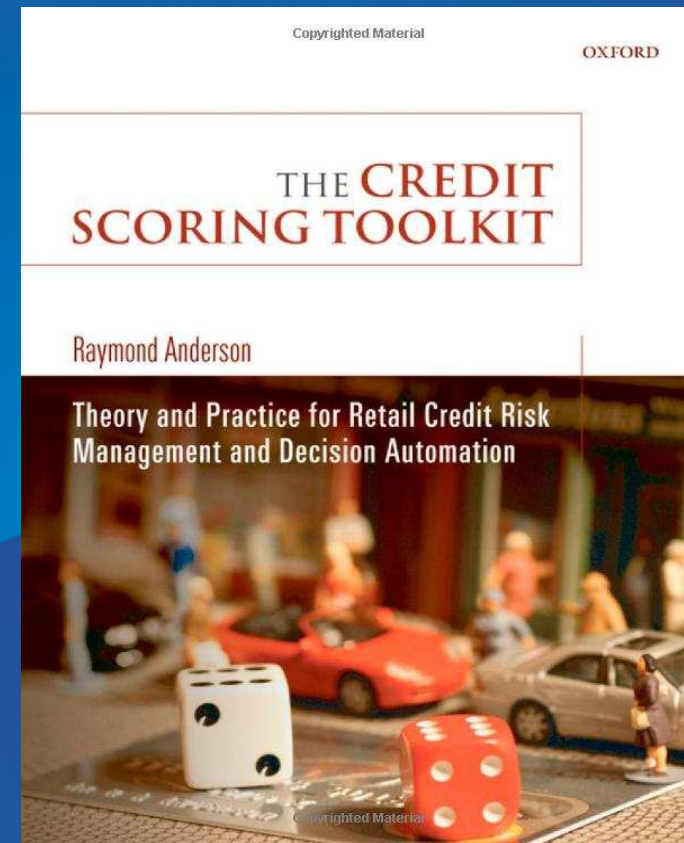




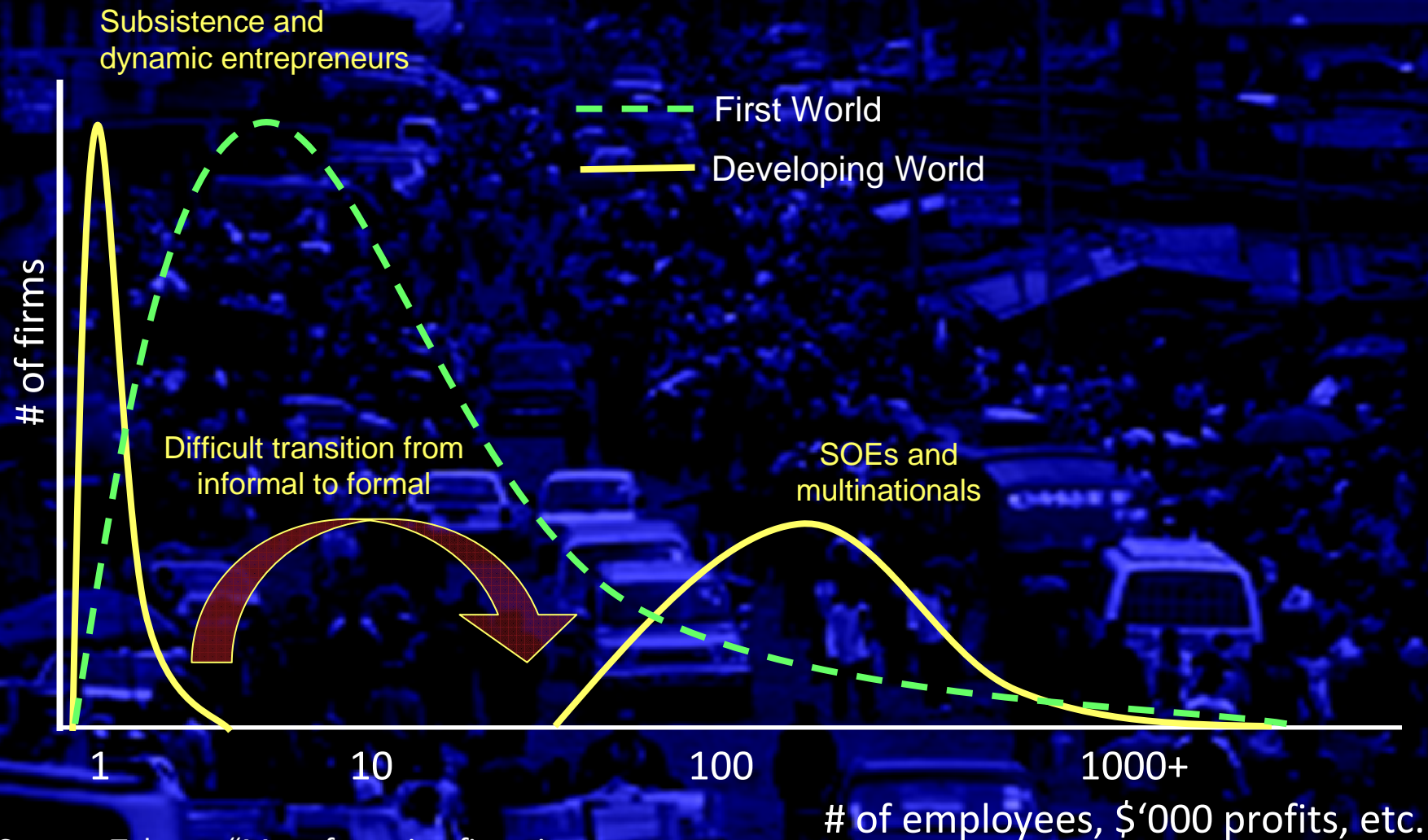
Psychometrics: A new tool for Small Business Lending

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The Missing Middle



Source: Tybout, "Manufacturing firms in developing countries: how well they do and why?"



Graphic: designed by Bailey Klinger and Asim Khwaja, used with permission

The questions

- Does credit scoring work for MicroFinance?
 - Lack of data
 - Traditional methods provide limited benefit
 - Are there other ways?
 - **If psychometric testing works for employment and education, why not credit?**
- What is Microfinance?
 - Banking the unbankable
 - Financial services for the poor
 - Credit, savings, insurance, money transfer
- What is Microcredit?
 - Lending of small amounts to the poor
 - Usually non-bank lenders who specialise in their markets
 - Rely on intuition, price, and targeted risk mitigation
 - a) group liability; b) individual development accounts; c) community/village banks
 - Low penetration relative to societal need
 - Focus on subsistence entrepreneurs (not dynamic)



Lending environment

sub-Saharan Africa ex RSA/Namibia

General

- cash-based societies
 - “credit virgins”
- poor infrastructure
 - credit bureaux
 - data → information?
 - interbank clearing
- lack of collateral
 - communal land
 - 99 year leases
- inability to identify people
 - No personal ID numbers

Microfinance

- large unbanked population
- many small entrepreneurs relative to salaried class
- little or no credit history
- inability to prove revenue or finances
- difficult to develop sustainable lending models and products
- high fraud risk

Banks versus Microfinanciers

Bank Lending

Situation

Focus on **salary earners**
Credit market saturated
Channel=Customer→Branch
Risk mitigation=
a) price
b) collateral
c) sureties/guarantees

Consideration

Scoring possible but poor!
Key policy factors
—affordability
—transaction/savings account held!
—time with bank
—time with employer
—past payment performance

Microfinance

Focus on **entrepreneurs**
Poor credit penetration
Channel=Agent/Branch→Customer
Risk mitigation=
a) group liability;
b) individual development accounts;
c) community/village banks
Need for savings mechanisms

- Scoring extremely difficult!
- Key policy factors
 - —use of funds / social end
 - — time at location
 - — community ties
 - — contactability

Complications for Banks in Microfinance

- **Dynamic entrepreneurs are poor cousins of salaried counterparts**
 - unable to supply financial info
 - cash-based businesses mean flows undocumented
 - very high gross profit margins (e.g. buy for \$1, sell for \$3)
- **Risk assessment complicated**
 - Lack of data for model developments
 - External factors affect statistical analysis (family support, other income)
 - Assessments usually intuitive, perhaps with site visits
 - Must be covered by higher margins, APRs 50 to 100% plus
 - Fraud risk is high!
- **Products must be tailored to each market**
 - Bulk cash outflows for stock purchases
 - Uncertain revenue inflows: daily/weekly, or seasonal
 - Borrowers price insensitive; repayment ability more important
 - Imperative of ensuring culture of repayment in target group

Data Sources by Enterprise Size

	Very Large	Large	Mid-sized	Small	Very Small	Micro
Market Prices	✓					
Fundamental Assessments	✓	✓				
Financial Statements	✓	✓	✓			
Trade Creditors (business)			✓	✓		
Credit Bureau (personal)				✓	✓	
Behavioural Analysis				✓	✓	✓
Personal Assessments					✓	✓

Risk = f(data = f(enterprise size))

—In developing markets many of the
✓s disappear!



Entrepreneurial Finance Lab

- brainchild of Bailey Klinger and Asim Khwaja
- idea developed during research of barriers to Microenterprise growth in South Africa
- winner of G-20 SME Finance Challenge award in 2010
- premise—if psychometrics used for employment, why not credit?
- Challenges
 - to build a cost effective, scalable, game-resistant test broadly applicable across cultures and socioeconomic groups
 - gather data on borrowers and their performance
 - develop an initial model
 - apply in practice, and refine model based on results

Other potential markets: a) thin-data credit seekers (youth, students, sub-prime); b) small new-venture entrepreneurs;



EFL Test design

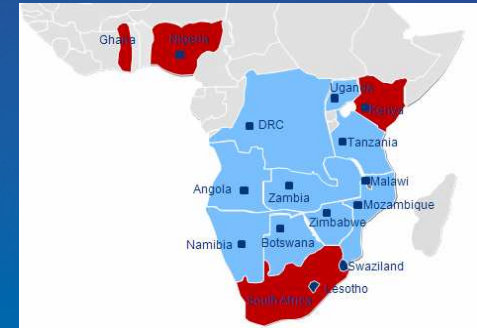
- Literature review to identify traits of successful entrepreneurs
 - Locus of control, ethics and honesty, conscientiousness, optimism
 - Age, past business experience, enterprise size
 - Traits differ between start-up, growth, and mature
- Design of questionnaire and tool
 - Psychometric, intelligence, and business aptitude
 - Purchase of tests from employment screening companies
 - Questionnaire set up on laptop or handheld device
 - Included randomizing questions to prevent gaming
- Data collection and model development:
 - South Africa, Kenya, Columbia
 - Existing customers with known outcomes (low-stakes)
 - Focus on 30- and 60- days past due (90 days refused interview)

Predictive power based on development data 50% plus!
Could it be maintained in high-stakes environment in practice?



Standard Bank Group

- Represented in 18 Sub-Saharan countries
 - GDP growth rates of 5% plus
 - Tool needed for entering new markets
- Using tool in 4 countries:
 - Kenya, Ghana, Nigeria, and RSA
 - Primary use is to set pricing and max loan sizes
- Kenya – after 8 months of loan originations
 - 1,100 loans for \$3.8 M
 - ~ 20% of new loan activity in country
 - >70% of loans EFL Yes only
 - Overall Portfolio at <10% default
 - Stated as 7 to 10x more profitable than other products
- Ghana
 - Disbursed >200 loans for \$2.0 M







Planning and Control

- Experimental design
 - Control group: applicants who passed normal Bank criteria
 - Fail-safe thresholds (terminate in whole or part)
 - Setting of maximum loan sizes and pricing
 - Setting of target market basic qualifying criteria (e.g. time in market)
 - Addressing potential fraud (confirmation letters, initial site visits)
 - Differential treatment of wholesalers, retailers, and traders
 - Hawthorne effect? Both staff and customers.
- Internal issues
 - Governance, accommodation within existing structures
 - Accommodation of weekly instead of monthly payments
 - Weekly not accommodated in existing framework
 - Ensuring standard treatment in processes
- Deployment
 - Staff and customer education (computer-based questionnaire)
 - Marketing, selection and incentivisation of sales

Experiment Results

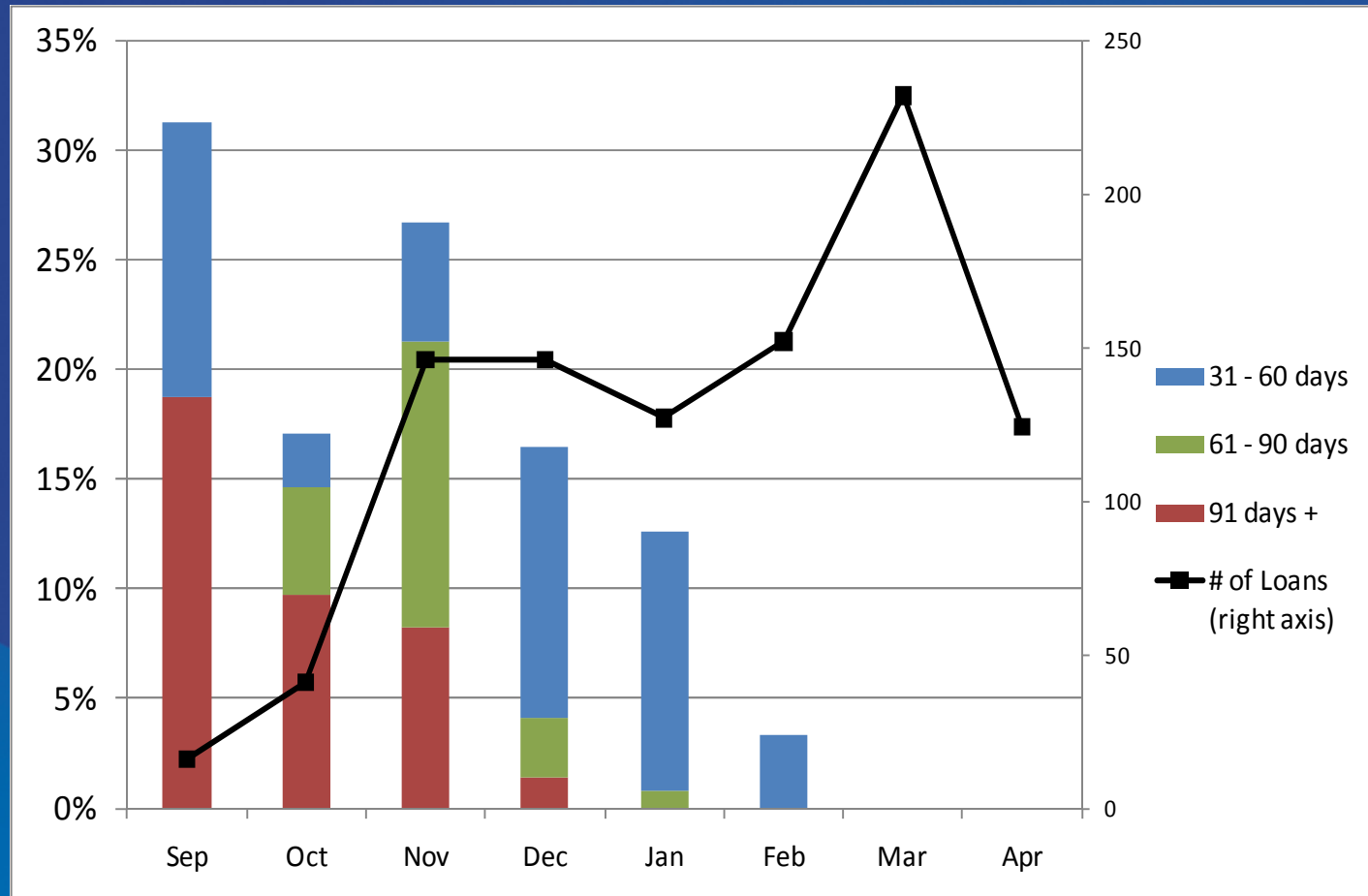
Table 1: EFL versus SB



	Approved		3+ past due	
	Yes	No	Yes	No
Yes	98	269	1.0%	4.8%
No	45		8.9%	



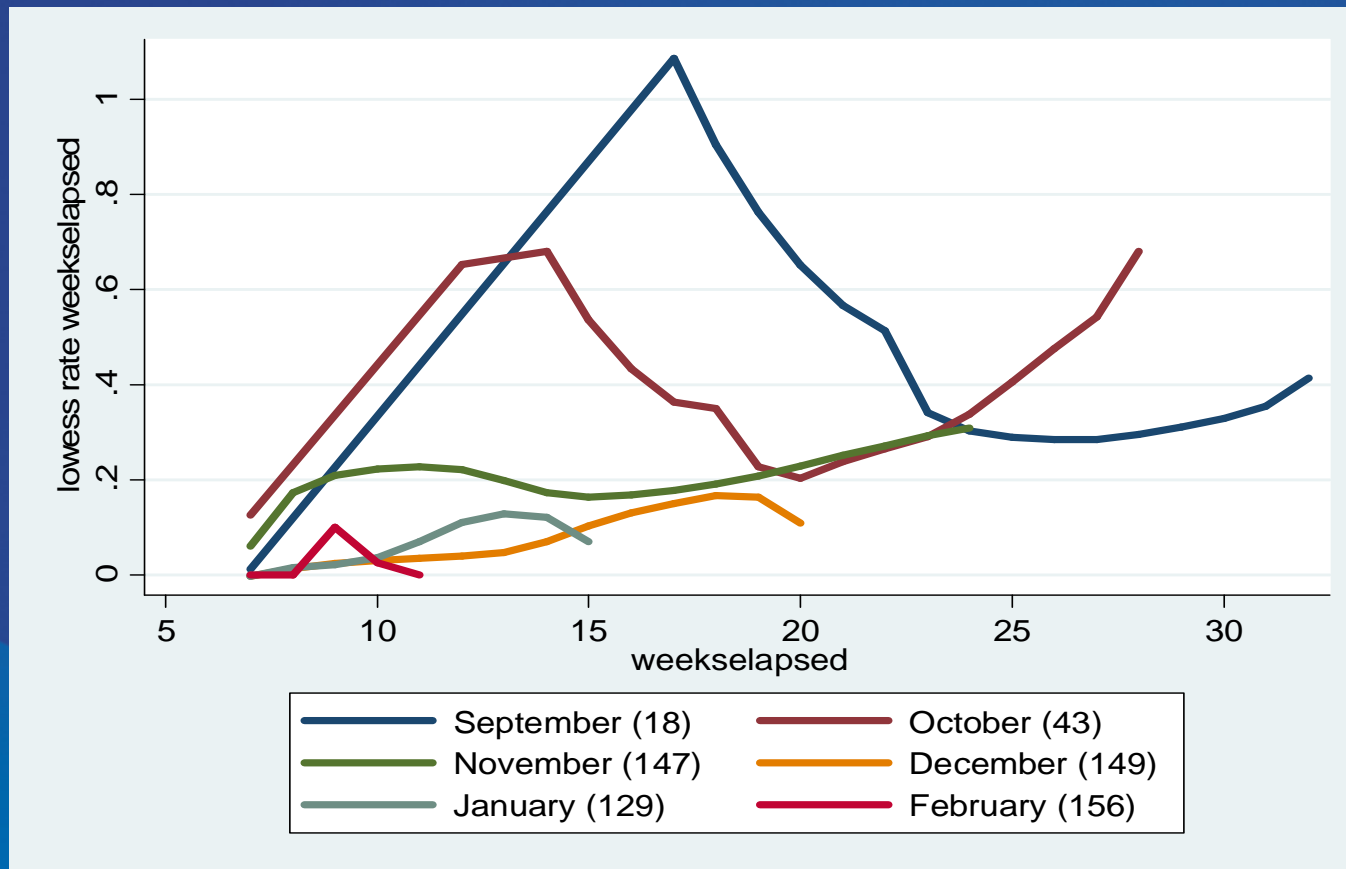
Kenya - Initial cohorts



- Very low initial volumes with higher risk
- Recent volumes improved but not as expected



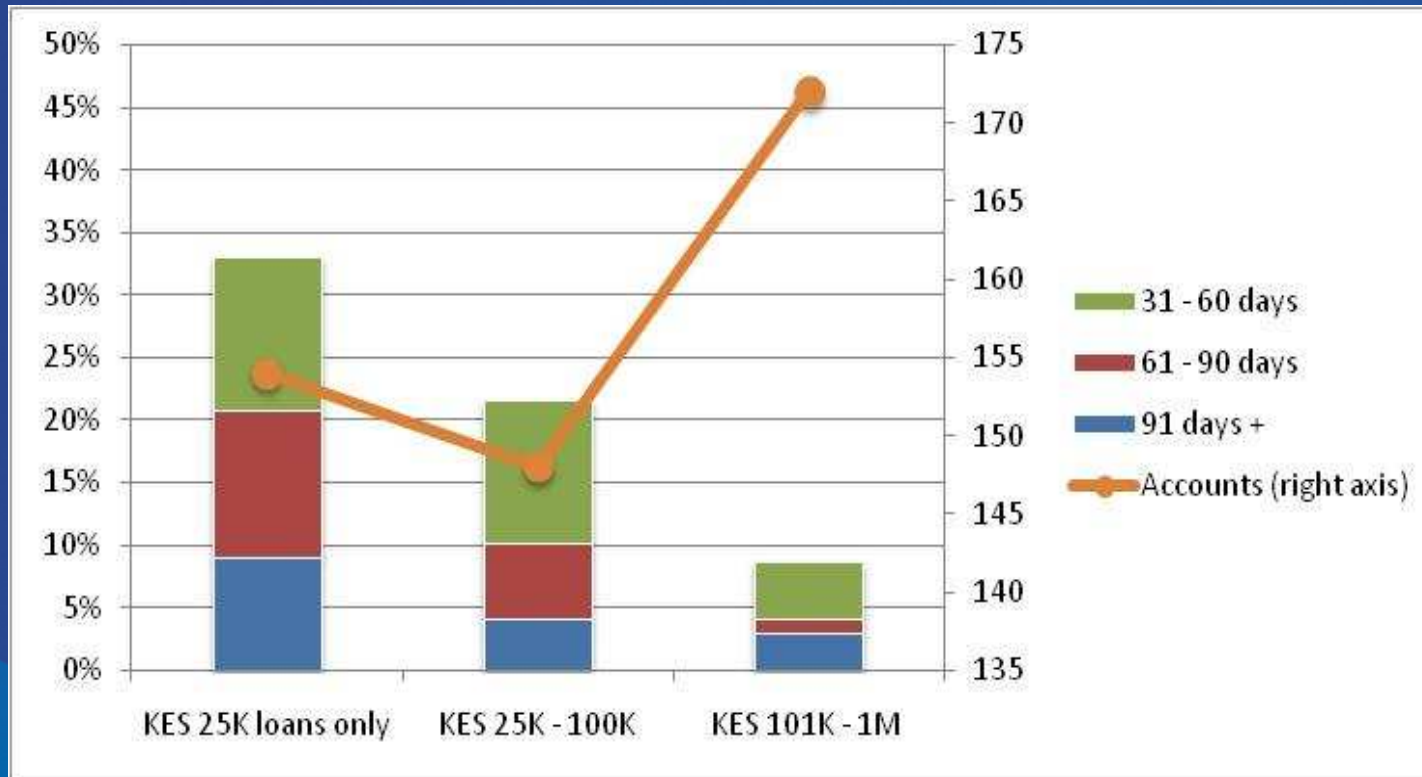
Vintage analysis



- Lower risk in later cohorts
- Process issues solved as time went by



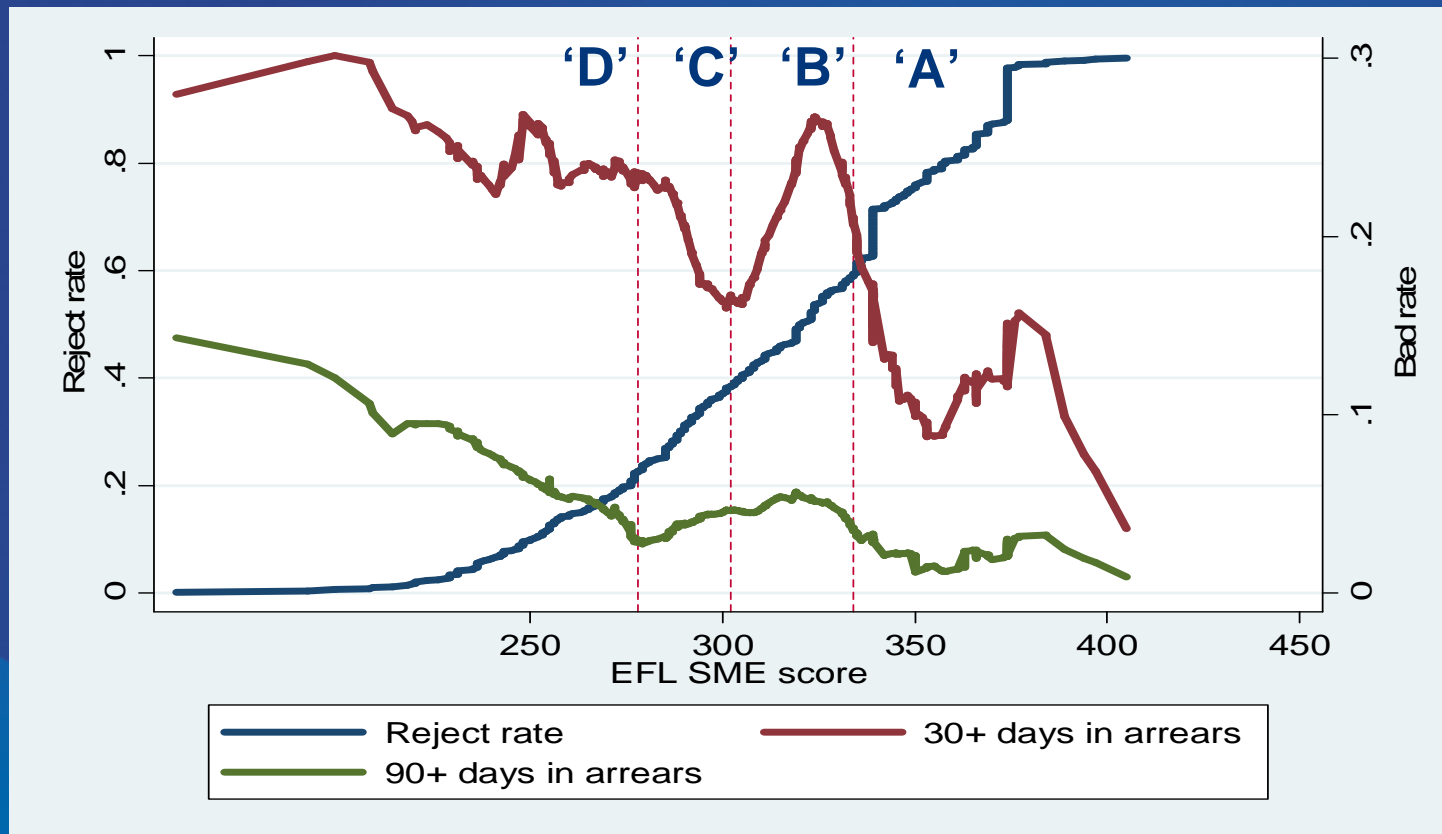
Kenya – by Loan Size



- Greatest risks are starter loans (KES25,000=US\$300)
- Enterprise size is a substantial factor:
larger size, larger loan, lower risk



Bad Rates by Score



- D are EFL declines, A/B/C set loan sizes and pricing
- Results: 20% D high risk, 40% B/C mid-risk, 40% A low risk
- Little differentiation between B and C, YET.
- Beware impact of pricing (50%+ at lowest end)

- Experiment results
 - Bad rates lower than expected
 - Problem group is lowest loan value (US\$300 starter loans)
 - Business is profitable
- Model Results
 - First model not as good as sold, but still added value
 - Need more tailoring to specific implementations
 - Expectations for results in mid 30s to low 40s
 - Potential to tweak model as data becomes available
- Implementation issues
 - Acceptance within country
 - Volumes lower than anticipated (better in other countries)
 - Excessive focus on collections, less on sales
 - Need sustainable collections model
 - Country insistence on site collections (unsustainable)

- Re the model
 - Model is working, even if not as good as sold
 - Process and buy-in bigger issues than credit risk assessment
 - Pilots in other countries already underway, with higher volumes
- EFL initiatives targeting fraud
 - Biometric identification (fingerprinting)
 - Voice analysis

