International Journal of Engineering Research and Modern Education (IJERME)
International Peer Reviewed - Refereed Research Journal, Website: www.rdmodernresearch.com
Impact Factor: 7.018, ISSN (Online): 2455 - 4200, Volume 9, Issue 2, July - December, 2024

ASSESSING ASSOCIATIONS BETWEEN REGULATORY AGENCY RESOURCES AND ANNUAL ENFORCEMENT ACTIVITY USING PUBLICLY REPORTED FINANCIAL DATA

Divya Vishwanath* & Paul Johnson Asamoah**
* Janardhan Rai Nagar Rajasthan Vidyapeeth, Udaipur, Rajasthan, India
** Power Life University College, Accra, Ghana, West Africa

Cite This Article: Divya Vishwanath & Paul Johnson Asamoah, "Assessing Associations Between Regulatory Agency Resources and Annual Enforcement Activity Using Publicly Reported Financial Data", International Journal of Engineering Research and Modern Education, Volume 9, Issue 2, July - December, Page Number 61-70, 2024.

Copy Right: © R&D Modern Research Publication, 2024 (All Rights Reserved). This is an Open Access Article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract:

This analysis examines whether regulatory financial resources and enforcement activity move together, addressing international debates about measuring public agency performance. Public records from the U.S. Securities and Exchange Commission provide 14 annual observations covering 2010 to 2023. Descriptive statistics, Pearson correlations, annual change comparisons, and sequential omission analyses distinguish correspondence in financial levels from annual movements. Funding authority, program expenditure, and net capital assets correlate positively with enforcement counts at 0.351, 0.159, and 0.367, respectively. Correlations between annual changes remain positive for funding at 0.225 but become negative for expenditure at 0.555 in magnitude and capital assets at 0.137 in magnitude. Omitting individual years preserves positive level correlations while altering their magnitudes. These contrasts qualify resource-based interpretations of organizational performance by demonstrating that financial levels and annual movements provide different empirical accounts of enforcement activity. The contribution is a temporal measurement distinction rather than an identified causal mechanism. For regulatory evaluation internationally, the evidence supports separating financial capacity, resource consumption, and recorded output before interpreting budget expansion as improved operational performance.

Key Words: Descriptive Analysis; Enforcement Activity; Public Agency Performance; Regulatory Resources; Temporal Sensitivity

1. Introduction:

Financial resources enable securities regulators to investigate misconduct and pursue enforcement, yet larger budgets do not necessarily coincide with more recorded actions. This distinction matters when legislators authorize funding, agencies allocate expenditure, and public institutions assess regulatory performance. An increase in resources may support a larger workload, more demanding cases, or statutory functions outside enforcement. Interpreting financial expansion through action counts alone can therefore obscure what resources finance and what enforcement output represents. This analysis examines that measurement problem by distinguishing funding authority, program expenditure, and net capital assets in relation to annual enforcement activity. Organizational capacity provides a theoretical basis for separating resource availability from realized output. Andrews and Boyne 2010 examine how capacity and leadership relate to organizational performance, directing attention to the processes that connect resources with results. Wu, Ramesh, and Howlett 2015 further distinguish policy competences and capabilities across interconnected levels. These perspectives suggest that financial inputs provide conditions for regulatory activity rather than a complete measure of operational capability. Funding authority indicates permission to spend, program expenditure records recognized resource consumption, and capital assets represent accumulated infrastructure. Their relationships with enforcement activity may differ because they capture distinct financial attributes.

The proposed connections also involve competing incentives. Greater resources may enable investigations and proceedings that an agency could otherwise defer. However, stronger enforcement can influence the behavior of regulated organizations, potentially changing the misconduct available for subsequent detection. Kedia and Rajgopal 2011 provide evidence that the SEC's enforcement preferences relate to corporate misconduct. Their analysis establishes the relevance of enforcement incentives but does not determine how annual agency financial measures correspond with aggregate action counts. A positive resource association is therefore theoretically plausible without being a necessary empirical pattern. Comparative accounting research reinforces the importance of distinguishing regulatory arrangements from formal requirements. Christensen, Hail, and Leuz 2013 examine mandatory financial reporting changes alongside changes in enforcement, showing why institutional implementation matters when interpreting regulatory outcomes. Their research addresses a different question from the relationship between agency resources and annual enforcement volume. Together, these contributions establish that organizational capability, enforcement incentives, and institutional arrangements matter, while leaving unresolved whether different financial measures produce a consistent descriptive account of enforcement activity within one regulator over time.

Outcome measurement is central to that unresolved issue. Total enforcement actions aggregate proceedings that differ in purpose and resource requirements. The SEC's enforcement report for 2019 distinguishes 862 total actions from 526 standalone actions, demonstrating that the aggregate count encompasses more than newly initiated substantive cases. U.S. Securities and Exchange Commission 2019 therefore provides a basis for interpreting total actions as recorded enforcement volume rather than a uniform measure of workload. Action counts also remain distinct from financial remedies and distributions to investors, which the agency reports separately in its enforcement results. U.S. Securities and Exchange Commission 2023 illustrates these different dimensions of output. This analysis retains the total count while preserving its substantive meaning. The specific research gap concerns the correspondence between distinct resource measures and enforcement volume across alternative temporal comparisons. The reviewed literature does not establish whether positive associations in financial levels also characterize annual changes in resources and actions. This distinction matters because years with larger resource levels may record more actions even

when increases between consecutive years do not move together. Examining levels alone can therefore produce an incomplete account of the observed relationship. The contribution here is to compare authorized resources, consumed resources, and accumulated assets using the same institutional coverage and observation period, then assess whether their descriptive associations persist across annual movements and the omission of individual observations.

The empirical setting is the U.S. Securities and Exchange Commission during 2010 to 2023. Public financial reports and official enforcement records provide 14 consecutive agency fiscal year observations. The consolidated dataset contains complete observations for funding authority, program expenditure, net capital assets, and enforcement actions. Descriptive statistics establish their distributions and relative variation. Pearson correlations summarize correspondence in annual levels, while exploratory annual change comparisons and sequential omission analyses assess sensitivity to temporal representation and individual years. The design enables a transparent comparison of measured series without treating financial resources as identified causes of enforcement output. This study aims to assess how regulatory agency financial resources correspond with annual enforcement activity. The central research question asks whether funding authority, program expenditure, and net capital assets display similar relationships with enforcement counts during 2010 to 2023. The analysis specifically examines the association between authorized funding and action volume, the correspondence between recognized program costs and actions, and the relationship between closing capital asset balances and recorded enforcement activity. It also evaluates whether the interpretation changes when comparisons focus on annual movements rather than levels.

The completed analysis shows that the choice of financial measure and temporal comparison changes the empirical interpretation. All three resource measures have positive correlations with enforcement counts in levels. Annual change correlations remain positive for funding but become negative for expenditure and capital assets. These results qualify the assumption that financial expansion and recorded action volume move together consistently. Their relevance beyond the SEC lies in the distinction between resources and the outputs used to assess regulatory institutions. The evidence supports more precise interpretation of those measures, while numerical relationships remain specific to the agency, reporting definitions, and observation period examined.

2. Theory, Conceptual Framework and Research Questions Development:

Regulatory enforcement depends on how public agencies convert financial resources into investigative and administrative activity. Legislatures authorize funding, agencies allocate expenditure across competing functions, and enforcement teams pursue cases within procedural constraints. These relationships separate resource availability from resource deployment and recorded output. Wu, Ramesh, and Howlett 2015 conceptualize policy capacity through interacting competences and capabilities rather than financial inputs alone. This analysis draws on that distinction to examine funding authority, program expenditure, and capital assets as separate observed dimensions of regulatory agency financial resources. The conceptual framework relates these three financial measures to annual enforcement activity at the U.S. Securities and Exchange Commission during 2010 to 2023. Funding authority represents authorized spending capacity. Program expenditure records resources consumed through agency activities. Capital assets represent the carrying value of property and equipment after depreciation. Annual enforcement activity is measured by the total number of enforcement actions. These measures remain separate observed variables rather than indicators of an estimated latent construct or components of a composite index.

Resource availability can expand an agency's operational choices, but organizational processes determine how those resources translate into output. Andrews and Boyne 2010 examine organizational capacity and leadership within a model of public management performance. Their framework supports a distinction between possessing resources and using them effectively. Applied here, this distinction implies that greater financial resources need not coincide with a proportional increase in enforcement actions. Resources may support other statutory functions, cases may require different amounts of work, and expenditure may precede the recording of an action. Enforcement also operates through incentives that complicate the interpretation of action counts. Greater enforcement capacity may increase recorded actions by enabling more investigations. Conversely, a stronger enforcement presence may discourage misconduct and reduce the cases available for subsequent action. Kedia and Rajgopal 2011 provide evidence linking corporate misconduct to the SEC's enforcement preferences. Their findings establish the relevance of enforcement incentives, but do not determine the direction of the relationship between aggregate annual financial resources and enforcement counts. This analysis therefore uses exploratory research questions without imposing directional hypotheses.

Funding authority represents the financial permission to undertake agency activities. It can support staffing commitments, specialist services, and operational planning. Its theoretical connection with enforcement arises through the activities that authorized resources make possible. However, authorization does not establish when resources are used or which agency functions receive them. The relevant descriptive relationship is therefore between annual spending capacity and recorded enforcement activity, rather than between funding approval and a presumed enforcement effect. Institutional conditions can alter how financial capacity relates to regulatory output. Christensen, Hail, and Leuz 2013 demonstrate the importance of enforcement changes when examining mandatory financial reporting requirements. Their evidence supports treating enforcement arrangements as consequential features of a regulatory system. It does not establish that additional funding necessarily produces more actions. Within the available annual series, the framework asks whether funding authority and enforcement activity move together, diverge, or display different patterns across years.

RQ1: How do funding authority and annual enforcement action counts vary together during 2010 to 2023?

Program expenditure captures resources consumed rather than resources authorized. It therefore reflects realized agency activity more closely than funding authority, although its connection with annual enforcement counts remains indirect. Investigations, litigation, administration, and other statutory functions can generate expenditure before an enforcement action is recorded. Expenditure may also respond to demanding cases, creating a possible relationship from workload to resource consumption. The distinction between expenditure and action counts also reflects differences in case composition. The SEC's enforcement results for 2020 distinguish total actions from standalone actions and describe work across several categories of securities violations. U.S. Securities and Exchange Commission 2020 therefore provides an institutional basis for treating the total

count as an aggregate measure of activity. A year containing resource intensive cases may record substantial expenditure without a corresponding increase in total actions. This analysis measures program expenditure through reported total program costs. The measure covers the agency rather than enforcement alone. Its descriptive value lies in showing whether changes in overall resource consumption coincide with changes in enforcement output. A positive, negative, or weak association can each be reported directly from the observations without attributing the pattern to unmeasured organizational processes.

RQ2: How does annual enforcement activity vary alongside reported program expenditure during 2010 to 2023?

Capital assets represent accumulated infrastructure that can support regulatory work across several reporting periods. Property, equipment, and capitalized systems may assist information processing, coordination, and case administration. The theoretical mechanism differs from current expenditure because capital assets provide continuing services rather than recording only resources consumed within a single year. Net capital assets nevertheless combine investment decisions with depreciation and asset retirement. Their reported value can decline while assets remain operational, or increase before new infrastructure contributes to recorded enforcement activity. The SEC's agency financial report for 2023 presents property and equipment as a financial statement measure. U.S. Securities and Exchange Commission 2023 supplies the basis for interpreting this variable as an accounting measure of infrastructure rather than a direct measure of technological effectiveness. The framework consequently examines the observed pattern between net capital assets and enforcement counts without assuming an immediate or proportional relationship. Capital assets may complement current spending, but the available measures do not require a separate interaction model to describe their annual variation. The descriptive question concerns whether the two series exhibit similar movements or distinct trajectories.

RQ3: How do changes in net capital assets correspond with changes in annual enforcement activity during 2010 to 2023?

Together, these questions organize the analysis around authorized resources, consumed resources, accumulated assets, and recorded enforcement output. The conceptual links represent possible associations informed by organizational capacity and regulatory incentive mechanisms. They do not represent identified causal effects. The framework uses the 14 annual observations to describe variation and correspondence among the measured series while retaining the distinction between financial resources and enforcement activity.

3. Data:

This analysis uses public financial and enforcement records to construct a consistent annual dataset for the U.S. Securities and Exchange Commission during 2010 to 2023.The data establish source provenance, distinguish three financial resource measures, and support descriptive comparisons with annual enforcement activity.

3.1 Data Sources, Population, and Sample Construction:

The empirical dataset combines financial information from SEC performance and accountability reports and agency financial reports with enforcement counts from annual reports and official enforcement results releases. The provider is the U.S. Securities and Exchange Commission. Each source is identified by its reporting year, document title, and URL. Financial observations refer to the current reporting year column in the relevant statement or management discussion, rather than the comparative column for the preceding year. The financial reporting framework and accompanying notes provide the basis for distinguishing spending authority, program costs, and property and equipment. These source characteristics are documented in U.S. Securities and Exchange Commission 2010, 2011, and 2012. The unit of analysis is one agency fiscal year. The geographical setting is the United States, and the institutional setting is federal securities regulation. The observation period comprises 14 consecutive fiscal years from 2010 through 2023, with each fiscal year ending on September 30. The dataset is a single agency annual time series. Funding authority and program expenditure describe annual financial activity, whereas net capital assets describe an asset balance at the reporting date. Enforcement actions are recorded as an annual flow.

The target population consists of SEC fiscal years within the stated observation period. The accessible sampling frame contains the corresponding public financial reports and enforcement records. All 14 eligible fiscal years appear in the consolidated dataset. Selection therefore constitutes complete coverage of the defined institutional and temporal frame rather than a probability sample of regulatory agencies. Eligibility requires a fiscal year within the observation window and a reported value for each of the four analytical variables. The workbook contains one observation per fiscal year, with no additional agency units. The retained observations therefore support comparisons within the SEC over time. They do not constitute a sample of national regulatory systems. The institutional boundaries and reporting structure are supported by U.S. Securities and Exchange Commission 2013 and 2014.

Table 1: Sample construction

Stage	Agency Units	Annual Observations	Reason or Rule
Initial eligible frame	1	14	SEC fiscal years from 2010 through 2023
Missing variable exclusions	0 removed	0 removed	All four analytical variables are populated
Duplicate year exclusions	0 removed	0 removed	Each fiscal year occurs once
Consolidated analytical sample	1	14	Financial measures and enforcement counts matched by fiscal year
Final descriptive sample	1	14	Complete observations retained without lags or differencing

The sample construction table reports the verified contents of the supplied workbook. No model specific sample is reported because the implemented analysis does not estimate a regression model. No observations are lost through lag construction, differencing, or missing controls.

3.2 Data Integration, Cleaning, and Quality Assurance:

Integration uses the SEC fiscal year as the common identifier. Each annual record combines funding authority, total program costs, net property and equipment, and total enforcement actions. The intended relationship is one financial record to one

enforcement record for each fiscal year. Inspection of the consolidated dataset confirms 14 distinct fiscal years and 14 annual rows. No duplicate year or unmatched annual observation remains in the analytical file. Temporal alignment follows the agency fiscal year rather than the calendar year. Annual expenditure and enforcement activity cover the reporting period, while capital assets refer to September 30. This distinction preserves the difference between flows and stocks. The financial statements and management discussions in U.S. Securities and Exchange Commission 2015 and 2016 document these reporting conventions.

Financial measures use U.S. dollars throughout. Funding authority is retained in reported millions. Program costs and net capital assets are converted from thousands to millions by division by 1,000. This operation changes presentation units without changing the underlying monetary values. No currency conversion or inflation adjustment is applied. Consequently, monetary comparisons describe nominal resources and remain sensitive to changes in purchasing power. Funding authority is distinguished from actual fee collections and total resources available from all accounts. The series represents new spending authority associated with the Salaries and Expenses Fund. The recorded value for 2013 incorporates the reported reduction of USD 66 million from USD 1,321 million, producing USD 1,255 million. The observations therefore follow the source definition rather than substituting transaction fee receipts for authorized resources.

Reported annual values are retained without interpolation, imputation, or replacement by zero. Funding authority, program expenditure, capital assets, and enforcement actions each contain 14 valid observations and no missing values. Inspection confirms positive monetary values, nonnegative integer enforcement counts, consistent monetary scaling, and uninterrupted annual coverage. Source excerpts and document locations are preserved in the extraction evidence worksheet. The financial reports distinguish accounting amounts from operational activity. Program expenditure can include costs outside enforcement, while net capital assets reflect depreciation and asset recognition policies. These distinctions are retained rather than treated as data errors. U.S. Securities and Exchange Commission 2017, 2018a, and 2019a provide the relevant financial statements and supporting explanations. No observations are removed as outliers. The largest program expenditure, USD 2,697.208 million, and the largest enforcement count, 868 actions, remain in the dataset. These are reported observations rather than values generated through estimation. The analysis does not claim that an extreme value represents an error merely because it differs from adjacent years. The dataset is a retrospective compilation of published annual information. It does not reconstruct the information available to decision makers at each historical date. Financial and enforcement reports can be published after the fiscal year closes, but each observation remains assigned to the period it describes. This treatment is appropriate for historical description rather than forecasting.

3.3 Variable Measurement, Construction, and Validation:

The analysis operationalizes regulatory agency financial resources through funding authority, program expenditure, and net capital assets. These measures describe different financial attributes and remain separate variables. No composite resource index or latent construct is estimated. Annual enforcement activity is measured by the total number of enforcement actions. Funding authority measures authorized financial capacity in USD millions. Program expenditure measures total program costs reported in the Statement of Net Cost. It represents accrual-based resource consumption across agency functions rather than enforcement expenditure alone. Net capital assets measure property and equipment after accumulated depreciation and related accounting adjustments. The financial statements in U.S. Securities and Exchange Commission 2020a and 2021a support these distinctions. Enforcement activity measures the total annual count reported by the SEC. The aggregate includes different classes of proceedings rather than a uniform set of cases requiring identical resources. U.S. Securities and Exchange Commission 2018b distinguishes total actions from standalone actions. The outcome is therefore interpreted as recorded enforcement volume rather than case complexity, sanctions, investor recovery, or compliance effectiveness.

Table 2: Variable dictionary

Variable	Analytical Role	Definition and Construction	Source and Identifier	Unit and Frequency	Transformation and Meaning of Higher Values	Missing Value Rule	Coverage and Limitation
Funding authority	Resource measure	New Salaries and Expenses spending authority reported in the management discussion	SEC annual financial report, spending authority discussion and accompanying chart	USD millions, annual	Reported level retained; higher values indicate greater authorized funding	No imputation; 14 complete values	2010 to 2023; nominal authorization rather than actual expenditure
Program expenditure	Resource measure	Total program costs from the Statement of Net Cost	SEC annual financial report, Total Program Costs line	USD millions, annual flow	Reported thousands divided by 1,000; higher values indicate greater recognized program costs	No imputation; 14 complete values	2010 to 2023; includes agency functions beyond enforcement
Net capital assets	Resource measure	Property and equipment after depreciation and applicable adjustments	SEC annual financial report, Property and Equipment, Net line	USD millions, annual closing stock	Reported thousands divided by 1,000; higher values indicate greater net asset carrying value	No imputation; 14 complete values	2010 to 2023; accounting value does not directly measure asset productivity
Enforcement actions	Outcome measure	Total enforcement actions attributed to the fiscal year	SEC financial reports, enforcement annual reports, and official results releases	Number of actions, annual flow	Count retained; higher values indicate more recorded actions	No imputation; 14 complete values	2010 to 2023; proceedings differ in type and resource requirements
Fiscal year	Temporal identifier	Reporting year ending on September 30	SEC reporting period	Year, annual	Original year retained	Complete for every record	Identifies time within one agency

Measurement verification focuses on transcription, reporting periods, source definitions, and unit consistency. Monetary values are traceable to financial statement lines or management discussion passages. Enforcement observations are traceable to reported annual totals. For 2017, the total of 754 actions is obtained from the reported categories of 446 standalone actions, 196 subsequent proceedings, and 112 delinquent filing proceedings. The conversion of program expenditure into millions follows Equation 1.

$$C_t = G_t/1000$$

Here, C_t is program expenditure in USD millions for fiscal year t, and G_t is reported total program costs in USD thousands. The conversion of capital assets follows Equation 2.

$$K_t = P_t/1000$$

Here, K_t is net capital assets in USD millions for fiscal year t, and $P_t$is reported net property and equipment in USD thousands. These conversions preserve the source values and require no estimated weights, normalization benchmarks, or missing component rules. The accounting definitions remain relevant to interpretation because asset depreciation and recognized program costs can change without proportional changes in operational activity. U.S. Securities and Exchange Commission 2022a and 2023a provide the corresponding statement classifications.

Table 3: Descriptive statistics

Variable	Valid Observations	Mean	Sample SD	Median	Minimum	Maximum
Funding authority, USD millions	14	1,606.143	338.066	1,605.000	1,095.000	2,210.000
Program expenditure, USD millions	14	1,785.826	527.666	1,770.781	1,058.423	2,697.208
Net capital assets, USD millions	14	104.710	16.479	100.587	79.712	131.075
Enforcement actions, count	14	761.357	60.524	754.500	681.000	868.000

The descriptive statistics use all retained observations. Standard deviations use the sample denominator of 13. Monetary statistics are presented in millions and rounded to three decimal places. No variable specific coverage loss occurs.

3.4 Analytical Framework, Identification, and Reproducibility:

The analytical framework is descriptive and exploratory. It examines how annual funding authority, program expenditure, and net capital assets vary alongside enforcement action counts. The evidence comes from changes across fiscal years within one institution. No variation across agencies or jurisdictions enters the analysis. The implemented procedures comprise coverage verification, descriptive statistics, and pairwise Pearson correlations between each financial measure and enforcement activity. Each correlation uses the same 14 annual observations. The coefficients are 0.351 for funding authority, 0.159 for program expenditure, and 0.367 for net capital assets. These values summarize linear correspondence in the observed levels without establishing independent resource effects. Interpretation preserves the distinction between enforcement volume and enforcement content. U.S. Securities and Exchange Commission 2019b reports both aggregate activity and different categories of enforcement work. U.S. Securities and Exchange Commission 2020b also distinguishes total actions from standalone actions. Such reporting differences make the aggregate count suitable for describing annual volume while limiting its interpretation as a uniform measure of work performed.

No directional hypothesis is treated as established by the correlation coefficients. The analysis reports the direction and magnitude of observed correspondence without significance tests or causal attribution. Financial resources can respond to anticipated workload, and recorded actions can reflect investigations initiated in earlier periods. Common time movements can also contribute to correlations between nominal financial levels and enforcement counts. The SEC's annual results releases further demonstrate that enforcement output contains several dimensions. U.S. Securities and Exchange Commission 2021b distinguishes new actions from other proceedings. U.S. Securities and Exchange Commission 2022b reports action counts alongside monetary remedies. U.S. Securities and Exchange Commission 2023b separately reports actions, financial remedies, and investor distributions. This analysis retains only the action count consistently represented in the assembled dataset. Reproducibility rests on the workbook's annual observations, variable definitions, source URLs, extraction excerpts, document locations, and unit conversion formulas. The reported descriptive statistics and correlations can be recalculated directly from the 14 retained rows. The measures share a common institution, reporting frequency, and fiscal year identifier, while their definitions preserve the distinction between authorized funding, recognized costs, closing asset balances, and annual enforcement activity.

4. Methods:

4.1 Research Design and Analytical Scope:

This analysis uses a retrospective descriptive design to examine how regulatory agency financial resources correspond with annual enforcement activity. The unit of analysis is one SEC fiscal year. The analytical sample contains 14 consecutive observations covering 2010 through 2023. The sample construction table and variable dictionary document eligibility, coverage, source definitions, and measurement units. The analytical target is the observed correspondence between each financial measure and enforcement action counts within the defined period. Useful variation comes from differences across fiscal years within the same institution. Each financial measure is examined separately against enforcement activity, preserving the distinction between authorized spending capacity, recognized program costs, and accumulated capital assets.

The design estimates unadjusted descriptive associations rather than conditional or causal effects. It does not isolate resource changes from changes in workload, institutional priorities, case composition, or other contemporaneous conditions. Consequently, a positive correlation indicates that larger observed financial amounts tend to coincide with higher action counts across the sample. It does not establish that increasing resources produces additional actions. The research questions are addressed through distributional summaries, correlations in annual levels, comparisons of consecutive annual movements, and sensitivity to individual observations. These procedures distinguish correspondence across financial levels from correspondence between annual changes. The distinction is consequential because the two comparisons use different sources of temporal variation.

4.2 Descriptive Measures and Association Specification:

The analysis calculates the valid count, arithmetic mean, sample standard deviation, median, minimum, and maximum for each financial measure and enforcement activity. Equations 1 and 2 define the monetary conversions used to place program expenditure and capital assets in USD millions. Funding authority remains in its reported unit of USD millions. All monetary comparisons use nominal amounts. The arithmetic mean is calculated using Equation 3.

$$\bar{x} = \frac{1}{n}\sum_{t=1}^{n} x_t$$

Here, $\bar{x}$ denotes the sample mean, x_t denotes the observation for a specified variable in fiscal year t, and $n$denotes the number of available annual observations. The complete annual series uses $n = 14$. Dispersion is measured using the sample standard deviation in Equation 4.

$$s_x = \sqrt{\frac{\sum_{t=1}^{n}\left(x_t - \bar{x}\right)^2}{n-1}}$$

Here, s_x denotes the sample standard deviation. The remaining symbols retain their definitions from Equation 3. The complete sample therefore uses a denominator of 13. Relative dispersion is summarized by dividing the sample standard deviation by the mean and multiplying by 100. This coefficient of variation permits a proportional comparison between monetary measures and action counts. Pearson correlations summarize linear correspondence between each financial measure and annual enforcement activity. Schober, Boer, and Schwarte 2018 distinguish the direction and strength of linear association from broader interpretations of relationships between variables. The present analysis uses the coefficient descriptively rather than as evidence of causal influence. The implemented correlation is specified in Equation 5.

$$r_{xy} = \frac{\sum_{t=1}^{n}\left(x_t - \bar{x}\right)\left(y_t - \bar{y}\right)}{\sqrt{\sum_{t=1}^{n}\left(x_t - \bar{x}\right)^2 \sum_{t=1}^{n}\left(y_t - \bar{y}\right)^2}}$$

Here, r_{xy} denotes the Pearson correlation, x_t denotes a specified financial measure, y_t denotes the enforcement action count, and $\bar{x}$ and $\bar{y}$ denote their respective sample means. The index t identifies matched fiscal years, and n denotes the number of matched observations. Three level correlations are calculated, each using the same 14 fiscal years. Every year receives equal weight. The analysis retains coefficients as continuous descriptive quantities rather than assigning universal categories such as weak, moderate, or strong. Differences between coefficients are interpreted as differences in observed correspondence, without treating their ranking as evidence of independent explanatory importance.

4.3 Annual Comparisons and Sensitivity Procedures:

The analysis orders observations chronologically before constructing annual changes. For each financial measure and enforcement activity, the change equals the current annual value less its immediately preceding value, as defined in Equation 6.

$$\Delta z_t = z_t - z_{t-1}$$

Here, Δz_t denotes the absolute annual change in a specified variable, $z_t$denotes its value in the current fiscal year, and z_{t-1}denotes its value in the preceding fiscal year. These transformations produce 13 paired annual changes covering transitions from 2010 to 2011 through 2022 to 2023. Equation 5 is then applied to each pair of financial and enforcement changes. The resulting coefficients describe whether annual increases or decreases occur together. They are distinct from correlations in levels, which compare the relative positions of annual observations across the complete period. Differencing is used as an exploratory temporal comparison rather than as proof that trends, dependence, or confounding have been removed.

Directional comparisons provide an additional descriptive summary. For each financial measure, consecutive annual changes are classified according to whether they share the direction of the corresponding enforcement change, move in opposite directions, or include an unchanged value. The classification uses the signs of the observed changes and covers all 13 consecutive annual comparisons. Percentage changes are calculated for selected annual comparisons and for the opening and closing observations. Each percentage change equals the later value divided by the earlier value, less one, multiplied by 100. All relevant earlier values are positive, so these calculations contain no zero denominators. Percentage changes remain distinct from the absolute differences used in the annual change correlations.

Sensitivity to individual observations is assessed through sequential omission. Each fiscal year is removed once, and the three level correlations are recalculated using the remaining 13 observations. The analysis reports the minimum and maximum coefficient obtained for each financial measure across the 14 recalculations. The omission procedure examines whether a single observation determines the sign or substantially influences the magnitude of the level correlation. It does not remove years from the principal sample. Annual change comparisons and sequential omission analyses are identified as exploratory extensions undertaken after inspection of the level correlations. Their results are presented together in Table 5 to make changes in specification and sample size explicit.

4.4 Implementation, Verification, and Interpretive Limits:

Calculations were implemented in Python 3.12.14 using the standard library. Workbook records were read through the zipfile and xml.etree. Element Tree modules. The statistics module supplied arithmetic means, sample standard deviations, medians, and Pearson correlations. Consecutive differences, percentage changes, directional classifications, and omission samples were constructed directly from the ordered annual records. The procedures are deterministic and require no random seed or numerical optimization settings. Verification confirmed 14 distinct fiscal years, complete values for all four analytical measures, and consistent chronological ordering. Monetary transformations were checked against the reported source units. Annual changes were constructed only between adjacent fiscal years. The complete sample was retained for principal summaries, while annual change calculations used 13 transitions and omission calculations used 13 observations per recalculation.

No missing observations were imputed, interpolated, or replaced by zero. Reported extreme values remained in the analysis. Sequential omission was used to assess their potential influence without redefining valid observations as errors. The reported mean, median, range, and sample standard deviation can be recalculated from the annual data underlying Table 4. The analysis reports descriptive coefficients without standard errors, confidence intervals, or significance tests. Interpretation therefore concerns the observed sample rather than statistical inference to a wider population of agencies or historical periods. Correlations

may reflect shared temporal movements, institutional changes, or differences between accounting recognition and the recording of enforcement actions. Replication relies on the workbook's annual observations, variable definitions, source URLs, extraction excerpts, and monetary conversion formulas, together with the calculations specified here. The methodological contribution is the consistent separation of financial measures and temporal comparisons using established descriptive procedures. These procedures answer whether the measured series correspond within the observed period while preserving the distinction between association, operational performance, and causation.

5. Findings:

This analysis examines how funding authority, program expenditure, and net capital assets correspond with annual SEC enforcement activity. The findings combine descriptive statistics, annual comparisons, and exploratory correlations across 14 fiscal years. Sensitivity analyses distinguish associations in financial levels from correspondence in annual changes. The analytical sample contains one SEC observation for each fiscal year from 2010 through 2023. All four variables have complete coverage, with no excluded years or imputed values. Funding authority and program expenditure describe annual financial resources, net capital assets describe the closing asset balance, and enforcement actions measure annual recorded activity. Monetary values are expressed in nominal USD millions. The findings therefore describe financial amounts as reported rather than changes in purchasing power.

Table 4: Financial resources and enforcement activity across 14 fiscal years

Measure	Mean	Standard Deviation	Median	Minimum	Maximum
Funding authority, USD millions	1,606.143	338.066	1,605.000	1,095.000	2,210.000
Program expenditure, USD millions	1,785.826	527.666	1,770.781	1,058.423	2,697.208
Net capital assets, USD millions	104.710	16.479	100.587	79.712	131.075
Enforcement actions, count	761.357	60.524	754.500	681.000	868.000

Financial resources varied more proportionately than enforcement counts. The coefficient of variation was 29.55 percent for program expenditure, 21.05 percent for funding authority, and 15.74 percent for net capital assets, compared with 7.95 percent for enforcement actions. Thus, annual financial variation did not translate into equally large proportional variation in recorded enforcement volume. The comparison between the opening and closing observations reinforces this distinction. Funding authority increased from USD 1,095 million to USD 2,210 million, an increase of 101.83 percent. Program expenditure increased by 127.96 percent, while net capital assets increased by 35.14 percent. Enforcement actions increased from 681 to 784, or 15.12 percent. These differences establish that financial resources and action counts followed different growth paths. They do not establish changes in enforcement efficiency because the resource measures cover the agency and the outcome does not adjust for case complexity.

For RQ1, funding authority had a positive correlation of 0.351 with annual enforcement actions. Years with greater authorized funding therefore tended to record more actions, although the correspondence was incomplete. Across the 13 consecutive annual comparisons, funding and actions moved in the same direction eight times, moved in opposite directions four times, and included one comparison with unchanged funding. The unchanged funding observation provides a substantive qualification. Funding authority remained at USD 1,605 million between 2016 and 2017, while enforcement actions declined from 868 to 754, a reduction of 13.13 percent. The SEC reported the 2016 total as a record volume of actions. U.S. Securities and Exchange Commission 2016 therefore supports interpreting this comparison as a decline from an unusually high observed count rather than evidence that unchanged funding necessarily reduced enforcement. The 2017 total also combined different proceedings. It comprised 446 standalone actions, 196 subsequent proceedings, and 112 delinquent filing proceedings, as reported by U.S. Securities and Exchange Commission 2017. Funding authority consequently relates to an aggregate output containing activities with different institutional purposes and resource requirements. The answer to RQ1 is a positive descriptive association in annual levels, accompanied by several years in which funding and action counts diverged.

For RQ2, program expenditure displayed the weakest correlation with enforcement activity, at 0.159. Expenditure and action counts moved in the same direction in six annual comparisons and in opposite directions in seven. Higher annual expenditure therefore did not consistently coincide with more recorded actions. The divergence was especially visible between 2019 and 2020. Program expenditure increased by USD 444.424 million, or 24.04 percent, while enforcement actions declined by 147, or 17.05 percent. A different divergence occurred between 2022 and 2023, when expenditure declined by 10.54 percent while actions increased by 3.16 percent. These observations show that aggregate annual costs and recorded enforcement volume can move in opposite directions. The distinction between total actions and their composition matters when interpreting these comparisons. U.S. Securities and Exchange Commission 2019 reported 862 total actions, including 526 standalone actions. A total count does not hold the mix of proceedings constant. The weak expenditure correlation therefore describes the relationship between agency program costs and aggregate action volume, rather than the resources required to complete a comparable case.

For RQ3, net capital assets had a positive correlation of 0.367 with enforcement actions. This coefficient was slightly larger than the funding correlation, but the difference was only 0.016. The descriptive evidence does not justify treating capital assets as a stronger independent determinant of enforcement activity. Annual comparisons further qualify the positive correlation in levels. Capital assets and enforcement actions moved in the same direction six times and in opposite directions seven times. Net capital assets reached their maximum of USD 131.075 million in 2017, whereas enforcement actions reached their maximum of 868 in 2016. In 2019, capital assets declined by 20.09 percent while enforcement actions increased by 4.99 percent. The answer to RQ3 is therefore a positive association across annual levels without consistent correspondence between annual movements.

Table 5: Exploratory associations and sensitivity analyses

Resource Measure	Correlation With Action Levels	Correlation Between Annual Changes	Lowest Correlation After Omitting One Year	Highest Correlation After Omitting One Year
Funding	0.351	0.225	0.222	0.474

Resource Measure	Correlation With Action Levels	Correlation Between Annual Changes	Lowest Correlation After Omitting One Year	Highest Correlation After Omitting One Year
authority				
Program expenditure	0.159	Negative 0.555	0.009	0.304
Net capital assets	0.367	Negative 0.137	0.224	0.588

The sensitivity analyses were exploratory extensions undertaken after inspecting the level correlations. Annual changes were calculated as the current observation less the preceding observation. This comparison addresses whether the positive correspondence in levels also appears when examining movement between consecutive years. Funding retained a positive annual change correlation of 0.225. Program expenditure changed from a positive level correlation to a negative annual change correlation of 0.555 in magnitude. Capital assets also changed sign, although their annual change correlation was smaller, at negative 0.137. The positive correlations in financial levels therefore do not establish that annual increases in expenditure or capital assets coincide with annual increases in enforcement actions. The expenditure result is consistent with the observed 2020 divergence. U.S. Securities and Exchange Commission 2020 reported 715 total actions, including 405 standalone actions. That annual count declined while recorded program expenditure increased. The comparison documents a divergence in measured series without identifying its cause.

Sequential omission of individual years preserved the positive sign of every level correlation. Nevertheless, magnitudes varied. The expenditure correlation ranged from 0.009 to 0.304, showing that its already limited correspondence could become close to zero. Funding correlations ranged from 0.222 to 0.474, while capital asset correlations ranged from 0.224 to 0.588. Positive level associations therefore persisted across these reduced samples, but their magnitudes depended on which observations were retained. Taken together, the findings answer the three research questions through a distinction between financial levels and annual movements. Funding authority and capital assets had positive level correlations with action counts, while program expenditure had a smaller positive correlation. Annual change comparisons retained a positive relationship only for funding. The SEC reported 784 actions in 2023 alongside separate measures of financial remedies and investor distributions, underscoring that action counts capture one dimension of enforcement output. U.S. Securities and Exchange Commission 2023 provides the institutional basis for that distinction. The empirical contribution is the documented divergence between financial resource expansion and recorded enforcement volume within this annual series.

6. Discussion:

Greater financial resources did not translate into proportionate increases in recorded enforcement activity. The distinction between financial levels and annual movements is the central contribution of this analysis. Table 5 shows positive correlations between each resource measure and enforcement counts in levels, yet annual changes produce a different pattern. Funding retains a positive association, while expenditure and capital assets change sign. This contrast shows why a positive correlation across annual levels cannot establish that increases in resources coincide with increases in enforcement output. Andrews and Boyne 2010 distinguish organizational capacity from the processes through which capacity supports performance. The findings extend that distinction descriptively by showing that authorized funding, recognized expenditure, and accumulated assets provide different accounts of the relationship between resources and output. The contribution lies in making these differences visible within a consistently defined institutional series. The evidence also separates resource authorization from resource consumption without identifying the intervening organizational processes. Funding has a stronger positive level correlation with enforcement counts than program expenditure, while expenditure displays the largest negative correlation between annual changes. These patterns indicate that spending permission and recognized costs are not interchangeable measures of regulatory activity. Wu, Ramesh, and Howlett 2015 conceptualize policy capacity through interacting resources and competences, providing a theoretical basis for distinguishing financial inputs from operational capability. Table 5 supports that distinction but does not identify which competences explain the observed divergence. The resulting contribution is a more precise interpretation of resource measures: expenditure records recognized costs, whereas enforcement counts record completed or initiated proceedings attributed to a reporting period. Their annual correspondence need not represent a direct transmission from spending to output.

The resource dimensions differ in descriptive correspondence, but the coefficients do not establish a dominant pathway. Capital assets have the largest level correlation, although its proximity to the funding coefficient provides little basis for ranking their substantive importance. Moreover, the capital asset association becomes negative when measured through annual changes. Equations 1 and 2 convert expenditure and asset values into common monetary units; they do not make these measures conceptually equivalent. Table 4 distinguishes annual resource consumption from an asset stock shaped by investment and depreciation. Kedia and Rajgopal 2011 demonstrate that enforcement preferences matter for corporate misconduct, highlighting the importance of institutional incentives alongside financial inputs. The present evidence adds a measurement qualification: correlations between financial resources and action counts cannot reveal how resource allocation, enforcement incentives, and the composition of cases contribute separately to observed output. The divergence between expenditure and enforcement volume challenges the use of aggregate action counts as a sufficient performance benchmark. Financial resources increased more than recorded actions across the observation window, but this difference does not establish operational inefficiency. Agency expenditure supports several statutory functions, and enforcement proceedings differ in complexity, duration, and institutional purpose. U.S. Securities and Exchange Commission 2023 reports action counts separately from financial remedies and investor distributions, illustrating that enforcement performance contains distinct dimensions. The sensitivity results in Table 5 reinforce the need for restraint: positive level correlations persist when individual years are omitted, but their magnitudes vary, and annual change comparisons alter two signs. What changes is the interpretation of apparent resource productivity. A financial expansion accompanied by slower growth in action counts requires attention to what each measure captures before it can inform judgments about performance.

The international relevance lies in a transferable distinction between regulatory resources and the outputs used to evaluate them. Christensen, Hail, and Leuz 2013 show that enforcement changes matter when interpreting financial reporting reforms across jurisdictions. Their evidence concerns institutional changes, whereas this analysis documents variation within one agency; the two designs therefore address different dimensions of regulatory performance. The SEC findings do not establish differences between advanced and emerging economies, but they demonstrate why comparisons based only on budgets and total actions can obscure differences in measurement and institutional responsibilities. Decision makers should distinguish authorized funding, recognized expenditure, and capital assets when interpreting enforcement activity, and should avoid treating the positive level correlations as evidence that additional spending produces more actions. The theoretical implication is to assess regulatory capacity through clearly separated resource and output measures rather than assume that they form a single performance relationship.

7. Conclusion and Implications:

Regulatory accountability requires more than assuming that expanding financial resources produces greater enforcement activity. This analysis reveals that positive associations across annual levels can coexist with divergent movements between consecutive years. The contribution is an empirical distinction between resource accumulation and annual operational correspondence, showing how temporal measurement changes the interpretation of regulatory capacity. The evidence qualifies frameworks that connect organizational resources with performance by demonstrating that financial expansion and recorded activity need not move proportionately. For managers, the implication is to assess resource commitments alongside the composition and timing of completed work before interpreting changes as improved or reduced productivity. Budget reviews should distinguish financial capacity from observable output and avoid treating aggregate counts as sufficient evidence of effectiveness. Operational reporting can support this distinction by linking expenditure records with clearly defined categories of activity and consistent reporting periods. For policymakers, the findings support scrutiny of performance benchmarks rather than automatic judgments about funding adequacy or institutional efficiency. International relevance rests on this transferable measurement principle, while the observed relationships remain specific to the institutional series examined. More precise interpretation can strengthen public accountability and make debates about regulatory resources more informative for institutions, regulated firms, investors, and the public.

The evidence covers one agency and a short annual series, creating opportunities for comparisons across regulators and institutional settings. Nominal financial amounts and aggregate activity counts invite extensions using inflation adjusted resources, comparable case categories, and investigation duration. The descriptive design establishes correspondence rather than causal pathways. Future research could examine changes in funding rules or other institutional arrangements with designs suited to causal identification. Linking financial records to individual proceedings would help distinguish workload composition from operational performance. These extensions could assess whether the temporal contrasts persist across jurisdictions and clarify which organizational processes connect resources with regulatory outcomes.

References:

1. Andrews, R., & Boyne, G. A. 2010. Capacity, leadership, and organizational performance: Testing the black box model of public management. Public Administration Review, volume 70, issue 3, pages 443 to 454. https://doi.org/10.111 1/j.1540-6210.2010.02158.x
2. Christensen, H. B., Hail, L., &Leuz, C. 2013. Mandatory IFRS reporting and changes in enforcement. Journal of Accounting and Economics, volume 56, issues 2 and 3, pages 147 to 177. https://doi.org/10.1016/j.jacceco.2013.10.007
3. Kedia, S., & Rajgopal, S. 2011. Do the SEC's enforcement preferences affect corporate misconduct? Journal of Accounting and Economics, volume 51, issue 3, pages 259 to 278. https://doi.org/10.1016/j.jacceco.2011.01.004
4. Schober, P., Boer, C., & Schwarte, L. A. 2018. Correlation coefficients: Appropriate use and interpretation. Anesthesia & Analgesia, volume 126, issue 5, pages 1763 to 1768. https://doi.org/10.1213/ANE.0000000000002864
5. U.S. Securities and Exchange Commission. 2010. Performance and accountability report: Fiscal year 2010. https://www. sec.gov/about/secpar/secpar2010.pdf
6. U.S. Securities and Exchange Commission. 2011. Performance and accountability report: Fiscal year 2011. https://www. sec.gov/about/secpar/secpar2011.pdf
7. U.S. Securities and Exchange Commission. 2012. Agency financial report: Fiscal year 2012. https://www.sec.gov/ about/secpar/secafr2012.pdf
8. U.S. Securities and Exchange Commission. 2013. Agency financial report: Fiscal year 2013. https://www.sec.gov/about/ secpar/secafr2013.pdf
9. U.S. Securities and Exchange Commission. 2014. Agency financial report: Fiscal year 2014. https://www.sec.gov/about/ secpar/secafr2014.pdf
10. U.S. Securities and Exchange Commission. 2015. Agency financial report: Fiscal year 2015. https://www.sec.gov/about/ secpar/secafr2015.pdf
11. U.S. Securities and Exchange Commission. 2016. Agency financial report: Fiscal year 2016. https://www.sec.gov/about /secpar/secafr2016.pdf
12. U.S. Securities and Exchange Commission. 2017. Agency financial report: Fiscal year 2017. https://www.sec.gov/files/s ec-2017-agency-financial-report.pdf
13. U.S. Securities and Exchange Commission. 2018a. Agency financial report: Fiscal year 2018. https://www.sec.gov/files/ sec-2018-agency-financial-report.pdf
14. U.S. Securities and Exchange Commission. 2018b. Division of Enforcement annual report. https://www.sec.gov/files /enforcement-annual-report-2018.pdf
15. U.S. Securities and Exchange Commission. 2019a. Agency financial report: Fiscal year 2019. https://www.sec.gov/files/ sec-2019-agency-financial-report.pdf

16. U.S. Securities and Exchange Commission. 2019b. Division of Enforcement annual report. https://www.sec.gov/files/enforcement-annual-report-2019.pdf
17. U.S. Securities and Exchange Commission. 2020a. Agency financial report: Fiscal year 2020. https://www.sec.gov/files/sec-2020-agency-financial-report.pdf
18. U.S. Securities and Exchange Commission. 2020b. SEC announces enforcement results for fiscal year 2020. https://www.sec.gov/news/press-release/2020-274
19. U.S. Securities and Exchange Commission. 2021a. Agency financial report: Fiscal year 2021. https://www.sec.gov/files/sec-2021-agency-financial-report.pdf
20. U.S. Securities and Exchange Commission. 2021b. SEC announces enforcement results for FY 2021. https://www.sec.gov/news/press-release/2021-238
21. U.S. Securities and Exchange Commission. 2022a. Agency financial report: Fiscal year 2022. https://www.sec.gov/files/sec-2022-agency-financial-report.pdf
22. U.S. Securities and Exchange Commission. 2022b. SEC announces enforcement results for fiscal year 2022. https://www.sec.gov/news/press-release/2022-206
23. U.S. Securities and Exchange Commission. 2023a. Agency financial report: Fiscal year 2023. https://www.sec.gov/files/sec-2023-agency-financial-report.pdf
24. U.S. Securities and Exchange Commission. 2023b. SEC announces enforcement results for fiscal year 2023. https://www.sec.gov/news/press-release/2023-234
25. Wu, X., Ramesh, M., & Howlett, M. 2015. Policy capacity: A conceptual framework for understanding policy competences and capabilities. Policy and Society, volume 34, issues 3 and 4, pages 165 to 171. https://doi.org/10.1016/j.polsoc.2015.09.001