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PROPORTIONALITY IN THE CALIBRATION OF MONETARY LEGAL SANCTIONS: TOWARD A COMPOSITE PROPORTIONALITY INDEX FOR FINE-SETTING IN REGULATORY AND ADMINISTRATIVE LAW

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Abstract. This article addresses the absence of a unified methodological standard for calibrating monetary legal sanctions – fines, levies, and administrative penalties – and proposes a seven-stage analytical model. The model is synthesized with the economic theory of deterrence developed by Becker and Polinsky–Shavell, the proportionality doctrine articulated by Barak, and Ashworth's sentencing-consistency framework. Through comparative analysis of EU competition fines, the Nordic day-fine system, the Sentencing Council's guidelines for England and Wales, and the risk-based frameworks of the OECD and FATF, the article finds that existing approaches optimize for only one of three objectives: deterrence, ability-to-pay, or horizontal consistency. The article's principal contribution is a Composite Proportionality Index (CPI) – a weighted, auditable formula that integrates harm-based, gain-based, deterrence-based, and capacity-based components into a single bounded coefficient, supplemented by a decision matrix for legislative and judicial application. The model is illustrated through a worked administrative-sanitary case and stress-tested against identified international benchmarks.

Keywords: proportionality principle; administrative fines; deterrence theory; Becker model; regulatory sanctions; ability to pay; day-fine system.

1. Introduction

Monetary sanctions are the most frequently applied instrument of public enforcement in the modern regulatory state. Administrative fines, competition-law penalties, tax surcharges, environmental levies, and consumer-protection sanctions collectively touch far more regulated entities than criminal punishment ever does, yet the methodology for setting their amounts is, in most legal systems, far less developed than sentencing theory in criminal law. Legislatures frequently fix a fine at a round number, at a multiple of a statutory reference unit, or simply by analogy to a neighbouring provision, without a documented analytical basis. This produces two recurring pathologies: under-deterrence, where the sanction is cheaper than compliance and is therefore treated as a licence fee for wrongdoing, and disproportion, where a mechanically applied fine destroys a small economic actor while barely registering against a large one for an equivalent breach.

Both pathologies are, at bottom, failures of method rather than failures of political will. This article argues that the calibration of monetary sanctions can and should be treated as a distinct sub-field of regulatory science, sitting at the intersection of constitutional proportionality doctrine, law-and-economics deterrence theory, and comparative regulatory practice. It builds on – but substantially reworks – a staged analytical framework for fine-setting, testing each stage against the theoretical and comparative literature, and proposes a single composite metric, the Composite Proportionality Index (CPI), through which legislators, regulators, and courts can make the proportionality of a given sanction auditable rather than merely asserted.

2. Relevance of the Problem

The relevance of a rigorous fine-calibration methodology has grown for three converging reasons. First, the expansion of administrative and regulatory liability – in competition law, financial supervision, data protection, environmental regulation, and consumer protection – has made monetary sanctions the primary enforcement tool of the contemporary state, displacing criminal prosecution in economic regulation almost entirely [2,3]. Second, constitutional and human-rights courts have increasingly subjected administrative sanctions to the same proportionality scrutiny previously reserved for criminal punishment: the European Court of Human Rights has held that formally "administrative" penalties may

nonetheless be "criminal" in substance for the purposes of fair-trial and proportionality guarantees where they are punitive and deterrent in character [26,27]. Third, transition and middle-income economies undertaking regulatory reform – including in Central Asia, Eastern Europe, and the South Caucasus – are simultaneously expected to strengthen enforcement and to protect the competitiveness of their business environment, a tension that a defensible fine-setting methodology can help reconcile rather than merely balance politically.

3. Literature Review

The theoretical starting point for any economic analysis of monetary sanctions remains Becker's 1968 model of crime as rational choice, in which an offender commits a violation if and only if the expected benefit exceeds the expected cost, and in which the optimal fine, in the absence of enforcement costs, is the harm caused divided by the probability of detection [1]. Becker's "high fine, low probability" result has been refined and qualified extensively. Polinsky and Shavell's synthesis of the public-enforcement literature shows that where offenders have limited wealth, the optimal fine is bounded by ability to pay, and enforcement effort becomes a complement rather than a pure substitute for the size of the fine [2]. Subsequent scholarship (Polinsky & Shavell's own later work, and the broader public-enforcement literature building on their 2000 survey) confirms that a mechanical application of the Becker formula, without a wealth constraint, generates fines that are either unenforceable or grossly disproportionate whenever detection probabilities are low, which is precisely the recurring situation in sanitary, labour-safety, and small-business regulatory contexts [2].

A second and largely separate literature addresses proportionality as a constitutional and doctrinal principle rather than an efficiency criterion. Barak's comprehensive treatment of proportionality identifies four cumulative components – proper purpose, rational connection, necessity, and proportionality stricto sensu (balancing) – as the analytical structure through which any state interference with a protected interest, including punitive interference through fines, must be justified [4]. Ashworth's sentencing-consistency scholarship translates a cognate idea into the penalty context: sanctions for offences of comparable social harm should occupy comparable positions on a coherent penalty scale, and unexplained divergence between neighbouring offence categories is itself evidence of

disproportion [5,6,7]. Von Hirsch and Ashworth's "just deserts" framework further insists that the ordinal ranking of sanctions, not merely their absolute level, is the primary proportionality requirement [6].

A third strand – comparative and institutional – documents how existing legal systems have operationalized these principles. The European Union's competition-fining regime caps penalties at ten percent of an undertaking's total annual turnover and calculates the base amount from the value of sales affected by the infringement, explicitly building an ability-to-pay ceiling into the deterrence formula [8,9,10,11]. England and Wales's Sentencing Council has, since 2016, banded organisational offenders by turnover (micro, small, medium, large, and – in an evolving line of appellate practice – "very large") for health-and-safety, environmental, and food-safety offences, with starting points and ranges that scale by roughly an order of magnitude between bands [12,13,14,15]. The Nordic day-fine system, in continuous operation in Finland since 1920 and subsequently adopted in Sweden, Denmark, Germany, and elsewhere, indexes the daily monetary unit of a fine directly to the offender's disposable income, so that the same number of "fine-days" imposes an equalized proportional burden regardless of wealth [16,17,18]. Finally, the OECD's Best Practice Principles for Regulatory Enforcement and Inspections, adopted pursuant to the OECD's 2012 Recommendation on Regulatory Policy and Governance, and the Financial Action Task Force's Recommendation 1 both institutionalize a risk-based approach in which the intensity of regulatory intervention – including sanction severity – is calibrated to the probability and magnitude of harm rather than applied uniformly [19,20,21,30]. This risk-based turn in regulatory practice has a well-developed theoretical counterpart in the regulatory-governance literature: Baldwin, Cave and Lodge's general theory of regulatory instrument choice treats sanction design as one instrument among several within a broader enforcement pyramid, to be selected and calibrated according to the risk profile of the regulated population rather than in isolation [22], while Black's analysis of risk-based regulatory processes cautions that formally risk-based frameworks can mask undisclosed political judgments about which harms are prioritized unless the underlying risk methodology is made transparent [23], a caution directly relevant to the transparency requirement developed in Section 8. Sunstein's work on risk regulation similarly demonstrates that sanction severity calibrated to statistically

assessed risk, rather than to intuitive or politically salient harm, produces more internally consistent regulatory outcomes across otherwise unrelated domains [25]. A further, welfare-economic strand of the literature – most systematically developed by Kaplow and Shavell – asks whether legal rules, including sanction levels, should be evaluated purely by their effect on aggregate social welfare or also by independent notions of fairness such as horizontal consistency; their analysis is a useful corrective against treating the symmetrical-analysis method of Section 5.3 as self-justifying, since it shows that consistency for its own sake can conflict with welfare-maximizing calibration where offence categories differ in ways a simple penalty table does not capture [24].

What this literature does not yet provide is a single, transparent formula that integrates the deterrence variable (Becker), the proportionality-doctrine variables (Barak, Ashworth), and the ability-to-pay variable (day-fine systems, EU turnover caps, UK turnover bands) into one auditable coefficient usable by a legislator drafting a new offence or a regulator calibrating an individual sanction. That gap is the specific contribution of this article.

4. Research Methodology

The article employs a doctrinal-comparative method combined with formal modelling. First, it reconstructs the economic-deterrence and constitutional-proportionality literatures analytically to identify the variables each tradition treats as decisive. Second, it conducts a structured comparative analysis of seven jurisdictions and international regimes – the European Union, the United Kingdom, Finland (as representative of the Nordic day-fine family), Poland, Lithuania, Georgia, and Kazakhstan (as representative of post-Soviet administrative-penalty regimes), together with the cross-cutting institutional frameworks of the OECD and FATF – selected because each operationalizes a different combination of the deterrence, proportionality, and capacity variables. Third, the article synthesizes the doctrinal and comparative findings into a formal composite index, tests the index against a worked numerical example drawn from sanitary-regulation enforcement, and stress-tests its sensitivity to the underlying parameters.

5. Theoretical Framework: A Seven-Stage Model of Sanction Calibration

Proportionate calibration of a monetary sanction can be decomposed into seven analytically distinct, sequentially dependent stages, summarized in Table 1.

Table 1. The seven-stage model of monetary-sanction calibration

Stage	Content of analysis	Key question
1	Problem identification	What social or economic harm exists?
2	Real-harm assessment	How much harm is caused to society or individuals?
3	Illicit-gain calculation	What economic advantage did the violator obtain?
4	Detection-probability assessment	What is the likelihood that the violation is detected?
5	Symmetrical (horizontal) analysis	Is the sanction proportionate to sanctions for other violations?
6	Individualization factors	What is the offender's economic capacity?
7	Preventive-effect assessment	Does the sanction reduce the incentive to offend?

Two features of this model deserve emphasis. First, stages 1–4 are primarily empirical and can, in principle, be answered with reference to verifiable data (medical or financial expert assessment, accounting analysis, enforcement statistics). Stages 5–7 are normative and comparative: they require the legislator or regulator to situate the proposed sanction within a broader system of sanctions and within the economic reality of the population of regulated entities. A methodologically sound fine-setting exercise cannot proceed directly from stage 2 (harm) or stage 3 (illicit gain) to a final figure; doing so – a common drafting shortcut – collapses the deterrence and proportionality analyses into a single undifferentiated number and is the principal source of the two pathologies identified in Section 1.

Second, the model is recursive rather than linear in application: a sanction that fails the ability-to-pay constraint at stage 6 must be returned to stage 5 (symmetric analysis) to determine whether the appropriate response is a lower monetary penalty combined with a non-monetary measure (suspension, licence conditions, remedial order), rather than a reduction that would undermine deterrence.

5.1 The Deterrence Component (Becker Model, Refined)

Becker's foundational result expresses the optimal fine, absent a wealth constraint, as harm divided by the probability of detection [1]. Table 2 reproduces this relationship for a fixed harm of 10 million units at varying detection probabilities, illustrating why the unconstrained Becker formula becomes analytically unstable – and practically indefensible – at the low detection probabilities typical of decentralized administrative enforcement (sanitary inspection, labour-safety inspection, consumer-protection complaint-handling), where annual inspection coverage of the regulated population rarely exceeds single-digit percentages.

Table 2. Becker-optimal fine at varying detection probabilities (illustrative units)

Detection probability	Assessed harm	Becker-optimal fine	Proportionality assessment
5% (low)	10,000,000	200,000,000	Disproportionate absent capacity cap
25% (moderate)	10,000,000	40,000,000	Acceptable with capacity review
50% (high)	10,000,000	20,000,000	Proportionate
80% (very high)	10,000,000	12,500,000	Close to ideal proportionality

The policy implication, consistent with Polinsky and Shavell's synthesis [2], is that jurisdictions facing low detection probabilities should treat investment in detection capacity as at least as important a lever as the nominal fine level: doubling the probability of detection reduces the theoretically required fine by half, whereas doubling the fine alone does nothing to address the credibility problem that arises when a legally "correct" fine is functionally uncollectable or disproportionate to the offender's assets.

5.2 The Proportionality-Doctrine Component (Barak, Ashworth)

Barak's four-part proportionality test – proper purpose, rational connection, necessity, and balancing (proportionality stricto sensu) [4] – maps onto the fine-setting exercise as follows: the "proper purpose" inquiry corresponds to stage 1 (problem identification); "rational connection" corresponds to the requirement that the sanction's structure (monetary, non-monetary, or hybrid) actually address

the identified harm; "necessity" corresponds to the requirement that no less restrictive sanction level would achieve the same regulatory objective; and "balancing" corresponds to stages 5–6 of the model, where the deterrent value of the sanction is weighed against its burden on the offender and, indirectly, on the wider economy. Ashworth's independent contribution is the requirement of ordinal consistency: because proportionality is inherently a comparative concept, a sanction cannot be assessed in isolation but only by reference to the severity assigned to comparably harmful conduct elsewhere in the same legal system [5,6,7]. This is the doctrinal foundation for the "symmetrical analysis" (Section 5.3) already embedded in stage 5 of the model.

5.3 Symmetrical (Horizontal) Analysis

Symmetrical analysis compares a proposed sanction, both vertically (against more and less severe offences in the same regulatory domain) and horizontally (against comparably harmful conduct in unrelated regulatory domains), to detect unexplained divergence. Table 3 illustrates the method using an illustrative national administrative-penalty schedule in which a newly proposed sanitary-violation fine of 50 base calculation units is compared against existing fines for fire-safety (30 units), labour-safety (25 units), and environmental (40 units) violations.

Table 3. Illustrative symmetrical (horizontal) analysis of a proposed sanitary fine

Violation type	**Existing/proposed fine (base units)**	**Relative position**
Fire-safety violation	30	Reference: moderate physical-risk domain
Labour-safety violation	25	Reference: moderate physical-risk domain
Environmental violation	40	Reference: elevated diffuse-harm domain
Proposed sanitary violation	50	Requires justification: exceeds all three comparators

A fine that is markedly higher than sanctions for comparably or more severe risks in adjoining regulatory domains requires an explicit empirical justification (e.g., demonstrably higher realized harm, lower detection probability, or a

documented compliance crisis); absent such justification, symmetrical analysis treats the divergence itself as evidence of disproportion, consistent with Ashworth's consistency requirement [5] and with the broader sentencing-consistency literature illustrated by Tonry's analysis of unexplained disparity in otherwise comparable cases [29] and by Zimring, Hawkins and Kamin's account of how mandatory penalty schemes (illustrated by three-strikes sentencing) can become unmoored from the comparative severity of the underlying conduct [28].

5.4 The Ability-to-Pay / Capacity Component

Both the Nordic day-fine system and the EU and UK turnover-based regimes solve the capacity problem by making the ability-to-pay variable an explicit, structural element of the calculation rather than an ex post mitigating factor. Finland's day-fine mechanism sets a daily monetary unit equal to roughly half of the offender's net daily disposable income, multiplies it by an offence-severity-determined number of "fine-days," and has consequently produced individualized fines ranging from a statutory minimum of a few euros to, in the case of high-income offenders, sums in the hundreds of thousands of euros for the same nominal offence [16,17,18]. The European Commission's competition-fining guidelines cap the final fine at ten percent of the undertaking's total turnover in the preceding business year, irrespective of the gravity-based calculation that precedes it, explicitly to prevent a mathematically "correct" deterrence-based fine from becoming an instrument of corporate liquidation [8,9]. The Sentencing Council for England and Wales achieves a comparable result through a banded rather than continuous mechanism: organisational offenders are placed into micro, small, medium, or large turnover bands (and, by evolving case law, a "very large" band above roughly £300–400 million turnover), each with its own starting point and range, so that – for example – a Category 1, high-culpability health-and-safety offence carries a starting point of £250,000 for a micro-organisation but £4,000,000 for a large organisation, before further adjustment for profitability and the specific aim that "it should not be cheaper to offend than to take the appropriate precautions" [12,14,15].

5.5 The Risk-Based Component (OECD, FATF)

The OECD's Best Practice Principles for Regulatory Enforcement and Inspections require that sanction intensity, like inspection intensity, be calibrated to a jointly assessed probability and magnitude of harm, producing a risk matrix in which resources and punitive severity concentrate on the "high probability / high magnitude" quadrant while lower-risk conduct is addressed through warnings, guidance, or lighter-touch measures [19,20]. The Financial Action Task Force's Recommendation 1 embeds an equivalent logic in anti-money-laundering supervision, requiring that preventive and punitive measures be "commensurate" with the assessed money-laundering and terrorist-financing risk, with simplified measures permitted for demonstrably lower-risk conduct [21]. Both frameworks converge on the same structural insight already present in Becker's model: proportionate sanctioning is inseparable from the credibility and targeting of detection, not merely from the nominal severity of the penalty.

6. Comparative Analysis of Foreign Practice

Table 4 synthesizes the seven jurisdictions and institutional frameworks analysed in this article according to the four components of the proposed model: the deterrence mechanism, the proportionality/consistency mechanism, the capacity (ability-to-pay) mechanism, and the risk-calibration mechanism.

Table 4. Comparative synthesis of fine-calibration mechanisms

Jurisdiction / framework	**Deterrence mechanism**	**Proportionality / consistency mechanism**	**Capacity (ability-to-pay) mechanism**	**Risk-calibration mechanism**
European Union (competition law)	Gravity- and duration-based base amount	Guidelines applied uniformly across cases; CJEU review	10% of total annual turnover cap	Aggravating/mitigating adjustment
United Kingdom (Sentencing Council)	Culpability x harm-category starting points	Published starting points and ranges across offence types	Four (or five) turnover bands, micro to very large	Explicit risk-of-harm categories, not only realized harm
Finland / Nordic states	Number of "fine-days" set by offence severity	Statutory scale of fine-days across offences	Daily unit = approx. half of net daily income	Limited to offences within day-fine scope
Poland / Lithuania / Georgia / Kazakhstan (illustrative)	Statutory multiple of a base calculation unit	Ad hoc; rarely documented	Largely absent for legal entities	Largely absent

OECD Best Practice Principles	Not a calculation method; enforcement-intensity guidance	Consistency across inspectorates required	Not addressed directly	Central organizing principle (risk matrix)
FATF Recommendation 1	Not a calculation method; supervisory guidance	Consistency across supervised entities required	Simplified measures for lower-risk entities	Central organizing principle (risk-based approach)

Three comparative conclusions follow. First, no single jurisdiction in the sample operationalizes all four components simultaneously and transparently: the EU and UK regimes are strong on capacity and deterrence but comparatively opaque on cross-domain symmetrical analysis; the Nordic day-fine system is strong on capacity and individualization but is confined to natural-person offenders and a narrow band of offences; the OECD and FATF frameworks are strong on risk-calibration but are guidance instruments rather than binding calculation methodologies. Second, turnover- or income-indexed mechanisms (EU, UK, Nordic) consistently outperform flat statutory-unit multiples (the typical post-Soviet administrative-penalty model illustrated by the Poland/Lithuania/Georgia/Kazakhstan comparators drawn from the underlying policy dataset) in avoiding the twin pathologies of under-deterrence for large offenders and disproportion for small ones, though the comparative fine ranges reported for these four countries should be read as illustrative reference points for benchmarking exercises rather than as verified current statutory figures, given the pace of legislative amendment in this area. Third, benchmarking against foreign fine levels is analytically valid only if adjusted for the factors identified in Section 6.1 below; unadjusted nominal comparison – a common but methodologically unsound legislative-drafting shortcut – routinely overstates the required severity of a transplanted sanction by an order of magnitude when moving from a high-income to a middle-income jurisdiction.

6.1 Adjustment Factors for Cross-Country Benchmarking

Benchmarking method requires the following adjustments before a foreign fine level can inform domestic legislative drafting: (i) legal-system differences in how administrative and criminal liability are delineated, since a formally "administrative" fine in one system may correspond to a formally "criminal"

penalty in another for functionally identical conduct; (ii) the prevalence and detection statistics of the offence in the source jurisdiction relative to the receiving jurisdiction; (iii) macroeconomic comparators – average wage, GDP per capita, and inflation – since a nominally identical fine has a categorically different real burden across income levels; (iv) legal culture and voluntary-compliance rates, which determine how much deterrent weight the fine itself must carry relative to non-punitive compliance-promotion measures; and (v) the effectiveness of the underlying detection and enforcement infrastructure, since – per the Becker relationship in Table 2 – an identical harm requires a substantially higher fine under weak detection capacity than under strong detection capacity [1,2,19].

7. Analysis of National Legislative Practice and Identified Gaps

Administrative-penalty regimes in many transition and middle-income economies, including those in Central Asia, characteristically calculate fines as a multiple of a statutory base calculation unit (an indexed reference value tied to the minimum wage or a comparable benchmark), applied uniformly to a defined category of offence without a documented harm assessment, illicit-gain calculation, or ability-to-pay adjustment. This drafting technique has genuine advantages – administrability, predictability, and resistance to inspector discretion and associated corruption risk – but it structurally forecloses three of the seven stages identified in Section 5 (illicit-gain calculation, ability-to-pay adjustment, and risk-based differentiation), and it typically substitutes a coarse recidivism multiplier (first offence / repeat offence) for genuine individualization.

The principal identified gaps are: (a) the absence of a documented, publicly available methodology explaining how any given statutory multiple was derived, which forecloses meaningful judicial or academic proportionality review of the kind mandated by Barak's framework [4]; (b) the absence of a turnover- or income-indexed mechanism for legal-entity offenders, meaning that a fixed statutory fine is simultaneously trivial for a large enterprise and potentially ruinous for a small one – precisely the disproportion pathology that the EU turnover cap and the UK banded-turnover guideline were designed to eliminate [8,9,12]; (c) an absence of systematic symmetrical (horizontal) analysis across regulatory domains at the legislative-drafting stage, so that unrelated ministries and regulators propose new sanctions without reference to the existing sanctions matrix; and (d) limited

integration of risk-based prioritization into either inspection planning or sanction-setting, notwithstanding the OECD's and FATF's demonstrated frameworks for doing so [19,20,21].

8. Author's Scientific Contribution: The Composite Proportionality Index (CPI)

To close the gap identified in Section 3 and Section 7, this article proposes a Composite Proportionality Index (CPI): a single, bounded, auditable coefficient that a legislator or regulator computes for a proposed or individualized fine, expressed as a ratio to a benchmark deterrence-optimal fine. The CPI is defined as:

$$CPI = [\ w1 \cdot (RH/RHmax) + w2 \cdot (IG/IGmax) + w3 \cdot (DET/DETmax) + w4 \cdot (SYM)\ ] \times CAP(ATP)$$

where RH is the assessed real harm score, IG is the assessed illicit-gain score, DET is the Becker-derived deterrence score (harm divided by detection probability, normalized), SYM is a symmetry coefficient bounded between 0.5 and 1.5 reflecting the sanction's position relative to comparable offences identified through symmetrical analysis (1.0 indicating perfect horizontal consistency), w1–w4 are policy-determined weights summing to 1, and CAP(ATP) is an ability-to-pay capping function – modelled directly on the EU's ten-percent-of-turnover mechanism and the UK's turnover-banding mechanism – that compresses the uncapped result toward a jurisdiction-specific maximum share of the offender's turnover or disposable income (illustratively, 8–12% of annual turnover for legal entities, following the EU precedent [8,9], or a day-fine multiple of assessed daily disposable income for natural persons, following the Nordic precedent [16,17]).

The CPI is deliberately constructed so that a value materially above 1.0 signals a sanction that is disproportionately severe relative to the deterrence-optimal benchmark once ability to pay is taken into account (the disproportion pathology), while a value materially below a jurisdiction-defined floor (illustratively 0.3–0.5) signals a sanction that is very unlikely to achieve deterrence at prevailing detection probabilities (the under-deterrence pathology). Table 5 operationalizes the CPI against the sanitary-violation example used throughout this article.

Table 5. Worked application of the Composite Proportionality Index to the sanitary-violation example

Component	Assessed value	Normalized score	Weight	Weighted contribution
Real harm (RH)	9,000,000 sum (12 clients x 500,000 + margin)	0.60	0.25	0.150
Illicit gain (IG)	3,000,000 sum (avoided compliance cost)	0.35	0.20	0.070
Deterrence score (DET, Becker-derived)	Detection probability approx. 25%	0.70	0.30	0.210
Symmetry coefficient (SYM)	50 units vs. 25-40 comparator range	1.25	0.25	0.313
Uncapped CPI (sum)	-	-	-	0.743
Ability-to-pay cap CAP(ATP)	Turnover 150,000,000; cap 10%	Binding at 15,000,000	-	Final fine = 15,000,000

The CPI's methodological contribution over the existing literature is threefold. First, unlike the unconstrained Becker formula, it is capped by an explicit, disclosed ability-to-pay function rather than an ad hoc post hoc reduction, preserving the transparency that Barak's proportionality doctrine requires [4]. Second, unlike the EU and UK mechanisms individually, it makes the symmetry coefficient an explicit, weighted input rather than an implicit background constraint, operationalizing Ashworth's consistency requirement as a computable variable [5,6]. Third, because its four components and their weights are individually disclosed, the CPI is auditable by courts, legislative drafters, and academic reviewers in a way that a single opaque statutory multiple is not – directly addressing gap (a) identified in Section 7.

8.1 A Risk-Adjusted Sanctions Matrix Incorporating the CPI

Building on the sanctions-matrix method and the OECD/FATF risk-based approach [19,20,21], Table 6 proposes a two-dimensional decision matrix that classifies violations by harm severity and recidivism, but replaces each cell's previously fixed multiple with a CPI band, allowing the matrix to remain stable in structure while individual fines within each cell are adjusted for the offender's specific ability to pay and the domain-specific detection probability.

Table 6. Risk-adjusted sanctions matrix incorporating CPI bands

Harm severity \ Recidivism	**First violation**	**Second violation**	**Third and subsequent**
Very low	Warning; CPI floor not applied	CPI 0.3-0.5 band	CPI 0.5-0.8 band
Low	CPI 0.3-0.5 band	CPI 0.5-0.8 band	CPI 0.8-1.1 band
Moderate	CPI 0.5-0.8 band	CPI 0.8-1.1 band	Suspension considered alongside fine
High	CPI 0.8-1.1 band	Suspension considered alongside fine	Licence revocation considered
Very high (life/health risk)	CPI 1.1+ band, capped by ATP	Suspension or revocation	Referral for criminal liability

9. Practical and Legislative Recommendations

Four recommendations follow directly from the analysis above. First, legislatures should require that any bill introducing or amending a monetary administrative sanction be accompanied by a disclosed regulatory-impact methodology addressing, at minimum, stages 1–6 of the model in Section 5, mirroring the explanatory-memorandum practice already required for EU competition-fining decisions [9] and for UK Sentencing Council guideline consultations [12]. Second, jurisdictions relying on flat statutory-unit fines for legal-entity offenders should introduce a turnover-indexed band or cap – even a simplified three- or four-band version of the UK model – for at least the highest-impact regulatory domains (health, safety, environment, financial services), since this single reform addresses the disproportion pathology identified as the most consequential and most easily remedied gap in Section 7. Third, regulatory agencies should be required to publish an annual symmetrical-analysis report comparing sanction levels across domains, both to support legislative drafting and to provide the transparency that judicial proportionality review requires. Fourth, and most directly building on this article's contribution, pilot implementation of the CPI (or a simplified two- or three-component variant) should be undertaken in a bounded regulatory domain – sanitary or labour-safety enforcement is a natural candidate given its data availability and its combination of individual and corporate offenders – with the weights w1–w4 and the ability-to-pay cap parameters set through public consultation and subject to periodic empirical review against

enforcement outcomes, consistent with the OECD's evidence-based-enforcement principle [19].

10. Conclusion

This article has argued that the calibration of monetary legal sanctions, though nominally a technical drafting question, is in substance an application of the constitutional proportionality principle that deserves the same methodological rigor long applied to criminal sentencing. Synthesizing Becker's deterrence economics [1,2], Barak's and Ashworth's proportionality doctrine [4,5,6], and the comparative practice of the European Union, the United Kingdom, the Nordic countries, and the OECD and FATF risk-based frameworks [8,9,12,16,19,21], the article has shown that existing fine-setting methodologies typically optimize for only one or two of four necessary components – harm/deterrence, horizontal consistency, ability to pay, and risk-calibration – and that this partial optimization is the structural source of both under-deterrence and disproportionate over-punishment observed across jurisdictions, including in the flat statutory-multiple regimes still common in transition economies. The proposed Composite Proportionality Index integrates all four components into a single, disclosed, auditable coefficient, capped by an ability-to-pay function modelled on the EU and Nordic precedents, and is intended as a practical instrument for legislators, regulators, and reviewing courts rather than a purely theoretical construct. Future empirical research should test the CPI against longitudinal compliance and enforcement-outcome data as pilot implementations become available, and should extend the symmetrical-analysis methodology into a fully quantified, cross-domain sanctions database capable of supporting systematic legislative review.

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