a_{ij} is close to 0). Also, post-clearance revenue recoveries are discounted by conversion

frictions (detecting violations with probability $\pi \in (0,1)$ and $\kappa \in (0,1)$ capturing imperfect conversion of assessed amounts into collected revenue due to importer appeals). This assumption then implies that the second term is weakly nonnegative. Hence

$$G_r(a;r) = \frac{\partial MB(a;r)}{\partial r} \geq 0.$$

Step 2: $G_a(a^*(r);r) < 0$ **at an interior optimum.** At an interior maximum, the (one-dimensional) second-order condition for the choice of audit intensity (a) implies

$$\frac{\partial^2 \mathscr{L}}{\partial a^2} = \frac{\partial MB(a;r)}{\partial a} - \lambda = G_a(a;r) \; < \; 0 \quad \text{evaluated at } a = a^*(r).$$

Or equivalently, λa is the marginal convex audit-cost term (and ν is the shadow value of scarce audit capacity). At an interior optimum the objective is locally concave in a, so $MB_a(a^*(r);r) < \lambda$.

Step 3: Monotone comparative statics. Because $G(a^*(r);r) = 0$ and $G_a(a^*(r);r) < 0$, the implicit function theorem applies (treating the common multiplier ν as fixed when differentiating), and

$$\frac{da^*(r)}{dr} = -\frac{G_r(a^*(r);r)}{G_a(a^*(r);r)} \; \geq \; 0,$$

since $G_r(a;r) \geq 0$ (Step 1) and $G_a(a^*(r);r) < 0$ (Step 2). Thus $a^*(r)$ is weakly increasing in r. Applying this dyad-by-dyad implies that in any interior optimum, higher-risk dyads (higher r_{ij}) receive weakly higher audit intensity a^*_{ij} (up to the bounds $a^*_{ij} \in [0,1]$).

Finally, because ν is a scalar common to all dyads (the shadow value of the *aggregate* capacity constraint), it shifts the FOC (A.8) uniformly across dyads; therefore choosing ν to satisfy (A.7) preserves the monotone ranking of a^*_{ij} in r_{ij}. □

Therefore, oversight is more effective when audit intensity is targeted at high-risk dyads. Uniform audit rules may underperform, especially under vertical patronage alignment.

Mapping to the empirical setting. In Paraguayan customs, the fine share kept by the detecting agent (α) is institutionally fixed (set to 0.5) and the PCA team's capacity is limited, making (A.7) an empirically relevant constraint. The proposition above motivates targeted audits toward high-risk dyads (e.g., vertically aligned patronage pairs and periods with high masking δ), consistent with the paper's interpretation of post-clearance audits as a closer "ground truth" signal for locally missed fraud.

B Methodology for uncovering *suspect assignments*

Following Chalendard et al. (2023), to determine whether an observed inspection share for a given inspector (with a given broker) is significantly distinct from the expected inspection share based on random assignment I construct standard errors for the expected inspection shares using simulation methods that take five steps.[66] First, I obtain 99% confidence intervals for inspectors' productivities (how many inspections each does in a semester at each port) using the method for constructing confidence intervals for multinomial proportions by Sison and Glaz (1995). Second, I simulate the productivity distribution across inspectors 100 times, drawing from the 99% confidence interval of observed productivities (obtained in the previous step), conservatively assuming the productivities are uniformly distributed. Next, for each productivity simulation, I take the total number of shipments as given and simulate which inspectors are assigned to his shipments 100 times assuming multinomial assignment. Afterwards, I test whether the observed number of shipments of a given broker handled by a given inspector is larger than the 99^{th} percentile of the respective simulated multinomial assignment. This allows us to quantify the percentage of times an inspector-broker pair in a given semester-port has a significant excess inspection share. Finally, I generate a binary indicator for inspector-broker pairs for which at least 90% of the productivity simulations reject the null hypothesis of random assignment.

[66] As I estimate excess inspections between inspectors and brokers by port and semester, the five steps to calculate standard errors are repeated for the 31 customs ports and 10 semesters in my sample covering the years 2017 to 2021.

C Additional tables and figures

Figure C1: Image of a physical inspection, which opens shipment containers

Notes: This is a stock photography of a physical inspection, physical inspections in Paraguayan customs are done by a single inspector.

Figure C2: Fraud detection rate for visual inspectors on red channel shipments

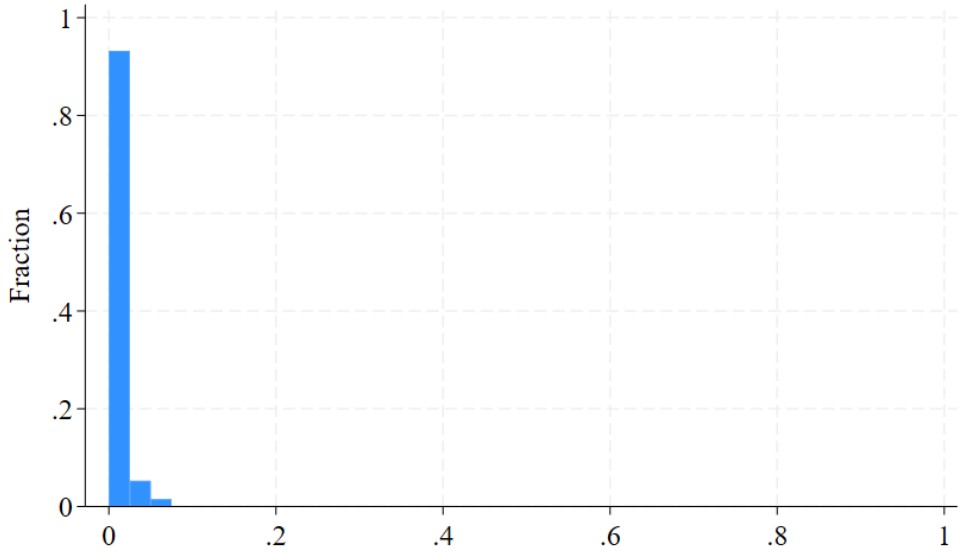
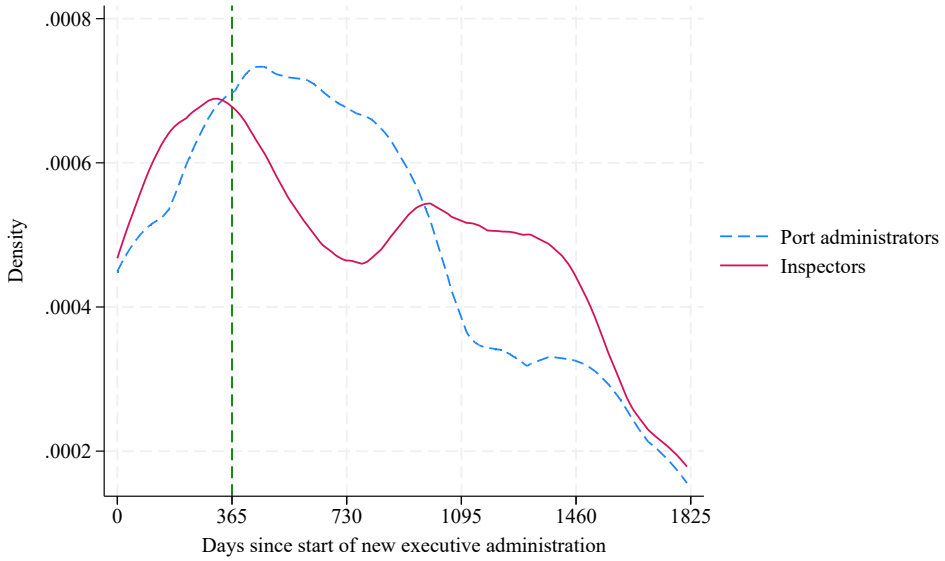
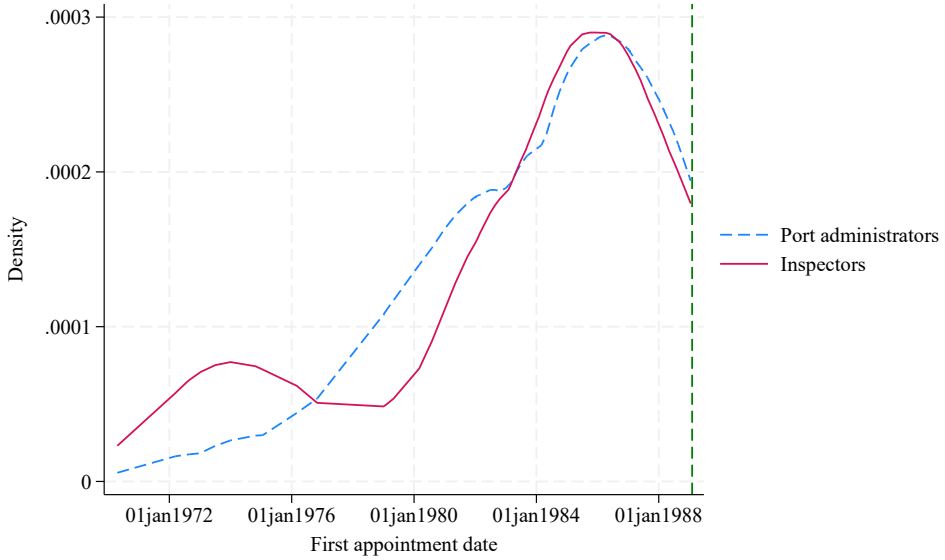


Figure C3: Kernel density plots of first appointment date within executive administrations during democracy for customs officials



Notes: Each plot shows the Epanechnikov kernel density estimates of the first appointment date within executive administrations during democracy for customs officials in the data. A vertical line is drawn at the first year cutoff.

Figure C4: Kernel density plots of first appointment date for customs officials hired during dictatorship



Notes: Each plot shows the Epanechnikov kernel density estimates of the first appointment date during dictatorship for customs officials in the data. A vertical line is drawn at the end of the dictatorship

Table C1: Comparison of patronage and non-patronage officials (excluding dictatorship hires)

(a) Valuation inspectors

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Education level	28	3.43	62	4.47	90	-1.04***
		(0.32)		(0.19)		
College degree	28	0.43	62	0.76	90	-0.33***
		(0.10)		(0.05)		
Age	28	48.79	62	45.08	90	3.71*
		(1.80)		(1.00)		
Political engagement index	28	3.57	62	3.76	90	-0.19
		(0.22)		(0.13)		

(b) Port administrators

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Education level	14	4.57	32	4.53	46	0.04
		(0.40)		(0.28)		
College degree	14	0.79	32	0.75	46	0.04
		(0.11)		(0.08)		
Age	14	51.14	32	50.84	46	0.30
		(1.57)		(1.51)		
Political engagement index	14	5.14	32	4.12	46	1.02**
		(0.52)		(0.19)		

Notes: The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). The "political engagement index" aggregates indicators for various types of political involvement that the customs official has taken part in, which are: (i) being affiliated with the incumbent party, (ii) having been a poll worker in recent elections (2013 or 2018), (iii) having been a poll watcher or party representative in recent elections (2013 or 2018), (iv) having a leadership role in the incumbent Colorado party since 2006, (v) being a local party headquarter (*seccional*) leader (Dosek, 2019; Bandiera et al., 2025) sometime between 2006 and 2022, (vi) being a local representative to party authorities sometime between 2006 and 2022, and (vii) having voted in the most recent general elections for my data's time period (2008, 2013, or 2018), (viii) having been a political candidate, and (ix) being a politician's relative.

Table C2: Comparison of patronage and non-patronage valuation inspectors' survey responses - inspector characteristics, effort, and motivation

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Relatives at customs	27	0.370	34	0.176	61	0.194*
		(0.095)		(0.066)		
Has been promoted	28	0.964	34	0.941	62	0.023
		(0.036)		(0.041)		
Has received a bonus	28	0.821	34	0.853	62	-0.032
		(0.074)		(0.062)		
Has been investigated for misconduct	27	0.259	33	0.182	60	0.077
		(0.086)		(0.068)		
Hours worked	27	43.222	34	44.500	61	-1.278
		(3.085)		(1.892)		
Extra hours worked	28	8.143	32	9.156	60	-1.013
		(0.776)		(0.761)		
Overall satisfaction	29	3.724	34	3.882	63	-0.158
		(0.216)		(0.242)		
Pay satisfaction	29	3.103	34	3.176	63	-0.073
		(0.201)		(0.166)		
Stress	29	2.103	33	1.939	62	0.164
		(0.167)		(0.189)		
Overall motivation	29	3.724	34	3.647	63	0.077
		(0.171)		(0.197)		
Intrinsic motivation for learning	29	3.655	34	3.529	63	0.126
		(0.103)		(0.165)		
Intrisic motivation for challenges	29	4.793	34	4.441	63	0.352
		(0.077)		(0.185)		
Extrinsic motivation for income	29	4.276	34	4.147	63	0.129
		(0.192)		(0.194)		
Extrinsic motivation for financial security	29	2.966	34	3.206	63	-0.240
		(0.182)		(0.132)		
Organizational pride	29	4.448	34	4.382	63	0.066
		(0.117)		(0.104)		

Notes: The questions about satisfaction, stress, motivation, and organizational pride were on a scale from 1 to 5, with 5 indicating greater satisfaction/stress/motivation/pride.

Table C3: Comparison of patronage and non-patronage valuation inspectors' survey responses - inspector promotion and institutional environment (I)

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
How easy to obtain a similar outside option	29	2.517	34	2.676	63	-0.159
		(0.190)		(0.162)		
Promotion prospects	28	4.464	32	4.750	60	-0.286
		(0.233)		(0.168)		
Shipment assignment diversity	29	4.310	34	4.471	63	-0.160
		(0.205)		(0.154)		
Discretion in shipment assigned	29	3.103	33	3.091	62	0.013
		(0.255)		(0.251)		
Belief in inspection channel accuracy	29	3.759	34	3.882	63	-0.124
		(0.246)		(0.214)		
Believe IT support is good	29	4.103	34	4.088	63	0.015
		(0.213)		(0.186)		
Believe training is good	29	3.793	34	3.824	63	-0.030
		(0.125)		(0.099)		
Believe management is good	29	4.621	34	4.647	63	-0.026
		(0.126)		(0.157)		
Believes inspectors lack key information	29	3.690	34	3.176	63	0.513
		(0.217)		(0.217)		
Believes it's useful to speak with brokers	29	3.207	34	3.235	63	-0.028
		(0.182)		(0.174)		
Level of frequency speaking with brokers	29	2.828	34	2.941	63	-0.114
		(0.186)		(0.179)		
Knows risky brokers	29	3.207	33	3.242	62	-0.036
		(0.240)		(0.250)		
Knows risky importers	29	3.379	33	3.364	62	0.016
		(0.224)		(0.249)		

Notes: All questions except the promotion prospects one were on a scale from 1 to 5. The promotion prospects question was on a scale from 1 to 6.

Table C4: Comparison of patronage and non-patronage valuation inspectors' survey responses - institutional environment (II)

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Believes colleagues are honest	29	4.828	34	4.676	63	0.151
		(0.071)		(0.156)		
Believes supervisor is honest	29	3.793	34	3.735	63	0.058
		(0.115)		(0.136)		
Believes documentary inspections are accurate	29	4.276	34	4.029	63	0.246
		(0.156)		(0.209)		
Believes physical inspections are accurate	29	4.276	31	3.935	60	0.340
		(0.156)		(0.222)		
Believes brokers pay bribes	29	2.103	33	1.697	62	0.406
		(0.194)		(0.202)		
Believes importers pay bribes	29	1.862	34	1.588	63	0.274
		(0.190)		(0.185)		
Believes brokers pay bribes more than importers	28	1.964	34	1.706	62	0.258
		(0.202)		(0.209)		
Believes they receive threats	28	2.714	34	2.118	62	0.597*
		(0.229)		(0.206)		
Believes inspector misconduct is penalized	28	4.607	34	4.353	62	0.254
		(0.139)		(0.206)		
Believes they can report misconduct freely to supervisors	28	3.500	34	3.559	62	-0.059
		(0.167)		(0.153)		
Believes they can report misconduct freely anonymously online	27	4.556	33	4.636	60	-0.081
		(0.163)		(0.156)		
Knows customs' risk score system	28	0.571	32	0.719	60	-0.147
		(0.095)		(0.081)		

Notes: All questions except the question about knowing customs' risk score system were on a scale from 1 to 5. The question about knowing customs' risk score is either 1 if they know it and 0 if they do not.

Table C5: Comparison of patronage and non-patronage valuation inspectors' survey responses - risk management system

Variable	(1) Patronage N	(1) Patronage Mean/(SE)	(2) Non-patronage N	(2) Non-patronage Mean/(SE)	(1)-(2) Pairwise t-test N	(1)-(2) Pairwise t-test Mean difference
Believes risk score information would help inspectors	27	2.778	30	2.700	57	0.078
		(0.111)		(0.119)		
Believes importers' fraud history would help inspectors	28	2.643	32	2.594	60	0.049
		(0.117)		(0.126)		
Believes brokers' fraud history would help inspectors	27	2.667	33	2.485	60	0.182
		(0.119)		(0.131)		
Believes shipment financial transaction info would help inspectors	27	2.926	34	2.765	61	0.161
		(0.074)		(0.095)		
Believes unit price info would help inspectors	25	2.520	34	2.588	59	-0.068
		(0.154)		(0.120)		
Believes origin country declaration would help inspectors	26	2.731	33	2.788	59	-0.057
		(0.118)		(0.104)		
Would feel supported with info provision	28	2.857	32	2.688	60	0.170
		(0.099)		(0.114)		
Would feel monitored with info provision	28	2.679	31	2.161	59	0.517**
		(0.137)		(0.168)		
Believes they need more time often	29	2.862	32	2.406	61	0.456*
		(0.184)		(0.173)		
Believes trade facilitation is more important than combating fraud	29	1.586	33	1.545	62	0.041
		(0.153)		(0.145)		
Believes irregular fine exemptions occur	24	0.083	32	0.156	56	-0.073
		(0.058)		(0.065)		

Notes: All questions except the question about needing time more often and whether irregular fine exemptions occur were on a scale from 1 to 3. The question about needing time more often was on a scale from 1 to 4 and the question about irregular fine exemptions was either 1 if they believe they occur or 0 if they do not.

Table C6: Comparison of patronage and non-patronage valuation inspectors' survey responses - varied questions

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Extent of time discounting	26	1.423	31	1.484	57	-0.061
		(0.347)		(0.314)		
How much money they would donate hypothetically	25	132,200.000	30	165,000.000	55	-32,800.000
		(23,169.808)		(28,882.441)		
Importance of their political party community	24	1.458	30	1.600	54	-0.142
		(0.269)		(0.247)		
Importance of their union/labor community	24	3.417	30	3.333	54	0.083
		(0.199)		(0.221)		
Prioritizes revenue collection over own income	25	1.600	29	1.690	54	-0.090
		(0.173)		(0.165)		

Notes: The question about the extent of time discounting went from 1 to 10. The question about how much money they would donate was out of 500,000 Paraguayan Guaranis (PYG), which is around $66 at the exchange rate for August 2024. The question about the importance of their community went from 1 to 5. The question about prioritizing revenue collection was on a scale from 1 to 3.

C.1 Tables with patronage hires using a 1.5-year window for election-cycle hires

Table C7: Patronage hires and customs fraud detected

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector × Patronage administrator	-0.0477	-0.0925**	-0.0369**	-0.0366**	0.0008	-0.0002	-0.0013	-0.0013
	(0.0321)	(0.0362)	(0.0151)	(0.0150)	(0.0039)	(0.0055)	(0.0055)	(0.0054)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2603	0.2618	0.5752	0.5766	0.0216	0.0218	0.0316	0.0317

Notes: All regressions include inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year and a half of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C8: Patronage pairs and suspect assignments

	Binary significant excess inspection share (1)
Patronage inspector	0.0024
× Patronage administrator	(0.0018)
Mean of Dependent Variable	0.0082
Observations	77,955
R^2	0.0394

Notes: The regression includes inspector, administrator, and customs broker fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99$^{\text{th}}$ percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year and a half of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The sample covers all possible non-singleton pairings of valuation inspectors and customs brokers at all semesters and ports.

Table C9: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	0.0089	-0.1213**	-0.0847*	-0.0848*	0.0173**	0.0663***	0.0664***	0.0663***
insp. share	(0.0145)	(0.0538)	(0.0471)	(0.0471)	(0.0077)	(0.0252)	(0.0249)	(0.0250)
Patronage inspector ×	-0.0104	-0.0244**	-0.0170**	-0.0170**	-0.0013	-0.0034	-0.0036	-0.0036
Patronage administrator	(0.0094)	(0.0107)	(0.0084)	(0.0084)	(0.0040)	(0.0057)	(0.0057)	(0.0056)
Patronage inspector ×	-0.0167	-0.0143	-0.0134	-0.0133	-0.0141	-0.0189**	-0.0187**	-0.0184*
Significant excess insp. share	(0.0205)	(0.0217)	(0.0172)	(0.0172)	(0.0095)	(0.0095)	(0.0094)	(0.0094)
Patronage administrator ×	0.0139	0.0075	0.0059	0.0061	-0.0053	-0.0083	-0.0080	-0.0077
Significant excess insp. share	(0.0190)	(0.0199)	(0.0172)	(0.0173)	(0.0089)	(0.0089)	(0.0088)	(0.0087)
Patronage inspector × Patronage	-0.0112	-0.0127	-0.0081	-0.0082	0.0224	0.0274**	0.0267**	0.0265**
administrator × Significant excess insp. share	(0.0273)	(0.0274)	(0.0231)	(0.0231)	(0.0140)	(0.0136)	(0.0134)	(0.0134)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,041	292,033	292,033	292,033	294,041	292,033	292,033	292,033
R^2	0.6667	0.6677	0.7118	0.7118	0.0670	0.0677	0.0745	0.0748

Notes: All regressions include inspector, administrator, and customs broker fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C10: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	0.0094	-0.1106***	-0.0368**	-0.0363**	-0.0019*	0.0105	0.0075	0.0075
	(0.0092)	(0.0347)	(0.0172)	(0.0171)	(0.0011)	(0.0083)	(0.0082)	(0.0083)
Patronage inspector ×	-0.0593*	-0.1081***	-0.0428***	-0.0425***	0.0047	0.0040	0.0027	0.0027
Patronage administrator	(0.0324)	(0.0361)	(0.0152)	(0.0151)	(0.0037)	(0.0053)	(0.0053)	(0.0052)
Patronage inspector ×	0.0171	0.0213	0.0095*	0.0096*	-0.0069**	-0.0080**	-0.0075**	-0.0075**
Workload deviations	(0.0130)	(0.0135)	(0.0057)	(0.0058)	(0.0027)	(0.0031)	(0.0031)	(0.0031)
Patronage administrator ×	0.0161	0.0140	0.0099	0.0106*	-0.0013	-0.0013	-0.0007	-0.0006
Workload deviations	(0.0154)	(0.0148)	(0.0065)	(0.0064)	(0.0014)	(0.0015)	(0.0015)	(0.0015)
Patronage inspector × Patronage	-0.0557***	-0.0463***	-0.0196**	-0.0203***	0.0219***	0.0212***	0.0202***	0.0201***
administrator × Workload deviations	(0.0188)	(0.0176)	(0.0079)	(0.0078)	(0.0057)	(0.0050)	(0.0049)	(0.0049)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2616	0.2643	0.5755	0.5769	0.0256	0.0260	0.0355	0.0357

Notes: All regressions include inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year and a half of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C11: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector × Patronage administrator	-0.1109***	-0.1043*	-0.0714
	(0.0422)	(0.0555)	(0.0520)
Mean of Dependent Variable	13,511,141	13,505,530	13,505,530
HS2-product FE	X	X	X
Interactions w/ insp. char.		X	X
Evasion risk index			X
Observations	79,709	79,589	79,589
Pseudo R^2	0.1659	0.1662	0.3099

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects. Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year and a half of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.2 Balance tables on shipment values

In this Appendix subsection I examine whether the declared shipment values handled by patronage and non-patronage valuation inspectors differ, and whether the baseline regression specification (1) mitigates these imbalances for patronage pairs. Balance table C12 compares the declared values of shipments handled by patronage and non-patronage valuation inspectors. It shows that patronage inspectors tend to inspect goods with higher value and tax liability, which plausibly lead to higher incentives for tax evasion. This is consistent with the results from Chalendard et al. (2023) who find that the most corrupt inspectors (according to their measure of suspect assignments from excess inspections) are assigned to the most lucrative shipments with highest expected tax yield. On the other hand, Table C13 demonstrates that once we run our baseline regression specification (1) with inspector and administrator fixed effects we can observe that patronage pairs do not have shipments with significantly higher value or tax liability.

Table C12: Balance table of shipment values and taxes paid handled by patronage and non-patronage valuation inspectors

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Total taxes paid on shipment (in PYG)	111445	54,863,108 (410,554)	182635	51,624,434 (315,119)	294080	3,238,673***
Total declared CIF value of shipment (in USD)	111445	64,187 (707)	182635	53,285 (431)	294080	10,901***
Total declared FOB value of shipment (in USD)	111445	60,015 (685)	182635	49,321 (415)	294080	10,695***
Total declared freight cost of shipment (in USD)	111445	3,716 (34)	182635	3,621 (23)	294080	95**

Notes:"Taxes paid" refers to the total taxes paid for the shipment in the local currency, Paraguayan Guaranis (PYG). The US Dollar (USD)-PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. "CIF value" refers to the CIF (cost, insurance, and freight) value for the shipment in US dollars.

Table C13: Shipment values and taxes paid on shipments handled by patronage pairs with same baseline regression specification

	Total taxes paid on shipment (in PYG)	Total declared CIF value of shipment (in USD)	Total declared FOB value of shipment (in USD)	Total declared freight cost of shipment (in USD)
	(1)	(2)	(3)	(4)
Patronage inspector × Patronage administrator	-3,630,680 (3,642,550)	-4,259 (7,222)	-4,465 (6,950)	242 (303)
Mean of Dependent Variable	52,774,075	57,248	53,259	3,606
Observations	292,069	292,069	292,069	292,069
R^2	0.0698	0.0699	0.0688	0.0496

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The sample covers red channel shipments.

C.3 Tables controlling for high-value ports

In this Appendix subsection, I additionally control for ports that are highlighted by customs officials as "high-value" ports given the value of goods handled at these ports, and hence opportunities for corruption. These are the *Ciudad del Este* ports (*Ciudad del Este*, *Campestre*, and ALGESA), the airports (Pettirossi, CODESA, and Guarani), and the three main river ports at the time period of my data (*Puerto Seguro Fluvial*, TERPORT, and TERPORT Villeta). The latter three are upstream river ports close to the capital. Tables C14 to C17 show the main results are robust to controlling for these high-value ports.

Table C14: Patronage hires and customs fraud detected

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector × Patronage administrator	-0.0724**	-0.1303***	-0.0363**	-0.0363**	0.0036	0.0045	0.0028	0.0028
	(0.0316)	(0.0352)	(0.0155)	(0.0154)	(0.0038)	(0.0056)	(0.0056)	(0.0056)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2628	0.2648	0.5759	0.5773	0.0217	0.0218	0.0316	0.0318

Notes: All regressions include inspector and administrator fixed effects and control for high-value ports. These are the *Ciudad del Este* ports (*Ciudad del Este*, *Campestre*, and ALGESA), the airports (Pettirossi, CODESA, and Guarani), and the three main river ports at the time period of my data (*Puerto Seguro Fluvial*, TERPORT, and TERPORT Villeta). Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C15: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	0.0153	-0.1186**	-0.0848*	-0.0849*	0.0123**	0.0522**	0.0525**	0.0524**
insp. share	(0.0143)	(0.0487)	(0.0440)	(0.0440)	(0.0059)	(0.0238)	(0.0236)	(0.0236)
Patronage inspector ×	-0.0081	-0.0246**	-0.0110	-0.0110	0.0008	0.0006	0.0004	0.0003
Patronage administrator	(0.0097)	(0.0116)	(0.0091)	(0.0091)	(0.0039)	(0.0057)	(0.0057)	(0.0057)
Patronage inspector ×	-0.0295	-0.0435*	-0.0313*	-0.0312*	-0.0081	-0.0127	-0.0129	-0.0128
Significant excess insp. share	(0.0214)	(0.0236)	(0.0185)	(0.0185)	(0.0099)	(0.0107)	(0.0108)	(0.0108)
Patronage administrator ×	0.0031	-0.0097	-0.0062	-0.0060	-0.0028	-0.0051	-0.0049	-0.0046
Significant excess insp. share	(0.0181)	(0.0185)	(0.0171)	(0.0171)	(0.0075)	(0.0071)	(0.0071)	(0.0070)
Patronage inspector × Patronage	-0.0021	0.0128	0.0060	0.0060	0.0279*	0.0304**	0.0297**	0.0297**
administrator × Significant excess insp. share	(0.0280)	(0.0285)	(0.0244)	(0.0244)	(0.0155)	(0.0151)	(0.0150)	(0.0151)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,041	292,033	292,033	292,033	294,041	292,033	292,033	292,033
R^2	0.6667	0.6677	0.7118	0.7118	0.0671	0.0678	0.0746	0.0749

Notes: All regressions include inspector, administrator, and customs broker fixed effects and also control for high-value ports. These are the *Ciudad del Este* ports (*Ciudad del Este*, *Campestre*, and ALGESA), the airports (Pettirossi, CODESA, and Guarani), and the three main river ports at the time period of my data (*Puerto Seguro Fluvial*, TERPORT, and TERPORT Villeta). Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C16: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	0.0142	-0.0974***	-0.0331*	-0.0326*	-0.0031***	0.0052	0.0023	0.0024
	(0.0094)	(0.0354)	(0.0171)	(0.0171)	(0.0012)	(0.0070)	(0.0069)	(0.0069)
Patronage inspector ×	-0.0808**	-0.1381***	-0.0391**	-0.0392**	0.0071*	0.0075	0.0059	0.0059
Patronage administrator	(0.0317)	(0.0354)	(0.0160)	(0.0158)	(0.0037)	(0.0054)	(0.0054)	(0.0054)
Patronage inspector ×	0.0066	0.0061	0.0018	0.0022	-0.0053*	-0.0060*	-0.0059*	-0.0059*
Workload deviations	(0.0134)	(0.0146)	(0.0071)	(0.0071)	(0.0027)	(0.0033)	(0.0032)	(0.0032)
Patronage administrator ×	0.0104	0.0088	0.0083	0.0088	0.0008	0.0007	0.0012	0.0012
Workload deviations	(0.0143)	(0.0135)	(0.0058)	(0.0058)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Patronage inspector × Patronage	-0.0517***	-0.0389**	-0.0144*	-0.0150*	0.0213***	0.0208***	0.0202***	0.0201***
administrator × Workload deviations	(0.0177)	(0.0172)	(0.0079)	(0.0079)	(0.0053)	(0.0050)	(0.0049)	(0.0049)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2644	0.2672	0.5761	0.5776	0.0262	0.0265	0.0360	0.0362

Notes: All regressions include inspector and administrator fixed effects and also control for high-value ports. These are the *Ciudad del Este* ports (*Ciudad del Este*, *Campestre*, and ALGESA), the airports (Pettirossi, CODESA, and Guarani), and the three main river ports at the time period of my data (*Puerto Seguro Fluvial*, TERPORT, and TERPORT Villeta). Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C17: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector × Patronage administrator	-0.1064**	-0.1074*	-0.0972*
	(0.0415)	(0.0607)	(0.0571)
Mean of Dependent Variable	13,511,141	13,505,530	13,505,530
HS2-product FE	X	X	X
Interactions w/ insp. char.		X	X
Evasion risk index			X
Observations	79,709	79,589	79,589
Pseudo R^2	0.1672	0.1677	0.3105

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects and also control for high-value ports. These are the *Ciudad del Este* ports (*Ciudad del Este*, *Campestre*, and ALGESA), the airports (Pettirossi, CODESA, and Guarani), and the three main river ports at the time period of my data (*Puerto Seguro Fluvial*, TERPORT, and TERPORT Villeta). Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.4 Additional tables on workload deviations

Table C18: Lack of correlation between patronage pairs and workload deviations

	Total shipments in a day (1)	Workload deviations (2)
Patronage inspector × Patronage administrator	0.2667	0.0608
	(0.3922)	(0.0895)
Mean of Dependent Variable	6.6383	0.0039
Observations	292,069	292,069
R^2	0.2669	0.2669

Notes: The regressions include inspector and administrator fixed effects and control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. "Total shipments in a day" refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Workload deviations" is the standardized version (with mean 0 and standard deviation of 1) of "Total shipments in a day." "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C19: Inspectors' workload tally and total shipments per inspector each day

	Inspector workload tally (1)
Total shipments in a day per inspector	0.7051***
	(0.1308)
Mean of Dependent Variable	4.7945
Observations	292,627
R^2	0.3922

Notes: Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the estimated running tally of each inspector's workload: how many shipments inspectors have pending to inspect. "Total shipments in a day per inspector" refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). The sample covers red channel shipments.

Table C20: Balance table of workload handled by patronage and non-patronage valuation inspectors

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Total shipments in a day	111445	6.4020	182635	6.7551	294080	-0.3531***
		(0.0150)		(0.0092)		
Workload deviations	111445	-0.0500	182635	0.0305	294080	-0.0805***
		(0.0034)		(0.0021)		

Notes: "Total shipments in a day" refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Workload deviations" is the standardized version (with mean 0 and standard deviation of 1) of "Total shipments in a day."

Table C21: Balance table of workload handled by patronage and non-patronage valuation inspectors (controlling for port administrator fixed effects)

	(1) Patronage		(2) Non-patronage		(1)-(2) Pairwise t-test	
Variable	N	Mean/(SE)	N	Mean/(SE)	N	Mean difference
Total shipments in a day	111445	6.4020	182635	6.7551	294080	-0.3531
		(0.0150)		(0.0092)		
Workload deviations	111445	-0.0500	182635	0.0305	294080	-0.0805
		(0.0034)		(0.0021)		

Notes: This table is similar to Table C20 except it also controls for port administrator fixed effects on the pairwise regressions. "Total shipments in a day" refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Workload deviations" is the standardized version (with mean 0 and standard deviation of 1) of "Total shipments in a day."

C.5 Tables showing balance among shipments' evasion risk and robustness to the imbalances

Table C22: Tax evasion risk of shipments handled by patronage pairs with same baseline regression specification

	SAS/SGIR-SBR risk score (1)	SAS/SGIR risk score (2)	SBR risk score (3)	Log initial CIF value (4)	Mixed shipment dummy (5)	Differentiated share (6)	Log initial weight (7)	Log weighted avg. initial unit price diff. (8)	Time-sensitive share (9)	Registered during extra hours (10)
Patronage inspector × Patronage administrator	0.4320	3.2016	0.7668	0.0842	-0.0188	-0.0822***	0.1079	0.0560***	0.0271**	0.0084*
	(1.9399)	(3.6260)	(1.8322)	(0.0725)	(0.0174)	(0.0287)	(0.1681)	(0.0202)	(0.0117)	(0.0050)
Mean of Dependent Variable	74.2499	14.9511	80.6459	9.8486	0.4967	0.7972	8.2326	0.0885	0.0949	0.0787
Observations	152,561	152,545	152,545	292,069	292,069	292,069	292,069	292,069	292,069	292,069
R^2	0.1195	0.3985	0.0831	0.1859	0.0579	0.2404	0.5047	0.0156	0.0901	0.0087

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The SAS/SGIR-SBR risk score is the final risk score assigned to the shipment, which takes a weighted average of the SAS/SGIR and the SBR risk score. The SAS/SGIR and SBR risk scores are two different types of evasion risk scores the customs authority uses. The initial CIF value refers to the sum of the product cost, insurance, and freight value as initially declared by the customs broker, which determines the tax base. The mixed shipment dummy takes into account whether the shipment has items belong to different product subheadings (six-digit HS codes). The differentiated share is the share of shipment items that have differentiated products. The initial unit price difference is first determined at the shipment-item level by taking the difference between the initially declared unit price by the customs broker and the median unit price for the same product code among all imports in the Paraguayan customs data. The weighted average at the shipment level is determined by using the shipment items' physical weights when taking the weighted average. The time-sensitive share corresponds to the proportion of items within a shipment that are time-sensitive according to the classification of Hummels and Schaur (2013). Registered during extra hours indicates that the shipment was registered at customs outside of normal port hours. The sample for Columns (1)-(3) covers red channel shipments which had a customs risk score assigned. Shipments that are assigned to the red channel based on legislation do not get assigned a risk score as this motive suffices for an inspection. The sample for the remaining columns includes all red channel shipments.

Table C23: Patronage hires and customs fraud detected

	Fraud detected by inspector			Fraud detected by PCA, but not inspector		
	(1)	(2)	(3)	(4)	(5)	(6)
Patronage inspector × Patronage administrator	-0.1294***	-0.0356**	-0.0288**	0.0045	0.0028	0.0028
	(0.0349)	(0.0155)	(0.0144)	(0.0056)	(0.0056)	(0.0056)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148
HS2-product FE		X	X		X	X
Evasion risk covariates			X			X
Observations	292,069	292,069	292,069	292,069	292,069	292,069
R^2	0.2628	0.5751	0.5885	0.0218	0.0316	0.0348

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk covariates" consist of tax evasion risk variables that are imbalanced between patronage and non-patronage pairs, they are described as follows. The differentiated share is the share of shipment items that have differentiated products. The initial unit price difference is first determined at the shipment-item level by taking the difference between the initially declared unit price by the customs broker and the median unit price for the same product code among all imports in the Paraguayan customs data. The weighted average at the shipment level is determined by using the shipment items' physical weights when taking the weighted average. The time-sensitive share corresponds to the proportion of items within a shipment that are time-sensitive according to the classification of Hummels and Schaur (2013). Registered during extra hours indicates that the shipment was registered at customs outside of normal port hours. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C24: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	-0.1187**	-0.1179**	-0.0833*	-0.0952**	0.0539**	0.0525**	0.0530**	0.0541**
insp. share	(0.0489)	(0.0488)	(0.0442)	(0.0432)	(0.0240)	(0.0238)	(0.0236)	(0.0232)
Patronage inspector ×	-0.0237**	-0.0245**	-0.0106	-0.0092	0.0027	0.0006	0.0005	0.0005
Patronage administrator	(0.0114)	(0.0115)	(0.0091)	(0.0088)	(0.0056)	(0.0057)	(0.0057)	(0.0057)
Patronage inspector ×	-0.0351**	-0.0429*	-0.0301	-0.0321*	0.0058	-0.0124	-0.0126	-0.0125
Significant excess insp. share	(0.0166)	(0.0237)	(0.0185)	(0.0181)	(0.0082)	(0.0107)	(0.0108)	(0.0107)
Patronage administrator ×		-0.0092	-0.0050	-0.0057		-0.0048	-0.0045	-0.0046
Significant excess insp. share		(0.0185)	(0.0172)	(0.0170)		(0.0071)	(0.0071)	(0.0070)
Patronage inspector × Patronage		0.0123	0.0048	0.0104		0.0301**	0.0293*	0.0285*
administrator × Significant excess insp. share		(0.0286)	(0.0246)	(0.0240)		(0.0151)	(0.0150)	(0.0147)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
HS2-product FE			X	X			X	X
Evasion risk covariates				X				X
Observations	292,033	292,033	292,033	292,033	292,033	292,033	292,033	292,033
R^2	0.6677	0.6677	0.7118	0.7151	0.0675	0.0677	0.0745	0.0771

Notes: All regressions include inspector, administrator, and customs broker fixed effects. All regressions control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk covariates" consist of tax evasion risk variables that are imbalanced between patronage and non-patronage pairs, they are described as follows. The differentiated share is the share of shipment items that have differentiated products. The initial unit price difference is first determined at the shipment-item level by taking the difference between the initially declared unit price by the customs broker and the median unit price for the same product code among all imports in the Paraguayan customs data. The weighted average at the shipment level is determined by using the shipment items' physical weights when taking the weighted average. The time-sensitive share corresponds to the proportion of items within a shipment that are time-sensitive according to the classification of Hummels and Schaur (2013). Registered during extra hours indicates that the shipment was registered at customs outside of normal port hours. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C25: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	-0.1079***	-0.1005***	-0.0347**	-0.0342**	0.0151	0.0051	0.0022	0.0019
	(0.0334)	(0.0348)	(0.0168)	(0.0162)	(0.0111)	(0.0070)	(0.0069)	(0.0067)
Patronage inspector ×	-0.1308***	-0.1372***	-0.0384**	-0.0317**	0.0039	0.0076	0.0059	0.0058
Patronage administrator	(0.0350)	(0.0352)	(0.0159)	(0.0149)	(0.0055)	(0.0054)	(0.0054)	(0.0054)
Patronage inspector ×	-0.0228**	0.0056	0.0014	0.0018	0.0098**	-0.0061*	-0.0060*	-0.0057*
Workload deviations	(0.0102)	(0.0145)	(0.0071)	(0.0068)	(0.0043)	(0.0033)	(0.0032)	(0.0032)
Patronage administrator ×		0.0109	0.0095	0.0099*		0.0008	0.0013	0.0014
Workload deviations		(0.0137)	(0.0059)	(0.0057)		(0.0014)	(0.0014)	(0.0014)
Patronage inspector × Patronage		-0.0397**	-0.0149*	-0.0160**		0.0208***	0.0202***	0.0197***
administrator × Workload deviations		(0.0173)	(0.0080)	(0.0075)		(0.0050)	(0.0049)	(0.0048)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
HS2-product FE			X	X			X	X
Evasion risk covariates				X				X
Observations	292,069	292,069	292,069	292,069	292,069	292,069	292,069	292,069
R^2	0.2650	0.2653	0.5755	0.5888	0.0242	0.0265	0.0360	0.0391

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk covariates" consist of tax evasion risk variables that are imbalanced between patronage and non-patronage pairs, they are described as follows. The differentiated share is the share of shipment items that have differentiated products. The initial unit price difference is first determined at the shipment-item level by taking the difference between the initially declared unit price by the customs broker and the median unit price for the same product code among all imports in the Paraguayan customs data. The weighted average at the shipment level is determined by using the shipment items' physical weights when taking the weighted average. The time-sensitive share corresponds to the proportion of items within a shipment that are time-sensitive according to the classification of Hummels and Schaur (2013). Registered during extra hours indicates that the shipment was registered at customs outside of normal port hours. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C26: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected	
	(1)	(2)
Patronage inspector × Patronage administrator	-0.1080*	-0.1079*
	(0.0618)	(0.0618)
Mean of Dependent Variable	13,505,530	13,505,530
HS2-product FE	X	X
Evasion risk covariates		X
Observations	79,589	79,589
Pseudo R^2	0.1662	0.1679

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk covariates" consist of tax evasion risk variables that are imbalanced between patronage and non-patronage pairs, they are described as follows. The differentiated share is the share of shipment items that have differentiated products. The initial unit price difference is first determined at the shipment-item level by taking the difference between the initially declared unit price by the customs broker and the median unit price for the same product code among all imports in the Paraguayan customs data. The weighted average at the shipment level is determined by using the shipment items' physical weights when taking the weighted average. The time-sensitive share corresponds to the proportion of items within a shipment that are time-sensitive according to the classification of Hummels and Schaur (2013). Registered during extra hours indicates that the shipment was registered at customs outside of normal port hours. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.6 Tables looking at fraud value on all shipments

Table C27: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector × Patronage administrator	-0.0979	-0.1369	-0.1456*
	(0.0637)	(0.0903)	(0.0804)
Mean of Dependent Variable	3,790,575	3,796,102	3,796,102
HS2-product FE	X	X	X
Interactions w/ insp. char.		X	X
Evasion risk index			X
Observations	293,753	291,794	291,794
Pseudo R^2	0.4504	0.4507	0.4977

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects. Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments.

C.7 Tables controlling for low-capacity interactions

In this Appendix subsection, I additionally control for inspectors and administrators having low capacity with other independent variables. In particular, I proxy for low capacity as having a below-median education, which is a college degree for both inspectors and administrators. Table C28 runs the baseline specification while also controlling for a "low-capacity pair." Table C29 controls for low-capacity pairs, interactions between significant excess inspection shares and low-capacity inspectors and administrators respectively, and their triple interaction. Table C30 has a similar specification with workload deviations instead. Finally, Table C31 also controls for low-capacity pairs. Overall, all the main coefficients retain their magnitude and significance as in the main results, ruling out a pure low-capacity channel and showing the effect of patronage pairs goes beyond their lower qualifications.

Table C28: Patronage hires and customs fraud detected

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector × Patronage administrator	-0.0760**	-0.1280***	-0.0346**	-0.0345**	0.0042	0.0043	0.0026	0.0027
	(0.0318)	(0.0350)	(0.0153)	(0.0152)	(0.0038)	(0.0056)	(0.0056)	(0.0056)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Low-capacity interactions	X	X	X	X	X	X	X	X
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2612	0.2631	0.5753	0.5767	0.0217	0.0218	0.0316	0.0318

Notes: All regressions include inspector and administrator fixed effects and control for low-capacity pairs (as proxied by both the inspector and administrator having below-median education). Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C29: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	0.0172	-0.2255***	-0.1767**	-0.1765**	0.0102*	0.0796***	0.0827***	0.0830***
insp. share	(0.0173)	(0.0863)	(0.0841)	(0.0840)	(0.0061)	(0.0272)	(0.0271)	(0.0270)
Patronage inspector ×	-0.0103	-0.0240**	-0.0101	-0.0102	0.0012	0.0006	0.0004	0.0003
Patronage administrator	(0.0097)	(0.0114)	(0.0090)	(0.0090)	(0.0038)	(0.0058)	(0.0058)	(0.0057)
Patronage inspector ×	-0.0243	-0.0460*	-0.0328*	-0.0327*	-0.0137	-0.0117	-0.0118	-0.0117
Significant excess insp. share	(0.0227)	(0.0240)	(0.0190)	(0.0190)	(0.0100)	(0.0107)	(0.0108)	(0.0108)
Patronage administrator ×	0.0018	-0.0108	-0.0065	-0.0064	-0.0026	-0.0044	-0.0041	-0.0038
Significant excess insp. share	(0.0198)	(0.0187)	(0.0175)	(0.0175)	(0.0074)	(0.0071)	(0.0070)	(0.0070)
Patronage inspector × Patronage	-0.0014	0.0143	0.0066	0.0066	0.0282*	0.0296*	0.0288*	0.0288*
administrator × Significant excess insp. share	(0.0284)	(0.0287)	(0.0249)	(0.0249)	(0.0152)	(0.0151)	(0.0150)	(0.0151)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Low-capacity interactions	X	X	X	X	X	X	X	X
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,041	292,033	292,033	292,033	294,041	292,033	292,033	292,033
R^2	0.6668	0.6678	0.7118	0.7118	0.0672	0.0677	0.0746	0.0749

Notes: All regressions include inspector, administrator, and customs broker fixed effects. They also control for low-capacity pairs (as proxied by both the inspector and administrator having below-median education), interactions between significant excess inspection shares and low-capacity inspectors and administrators respectively, and their triple interaction. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C30: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	0.0329***	-0.1824**	-0.0940**	-0.0936**	-0.0036***	0.0097	0.0076	0.0077
	(0.0110)	(0.0801)	(0.0373)	(0.0375)	(0.0013)	(0.0103)	(0.0100)	(0.0099)
Patronage inspector ×	-0.0851***	-0.1354***	-0.0371**	-0.0372**	0.0078**	0.0074	0.0057	0.0057
Patronage administrator	(0.0318)	(0.0352)	(0.0158)	(0.0157)	(0.0036)	(0.0054)	(0.0054)	(0.0054)
Patronage inspector ×	0.0120	0.0052	0.0011	0.0016	-0.0066**	-0.0060*	-0.0059*	-0.0059*
Workload deviations	(0.0143)	(0.0142)	(0.0069)	(0.0069)	(0.0031)	(0.0033)	(0.0032)	(0.0032)
Patronage administrator ×	0.0026	0.0097	0.0086	0.0091	0.0007	0.0009	0.0014	0.0014
Workload deviations	(0.0146)	(0.0137)	(0.0059)	(0.0059)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Patronage inspector × Patronage	-0.0400**	-0.0398**	-0.0150*	-0.0156**	0.0213***	0.0208***	0.0202***	0.0201***
administrator × Workload deviations	(0.0185)	(0.0169)	(0.0077)	(0.0077)	(0.0051)	(0.0050)	(0.0049)	(0.0049)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Low-capacity interactions	X	X	X	X	X	X	X	X
Interactions w/ insp. char.		X	X	X		X	X	X
HS2-product FE			X	X			X	X
Evasion risk index				X				X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2638	0.2656	0.5756	0.5771	0.0263	0.0265	0.0360	0.0362

Notes: All regressions include inspector and administrator fixed effects. They also control for low-capacity pairs (as proxied by both the inspector and administrator having below-median education), interactions between workload deviations and low-capacity inspectors and administrators respectively, and their triple interaction. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C31: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector × Patronage administrator	-0.1112***	-0.1089*	-0.0983*
	(0.0425)	(0.0622)	(0.0578)
Mean of Dependent Variable	13,511,141	13,505,530	13,505,530
Low-capacity interactions	X	X	X
HS2-product FE	X	X	X
Interactions w/ insp. char.		X	X
Evasion risk index			X
Observations	79,709	79,589	79,589
Pseudo R^2	0.1659	0.1662	0.3099

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects and control for low-capacity pairs (as proxied by both the inspector and administrator having below-median education). Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.8 Tables using other types of affinity matches

In this Appendix subsection, we replace patronage pairs with alternative affinity measures—specifically, shared gender and age similarity (defined as an age gap of at most 10 years)—as regressors in the main specifications. Same-gender pairs account for 59.1% and age-similar pairs for 52% of red channel shipments. The results show that these alternative affinities either have weaker effects or go in the opposite direction compared to patronage ties. This contrast underscores the distinctive role of patronage in shaping inspector-supervisor interactions.

Table C32: Same-gender pairs and customs fraud detected

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Same-gender pair	0.1177***	0.0028
	(0.0389)	(0.0023)
Mean of Dependent Variable	0.2725	0.0148
Observations	292,069	292,069
R^2	0.2641	0.0218

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. "Same-gender pairs" identifies inspectors and administrators working on a shipment with the same gender. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C33: Same-gender pairs and suspect assignments

	Binary significant excess inspection share (1)
Same-gender pair	0.0021*
	(0.0012)
Mean of Dependent Variable	0.0082
Observations	77,955
R^2	0.0394

Notes: The regression includes inspector, administrator, and customs broker fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. "Same-gender pairs" identifies inspectors and administrators working on a shipment with the same gender. The sample covers all possible non-singleton pairings of valuation inspectors and customs brokers at all semesters and ports.

Table C34: Customs fraud detected, same-gender pairs, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Significant excess insp. share	-0.1205**	-0.1170**	0.0534**	0.0436*
	(0.0489)	(0.0476)	(0.0240)	(0.0233)
Same-gender pair	0.0213**	0.0217**	0.0049**	0.0036*
	(0.0091)	(0.0092)	(0.0022)	(0.0022)
Patronage inspector × Significant excess insp. share	-0.0358**	-0.0367**	0.0060	0.0087
	(0.0167)	(0.0168)	(0.0082)	(0.0086)
Patronage administrator × Significant excess insp. share		-0.0050		0.0053
		(0.0131)		(0.0066)
Same-gender pair × Significant excess insp. share		-0.0048		0.0173***
		(0.0138)		(0.0062)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,033	292,033	292,033	292,033
R^2	0.6677	0.6677	0.0676	0.0678

Notes: All regressions include inspector, administrator, and customs broker fixed effects. All regressions control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99$^{\text{th}}$ percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C35: Same-gender pairs, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.1051***	-0.1004***	0.0150	-0.0010
	(0.0324)	(0.0363)	(0.0110)	(0.0077)
Same-gender pair	0.1147***	0.1147***	0.0034	0.0045**
	(0.0384)	(0.0385)	(0.0022)	(0.0022)
Patronage inspector ×	-0.0260**	-0.0252**	0.0099**	0.0091***
Workload deviations	(0.0105)	(0.0108)	(0.0043)	(0.0034)
Patronage administrator ×		-0.0054		0.0095***
Workload deviations		(0.0095)		(0.0024)
Same-gender pair ×		0.0005		0.0063***
Workload deviations		(0.0107)		(0.0021)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,069	292,069	292,069	292,069
R^2	0.2660	0.2661	0.0242	0.0257

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. "Same-gender pairs" identifies inspectors and administrators working on a shipment with the same gender. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C36: Same-gender pairs and customs fraud value detected by valuation inspectors

	Fraud value detected
	(1)
Same-gender pair	0.0555
	(0.0374)
Mean of Dependent Variable	13,505,530
HS2-product FE	X
Observations	79,589
Pseudo R^2	0.1662

Notes: The table runs a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regression includes inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regression controls for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made. "Same-gender pairs" identifies inspectors and administrators working on a shipment with the same gender. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

Table C37: Similar age pairs and customs fraud detected

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Similar age pair	-0.0736***	-0.0017
	(0.0185)	(0.0022)
Mean of Dependent Variable	0.2725	0.0148
Observations	292,069	292,069
R^2	0.2635	0.0218

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. "Similar age pairs" identifies inspectors and administrators working on a shipment with a similar age, defined as having an age gap of at most 10 years. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C38: Similar age pairs and suspect assignments

	Binary significant excess inspection share (1)
Similar age pair	0.0016*
	(0.0009)
Mean of Dependent Variable	0.0082
Observations	77,955
R^2	0.0394

Notes: The regression includes inspector, administrator, and customs broker fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. "Similar age pairs" identifies inspectors and administrators working on a shipment with a similar age, defined as having an age gap of at most 10 years. The sample covers all possible non-singleton pairings of valuation inspectors and customs brokers at all semesters and ports.

Table C39: Customs fraud detected, similar age pairs, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Significant excess insp. share	-0.1163**	-0.1171**	0.0542**	0.0564**
	(0.0489)	(0.0483)	(0.0241)	(0.0225)
Similar age pair	-0.0185***	-0.0178***	-0.0025	-0.0037
	(0.0047)	(0.0048)	(0.0022)	(0.0024)
Patronage inspector × Significant excess insp. share	-0.0359**	-0.0362**	0.0060	0.0063
	(0.0167)	(0.0167)	(0.0082)	(0.0080)
Patronage administrator × Significant excess insp. share		-0.0066		0.0067
		(0.0133)		(0.0066)
Similar age pair × Significant excess insp. share		-0.0106		0.0185***
		(0.0135)		(0.0061)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,033	292,033	292,033	292,033
R^2	0.6678	0.6678	0.0676	0.0678

Notes: All regressions include inspector, administrator, and customs broker fixed effects. All regressions control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99$^{\text{th}}$ percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C40: Similar age pairs, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.1078***	-0.1054***	0.0149	0.0058
	(0.0321)	(0.0315)	(0.0110)	(0.0079)
Similar age pair	-0.0738***	-0.0781***	-0.0023	-0.0017
	(0.0182)	(0.0186)	(0.0022)	(0.0021)
Patronage inspector ×	-0.0286***	-0.0245**	0.0099**	0.0079**
Workload deviations	(0.0107)	(0.0108)	(0.0043)	(0.0032)
Patronage administrator ×		-0.0032		0.0097***
Workload deviations		(0.0095)		(0.0024)
Similar age pair ×		-0.0290**		0.0044*
Workload deviations		(0.0117)		(0.0023)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,069	292,069	292,069	292,069
R^2	0.2656	0.2662	0.0242	0.0255

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. "Similar age pairs" identifies inspectors and administrators working on a shipment with a similar age, defined as having an age gap of at most 10 years. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C41: Similar age pairs and customs fraud value detected by valuation inspectors

	Fraud value detected
	(1)
Similar age pair	0.0081
	(0.0249)
Mean of Dependent Variable	13,505,530
HS2-product FE	X
Observations	79,589
Pseudo R^2	0.1660

Notes: The table runs a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regression includes inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regression controls for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made. "Similar age pairs" identifies inspectors and administrators working on a shipment with a similar age, defined as having an age gap of at most 10 years. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.9 Tables analyzing tenure heterogeneity

Table C42 evaluates the fraud detection for pairings of distinct patronage types. Panel A focuses on pairings where the inspector is an electoral patronage hire and the administrator is a dictatorship hire, while Panel B examines the reverse pairing, with the inspector as a dictatorship hire and the administrator as an electoral patronage hire. The results in both panels align with those in Table 2. Specifically, in column (1), both panels show that these pairings are associated with significantly lower customs fraud detection. Similarly, in column (2), the pairings exhibit positive coefficients implying fraud detected by the PCA team (but not the port inspector), yet the wide standard errors render these coefficients statistically insignificant.

Table C42: Distinct patronage types and customs fraud detected

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Panel A: Electoral patronage inspector & Dictatorship administrator		
Electoral patronage inspector × Dictatorship administrator	-0.0774*	0.0006
	(0.0397)	(0.0045)
Mean of Dependent Variable	0.2725	0.0148
Observations	292,069	292,069
R^2	0.2620	0.0218
	(1)	(2)
Panel B: Dictatorship inspector & Electoral patronage administrator		
Dictatorship inspector × Electoral patronage administrator	-0.1363**	0.0087
	(0.0560)	(0.0079)
Mean of Dependent Variable	0.2725	0.0148
Observations	292,069	292,069
R^2	0.2651	0.0218

Notes: All regressions include inspector and administrator fixed effects. All regressions in Panel A control for interactions of the dictatorship administrator indicator with: (1) inspector education and (2) inspector age. All regressions in Panel B control for interactions of the electoral patronage administrator indicator with: (1) inspector education and (2) inspector age. The electoral patronage and dictatorship inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start. Dictatorship hires are those that joined during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Next, I examine whether officials' tenure (their employment duration) is significantly associated with fraud detection. Table C43 analyzes the interaction between inspectors' tenure and patronage inspectors and/or administrators in relation to fraud detection. In column (2), only the coefficient for patronage pairs is significant, while none of the coefficients involving inspector tenure are. In column (4), two coefficients involving inspector tenure are significant, but they have opposite signs, such that patronage pairs with inspectors having longer tenure tend to have slightly more undetected fraud that is later uncovered by the PCA team.

Table C43: Patronage hires, customs fraud detected and inspector tenure

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Inspector tenure	-0.0863	-0.1117	0.0574	0.0615
	(0.4169)	(0.4145)	(0.0531)	(0.0534)
Patronage inspector ×	-0.1316***	-0.1446***	0.0028	0.0036
Patronage administrator	(0.0350)	(0.0378)	(0.0052)	(0.0052)
Patronage inspector ×	0.0054	0.0167	-0.0067	-0.0125
Inspector tenure	(0.1507)	(0.1468)	(0.0236)	(0.0241)
Patronage administrator ×		0.0362		-0.0090**
Inspector tenure		(0.0339)		(0.0041)
Patronage inspector × Patronage		-0.0089		0.0098**
administrator × Inspector tenure		(0.0335)		(0.0049)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,069	292,069	292,069	292,069
R^2	0.2643	0.2645	0.0235	0.0237

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and inspector tenure with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Inspector tenure' is standardized and refers to how long the inspector has been at customs by taking into account the date difference between the inspectors' first appointment and the date of the shipment inspection. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

C.10 Table analyzing concurrent hires

I examine whether the performance patterns observed for patronage hires are amplified when inspectors and port administrators are concurrent hires (i.e., if both were appointed by same executive administration). As individuals hired under the same administration likely belong to the same political faction, this measure serves as a rough proxy for shared factional affiliation within their party.[67] Identifying concurrent hires captures cohort dynamics (Bandiera et al., 2009). Columns (1)-(2) show concurrent hires are associated with lower customs fraud detection. Columns (3)-(4), show no significant relationship between concurrent hires and fraud detection by the PCA team.

Table C44: Patronage hires, customs fraud detected and concurrent hires

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Concurrent hires	-0.1077**	-0.0895**	-0.0176	-0.0135
	(0.0466)	(0.0437)	(0.0124)	(0.0133)
Patronage inspector ×	-0.0204*	-0.0249**	0.0019	0.0009
Patronage administrator	(0.0109)	(0.0119)	(0.0059)	(0.0067)
Patronage inspector ×	-0.0271*	-0.0425	0.0000	-0.0061
Concurrent hires	(0.0150)	(0.0297)	(0.0040)	(0.0073)
Patronage administrator ×		-0.0170		0.0018
Concurrent hires		(0.0146)		(0.0050)
Patronage inspector × Patronage		0.0299		0.0078
administrator × Concurrent hires		(0.0361)		(0.0092)
Mean of Dependent Variable	0.2725	0.2725	0.0148	0.0148
Observations	292,033	292,033	292,033	292,033
R^2	0.6680	0.6680	0.0669	0.0669

Notes: All regressions include inspector and administrator fixed effects. "Concurrent hires" is a variable equal to 1 when the inspector and administrator were hired during the same executive administration. All regressions control for interactions of the patronage administrator indicator and concurrent hires with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

[67] While I have data on Paraguayans' partisanship, no comparable data exist on intra-party faction membership. Factional alignment is also fluid in Paraguay and shifts with changes in power (Última Hora, 2007, 2017, 2022).

C.11 Additional tables showing columns without inspector and administrator FEs

Table C45: Patronage hires and customs fraud detected

	Fraud detected by inspector			Fraud detected by PCA, but not inspector		
	(1)	(2)	(3)	(4)	(5)	(6)
Patronage inspector	0.0559			0.0051		
	(0.0492)			(0.0053)		
Patronage administrator	-0.3641***			0.0092		
	(0.1322)			(0.0103)		
Patronage inspector × Patronage administrator	-0.1548**	-0.1294***	-0.0356**	-0.0011	0.0045	0.0028
	(0.0624)	(0.0349)	(0.0155)	(0.0061)	(0.0056)	(0.0056)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148
Inspector FE		X	X		X	X
Administrator FE		X	X		X	X
HS2-product FE			X			X
Observations	292,071	292,069	292,069	292,071	292,069	292,069
R^2	0.0253	0.2628	0.5751	0.0012	0.0218	0.0316

Notes: "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects in columns (2)-(3) and (5)-(6). Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C46: Patronage pairs and suspect assignments

	Binary significant excess inspection share	
	(1)	(2)
Patronage inspector	-0.0019	
	(0.0012)	
Patronage administrator	0.0006	
	(0.0014)	
Patronage inspector	0.0006	0.0031*
× Patronage administrator	(0.0018)	(0.0018)
Mean of Dependent Variable	0.0082	0.0082
Inspector FE		X
Administrator FE		X
Observations	77,958	77,955
R^2	0.0196	0.0394

Notes: The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects in column (2). Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99th percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The sample covers all possible non-singleton pairings of valuation inspectors and customs brokers at all semesters and ports.

Table C47: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector	-0.0063				0.0061			
	(0.0087)				(0.0050)			
Patronage administrator	-0.0161				-0.0097			
	(0.0290)				(0.0091)			
Significant excess	-0.1143**	-0.1187**	-0.1179**	-0.0833*	0.0430*	0.0539**	0.0525**	0.0530**
insp. share	(0.0548)	(0.0489)	(0.0488)	(0.0442)	(0.0223)	(0.0240)	(0.0238)	(0.0236)
Patronage inspector ×	-0.0013	-0.0237**	-0.0245**	-0.0106	-0.0061	0.0027	0.0006	0.0005
Patronage administrator	(0.0133)	(0.0114)	(0.0115)	(0.0091)	(0.0056)	(0.0056)	(0.0057)	(0.0057)
Patronage inspector ×	-0.0124	-0.0351**	-0.0429*	-0.0301	0.0080	0.0058	-0.0124	-0.0126
Significant excess insp. share	(0.0167)	(0.0166)	(0.0237)	(0.0185)	(0.0080)	(0.0082)	(0.0107)	(0.0108)
Patronage administrator ×			-0.0092	-0.0050			-0.0048	-0.0045
Significant excess insp. share			(0.0185)	(0.0172)			(0.0071)	(0.0071)
Patronage inspector × Patronage			0.0123	0.0048			0.0301**	0.0293*
administrator × Significant excess insp. share			(0.0286)	(0.0246)			(0.0151)	(0.0150)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Inspector FE		X	X	X		X	X	X
Administrator FE		X	X	X		X	X	X
HS2-product FE				X				X
Observations	292,035	292,033	292,033	292,033	292,035	292,033	292,033	292,033
R^2	0.6536	0.6677	0.6677	0.7118	0.0508	0.0675	0.0677	0.0745

Notes: All regressions include customs broker fixed effects. "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. All regressions control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects in columns (2)-(4) and (6)-(8). Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C48: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector	0.0573				0.0044			
	(0.0480)				(0.0053)			
Patronage administrator	-0.3474***				0.0068			
	(0.1301)				(0.0092)			
Workload deviations	-0.2706***	-0.1079***	-0.1005***	-0.0347**	0.0040	0.0151	0.0051	0.0022
	(0.0665)	(0.0334)	(0.0348)	(0.0168)	(0.0128)	(0.0111)	(0.0070)	(0.0069)
Patronage inspector ×	-0.1493**	-0.1308***	-0.1372***	-0.0384**	-0.0003	0.0039	0.0076	0.0059
Patronage administrator	(0.0616)	(0.0350)	(0.0352)	(0.0159)	(0.0058)	(0.0055)	(0.0054)	(0.0054)
Patronage inspector ×	-0.0010	-0.0228**	0.0056	0.0014	0.0087	0.0098**	-0.0061*	-0.0060*
Workload deviations	(0.0205)	(0.0102)	(0.0145)	(0.0071)	(0.0055)	(0.0043)	(0.0033)	(0.0032)
Patronage administrator ×			0.0109	0.0095			0.0008	0.0013
Workload deviations			(0.0137)	(0.0059)			(0.0014)	(0.0014)
Patronage inspector × Patronage			-0.0397**	-0.0149*			0.0208***	0.0202***
administrator × Workload deviations			(0.0173)	(0.0080)			(0.0050)	(0.0049)
Mean of Dependent Variable	0.2725	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
Inspector FE		X	X	X		X	X	X
Administrator FE		X	X	X		X	X	X
HS2-product FE				X				X
Observations	292,071	292,069	292,069	292,069	292,071	292,069	292,069	292,069
R^2	0.0324	0.2650	0.2653	0.5755	0.0041	0.0242	0.0265	0.0360

Notes: "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects in columns (2)-(4) and (6)-(8). Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C49: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected	
	(1)	(2)
Patronage inspector	0.0960	
	(0.1015)	
Patronage administrator	0.5938**	
	(0.2449)	
Patronage inspector ×	-0.1939	-0.1080*
Patronage administrator	(0.1211)	(0.0618)
Mean of Dependent Variable	13,505,465	13,505,530
Inspector FE		X
Administrator FE		X
HS2-product FE	X	X
Observations	79,590	79,589
Pseudo R^2	0.0494	0.1662

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include product chapter (HS 2-digit code) fixed effects. The regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects in column (2). Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment . Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.12 Main results showing all coefficients (including covariates)

Table C50: Patronage hires and customs fraud detected

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patronage inspector ×	-0.0705**	-0.1294***	-0.0356**	-0.0356**	0.0036	0.0045	0.0028	0.0028
Patronage administrator	(0.0317)	(0.0349)	(0.0155)	(0.0153)	(0.0038)	(0.0056)	(0.0056)	(0.0055)
Patronage administrator ×		-0.0029	-0.0043	-0.0042		0.0006	0.0008	0.0008
Inspector education level		(0.0092)	(0.0039)	(0.0039)		(0.0014)	(0.0014)	(0.0014)
Patronage administrator ×		0.0058***	0.0020***	0.0020***		0.0000	0.0001	0.0001
Inspector age		(0.0016)	(0.0007)	(0.0007)		(0.0002)	(0.0002)	(0.0002)
Evasion risk index				0.0204***				0.0020***
				(0.0028)				(0.0006)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
HS2-product FE			X	X			X	X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2608	0.2628	0.5751	0.5766	0.0217	0.0218	0.0316	0.0317

Notes: All regressions include inspector and administrator fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C51: Customs fraud detected, patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Significant excess	0.0149	-0.1179**	-0.0833*	-0.0833*	0.0121**	0.0525**	0.0530**	0.0529**
insp. share	(0.0143)	(0.0488)	(0.0442)	(0.0442)	(0.0059)	(0.0238)	(0.0236)	(0.0236)
Patronage inspector ×	-0.0079	-0.0245**	-0.0106	-0.0107	0.0009	0.0006	0.0005	0.0004
Patronage administrator	(0.0097)	(0.0115)	(0.0091)	(0.0091)	(0.0039)	(0.0057)	(0.0057)	(0.0057)
Patronage inspector ×	-0.0291	-0.0429*	-0.0301	-0.0300	-0.0079	-0.0124	-0.0126	-0.0124
Significant excess insp. share	(0.0214)	(0.0237)	(0.0185)	(0.0185)	(0.0099)	(0.0107)	(0.0108)	(0.0108)
Patronage administrator ×	0.0036	-0.0092	-0.0050	-0.0049	-0.0026	-0.0048	-0.0045	-0.0043
Significant excess insp. share	(0.0181)	(0.0185)	(0.0172)	(0.0172)	(0.0075)	(0.0071)	(0.0071)	(0.0070)
Patronage inspector × Patronage	-0.0026	0.0123	0.0048	0.0048	0.0276*	0.0301**	0.0293*	0.0293*
administrator × Significant excess insp. share	(0.0280)	(0.0286)	(0.0246)	(0.0246)	(0.0155)	(0.0151)	(0.0150)	(0.0151)
Evasion risk index				0.0014				0.0028***
				(0.0016)				(0.0006)
Patronage administrator ×		-0.0033	-0.0033	-0.0034		0.0012	0.0012	0.0012
Inspector education level		(0.0029)	(0.0022)	(0.0022)		(0.0014)	(0.0014)	(0.0014)
Patronage administrator ×		0.0012**	0.0008*	0.0008*		0.0002	0.0002	0.0002
Inspector age		(0.0006)	(0.0004)	(0.0004)		(0.0002)	(0.0002)	(0.0002)
Significant excess insp. share ×		0.0092*	0.0065	0.0065		-0.0051**	-0.0052**	-0.0052**
Inspector education level		(0.0052)	(0.0045)	(0.0045)		(0.0024)	(0.0024)	(0.0024)
Significant excess insp. share ×		0.0022***	0.0016**	0.0016**		-0.0004	-0.0004	-0.0004
Inspector age		(0.0008)	(0.0007)	(0.0007)		(0.0004)	(0.0004)	(0.0004)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
HS2-product FE			X	X			X	X
Observations	294,041	292,033	292,033	292,033	294,041	292,033	292,033	292,033
R^2	0.6667	0.6677	0.7118	0.7118	0.0671	0.0677	0.0745	0.0749

Notes: All regressions include inspector, administrator, and customs broker fixed effects. The patronage inspector and administrator variables are absorbed by the inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share she would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C52: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector				Fraud detected by PCA, but not inspector			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Workload deviations	0.0144	-0.1005***	-0.0347**	-0.0342**	-0.0031***	0.0051	0.0022	0.0023
	(0.0094)	(0.0348)	(0.0168)	(0.0167)	(0.0012)	(0.0070)	(0.0069)	(0.0069)
Patronage inspector ×	-0.0791**	-0.1372***	-0.0384**	-0.0385**	0.0071*	0.0076	0.0059	0.0059
Patronage administrator	(0.0318)	(0.0352)	(0.0159)	(0.0157)	(0.0037)	(0.0054)	(0.0054)	(0.0053)
Patronage inspector ×	0.0064	0.0056	0.0014	0.0019	-0.0053*	-0.0061*	-0.0060*	-0.0059*
Workload deviations	(0.0132)	(0.0145)	(0.0071)	(0.0071)	(0.0027)	(0.0033)	(0.0032)	(0.0032)
Patronage administrator ×	0.0124	0.0109	0.0095	0.0100*	0.0009	0.0008	0.0013	0.0013
Workload deviations	(0.0144)	(0.0137)	(0.0059)	(0.0059)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Patronage inspector × Patronage	-0.0530***	-0.0397**	-0.0149*	-0.0154*	0.0213***	0.0208***	0.0202***	0.0201***
administrator × Workload deviations	(0.0177)	(0.0173)	(0.0080)	(0.0080)	(0.0053)	(0.0050)	(0.0049)	(0.0049)
Evasion risk index				0.0204***				0.0021***
				(0.0028)				(0.0006)
Patronage administrator ×		-0.0045	-0.0047	-0.0046		0.0010	0.0011	0.0011
Inspector education level		(0.0092)	(0.0040)	(0.0040)		(0.0014)	(0.0014)	(0.0014)
Patronage administrator ×		0.0054***	0.0019**	0.0018**		0.0001	0.0002	0.0002
Inspector age		(0.0016)	(0.0007)	(0.0007)		(0.0002)	(0.0002)	(0.0002)
Workload deviations ×		0.0105***	0.0040**	0.0039**		-0.0010	-0.0008	-0.0008
Inspector education level		(0.0031)	(0.0017)	(0.0017)		(0.0008)	(0.0008)	(0.0008)
Workload deviations ×		0.0015**	0.0004	0.0004		-0.0001	-0.0000	-0.0000
Inspector age		(0.0006)	(0.0003)	(0.0003)		(0.0001)	(0.0001)	(0.0001)
Mean of Dependent Variable	0.2711	0.2725	0.2725	0.2725	0.0148	0.0148	0.0148	0.0148
HS2-product FE			X	X			X	X
Observations	294,077	292,069	292,069	292,069	294,077	292,069	292,069	292,069
R^2	0.2625	0.2653	0.5755	0.5769	0.0262	0.0265	0.0360	0.0362

Notes: All regressions include inspector and administrator FEs. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Regressions in columns (2)-(4) and (6)-(8) control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). "HS2-product FE" corresponds to product chapter (HS 2-digit code) fixed effects. "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. The outcome variable on columns (5)-(8) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments.

Table C53: Patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected		
	(1)	(2)	(3)
Patronage inspector ×	-0.1112***	-0.1080*	-0.0976*
Patronage administrator	(0.0425)	(0.0618)	(0.0576)
Patronage administrator ×		-0.0127	-0.0025
Inspector education level		(0.0144)	(0.0128)
Patronage administrator ×		-0.0017	-0.0017
Inspector age		(0.0027)	(0.0024)
Evasion risk index			0.4963***
			(0.0174)
Mean of Dependent Variable	13,511,141	13,505,530	13,505,530
HS2-product FE	X	X	X
Observations	79,709	79,589	79,589
Pseudo R^2	0.1659	0.1662	0.3099

Notes: The table runs Poisson pseudo-maximum likelihood (PPML) regressions (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regressions include inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Regressions in columns (2)-(3) control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The education level variable goes from no education mentioned (0), primary (1), secondary (2), some professional/vocational/technician (non-academic) training (3), some (academic) college courses (4), college degree (5), master's degree (6), and doctorate (7). "Evasion risk index" consists of an index for tax evasion risk variables. It consists of the unweighted average of standardized variables capturing potential evasion: three risk scores from customs' risk management unit (the SAS/SGIR score, the SBR risk score, and their weighted average used in practice), the declared CIF value (tax base), a mixed-shipment indicator (whether the shipment includes products from at least two six-digit HS codes), the share of differentiated items, shipment weight, a weighted undervaluation measure (difference between declared and median unit prices, aggregated across items using product weights), the share of time-sensitive products, and an indicator for registration outside normal operating hours at the relevant customs port. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the fraud value adjustment made, which is the additional tax and penalty fine payment needed by the customs broker due to customs fraud being uncovered on the broker's shipment. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments with some fraud value detected by the valuation inspector.

C.13 Tables for shipments with inspector-broker pairs without *suspect assignments*

Table C54: Patronage hires and customs fraud detected for shipments with inspector-broker pairs without suspect assignments

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Patronage inspector × Patronage administrator	-0.1274***	0.0031
	(0.0350)	(0.0056)
Mean of Dependent Variable	0.2739	0.0143
Observations	281,839	281,839
R^2	0.2649	0.0201

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments, excluding shipments with inspector-broker pairs with significant excess inspection shares.

Table C55: Patronage hires, customs fraud detected and workload deviations at customs ports each day for shipments with inspector-broker pairs without suspect assignments

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.0870***	-0.0898***	-0.0061*	-0.0071**
	(0.0330)	(0.0336)	(0.0033)	(0.0033)
Patronage inspector ×	-0.1289***	-0.1344***	0.0029	0.0043
Patronage administrator	(0.0351)	(0.0354)	(0.0055)	(0.0053)
Patronage inspector ×	-0.0162	0.0038	-0.0003	-0.0047
Workload deviations	(0.0103)	(0.0132)	(0.0014)	(0.0029)
Patronage administrator ×		0.0093		0.0007
Workload deviations		(0.0127)		(0.0013)
Patronage inspector × Patronage		-0.0329*		0.0072**
administrator × Workload deviations		(0.0171)		(0.0030)
Mean of Dependent Variable	0.2739	0.2739	0.0143	0.0143
Observations	281,839	281,839	281,839	281,839
R^2	0.2666	0.2669	0.0207	0.0210

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments, excluding shipments with inspector-broker pairs with significant excess inspection shares.

Table C56: Patronage hires and customs fraud value detected by valuation inspectors for shipments with inspector-broker pairs without suspect assignments

	Fraud value detected
	(1)
Patronage inspector ×	-0.1177*
Patronage administrator	(0.0615)
Mean of Dependent Variable	13,560,117
HS2-product FE	X
Observations	77,197
Pseudo R^2	0.1643

Notes: The table runs a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regression includes inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regression controls for interactions of the patronage administrator indicator with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. The sample covers all red channel shipments with some fraud value detected by the valuation inspector. The sample excludes shipments with inspector-broker pairs with significant excess inspection shares.

C.14 Tables showing workload deviations go through for large and small customs brokers

Table C57: Patronage hires, customs fraud detected and workload deviations at customs ports each day for large customs brokers

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.0998***	-0.0913***	0.0158	0.0050
	(0.0329)	(0.0347)	(0.0115)	(0.0075)
Patronage inspector ×	-0.0940***	-0.0990***	0.0039	0.0077
Patronage administrator	(0.0331)	(0.0332)	(0.0056)	(0.0054)
Patronage inspector ×	-0.0199**	0.0026	0.0105**	-0.0063*
Workload deviations	(0.0101)	(0.0138)	(0.0044)	(0.0034)
Patronage administrator ×		0.0059		0.0005
Workload deviations		(0.0135)		(0.0016)
Patronage inspector × Patronage		-0.0304*		0.0218***
administrator × Workload deviations		(0.0164)		(0.0050)
Mean of Dependent Variable	0.2331	0.2331	0.0158	0.0158
Observations	246,542	246,542	246,542	246,542
R^2	0.2363	0.2366	0.0244	0.0267

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments and large customs brokers with above-median total CIF value imported (i.e., those that handled the most value in shipments imported).

Table C58: Patronage hires, customs fraud detected and workload deviations at customs ports each day for small customs brokers

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.0807**	-0.0835**	-0.0032	-0.0043
	(0.0347)	(0.0334)	(0.0042)	(0.0044)
Patronage inspector ×	-0.2368***	-0.2457***	0.0013	0.0030
Patronage administrator	(0.0480)	(0.0482)	(0.0069)	(0.0067)
Patronage inspector ×	-0.0258**	0.0016	0.0016	-0.0027
Workload deviations	(0.0124)	(0.0171)	(0.0019)	(0.0036)
Patronage administrator ×		0.0115		0.0021
Workload deviations		(0.0134)		(0.0014)
Patronage inspector × Patronage		-0.0469**		0.0077**
administrator × Workload deviations		(0.0224)		(0.0039)
Mean of Dependent Variable	0.4861	0.4861	0.0091	0.0091
Observations	45,523	45,523	45,523	45,523
R^2	0.4068	0.4072	0.0344	0.0350

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments and small customs brokers with below-median total CIF value imported (i.e., those that handled the least value in shipments imported).

C.15 Tables for electoral patronage hires

Table C59: Electoral patronage hires and customs fraud detected

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Electoral patronage inspector× Electoral patronage administrator	-0.0569	-0.0033
	(0.0366)	(0.0051)
Mean of Dependent Variable	0.2667	0.0153
Observations	242,970	242,970
R^2	0.2568	0.0239

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the electoral patronage administrator indicator with: (1) inspector education and (2) inspector age. The electoral patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start during Paraguay's democratic period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by dictatorship inspectors as these form the other treatment group.

Table C60: Electoral patronage pairs and suspect assignments

	Binary significant excess inspection share (1)
Electoral patronage inspector × Electoral patronage administrator	0.0006
	(0.0022)
Mean of Dependent Variable	0.0073
Observations	64,769
R^2	0.0244

Notes: All regressions include inspector, administrator, and customs broker fixed effects. The electoral patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Significant excess inspection shares refers to how often the inspection shares are larger than the 99$^{\text{th}}$ percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start during Paraguay's democratic period. The sample covers all possible pairings of valuation inspectors and customs brokers at all semesters and ports in my data, except those involving dictatorship inspectors as these are the other part of the treatment group.

Table C61: Customs fraud detected, electoral patronage hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Significant excess insp. share	-0.0775	-0.0732	0.0694***	0.0648***
	(0.0501)	(0.0494)	(0.0209)	(0.0199)
Electoral patronage inspector × Electoral patronage administrator	-0.0032	0.0019	-0.0068	-0.0106**
	(0.0151)	(0.0149)	(0.0045)	(0.0048)
Electoral patronage inspector × Significant excess insp. share	-0.0454**	-0.0262	-0.0015	-0.0148*
	(0.0177)	(0.0186)	(0.0086)	(0.0089)
Electoral patronage administrator × Significant excess insp. share		0.0249		-0.0022
		(0.0184)		(0.0070)
Electoral patronage inspector × Electoral patronage administrator × Significant excess insp. share		-0.0689*		0.0512*
		(0.0399)		(0.0275)
Mean of Dependent Variable	0.2667	0.2667	0.0153	0.0153
Observations	242,930	242,930	242,930	242,930
R^2	0.6554	0.6554	0.0702	0.0706

Notes: All regressions include inspector, administrator, and customs broker fixed effects. All regressions control for interactions of the electoral patronage administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The electoral patronage inspector variable is absorbed by the inspector fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Excess inspection share is the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share he would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start during Paraguay's democratic period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by dictatorship inspectors as these form the other treatment group.

Table C62: Electoral patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.0775*	-0.0749*	0.0097*	0.0022
	(0.0397)	(0.0411)	(0.0058)	(0.0045)
Electoral patronage inspector ×	-0.0586	-0.0615*	-0.0050	-0.0001
Electoral patronage administrator	(0.0358)	(0.0360)	(0.0047)	(0.0047)
Electoral patronage inspector ×	-0.0308***	-0.0217*	0.0111**	-0.0051*
Workload deviations	(0.0105)	(0.0122)	(0.0045)	(0.0029)
Electoral patronage administrator ×		0.0037		0.0003
Workload deviations		(0.0184)		(0.0013)
Electoral patronage inspector × Electoral		-0.0156		0.0244***
patronage administrator × Workload deviations		(0.0220)		(0.0037)
Mean of Dependent Variable	0.2667	0.2667	0.0153	0.0153
Observations	242,970	242,970	242,970	242,970
R^2	0.2594	0.2595	0.0273	0.0301

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the electoral patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The electoral patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start during Paraguay's democratic period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by dictatorship inspectors as these form the other treatment group.

Table C63: Electoral patronage hires and customs fraud value detected by valuation inspectors

	Fraud value detected
	(1)
Electoral patronage inspector ×	-0.1195*
Electoral patronage administrator	(0.0672)
Mean of Dependent Variable	13,505,200
HS2-product FE	X
Observations	64,789
Pseudo R^2	0.1791

Notes: The table runs a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regression includes inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regression controls for interactions of the electoral patronage administrator indicator with: (1) inspector education and (2) inspector age. The electoral patronage inspector indicator variable is absorbed by the inspector fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Electoral patronage hires are those inspectors and administrators that joined the customs authority within a year of a new executive administration's start during Paraguay's democratic period. The sample covers all red channel shipments with some fraud value detected by the valuation inspector, except those handled by dictatorship inspectors as these form the other treatment group.

C.16 Tables for dictatorship hires

Table C64: Dictatorship hires and customs fraud detected

	Fraud detected by inspector (1)	Fraud detected by PCA, but not inspector (2)
Dictatorship inspector × Dictatorship administrator	-0.0359	0.0158**
	(0.0656)	(0.0065)
Mean of Dependent Variable	0.2839	0.0126
Observations	229,722	229,722
R^2	0.2552	0.0144

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the dictatorship administrator indicator with: (1) inspector education and (2) inspector age. The dictatorship inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on column (2) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Dictatorship hires are those inspectors and administrators that joined the customs authority during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by electoral patronage inspectors as these form the other treatment group.

Table C65: Dictatorship pairs and suspect assignments

	Binary significant excess inspection share (1)
Dictatorship inspector × Dictatorship administrator	0.0026
	(0.0037)
Mean of Dependent Variable	0.0075
Observations	61,038
R^2	0.0276

Notes: All regressions include inspector, administrator, and customs broker fixed effects. The dictatorship inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Significant excess inspection shares refers to how often the inspection shares are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector combinations which are significantly excessive for 90% or more of the simulations. Dictatorship hires are those inspectors and administrators that joined the customs authority during Paraguay's dictatorship period. The sample covers all possible pairings of valuation inspectors and customs brokers at all semesters and ports in my data, except those involving electoral patronage inspectors as those correspond to the other part of the treatment group.

Table C66: Customs fraud detected, dictatorship hires, and suspect assignments between customs brokers and inspectors

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Significant excess insp. share	-0.1284**	-0.1293**	0.0483*	0.0482*
	(0.0576)	(0.0560)	(0.0259)	(0.0264)
Dictatorship inspector × Dictatorship administrator	-0.0243	-0.0289	0.0157**	0.0151**
	(0.0171)	(0.0177)	(0.0066)	(0.0065)
Dictatorship inspector × Significant excess insp. share	-0.0222	-0.0396	0.0208	0.0187
	(0.0231)	(0.0244)	(0.0144)	(0.0165)
Dictatorship administrator × Significant excess insp. share		-0.0329**		-0.0039
		(0.0166)		(0.0064)
Dictatorship inspector × Dictatorship administrator × Significant excess insp. share		0.0572		0.0070
		(0.0405)		(0.0216)
Mean of Dependent Variable	0.2839	0.2839	0.0126	0.0126
Observations	229,688	229,688	229,688	229,688
R^2	0.6874	0.6875	0.0625	0.0625

Notes: All regressions include inspector, administrator, and customs broker fixed effects. All regressions control for interactions of the dictatorship administrator indicator and significant excess inspection shares with: (1) inspector education and (2) inspector age. The dictatorship inspector variable is absorbed by the inspector fixed effects. Standard errors in parentheses are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Excess inspection share is the difference between the share of a given broker's shipments handled by an inspector in a given semester and the hypothetical share he would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to the proportion of inspection shares that are larger than the 99th percentile of the respective simulated multinomial assignment shares. This latter variable varies between 0 and 1. Dictatorship hires are those inspectors and administrators that joined the customs authority during Paraguay's dictatorship period. "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by electoral patronage inspectors as these form the other treatment group.

Table C67: Dictatorship hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	-0.0759*	-0.0826*	-0.0036	-0.0037
	(0.0451)	(0.0446)	(0.0048)	(0.0049)
Dictatorship inspector ×	-0.0409	-0.0463	0.0151**	0.0151**
Dictatorship administrator	(0.0654)	(0.0648)	(0.0064)	(0.0064)
Dictatorship inspector ×	-0.0053	0.0125	0.0038	0.0037
Workload deviations	(0.0173)	(0.0198)	(0.0024)	(0.0031)
Dictatorship administrator ×		0.0272*		0.0007
Workload deviations		(0.0146)		(0.0010)
Dictatorship inspector × Dictatorship		-0.0606**		0.0000
administrator × Workload deviations		(0.0259)		(0.0031)
Mean of Dependent Variable	0.2839	0.2839	0.0126	0.0126
Observations	229,722	229,722	229,722	229,722
R^2	0.2576	0.2582	0.0148	0.0148

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the dictatorship administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The dictatorship inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (3)-(4) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Dictatorship hires are those inspectors and administrators that joined the customs authority during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers all red channel shipments, except those handled by electoral patronage inspectors as these form the other treatment group.

Table C68: Dictatorship hires and customs fraud value detected by valuation inspectors

	Fraud value detected
	(1)
Dictatorship inspector ×	0.0421
Dictatorship administrator	(0.0785)
Mean of Dependent Variable	13,574,923
HS2-product FE	X
Observations	65,207
Pseudo R^2	0.1603

Notes: The table runs a Poisson pseudo-maximum likelihood (PPML) regression (Santos Silva and Tenreyro, 2006), where the coefficients are interpreted as semi-elasticities: a coefficient β implies a $100 \times (e^{\beta} - 1)\%$ change in the expected value of the dependent variable. The dependent variable is measured in the local currency (Paraguayan Guaranis, PYG). The US dollar (USD) to PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. The regression includes inspector, administrator, and product chapter (HS 2-digit code) fixed effects. The regression controls for interactions of the dictatorship administrator indicator with: (1) inspector education and (2) inspector age. The dictatorship inspector indicator variable is absorbed by the inspector fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Dictatorship hires are those inspectors and administrators that joined the customs authority during Paraguay's dictatorship period. The sample covers all red channel shipments with some fraud value detected by the valuation inspector. The sample excludes those handled by electoral patronage inspectors as these form the other treatment group.

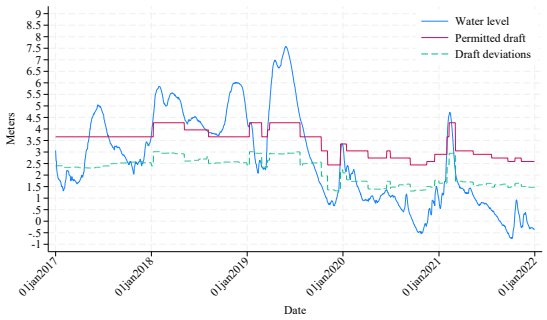
C.17 Results using water level deviations to proxy for workload deviations at river ports

To derive a more exogenous measure affecting the workload deviations discussed in the main text that cannot be influenced by customs officials, I use exogenous changes in the water level of the Paraguay River, the primary waterway in Paraguay. These changes influence the type and size of vessels that can navigate the river. In particular, the General Naval Prefecture of Paraguay regulates the maximum permitted vessel draft—the vertical distance between the waterline and a vessel's keel. Following Ignatenko (2024), I measure deviations in the water level and vessel draft from their monthly average across years to capture unexpected changes in them and I use these deviations to proxy for the total shipment volume at river ports. The relevant ports on the Paraguay River are Villeta, Pilar, Terport, Terport Villeta, *Puerto Seguro Fluvial*, Caacupemi, Caacupemi Pilar, *Puertos y Estibajes*, Empedril, and Concepcion.

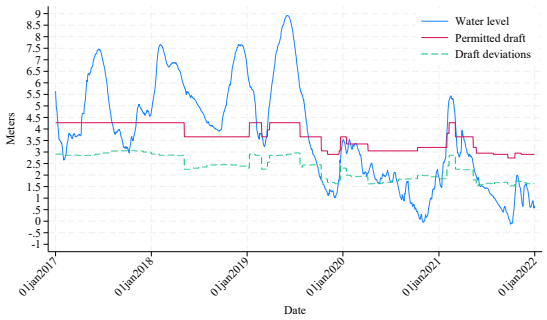
I obtained daily data on the permitted vessel draft from the General Naval Prefecture for four key upstream locations: Pilar, Asuncion, Concepcion, and Villeta. Similarly, I obtained data on the water level for these locations from the Directorate of Meteorology and Hydrology of Paraguay. I then linked these data to their corresponding river ports. Through this data I identify days when the vessel draft supports higher or lower shipment volumes, with a variable that subtracts the monthly average vessel draft across years with the current vessel draft to obtain the vessel draft deviations. Figure C5 below plots the daily water level, daily permitted vessel draft and draft deviations for the four upstream locations.

Figure C5: Daily permitted and expected vessel draft for upstream locations on the Paraguay river

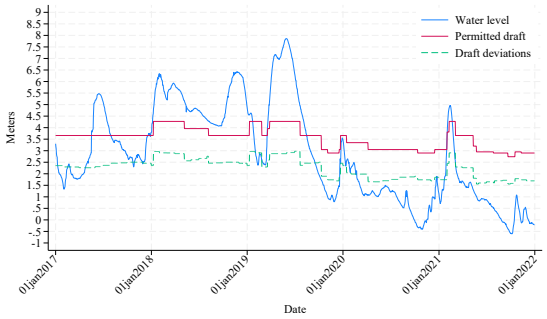
(a) Asuncion



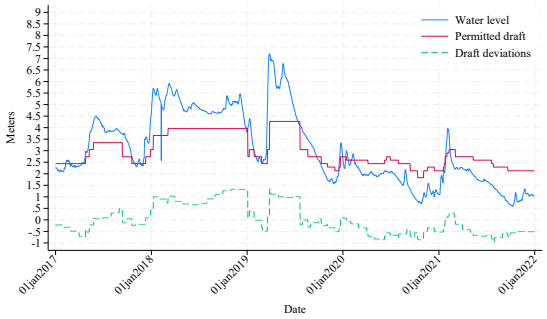
(b) Pilar



(c) Villeta



(d) Concepcion



Notes: Each blue solid line plot shows the daily water level for four upstream locations on the Paraguay river: Pilar, Asuncion, Villeta and Concepcion. The water level is measured in meters and 0 is a reference point (elevation) above the mean sea level. Each solid red line plot shows the daily permitted vessel drafts and each dashed green line plots the draft deviations (from the monthly average across years) for four upstream locations on the Paraguay river: Pilar, Villeta, Asuncion (particularly, *Remanso Castillo* in the greater Asuncion area where several river ports are located), and Concepcion. The vessel draft is measured in meters.

Table C69 explores the relationship between the river's water levels, vessel drafts, their deviations from monthly averages, and workload deviations. First, as a sanity check, we confirm that higher water levels are associated with higher vessel drafts, and similarly, deviations in water levels predict deviations in vessel drafts. We also find that both water level and vessel draft deviations are significant predictors of total red channel shipments per inspector per day at each customs port. Lastly, we confirm that workload deviations are influenced by both water level and vessel draft deviations. The stronger relationship between vessel drafts and shipment volumes likely stems from the fact that vessel drafts serve as a policy variable, capturing critical thresholds for vessel navigation. In contrast, beyond a certain point, higher water levels do not necessarily translate into proportionately higher shipment volumes. As noted by Ignatenko (2024), the river becomes unnavigable for standard barges upstream when water levels fall below three meters.

Table C69: Relationship between the river water level and the vessel draft, their deviations from monthly averages, and workload deviations

	Vessel draft	Vessel draft deviations	Total shipments in a day		Workload deviations	
	(1)	(2)	(3)	(4)	(5)	(6)
Water level	0.2224***					
	(0.0034)					
Water level deviations		0.8392***	0.4309***		0.1698***	
		(0.0137)	(0.0384)		(0.0151)	
Vessel draft deviations				0.3614***		0.1424***
				(0.0311)		(0.0123)
Mean of Dependent Variable	3.4447	-0.0000	3.7259	3.7259	0.0000	0.0000
Observations	8,103	8,103	8,103	8,103	8,103	8,103
R^2	0.7213	0.7043	0.0288	0.0203	0.0288	0.0203

Notes: Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. "Vessel draft deviations" is standardized and refers to the deviations in the vessel draft from its monthly average across years to capture unexpected changes in the vessel draft. "Water level deviations' is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. The outcome variable for Columns (3)-(4) and (5)-(6) are "Total shipments in a day" and "Workload deviations" respectively. "Total shipments in a day" refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Workload deviations" is the standardized version (with mean 0 and standard deviation of 1) of "Total shipments in a day." "Observations" are at the port-day level for river ports.

Table C70 confirms that the water level, vessel draft, and workload deviations predict the total number of shipments assigned to inspectors each day, including patronage hires. Although Column (3) suggests that patronage inspectors may get slightly less shipments per standard deviation of workload (0.4) shipments less, they still get three more shipments per additional standard deviation in workload at the port as a whole. In contrast, Table C71 shows that water level deviations do not correlate with various measures of shipment value, including total taxes paid, the CIF (cost, insurance, and freight) value, and the FOB (free on board) value of the products. However, greater water level deviations are associated with lower freight costs. This aligns with Ignatenko (2024), who finds that higher water levels on the Paraguay River increase competition among transport companies, as more firms can operate when the water level is sufficiently high. Conversely, when water levels drop too low, some transport companies are unable to compete due to them lacking smaller vessels capable of navigating shallower waters.

We can also highlight that water level deviations do not correlate with suspect assignments or differentiated products. Table C72 indicates there is no significant correlation between excess inspection shares of inspectors towards customs brokers or importers and water level deviations. Finally, Table C73 shows that water level deviations do not correlate with the share of differentiated items or whether a shipment has differentiated items, which are products subject to greater tariff evasion due to the difficulties associated with assessing their quality and price (Javorcik and Narciso, 2008).

Table C70: Inspectors' total shipments assigned for the day, patronage hires, and deviations of the water level, vessel draft, and port workload

	Total shipments assigned to inspector on date		
	(1)	(2)	(3)
Water level deviations	0.3629***		
	(0.0541)		
Vessel draft deviations		0.3005***	
		(0.0539)	
Workload deviations			3.4816***
			(0.0382)
Patronage inspector × Water level deviations	0.2370***		
	(0.0666)		
Patronage inspector × Vessel draft deviations		0.1350**	
		(0.0627)	
Patronage inspector × Workload deviations			-0.3982***
			(0.0536)
Mean of Dependent Variable	5.4294	5.4294	5.4294
Observations	17,577	17,577	17,577
R^2	0.1271	0.1222	0.7074

Notes: All regressions include inspector fixed effects. Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable is the total number of red channel shipments assigned to the inspector on a particular day. "Vessel draft deviations" is standardized and refers to the deviations in the vessel draft from its monthly average across years to capture unexpected changes in the vessel draft. "Water level deviations' is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" are at the inspector-port-day level for river ports.

Table C71: Relationship between the water level deviations and shipment values

	Total taxes paid on shipment (in PYG) (1)	Total declared CIF value of shipment (in USD) (2)	Total declared FOB value of shipment (in USD) (3)	Total declared freight cost of shipment (in USD) (4)	Total final CIF value of shipment (in USD) (5)	Total final FOB value of shipment (in USD) (6)	Total final freight cost of shipment (in USD) (7)
Water level deviations	-592,701	816	1,067	-289***	296	644	-379***
	(930,148)	(900)	(848)	(71)	(901)	(849)	(73)
Mean of Dependent Variable	81,505,359	77,300	70,966	5,795	80,410	73,688	6,151
Observations	94,714	94,714	94,714	94,714	94,714	94,714	94,714
R^2	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0006

Notes: Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. "Water level deviations' is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. "Taxes paid" refers to the total taxes paid for the shipment in the local currency, Paraguayan Guaranis (PYG). The US Dollar (USD)-PYG exchange rate hovered between 5,500-7,100 PYG per USD during the time period of my data. "CIF value" refers to the CIF (cost, insurance, and freight) value for the shipment in US dollars. The difference between "declared" and "final" values is that declared values are those originally reported by customs brokers while final values are the values after shipments are inspected. The sample covers red channel shipments at the Paraguay river customs ports.

Table C72: Relationship between the water level deviations and suspect assignments

	Inspector-broker signif. excess inspection share	Binary inspector-broker signif. excess inspection share	Inspector-importer signif. excess inspection share	Binary inspector-importer signif. excess inspection share
	(1)	(2)	(3)	(4)
Water level deviations	-0.0013	0.0006	-0.0002	0.0004
	(0.0012)	(0.0010)	(0.0013)	(0.0010)
Mean of Dependent Variable	0.0589	0.0264	0.0567	0.0232
Observations	94,714	94,714	94,714	94,714
R^2	0.0000	0.0000	0.0000	0.0000

Notes: Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. "Water level deviations' is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. Suspect assignments are identified through excess inspection shares, which are the difference between the share of a given broker's (importer's) shipments handled by an inspector in a given semester and the hypothetical share he would be expected to handle if the allocation of shipments to inspectors were randomly assigned. Significant excess inspection shares refers to how often the inspection shares are larger than the 99^{th} percentile of the respective simulated multinomial assignment shares. The binary significant excess inspection share refers to broker-inspector (importer-inspector) combinations which are significantly excessive for 90% or more of the simulations. The sample covers red channel shipments at the Paraguay river customs ports.

Table C73: Relationship between the water level deviations and differentiated products

	Share of differentiated items (1)	Any differentiated item (2)
Water level deviations	0.0014	0.0002
	(0.0015)	(0.0014)
Mean of Dependent Variable	0.8328	0.8563
Observations	94,714	94,714
R^2	0.0000	0.0000

Notes: Standard errors are clustered at the day level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. "Water level deviations' is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. "Share of differentiated items" corresponds to the share (out of the total number of items in the shipment) that have a differentiated product, which is a product with a wide quality spectrum. "Any differentiated item" is a dummy variable equal to 1 when the shipment has at least one item with a differentiated product. The sample covers red channel shipments at the Paraguay river customs ports.

Table C74 presents regression results using unexpected water level deviations as a proxy for workload deviations, as these water level deviations affect the types of vessels able to access river ports and, consequently, the total shipment volume. The full regression on Column (2) with the triple interaction indicates that vertical patronage alignment magnifies underperformance: for each additional SD in workload, patronage pairs detect about 2.16 percentage points less fraud, equivalent to around 7% of the dependent variable mean. When focusing on fraud detected by the post-clearance audit team, we only find a negative significant relationship with water level deviations. Table C75 shows similar results when we focus on vessel draft deviations instead. The full regression on Column (2) with the triple interaction reveals that for each additional standard deviation in workload, patronage pairs detect approximately 4.31 percentage points less customs fraud, equivalent to around 14.9% of the dependent variable mean. Likewise, on Column (4) we observe a negative relationship between vessel draft deviations and fraud detected by the PCA team, though the interaction with patronage administrators partially offsets this. Table C76 runs the same analyses as Table 5, while restricting the sample to the Paraguay river customs ports, to make it comparable to the samples of Tables C74 and C75. It shows a similar pattern for Columns (1) and (2), and on Column (4) we find that patronage administrators handling shipments with an additional standard deviation in workload have 0.69 percentage points (29% more of the dependent variable mean) more fraud detected by the PCA team. This divergence likely arises from the fact that workload deviations directly affect inspectors' actions, whereas vessel draft and water level deviations influence inspectors and administrators more indirectly.

Table C74: Patronage hires, customs fraud detected and water level deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Water level deviations	0.0294	0.0005	-0.0353**	-0.0373**
	(0.0324)	(0.0339)	(0.0151)	(0.0155)
Patronage inspector ×	-0.0095	-0.0085	-0.0041	-0.0043
Patronage administrator	(0.0231)	(0.0225)	(0.0086)	(0.0086)
Patronage inspector ×	-0.0137	0.0095	-0.0015	-0.0004
Water level deviations	(0.0107)	(0.0121)	(0.0066)	(0.0078)
Patronage administrator ×		0.0291**		0.0084
Water level deviations		(0.0143)		(0.0054)
Patronage inspector × Patronage		-0.0507***		0.0002
administrator × Water level deviations		(0.0174)		(0.0074)
Mean of Dependent Variable	0.2890	0.2890	0.0238	0.0238
Observations	94,659	94,659	94,659	94,659
R^2	0.1100	0.1105	0.0335	0.0338

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and water level deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Water level deviations" is standardized and refers to the deviations in the water level from its monthly average across years to capture unexpected changes in the water level. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments at the Paraguay river customs ports.

Table C75: Patronage hires, customs fraud detected and vessel draft deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Vessel draft deviations	0.0097	-0.0129	-0.0311*	-0.0337**
	(0.0357)	(0.0373)	(0.0182)	(0.0166)
Patronage inspector ×	-0.0003	0.0040	-0.0032	-0.0043
Patronage administrator	(0.0225)	(0.0219)	(0.0086)	(0.0089)
Patronage inspector ×	-0.0287***	-0.0097	-0.0023	-0.0030
Vessel draft deviations	(0.0107)	(0.0115)	(0.0057)	(0.0067)
Patronage administrator ×		0.0207		0.0085*
Vessel draft deviations		(0.0141)		(0.0048)
Patronage inspector × Patronage		-0.0431**		0.0049
administrator × Vessel draft deviations		(0.0188)		(0.0068)
Mean of Dependent Variable	0.2890	0.2890	0.0238	0.0238
Observations	94,659	94,659	94,659	94,659
R^2	0.1104	0.1107	0.0336	0.0341

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and draft deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Vessel draft deviations" is standardized and refers to the deviations in the vessel draft from its monthly average across years to capture unexpected changes in the vessel draft. "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments at the Paraguay river customs ports.

Table C76: Patronage hires, customs fraud detected and workload deviations at customs ports each day

	Fraud detected by inspector		Fraud detected by PCA, but not inspector	
	(1)	(2)	(3)	(4)
Workload deviations	0.0351	0.0055	-0.0150	-0.0139
	(0.0524)	(0.0512)	(0.0100)	(0.0085)
Patronage inspector ×	-0.0185	-0.0247	-0.0002	0.0014
Patronage administrator	(0.0234)	(0.0233)	(0.0092)	(0.0089)
Patronage inspector ×	-0.0222*	0.0052	-0.0050	-0.0049
Workload deviations	(0.0117)	(0.0156)	(0.0039)	(0.0059)
Patronage administrator ×		0.0297**		0.0069***
Workload deviations		(0.0140)		(0.0026)
Patronage inspector × Patronage		-0.0526***		0.0038
administrator × Workload deviations		(0.0165)		(0.0064)
Mean of Dependent Variable	0.2890	0.2890	0.0238	0.0238
Observations	94,659	94,659	94,659	94,659
R^2	0.1114	0.1120	0.0334	0.0339

Notes: All regressions include inspector and administrator fixed effects. All regressions control for interactions of the patronage administrator indicator and workload deviations with: (1) inspector education and (2) inspector age. The patronage inspector and administrator indicator variables are absorbed by the inspector and administrator fixed effects. Standard errors are clustered at the inspector-administrator pair level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. The outcome variable on columns (4)-(6) is an indicator variable equal to 1 when a shipment is linked to fraud detected by the post-clearance audit (PCA) team, but not by the valuation inspector. Patronage hires are those inspectors and administrators that joined the customs authority: (1) within a year of a new executive administration's start during democracy, or (2) during Paraguay's dictatorship period. "Workload deviations" is standardized and refers to the total number of red channel shipments that arrived at the relevant customs port on the relevant day for the shipment, divided by the number of inspectors present at the port (to take into account the differing capacities of customs ports). "Observations" refers to the number of non-singleton shipment observations. The sample covers red channel shipments at the Paraguay river customs ports.

D Counterfactual tax revenue in the absence of patronage

Following Chalendard et al. (2023), we can define hypothetical tax revenue losses as the difference between the log of hypothetical tax yield (based on internal reference prices) and the log of actual tax yield: $loss = log(T^H) - log(T)$. Similarly, hypothetical losses in the absence of patronage hires are defined as: $loss^{NP} = log(T^H) - log(T^{NP})$, where T^{NP} is the counterfactual tax yield absent patronage—our estimate of interest. Rearranging these expressions yields:

$$log(T^{NP}) = log(T) - (loss^{NP} - loss) \tag{D.1}$$

We can then use the β estimates obtained in Table 7 to quantify the predicted tax revenue loss from patronage hires as:

$$\widehat{loss} = \beta_1 PatronInsp + \beta_2 PatronAdm + \beta_3 PatronInsp \times PatronAdm + \beta_X X, \tag{D.2}$$

where the vector X includes all independent variables other than the patronage hire indicator variables. I use these estimates to predict the counterfactual tax revenue losses that would have taken place without the patronage hires as:

$$\widehat{loss^{NP}} = \widehat{\beta_X} X \tag{D.3}$$

If we subtract equation (D.2) from equation (D.3) we obtain:

$$\widehat{loss^{NP}} - \widehat{loss} = -\widehat{\beta}_1 PatronInsp - \widehat{\beta}_2 PatronAdm - \widehat{\beta}_3 PatronInsp \times PatronAdm$$

With this we can calculate the counterfactual tax yield in the absence of patronage hires by inserting into equation (D.1) and taking the exponent:

$$\widehat{T^{NP}} = T \times exp(\widehat{\beta}_1 PatronInsp + \widehat{\beta}_2 PatronAdm + \widehat{\beta}_3 PatronInsp \times PatronAdm) \tag{D.4}$$