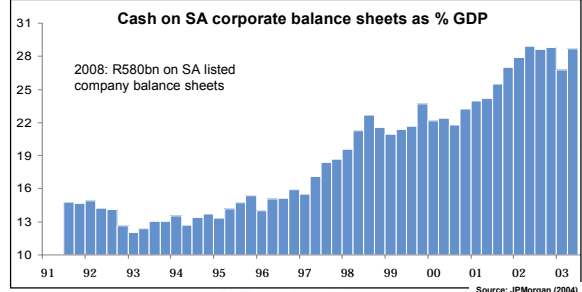



Understanding the determinants of cash holdings of corporate South Africa and the implications for Monetary Policy

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Burning Platform: Michael Power (Cash as % of BS)



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Literature Review

Article	Models	Definitions of independent variables	Findings
1. The determinants of corporate cash holdings in US (Opler & Opler 2001)	<ul style="list-style-type: none"> -Imperfect Capital market: firm equates MC of holding liquid assets to MB of holding those assets -Why liquid assets held -Firm saves transaction costs/ does not have to liquidate assets -Firm use liquid assets to finance activities 1. Transaction cost discussion -Keynes: Transaction motive Firms hold cash to mitigate losses (fin distress-Precautionary motive) 2. Information asymmetries, agency cost of debt -excess funds from internal saving & used to cover losses rather than expansion -Cash-to-asset ratios higher in profitable sectors (Chudsen 1945) -Taxes increase costs of holding liquid assets -Higher cash when many opportunities and cost of debt high (use market-to-book ratio as proxy for investment opportunities- Smith et al 1992) 3. Agency costs of Managerial discretion -Agency theory: higher cash reduces risk (lowers risk) -independence of shareholders (low power) Shleifer 1986 (p12) -naturally risk averse -Avoid discipline of capital markets 4. Financing Hierarchy theory -Pecking order theory: firms leverage reacts to changes in firms internal funds (Myers 1984) - Jensen (1986): Free cash theory: Excess cash will have to be lowered tho. Shareholder wealth theory and rather increase investments 	<ul style="list-style-type: none"> -Data period 1952-1994 -Exclude Fin firms CASH defined: liquid asset holdings is ratio of cash and marketable securities to total assets minus cash and marketable securities Liquidity = sales to assets ratio Use market to book value as ratio to determine corporate financing options Dummy variable for industries where entry and price regulation Firm size: log of book value of assets in current prices Leverage: debt-to-asset ratios Dummy: firms dividends payouts in year $t-1$ Cash flow = earnings after interest, div and taxes but before depreciation, divided by net assets Cash flow riskiness: Std dev of industry 	<ul style="list-style-type: none"> Median ratio of cash to assets = 6% of net assets Mean Value = \$6.28m Mean asset base= \$90m Confirms firms do have target cash levels (cash holdings revert to the mean) Firms with strong growth opportunities, firms with riskier activities Supports precautionary motive to hold cash- flow of funds deficit drives cash accumulation Cash holdings NEGATIVELY related to size, NWC, leverage, dividend payment and gov. regulation, and POSITIVELY related to cash flow to assets ratio, the capital expenditures-to-assets ratio, industry volatility and R&D to sales ratio

Literature Review

Article	Models	Definitions of independent variables	Findings
2. Corporate Cash holdings: Empirical study of UK firms (Oskan & Oskan 2003)	<ul style="list-style-type: none"> Identifies 2 motives for holding cash: 1. Transaction cost motive: firms facing a shortage of internal resources can raise funds, but strategy incurs costs of both variable and fixed components. Cash therefore held to minimise these costs. 2. Precautionary motive: places focus on the costs arising from the foregone investment opportunities. Therefore expect small firms to hold cash. Specific reasons: a. Asymmetric information, agency costs of debt b. Liquidity constraints and cash substitutions c. Bank relationship d. Ownership and cash holdings <ul style="list-style-type: none"> a. Managerial ownership b. Board structure of companies c. Controlling shareholders d. Identity of ultimate controllers (family owners etc) 	<ul style="list-style-type: none"> Use publicly traded firms from 1984-1999 -Financial firms excluded -Part 1: total of 1029 firms built representative UK firm -Part 2: individual details of ownership sourced from PWC corporate register Uses descriptive statistics Cash (see findings) Cash flow: ratio of pre-tax profit = dep: total assets Liquidity: ratio of CA-cur liab and total cash to total assets Leverage: ratio of total debt to total assets Bank debt: is ratio of total bank borrowings to total debt Market book value: is ratio of book value of total assets = book value of equity + market value of equity to book value of assets Regression results Use cross sectional study by regressing average values of each firms characteristics over 4 years to mitigate cash substitution 	<ul style="list-style-type: none"> Mean cash ratio of 9.9%, median value 5.9% similar to Kim (1998) but lower than Opler (1999). Oskan uses normalised cash measure by calculating cash as cash/marketable securities/ (total assets - cash and mark sec) rather than total assets. 1. Managerial ownership important determinant of cash holdings 2. Relationship between man ownership and cash is non-motomonic (strong in some times, weak in others) 3. Board composition not NB 4. Identity of controllers and divergence between control rights and cash holdings significant

Literature Review

Article	Models	Definitions of independent variables	Findings
3. The determinants of corporate liquidity (Kim, Mauer, Sherman 1998)	<ul style="list-style-type: none"> Notes Keynesian theory on holding liquid balances -Like Almeida states that access to capital in external market would imply low cash balances -Capital market imperfections forces cash to be held -"Investment in EXCESS liquidity can be viewed as economically sensible way to reduce the firms exposure to costly external financing" Develops a model: looks at "Trade-off between holding costs of liquid assets (giving low returns) and the benefits of minimizing the need to seek costly external financing if internally generated funds are insufficient to finance future investment opportunities" Model predicts 4 testable assertions: 1. For cross section of firms, expect a POSITIVE relation between cost of ext. financing and investment in liquid assets 2. Greater firms cash variability, the greater the investment in liquid assets (POSITIVELY CORRELATED) 3. Investment in liquid assets is NEGATIVELY correlated to current rate of return on investment in production, but POSITIVELY related to return on liquid assets 4. More promising are future investment opportunities, the larger current holdings of cash (POSITIVE) 	<ul style="list-style-type: none"> Uses sample of 915 US Industrial firms between 1975 and 1994. Cash holdings defined as: "ratio of cash plus marketable securities to the book value of total assets" LOOKS AT EXCESS CASH HOLDINGS so controls for NORMAL CASH HOLDING LEVELS -Cash cycle and variability of the cash cycle -Firm's debt ratio -Controls for industry classification Index variables 1. Firm size: Nat log of market value of firms assets 2. Cash flow uncertainty: Variability of cash flow std dev of first difference in earning before interest, dep and taxes minus Non-operating income 3. Current and future inv. opportunities 	<ul style="list-style-type: none"> Average ratio of cash = (+mark securities) to total assets is 8.1% 1. Optimal investment in liquidity is increasing with cost of external financing LEVELS 2. Increasing with variance in future cash flows 3. Increasing with returns in future cash flows 4. Decreasing with return differential between physical assets and liquid assets 5. Firms with larger market to book ratios hold larger cash balances 6. Firm size negatively related to liquidity (funding question)

Literature Review

Article	Models	Definitions of independent variables	Findings
4. Why do US firms hold so much cash than they used to? Bates, Kahle, Stult (2006)	<ul style="list-style-type: none"> From 1980-2004, US industrial firms average cash to assets ratio rises 129% Also uses a simpler analysis of the transactions motive 2. precautionary motive 3. Agency motive 4. The tax motive Each discussed but clearly derived from Opler (article 1) and Oskan (article 2) 	<ul style="list-style-type: none"> Uses industrial firms over period 1980-2004 Uses Opler model to regress cash holdings with (p13): -Market to book ratio -Firm size; Cash flow to assets -NWC to assets; Cap exp to assets -Leverage; Industry CF risk -Dividend payout dummy; R&D to sales -Acquisitions to assets Dependent variable: Cash holdings MODEL 1: defined as ratio of holdings of cash and mark. Securities to total assets Cash flow: is ratio of earnings before ext. items and dep. (minus div) to Total assets MODEL 2: defined Annual change in firms cash to asset holdings as a function of model 1 + expenditures, acquisitions NWC and Short term debt 	<ul style="list-style-type: none"> Average cash ratio = 10.48%, ratio falls in 8 of years and rises in 16 of years Increases in cash flow concentrated among firms NOT paying regular dividend Also mainly explained by firm characteristics (no evidence of an exogenous change in demand for cash) Unconstrained firms less sensitive to holding cash (p1791). Unconstrained firms hold 8-9% of assets in form of cash and MS. Agrees with Kim, constrained firms hold 15% of cash to assets Discussion of business cycles -Financial constrained firms will save more during downturns, also due to future investments looking more attractive as well as a decline in current inflows: UNCONSTRAINED firms should not show these characteristics
5. The CF sensitivity of cash (Almeida, Campello & Weisbach 2004)	<ul style="list-style-type: none"> Looks at 3 areas of focus: 1. Effects of financial constraints on firms, and 2. Manner in which firms perform fin. Mx. Based on assertions of Keynes: 1. A liquid balance sheet allows firms to undertake valuable projects 2. Balance also influenced by firms access to external financing <ul style="list-style-type: none"> 1. Access = BEING UNCONSTRAINED 2. Therefore NO NEED to safeguard future investments Tests use of business cycle: Treats as exogenous event, affects BOTH size of current cash flows and relative attractiveness of current investments versus future ones (p1779) +Tested for 4 financial constraints <ul style="list-style-type: none"> o Payout policy, Size o Bond ratings; Comm paper ratings 		

Research Methodology

- Based on Ozkan (2003), created a single company "SA Incorporated", by consolidating all the income statements and balance sheets of industrial companies on JSE (1985-2008).

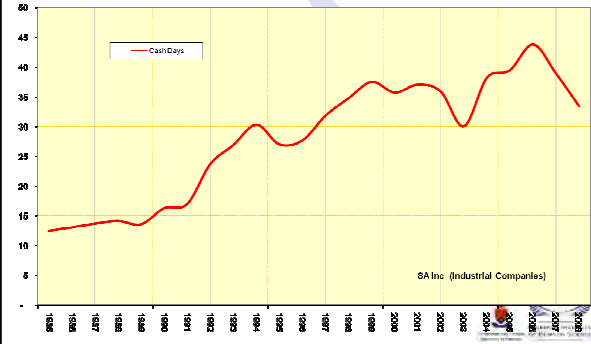
- n=125 (1985) & 461 (1999)

- excluded mining and financial companies in this analysis

- 2 measures of cash: Cash Days (Cash & Marketable Securities / Turnover * 365) & cash as % of Sales



% cash in the current top 160 companies on the JSE



Quantitative Output

- 19 Independent variables chosen

Correlation matrix	Cash Days	SUMMARY OUTPUT	
Operating Profit Margin	45%	Regression Statistics	
After Tax Profit Margin	68%	Multiple R	0.944222
NetAsset Turnover	-75%	R Square	0.891556
Equity Multiplier	79%	Adjusted R Square	0.880337
RONA	-50%	Standard Error	4.276051
ROE	51%	Observations	23
Interest Cover	5%	ANOVA	
Debt / ShareholderFunds	34%		
Debt / Equity	36%		
Tax Rate	-84%		
PPE Percent Sales	79%		
Investments Percent Sales	80%		
Inventory Days	-59%		
Receivables Days	17%		
Payables Days	56%		
Cash Days	105%		
Cash Cycle Days	-75%		
Dividend Payout Ratio	39%		
Sustainable Growth Rate	58%		

	df	SS	MS	F	Significant at F
Regression	3	4359.387	1453.129	79.47279	4.28E-14
Residual	20	530.2536	18.29481		
Total	23	4889.64			

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	108.3743	9.845864	11.00709	7.16E-12	88.23723	128.5113	88.23723	128.5113
NetAsset Turnover	-13.4122	2.261519	-5.93061	1.93E-06	-18.0375	-8.78687	-18.0375	-8.78687
Cash Cycle Days	-0.31136	0.070694	-4.40439	0.000132	-0.45595	-0.16678	-0.45595	-0.16678
Tax Rate	-126.191	36.37236	-3.46942	0.001652	-200.581	-51.8012	-200.581	-51.8012

Findings from the research

- Cash levels have grown steadily over the past years;
- The better utilised the (fixed) assets the more cash has been generated;
- The better working capital management the more cash has been generated
- The lower the tax rate the more cash held for transactionary purposes (Opler *et al* 2001)
- Support for the agency theory problem (Ozkan *et al* 2003)
 - Companies that have done well, haven't invested as much as they could;
 - haven't paid out dividends and chosen to retain cash.

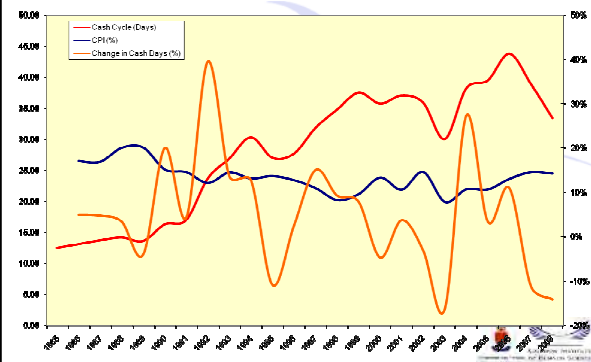


Findings from the research

- Some evidence that change in prime interest explain change in cash holdings
- Supports Jensen (1986) hypothesis that interest rate volatility = uncertainty in the discounting (pricing) of future projects = Allows management to explain the holding of liquid assets in the face of equally volatile external financing.
- More evident in downturns in the business cycle



Cash and inflation



Q&A



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Thank you
Siyabonga
Re ya leboha
Seyabulela
Baie Dankie
Ri a livhuba
Ha khensa

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