ASTRAZENECA CASH FLOW FORECASTING

Intelligent Cash Flow Prediction | ARIMA Model | December 20, 2025

COUNTRIES

8

Entities Analyzed

DATA PERIOD

44 Weeks

Jan - Nov 2025

NET CASH FLOW

$-4.2M

Total (All Countries)

BEST MODEL: ARIMA
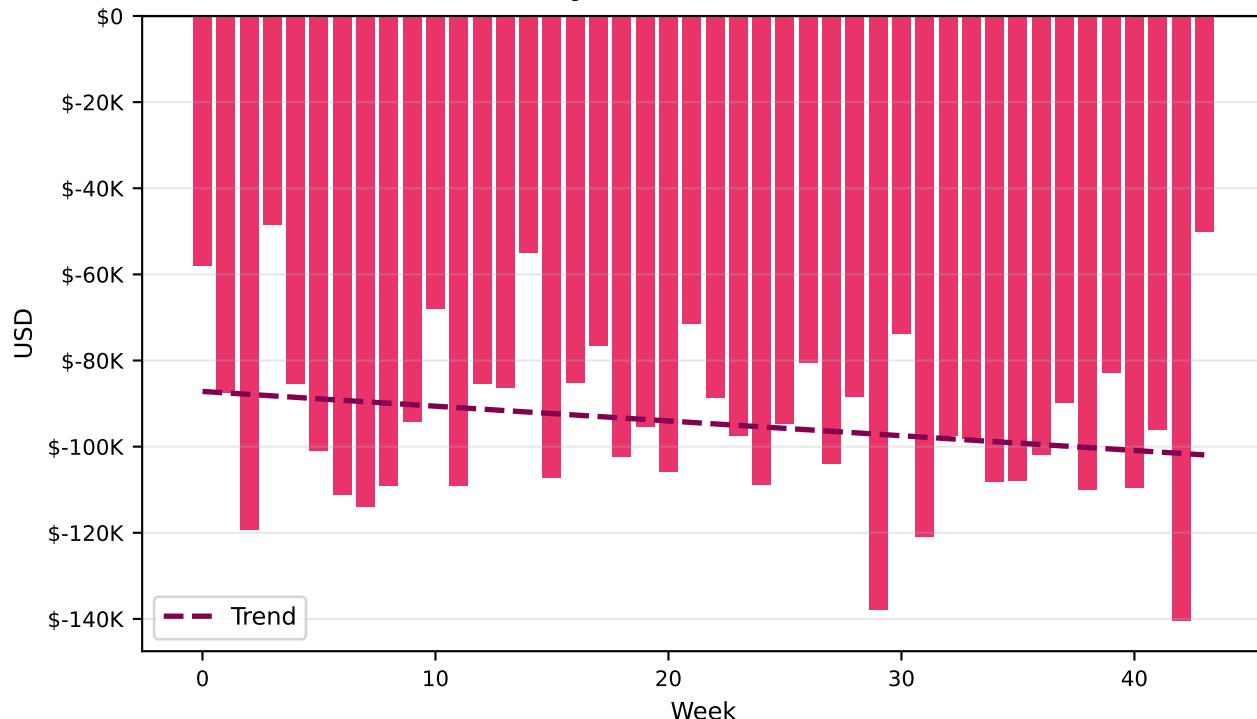
Avg MAPE: 113.6%

Best: MY (15.2%)

Structural Anomalies: 16

Transaction Anomalies: 1,869

Weekly Net Cash Flow Trend


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PROJECT SUMMARY
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DATA SCOPE
   Weeks: 44
   Countries: 8
   Transactions: 84,528

MODELS EVALUATED
   - ARIMA (Winner)
   - Prophet
   - Naive Baseline

ANALYSIS
   - Time Series Forecasting
   - Anomaly Detection
   - Model Backtesting

OUTPUTS
   - 1-Month Forecasts
   - 6-Month Projections
   - Risk Alerts
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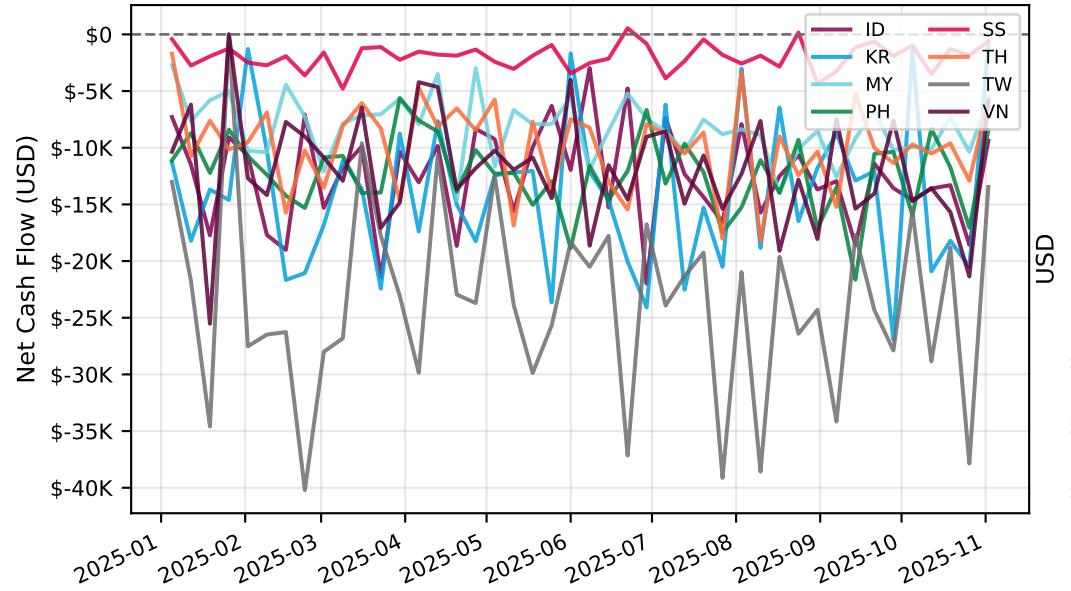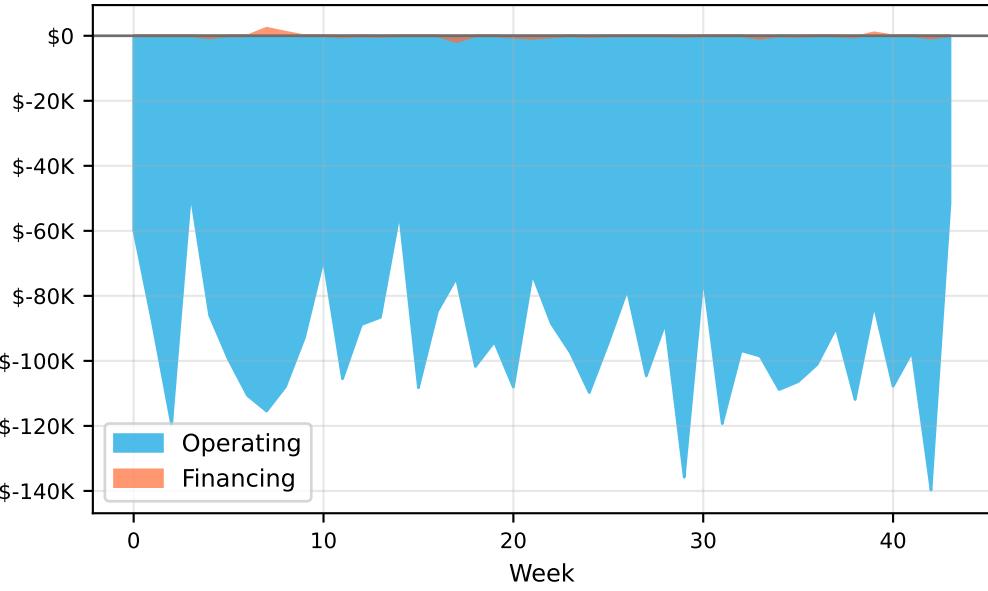
CASH FLOW TRENDS & PATTERNS

Historical analysis across 8 countries and 44 weeks
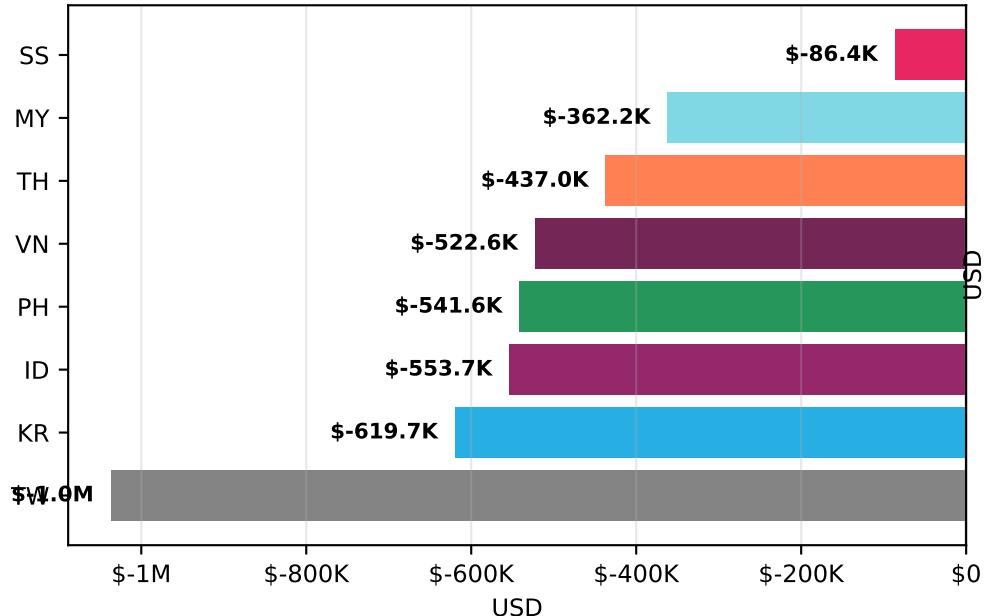
Weekly Cash Flow by Country
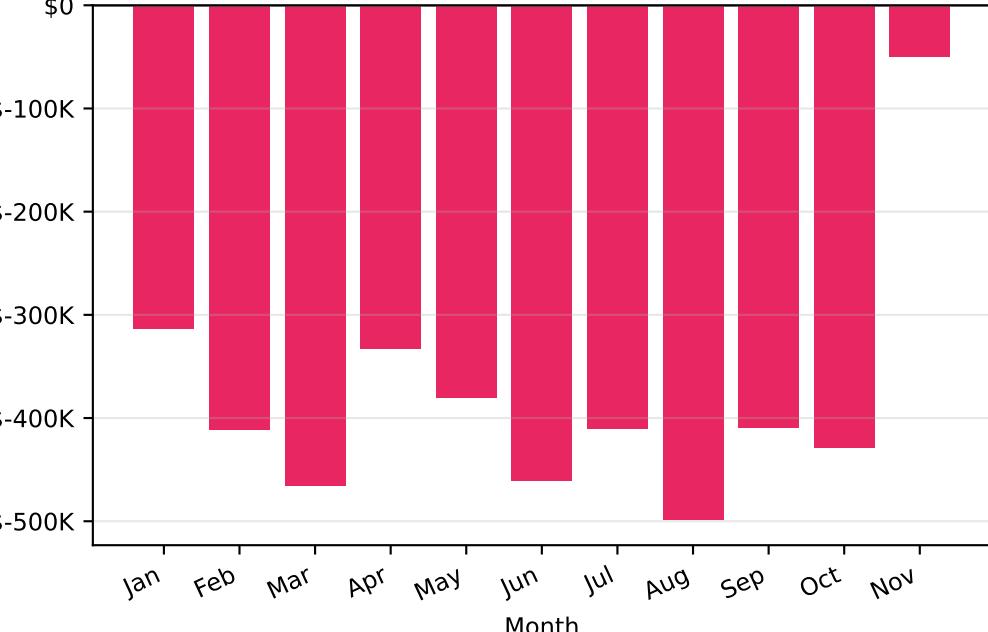
Operating vs Financing Cash Flow

Total Net Cash Flow by Country

Country	Value
SS	$-86.4K
MY	$-362.2K
TH	$-437.0K
VN	$-522.6K
PH	$-541.6K
ID	$-553.7K
KR	$-619.7K
TW	$-1.0M
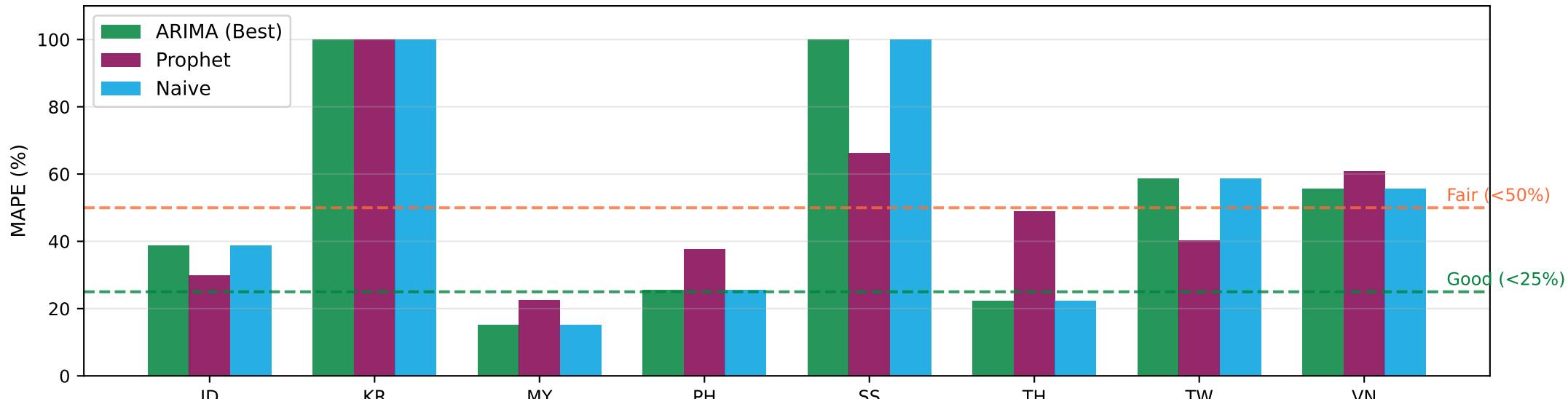
Monthly Cash Flow Pattern

MODEL COMPARISON & PERFORMANCE

ARIMA vs Prophet vs Naive | 4-Week Backtesting Validation

MAPE Comparison by Country (Lower is Better)
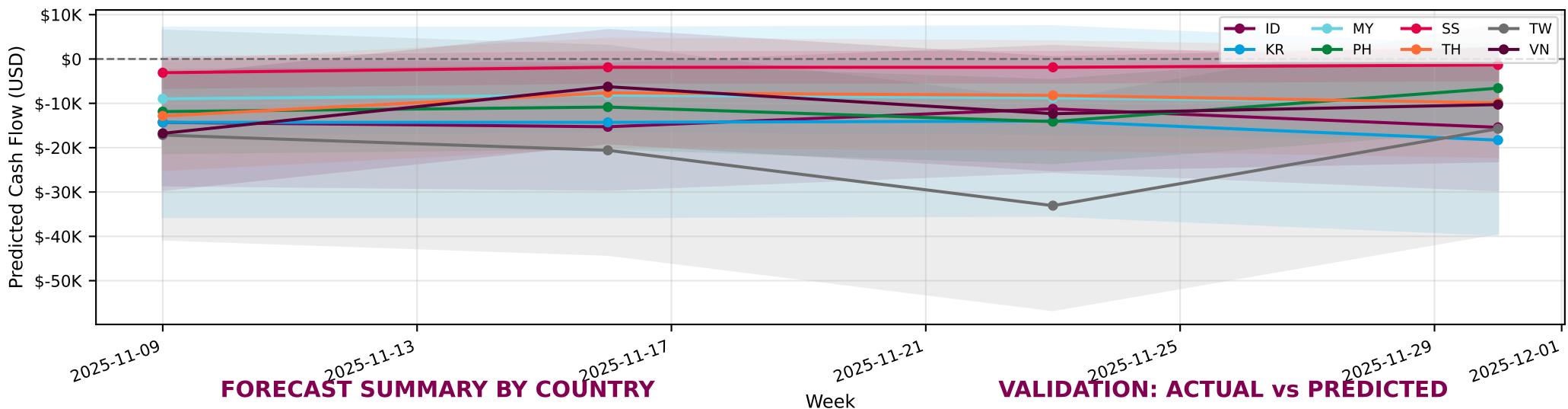
DETAILED MODEL PERFORMANCE METRICS

Country	RMSE	MAE	ARIMA	Prophet	Naive	Winner	Status
ID	$5,496	$4,625	38.9%	29.9%	38.9%	Prophet	Fair
KR	$12,501	$10,761	569.6%	413.2%	569.6%	Prophet	Review
MY	$1,703	$1,286	15.2%	22.4%	15.2%	ARIMA	Good
PH	$3,467	$2,914	25.6%	37.7%	25.6%	ARIMA	Good
SS	$1,496	$1,344	123.4%	66.3%	123.4%	Prophet	Review
TH	$1,992	$1,759	22.2%	49.0%	22.2%	ARIMA	Good
TW	$14,794	$13,792	58.6%	40.2%	58.6%	Prophet	Fair
VN	$8,171	$6,963	55.7%	60.9%	55.7%	ARIMA	Fair

ARIMA FORECAST RESULTS

1-Month and 6-Month Predictions with Confidence Intervals

1-Month ARIMA Forecast with 95% CI

FORECAST SUMMARY BY COUNTRY

Country	1-Month	6-Month	Avg/Week
ID	$-56.2K	$-361.0K	$-13.9K
KR	$-60.9K	$-368.5K	$-14.2K
MY	$-35.8K	$-235.2K	$-9.0K
PH	$-43.4K	$-275.6K	$-10.6K
SS	$-8.2K	$-53.5K	$-2.1K
TH	$-38.6K	$-257.0K	$-9.9K
TW	$-86.5K	$-577.0K	$-22.2K
VN	$-45.6K	$-301.1K	$-11.6K
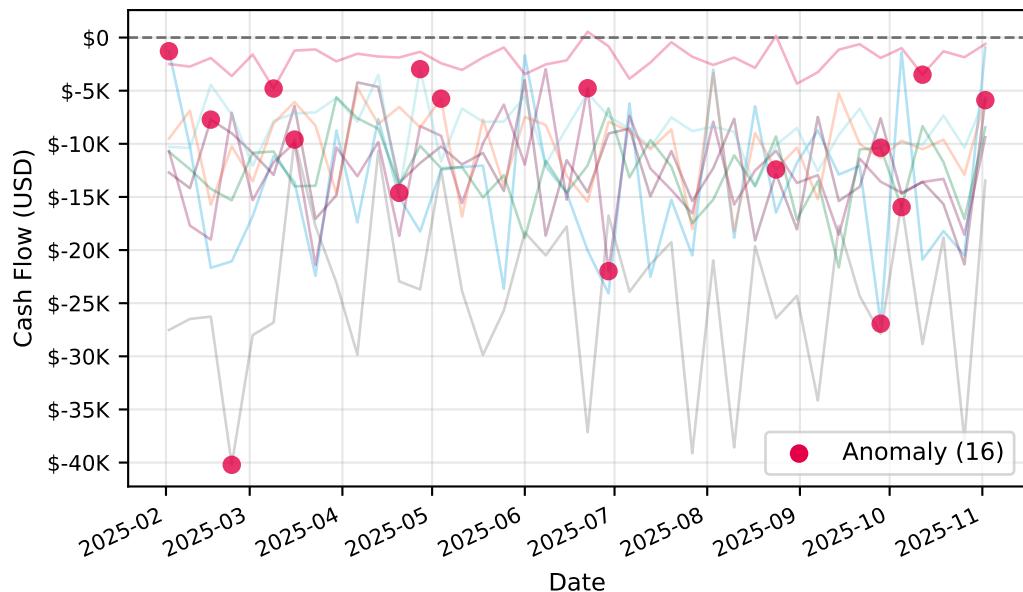
VALIDATION: ACTUAL vs PREDICTED

Country	Actual	Predicted	Accuracy
ID	$-54.8K	$-54.3K	**99%**
KR	$-60.6K	$-58.1K	**96%**
MY	$-33.4K	$-32.3K	**97%**
PH	$-45.6K	$-44.7K	**98%**
SS	$-7.2K	$-8.8K	**79%**
TH	$-38.7K	$-45.1K	**84%**
TW	$-99.0K	$-89.9K	**91%**
VN	$-56.5K	$-40.2K	**71%**

ANOMALY DETECTION & RECOMMENDATIONS

Dual-layer: Structural (Isolation Forest) + Transaction (Z-Score)

Structural Anomalies Timeline


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ANOMALY DETECTION SUMMARY
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STRUCTURAL ANOMALIES
  Detected: 16
  Method: Isolation Forest (5%)
  Features: Cash Flow, Rolling Stats

TRANSACTION ANOMALIES
  Detected: 1,869
  Method: Z-Score (|Z| > 3.5)

TOP RISK COUNTRIES
  ID: 2 weeks
  KR: 2 weeks
  MY: 2 weeks
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KEY INSIGHTS
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CASH FLOW PATTERNS
  - All countries negative net flow
  - Operating flows dominate
  - Strong weekly seasonality
  - Month-end payment cycles

MODEL PERFORMANCE
  - ARIMA = Best model
  - Best: MY
  - Review: KR
  - 4-week holdout validation

DATA QUALITY
  - 44 weeks historical data
  - 84,528 transactions
  - Minimal data gaps
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RECOMMENDATIONS
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SHORT-TERM (1-4 Weeks)
  - Deploy ARIMA in production
  - Set anomaly alerts (>2 std)
  - Monitor KR, TW closely

MEDIUM-TERM (1-6 Months)
  - Weekly rolling updates
  - Add FX rate regressors
  - Country-specific tuning

MODEL IMPROVEMENTS
  - Expand data (2+ years)
  - Test ensemble models
  - Add holiday adjustments
  - Real-time integration
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