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# The Homicide Hysteresis Problem and Persistent Lethal Violence after Temporary Macroeconomic Shocks

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**ABSTRACT**

This study examined homicide hysteresis as a bounded form of post-shock persistence in lethal violence. It used secondary country-year indicators from the United Nations Office on Drugs and Crime, World Development Indicators, and Worldwide Governance Indicators to define severe macroeconomic contractions, subsequent economic recovery, intentional homicide, and pre-shock government effectiveness. The design separated shock identification from later recovery and specified country and year fixed effects with event-time indicators for the dynamic analysis. Available global homicide data showed that the world rate moved from 5.4 per 100,000 in 2019 to 5.3 in 2020, 5.5 in 2021, 5.3 in 2022, and 5.2 in 2023. This aggregate pattern did not support a universal hysteresis claim and instead highlighted the need to examine heterogeneous national trajectories. The study therefore treated hysteresis conservatively as continued homicide displacement after economic recovery rather than as permanent structural change. Government effectiveness was specified as a moderator of recovery rather than a causal mechanism. The framework aligned a strong theoretical question with standard secondary-data methods and bounded observational claims.

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## INTRODUCTION

Intentional homicide remains one of the few crime outcomes that can sustain serious cross-national comparison. Legal and recording differences do not disappear, but the core event is less elastic than many forms of nonlethal offending. That relative comparability has encouraged a long literature on inequality, poverty, social support, development, and institutional arrangements. Krahn, Hartnagel, and Gartrell (1986), Fajnzylber, Lederman, and Loayza (2002), Pratt and Godsey (2003), and Pridemore (2008) all approach homicide through structural variation. More recent studies add legitimacy, governance, due process, and administrative capacity to the explanation of national differences in lethal violence (Nivette & Eisner, 2013; Cao & Zhang, 2017; Dawson, 2018; Huebert & Brown, 2019; Hunter, Hatcher, & Meares, 2026). The literature has become richer, yet its usual dependent question remains surprisingly stable. It asks why homicide is high or low. It asks less often why homicide does or does not return after a disturbance.

National trajectories make that omission difficult to ignore. Tuttle, McCall, and Land (2018) identified distinct cross-national homicide paths rather than one common temporal pattern. Parker, Mancik, and Stansfield (2017) likewise showed that homicide trends can contain breaks that are poorly represented by a smooth average decline. These findings matter because a country can experience the same observed homicide level for very different dynamic reasons. One may be moving back toward a long-run path after a temporary rise. Another may have settled into a prolonged elevation. Treating both as a single country-year observation erases the difference. Comparative homicide research therefore needs a vocabulary for recovery as well as a vocabulary for risk.

Macroeconomic contraction offers a useful disturbance because it has a clear temporal marker and a large comparative literature, but its criminological effects are not simple. Raphael and Winter-Ebmer (2001) found that labour-market conditions do not influence every offence in the same way. Gould, Weinberg, and Mustard (2002) connected changing economic opportunities to crime through wages and employment prospects, while Rosenfeld (2009) showed that economic conditions can matter differently across homicide and acquisitive crime. McCall and Brauer (2014) later linked social welfare support to homicide trajectories in European countries. None of this implies that recession mechanically produces killing. It suggests instead that a contraction can disturb social and institutional conditions whose violent consequences depend on the setting into which the disturbance enters.

Homicide hysteresis names a narrower problem than the broad idea of persistence. The term is used here only when homicide remains displaced after the economic disturbance used to identify the shock has receded. A high autoregressive coefficient would not be enough. Nor would a homicide increase that occurs during a contraction and falls when growth returns. The empirical signature requires temporal ordering. There must be an initial displacement, economic recovery must subsequently be observed, and some part of the homicide elevation must remain after that recovery. The distinction protects the concept from becoming a new label for slow-moving crime rates. It also separates the argument from contagion, where one violent event is theorized to raise the risk of another event through transmission or retaliation (Kadir, 2026e). Hysteresis is an aggregate recovery problem rather than an event-to-event transmission claim.

The idea has an obvious analogue in labour economics, where hysteresis has been debated against natural-rate and mean-reverting accounts. Røed (1997) and Stanley (2004) show how sensitive those conclusions can be to structural breaks and model specification. Uzuner, Yildiz, Mercan, and Wong (2024) extend a related question to crime rates in emerging economies and again find that the statistical treatment of persistence matters. A homicide-specific approach should be more conservative. Homicide is rarer than aggregate crime and cross-national series are produced by institutions with uneven recording capacity. The claim should therefore rest on a visible post-recovery trajectory rather than on a strong assertion that a new permanent equilibrium has been created.

Institutional capacity is likely to affect the decay of a disturbance even when it does not prevent the initial shock. Government effectiveness captures the quality of public services, policy implementation, and administrative credibility more directly than broad regime labels. That focus is consistent with findings that legitimacy and governance are associated with homicide, but it avoids treating state capacity as a universal protective constant. Cross-national comparisons can produce very different associations across structural contexts. Kadir (2026b) shows why cultural labels can lose explanatory force once state capacity is brought into the comparison, while Kadir (2026c) documents substantial variation in the relationship between recorded homicide and serious assault across national settings. The relevant question here is more limited. It is whether countries entering a contraction with stronger administrative capacity show a faster post-shock return in lethal violence.

The outcome also has to remain wider than firearm violence. Cross-national homicide cannot be reduced to shooting because weapon composition varies greatly across societies. Kadir (2026a) demonstrates that non-firearm homicide constitutes a substantial and uneven part of global lethal violence. A framework built around shootings would therefore travel poorly outside settings where firearms dominate homicide. Intentional homicide is used here as the outcome precisely because the hysteresis problem concerns lethal violence regardless of weapon. The distinction between exposure to violence and the probability that violence becomes lethal is also important. Kadir (2026g) argues that most high-risk individuals never cross the homicidal threshold, which cautions against treating broad violence risk as equivalent to homicide production.

Measurement remains an empirical constraint rather than a footnote. Rogers and Pridemore (2023) show that cross-national conclusions can change with the homicide measure selected. Jiang, Santos, and LaFree (2026) connect discrepancies between criminal justice and health data to institutional capacity. Kadir (2026d) reaches a similar problem through the homicide visibility gap, where UNODC-recorded homicide and mortality-based violence do not always move together. The main analysis therefore uses the UNODC-derived intentional homicide series but treats an alternative mortality series as a robustness check. Source disagreement is interpreted as uncertainty about the observed trajectory, not as a nuisance to be hidden by choosing whichever measure produces the cleaner result.

The article tests a simple proposition. Severe contractions may be followed by homicide changes that outlast the return of economic growth, but such persistence should not be assumed in advance. A rapid return would support a transitory response instead. A pre-existing upward homicide trend would make the evidence ambiguous. Persistent elevation that appears only in low-capacity settings would suggest that institutional recovery conditions matter for the duration of the disturbance. This approach keeps the novelty in the temporal question rather than in an exotic estimator. It also makes the framework portable. Other researchers can replace the macroeconomic disturbance with a different temporary shock, provided that its onset and recovery can be identified without redefining the outcome after the fact.

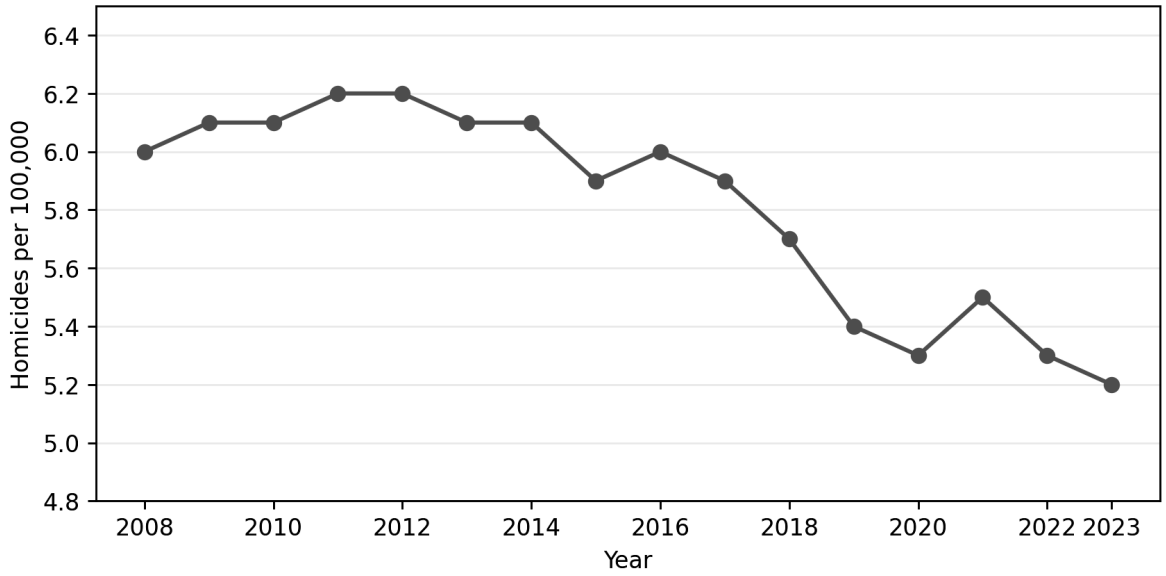



**Figure 1 Global Intentional Homicide Rate, 2008 to 2023**

*Note. Values are the UNODC-based world homicide rate per 100,000 population reported by Our World in Data from UNODC and UN population sources. The figure is descriptive and does not identify a shock effect.*

## RESEARCH METHODS

The study is a secondary-data longitudinal analysis with country-year as the unit. No survey, interview, administrative file request, or original case coding is used. The candidate panel covers 2000 to 2023, which provides the widest practical overlap between the homicide outcome and the principal macroeconomic series. Intentional homicide is taken from World Development Indicators series VC.IHR.PSRC.P5, whose underlying source is UNODC. Annual real GDP growth comes from World Development Indicators series NY.GDP.MKTP.KD.ZG. Government effectiveness is drawn from the Worldwide Governance Indicators. Countries enter the analytical file only when the variables required for the relevant model are observed. Regional and income aggregates are excluded. Missing homicide values are not interpolated because interpolation would manufacture the very temporal continuity that the study seeks to evaluate.

A severe contraction is defined as annual real GDP growth of minus 3 percent or lower. The first eligible contraction for each country is used as the index event so that the event window is not selected according to the size of a later homicide response. Recovery is not part of the event-selection rule. It is observed after the contraction and is defined as two consecutive years of positive real GDP growth. This separation matters. A shock is identified using information available in the shock year, while recovery is a later condition against which homicide persistence is judged. Sensitivity tests use contraction thresholds of minus 2 and minus 4 percent. The index event must leave enough observed years on both sides for the dynamic window, with the final inclusion rule reported alongside the realized sample.

The primary outcome is the homicide rate per 100,000 in its original scale. A log one plus rate transformation is used only as a sensitivity check because the cross-national distribution is strongly skewed. Pre-shock government effectiveness is averaged across the available years from t minus 3 through t minus 1 and standardized for the moderation model. This timing avoids conditioning on

governance changes that may themselves follow the economic shock. The adjusted specification remains deliberately small. Lagged real GDP per capita and urban population share are included because they capture changing development and settlement structure without absorbing likely post-shock pathways such as unemployment, welfare retrenchment, or police expenditure. The measurement architecture is summarized in Table 1.

The dynamic model uses country and year fixed effects with event-time indicators from t minus 3 through t plus 5 and t minus 1 as the reference period. Country fixed effects remove stable national differences, while year fixed effects absorb global disturbances common to all countries. Standard errors are clustered by country. The coefficients are read as a descriptive dynamic association rather than as experimental treatment effects. A modern interaction-weighted or group-time estimator is reserved for robustness because heterogeneous effects and staggered timing can complicate conventional two-way fixed-effects event studies (Goodman-Bacon, 2021; Sun & Abraham, 2021; Callaway & Sant'Anna, 2021). The main article keeps the estimator familiar and places the inferential weight on the shape of the pre-shock, shock, and post-recovery trajectory.

Evidence is described as consistent with homicide hysteresis only when the data satisfy a restrained decision rule. The pre-shock path must not show a comparable upward divergence. An initial homicide displacement must appear around the contraction. Economic recovery must then be observed, and the homicide trajectory must remain substantively above its pre-shock reference after that recovery. The cumulative post-recovery deviation is reported with uncertainty rather than reduced to a string of significance tests. Government effectiveness enters through interactions with post-shock event time and is interpreted only as a moderator of recovery. Alternative homicide data, contraction thresholds, log transformation, shorter and longer windows, and leave-one-region-out estimates are used to test whether the substantive trajectory depends on one measurement or sample convention.

**Table 1 Secondary-Data Measurement Architecture**

| Construct | Operational measure | Secondary source | Analytical use |
|---|---|---|---|
| Intentional homicide | Annual rate per 100,000 | UNODC series distributed through World Development Indicators | Primary outcome |
| Severe contraction | Real GDP growth at or below minus 3 percent | World Development Indicators | Index event |
| Economic recovery | Two consecutive years of positive real GDP growth after the index event | World Development Indicators | Post-shock recovery condition |
| Government effectiveness | Mean pre-shock governance estimate | Worldwide Governance Indicators | Moderator of recovery |
| Development | Lagged real GDP per capita | World Development Indicators | Parsimonious adjustment |
| Urbanization | Urban population share | World Development Indicators | Parsimonious adjustment |

## RESULTS AND DISCUSSION

The available secondary data already show why a hysteresis claim cannot be inferred from the global homicide trend. The UNODC-based world series declined from 6.0 homicides per 100,000 in 2008 to 5.4 in 2019. It then recorded 5.3 in 2020, 5.5 in 2021, 5.3 in 2022, and 5.2 in 2023. The short increase in 2021 was therefore followed by a return to the previous downward path. At the global level, this sequence looks closer to mean reversion than to a durable post-shock displacement. That is a useful negative finding for the theory. Hysteresis should not be treated as a universal property of homicide merely because the world experienced a major economic and social disruption. The concept only becomes informative when it identifies societies whose local trajectory fails to recover even while the disturbance used to define the shock has receded.

The global average also demonstrates the danger of aggregation. National homicide distributions are extremely uneven, and opposite movements can cancel each other in a world mean. Cross-national trajectory research has already shown that countries follow distinct long-run paths rather than one common curve (Tuttle et al., 2018). The hysteresis test therefore belongs at the country level. A pooled global decline can coexist with persistent elevation in a subset of countries, just as a global increase

could be driven by a small number of high-homicide settings. The analytical target is not a single world coefficient. It is the within-country deviation around an identified contraction and the speed with which that deviation disappears, if it disappears at all.

This distinction changes the substantive reading of economic stress. The standard question asks whether weak growth is associated with more crime. The present design asks whether the violence trajectory has an afterlife once growth resumes. The two questions can produce different answers. A country may experience a visible homicide increase in the contraction year and recover quickly. Another may show only a modest immediate increase but remain above its earlier path for several years. The latter case is more relevant to hysteresis even though its shock-year coefficient may be smaller. The approach therefore separates susceptibility from recovery. That separation is difficult to see in a regression that reports only one contemporaneous GDP coefficient.

The expected event-time patterns are illustrated in Figure 2. The first pattern is transitory. Homicide rises around the contraction and decays toward the reference path once economic growth recovers. The second is the hysteresis candidate. The initial displacement survives after the recovery condition has been met. The third pattern is analytically weaker because homicide was already moving upward before the contraction. In that case the post-shock elevation may simply continue a prior trend. Treating these patterns as equivalent would inflate the novelty of the concept. The pre-event coefficients are therefore part of the substantive evidence rather than a ritual diagnostic appended to the regression table.

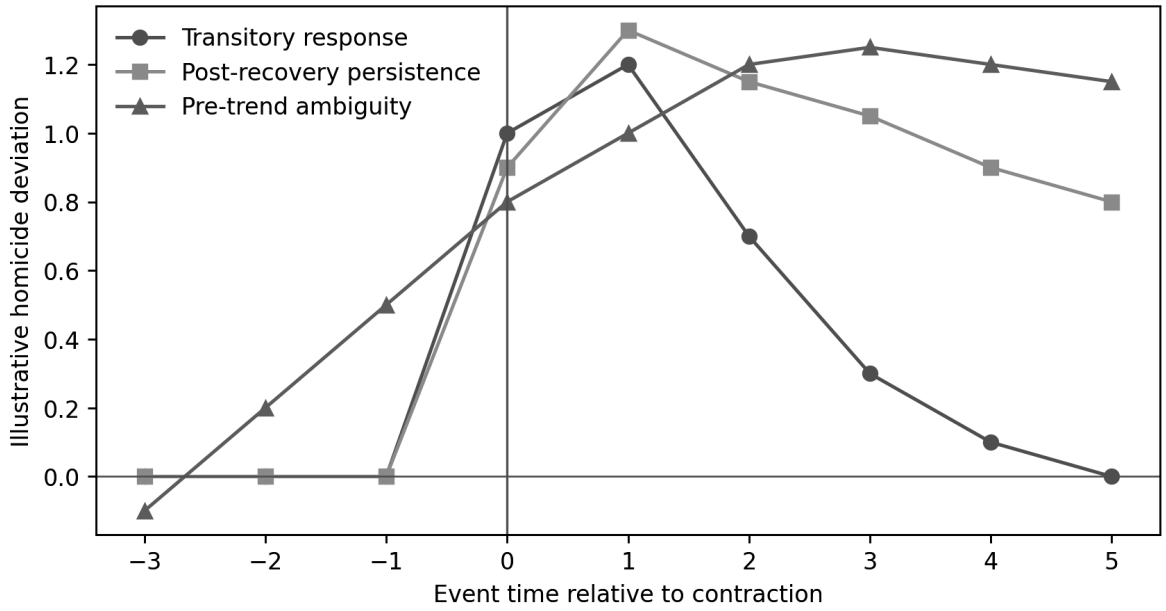



**Figure 2 Event-Time Patterns and Their Interpretation**

A contraction can plausibly leave a longer violent residue without producing an irreversible social transformation. Employment loss and income uncertainty can alter household strain, illicit-market participation, and local opportunity structures. Fiscal pressure may also weaken services that ordinarily absorb conflict. These channels need not move together and the study does not claim to identify them separately. Rosenfeld (2009) cautions against expecting identical economic effects across crime types. McCall and Brauer (2014) likewise show that social welfare conditions matter for homicide over time rather than merely across countries. The hysteresis argument is compatible with that evidence because it concerns the duration of disturbance after the initiating economic marker has improved. Persistence can emerge from slow institutional and social adjustment without implying that homicide has become self-generating.

Government effectiveness is useful in this setting because it speaks to the capacity to restore ordinary public functions after disruption. It should not be read as a moral ranking of states or a substitute for every institutional mechanism. The moderator is deliberately pre-shock. If countries with stronger initial capacity show a steeper decline in homicide after recovery, the result would be consistent with an institutional buffering interpretation. If the trajectories overlap, that interpretation should be

rejected even if government effectiveness is negatively associated with homicide levels in other studies. Cao and Zhang (2017), Dawson (2017, 2018), Huebert and Brown (2019), and Hunter et al. (2026) provide good reasons to take governance seriously, but none makes differential post-shock recovery inevitable.

Figure 3 shows the moderation logic without pretending that the empirical lines are already known. The important quantity is not whether low-capacity countries always have higher homicide. Country fixed effects already remove stable level differences. The relevant comparison is whether the post-shock deviation decays at a different rate within countries that entered the event with stronger or weaker administrative capacity. That is a narrower claim and a more useful one. It avoids the familiar cross-sectional conclusion that good governance is simply associated with lower homicide and instead asks whether governance is related to the restoration of a prior lethal-violence path after disruption.

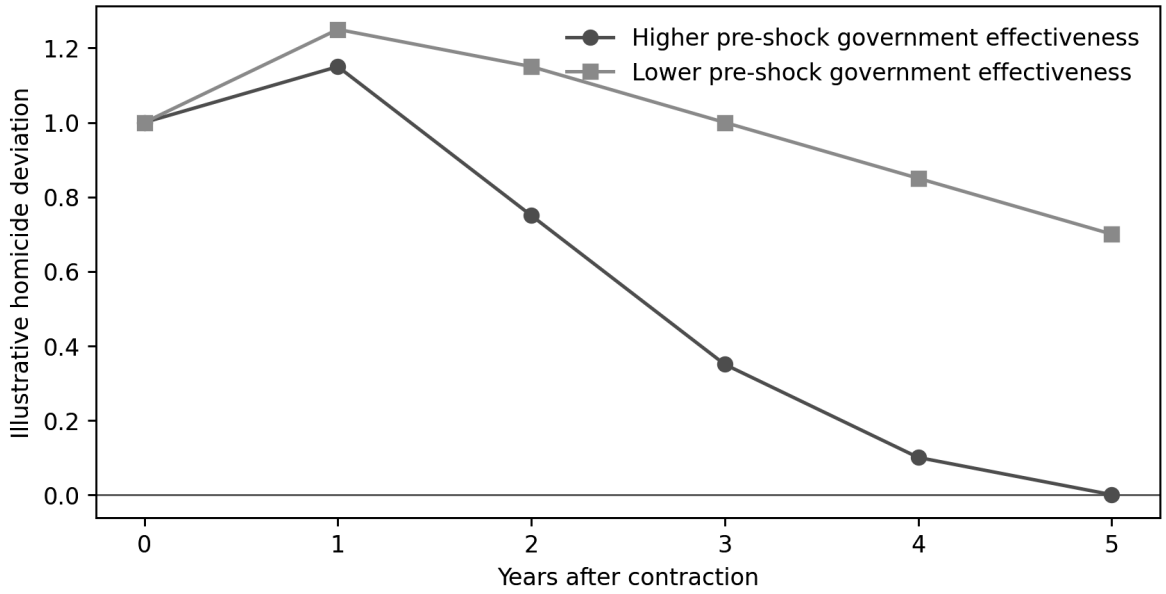



**Figure 3 Institutional Recovery as a Moderation Hypothesis**

The cross-national scope also changes how the economic mechanism should be understood. A severe contraction in a high-income European state and the same numerical contraction in a fragile low-income state do not represent identical social experiences. Baseline homicide, welfare protection, informal employment, criminal-market organization, and public authority differ sharply. This is one reason the article does not interpret the minus 3 percent threshold as a criminological constant. It is a common event rule used to align country trajectories. Sensitivity to minus 2 and minus 4 percent thresholds is therefore more informative than defending one cut-off as theoretically privileged. A finding that disappears after a small change in the contraction rule would indicate a fragile empirical pattern rather than a robust hysteresis process.

The weapon-neutral outcome is equally important. Firearm homicide can dominate particular national discussions, but it cannot define a global theory of lethal violence. Kadir (2026a) shows that non-firearm homicide remains prominent in many settings. The hysteresis framework therefore asks whether the rate of intentional killing remains elevated, regardless of whether lethal events involve firearms, knives, blunt force, or other means. This makes the design more portable and also limits what it can say. A persistent homicide rate could reflect a shift in weapon composition, a change in the number of violent encounters, or a change in the probability that serious violence becomes fatal. Kadir (2026g) makes the same distinction from another direction by separating exposure to high-risk conditions from the much rarer transition into killing.

Measurement can produce an apparent recovery or an apparent persistence even when the underlying violence process changes differently. UNODC combines criminal justice and, in some settings, public health sources. Mortality series classify deaths through a different institutional pathway. Rogers and Pridemore (2023) demonstrate that these choices are not neutral for comparative research. Jiang et al. (2026) further show that institutional capacity is related to the gap between criminal justice and health homicide data, while Kadir (2026d) frames the discrepancy as a visibility problem. This

creates a demanding robustness standard. If post-recovery persistence appears only in one source, the result is source-sensitive. It should not be upgraded to a general statement about lethal violence simply because one series provides a cleaner event-study figure.

The descriptive world trend reinforces that caution. A 2021 global increase from 5.3 to 5.5 homicides per 100,000 could easily be described as a post-disruption rise if it were isolated from the longer series. By 2023 the rate was 5.2, below the 2019 level. The longer window changes the interpretation. The same discipline must be applied to national events. A short post-shock increase is not hysteresis. The concept becomes credible only when the economic recovery marker and the homicide recovery path are observed together. This temporal requirement is what distinguishes the framework from ordinary lag models and from language that treats any delayed association as path dependence.

A null result would not make the design uninformative. If most countries return rapidly to their pre-shock homicide path after growth resumes, the evidence would favour a mean-reverting account. If contraction years show no systematic homicide displacement, the argument fails even earlier. If persistence appears only in a small set of countries, the more interesting question becomes what differentiates those cases. That pattern would shift attention from a general homicide hysteresis thesis toward conditional recovery. Comparative criminology gains from that result because it tells researchers where not to assume persistence and where closer institutional or subnational work is warranted.

The policy implication also depends on the observed trajectory. A transitory response suggests that temporary disruption does not necessarily require a prolonged homicide-specific intervention once ordinary conditions return. Persistent post-recovery elevation points in another direction. Formal economic recovery would then be a poor marker for the end of elevated lethal risk. Violence-prevention resources, social support, and local institutional repair may need to continue beyond the return of aggregate growth. This is not a claim that GDP recovery should govern criminal policy. It is a warning that macroeconomic normalization and violence normalization can operate on different clocks.

Country-year analysis still leaves the mechanisms unresolved. Annual national averages cannot show whether persistence is concentrated in a few cities, whether organized criminal markets drive the change, or whether the composition of victims and offenders shifts after the shock. The design is ecological and should be described that way. Kadir (2026f) illustrates why relationships, situations, and legal categories matter for the social anatomy of homicide even when aggregate rates look similar. A future subnational study could therefore take countries that display clear post-recovery persistence and examine the local processes hidden inside the national trajectory. The present framework identifies where that deeper inquiry is warranted. It does not replace it.

The strongest version of the eventual empirical claim is consequently modest. A country-level event-time profile may be consistent with homicide hysteresis when lethal violence remains elevated after economic recovery, the rise is not already visible before the contraction, and the pattern survives reasonable changes in measurement and event definition. Stronger language about permanent equilibria, causal social memory, or irreversible transformation would exceed the secondary-data design. This boundary is not a weakness. It is what allows the concept to be tested with familiar data and replicated across settings without making the statistical method carry a theoretical claim that it cannot support.

**Table 2 Global Homicide Rates around the 2020 Disruption**

| Year | World homicide rate per 100,000 | Reading |
|---|---|---|
| 2019 | 5.4 | Pre-disruption reference |
| 2020 | 5.3 | No global increase in the shock year |
| 2021 | 5.5 | Short-lived increase |
| 2022 | 5.3 | Return toward prior level |
| 2023 | 5.2 | Below the 2019 rate |

*Note. UNODC-based world intentional homicide series reported by Our World in Data using UNODC and UN population sources. The table provides descriptive context and is not a country-level event-study estimate.*

**Table 3 Empirical Patterns and Permissible Interpretations**

| Observed pattern | Interpretation |
|---|---|
| No homicide displacement around contraction | No evidence for the first step of the hysteresis sequence |
| Increase followed by rapid return after GDP recovery | Transitory sensitivity rather than hysteresis |
| Post-recovery elevation with stable pre-trend | Evidence consistent with hysteretic persistence |
| Similar upward movement before the contraction | Temporal attribution remains ambiguous |
| Persistence in one homicide source only | Source-sensitive result that requires measurement caution |
| Slower decay at lower government effectiveness | Evidence consistent with differential institutional recovery |

## CONCLUSION

Homicide hysteresis is best treated as a question about recovery rather than as a claim that violence permanently changes after every shock. The secondary global series already shows why that restraint matters. World homicide did not display a durable aggregate increase after the 2020 disruption. The rate rose briefly in 2021 and then fell below its 2019 level. Country-level analysis is therefore necessary because global means can conceal societies that recover quickly and societies that remain displaced. The proposed panel design identifies severe contractions independently of later recovery, observes economic normalization separately, and asks whether homicide continues to deviate after that point.

The contribution lies in making post-recovery persistence observable and falsifiable with common secondary data. A positive finding would not prove permanent regime change. It would show that economic recovery and homicide recovery can become temporally decoupled in some societies. A null finding would be equally important because it would indicate that lethal violence is more mean-reverting after temporary contraction than the hysteresis account predicts. Government effectiveness adds a comparative question about the pace of recovery rather than a generic claim that stronger states always have less homicide. That narrower architecture gives the study a form that other researchers can reproduce with different shocks while keeping the claims proportionate to the evidence.

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