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Effects of Economic and Geopolitical Shocks on Labour Market

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Abstract: Beginning in 2008, overlapping crises from financial collapse to pandemic and war have fundamentally reshaped how economies absorb stress. Systems now face new pressures before old ones fade, meaning labour markets respond differently than historical models assumed. Evidence spanning over a decade shows repeated disturbances alter the speed and shape of job losses, pay shifts, and worker mobility. Resilience is no longer about returning to normal, it is about adjusting within ongoing instability.
Existing research largely examines crises in isolation, missing what happens when several hit simultaneously. Concurrent disruptions intensify one another, producing patterns linear models cannot capture. Job markets bear much of this strain: hiring slows, automation and gig-based platforms accelerate, and worker skills become outdated faster than anticipated. What might unfold over years under isolated disruption now compresses into months when shocks overlap.
The analysis combines quantitative labour market data across multiple downturns with insights into how policy frameworks and organisations adapt, spotlighting forces that amplify damage when crises collide. Layered setbacks consistently strike hardest at already exposed groups, accelerate shifts already underway, and demand new forms of policy response rather than stronger versions of existing ones. Regional variation reveals how structures such as safety nets and hiring practices reshape outcomes in compounded emergencies, defying forecasts built for simpler events.
Digital acceleration and trade disruptions reshaped job structures, requiring a revised framework that captures complex, networked workforce adjustments.

Keywords: compound shocks; overlapping crises; labour market resilience; economic shocks; geopolitical shocks; unemployment dynamics.

Introduction

Now comes a time when the world economy faces several large-scale disruptions at once, reshaping how we think about jobs and work. Not long after one crisis ends, another begins — unlike past patterns where breaks between downturns allowed healing. Back in 2008 came a crash worse than any since the 1930s, and then just over ten years passed before a deadly virus swept across nations. While societies struggled with that shock, war erupted in Eastern Europe, further straining systems already under pressure. Because these events happen so close together, job markets now deal with more than one blow at a time. Each disturbance spreads differently through economies, yet they all twist outcomes for pay, hiring, and daily working life in linked ways (Hodler, 2014; Malynovska, 2025; Margarit, 2019; Rezaei Soufi, 2022).

A fresh look at recent upheavals begins to make sense only when one notices a flaw in standard analysis — traditional methods assume big disturbances happen alone, finish quickly, then vanish (Bruneckiene, 2019). Though easier to model mathematically, such thinking misses how today's breakdowns stretch across time, pile up, and interact. By the time Coronavirus hit jobs worldwide in 2020, many systems were still adjusting from

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post-2008 reforms meant to fix deeper imbalances. Even as emergency shifts toward online work changed who does what and where they do it, war broke out in Eastern Europe, shaking raw material prices, transport networks, and fuel supplies. These overlapping forces do not just add pressure; they magnify each other, building cycles of strain that older tools can neither forecast nor untangle.

Looking at jobs reveals how combined disruptions play out over time. Prices shift fast in finance, yet people take longer to adjust because of training needs, workplace rules, trust between employers and staff, and slow-moving systems. As crises pile up, employees must handle new tools, move across industries, learn different abilities, switch roles — meanwhile governments and organisations lag behind, trying to keep pace with constant change. What we have seen lately shows shortened learning curves that reshape job trends so deeply that older models fail to explain what happens when everything shifts at once.

Beginning in 2008, this study spans fifteen years, chosen so patterns across multiple upheavals can be seen clearly. Because shocks rarely occur in isolation, later events unfolded against backdrops shaped by earlier ones. A wave of instability started when the financial system collapsed, reshaping job structures throughout wealthy nations. Years afterward, a viral outbreak pushed millions into working remotely, speeding up shifts already underway (Piroșcă, 2021; Vyas, 2022). Even as people adapted, war erupted between two countries, sending ripples through trade networks. Supply chains faltered, prices climbed, and recovery efforts tangled with prior government actions. Each event overlapped — effects piled on top of effects, altering employment conditions step by step. What makes this study matter goes far beyond scholarly curiosity about how crises unfold.

Those shaping policy, managing organisations, and employees themselves need clearer ways to grasp sudden, layered disturbances. Past strategies built for single emergencies often fall short once several upheavals hit at once. Systems meant to help workers through economic dips struggle differently when deep, long-term shifts speed up amid converging breakdowns. Support programmes that worked before might not meet today's demands, where job changes, new technologies, and global instability collide without warning.

Though researchers now identify how combined crises ripple across job markets, a full picture stays out of reach. From war zones to border tensions, shifts in global politics stir job losses by rattling raw material costs and breaking trade routes, yet sometimes sparking cautious spending that slows new hires. As Chakrabarti (2015) has documented, downturns tied to finance squeeze jobs via tighter borrowing rules, shrinking household assets, and banking breakdowns that stall payrolls. Health emergencies limit workers' ability to show up, force shops to shut, and push firms toward machines faster than before. Overlapping waves — conflict layered on recession, illness meeting inflation — twist pathways so some forces grow stronger, others fade, leaving outcomes far removed from forecasts built on single causes.

A resilience model designed to reflect complex, layered disruptions meets a pressing real-world demand. With connections across nations growing tighter and political strains showing little sign of ease, concurrent crises seem more probable now than before. This study builds its structure by looking closely at three significant shifts in job markets since 2009. The resulting Compound Shock Resilience Framework offers both retrospective explanatory power for understanding recent labour market transformations and prospective analytical capacity for anticipating future overlapping disruptions.

Two research questions guide this inquiry:
RQ1: How do overlapping economic and geopolitical shocks produce labour market effects that differ from isolated shocks, and what mechanisms drive these compound effects?
RQ2: Can a resilience framework be developed that successfully identifies the accumulated risks and compound effects of overlapping crises as demonstrated through

retrospective analysis of recent disruptions, and can this framework provide actionable insights for anticipating and mitigating future overlapping shocks?

Literature Review

Scholarly work on economic and geopolitical crises often treats them separately, one falling into economics, the other into global politics. Even so, focusing apart limits grasp of what happens when both strike at once, feeding into each other across systems. Insights gained in isolation do help, yet blind spots remain where forces converge unexpectedly. Some newer studies attempt bridge-building, but a full method to assess combined impact on jobs is still missing.

Employment outcomes often shift when economies face sudden downturns, as shown by early studies on shock impacts. Evidence from the 2008 crisis reveals that limited credit access, shrinking household wealth, and sharp drops in spending led to uneven labour market results worldwide. Looking at Europe, as Eichhorst (2017) and Potrafke (2013) have noted, policy adjustments in work regulations exposed ongoing friction: making hiring easier sometimes weakened safety nets, creating debate over fairness versus efficiency. While sectors like construction and industrial production saw steep job losses after the crash, instability within finance spilled into service sector staffing patterns. Not every institution reacted the same way when crises hit — some cushioned blows better due to how jobs are structured, a factor many mainstream models tend to ignore. When shocks arrive, regions respond differently, and one reason lies in whether local economies mix industries well, have trustworthy systems, or strong community ties (Causo, 2023; Ding, 2024; Fang, 2022).

Recent global tensions have widened the scope of geopolitical shock studies. Because of events like the Russia–Ukraine war, researchers now see how such crises ripple through raw material markets. Energy prices shift sharply and so do those for food crops. These swings feed into rising costs across economies, and as living expenses climb, worker spending habits change — production budgets tighten and firms respond by adjusting staffing levels. Even countries distant from active conflicts feel these shifts. When political risks rise, companies tend to pause expansion plans, hiring slows before profits drop, and investor caution plays a role too. Supply networks break apart under strain, trade rules become unpredictable, and cross-border funding fluctuates without warning. Each of these forces nudges labour markets off balance (Andrews, 2026; Bondarenko, 2024). Job losses in Ukraine reached devastating levels during the conflict, hitting around 21% joblessness in 2022 (International Labour Organization, 2021), meanwhile European Union labour markets saw little immediate harm by mid-year, even if pay growth trailed rising prices.

Though sparked by a virus, the ripple effects of COVID-19 unfolded unlike financial downturns or political crises. Instead of isolated breakdowns, this disruption hit production and consumption at once — illness reducing labour supply while fear pulled consumers away from services needing closeness. In early forecasts, researchers saw working time vanish: nearly 7% lost worldwide during spring 2020, matching about 195 million full-time employees vanishing from work. As the International Labour Organization (2021) has reported, year after year, evaluations showed time lost at work nearly quadrupled compared to levels seen in 2009. Rather than rising joblessness, many simply left the workforce — a shift noted widely across data. Digital shifts moved fast and tools and platforms took hold within months, reshaping how tasks are organised — not just temporarily, but possibly for good (Capello, 2025; Piroșcă, 2021).

Starting with published studies, sources reveal how global trade links reshape employment systems unevenly. High-skill individuals often gain chances elsewhere, while those in lower-tier roles confront tougher demands. Location matters just as much as education level when facing outside forces. Shifts in supply chains ripple through

employment systems, yet full understanding lags behind. Exposure is not random — it clusters by industry type, ability range, and place.

Although still sparse, new studies on repeated and concurrent crises provide useful understanding. Existing models of macroeconomic resilience often miss combined impacts, despite offering ways to gauge a region's ability to withstand setbacks (Giotis, 2024; Gogoi, 2023; Kapička, 2022). Depending on local industry makeup and governance setups, regions differ greatly in their ability to handle sudden stress. When disruptions pile up — as seen during Europe's turbulent shift amid health and conflict emergencies — effects unfold unpredictably, something conventional single-event analyses cannot capture.

How rules shape job markets becomes clear through studies of policy response. When designed well, programmes helping people find work cut unemployment rates — yet results depend heavily on local systems and the nature of disruption (Irandoust, 2023). Workforce abilities play a central role when systems face disruption; when downturns occur, mismatched skills tend to worsen job loss, yet targeted training can ease transitions (Andabayeva, 2024; Bhattacharyya, 2024).

Even so, key shortcomings persist. While some work highlights single crises, it often ignores how events unfold alone versus together. What happens when various shocks strike at once — how they blend, amplify, or shift one another — is still unclear. So too is what this means for workers and responses meant to support them. A new approach emerges here: a structure built to trace layered impacts across employment systems.

Methodology

This study draws together insights from existing sources through structured document review, blending careful comparison of real-world examples alongside creation of an adaptive analytical structure focused on how layered crises impact employment systems. By weaving qualitative exploration of government actions into numerical evaluation of workforce trends during turbulent years — from financial downturns to more recent disruptions — the work builds mainly on scholarly publications, verified statistics, and established policy records. Though rooted in previously collected information, the process allows patterns to emerge across timeframes often examined separately. Periods under scrutiny extend beyond immediate recessions, capturing delayed consequences up to mid-century projections where available.

Starting with figures gathered by the International Labour Organization, patterns emerge on worldwide and area-specific job markets. Alongside these, evaluations from the European Commission shed light on how institutions react and how pay trends shift over time. Information pulled directly from official national statistics allows meaningful comparisons between countries. Ideas taken from scholarly studies contribute concepts explaining economic stress spread. Coverage stays broad, reaching diverse regions without losing depth.

Beginning with a clear outline, the study's design unfolded across four separate stages that shaped the inquiry while supporting consistent examination of combined shock behaviours. Step-by-step progression allowed each phase to build on prior work without overlap or repetition.

Step 1: Shock characterisation and periodisation
One way to start was by pinning down every key disruption hitting job markets during the fifteen years under review — defining exact start points, peak durations, and early rebounds for the 2008 banking collapse, the global viral outbreak, and the war between Russia and Ukraine. Instead of assuming clean breaks between crises, effort went into spotting stretches where upheavals bled into one another. Each event carried its own pathway: frozen lending plus lost household assets marked the downturn in finance;

halted production alongside weakened spending defined the health emergency; surging raw material prices along with jittery investor sentiment traced back to hostilities abroad.

Step 2: Transmission mechanism analysis
Following the first phase, attention shifted to how distinct shocks influenced employment via their unique routes. From origin to outcome, chains of cause and effect were mapped across different scenarios. When studying the financial downturn, restricted lending curtailed company growth even as weaker household assets reduced spending. During the health emergency, worker availability shrank due to illness while lockdowns halted operations. Amid territorial disputes, surging fuel prices disrupted manufacturing budgets along with global delivery networks. This phase looked closely at combined impacts — such as how rapid digital shifts during the pandemic affected job markets when later hit by global political events — and examined how economic crises reshaped institutions in ways that altered government actions during health emergencies.

Step 3: Resilience indicator development
Beginning with the next phase, a full range of indicators was built to reflect short-term disruptions, ability to adapt, and paths toward recovery when multiple pressures occur together. Unemployment figures, workforce engagement levels, and jobholding proportions offered starting points for gauging effects. Alongside these, shifts in economic structure appeared through changes in technology uptake, movement between industries, spread of remote working, and evolving needs for worker capabilities. To assess resilience more directly, researchers tracked how fast jobs returned after disruption, whether employment reached earlier expected levels, and how available budget room and extent of safety net programmes influenced outcomes. Patterns across populations emerged by examining differences based on age, gender, education, industry, and location.

Step 4: Framework validation and comparative analysis
Testing came last: could the new resilience model outperform old single-shock versions at explaining job market results? Rather than adding up separate disruptions, real work paths, bounce-back times, and deep shifts were weighed across shared crisis windows. Attention focused on who suffered most under combined blows, which economies held steady despite layered strain, and how fast change stuck versus faded when upheavals overlapped.

Results and discussion

RQ1: Compound effects of overlapping crises
Not one but several crises piling up over fifteen years revealed how combined economic blows reshape job markets unlike single events ever could. Recovery after 2008 followed familiar paths seen before, yet what came next — crisis stacked on top of crisis — shortened timeframes for adaptation dramatically. Standard forecasting tools proved inadequate when faced with such sequence of upheavals.

Six years passed before U.S. job numbers climbed back to where they stood before 2008, even though economic output bounced back in less than three, due mainly to shrinking credit and a sharp drop in spending. Across Europe, the rebound dragged on further — many countries did not see stable work levels again until between 2015 and 2017. Globally, lost work time during the pandemic hit nearly four times harder than during the earlier downturn: an 8.8% decline in 2020, matching 255 million full-time positions gone. By early 2022, when conflict erupted between Russia and Ukraine, labour systems had yet to settle from two years of health-related shifts. In Ukraine itself, joblessness soared to 21%, whereas much of Europe saw pay power shrink without large layoffs taking hold (Aizenman, 2024; European Commission, 2022; International Labour Organization, 2021).

Early signs pointed to a return of job markets near their old paths once health rules faded and Europe shifted its stance by 2023–2024. Yet reality shows stubborn gaps remain.

Though certain wealthy nations hit earlier hiring highs again during this window, people still took part in work at lower rates than before the crisis struck; temporary roles climbed faster than stable ones; fields kept misaligning instead of fixing themselves. Nations wrestling both soaring fuel costs and rapid technology shifts found change dragged on far longer than in areas shielded by location, proving layered disruptions breed deeper instability that standard single-event forecasts fail to capture.

What emerged from these overlapping crises was something entirely different — not just a sum of parts. Disappearing chances to recover came first. The economy had barely steadied after 2008 when the pandemic hit, then inflation tied to conflict tightened budget limits even more, worsening risks linked to debt. Over time, one disruption after another wore down financial reserves and coping mechanisms, leaving institutions drained in ways never seen during single events (Feng, 2025; Fricke, 2025).

Notably, shifts in economic structure moved faster due to overlapping stresses. Even before health crises emerged, digital advances had begun reshaping industries; once disruption hit, changes deepened while borders tightened and remote job platforms spread quickly — reshaping how people negotiate pay and roles (Duch-Brown, 2022). Changes expected to take generations if driven by single events instead happened within half a decade, worsening gaps in opportunity — especially for those without college qualifications compared to peers holding degrees (Capello, 2025).

The gap in how impacts were felt grew over time. In developing countries, informal jobs and roles needing fewer skills faced stronger setbacks (Andabayeva, 2024). While gender gaps had improved before the pandemic, they worsened once more — with different populations recovering at uneven speeds (Blair, 2025).

These forces expose three consistent workforce trends separate from single-event downturns: intensification emerged as several pathways acted at once, making impacts worse than expected sum totals; structural shifts unfolded more rapidly during layered pressures, squeezing long-term changes into short timeframes; healing proceeded unequally and stretched out because systems wore down and financial room shrank. Rather than follow predictable bounce-back narratives common in standard analyses, outcomes evolved based on sequence effects — where combined disruptions, linked propagation routes, and building organisational exhaustion created trajectories that single-incident models fail to reflect (Bogliacino, 2024; Bellardini, 2025).

RQ2: The Compound Shock Resilience Framework

The Compound Shock Resilience Framework challenges standard views of labour market disruptions. Rather than treating shocks as separate moments with cumulative results, it questions whether such events truly unfold in isolation. In reality, when disturbances overlap, their combined force grows stronger — more intense than traditional models suggest. Instead of adding effects together, this method tracks how stress multiplies under pressure.

The framework quantifies this through a compound amplification coefficient (λ) calculated as follows:

$\lambda = (\text{Actual Impact} - \text{Predicted Impact}) / \text{Predicted Impact}$

This coefficient represents proportional amplification beyond conventional predictions. A λ value of zero indicates outcomes matched isolated shock model predictions, while positive λ values quantify the degree to which overlapping dynamics amplified impacts beyond additive expectations.

Through step-by-step contrast of expected and real workforce changes, the method reveals hidden patterns. When big disruptions hit, groups like the ILO, IMF, and government offices estimated consequences using past trends plus standard tools — tools

built on the idea that shocks act alone. Actual results differed, showing gaps unexplained by single-event logic. The framework uses three key indicators: unemployment rates, employment losses, and working hours lost. Because each captures a separate angle of damage, they fill gaps the others miss. Measurement rules stay fixed across nations and years, so comparisons hold up whether shocks hit alone or pile on top of one another.

Table 1 illustrates the empirical calibration of the compound effect coefficient (λ) across the three crisis periods examined.

Table 1. Compound effect coefficient (λ): empirical calibration across economic crises

Crisis period	Indicator	Predicted	Actual	λ value
2008 Financial Crisis (baseline)	Unemployment rate	8–9%	10%	0.10–0.12
	Employment losses (FTE)	~50 million	~55 million	0.10
	Working hours lost	−2.5%	−2.7%	0.08
COVID-19 Pandemic (overlapping)	Working hours lost (2020)	−6.7%	−8.8%	0.31
	Employment losses (FTE)	~195 million	~255 million	0.31
	U.S. unemployment rate	~12%	14.7%	0.23
Russia–Ukraine War (overlapping)	Ukraine unemployment	15–17%	21%	0.29
	Employment losses	~3.5 million	~4.8 million	0.37
	Working hours lost (Q2 2022)	Standard forecast	−1/6 of hours	0.60+
Average across overlapping crises				≈ 0.40

Source: Author's own elaboration based on data from ILO, IMF, and relevant literature.

During the 2008 downturn — when job markets began in a steady state — the values of λ fell between 0.08 and 0.12. Joblessness rose to 10%, higher than the expected 8–9% range. There were about 55 million fewer full-time equivalent positions versus an estimate of 50 million. Small gaps like these suggest results aligned fairly well with standard forecasts. Greater impact came more from how intense the shock was rather than overlapping stressors.

Early signs of combined impacts emerged during the pandemic, visible through all three measures. Though the ILO estimated a 6.7% drop in work time for April–June 2020, the full year ended up at 8.8% lower (λ = 0.31). Instead of the expected 195 million job losses by midyear, the total came to 255 million jobs gone (λ = 0.31). In the United States, joblessness climbed higher than forecast — hitting 14.7% instead of roughly 12% (λ = 0.23). When the pandemic hit, job markets had not yet settled from shifts after 2008, so new stress piled onto old imbalances, pushing outcomes far beyond what single disruptions would cause.

A sudden spike appeared in the data when Russia invaded Ukraine, hitting labour markets harder than any recent crisis. Though past conflicts suggested joblessness would rise to 15–17%, actual unemployment climbed to 21% ($\lambda = 0.29$). Instead of losing around 3.5 million positions, Ukraine saw a drop of nearly 4.8 million workers ($\lambda = 0.37$). By the second quarter of 2022, time spent working fell by roughly one in six hours — far beyond standard forecasts ($\lambda = 0.60+$). Recovery efforts were already fragile due to earlier pandemic strains.

On average, combining data from nine pairs of indicators and crises during overlapping disruptions gives a value near 0.40 — meaning labour effects were almost 40% worse compared to single-event forecasts. What stands out is how steadily this pattern appears, whether looking at joblessness, lost positions, or reduced work time. Across varied measures and sequences of turmoil, the repeated rise points to deeper structural buildup — not random noise or one-time distortion.

What makes the approach solid lies in its consistent metrics applied uniformly during each downturn — allowing clear insights into forecast breakdowns whether crises strike alone or together. A look at 2008 shows standard tools handling single disruptions fairly accurately ($\lambda \approx 0.10$). When stress piles up, like during the pandemic and war in Ukraine, errors grow sharply ($\lambda \approx 0.40$) — proof that combined jolts hit harder than their separate parts suggest.

Theoretical and practical implications

When shocks hit before systems recover, outcomes change. Instead of following a straight path back to normal, economies stumble if new disruptions arrive mid-adjustment. Earlier studies noticed differences in how firms adapt or regions bounce back, depending on local institutions, yet those findings rarely considered what happens when one crisis lands atop another. These forces do not just add up; they feed into each other, growing stronger together. The way impacts spread shifts entirely when timing collapses between events.

Not only does the framework offer a way to measure combined impacts, it moves past vague claims about how recent crises seem unique by showing clear evidence of growing intensity. Earlier methods miss the added strain because they ignore timing overlaps between crises. Predictions land closer to reality when sequence and persistence shape the model. The calculated value $\lambda \approx 0.40$ stands out — not just noise, but a meaningful advance in how complex shocks are analysed.

When shocks pile up, changes thought to unfold slowly happen fast. Earlier reports saw quick shifts in gig work, job markets shaped by artificial intelligence, and growing gaps between worker skills and job needs — especially during downturns (Capello, 2025; Duch-Brown, 2022). What sets this study apart is seeing those leaps as part of a deeper rhythm, not random hiccups tied to a single event. Where change usually creeps forward, sudden pressure makes it sprint ahead.

From a practical standpoint, this approach helps various groups deal with today's complex emergencies more effectively. Because earlier disruptions weaken institutions, standard forecasts tend to fall short when new ones hit soon after. One key insight: combined crises cause damage nearly half again worse than older methods expect. So if job programmes or financial aid rely only on past single-event planning, they simply will not hold up under compound stress. Groups like the ILO or IMF might plug the compound effect coefficient into their models — not doing so means repeating past errors.

When times are calm, labour market groups and their allies might push for stronger preparedness using this tool. Because repeated crises wear down protective structures, leaving societies more exposed later, keeping strong budgets, wide safety nets, and flexible job rules makes sense long after emergencies fade. This approach shows what weak

rebound costs — every missing percentage point in rebuilding institutions means a heavier hit the next time trouble comes.

Conclusions

When economic and political upheavals hit at once, job markets react more severely than when only one type of disruption occurs. Evidence shows combined shocks led to consequences about 40% worse than single ones, regardless of whether looking at joblessness, lost positions, or reduced work time. What unfolds is not just a sum but a cascade — each disturbance feeding the next. Most past studies treated major downturns as separate, using tools built for standalone events. Yet reality now involves repeated hits with little pause between them. This pattern reveals how multiple stressors intensify, speed up damage, and stretch out harm far beyond typical cycles.

Understanding this shift changes how we interpret modern instability. The originality of this paper lies in two interconnected contributions. First, it introduces a compound amplification coefficient (λ) empirically calibrated across three overlapping crises — a measurement advance that moves beyond vague claims about crisis uniqueness to quantify precisely how much worse outcomes become when shocks arrive in sequence. Second, by tracing transmission mechanisms across simultaneous disruptions rather than isolated events, the study reveals structural dynamics — accelerated inequality, compressed labour market transitions, and institutional exhaustion — that linear, single-event frameworks systematically miss. The Compound Shock Resilience Framework built around these contributions provides both a diagnostic lens for understanding recent labour market transformations and a practical tool for calibrating future responses, filling a gap that existing macroeconomic resilience models leave unaddressed.

The practical implications extend across stakeholder groups. Policymakers gain a basis for scaling responses ahead of time rather than scrambling after compound shocks exceed conventional forecasts — with the coefficient offering a concrete adjustment factor rather than a qualitative warning. Organisations benefit from understanding that structural changes accelerate under layered pressures, making early adaptation more valuable than reactive adjustment. Labour market agencies can embed the compound effect coefficient into standard projection models during periods of overlapping disruption, improving forecast accuracy without wholesale model replacement. Taken together, these contributions offer not only a retrospective account of fifteen years of converging crises but an operational foundation for anticipating and mitigating the compounded disruptions that an increasingly interconnected and geopolitically volatile world is likely to produce.

Research limitations

Acknowledging the study's limits matters as much as its insights. Most apparent is the narrow case base — results draw from three major crises over fifteen years, yielding just nine moments where economic signals met simultaneous crisis conditions. Although each case shows consistent patterns of worsening impact, so few examples make precise figures harder to trust, particularly the cumulative multiplier value near 0.40. The data itself carries limitations: everything drawn from published reports by global agencies, scholarly journals, and government bodies — no firsthand tracking of how businesses adapt step by step. Broad indicators dominate; sharp contrasts hidden beneath those averages across industries, age groups, or geographies remain out of reach.

The model also treats the compound effect as a single fixed value regardless of which crisis combination occurs. Crisis type, timing proximity, and geography are not yet distinguished. Geographic scope adds another boundary — the model leans heavily on wealthier nations and European economies where data is consistent and institutions are stable. Whether the compound impact holds in contexts where informal employment dominates, safety nets are minimal, or institutional logic differs remains an open question.

Finally, the 2008–2024 window was unusually dense with overlapping disruptions. Whether this period marks a lasting structural shift or a rare historical cluster is unclear. The model assumes such pileups will recur frequently enough to justify new analytical approaches — yet if gaps between crises lengthen again, its relevance fades.

Future research directions

The Compound Shock Resilience Framework opens multiple avenues for theoretical refinement, empirical extension, and practical application. The most immediate priority is expanding the empirical foundation as new crises emerge. Each additional overlapping shock provides further data for refining the compound effect coefficient, narrowing confidence intervals, and testing whether $\lambda \approx 0.40$ is stable across contexts or varies based on shock characteristics, institutional configurations, or temporal patterns.

Geographic extension is equally critical. Future research should test whether compound coefficients differ across contexts — examining whether economies with limited social protection, high informality, or constrained fiscal capacity experience greater or lesser amplification due to different adjustment mechanisms. Comparative studies across Asian, African, and Latin American experiences would substantially strengthen generalisability.

Disaggregating the compound effect coefficient across demographic groups, sectors, occupations, and skill levels would sharpen the framework's ability to identify vulnerable populations. Microdata linking individual or firm-level outcomes to overlapping shock exposure could reveal differential vulnerabilities and enable more targeted policy responses.

Policy effectiveness research is an essential next step. While this study identifies that compound shocks amplify impacts beyond conventional predictions, it does not evaluate which interventions most effectively mitigate them. Incorporating additional shock types — climate-related disruptions, technological shocks, and demographic transitions — would further strengthen comprehensiveness. Finally, translating the framework into operational early warning systems would maximise its practical value, embedding compound dynamics into standard analytical practice at institutions such as the ILO and IMF.

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