GhostPlay EIM — Evaluation Executive Summary

Economy Audit — severity-rated findings report.

Formal evaluation iterations reviewed: 3

60-Second Executive Summary

This audit reviewed 3 formal evaluation iteration(s) across the four Systemic Asset Classes and surfaced 5 finding(s): 1 Critical, 4 High.

Economy health: Mint-to-Burn Ratio 1.73 is at or above the 1.50 collapse threshold — the economy shows a structural faucet/sink inflation signal.

Top finding (Critical): Mint outpaces burn — faucet/sink hyperinflation risk **Bottom line:** 5 finding(s) at High or Critical severity warrant remediation before launch; see Prioritized Findings below for fixes and the Fun-to-Money Chain for revenue exposure.

Risk Analysis Summary

Executive Brief

Forecast off-track for 4 of 4 asset classes — each exceeded the ≤5% MAPE accuracy gate. The simulation identified parameter miscalibrations that make projections for those classes unreliable under real player conditions. Remediation levers are detailed below — each lever has a projected MAPE impact and a recommended retest cost. **Suggested next step:** Apply Lever 1 for each off-track class, then request a $5,000 Patch-Delta Retest.

Financial Risk Assessment

Class 1 (Fiat Currency) MAPE: 99.77% — ⚠ RED FLAG **Class 2 (Velocity Catalyst) MAPE:** 93.81% — ⚠ RED FLAG **Class 3 (Progression Sink) MAPE:** 98.02% — ⚠ RED FLAG **Class 4 (Wildcard Faucet) MAPE:** 96.80% — ⚠ RED FLAG

Prioritized Findings

Critical (1)

- **Mint outpaces burn — faucet/sink hyperinflation risk** (Economy Health)
- Mint-to-Burn Ratio (MBR) is 1.73, at or above the 1.50 collapse threshold. Currency is entering circulation faster than sinks remove it — the structural signature of the faucet/sink hyperinflation that collapsed economies such as Axie Infinity's SLP.
- **Recommended fix:** Bring MBR below the threshold before launch: throttle the Class 1 (fiat currency) faucet and/or deepen the Class 3 (progression) sink so burn keeps pace with mint. Re-ingest the rebalanced economy and re-score MBR.
- Signal: Backtest MBR=1.73 (threshold 1.50)

High (4)

- **Class 1 — Fiat Currency: forecast off-track (99.9% MAPE)** (Forecast Confidence)
- Class 1 — Fiat Currency forecast error is 99.9%, exceeding the 5% gate by 94.9pp. Projections for this class are unreliable under the stress conditions evaluated.
- **Recommended fix:** Apply the highest-impact remediation lever for this class (see Forecast Accuracy Detail), then request a Patch-Delta retest to confirm the forecast re-converges below the gate.
- Signal: class1_fiat_currency MAPE=99.9%
- **Class 2 — Velocity Catalyst: forecast off-track (121.1% MAPE)** (Forecast Confidence)

- Class 2 — Velocity Catalyst forecast error is 121.1%, exceeding the 5% gate by 116.1pp. Projections for this class are unreliable under the stress conditions evaluated.
- **Recommended fix:** Apply the highest-impact remediation lever for this class (see Forecast Accuracy Detail), then request a Patch-Delta retest to confirm the forecast re-converges below the gate.
- Signal: class2_velocity_catalyst MAPE=121.1%
- **Class 3 — Progression Sink: forecast off-track (99.5% MAPE)** (Forecast Confidence)
- Class 3 — Progression Sink forecast error is 99.5%, exceeding the 5% gate by 94.5pp. Projections for this class are unreliable under the stress conditions evaluated.
- **Recommended fix:** Apply the highest-impact remediation lever for this class (see Forecast Accuracy Detail), then request a Patch-Delta retest to confirm the forecast re-converges below the gate.
- Signal: class3_progression_sink MAPE=99.5%
- **Class 4 — Wildcard Faucet: forecast off-track (98.2% MAPE)** (Forecast Confidence)
- Class 4 — Wildcard Faucet forecast error is 98.2%, exceeding the 5% gate by 93.2pp. Projections for this class are unreliable under the stress conditions evaluated.
- **Recommended fix:** Apply the highest-impact remediation lever for this class (see Forecast Accuracy Detail), then request a Patch-Delta retest to confirm the forecast re-converges below the gate.
- Signal: class4_wildcard_faucet MAPE=98.2%

Fun-to-Money Chain

How each economy mechanic converts gameplay into revenue, and the current signal on each link:

Asset class	Mechanic	Fun driver	Revenue lever	Current signal
Class 1 — Fiat Currency	Core transactions & store purchases	Players turn effort/cash into spendable currency	Direct IAP revenue & purchase velocity	99.9% ⚠ off-track
Class 2 — Velocity Catalyst	Progression boosters / time-savers	Players pay to accelerate progress and stay in the fun loop	Conversion rate & ARPPU (impulse + whale spend)	121.1% ⚠ off-track
Class 3 — Progression Sink	Sinks that absorb currency (upgrades, crafting, gates)	Sinks pace the grind and keep goals meaningful	Repeat spend & long-run LTV / retention	99.5% ⚠ off-track
Class 4 — Wildcard Faucet	Reward faucets (drops, events, login rewards)	Surprise rewards drive delight and re-engagement	Session frequency → ad + IAP exposure	98.2% ⚠ off-track

Revenue trajectory: with MBR 1.73 above the 1.50 threshold, currency oversupply deflates the in-game value of premium goods. As earned currency buys more, willingness to pay for IAP currency falls — the fun-to-money chain leaks at Class 1, dragging the whole revenue trajectory down over time.

Forecast Accuracy Detail

Per-iteration MAPE gate readings and remediation levers — the evidence behind the findings above. Gate status is forecast accuracy, not a launch verdict.

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vector_a_exploit_shock

Status: OFF_TRACK **Evaluation Window:** 180 days

MAPE Per Asset Class

- `class1_fiat_currency` : 99.90% ⚠ OFF_TRACK

- `class2_velocity_catalyst` : 115.34% ⚠ OFF_TRACK
- `class3_progression_sink` : 99.49% ⚠ OFF_TRACK
- `class4_wildcard_faucet` : 96.07% ⚠ OFF_TRACK

Failure Analysis — class1_fiat_currency

Root Cause Diagnosis: class1_fiat_currency MAPE reaches 99.9%, exceeding gate by 94.9pp. Failure window: Days 179–180. Exploit Shock stress (+300% transaction volume) at Day 180 likely drives hyperinflation or currency drain patterns that exceed model predictions.

Failure Window: Days 179–180 **Dominant Stress Vector:** A (Exploit Shock) **Confidence:** 80%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class1_fiat_currency

Lever 1: Exploit loop transaction rate cap - Adjustment: Cap daily transaction frequency for high-yield exploit loops by 30%. Proportional deflation of currency supply. - Projected MAPE Δ: -2.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Fiat currency sink burn multiplier - Adjustment: Increase Class 3 sink burn rate for fiat currency by 20%. Absorbs excess supply from exploit shock. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Medium

Failure Analysis — class2_velocity_catalyst

Root Cause Diagnosis: class2_velocity_catalyst MAPE reaches 115.3%, exceeding gate by 110.3pp. Failure window: Days 18–118. Whale Flight stress (top-10% dormant) at Day 180 likely drives velocity demand collapse or creates feedback loops in Velocity Catalyst emission mechanics.

Failure Window: Days 18–118 **Dominant Stress Vector:** A (Exploit Shock) **Confidence:** 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class2_velocity_catalyst

Lever 1: Velocity catalyst daily emit cap - Adjustment: Reduce daily Velocity Catalyst emission by 20%. Proportional reduction in agent acceleration. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale re-engagement incentive - Adjustment: Introduce 15% Velocity Catalyst bonus for top-10% players returning after dormancy. Stabilises demand collapse from Whale Flight stress vector. - Projected MAPE Δ: -1.4pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class3_progression_sink

Root Cause Diagnosis: class3_progression_sink MAPE reaches 99.5%, exceeding gate by 94.5pp. Failure window: Days 89–180. Whale Flight stress (top-10% persona dormancy) at Day 180 likely collapses Class 3 expenditure, creating a sink drain shortfall that the model underestimates.

Failure Window: Days 89–180 **Dominant Stress Vector:** A (Exploit Shock) **Confidence:** 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class3_progression_sink

Lever 1: Progression sink expenditure cap - Adjustment: Cap daily Class 3 expenditure per agent by 20%. Reduces overconsumption outliers from whale cohort. - Projected MAPE Δ: -1.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale churn velocity threshold - Adjustment: Raise whale churn trigger from ≤10% to ≤15% of peak velocity. Extends active whale lifecycle, smoothing sink

drain. - Projected MAPE Δ: -1.3pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class4_wildcard_faucet

Root Cause Diagnosis: MAPE deviation in class4_wildcard_faucet accelerates between Days 89–180, consistent with compound accumulation from Progression Overdrive stress injection at Day 180. Simulation predicts stable Faucet emit rates, but agent behavior drives Faucet consumption 9107% above modelled levels as Class 2 (Velocity Catalyst) utilisation sustains above 300% for 91 consecutive simulated days. Root cause: sink-depth miscalibration (secondary Faucet demand from prolonged high-velocity gameplay), not primary faucet emit rate problem.

Failure Window: Days 89–180 **Dominant Stress Vector:** A (Exploit Shock) **Confidence:** 85%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class4_wildcard_faucet

Lever 1: Class 3→4 conversion rate - Adjustment: Reduce daily conversion from Progression Sinks to Wildcard Faucets by 12–15%. Proportional impact, room to adjust. - Projected MAPE Δ: -2.4pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Faucet emit velocity soft cap - Adjustment: Introduce soft cap on Faucet emission when Velocity Catalyst utilization exceeds 300%. Binary threshold; needs precise calibration. - Projected MAPE Δ: -1.9pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Lever 3: Class 4 sink depth (cooldown) - Adjustment: Increase Faucet cooldown mechanics by 12%. Proportional sink deepening; room to adjust ±3%. - Projected MAPE Δ: -1.5pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

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vector_b_whale_flight

Status: OFF_TRACK **Evaluation Window:** 180 days

MAPE Per Asset Class

- `class1 fiat currency` : 99.70% ⚠ OFF_TRACK
- `class2_velocity_catalyst` : 121.14% ⚠ OFF_TRACK
- `class3 progression sink` : 95.04% ⚠ OFF_TRACK
- `class4_wildcard_faucet` : 96.16% ⚠ OFF_TRACK

Failure Analysis — class1_fiat_currency

Root Cause Diagnosis: class1_fiat_currency MAPE reaches 99.7%, exceeding gate by 94.7pp. Failure window: Days 179–180. Exploit Shock stress (+300% transaction volume) at Day 180 likely drives hyperinflation or currency drain patterns that exceed model predictions.

Failure Window: Days 179–180 **Dominant Stress Vector:** B (Whale Flight) **Confidence:** 80%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class1_fiat_currency

Lever 1: Exploit loop transaction rate cap - Adjustment: Cap daily transaction frequency for high-yield exploit loops by 30%. Proportional deflation of currency supply. - Projected MAPE Δ: -2.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Fiat currency sink burn multiplier - Adjustment: Increase Class 3 sink burn rate for fiat currency by 20%. Absorbs excess supply from exploit shock. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Medium

Failure Analysis — class2_velocity_catalyst

Root Cause Diagnosis: class2_velocity_catalyst MAPE reaches 121.1%, exceeding gate by 116.1pp. Failure window: Days 16–116. Whale Flight stress (top-10% dormant) at Day 180 likely drives velocity demand collapse or creates feedback loops in Velocity Catalyst emission mechanics.

Failure Window: Days 16–116 **Dominant Stress Vector:** B (Whale Flight)
Confidence: 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class2_velocity_catalyst

Lever 1: Velocity catalyst daily emit cap - Adjustment: Reduce daily Velocity Catalyst emission by 20%. Proportional reduction in agent acceleration. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale re-engagement incentive - Adjustment: Introduce 15% Velocity Catalyst bonus for top-10% players returning after dormancy. Stabilises demand collapse from Whale Flight stress vector. - Projected MAPE Δ: -1.4pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class3_progression_sink

Root Cause Diagnosis: class3_progression_sink MAPE reaches 95.0%, exceeding gate by 90.0pp. Failure window: Days 89–180. Whale Flight stress (top-10% persona dormancy) at Day 180 likely collapses Class 3 expenditure, creating a sink drain shortfall that the model underestimates.

Failure Window: Days 89–180 **Dominant Stress Vector:** B (Whale Flight)
Confidence: 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class3_progression_sink

Lever 1: Progression sink expenditure cap - Adjustment: Cap daily Class 3 expenditure per agent by 20%. Reduces overconsumption outliers from whale cohort. - Projected MAPE Δ: -1.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale churn velocity threshold - Adjustment: Raise whale churn trigger from ≤10% to ≤15% of peak velocity. Extends active whale lifecycle, smoothing sink drain. - Projected MAPE Δ: -1.3pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class4_wildcard_faucet

Root Cause Diagnosis: MAPE deviation in class4_wildcard_faucet accelerates between Days 89–180, consistent with compound accumulation from Progression Overdrive stress injection at Day 180. Simulation predicts stable Faucet emit rates, but agent behavior drives Faucet consumption 9116% above modelled levels as Class 2 (Velocity Catalyst) utilisation sustains above 300% for 91 consecutive simulated days. Root cause: sink-depth miscalibration (secondary Faucet demand from prolonged high-velocity gameplay), not primary faucet emit rate problem.

Failure Window: Days 89–180 **Dominant Stress Vector:** B (Whale Flight)
Confidence: 85%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class4_wildcard_faucet

Lever 1: Class 3→4 conversion rate - Adjustment: Reduce daily conversion from Progression Sinks to Wildcard Faucets by 12–15%. Proportional impact, room to adjust. - Projected MAPE Δ: -2.4pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Faucet emit velocity soft cap - Adjustment: Introduce soft cap on Faucet emission when Velocity Catalyst utilization exceeds 300%. Binary threshold; needs precise calibration. - Projected MAPE Δ: -1.9pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Lever 3: Class 4 sink depth (cooldown) - Adjustment: Increase Faucet cooldown mechanics by 12%. Proportional sink deepening; room to adjust ±3%. - Projected MAPE Δ: -1.5pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

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vector_c_progression_overdrive

Status: OFF_TRACK **Evaluation Window:** 180 days

MAPE Per Asset Class

- `class1_fiat_currency` : 99.71% ⚠ OFF_TRACK
- `class2_velocity_catalyst` : 44.96% ⚠ OFF_TRACK
- `class3_progression_sink` : 99.52% ⚠ OFF_TRACK
- `class4_wildcard_faucet` : 98.17% ⚠ OFF_TRACK

Failure Analysis — class1_fiat_currency

Root Cause Diagnosis: class1_fiat_currency MAPE reaches 99.7%, exceeding gate by 94.7pp. Failure window: Days 179–180. Exploit Shock stress (+300% transaction volume) at Day 180 likely drives hyperinflation or currency drain patterns that exceed model predictions.

Failure Window: Days 179–180 **Dominant Stress Vector:** C (Progression Overdrive) **Confidence:** 80%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class1_fiat_currency

Lever 1: Exploit loop transaction rate cap - Adjustment: Cap daily transaction frequency for high-yield exploit loops by 30%. Proportional deflation of currency supply. - Projected MAPE Δ: -2.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Fiat currency sink burn multiplier - Adjustment: Increase Class 3 sink burn rate for fiat currency by 20%. Absorbs excess supply from exploit shock. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Medium

Failure Analysis — class2_velocity_catalyst

Root Cause Diagnosis: class2_velocity_catalyst MAPE reaches 45.0%, exceeding gate by 40.0pp. Failure window: Days 176–180. Whale Flight stress (top-10% dormant) at Day 180 likely drives velocity demand collapse or creates feedback loops in Velocity Catalyst emission mechanics.

Failure Window: Days 176–180 **Dominant Stress Vector:** C (Progression Overdrive) **Confidence:** 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class2_velocity_catalyst

Lever 1: Velocity catalyst daily emit cap - Adjustment: Reduce daily Velocity Catalyst emission by 20%. Proportional reduction in agent acceleration. - Projected MAPE Δ: -2.1pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale re-engagement incentive - Adjustment: Introduce 15% Velocity Catalyst bonus for top-10% players returning after dormancy. Stabilises demand collapse from Whale Flight stress vector. - Projected MAPE Δ: -1.4pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class3_progression_sink

Root Cause Diagnosis: class3_progression_sink MAPE reaches 99.5%, exceeding gate by 94.5pp. Failure window: Days 89–180. Whale Flight stress (top-10% persona dormancy) at Day 180 likely collapses Class 3 expenditure, creating a sink drain shortfall that the model underestimates.

Failure Window: Days 89–180 **Dominant Stress Vector:** C (Progression Overdrive) **Confidence:** 75%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class3_progression_sink

Lever 1: Progression sink expenditure cap - Adjustment: Cap daily Class 3 expenditure per agent by 20%. Reduces overconsumption outliers from whale cohort. - Projected MAPE Δ: -1.8pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Whale churn velocity threshold - Adjustment: Raise whale churn trigger from ≤10% to ≤15% of peak velocity. Extends active whale lifecycle, smoothing sink drain. - Projected MAPE Δ: -1.3pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Failure Analysis — class4_wildcard_faucet

Root Cause Diagnosis: MAPE deviation in class4_wildcard_faucet accelerates between Days 89–180, consistent with compound accumulation from Progression Overdrive stress injection at Day 180. Simulation predicts stable Faucet emit rates, but agent behavior drives Faucet consumption 9317% above modelled levels as Class 2 (Velocity Catalyst) utilisation sustains above 300% for 91 consecutive simulated days. Root cause: sink-depth miscalibration (secondary Faucet demand from prolonged high-velocity gameplay), not primary faucet emit rate problem.

Failure Window: Days 89–180 **Dominant Stress Vector:** C (Progression Overdrive) **Confidence:** 85%

Next Steps: Apply Lever 1 + Lever 2 (combined approach). Lever 2 requires internal playtest validation before retest.

Remediation Levers — class4_wildcard_faucet

Lever 1: Class 3→4 conversion rate - Adjustment: Reduce daily conversion from Progression Sinks to Wildcard Faucets by 12–15%. Proportional impact, room to adjust. - Projected MAPE Δ: -2.4pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

Lever 2: Faucet emit velocity soft cap - Adjustment: Introduce soft cap on Faucet emission when Velocity Catalyst utilization exceeds 300%. Binary threshold; needs precise calibration. - Projected MAPE Δ: -1.9pp - Sensitivity: Cliff (binary threshold — calibrate precisely) - Risk: Medium

Lever 3: Class 4 sink depth (cooldown) - Adjustment: Increase Faucet cooldown mechanics by 12%. Proportional sink deepening; room to adjust ±3%. - Projected MAPE Δ: -1.5pp - Sensitivity: Gradient (proportional — room to adjust ±3–4%) - Risk: Low

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