

**A Longitudinal Analysis of the December Withdrawal Phenomenon in Ugandan Banks: Tracing the Destination of Funds from Financial Intermediation to Seasonal Expenditure**

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**Abstract**

This study conducted a comprehensive longitudinal analysis of the December withdrawal phenomenon in Uganda's banking sector, examining withdrawal patterns from 2018 to 2022 and systematically tracing the destination of withdrawn funds from financial intermediation to ultimate expenditure categories. Using a mixed-methods research design, the study collected primary data from 1,847 bank customers across 12 commercial banks representing 65% of the sector's asset base, supplemented by secondary data from Bank of Uganda reports and financial statements. Analytical methods included univariate descriptive statistics, bivariate chi-square and correlation analyses, and sophisticated mixed-effects regression models that accounted for hierarchical data structures and temporal dependencies. The research established three principal findings that addressed critical knowledge gaps regarding seasonal liquidity disruptions in developing economy banking systems. First, the quantitative analysis revealed that customers withdrew an average of UGX 3.85 million (67.8% of pre-withdrawal balances) during a concentrated period approximately 8 days before Christmas, with withdrawal amounts increasing significantly by 15.6% over the study period ( $p < 0.001$ ) after controlling for demographic and economic factors, demonstrating intensification of the phenomenon beyond inflation effects. Second, the fund destination tracking demonstrated that consumption expenditure dominated withdrawn funds at 59.9% overall (festive expenses 30.4%, school fees 17.7%, household purchases 11.8%), with a statistically significant increasing trend to 62.2% by 2022 ( $\chi^2 = 12.847, p = 0.012$ ), while investment activities constituted 26.7% (business capital 15.3%, agricultural inputs 8.1%, real estate 3.3%) with marginal declining trends, and informal financial systems absorbed 8.5% of withdrawn funds, indicating that the majority of funds exited productive financial intermediation cycles at least temporarily. Third, mixed-effects multinomial regression models revealed substantial demographic heterogeneity in both withdrawal magnitudes and fund destinations: males withdrew 18.7% more than females and showed 68.7% higher odds of investment destination ( $OR = 1.687, p < 0.001$ ); tertiary-educated customers withdrew 33.4% more than primary-educated and demonstrated 134.7% higher investment odds ( $OR = 2.347, p < 0.001$ ); urban customers withdrew 24.3% more but showed 32.9% lower investment odds ( $OR = 0.671, p < 0.001$ ) compared to rural customers; and business owners withdrew 22.1% more with 189.1% higher investment odds ( $OR = 2.891, p < 0.001$ ). The intraclass correlation coefficient of 8.2% indicated meaningful bank-level variation in withdrawal patterns beyond customer characteristics, suggesting institutional factors influenced seasonal deposit volatility. These findings carried significant implications for monetary policy formulation, banking sector liquidity management, and financial sector development strategies in Uganda and similar developing economies. The study documented opportunity costs associated with consumption-driven capital flight from formal banking while revealing nuanced patterns where substantial minorities of withdrawn funds served productive investment purposes, particularly among educated, rural, and business-owning segments. The research concluded that the December withdrawal phenomenon reflected deeper structural features of Uganda's economy including persistence of cash-based transactions, cultural practices surrounding festive expenditure, agricultural seasonality, and incomplete integration of informal and formal financial systems, requiring multi-faceted policy

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responses combining counter-cyclical financial product design, digital payment infrastructure expansion, seasonally-adjusted reserve requirements, and targeted financial literacy interventions to mitigate banking sector liquidity stress while enhancing economic productivity of seasonal fund flows.

**Key Words: Longitudinal Analysis and Withdrawal Phenomenon**

### **Introduction**

The banking sector in Uganda experiences a distinctive seasonal pattern characterized by significant deposit withdrawals during the month of December, a phenomenon that has persisted for decades yet remains inadequately documented in academic literature (ANDOLFATTO et al., 2020; Murinde et al., 2022). This cyclical liquidity drain poses unique challenges to financial intermediation, monetary policy effectiveness, and macroeconomic stability in Uganda's economy. While similar seasonal patterns have been observed in other developing economies, the magnitude and consistency of Uganda's December withdrawal phenomenon warrant dedicated scholarly attention, particularly given the country's evolving financial landscape and the sector's critical role in economic development (Bank et al., 2023; Jiang & Wu, 2023). The December withdrawal pattern represents more than a mere operational inconvenience for financial institutions; it reflects deeper structural characteristics of Uganda's economy, including the dominance of cash-based transactions, informal sector activities, agricultural seasonality, and cultural practices surrounding end-of-year festivities. As funds migrate from formal banking channels into various expenditure streams, questions arise about the efficiency of financial intermediation, the velocity of money, and the opportunity costs associated with this seasonal capital flight (Baganzi et al., 2021; Basri, 2020). Understanding where these funds ultimately flow—whether to consumption, investment, informal savings, or cross-border transactions—has significant implications for monetary policy formulation, banking sector regulation, and economic planning. This study employs a longitudinal analytical framework to trace the trajectory of withdrawn funds from their origin in Uganda's banking system to their final destinations in the real economy (Branch et al., 2023; Maghfuriyah et al., 2019). By examining multiple years of data, the research aims to identify consistent patterns, quantify the phenomenon's magnitude, and establish linkages between bank withdrawals and specific expenditure categories. The findings will contribute to the limited body of knowledge on seasonal liquidity management in Sub-Saharan African banking systems while providing actionable insights for policymakers, financial institutions, and economic planners seeking to optimize resource allocation and financial stability.

### **Background of the Study**

Uganda's banking sector has undergone substantial transformation since the liberalization policies of the 1990s, evolving from a state-dominated structure to a competitive multi-institutional landscape comprising 24 commercial banks, several credit institutions, and numerous microfinance deposit-taking institutions as of 2024 (Irumba, Mugabi, & Akankwasa, 2023; Karnowski & Miskiewicz, 2021; Richard et al., 2024). Despite this modernization and the introduction of digital financial services, the sector continues to exhibit pronounced seasonality in deposit behavior, with December consistently recording the highest withdrawal volumes and lowest liquidity ratios of the calendar year. The December withdrawal phenomenon intersects with several distinctive features of Uganda's socio-economic context. First, the country's festive season—encompassing Christmas celebrations, New Year preparations, and traditional end-of-year ceremonies—generates exceptional consumption demand across urban and rural areas (Irumba, Mugabi, & Nelson, 2023; Kenneth & Wilbrod, 2024). Second, Uganda's agricultural calendar sees many farmers

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receiving payments for cash crops during the November-December period, creating a temporary surge in rural liquidity that often bypasses or exits formal banking channels. Third, cultural practices including school fee payments for the upcoming academic term, family reunions, and traditional gift-giving ceremonies concentrate significant expenditure within this narrow temporal window (Hasan et al., 2023; Samuel et al., 2023).

The Bank of Uganda, the country's central bank, has acknowledged this seasonal pattern in various monetary policy statements and financial stability reports, noting its impact on liquidity management and reserve requirements. Commercial banks have developed various strategies to manage the December liquidity crunch, including building precautionary reserves, limiting lending in November-December, and offering special deposit products with withdrawal restrictions (Jane et al., 2023; Julius, 2023; Nelson, 2023). However, these reactive measures have not been informed by comprehensive research into the underlying causes, destinations, and economic impacts of the withdrawal phenomenon. Previous studies on Uganda's banking sector have focused primarily on financial inclusion, credit risk management, and banking efficiency, with minimal attention devoted to seasonal liquidity patterns. Regional studies from neighboring East African countries have documented similar December withdrawal trends, suggesting common cultural and economic drivers across the region (Bris et al., 2021; Jara & Piña, 2023; Loiacono & Rulli, 2022). However, the specific pathways through which withdrawn funds circulate in Uganda's economy remain largely unexplored, representing a significant gap in understanding the country's monetary dynamics and the effectiveness of its financial intermediation system (Gheewala, 2024; Zemtsov, 2020). The advent of mobile money platforms, which now process transactions exceeding traditional banking channels in volume, adds additional complexity to the December phenomenon (Lenferna, 2023; Nasir et al., 2019). Some evidence suggests that funds withdrawn from banks may be temporarily held in mobile money accounts before final expenditure, creating intermediate stopping points in the fund flow that complicate traditional tracking mechanisms. Understanding these multi-channel flows has become increasingly important for comprehensive monetary analysis and policy formulation (Niluka & Dushyantha, 2023).

### **Problem Statement**

Despite the December withdrawal phenomenon's regular occurrence and significant impact on Uganda's banking sector liquidity, there exists a critical knowledge gap regarding the ultimate destination and utilization of these withdrawn funds (Jawarneh & Al-Alawi, 2023; Julius & Kazaara, 2025). Banks experience predictable deposit declines averaging 15-25% of total deposits during December, forcing expensive liquidity management interventions, yet neither financial institutions nor regulatory authorities have systematically traced where these funds flow once they leave the formal banking system (Fred et al., 2023; Öztuna, 2023). This information deficit creates several interconnected problems. First, the Bank of Uganda's monetary policy formulation and reserve requirement calibration operate with incomplete understanding of seasonal money velocity and circulation patterns, potentially leading to suboptimal policy interventions. Second, commercial banks incur substantial costs maintaining excess reserves and limiting productive lending during this period, without clear evidence that such measures are optimally designed for the actual risk profile (Sun et al., 2022; Tanveer et al., 2025). Third, economic planners lack empirical foundations for assessing whether December withdrawals primarily fund productive investments, consumption, or capital flight, hindering effective resource allocation strategies.

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Furthermore, the phenomenon may indicate structural inefficiencies in Uganda's financial intermediation system, where formal savings are periodically converted to cash for expenditures that might be more efficiently conducted through banking channels (Gao et al., 2023; Gracious Kaazara & Nancy, 2025; Phiona & William, 2023). If withdrawn funds largely finance consumption rather than investment, this represents missed opportunities for capital accumulation and economic growth. Conversely, if significant portions flow to informal investment or productive agricultural inputs, current banking products may be inadequately designed to retain these funds while serving their ultimate purposes (Nancy & Audrey, 2025; Niemiec et al., 2021; Zhang, 2023). The problem is compounded by the absence of longitudinal analysis that would reveal whether the phenomenon is intensifying, stabilizing, or declining over time, and whether its character is changing in response to financial innovation, economic development, or demographic shifts. Without such temporal perspective, stakeholders cannot distinguish between cyclical fluctuations and structural trends, limiting their capacity for strategic planning and policy design.

### **Main Objective of the Study**

To comprehensively analyze the December withdrawal phenomenon in Uganda's banking sector through longitudinal examination of withdrawal patterns and systematic tracing of fund destinations, thereby establishing empirical foundations for enhanced liquidity management, monetary policy formulation, and financial sector development strategies.

### **Specific Objectives**

1. To quantify the magnitude, timing, and demographic distribution of bank deposit withdrawals during the December period across multiple years, identifying trends and variations in the withdrawal phenomenon's intensity and characteristics.
2. To trace and categorize the primary destination channels of withdrawn funds, distinguishing between consumption expenditure, investment activities, informal financial systems, cross-border flows, and temporary holdings in alternative financial platforms.
3. To assess the economic implications of the December withdrawal phenomenon on banking sector liquidity, financial intermediation efficiency, and monetary policy effectiveness in Uganda's economy.

### **Research Questions**

1. What are the temporal patterns, quantitative magnitudes, and demographic characteristics of bank deposit withdrawals during the December period in Uganda, and how have these patterns evolved over recent years?
2. Where do funds withdrawn from Ugandan banks during December ultimately flow, and what proportion is allocated to consumption, investment, informal savings, or other economic activities?
3. What are the consequences of the December withdrawal phenomenon for banking sector stability, financial intermediation efficiency, and the effectiveness of monetary policy instruments in Uganda?

### **Methodology**

This study employed a mixed-methods longitudinal research design to investigate the December withdrawal phenomenon in Ugandan banks over a five-year period from 2018 to 2022. The research utilized a stratified random sampling approach, selecting 12 commercial banks representing 65% of the banking sector's total asset base, stratified by bank size (large, medium, and small) and ownership structure (domestic vs. foreign). Primary data were collected through structured surveys administered to 1,847 bank customers who had conducted withdrawals exceeding UGX

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500,000 during December across the study period, while secondary data were obtained from Bank of Uganda reports, individual bank records, and financial statements. The customer survey instrument captured demographic characteristics, withdrawal amounts, timing, and detailed expenditure destinations categorized into consumption (festive expenses, school fees, household purchases), investment (business capital, agricultural inputs, real estate), informal financial systems (savings groups, money lenders), cross-border transactions, and temporary holdings in mobile money platforms. Data analysis proceeded in three phases: first, univariate analysis involving descriptive statistics (means, standard deviations, frequencies, percentages) characterized withdrawal patterns and demographic distributions; second, bivariate analysis employed chi-square tests, independent samples t-tests, and Pearson correlation coefficients to examine relationships between demographic variables, withdrawal magnitudes, and fund destinations; third, mixed-effects regression models were estimated to account for the hierarchical data structure (customers nested within banks across time), with withdrawal amount as the dependent variable and time, customer demographics, bank characteristics, and macroeconomic indicators as fixed effects, while bank-level random intercepts captured unobserved heterogeneity. Additional mixed-effects multinomial logistic regression models examined determinants of fund destination choices, controlling for repeated measurements and clustering effects. To trace fund flows, the study employed a fund destination tracking matrix that cross-tabulated withdrawal sources with expenditure categories, weighted by transaction amounts. Trend analysis utilized time-series decomposition to isolate seasonal components from underlying trends, while panel regression models with year and bank fixed effects assessed temporal evolution of the phenomenon. All statistical analyses were conducted using Stata 17.0 at 95% confidence level ( $\alpha = 0.05$ ), with model diagnostics including tests for multicollinearity (VIF), heteroskedasticity (Breusch-Pagan test), and model fit indices (AIC, BIC) to ensure robustness of findings (Nelson et al., 2022, 2023).

## Results

**Table 1: Descriptive Statistics of December Withdrawal Patterns and Demographic Characteristics (2018-2022)**

Variable	Mean	SD	Min	Max	N
<b>Withdrawal Amount (UGX '000)</b>	3,847.5	4,235.8	500	45,000	1,847
Age (years)	38.6	11.2	22	67	1,847
Account Balance Pre-withdrawal (UGX '000)	6,234.7	5,891.3	800	52,000	1,847
Withdrawal as % of Account Balance	67.8%	18.4%	15%	100%	1,847
Days Before Christmas (withdrawal timing)	8.3	4.6	1	20	1,847
<b>Categorical Variables</b>	<b>Frequency</b>	<b>Percentage</b>			
<b>Gender:</b> Male	1,089	59.0%			
Female	758	41.0%			
<b>Location:</b> Urban	1,237	67.0%			
Rural	610	33.0%			
<b>Education:</b> Primary	298	16.1%			
Secondary	628	34.0%			
Tertiary	921	49.9%			

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<b>Occupation:</b> Salaried Employee	712	38.5%			
Business Owner	634	34.3%			
Farmer	389	21.1%			
Other	112	6.1%			
<b>Bank Size:</b> Large	1,015	55.0%			
Medium	554	30.0%			
Small	278	15.0%			

The descriptive analysis revealed that the average December withdrawal amount was UGX 3,847,500 (SD = 4,235,800), with substantial variation indicated by the high standard deviation relative to the mean (coefficient of variation = 110%), suggesting considerable heterogeneity in withdrawal behaviors across customers. The wide range from UGX 500,000 to UGX 45,000,000 further underscored this diversity, with the distribution positively skewed toward larger withdrawals among higher-income segments. Critically, customers withdrew an average of 67.8% of their pre-withdrawal account balances (SD = 18.4%), indicating that December withdrawals were not merely routine transactions but represented substantial drawdowns of accumulated savings. The timing pattern showed that withdrawals peaked approximately 8 days before Christmas (mean = 8.3 days, SD = 4.6), concentrated within a narrow two-week window that intensified liquidity pressures on banks. The demographic composition revealed a male predominance (59.0%), urban concentration (67.0%), and relatively educated customer base (49.9% with tertiary education), reflecting the general profile of formal banking customers in Uganda. The occupational distribution showed that salaried employees (38.5%) and business owners (34.3%) constituted the majority of December withdrawers, while farmers represented 21.1%, suggesting that the phenomenon extended beyond agricultural income seasonality to encompass broader cultural and economic factors.

These findings illuminated several important dimensions of the December withdrawal phenomenon that addressed the first research question regarding temporal patterns and magnitudes. The fact that customers withdrew approximately two-thirds of their account balances indicated that this was a planned, large-scale liquidity event rather than normal transactional behavior, validating banking sector concerns about seasonal deposit volatility. The concentration of withdrawals within 8-10 days before Christmas created acute, predictable stress points for bank liquidity management, suggesting that targeted interventions during this specific window could be more efficient than maintaining elevated reserves throughout December. The demographic patterns revealed that urban, educated, salaried workers—traditionally the most stable depositor base—were primary drivers of the phenomenon, challenging assumptions that December withdrawals were predominantly rural or agriculture-driven. This urban concentration suggested that cultural and consumptive factors (festive spending, gift-giving, school fees) were more influential than agricultural seasonality in driving withdrawals. The substantial representation of business owners (34.3%) raised important questions about whether withdrawn funds were being deployed for year-end inventory purchases or business expansion, which would have different implications for economic productivity than pure consumption. The high coefficient of variation in withdrawal amounts indicated significant segmentation within the withdrawing population,

with implications for differentiated product design and retention strategies. Banks serving different demographic segments might need tailored approaches, with high-value relationship management for large withdrawers and convenience-focused products for smaller, routine withdrawers.

**Table 2: Destination of Withdrawn Funds by Category and Year (2018-2022)**

Fund Destination Category	2018	2019	2020	2021	2022	Overall	Chi-square	p-value
<b>Consumption Expenditure</b>								
Festive/Holiday Expenses	28.3%	29.1%	31.2%	30.8%	32.4%	30.4%		
School Fees & Education	18.5%	17.9%	16.8%	18.2%	17.1%	17.7%		
Household Purchases	11.2%	10.8%	12.4%	11.9%	12.7%	11.8%		
<b>Subtotal Consumption</b>	<b>58.0%</b>	<b>57.8%</b>	<b>60.4%</b>	<b>60.9%</b>	<b>62.2%</b>	<b>59.9%</b>	12.847	0.012*
<b>Investment Activities</b>								
Business Capital/Inventory	15.3%	16.2%	14.1%	15.8%	14.9%	15.3%		
Agricultural Inputs	8.7%	9.1%	7.2%	7.9%	7.4%	8.1%		
Real Estate/Construction	3.2%	3.8%	2.9%	3.4%	3.1%	3.3%		
<b>Subtotal Investment</b>	<b>27.2%</b>	<b>29.1%</b>	<b>24.2%</b>	<b>27.1%</b>	<b>25.4%</b>	<b>26.7%</b>	8.634	0.071
<b>Informal Financial Systems</b>								
Savings Groups (VSLA/SACCO)	6.8%	6.2%	7.1%	5.9%	6.3%	6.5%		
Money Lenders/Informal Loans	2.1%	1.9%	2.3%	1.8%	1.7%	2.0%		
<b>Subtotal Informal Finance</b>	<b>8.9%</b>	<b>8.1%</b>	<b>9.4%</b>	<b>7.7%</b>	<b>8.0%</b>	<b>8.5%</b>	3.217	0.522
<b>Cross-border Transactions</b>	2.4%	2.1%	2.8%	1.9%	2.2%	2.3%	2.145	0.709
<b>Mobile Money Holdings</b>	3.5%	2.9%	3.2%	2.4%	2.2%	2.9%	4.892	0.299
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>		

\*Note: Chi-square tests examine temporal variation in category proportions across years.  $p < 0.05$

**Bivariate Analysis of Fund Destination by Demographic Variables:**

Demographic Variable	Consumption	Investment	Informal Finance	Pearson $\chi^2$	p-value
<b>Gender:</b> Male	56.2%	30.1%	8.4%	18.743	<0.001***
Female	65.3%	21.7%	8.7%		
<b>Location:</b> Urban	62.8%	24.3%	8.2%	24.156	<0.001***
Rural	54.1%	32.4%	9.1%		
<b>Education:</b> Primary	68.4%	18.2%	10.3%	42.891	<0.001***
Secondary	61.7%	24.1%	9.5%		
Tertiary	55.9%	31.2%	7.1%		

\*\* $p < 0.001$

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The fund destination analysis revealed that consumption expenditure was the dominant destination for withdrawn funds, accounting for 59.9% of total withdrawals across the five-year period, with festive/holiday expenses alone representing 30.4% of all withdrawn funds. The temporal analysis showed a statistically significant increasing trend in consumption's share ( $\chi^2 = 12.847$ ,  $p = 0.012$ ), rising from 58.0% in 2018 to 62.2% in 2022, suggesting an intensification of the consumption-oriented character of December withdrawals over time. Investment activities constituted the second-largest category at 26.7% overall, though this proportion showed marginal decline over the study period ( $\chi^2 = 8.634$ ,  $p = 0.071$ ), approaching but not achieving statistical significance at the 0.05 level. Within the investment category, business capital/inventory was the primary subcategory (15.3%), followed by agricultural inputs (8.1%) and real estate (3.3%), indicating diverse productive applications of withdrawn funds. Informal financial systems absorbed 8.5% of withdrawn funds, primarily through village savings and loan associations (VSLAs) and SACCOs (6.5%), showing relative stability across years ( $\chi^2 = 3.217$ ,  $p = 0.522$ ). Cross-border transactions (2.3%) and mobile money holdings (2.9%) represented minor but persistent destination categories, with no statistically significant temporal variation. The bivariate analysis uncovered significant demographic differences in fund destination patterns, with gender showing highly significant associations ( $\chi^2 = 18.743$ ,  $p < 0.001$ ): females allocated significantly more to consumption (65.3% vs. 56.2%) while males directed more toward investment (30.1% vs. 21.7%), reflecting possible gender differences in financial decision-making and economic roles.

These results directly addressed the second research question regarding fund destinations and provided crucial insights into the economic character of the December withdrawal phenomenon. The predominance of consumption expenditure (59.9%) indicated that the majority of withdrawn funds exited productive financial intermediation cycles at least temporarily, representing opportunity costs in terms of foregone lending and capital formation. However, the substantial investment component (26.7%) demonstrated that the phenomenon was not purely consumptive, with more than one-quarter of funds flowing toward potentially productive economic activities. The increasing consumption trend over 2018-2022 was particularly noteworthy and potentially concerning from a development perspective, possibly reflecting growing commercialization of festive seasons, rising consumption aspirations, or changing cultural practices that prioritized immediate expenditure over saving and investment. The stability of informal financial system allocations (8.5%) suggested a persistent dual financial system where formal bank savings were periodically cycled through informal mechanisms, possibly due to social obligations in savings groups or accessibility advantages of informal finance during high-demand periods. The relatively low cross-border flow (2.3%) was somewhat surprising given anecdotal evidence of December shopping trips to neighboring countries, possibly indicating underreporting or indirect cross-border flows through other categories. The demographic variations revealed critical segmentation patterns with policy and product design implications: female customers' higher consumption orientation (65.3%) might reflect their traditional roles in household provisioning and festive preparation, while male customers' greater investment allocation (30.1%) could indicate business ownership patterns or gender differences in discretionary spending authority. The strong education gradient in investment destination (18.2% for primary, 31.2% for tertiary education) suggested that financial literacy and economic opportunity structures significantly influenced how withdrawn funds were deployed, with more educated customers better positioned to identify and execute investment opportunities even during the festive season. Urban-rural differences showed rural customers directing significantly

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more toward investment (32.4% vs. 24.3%), challenging urban-centric development narratives and suggesting that rural December withdrawals may be more economically productive, possibly linked to agricultural input purchases for the upcoming planting season.

**Table 3: Mixed-Effects Regression Models Predicting Withdrawal Amount and Fund Destination**

**Model 1: Linear Mixed-Effects Model - Determinants of Withdrawal Amount (Log-transformed)**

Fixed Effects	Coefficient	SE	t-value	p-value	95% CI
Intercept	14.127	0.234	60.37	<0.001***	[13.668, 14.586]
Year (2018 reference)					
2019	0.082	0.041	2.00	0.046*	[0.002, 0.162]
2020	0.034	0.043	0.79	0.428	[-0.050, 0.118]
2021	0.118	0.044	2.68	0.007**	[0.032, 0.204]
2022	0.156	0.045	3.47	<0.001***	[0.068, 0.244]
Age (years)	0.011	0.003	3.67	<0.001***	[0.005, 0.017]
Gender (Female ref.)	0.187	0.052	3.60	<0.001***	[0.085, 0.289]
Urban Location	0.243	0.058	4.19	<0.001***	[0.129, 0.357]
Education (Primary ref.)					
Secondary	0.159	0.068	2.34	0.019*	[0.026, 0.292]
Tertiary	0.334	0.071	4.70	<0.001***	[0.195, 0.473]
Account Balance (log)	0.612	0.029	21.10	<0.001***	[0.555, 0.669]
Days Before Christmas	-0.018	0.006	-3.00	0.003**	[-0.030, -0.006]
Business Owner	0.221	0.061	3.62	<0.001***	[0.101, 0.341]
<b>Random Effects</b>	<b>Variance</b>	<b>SD</b>			
Bank-level Intercept	0.047	0.217			
Residual	0.523	0.723			
<b>Model Fit</b>					
AIC	4,234.8				
BIC	4,356.2				
Log-likelihood	-2,104.4				
ICC (Intraclass Correlation)	0.082				

\*Note: N = 1,847 observations nested in 12 banks. \*\*\*p < 0.001, \*\*p < 0.01, p < 0.05

**Model 2: Mixed-Effects Multinomial Logistic Regression - Determinants of Fund Destination (Reference Category: Consumption)**

Predictor	Investment vs. Consumption	Informal Finance vs. Consumption
	OR (95% CI)	p-value
Male Gender	1.687 (1.389-2.048)	<0.001***

Urban Location	0.671 (0.548-0.822)	<0.001***
Secondary Education	1.512 (1.147-1.993)	0.003**
Tertiary Education	2.347 (1.803-3.056)	<0.001***
Age (per 10 years)	1.143 (1.062-1.230)	<0.001***
Withdrawal Amount (log)	1.234 (1.156-1.317)	<0.001***
Business Owner	2.891 (2.347-3.560)	<0.001***
Year (continuous)	0.947 (0.903-0.993)	0.025*
Days Before Christmas	1.021 (1.002-1.041)	0.032*
<b>Random Effects SD</b>	0.289	
<b>Model Fit</b>	AIC: 3,847.3	BIC: 4,021.7

\*Note: OR = Odds Ratio. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ ,  $p < 0.05$

The linear mixed-effects model (Model 1) demonstrated that withdrawal amounts increased significantly over the study period, with 2022 withdrawals averaging 15.6% higher than 2018 ( $\beta = 0.156$ ,  $p < 0.001$ ) after controlling for other factors, indicating intensification of the withdrawal phenomenon beyond inflation effects. The intraclass correlation coefficient (ICC = 0.082) revealed that 8.2% of variance in withdrawal amounts was attributable to bank-level differences, justifying the mixed-effects modeling approach and suggesting meaningful institutional heterogeneity in customer withdrawal behaviors. Pre-withdrawal account balance was the strongest predictor ( $\beta = 0.612$ ,  $p < 0.001$ ), indicating that a 1% increase in account balance was associated with a 0.61% increase in withdrawal amount, demonstrating proportional rather than fixed withdrawal patterns. Demographic variables showed consistent significant effects: males withdrew 18.7% more than females ( $\beta = 0.187$ ,  $p < 0.001$ ), urban customers withdrew 24.3% more than rural ( $\beta = 0.243$ ,  $p < 0.001$ ), and tertiary-educated customers withdrew 33.4% more than those with primary education ( $\beta = 0.334$ ,  $p < 0.001$ ), controlling for account balance and other factors. The negative coefficient for days before Christmas ( $\beta = -0.018$ ,  $p = 0.003$ ) indicated that withdrawals increased as Christmas approached, with each day closer to Christmas associated with 1.8% higher withdrawal amounts, confirming the temporal concentration pattern. Business ownership was associated with 22.1% higher withdrawals ( $\beta = 0.221$ ,  $p < 0.001$ ), suggesting this group's particular reliance on banked funds for year-end business activities or higher overall financial capacity.

The multinomial logistic regression (Model 2) revealed sophisticated patterns in fund destination determinants that extended beyond simple demographic associations. Male gender significantly increased odds of investment destination by 68.7% compared to consumption (OR = 1.687,  $p < 0.001$ ), while tertiary education more than doubled investment odds (OR = 2.347,  $p < 0.001$ ), demonstrating strong educational and gender gradients in productive fund deployment. Conversely, urban location reduced investment odds by 32.9% (OR = 0.671,  $p < 0.001$ ), supporting the earlier finding that rural withdrawers directed more funds toward investment activities. The temporal trend coefficient (OR = 0.947,  $p = 0.025$ ) indicated that with each passing year, the odds of choosing investment over consumption declined by 5.3%, providing statistical confirmation of the concerning shift toward consumption documented in Table 2. Business owners showed dramatically elevated investment odds (OR = 2.891,  $p < 0.001$ ), suggesting this occupational category's distinctive economic role in converting savings to productive capital. Larger withdrawal

amounts were associated with increased investment odds ( $OR = 1.234, p < 0.001$ ), indicating that higher-value withdrawers were more likely to deploy funds productively. For informal finance destination, tertiary education actually reduced odds by 36.6% ( $OR = 0.634, p = 0.016$ ), suggesting more educated customers avoided informal financial systems, possibly due to perceived inefficiency or lack of need given their access to formal finance and investment opportunities.

These mixed-effects models provided robust answers to all three research questions while accounting for the hierarchical data structure and temporal dependencies inherent in longitudinal banking data. The significant temporal trend toward larger withdrawals (increasing 15.6% by 2022) combined with the declining investment orientation (5.3% annual decrease in investment odds) painted a concerning picture of intensifying consumption-driven liquidity drain from the banking sector, with implications for financial intermediation efficiency addressed in the third research question. The models revealed that the December withdrawal phenomenon was not uniformly distributed but was concentrated among specific demographic segments: urban, educated, male, business-owning customers withdrew more and directed proportionally more toward investment, while female, less-educated, rural customers withdrew less but allocated more proportionally to consumption. This segmentation suggested that differentiated banking products and retention strategies might be more effective than uniform approaches, with high-value business customers potentially responsive to year-end credit facilities that could substitute for deposit withdrawals, while consumption-oriented segments might value commitment savings products or expenditure-linked accounts.

The strong account balance coefficient ( $\beta = 0.612$ ) demonstrated that December withdrawals were proportional to savings accumulation, meaning that as Ugandan incomes grew and savings deepened, the absolute magnitude of December liquidity stress would intensify unless structural interventions changed withdrawal propensities. The ICC of 8.2% indicated meaningful bank-level variation not explained by customer characteristics, suggesting that institutional factors such as customer relationship management, product design, branch accessibility during festive periods, or corporate culture influenced withdrawal behaviors. Banks with lower random intercepts might provide case studies for best practices in managing seasonal deposit volatility. The multinomial model's findings on investment determinants had important policy implications: if business owners ( $OR = 2.891$ ) and educated customers ( $OR = 2.347$ ) were primary drivers of productive fund deployment, targeted financial products serving these segments during December could enhance the economic productivity of withdrawn funds even if withdrawals themselves were not prevented. For instance, short-term business credit facilities or agricultural input financing programs timed to December could redirect funds from consumption to investment without requiring customers to maintain formal deposits. The negative urban coefficient for investment ( $OR = 0.671$ ) suggested that urban areas, despite higher overall banking penetration and economic activity, exhibited less productive deployment of December withdrawals, possibly indicating consumption pressures from commercialized festive culture were more intense in cities. This urban-rural divergence challenged typical development narratives and suggested that rural December withdrawals, while problematic for bank liquidity, might have more favorable economic multiplier effects through agricultural investment and input purchases.

### **Conclusion**

This longitudinal study comprehensively analyzed the December withdrawal phenomenon in Uganda's banking sector from 2018 to 2022, revealing it as a significant, intensifying seasonal disruption to financial intermediation with complex socio-economic underpinnings and heterogeneous impacts across demographic segments. The research established that customers withdrew an average of 67.8% of their account balances during a concentrated period approximately 8 days before Christmas, with withdrawal amounts increasing by 15.6% over the study period after controlling for confounding factors, demonstrating that the phenomenon was intensifying beyond inflation or natural growth trajectories. The fund destination analysis conclusively demonstrated that consumption expenditure dominated, accounting for 59.9% of withdrawn funds overall and increasing to 62.2% by 2022, while investment activities constituted 26.7% with a declining trend, indicating a troubling shift away from productive capital deployment toward immediate consumption that undermined banking sector capacity for development finance. The mixed-effects regression models revealed sophisticated segmentation patterns, with male, educated, business-owning, and rural customers demonstrating higher propensities for investment destination, while female, less-educated, and urban customers oriented more heavily toward consumption, suggesting that the phenomenon's economic impact varied substantially across population segments. The intraclass correlation coefficient of 8.2% indicated meaningful bank-level variation in withdrawal patterns, suggesting that institutional factors and customer relationship management practices influenced seasonal deposit volatility beyond customer characteristics alone. The study's findings carried important implications for monetary policy effectiveness, as the Bank of Uganda's liquidity management and reserve requirement calibration operated in an environment where formal savings periodically exited financial intermediation channels in predictable but substantial waves, potentially requiring counter-cyclical policy interventions or macroprudential tools specifically designed for seasonal liquidity management. From a financial sector development perspective, the research illuminated opportunity costs associated with consumption-driven capital flight from formal banking, while simultaneously revealing that more than one-quarter of withdrawn funds served productive investment purposes, suggesting nuanced rather than uniformly negative economic implications. The temporal concentration of withdrawals within a narrow window created acute liquidity stress that banks managed through costly precautionary reserves and lending restrictions, representing inefficiencies in financial resource allocation that could potentially be mitigated through innovative product design, behavioral interventions, or regulatory adjustments. Ultimately, the study established that Uganda's December withdrawal phenomenon was not merely an operational banking challenge but reflected deeper structural features of the economy including the persistence of cash-based transactions, cultural practices surrounding festive expenditure, agricultural seasonality, and the incomplete integration of informal and formal financial systems, requiring multi-faceted policy responses that addressed both supply-side banking sector adjustments and demand-side behavioral and cultural factors driving the seasonal exodus of funds from financial intermediation.

### **Recommendations**

**Development of Counter-Cyclical Financial Products and Incentive Structures:** Banks and regulatory authorities should collaboratively design specialized financial products that provide compelling alternatives to December withdrawals, including festive season credit facilities with preferential interest rates for established customers, commitment savings accounts with withdrawal penalties that are relaxed for non-December periods, and expenditure-linked accounts that allow customers to earmark funds for specific festive purposes while maintaining deposits in

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interest-bearing instruments until the point of actual expenditure. Given that the study identified business owners as both high-volume withdrawers and high-propensity investors (OR = 2.891 for investment destination), targeted business credit lines or inventory financing products timed to November-December could substitute borrowed funds for deposit withdrawals, maintaining banking sector liquidity while serving legitimate business capital needs. These products should be differentiated by customer segment, with relationship banking approaches for high-value educated customers and convenience-focused digital solutions for mass-market segments, recognizing the heterogeneous withdrawal motivations revealed in the demographic analysis.

**Strengthening Digital Payment Infrastructure and Merchant Acceptance for Festive Expenditure:** The Bank of Uganda and commercial banks should prioritize expansion of digital payment acceptance among retailers, schools, and service providers that are primary recipients of festive season expenditure, addressing the structural driver of cash withdrawals by enabling customers to meet consumption needs directly from bank accounts or mobile money platforms without cash intermediation. The study revealed that 30.4% of withdrawn funds were directed to festive expenses and 17.7% to school fees—categories that are largely served by merchants and institutions capable of accepting digital payments but often defaulting to cash transactions due to infrastructure gaps, transaction costs, or customer preferences. A coordinated campaign combining merchant incentives (reduced transaction fees during December), consumer education on digital payment benefits, and infrastructure investment in point-of-sale systems could gradually shift expenditure patterns away from cash dependency, reducing withdrawal pressures while simultaneously advancing financial inclusion and transaction formalization objectives.

**Implementation of Dynamic Reserve Requirements and Macprudential Policy Adjustments:** The Bank of Uganda should consider implementing seasonally-adjusted reserve requirements that acknowledge the predictable December liquidity cycle, allowing banks to maintain lower reserves during high-liquidity months (January-October) while building counter-cyclical buffers during November-December, thereby reducing the opportunity costs of blanket year-round precautionary reserves while ensuring adequate liquidity coverage during stress periods. Given the ICC finding that 8.2% of withdrawal variance occurred at the bank level, regulatory approaches should allow for institution-specific reserve calculations based on historical December withdrawal patterns, rewarding banks that successfully manage seasonal volatility through customer retention strategies with lower reserve burdens.

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