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Productivity in Indian Banking: 2017

HIDDEN TREASURE

How Data Can Turn the Fortunes for Indian Banks

November 2017

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Productivity in Indian Banking: 2017

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How Data Can Turn the Fortunes for Indian Banks

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The authors gratefully acknowledge data and analytical insights from

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"Without data, you're just another person with an opinion."

— W. Edwards Deming

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FINANCE IN DIGITAL ERA - NAVIGATING THE KNOWNS AND THE UNKNOWNS

NEED FOR TRANSFORMATIVE CHANGE

Most Indian banks are under major profitability pressure and need a significant boost. While major capital infusion by the government will give the Public Sector Banks the breathing space, it will not be sufficient to restore health of the system. Banks will need to adopt new strategies and restructure their business fundamentally. This performance transformation is going to be challenging for three reasons:

- Customer needs are changing; industry's revenue profile will be very different in five years.
- Unprecedented new competition from NBFCs and Fintech.
- The rules of the game are now dramatically in favor of those who fully embrace digital

Thankfully for banks, digital infrastructure in India has matured and is deployable at scale. Most importantly, banks have a huge, largely unexploited, advantage on data.

MAJOR SHIFTS IN CUSTOMER PREFERENCES — REVENUE PROFILE OF INDUSTRY SET TO CHANGE DRAMATICALLY

There are a few fundamental changes in the revenue profile of Indian banking:.

- Large and mid-corporate businesses that today bring 39% of lending revenue will bring only 27% by 2022, driven by movement of large ticket credit to wholesale markets and lingering bad debts in corporate segments. As high rated borrowers switch to capital markets, banks will be left with lesser rated clients on their books and will require sharper credit processes. Corporate banking will have to be much more working capital and transaction oriented. Staff productivity have to be upgraded to the next level with data analytics.
- Savings deposits will increase their significance in the revenue mix, since rising balances in Jan Dhan accounts, rising balances due to greater prosperity, and increased digital transactions will reduce the need for cash withdrawals. Banks that digitize customer on-boarding and transactions will enjoy lower break even costs and access a much broader market.
- SME credit will grow from 20% to 25% of the lending revenue mix for the system. This will be driven by substitution of informal credit triggered by the introduction of GST, increasing digital point of sale (POS) payments and rising sophistication of surrogate data-based credit analytics.
- Retail credit growth has been steady. It is expected to stabilize at this stage with penetration reaching high levels in certain segments/select geographies and slower new-to-credit customer growth. Smaller ticket borrowing has proliferated in consumer durables and gold loans. Share of youth (< 35 years) among new borrowers grew from 25% to an estimated 40% between 2013 and 2017.
- There is a major structural shift from deposits to mutual funds for savings. Fee income will be a major profitability booster for banks who play a role in advising their clients on investments.

ADVANCED DIGITAL AND DATA PLATFORMS IN INDIA — BANKS NEED TO EMBRACE A PARADIGM SHIFT

Indian banks have access to world class platforms to meet their challenges. The India stack platform has already reduced the cost of customer on-boarding and transactions dramatically. The cost of on-boarding a customer for investment advisory is down by 90%. Many banks have over 80% of new customer on-boarding purely through e-KYC. The quality of India's credit bureau infrastructure is rated higher than that in OECD countries by the World Bank and is now reaching coverage of over 40%. There are few key paradigm shifts that banks need to embrace in such context:

- Treat data as a strategic asset and prioritize technology investments that consolidate and monetize data. In many instances, banks' internal data has to be supplemented with external sources to drive maximum advantage. Partnerships for accessing data will need to become a standard feature of strategy in the coming days.
- Embrace data for credit decisions; judgment has limitations in a complex world. Analytical credit models will have to supplement banks' traditional capabilities.
- Paper is by and large not needed; paper causes delays, increases costs and gives false comfort. Transform processes with an intent to make them as straight-through as possible with only the most essential human intervention that is needed.
- Faster decisions are better decisions. Typically, decisions that take longer are the ones that should have been declined but are justified with various arguments over time.
- Partnerships are critical. Banks need to open up to partnerships with other players for data access, distribution reach or customer proposition enhancement. This is not a traditional strength of bank

RETAIL GROWTH TOUCHING ITS LIMITS — CHALLENGE FROM NON BANKS ACUTE

As an upshot of the ongoing infrastructure lending crisis (ILC), most players have decided to hang their hats on retail. Retail lending has not yet disappointed. Over last five years, there has been an estimated 16% annual growth in disbursement and over 30% annual growth in inquiries hitting the bureaus. Bad debts have held up well and the bureau score profile of customers receiving loans has stayed broadly on historical lines.

However, industry is almost at the limits of how fast it can grow. New-to-credit (NTC) customers as a proportion of new loans given have come down steadily each year from 34% in 2013 to an estimated 20% in 2017. Bureau data also shows that customers are progressively more leveraged. The proportion of customers with two or more lines of credit and availing a third one went up from 34% in Q2-2015 to an estimated 44% in Q2-2017. Overall NPA performance has been steady, with gradual inching up of delinquency rates from 2.6% in Q4-2015 to 2.9% in Q2-2017. This is especially visible in the historically solid home loans segment where vintage curves show an uptick in delinquencies in loans disbursed in the last few quarters.

Competition has been intense. Not only have most banks focused on retail growth, but NBFCs have also made significant inroads in the last three years.

The NBFC share of non-commercial lending grew from 15% to an estimated 20% of disbursement between 2014 and 2017. The NBFC share in the number of accounts opened grew from 21% to an estimated 44% (27% to an estimated 49% among 21-35 age group customers) in the same time frame, reflecting their predominance in smaller ticket consumer durables, two-wheelers, small businesses and gold loans.

But banks cannot hang their hats only on retail; retail is reaching its limits of growth. Bureau data shows that certain states have reached OECD levels of bureau penetration (Kerala at 61%) while other states are lagging behind severely (Bihar at 9%, UP at 13%). Additional New to Credit customers would need structural reforms that reduce geographic disparities in economic development and job creation.

MSME COULD BE THE NEW DRIVER OF GROWTH — NEED A NEW WAY OF LENDING

NPA woes in commercial lending of the banking industry are well recorded. Segmental profiles of NPAs show that the mid corporate and larger SME segments have taken the biggest hit. Bureau data is also able to highlight a significant chunk of accounts that are bad in one bank but not bad in another. A significant part of latent NPAs could slip in next few quarters. The revenue pool of mid and large corporates will probably stay subdued for the next 4-5 years due to stress in the lending books.

However, there is a silver lining on the commercial side. The smaller end of SMEs (loans < Rs. 1 Cr) has been relatively stable over time in terms of bad loan performance. Bureau data also shows the extent of under penetration in this segment. With over 50 million MSMEs in the country (and over 40 million current accounts), we have only 4.5 million unique borrowers from the formal industry.

Such borrowers have been shunned by the formal industry due to lack of reliable audited financial records. However, with significant surrogate digital data (e.g. tax payments) becoming available to banks (further spurred by GST), it is possible to create online credit models that are sufficiently discriminating and low cost.

Competition has been intensifying. NBFC outstanding credit reached approximately 10% in the micro segment by June 2017, from 9% in June 2015. As Public sector industry, bogged down by bad debt, has receded over the last three years; and the SME segment has seen steady capture of market share by new private sector banks, reaching close to 30%.

IMPERATIVES FOR BANKS

Data — a banks' hidden treasure — needs to be leveraged better. The beleaguered banking industry has not fully captured the power of the data that it has (e.g. transaction & payments information) or has access to (e.g. bureau data). Banks have the best data on their customers compared to any other industry, and thus enjoy the right to be the 'most personalized' service providers. Yet, this trophy is bagged by other industries so far.

Our estimates suggest that banks can improve their return on assets by as much as 0.4% with smarter leverage of data in deepening customer relationships and share of wallet through personalization; more differentiated pricing; pushing lower cost digital channels; advanced early warning signals and collections strategies; geo-analytics for more efficient placement of physical assets; and analytical insights for performance improvement of employees.

The new corporate bank model. As the revenue pool from large ticket lending contracts, banks will face twin issues. Revenue will go down as higher rated borrowers shift out. What will remain on banks' books will need higher credit skills to manage.

Banks need to invest in advanced originate-to-distribute (OTD) business models to help clients access wholesale markets. The new corporate banking model will rely much more on working capital, trade finance, and cash management. It will be technology-centric with an integrated digital front end for clients, heavily reliant on digital and analytics to enhance RM productivity, and will place huge premium on share of wallet across a wide range of main market investment products.

New credit model for commercial lending. The banking industry needs to invest in new credit models for commercial customers that rely on surrogate data, bureau information, and analytics to complement banks' capabilities in credit assessment and detecting early warning signals.

Digitize end-to-end processes and deploy AI/ML. Digital infrastructure in India has matured and is deployable at scale. The Aadhaar infrastructure provides the possibility for e-KYC that very few countries are able to offer. It is possible to envisage zero or minimal paper, turn-around times within minutes in certain products, and consequently much lower costs. Robotics process automation and artificial intelligence (RPA & AI) technologies have matured; and deployments in Indian banking technology environments have demonstrated up to 30% reduction in costs.

Scientific pricing. Pricing in Indian banks is an area that has not found sufficient science deployed. Both in the commercial as well as retail segments, pricing offers an opportunity to strengthen performance in the short term. Part of the problem is that pricing requires collective action from banks. If a few leaders in the industry were to adopt a disciplined approach to risk-based pricing, it could improve banking profitability by 20-30 basis points. Further, at the bank level, banks need to deploy models to

estimate customer price elasticity to introduce value-based pricing and control value that is destroyed by indiscriminate discounting by the front line.

Mass market investment advisory. Banks need to leverage digital models to create low cost advisory platforms with which to support the mass market in investing their savings in mutual funds and other non-deposit products.

Collections capabilities and infrastructure. A large segment of the banking industry does not have strong technology and analytics-enabled collection processes. As retail lending grows into a major part of bank balance sheets and the number of loans explodes with smaller ticket lending proliferating, it is important that banks deploy technology-enabled and analytics-driven centralized approach to collections.

IMPERATIVE FOR THE CENTRAL GOVERNMENT, STATE GOVERNMENTS, AND THE REGULATOR

Regional disparity in economic development is the ultimate hurdle. Penetration of retail or MSME credit varies very significantly across states; some states reach very advanced penetration, while others trail behind quite severely. Clearly, despite the overall numbers of credit penetration being low for the country, there is a natural limit to what banks can push on their own.

Bolster surrogate data availability. Bureau infrastructure in the country is world class — thanks to powerful enabling legislation. Banks and policy makers are yet to full recognize its value and deploy the insights into strategy and policy formulation. Bureaus provide data that is invaluable to banks for lending in the absence of reliable financials. Policy makers need to strengthen banks and bureaus with additional data fields to bolster the quality of insights they can garner regarding the credit quality of potential borrowers. The additional areas are:

- Utility bill payment information.
- Various tax payment information
- Transactions and payments data.

Augment bureaus with bond market data. In order to support the development of wholesale funding, access to bureau may be provided to institutional investors in bond market and conversely bond market data submitted to bureau.

Expedite consent architecture to democratize data access. There is significant innovation taking place in retail as well as commercial lending — especially at the lower end of the ticket size spectrum. Such innovation is extremely helpful for the inclusion agenda. However, the most precious fuel for such innovation is not risk capital or entrepreneurial spirit but the availability of data. Government and Regulator have to create an enabling environment to ensure that data is made available to the FinTech start-ups. This could take form in two ways:

- Expedite the electronic consent architecture so that any customer can provide electronic consent for a potential lender to access her transaction records electronically with the customer's transaction bank and utilities.
- Encourage banks and bureaus to provide data as 'public good' to the FinTech industry in a sand box model.

Strengthen accounting standards and quality. Banks discharge their role with help of supporting ecosystem — contract enforcement and bankruptcy resolution; credit rating; information bureau; and accounting & audit service providers. Policy makers need to find ways to take the quality and authenticity of the audit and accounting service to the next level to provide bankers with more reliable information on which to take decisions.

Data privacy and Digital literacy. As banks (and many other industries) start capturing and leveraging customer data to access risk and business potential, it is critical that laws regarding privacy of customer information and literacy of customer regarding their rights is strengthened in parallel to prevent misuse.

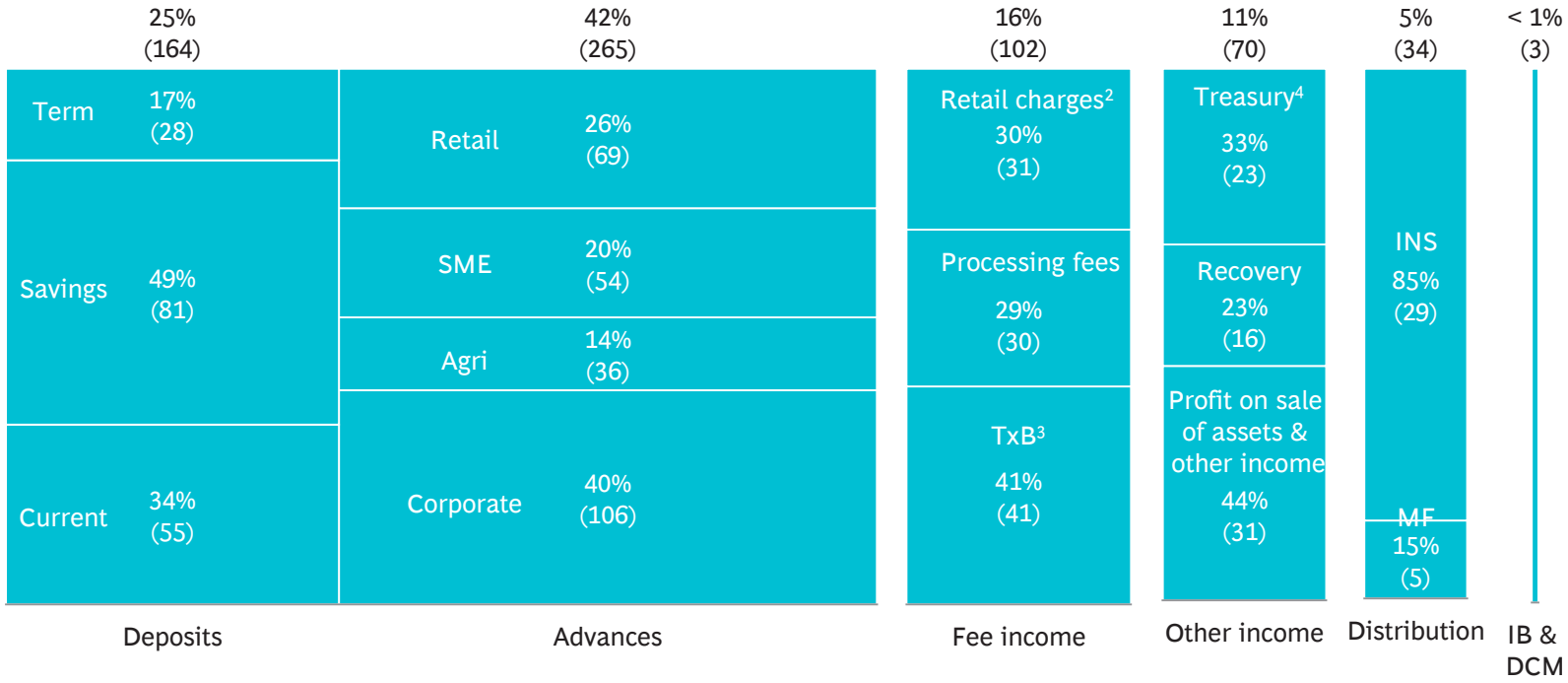
REVENUE POOLS AT AN INFLECTION – NEED TO ADJUST STRATEGIES

- Banking revenue pool mix will change significantly over next 5 years – requiring adjustments in strategies and business models
- Corporate segment which is ~40% of advances revenues today to shrink to ~27% by FY22 – driven by movement of large corporates to debt markets and lingering bad debts in corporate segments
- Retail lending revenue pool growth is close to its peak sustainable rate. Expected to stabilize at current rate
- Savings bank revenue pool to get a fillip due to higher digitization, rising balances in Jan Dhan accounts, and effects of rising prosperity on balances
- MSME to offer promising upside as share in lending revenues increases from ~20% today to ~24% by FY22 – driven by substitution of informal credit with reforms like GST & digital payments at POS
- Evolution in savings habits towards mutual funds will provide an inflection in bank's fee and advisory income – banks could gain share over non-bank distributors to shore up their profitability

Revenue pool accessible to banks in India is Rs. ~6.50 lacs Cr (USD 100 Bn)

Banking revenue[1] pool (FY17)

All figures in Rs. '000s Cr



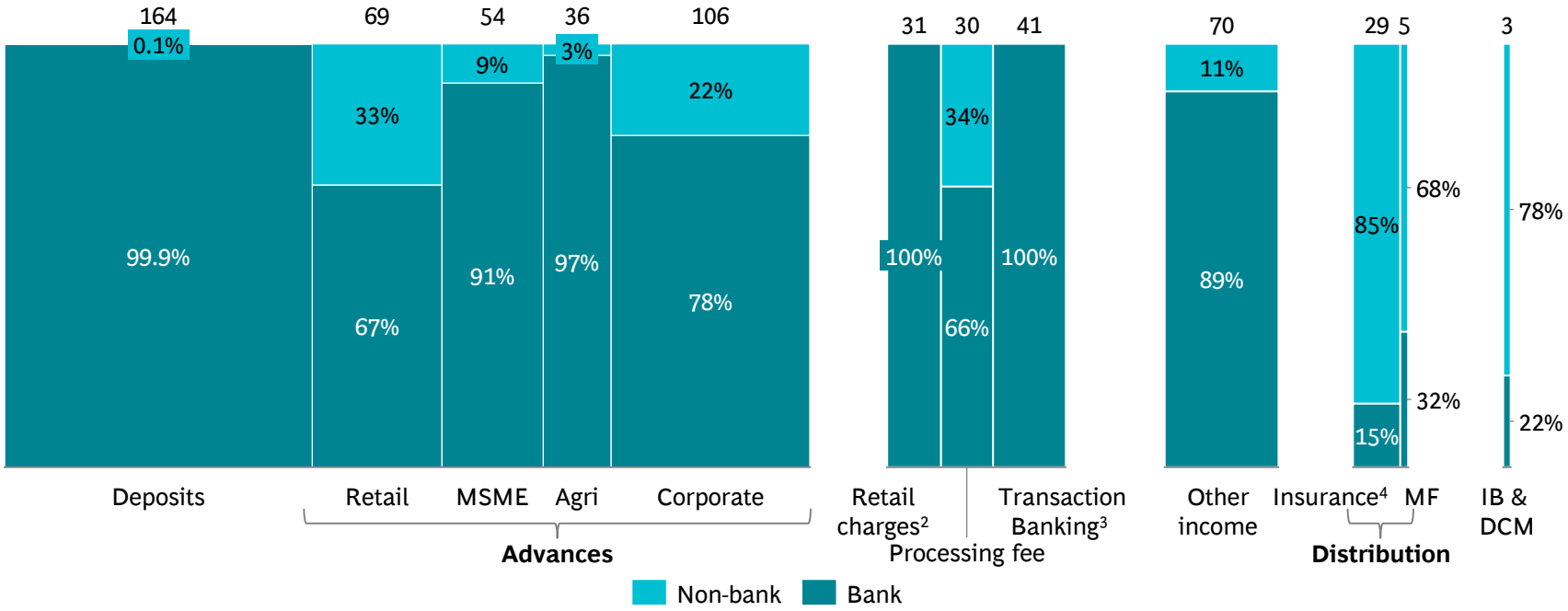
Banking revenue pools stood at Rs. ~6.50 lacs Cr at end of FY17. About two-thirds of this revenues came from conventional business of extending advances & accepting deposits while remaining was accounted for by fee, distribution, advisory and other incomes. It is interesting to note that 'Other income' comprising of non-recurring income such as treasury gains, recovery from write offs and profit on sale of assets accounted for ~10% of entire revenue pool – larger than entire distribution income.

Notes: 1. Revenue refers to net interest income for deposits and advances. It excludes RRBs & co-operative banks 2. Retail charges includes ATM / debit card interchange fees, credit card fees, penal charges, etc. 3. Transaction banking includes income on trade instruments such as LC, BG, forex income, fee from cash management services 4. Profit on sale of securities.
Sources: RBI; FIBAC data; Annual reports; BCG analysis.

Banks having ~85% share of total revenue pool; will they cede space to NBFCs & FinTechs?

Banking revenue[1] pool (FY17)

All figures in Rs. '000s Cr



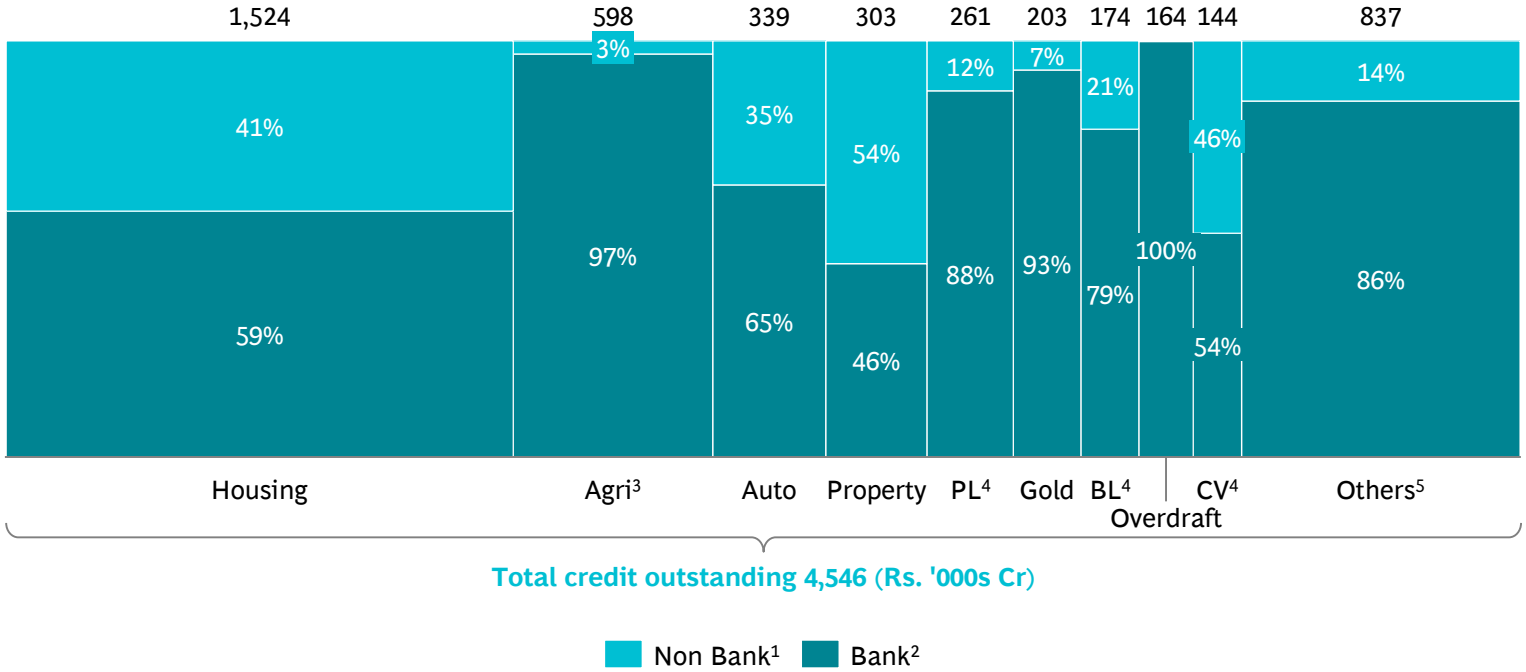
Banks are increasingly facing competition from other players as large number of NBFCs, FinTechs, wallets and other third party intermediaries (such as IFAs) participate in revenue pools accessible to banks. In the traditional lending segment, banks continue to enjoy majority share, however, the pace of NBFC growth poses a very real threat. The non-convention segments such as distribution of insurance & mutual fund products or corporate advisory (for access debt & equity markets) offer potential to drive growth and improve penetration.

Notes: 1. Revenue refers to NII for deposit and advances, excl. RRBs & co-operative banks and fee income 2. Retail charges includes ATM / debit card interchange fees, credit card fees, penal charges, etc. 3. Txn banking includes income on trade instruments 4. Bank's share in Insurance distribution excl. LIC is ~35% of total insurance commissions 5. Significant portion accounted for by public sector FIs.
Sources: RBI; FIBAC data; Annual reports; BCG analysis.

Non banks occupy dominant share in select segments of retail and agriculture lending pool

Retail credit outstanding (Jun 17)

All figures in Rs. '000s Cr



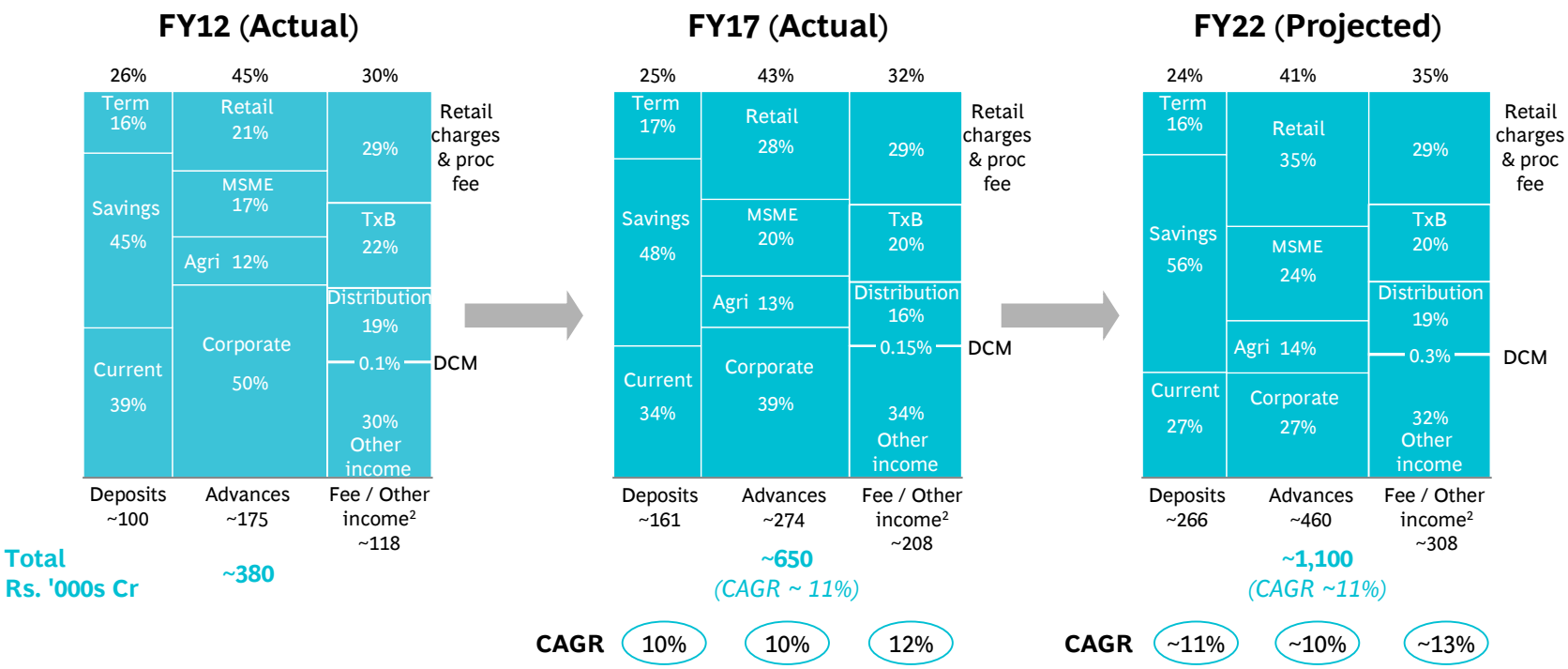
Banks continue to be in the forefront of credit expansion in the country and occupy majority share of outstanding in most retail and agricultural products. However non banks (primarily NBFCs and HFCs) have captured significant share in some of the key retail products. Agriculture continues to be dominated by PSU banks.

Notes: 1. Non-banks primarily include NBFCs, HFCs 2. Banks include all public, private, MNC banks and others. Others include RRBs, co-op banks, and other financial institutions 3. Agriculture includes priority sector agriculture, tractor loans, kisan credit card 4. PL = Personal loan, BL = Business loan, CV = Commercial vehicle 5. Product others include all remaining retail and agricultural products.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

The revenue pool is at an inflection point – set to change significantly in next 5 years

Revenue[1] pool across segments

All figures in Rs. '000s Cr

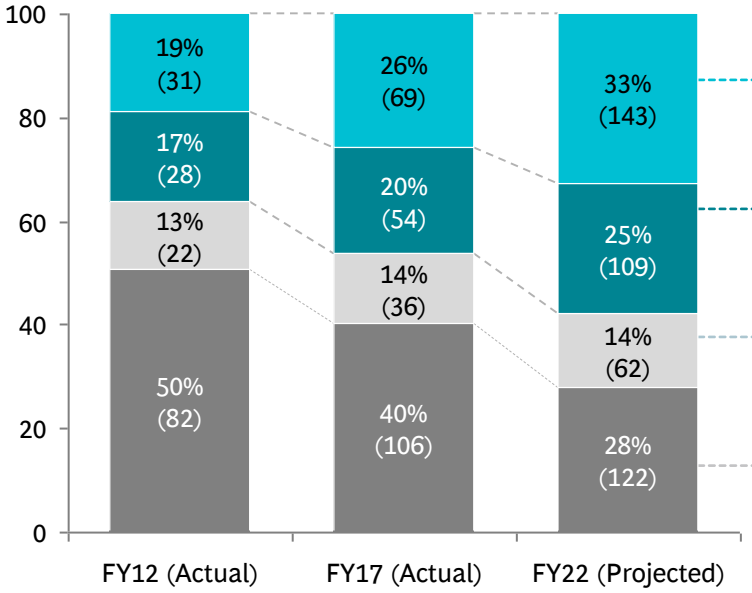


Revenue pool in the financial services sector are expected to see material shifts over next few years. While aggregate revenues are expected to grow in line with historic growth of ~11%, the mix across segments is likely to shift materially. Retail and MSME advances to significantly grow increasing their contribution to ~60% of lending revenue vs. ~48% today. Share of fee income shall continue to expand with focus on penetration of 3rd party products and offering advisory services to corporates for accessing wholesale markets.

Notes: 1. Revenue refers to NII for deposits and advances. Above revenues include all SCBs & NBFCs but exclude RRBs 2. Fee & other income includes retail charges, processing fees, transaction banking revenues, distribution commission, treasury income, profit on sale of assets, recovery of earlier written off assets, investment banking revenue, DCM fee and other income.
Sources: RBI; FIBAC productivity survey; Annual reports; Industry discussions; BCG analysis.

In advances, MSMEs to be the key growth driver, retail to stabilize, however more pain expected in corporate

Revenue[1] from advances (%, Rs. '000s Cr)

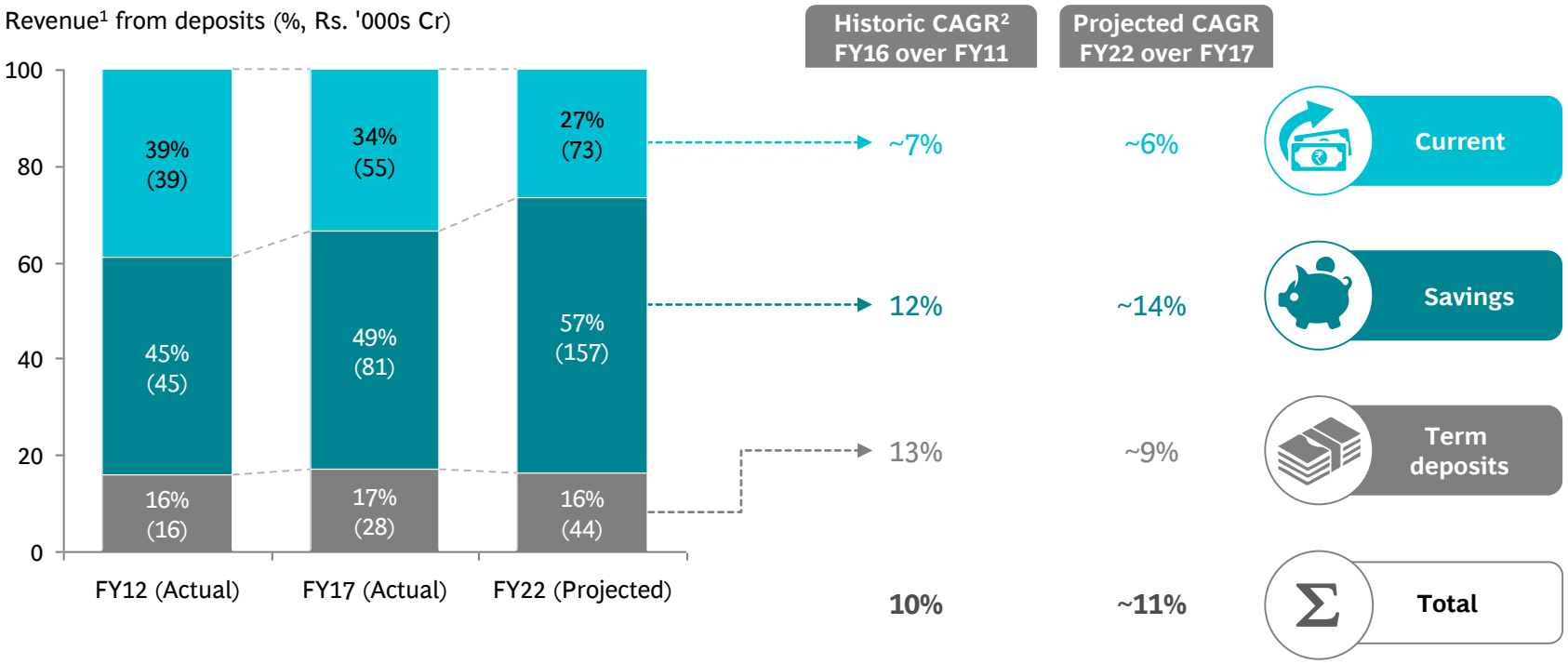


	Historic CAGR FY17 over FY12	Projected CAGR FY22 over FY17
Retail	17%	~16%
MSME	14%	~15%
Agri	11%	~11%
Corporate	5%	~3%
Total	**10%**	**~10%**

Retail advances to continue growth in medium term with private sector banks & NBFCs leading category growth as they target latent consumption demand, however, slight increase in NPAs impact growth in longer term. MSME segment to offer significant growth as players leverage better information availability (supported by reforms such as GST) to bring more MSMEs in formal financing fold. Corporate advances on the other hand are expected to continue experiencing muted growth in immediate future as delinquency levels peak in next 2 years, followed by uplift in growth to 8-10% levels as NPA stress reduces. Delinquency levels expected to inch closer to better years for MSME while corporate NPA remains at moderate levels but distant from lower levels experienced earlier.

Note: 1. Revenue refers to Net Interest Income for deposits and advances. Above revenues include all SCBs & NBFCs but exclude RRBs.
Sources: RBI; FIBAC productivity survey; Annual reports; Industry discussions; BCG analysis.

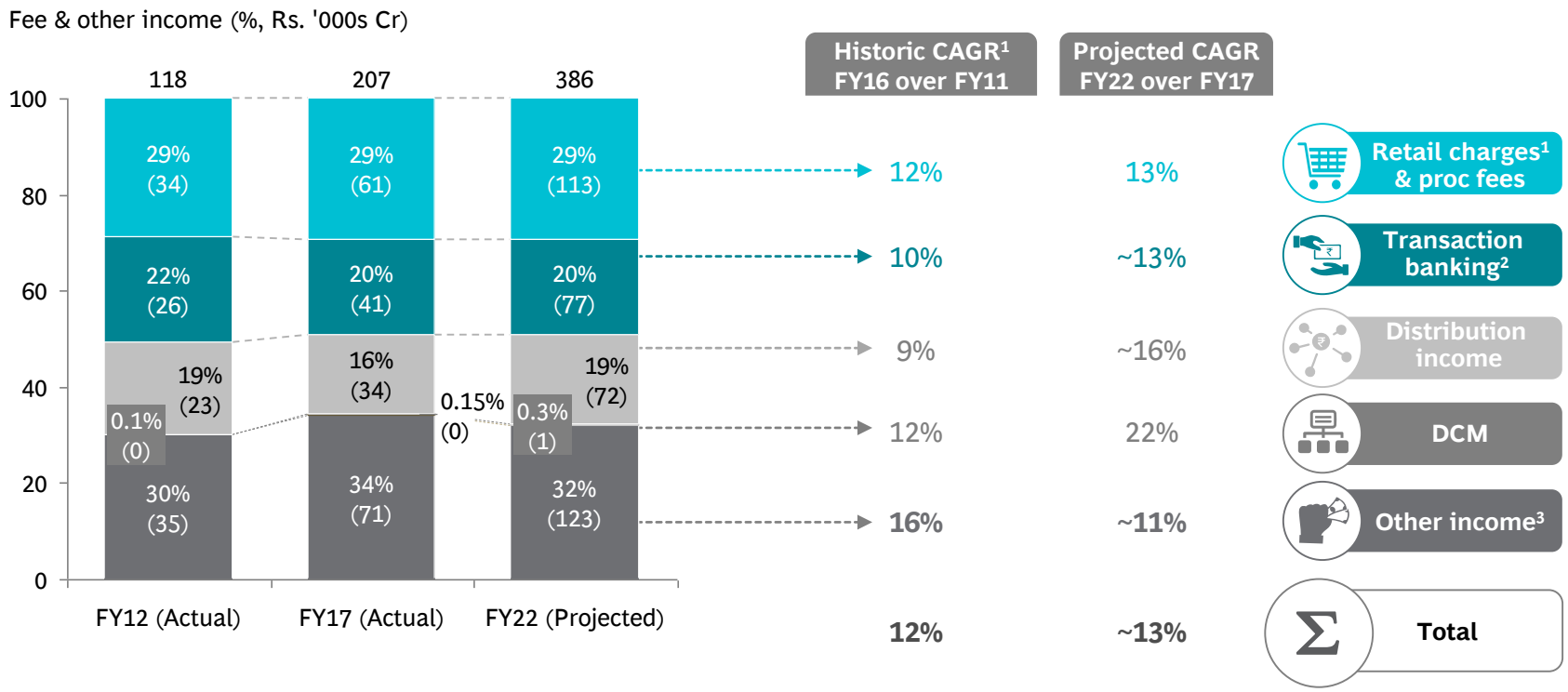
Cashless economy to drive savings growth: Term deposit stagnates as consumers shift to mutual funds



Drive towards cashless economy & greater push towards digital transactions are expected to bring funds in Jan Dhan accounts & improve average balance per savings account enabling faster savings deposit growth over next 5 years. Term deposits on the other hand are likely to observe a slow down in growth as consumers increasingly shift savings in mutual funds and other alternate modes of investment. Current accounts to observe limited growth via new account opening while average balance per account remains muted as businesses increasingly park surplus funds in liquid investments.

Notes: 1. Revenue refers to NII for deposits and advances. Above revenues include all SCBs & NBFCs but exclude RRBs 2. Deposits growth of FY 17 excluded in above table to adjust for impact of demonetization – growth considered from FY11-16.
Sources: RBI; FIBAC data; Annual reports; Industry discussions; BCG analysis.

Fee income can offer profitability booster for banks focusing on advising clients



Banks will continue to focus on expanding the share of fee income in their overall revenues as pressure on margin on advances continues. Distribution income offers significant growth potential as a structural shift is observed from deposits to mutual funds for savings. Retail charges and processing fee continue healthy growth in line with savings bank balances grow, however, processing fee faces pricing pressure as competition from non-banking players intensified. Corporate advisory for accessing debt capital markets as well as transaction banking offer profitability boosters in corporate segment as larger corporates increasingly access wholesale markets for funding.

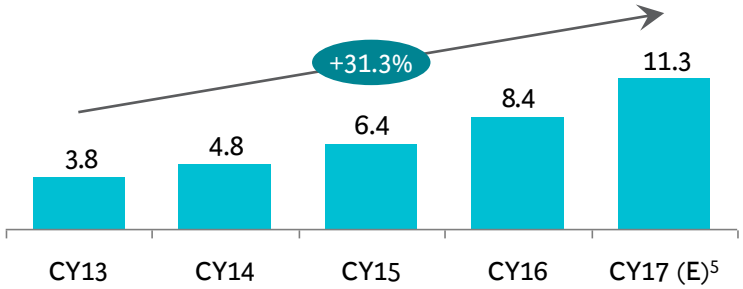
Notes: 1. Retail charges includes ATM / debit card interchange fees, credit card fees, penal charges, locker charges and other charges 2. Transaction banking includes income on trade instruments such as LC, BG, forex income etc. 3. Other income includes treasury (profit on sale of financial assets), recovery earlier written off, profit on sale of fixed assets and other non-recurring income.
Sources: RBI; FIBAC data; Annual reports; BCG analysis.

Spirited supply of retail credit has matched robust retail demand over last 5 years

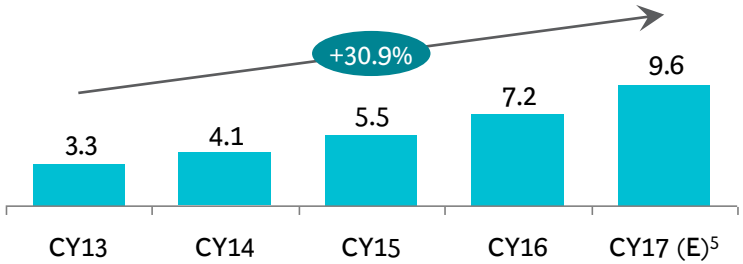
Retail includes agri.

Demand

Credit enquiries[1] (in Cr)

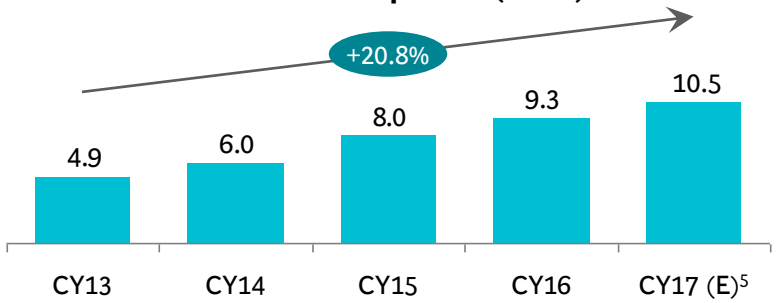


Unique potential borrowers[3] (in Cr)

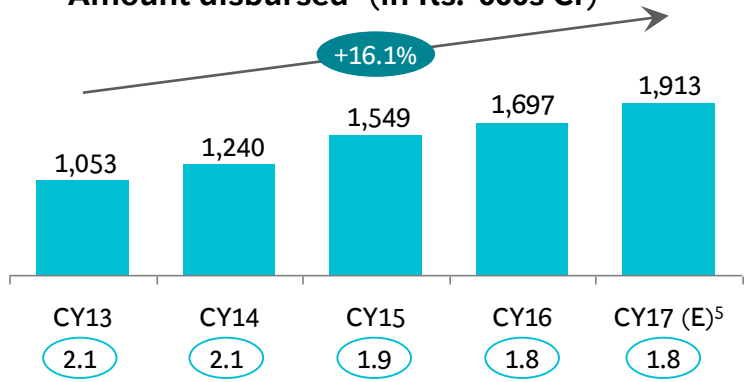


Supply

Loan accounts[2] opened (in Cr)



Amount disbursed[4] (in Rs. '000s Cr)



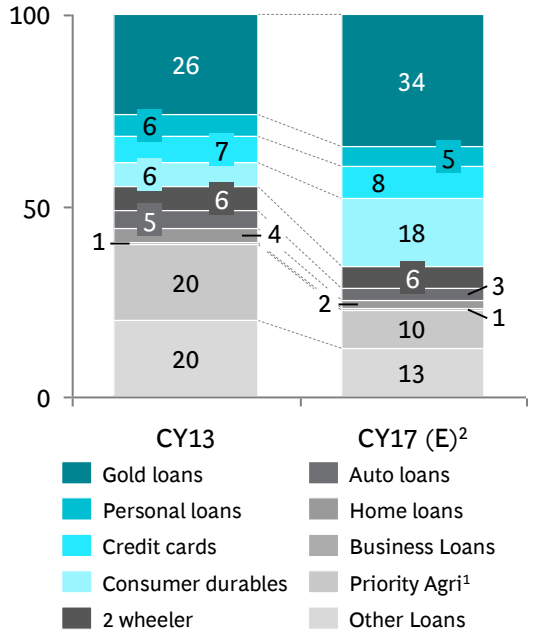
Avg. ticket size (in Rs. Lacs)

Demand for retail credit, represented by both number of credit enquiries and number of unique potential borrowers, has grown at a healthy ~30% over the last few years. Supply of credit, represented by both the number of loan accounts and amount disbursed, is moving broadly in tandem with demand. The growth in number of accounts is increasingly outpacing the growth in amount disbursed, driven by an expanding share of small ticket sized loans in the credit portfolio. The demand for retail credit excludes gold loans as majority of gold loans are opened without credit enquiry.

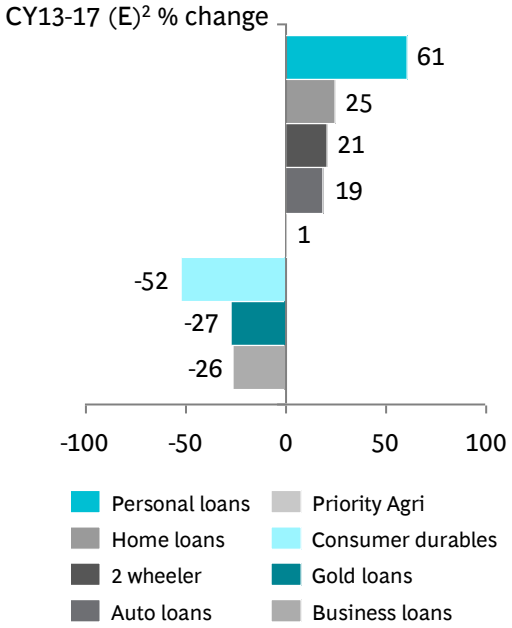
Notes: 1. No. of credit enquiries represent the enquiries with TransUnion CIBIL by financial institutions. It does not include gold loans 2. No. of accts include gold loans (34% of total in CY16) 3. Unique potential borrowers means unique applicants hitting the bureau 4. Amt. disbursed does not include credit cards (impact less than 1%) 5. 2017 calendar year fig. estimated based on 2017 Q1 and Q2 data.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Nature of retail credit is changing rapidly

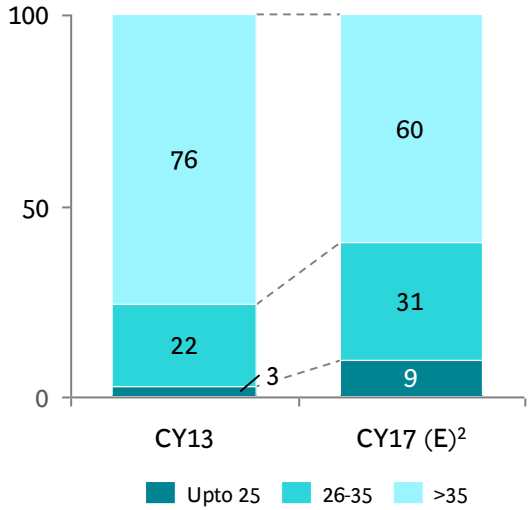
Product share of accounts opened (%)



Ticket size change of key retail products (%)



Age group share of accounts opened (%)

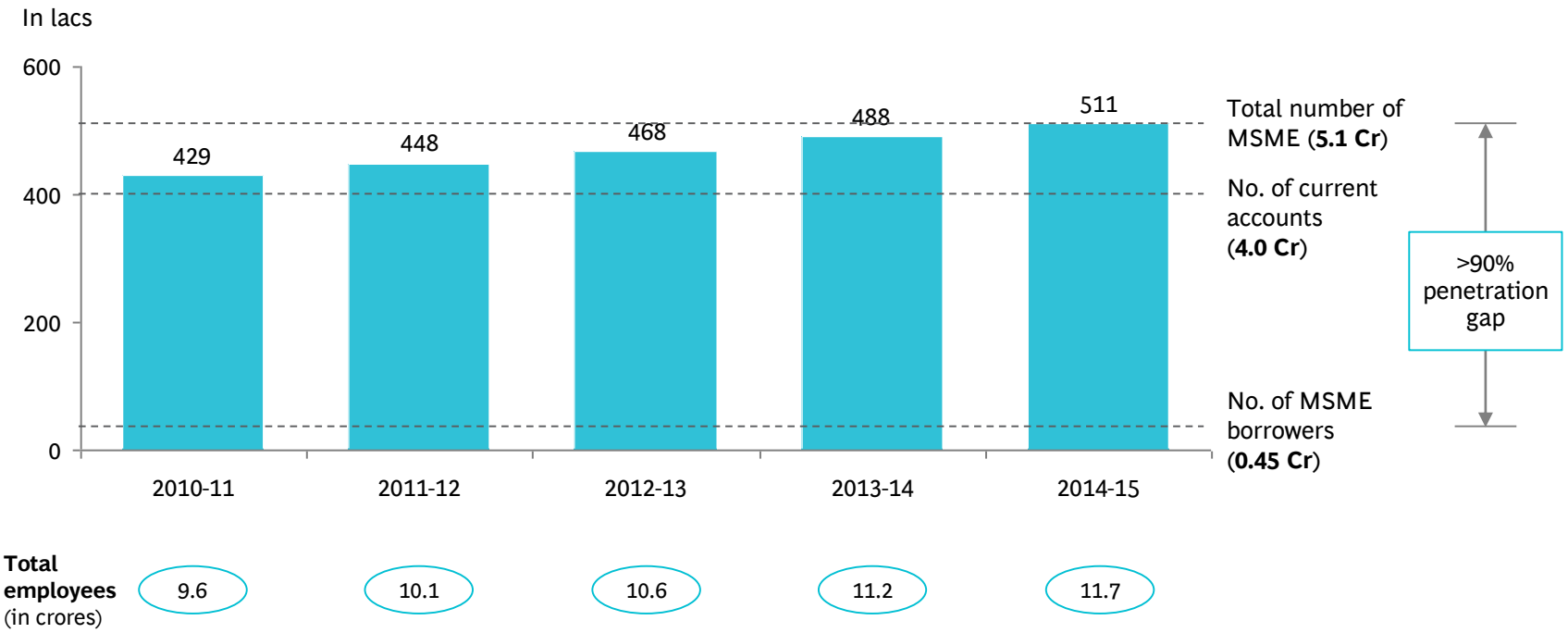


Nature of retail credit is changing rapidly in India. Share of products in new accounts opened has evolved with gold loans and consumer durables gaining significant volumes and accounting for ~50% of all new accounts opened. The gain in volumes for these products is also accompanied by significant drop in ticket sizes as financial institutions are becoming more and more willing to extend credit for lower value assets. In case of certain other retail products, the ticket sizes have actually increased, prominent among them being personal loans – indicative of the increasing credit willingness of Indian borrower and supply side push and home loans and auto/2w loans – indicative of the overall increase in the values of the underlying assets funded. In addition, the share of youth in retail credit is growing with millennials' share of accounts opened increasing to 40%.

Notes: 1. Priority agri represents priority sector agriculture loans extended to individuals 2. 2017 calendar year figures estimated based on 2017 Q1 and Q2 data.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

MSME lending has a significant white space

Number of MSME in India



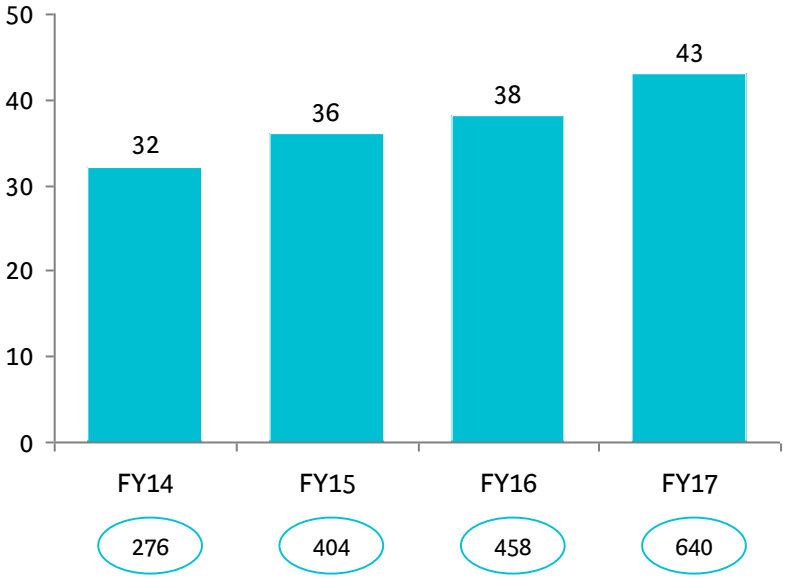
Of the total 5.1 crore MSMEs in India, only 45 lacs have access to formal credit. This represents significant under-penetration, a coverage gap that is larger than the one in retail. Digital push (restriction on cash) coupled with GST will force "formalization" and hence credit coverage of MSME. The MSME segment also has low cyclical NPA among all commercial banking segments and presents significant pricing advantage leading to better returns. Addressing the potential in MSME effectively can help deliver disproportionate growth for commercial lenders. MSME segment, if targeted and serviced appropriately, can grow to have substantial share of Indian bank's commercial balance sheets in the next 3-4 years.

Note: Number of MSME borrowers based on TransUnion CIBIL commercial bureau data for entities with <25 crore cumulative exposure.
Sources: TransUnion CIBIL data and analysis; BCG analysis; MSME Annual Report 2016-17; number of current accounts from FIBAC Productivity Survey 2016.

Significant shift towards wholesale market by corporates

Increasing reliance on corporate bonds...

Corporate bonds & commercial papers as % of total corporate credit



Fresh bond issuances (Rs. '000s Cr)

... and other sources of funding

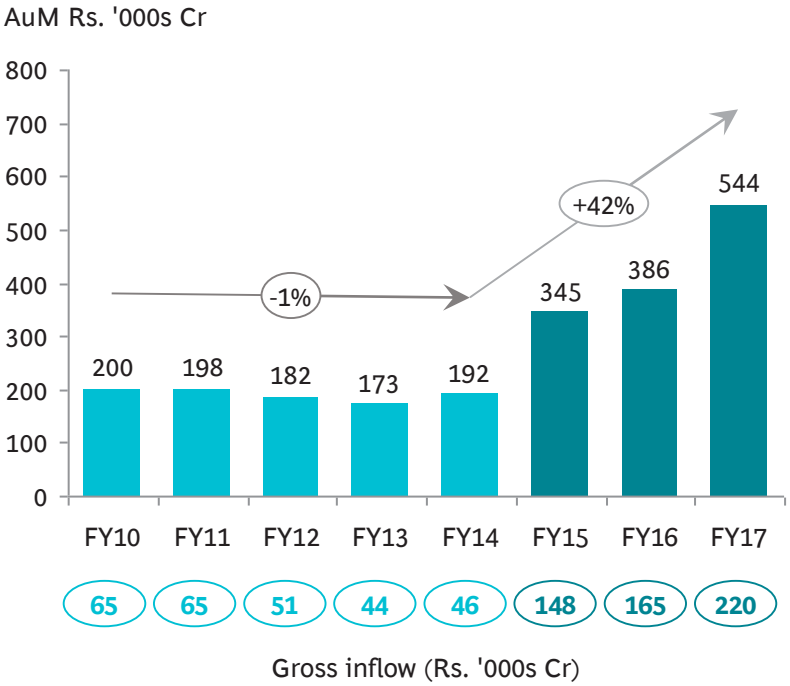
Funds raised (Rs. '000s Cr)	FY14	FY15	FY16	FY17
AIFs	~4	~10	~23	~41
Masala bonds	-	-	~3	~4
Uday bonds	-	-	~150	~80

Corporate sector has observed a significant shift in reliance towards non-bank debt in recent years. Despite muted growth in credit extended by banks, corporate bond and commercial paper have delivered growth of 40% and 53% respectively. Further, corporates are tapping into alternate sources of funding such as AIFs, Masala bonds, Uday bonds and Inv-IT putting pressure on corporate lending revenue pools for financial institutions.

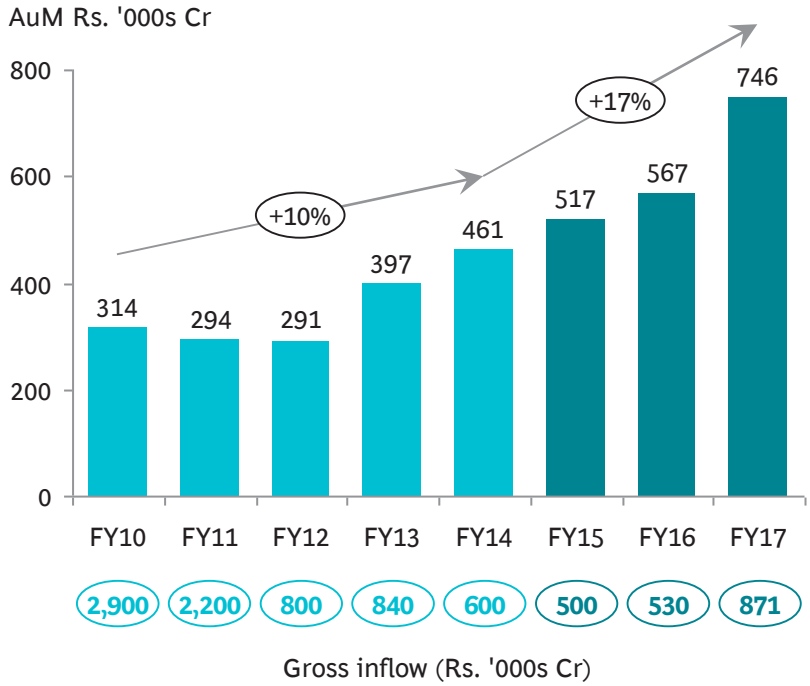
Sources: RBI; Analyst reports; Industry discussions.

Increased appetite for mutual fund investment

Equity schemes
(~32% of MF AuM)



Debt funds
(~42% of MF AuM)



Mutual fund market has seen a rapid increase in inflows and overall AuMs over past 2-3 years. Consumers have increasingly shifted savings from cash and term deposits to SIPs and mutual fund programs. Equity schemes that account for one-third of total mutual fund AuMs has observed a growth rate of 40%+ since FY14. This shift offers an alternative source to revenue by enhancing penetration in mutual fund and other third party distribution products.

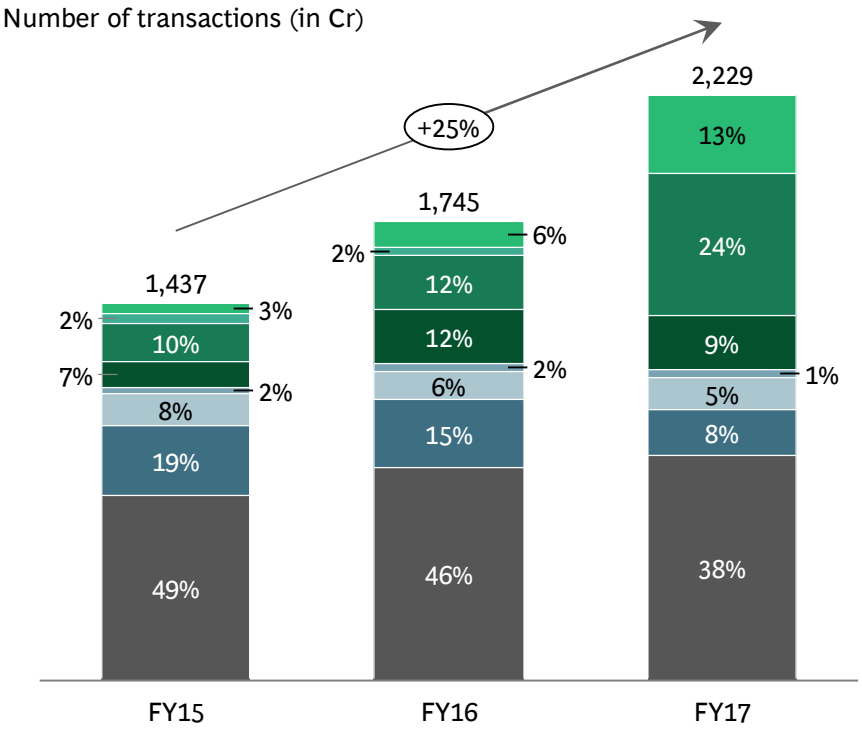
Source: AMFI.

INDIA'S EDGE IN DIGITAL & DATA – TIME TO EMBRACE NEW PARADIGMS

- Step jump in digital activation in savings and current accounts in FY17
- Indian banks have access to world class platforms –India stack platform has already dramatically reduced cost of customer onboarding and transactions
- Credit bureau infrastructure in India are rated higher quality than OECD countries by the World Bank and is now reaching coverage of 43%, 7 rating on World Bank index (OECD avg – 6.6)
- There are a few key paradigm shifts which banks in India need to embrace
- Treat data as a strategic asset and prioritize technology investments that consolidate and monetize data. In many instances, banks' internal data has to be supplemented with external sources to drive maximum advantage. Partnerships for accessing data will need to become a standard feature of strategy in the coming days
- Embrace data for credit decisions; judgment has limitations in a complex world. Analytical credit models will have to supplement banks' traditional capabilities

Dramatic shift in transaction profile of banks – Noticeable acceleration in digital adoption

Total Transactions – Indian Banking Industry (FY15, FY16 and FY17)



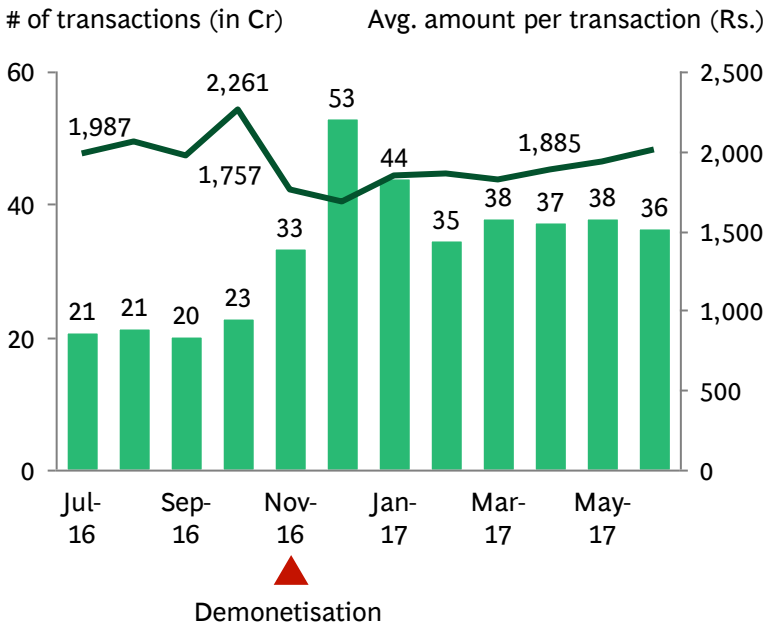
	Growth (FY15 over FY14)	Growth (FY16 over FY15)	Growth (FY17 over FY16)
Digital channels			
Mobile	40%	67%	94%
ECS[3]			
POS			
Internet			
Physical / paper based / branch based			
NEFT[4]	-7%	-4%	-19%
Cheque			
Cash[2]			
ATM			
ATM[1]	15%	15%	6%

Total transactions processed in FY17 were 22bn, showing a CAGR of 25% from FY15. There is a clear shift from branch based transactions to digital transactions, which are now growing at almost double the pace from FY16. The talk of digital is now getting real. Organizations have started undertaking systemic changes to redefine role of branches and accept digital as their primary mode of transaction which is in turn offering increased efficiency and a 'wow' experience for customers.

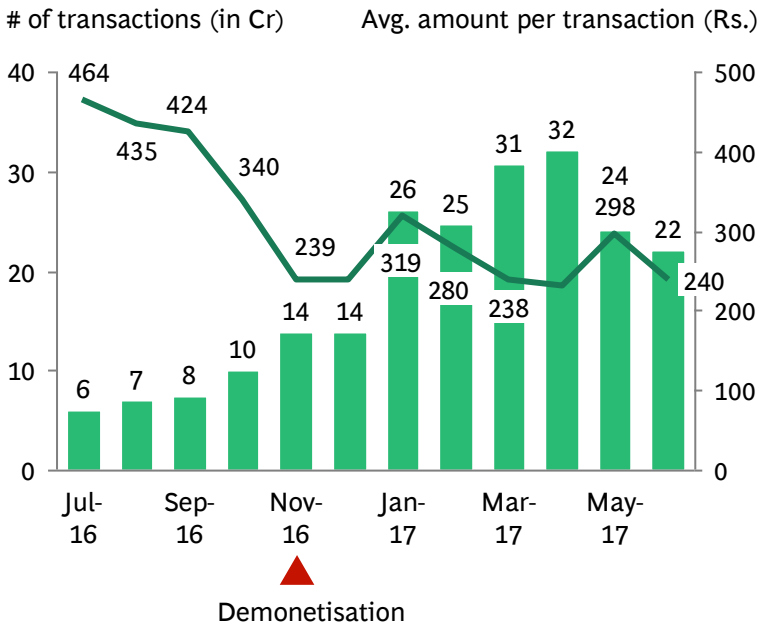
Notes: 1. ATM includes withdrawals, deposit transactions at ATM and CDMs. ATM and Mobile transactions included are financial transactions 2. Cash transactions refer to counter cash transactions within branch 3. ECS transactions can be initiated offline or through online channels 4. NEFT transactions initiated in branches.
Source: FIBAC Productivity Survey 2017; RBI data; IBA data; BCG analysis.

Step increase in size of digital transactions at POS and m-wallets

Rise of POS[1] transactions



Rise of m-wallets[2] as payments platform



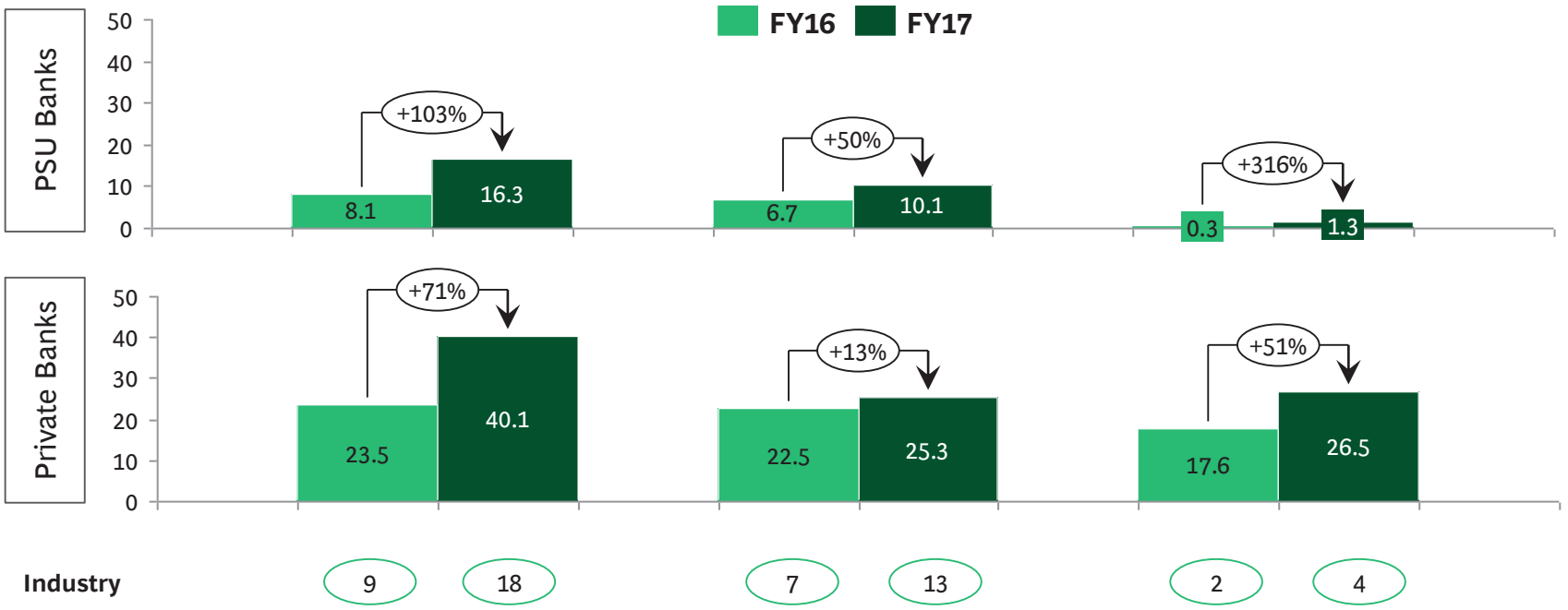
Avg. amount per transaction (Rs.) # of transactions (in Cr)

Over time, coupled effects of demonetization and incentives provided to push digital transactions have led to accelerated growth in transactions through digital channels. Fear of using digital channels in the minds of customers is finally subsiding as is evident from the increased usage of m-wallets and POS as mode of transaction. However, the effect of initial build-up is now seen to be stabilizing to a new normal.

Notes: 1. Credit and debit card financial transactions (issued by bank) at POS terminals 2. Calculated based on provisional data issued by RBI of only 8 non-banker wallets. Data is limited to goods and services transactions only for m-wallets.
Source: RBI data.

Step jump in digital activation in FY 17 – Public sector metrics more than doubled

Activation status of banks as % of active[1] Savings accounts[3]

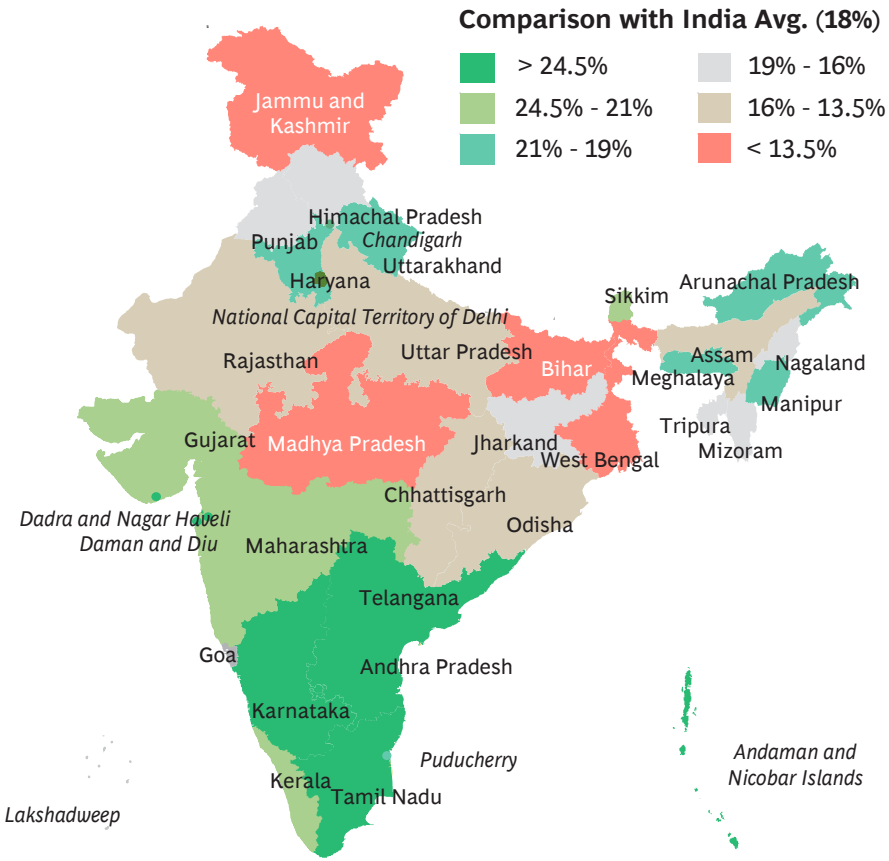


There has been a phenomenal rise in transactions through various digital channels; especially for public sector banks. Mobile banking as a mode of transaction has seen wider acceptability translating into high growth numbers. This has partially been a result of several government initiatives on digital banking.

Notes: 1. Active acct. is defined as an acct. with at least 1 user initiated transaction in last 6 months 2. Financially active acct is defined as an acct. with at least 1 user initiated transaction in last 6 months
3. Data of 1 PSU (Large), 1 PSU (Medium), 1 Pvt (New) and 1 Pvt (Old) banks excluded from the analysis.
Sources: FIBAC Productivity Survey 2017; BCG analysis.

Digital adoption is growing rapidly – but regional disparities are very significant

Heat-Map representing penetration of accounts that use debit cards at POS as % of savings account[2]

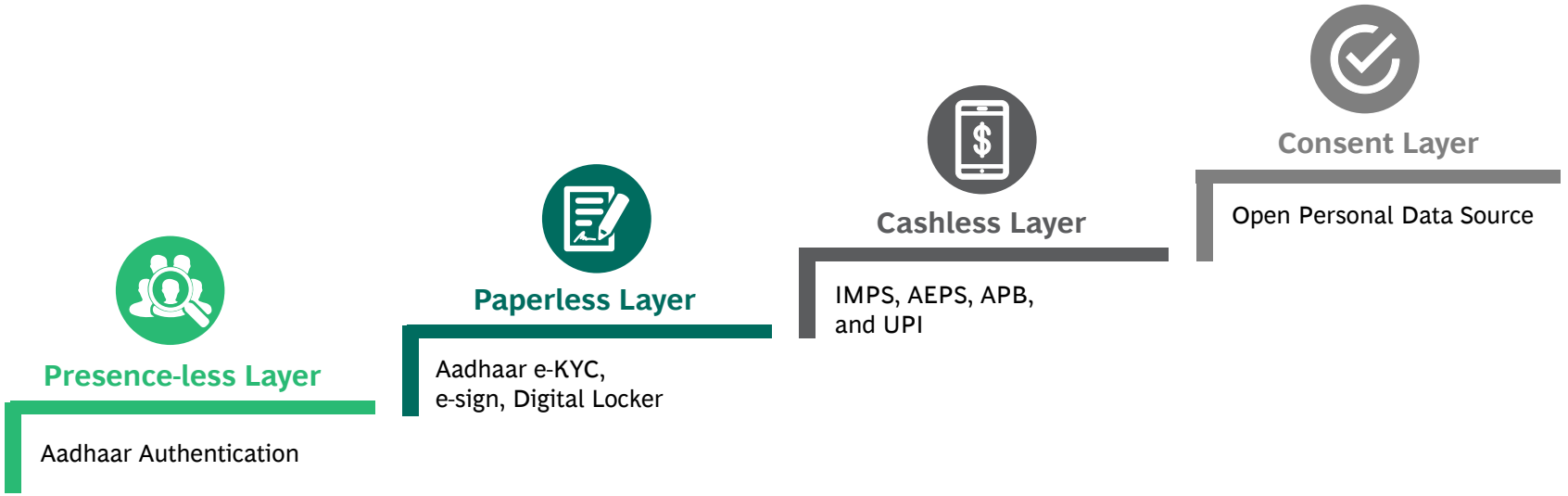


SA Active at POS[1]		
States & UTs	2016	2017
Andaman and Nicobar Islands	6%	24%
Andhra Pradesh	4%	26%
Arunachal Pradesh	5%	21%
Assam	3%	15%
Bihar	2%	9%
Chandigarh	8%	31%
Chhattisgarh	3%	14%
Dadra and Nagar Haveli	9%	40%
Daman and Diu	10%	35%
Delhi	9%	28%
Goa	6%	21%
Gujarat	5%	22%
Haryana	4%	20%
Himachal Pradesh	4%	18%
Jammu and Kashmir	5%	5%
Jharkhand	5%	17%
Karnataka	6%	26%
Kerala	5%	21%

SA Active at POS[1]		
States & UTs	2016	2017
Lakshadweep	9%	18%
Madhya Pradesh	2%	11%
Maharashtra	5%	21%
Manipur	2%	20%
Meghalaya	5%	19%
Mizoram	6%	17%
Nagaland	5%	17%
Odisha	4%	15%
Pondicherry	8%	31%
Punjab	2%	18%
Rajasthan	3%	15%
Sikkim	6%	22%
Tamil Nadu	7%	25%
Telangana	9%	32%
Tripura	3%	16%
Uttar Pradesh	3%	13%
Uttarakhand	4%	20%
West Bengal	3%	12%
India	9%	18%

Notes: 1. No. of SB accounts that have active transactions at POS as on March 31, 2017 (At least 1 customer initiated financial transaction in last 6 months) 2. Data of 3 PSU (Medium) Banks excluded.
Sources: FIBAC 2017; BCG analysis.

India Stack proposition built on 4 distinct layers



Supported by major reforms and policy interventions...

Pradhan Mantri Jan Dhan Yojana	Aadhaar eKYC	Goods And Services Tax Network	Unified Payments Interface	Bharat Bill Payment System

30 Cr accounts opened since Aug 2014

There has been a paradigm shift in the processes to a more smoother and less time consuming one which will assist in having better quality of data as it is capable of handling massive data inflows. Embracing digital processes is one of the biggest changes to the process. With this the India's digital revolution is waiting in the wings.

Source: BCG analysis.

India Stack opens up opportunity to serve bottom of pyramid by lowering costs

Small ticket loans / MFI

	Loan Disbursement cost (Rs.)
Physical	20
	1/4th
APBS[1]	5

Savings account

	Customer acquisition cost (Rs. pa)[3]	Break even MAB[2] (Rs.)
Physical	1,800	60K
	1/6th	
Aadhaar Based	300	10K

Wealth management

	Customer acquisition cost (Rs.)	Break even investment portfolio (Rs.)	Addressable market
Physical	1,500	200K	3M
		1/10th	
Digital *(Fintech)*	150	20K	30M

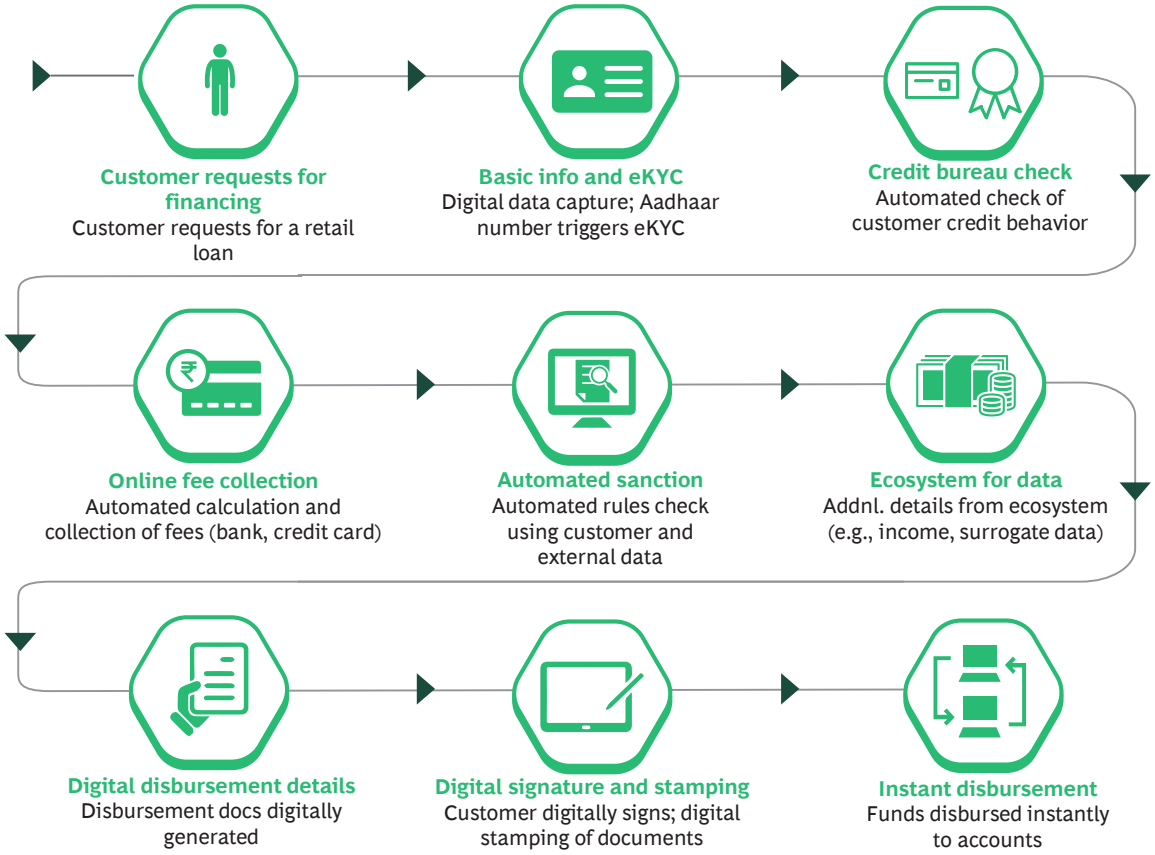
Due to the implementation of the India Stack there has now been a reduction in effective cost to serve the bottom of the pyramid. India Stack assists with transparency in the services. It is the cashless layer which is meant to ease the process of digital financial transactions and reduce costs along with an added benefit of smoothening the entire process. Due to this the lower cost benefits gained can be passed on to customers in form of lower commissions and processing fees too.

Notes: 1. Aadhaar Payment Bridge System 2. Monthly Average Balance 3. Average medium size private sector bank.
Source: BCG analysis.

End to end digital process is now possible in lending

Consumer lending end-to-end digital example

(30 second sanction and immediate disbursement)



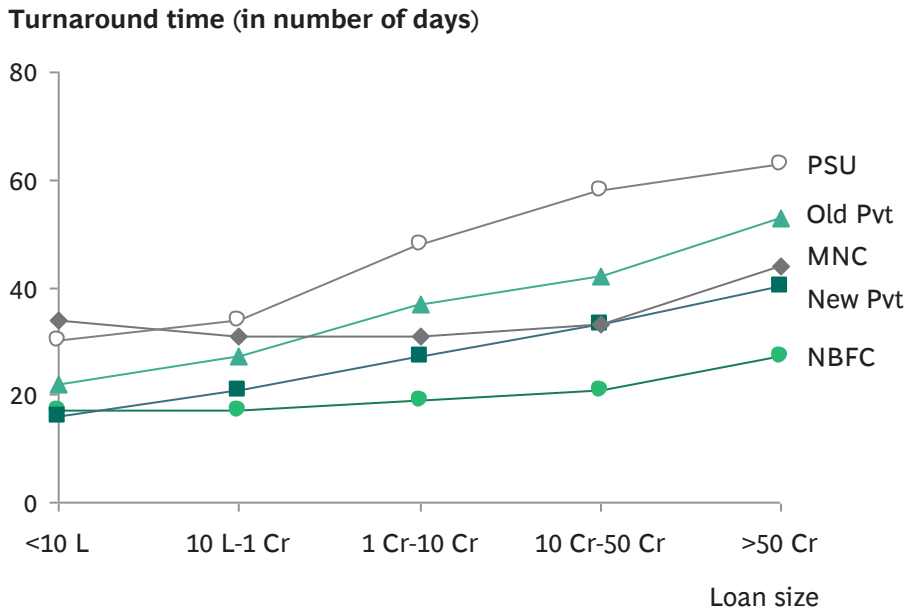
Impact

- **Significantly reduced TAT**
- **Reduced opex**
- **Superior customer experience**
- **Step change in employee productivity**
- **Lean and scalable processes**

Source: BCG analysis.

Bureau data shows direct correlation between TAT and NPA rates

Institution-wise TAT



Linkage of TAT to default rates

(Loans sanctioned between Apr 16 – Jun 16)

TAT[1] (no. of days)	Bad rate[2] (Sept 2017)	Population %
<15	0.8%	48%
16-45	1.3%	29%
>46	2.0%	22%

Analysis of bureau data indicates that the turnaround time for commercial loan applications ranges significantly across the industry. PSU Banks take on an average 1.5-2x the number of days taken by NBFCs and private sector banks to process new loans (sanctions and account opening). There is also a clear linkage between turnaround time and NPA rates, with loans that were sanctioned at lower TATs displaying low default behaviors. Most financial institutions with low turnaround times have embraced end to end digital capabilities including automated data capture and decisioning, digital documents and workflows and minimal manual interventions that has enabled drastic reduction in turnaround times, improved throughput and minimized risks.

Notes: 1. TAT – Turnaround time, Turnaround measured as the number of days between account open and last instance of credit enquiry by the same bank 2. Bad rate calculated as the percentage of total loan amount sanctioned between Apr 16 – Jun 16 that are currently in the 90+DPD bucket.
Source: TransUnion CIBIL data and analysis, BCG analysis.

India's credit bureau infrastructure is amongst the best in the world

India ranks in top 30 in Getting Credit – much higher than ease of doing business rank; depth of credit info index key contributor

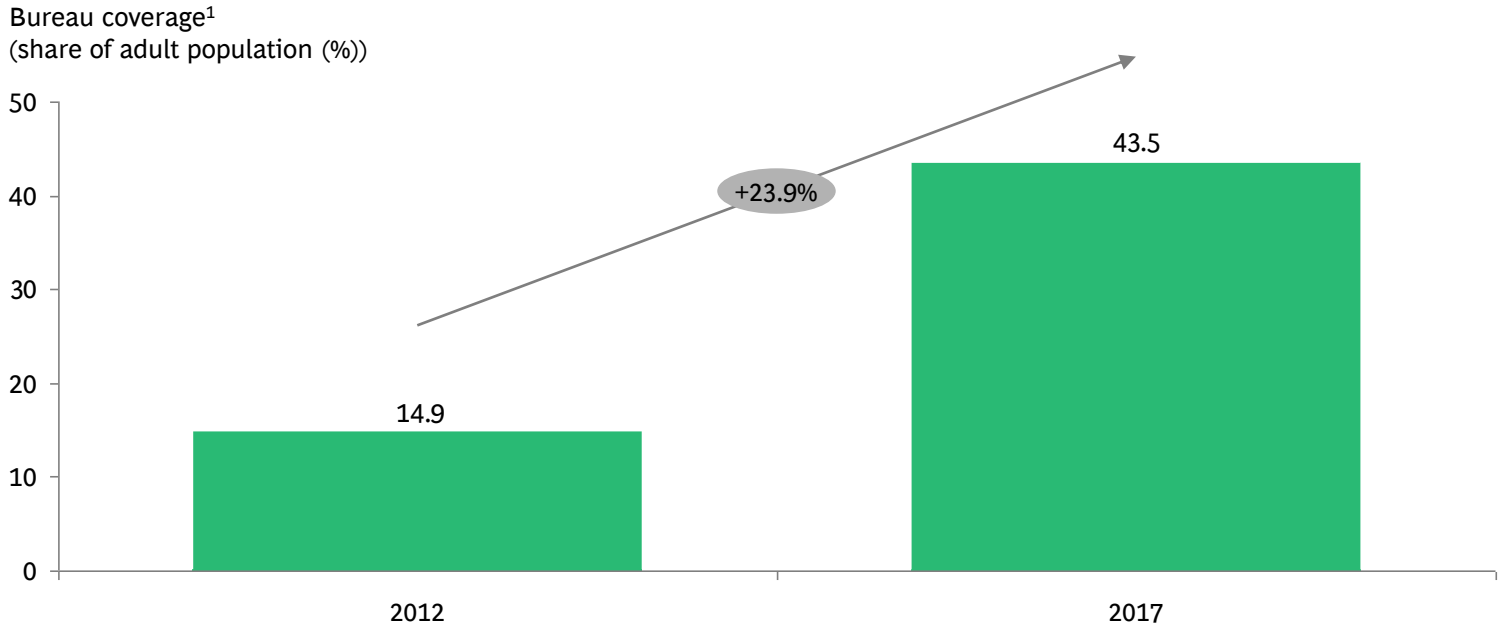


India scores higher than the OECD countries on certain credit specific parameters such as the depth of credit information index (India-7, OECD avg –6.6). India ranks 29 on getting credit in the World Bank ease of doing business report which is significantly better than the 100th spot that the country occupies in the overall ease of doing business.

Source: World Bank Doing Business Report, 2018.

Rapid growth in bureau coverage – changing rules of the game in lending in India

Credit bureau coverage



India's credit bureau infrastructure, which is amongst the best in the World, provides a strong bulwark against credit misadventure but also facilitates proactive strategies to access new customers. The credit bureau coverage in India has improved significantly over the last few years. There are currently ~37 crore retail borrowers and ~1.3 crore commercial borrowers in the bureau. The availability of bureau data is enabling far reaching changes in broader credit infrastructure in India. This includes adoption of digital processes end to end, instant credit decisioning and digital workflows, enhanced early warning and collections processes etc.

Note: 1. Credit bureau coverage as per World Bank Report 2018 means the number of individuals and firms listed in a credit bureau's database as of Jan 2017, with information on their borrowing history within the past five years, plus the number of individuals and firms that have had no borrowing history in the past 5 years but for which a lender requested a credit report from the bureau in the past year.
Source: World Bank Doing Business Reports.

Banking industry needs to adopt new paradigms in digital world

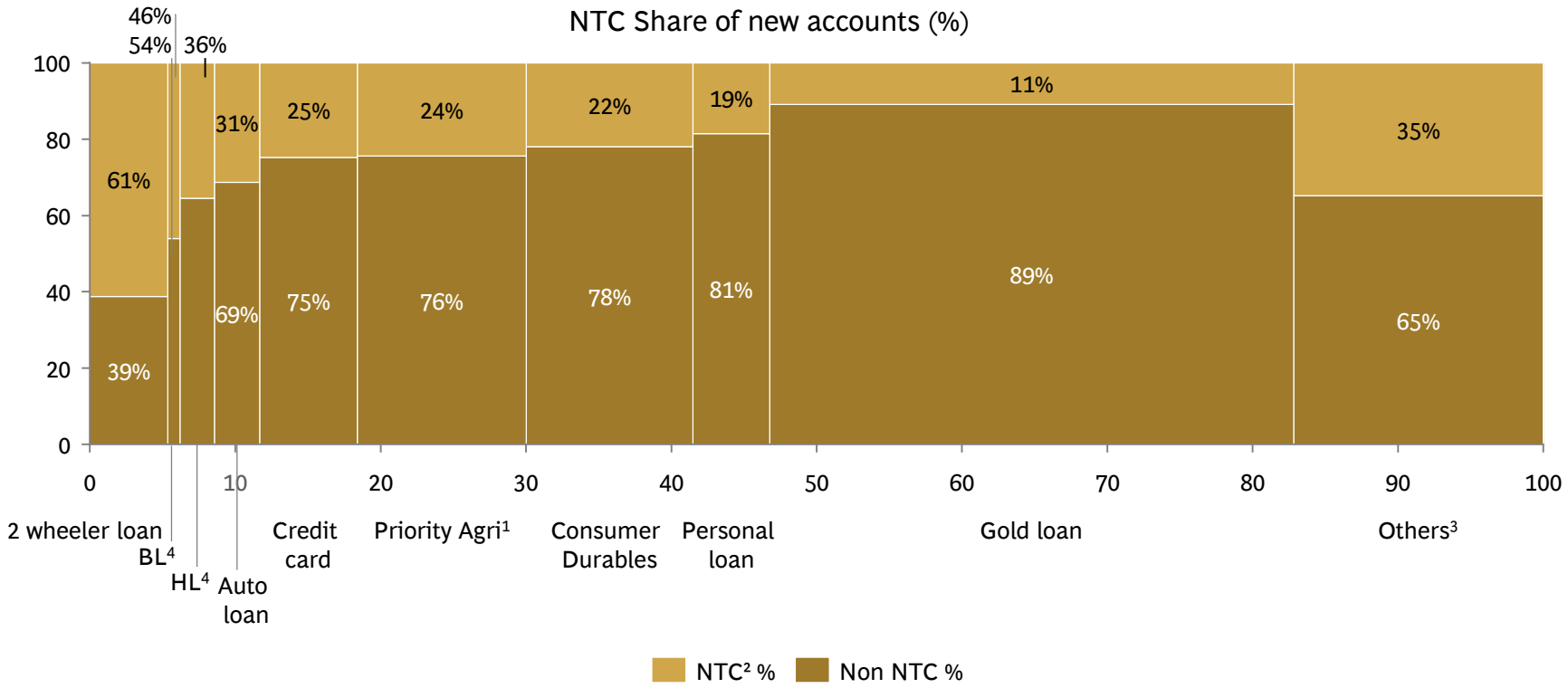
- **Treat data as a strategic asset** and prioritize technology investments that consolidate and monetize data. In many instances, banks' internal data has to be supplemented with external sources to drive maximum advantage. Partnerships for accessing data will need to become a standard feature of strategy in the coming days.
- **Embrace data for credit decisions**; judgment has limitations in a complex world. Analytical credit models will have to supplement banks' traditional capabilities.
- **Paper is by and large not needed**; paper causes delays, increases costs and gives false comfort. Transform processes with an intent to make them as straight-through as possible with only the most essential human intervention that is needed.
- **Faster decisions are better decisions**. Typically, decisions that take longer are the ones that should have been declined but are justified with various arguments over time.
- **Partnerships are critical.** Banks need to open up to partnerships with other players for data access, distribution reach or customer proposition enhancement. This is not a traditional strength of bank

RETAIL & AGRI CREDIT – TRANSFORMATIVE CHANGE

- Supply side disruptions to challenge the robust growth that retail credit (incl. agriculture) has witnessed over the last few years. Proportion of New to Credit customers has been steadily dropping year on year and existing customers are getting over leveraged
- Early signs of stress are visible in select product portfolios even though overall NPA rates continue to be stable. Recent vintages of products like HL and PL are displaying early deterioration. Banks should act quickly to prevent further contagion and impact on the portfolios
- Competition has been intensifying in the retail space. PSU banks market share is declining rapidly and NBFCs are making significant inroads. Receding of PSU banks is hampering extension of credit to new to credit customers – especially in Semi Urban and Rural markets. PSU banks are losing share rapidly in youth population
- Adopting better risk based pricing discipline and over investing in collections infrastructure and data capabilities is critical to address the changes in the market place

Two wheeler is the leader product in signing up New To Credit (NTC) customers

Share of NTC in new loan accounts (CY16)



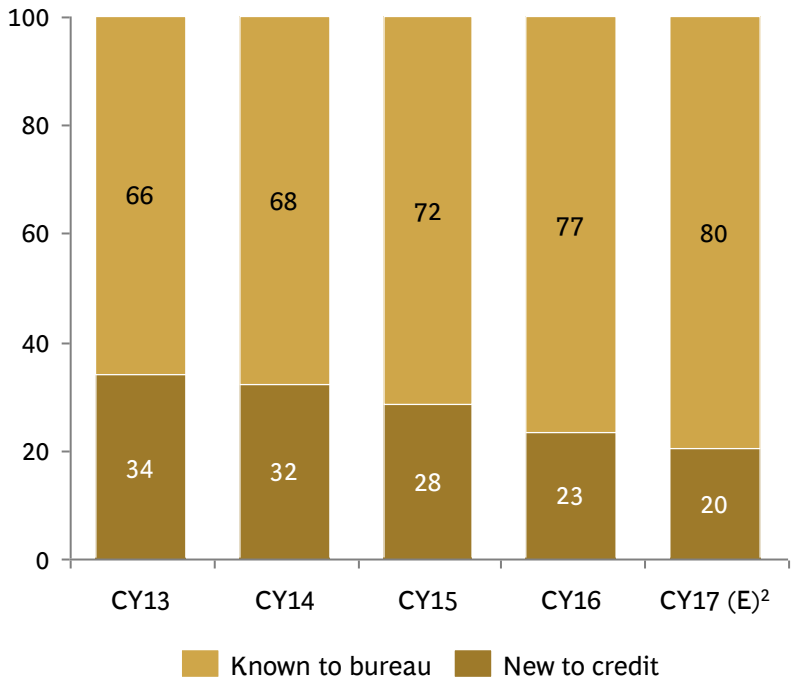
NTC share of accounts opened varies across products. Two wheeler is the product that attracts most NTC customers with close to two-thirds of two wheeler customers being NTC. Home loan and auto loans also attract significant share of NTC. The implication of this for financial institutions is significant – in terms of building portfolio strategies to capture life time value of the customer.

Notes: 1. Priority agri represents priority sector agriculture loans extended to individuals 2. NTC defined as a borrower with no pre-existing bureau history 3. Others include remaining retail products (e.g., commercial vehicles, tractor loans, construction equipment etc.) 4. BL = Business loan, HL = Home loan.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Share of New to Credit (NTC) customers in retail and agriculture has been steadily coming down

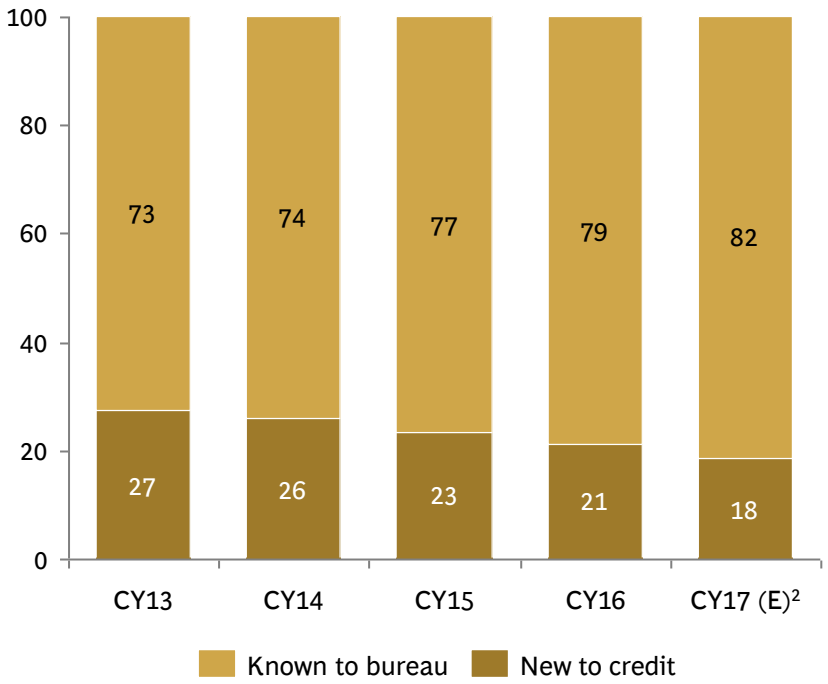
NTC[1] share in loan accounts opened

Share of new accounts opened (%)



NTC[1] share in loan amount disbursed

Share of amount disbursed (%)

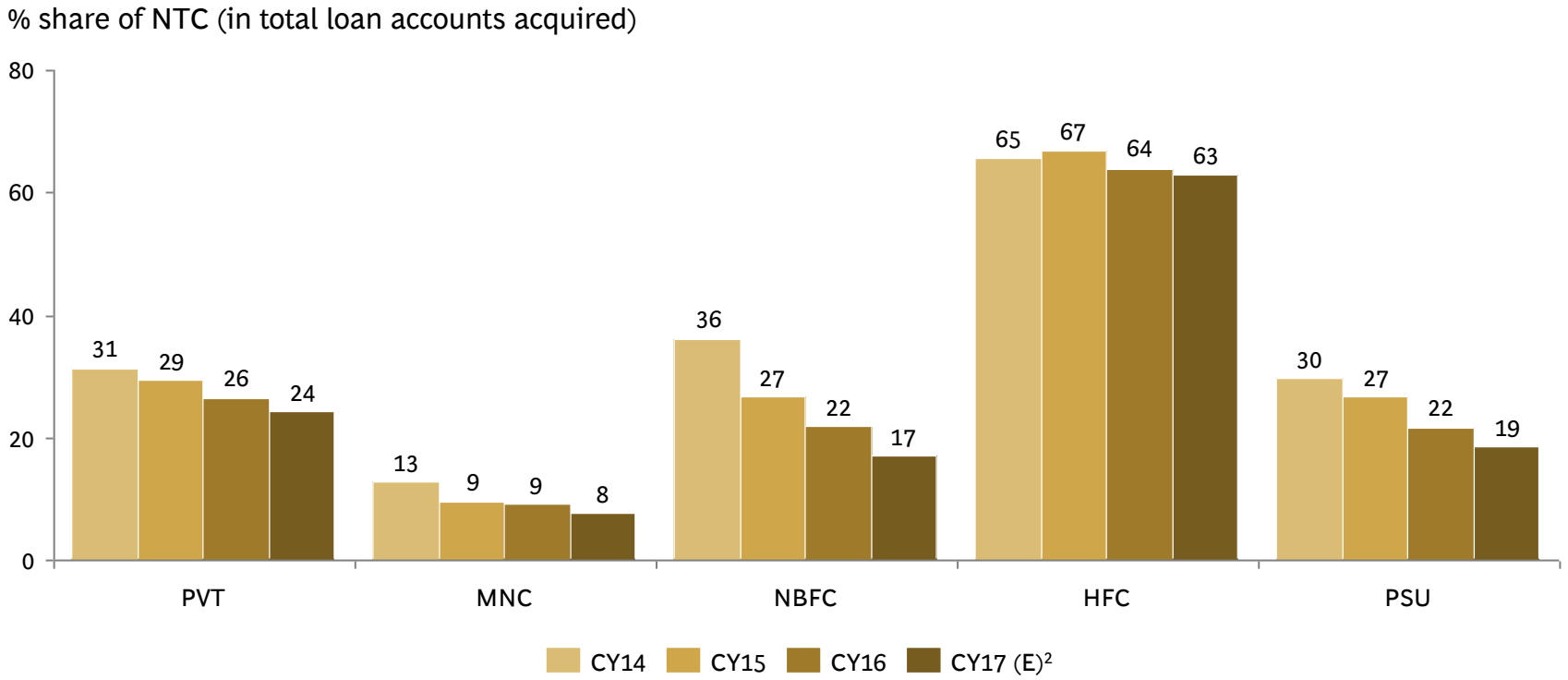


Share of NTC customer, both in terms of number of accounts and amount disbursed is steadily coming down. This can be attributed to significant credit expansion over the last few years and financial inclusion activity resulting in reduced number of individuals without formal access to credit. As greater proportion of bank's business get sourced from customers who already have a credit footprint, ability to leverage both internal and external data effectively to analyze, underwrite and monitor becomes critical.

Notes: 1. NTC defined as a borrower with no pre-existing bureau history 2. 2017 calendar year figures estimated based on Q1 and Q2 data.
Sources: TransUnion CIBIL data and analysis, BCG analysis.

Across the board, NTC accretion has rapidly diminished in retail and agriculture lending

Institution wise share of NTC[1]

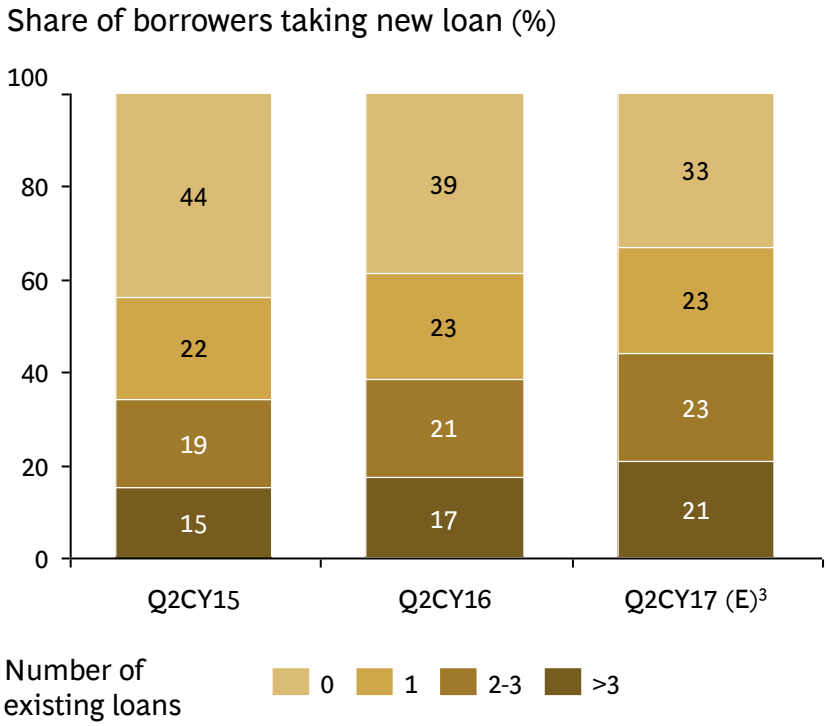


The share of NTC as a proportion of all customers acquired is falling steadily across all institutions. Both NBFCs and PSU banks have shown the maximum decline with PSU banks share in NTC reducing from 30% to 19% and NBFCs share reducing from 36% to 17%. This underlines the trend that increasingly growth in retail will come from existing customers. HFC's NTC proportion has mostly stayed stable as housing loans products continue to attract new to credit customers in fairly large numbers.

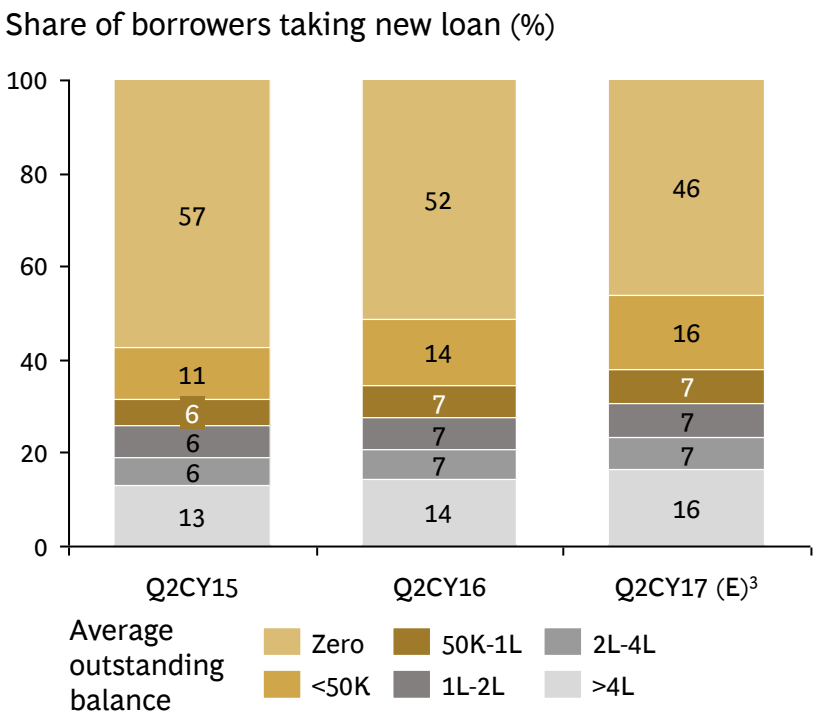
Notes: 1. NTC defined as a borrower with no pre-existing bureau history 2. 2017 full year values estimated on 2014-16 values.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Leverage of retail customers is continuously building up

Product leverage[1] (number of existing loans)



Balance leverage[2] (total outstanding balance)



Overall product leverage is increasing with more than 40% of customers having 2 or more open credits at time of acquisition in 2017 (35% in 2015). Overall balance leverage is increasing with around 30% of customers having >1L outstanding at time of acquisition in 2017 (25% in 2015). This trend is also linked with the overall reduction in NTC as more and more existing customers are targeted for new loans.

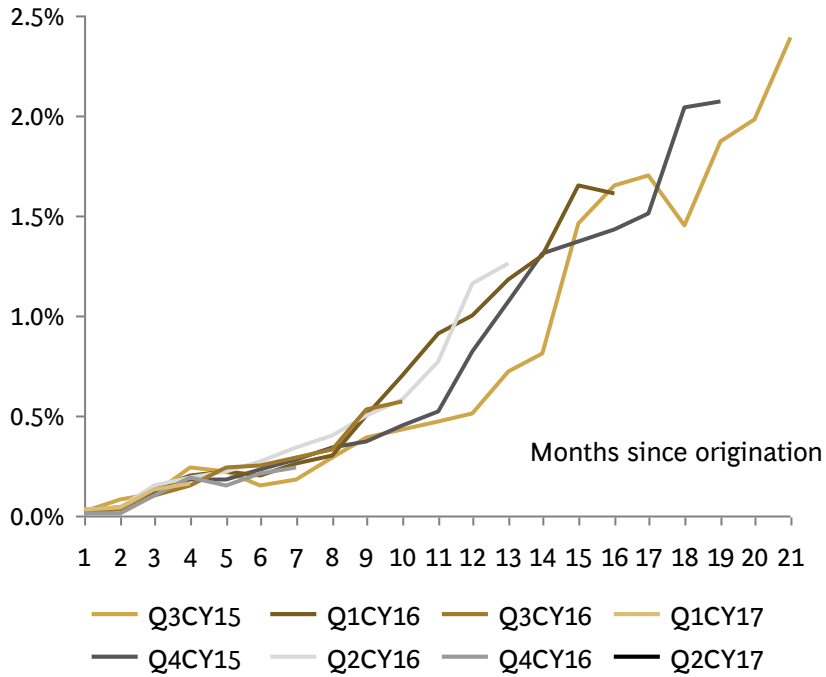
Notes: 1. Product leverage means number of existing loans borrower has while taking a new loan 2. Balance leverage means outstanding balances of existing loans a borrower has while taking a new loan 3. Q2 CY17 has been estimated by applying Q2 CY16's growth over Q1 CY16 on Q1 CY17.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Delinquency rates in retail book are stable; marginal uptick in delinquency in home loan

Delinquencies[1] by select retail products

	Personal loan	Home loan	2 wheeler loan	Auto loan	Consumer Durable	Gold loan	Overall retail
Q3 CY15	0.9%	0.7%	3.0%	2.3%	2.5%	1.1%	2.3%
Q4 CY15	0.9%	0.7%	3.2%	3.8%	2.5%	0.9%	2.6%
Q1 CY16	0.8%	0.7%	2.9%	3.4%	1.9%	0.7%	2.4%
Q2 CY16	0.9%	0.9%	3.3%	3.6%	2.6%	0.7%	2.8%
Q3 CY16	0.9%	0.8%	2.7%	3.4%	2.8%	1.2%	2.6%
Q4 CY16	0.9%	0.9%	3.5%	3.4%	3.1%	1.0%	2.8%
Q1 CY17	0.8%	0.9%	2.7%	2.7%	3.0%	0.8%	2.9%
Q2 CY17	0.9%	1.0%	2.9%	2.9%	2.3%	0.8%	2.9%

Home Loan delinquencies by vintage[2]

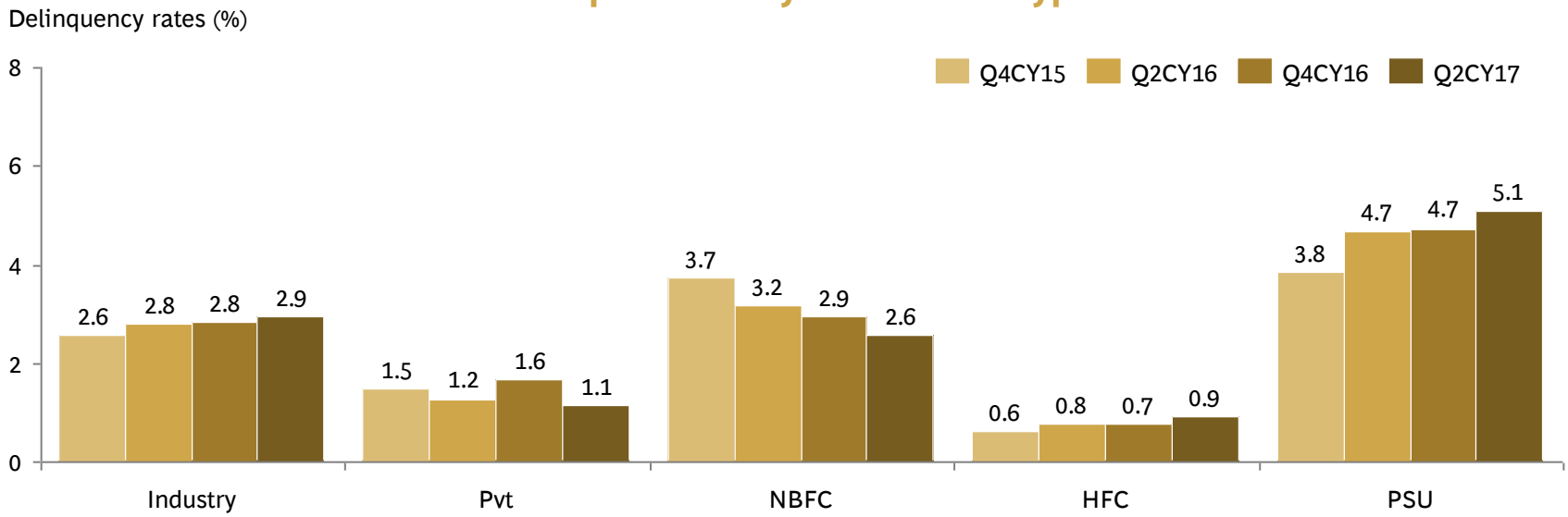


While the overall rate of retail (incl. agri) delinquencies are broadly stable, signs of slight uptick are emerging in select products. HL is displaying marginal deterioration in portfolio quality over the last few quarters with analysis of vintages indicating that home loans originating in 2016 showing deterioration. With home loans occupying large % of the total retail book, any further deterioration would impact overall retail portfolio and adjoining sentiment around retail lending. Analysis of vintage curves for other products indicate early deterioration in recent vintages (e.g. PL). The deterioration in portfolio is relatively under manifested in portfolio metrics such as coincidental delinquency rate due to growing loan disbursements in denominator. Focus on building early warning systems and a robust collections process is critical to addressing the portfolio health.

Notes: 1. Delinquencies calculated basis accounts in 90-179 DPD 2. Vintage curves calculated basis accounts in 90 DPD or higher.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Delinquencies are showing steady uptrend for HFC and PSU banks

Delinquencies by institution type



Amount disbursed CAGR (CY16 over CY14)	17%	19%	31%	23%	9%

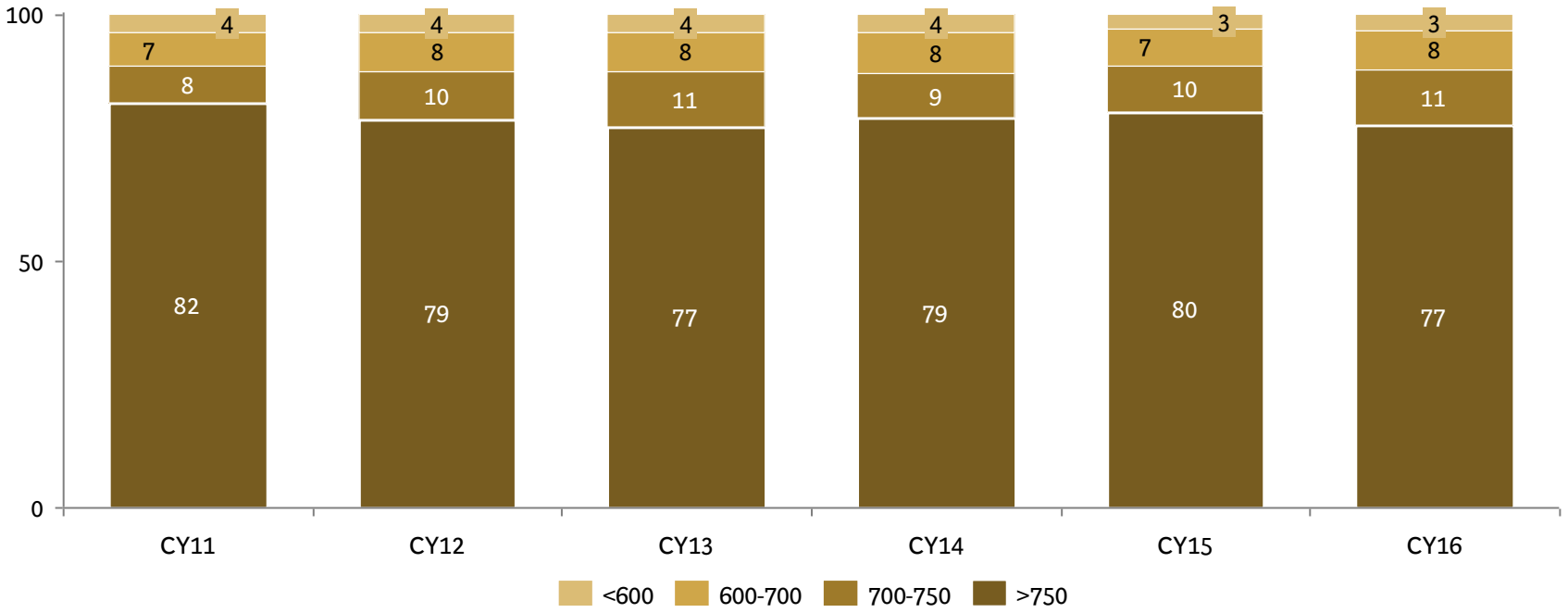
Overall delinquency rates in retail (including agriculture) are broadly stable in the last few quarters. PSU banks and HFC delinquencies however are showing marginal uptick. This can be attributed to the higher share of these institutions within the home loan segment that is displaying early portfolio deterioration. For NBFCs and HFCs, while the overall portfolio delinquency is showing a downward trajectory, it should also be noted that these institutions also displayed the most increase in disbursements over the last few periods that could suppress the delinquency ratios.

Note: Delinquencies calculated basis accounts in 90-179 DPD.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

New customers with stable credit profiles –risk based pricing to push sub prime lending & enhance coverage?

CIBIL score distribution of retail customers acquired

Share by credit score ranges of customers acquired (%)



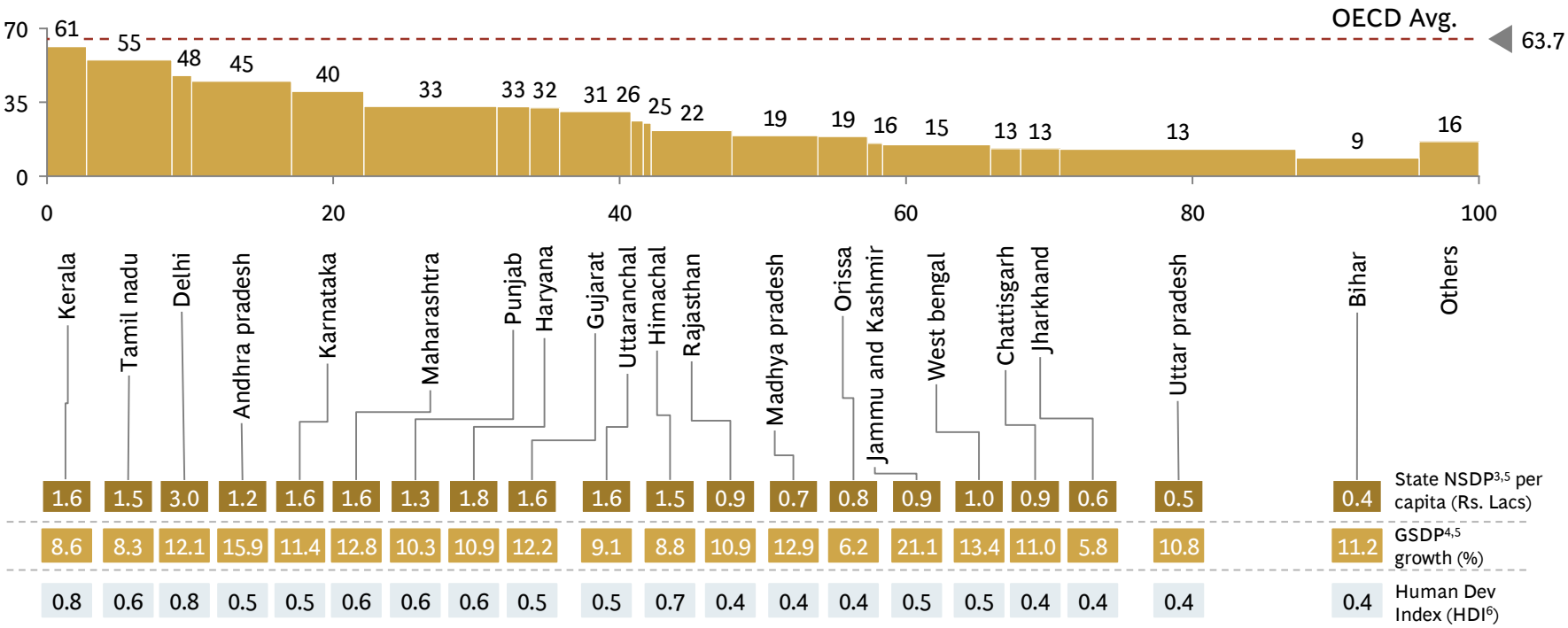
Credit profile of customers acquired by financial institutions have broadly remained stable over the years across different score ranges. The score distribution indicates that financial institutions have focused more on the higher end of the credit spectrum with >75% of customers acquired belonging to the 750+ credit score. The market potential in the below prime segment is therefore not explored enough and presents financial institutions with an opportunity. Adopting a risk based approach to pricing of loans is also critical to price in the additional risk.

Note: Based on ranges of CIBIL TransUnion V1 Score of customers acquired in first quarter of each year.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Certain states in India are highly underpenetrated; Structural measures needed to generate NTC customers

State-wise retail credit coverage

Borrowers[1] as a % of adult population[2] (%)

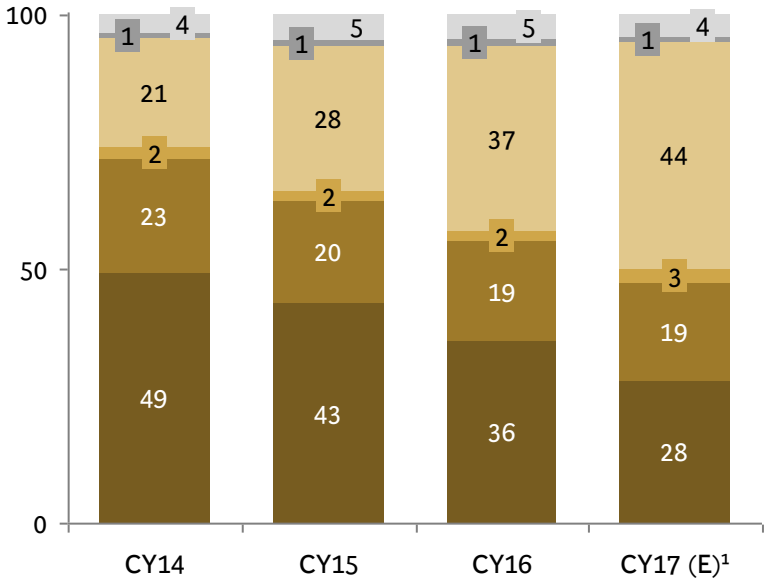


The credit penetration in India varies across states with certain states being close to the OECD average in terms of penetration. While credit opportunity exists in underpenetrated states, capturing this potential requires significant structural changes especially in the social-economic front.

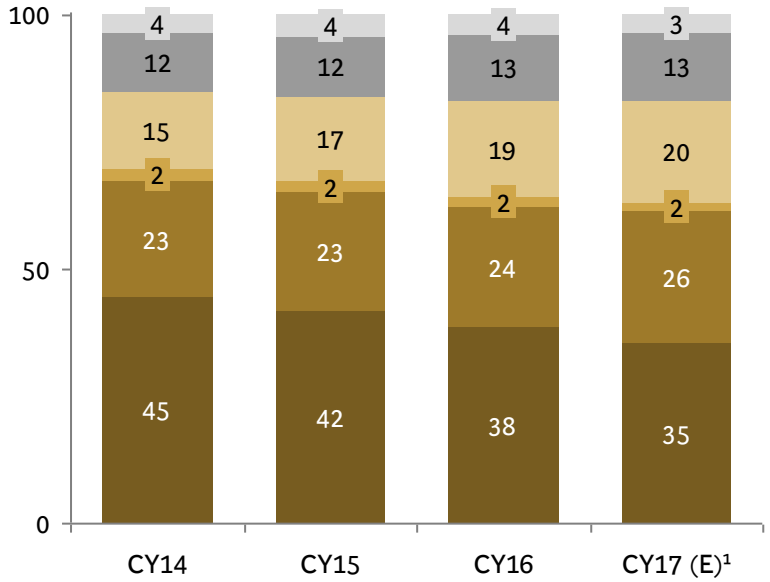
Notes: 1. Borrowers mean unique borrowers in TransUnion CIBIL Bureau (live + closed) 2. Adult Population for 2016-17 estimated basis census data for 2011 3. State NSDP per capita is for 2016-17 4. GSDP growth rate is taken for year 2015-16. 5. GSDP,NSDP data is at current prices 6. HDI index pertains to 2007-08.
Sources: TransUnion CIBIL data and analysis; MOSPI; NITI Aayog; India Human Development Report by Planning Commission; BCG analysis.

Share of PSU banks rapidly declining; NBFCs have had unprecedented growth

Share in number of loans taken (%)



Share in amount disbursed (%)



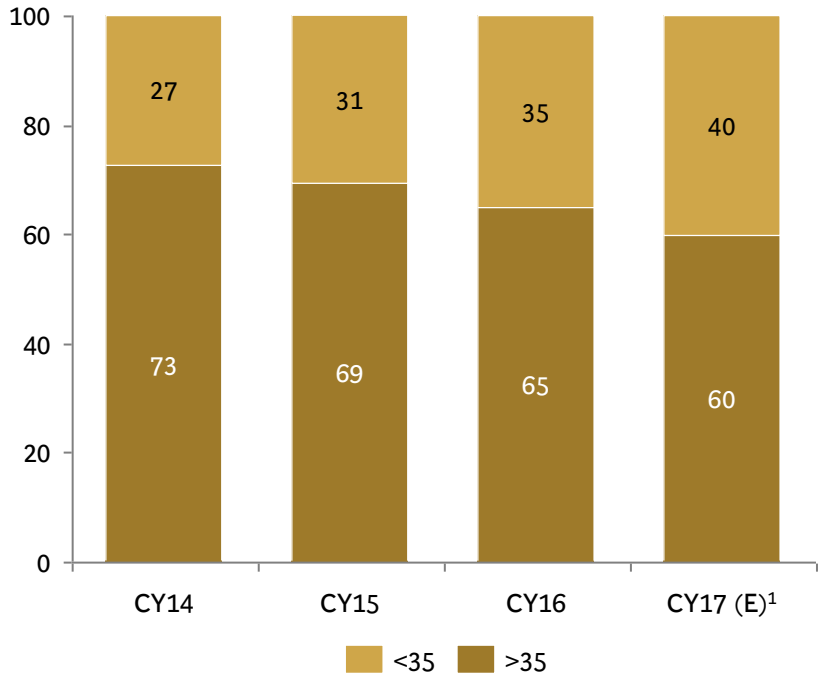
PSU PVT MNC NBFC HFC Others²

Share of public sector banks in total retail (incl. agri) credit has come down significantly both in terms of number of loans and amount disbursed. NBFCs have expanded their share rapidly, particularly in the number of loans disbursed – primarily driven by their aggressive push to expand and capture market in CD and Gold. These products have low average ticket sizes which are continuing to fall further, resulting in lower share of the amount disbursed. Private bank's share of the amount disbursed is also increasing in spite of reduction in share of number of loans – primarily driven by their focus on larger ticket loan products.

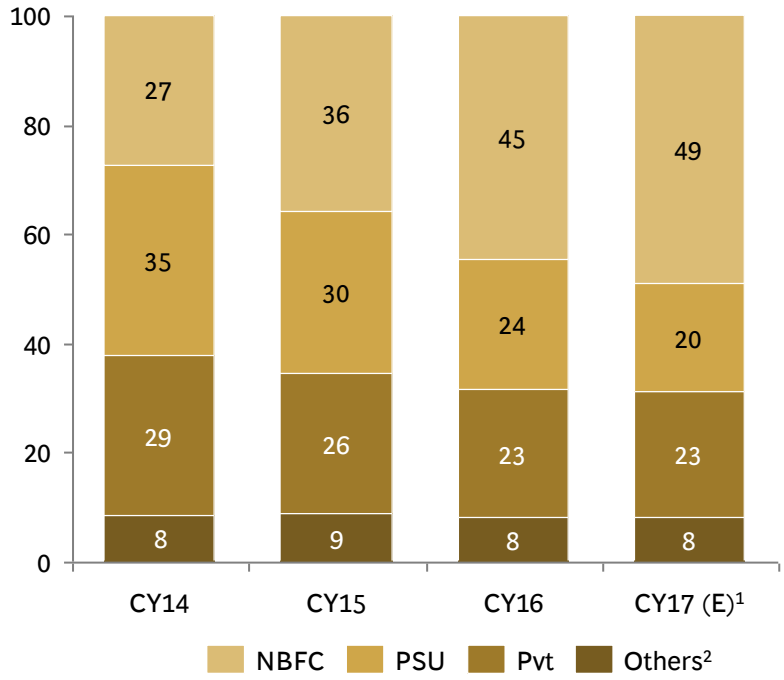
Note: 1. 2017 calendar year figures estimated based on Q1 and Q2 data 2. Others include regional rural banks, co-operative banks, state finance corporations etc.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Dramatic shift in age profile of borrowers – NBFC gaining disproportionate share in youth segment

% share of age groups in loan accounts



% share of institution in loans taken by 21-35 age group



Share of youth in new loans taken has been increasing steadily over the last few years. NBFCs, with their focus on lower ticket early credit lifestage products, have gained close to 50 percent share of the loans in the youth segment. Both PSU and private bank's share of the loans taken by youth have declined over the last few years.

Notes: 1. 2017 calendar figures estimated based on Q1 and Q2 data 2. Others include HFCs, MNCs, regional rural banks, co-operative banks, state finance corporations etc.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

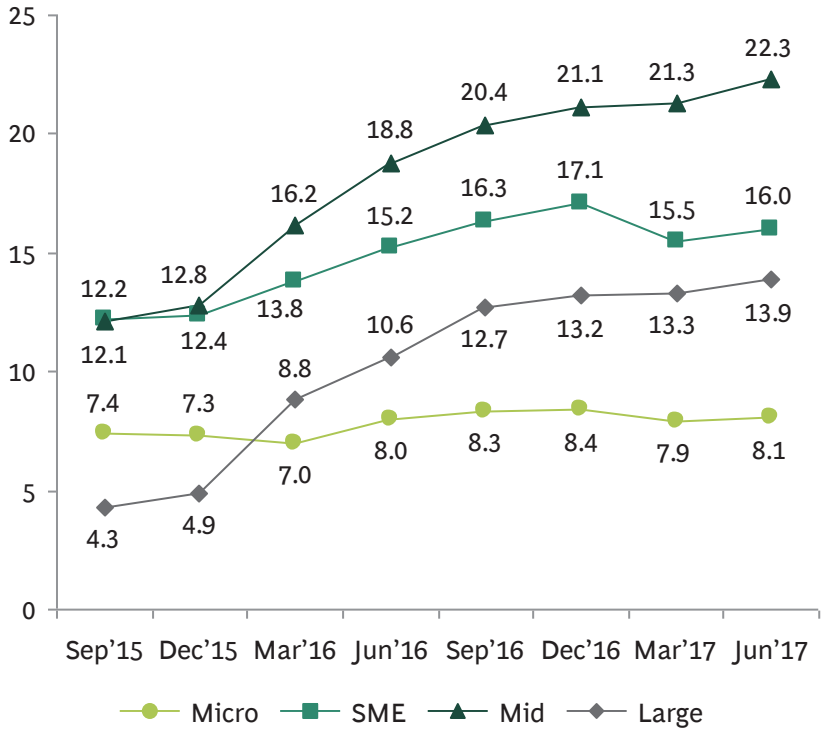
COMMERCIAL CREDIT – NEW MODELS NEEDED

- NPA in commercial lending are very large and have been growing. It is broadly recognized in the industry that the pain of provisioning will stay for next few years as the industry deals with significant additional slippages beyond what has been recognized so far.
- New models for commercial credit are needed to unlock the growth potential. Banks need to rely a lot more on non-financial surrogate data to build credit and early warning models. With advances in bureau, public digital platforms like GSTN, and proliferation of API approach, this is a real possibility today.
- Private sector and NBFCs are continuing to capture market share from PSBs across all key segments. The market share loss is severe in small and micro segment; which are more attractive.
- MSME segment is emerging as the silver lining for commercial lending. This segment is severely underpenetrated and has lower NPAs and better pricing advantage and provides bank's with a unique opportunity to build disproportionate growth.
- Opportunity also exists for banks to optimize the regional coverage models for MSMEs by devising focused strategies to expand the book. Like in retail and agriculture, there is major regional disparity in penetration of MSME credit. Full potential of credit access is ultimately critically dependent on policy interventions for broad based regional economic growth.

Delinquency rates have gone up significantly; smaller end of SME portfolio has held well

Loan Type[1]	Number of Unique Borrowers (In lacs.)[2]	2017 outstanding (Rs. '000s Cr)[3]	NPA rates[3]
Large	0.2	2,300	13.9%
Mid	0.2	1,070	22.3%
Small	10.8	1,250	16.0%
Micro	40.4	490	8.1%
Total	**51.5**	**5,110**	**15.6%**

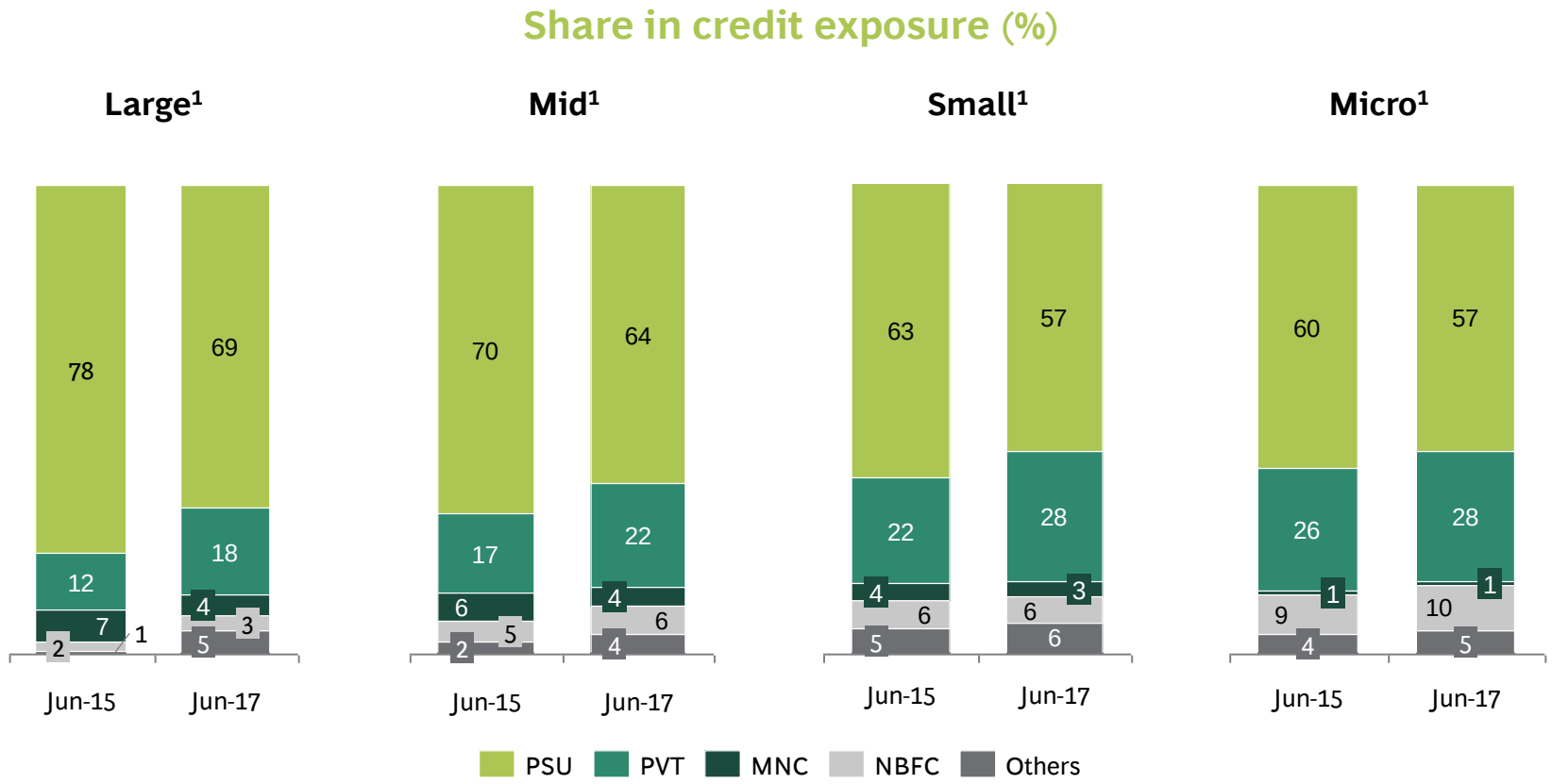
Segment wise delinquency[4] trends



The total on balance-sheet commercial lending in India stood at Rs. 51.1 lac crores in 2017 with large loan types constituting close to ~45% of outstanding. The overall NPA of commercial lending stood at 15.6% in 2017, representing an increase from 13.2% previous year. The NPA rates are highest in the mid corporate and larger SME segments that also represent significant exposure in the commercial lending space. Micro sector is the best preforming sector currently in commercial lending in terms of delinquency trends over the last few years.

Notes: 1. Commercial loans classified into various segments basis ticket size of loan amount disbursed , Micro <1 Cr, Small 1cr-25cr, Mid 25cr-100cr, Large >100 cr. Stated credit exposure is fund based
2. As of March 2017 3. As of June 2017 4. Loans with 90+ DPD (days past due) or asset classification as sub-standard/ doubtful/ loss (technically equivalent to gross NPA).
Sources: TransUnion CIBIL data and analysis; BCG analysis.

PSBs losing share; private banks & NBFCs filling the vacated space with higher presence in small and micro

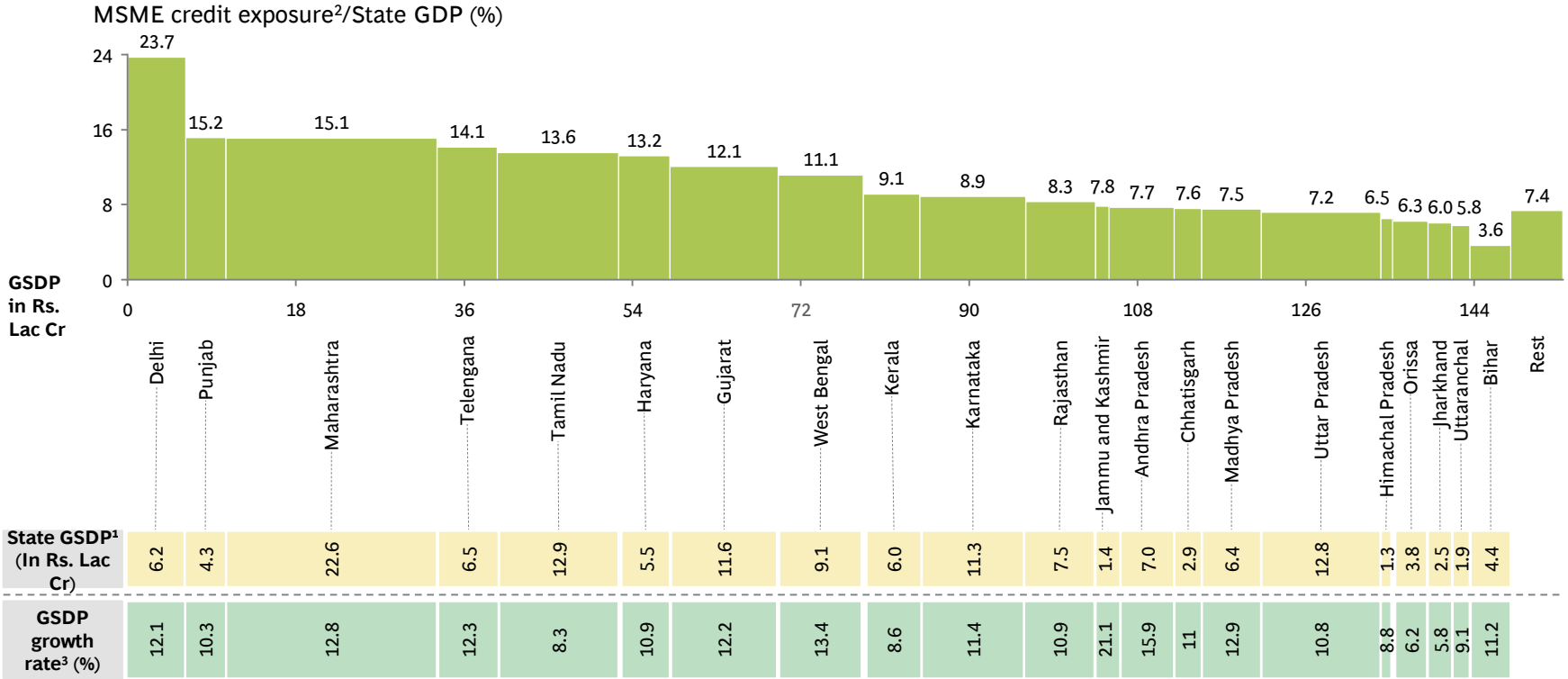


The share of public sector banks in commercial lending has been steadily decreasing in all commercial segments. Private banks and NBFCs are the main beneficiary of this market share shift. The most share loss for PSBs has been in the large and medium segments. Micro segment, despite being the most attractive from a return and risk perspective, has seen the least share shift of all segments.

Notes: 1. Commercial loans classified into various segments basis ticket size of loan amount disbursed , Micro <1 Cr, Small 1 Cr-25 Cr, Mid 25 Cr-100 Cr, Large >100 Cr; data as of June 2017 2. Others include public and state FIs, RRBs, co-operative banks etc. that submit data to TransUnion CIBIL. This does not include data from Rural Electr. Corp and non-private sector lending of Power Finance Corp.
Sources: TransUnion CIBIL data and analysis; BCG analysis.

Significant regional disparity in penetration of SME credit needs structural solutions

State-wise MSME credit coverage



The MSME credit penetration displays significant disparity across states when normalized for gross domestic product. This represents significant opportunity for financial institutions as they explore strategies to expand their MSME book. However, it is also important to take into account the underlying factors contributing to the low MSME penetration. In case of several of these states, structural issues exist in the economic and business dimensions that needs to be addressed first. Deliberate effort at the policy level is required to overcome these structural barriers and trigger the untapped growth potential in MSME.

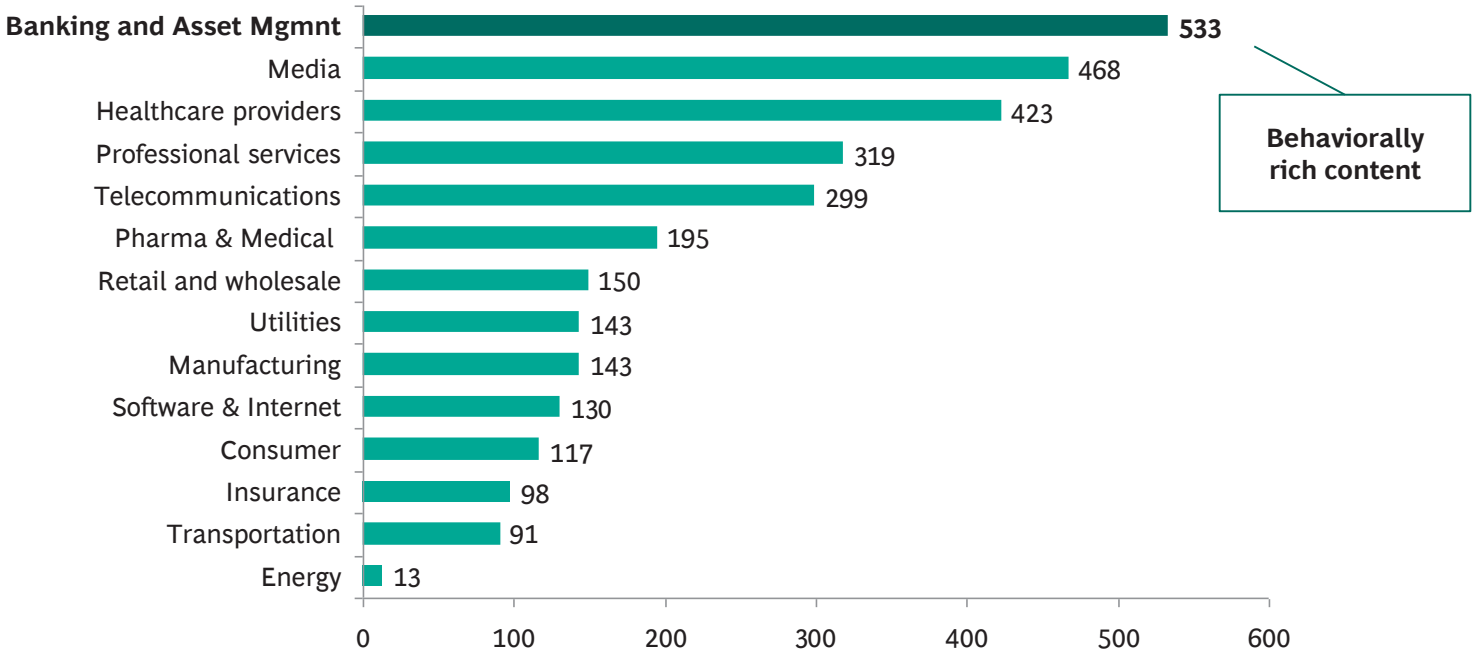
Notes: 1. State GSDP (Gross State Domestic Product) is for 2016/17 (actual/estimated based on 2015-16/2014-15 growth rates), GSDP is at current prices. 2. Credit exposure taken as of March 2017 3. GSDP growth rates is for year 2015-16
Sources: TransUnion CIBIL data and analysis; MOSPI; NITI Aayog, BCG analysis.

SMARTER USE OF DATA – RS. 3 LAC CRORE OPPORTUNITY

- Banks have a natural advantage in the data world: they have more data per unit of revenue than any other industry – 5330 GB per Rs. Cr of revenue
- Harnessing this power can potentially uplift the sector level ROA by 0.4 percent – adding Rs. 3 lac Cr to bottom-line in 5 years
- We have observed that banks globally deploy 45 high priority use cases of big data across the business model components
- For achieving this potential banks need to build the "memory" and "brain" to unlock the data potential
- Memory is built by building a massive data lake that can house vast volumes of data in a cost efficient manner
- Brain requires building algorithms and use cases that unleash the value of data

Banks have a natural advantage in the data world

Current data intensity by industry
(Installed gigabytes per revenue Rs. '000s Cr)



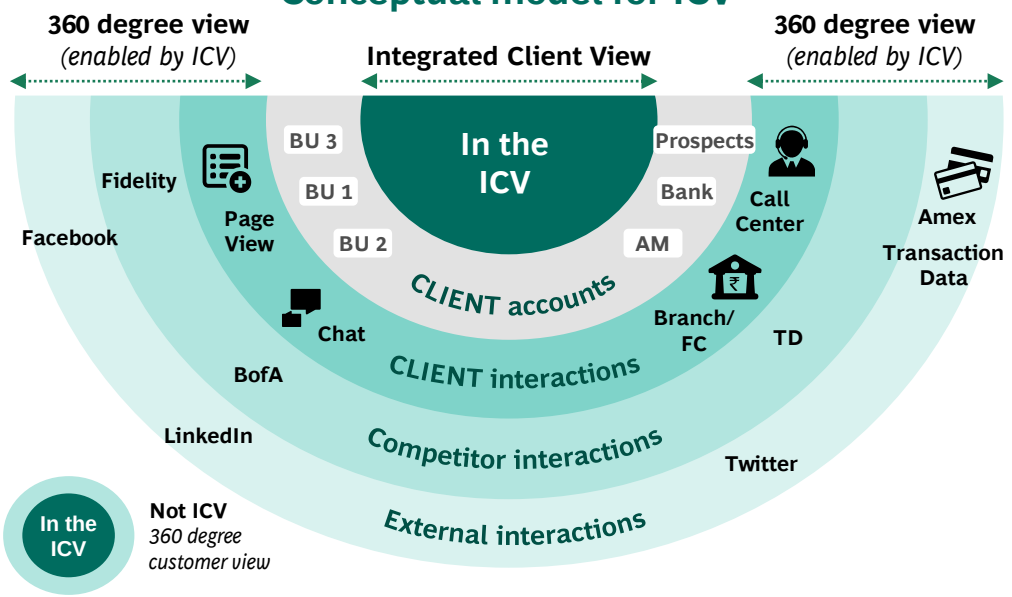
The amount of data available to banks per unit of revenue is unparalleled. This data is very rich can if utilized well can reveal the full financial GENOME of the customer – individual or corporate. It is up to the banks to leverage this vantage point to serve their clients' and their interests better.

Source: BCG analysis.

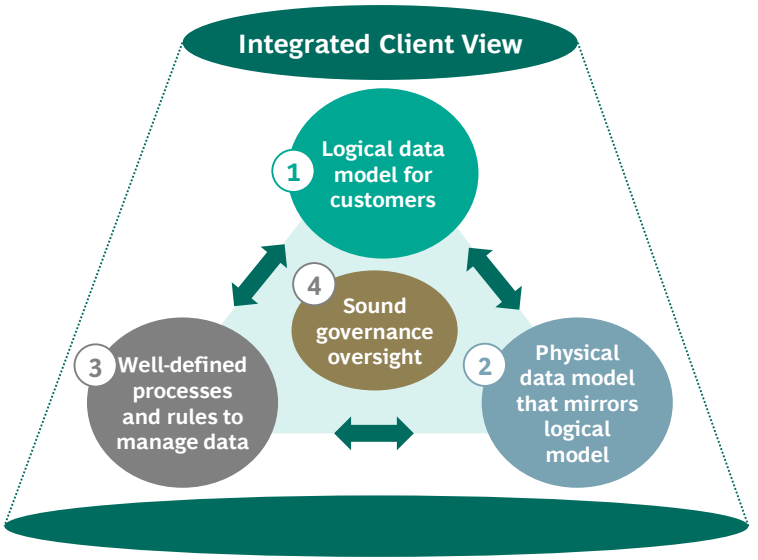
Unlocking value: A large global bank built Big Data capabilities around 'integrated client view'

Description	**Build an Integrated Client View (ICV) of bank customers (beyond the product ownership view)** • How does customer use various channels? • Which other financial institutions does the customer bank with? • What does his social media profile and network tell us about the customer?
Approach	**Required managing high volume and complex variety of data:** (i) Internal databases, (ii) websites, (iii) mobile data, (iv) clickstream data, (v) call center logs, (vi) sales force notes, (vii) Twitter / Facebook / LinkedIn, (viii) News reports, (ix) Demographic data etc

Conceptual model for ICV



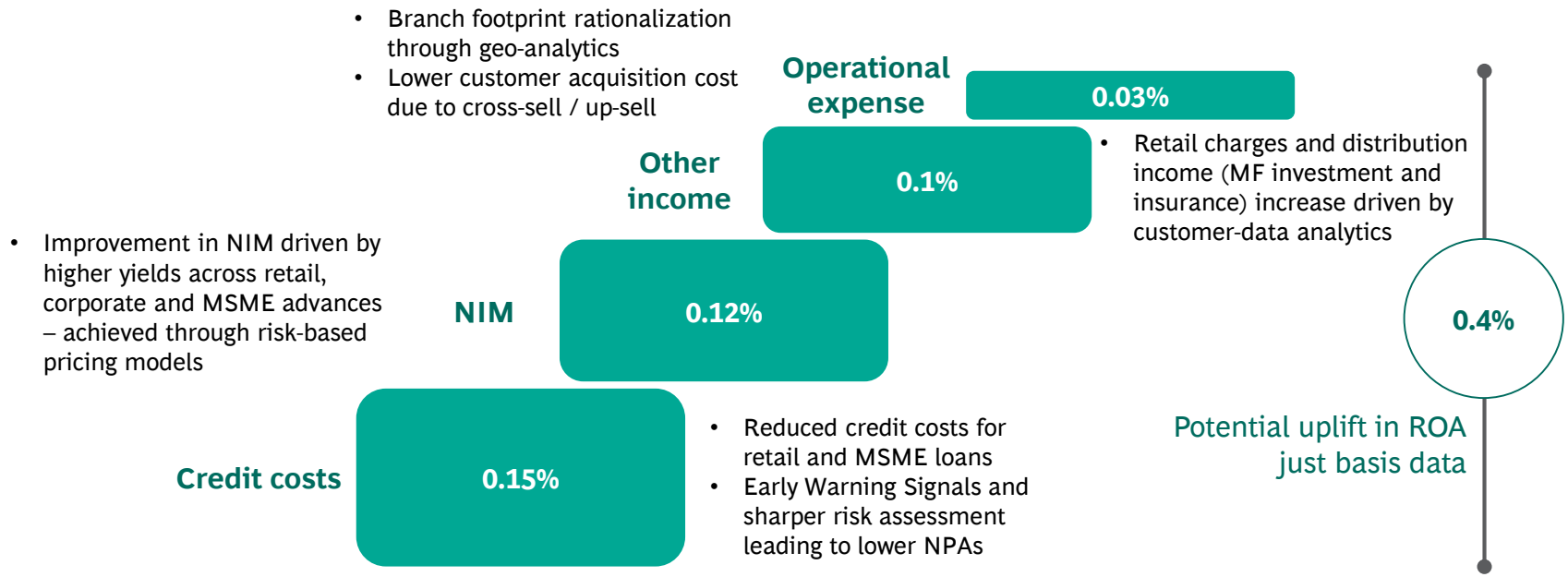
Initiatives undertaken to deliver ICV



ICV was converted to customer attractiveness rating using scoring models to map customer attributes to attractiveness (e.g. gym membership) and stickiness (e.g. complaint log, demographic)

Source: BCG analysis.

Harnessing this power will uplift the ROA by 0.4 percent adding Rs. 3 lac Cr to bottom-line in 5 years

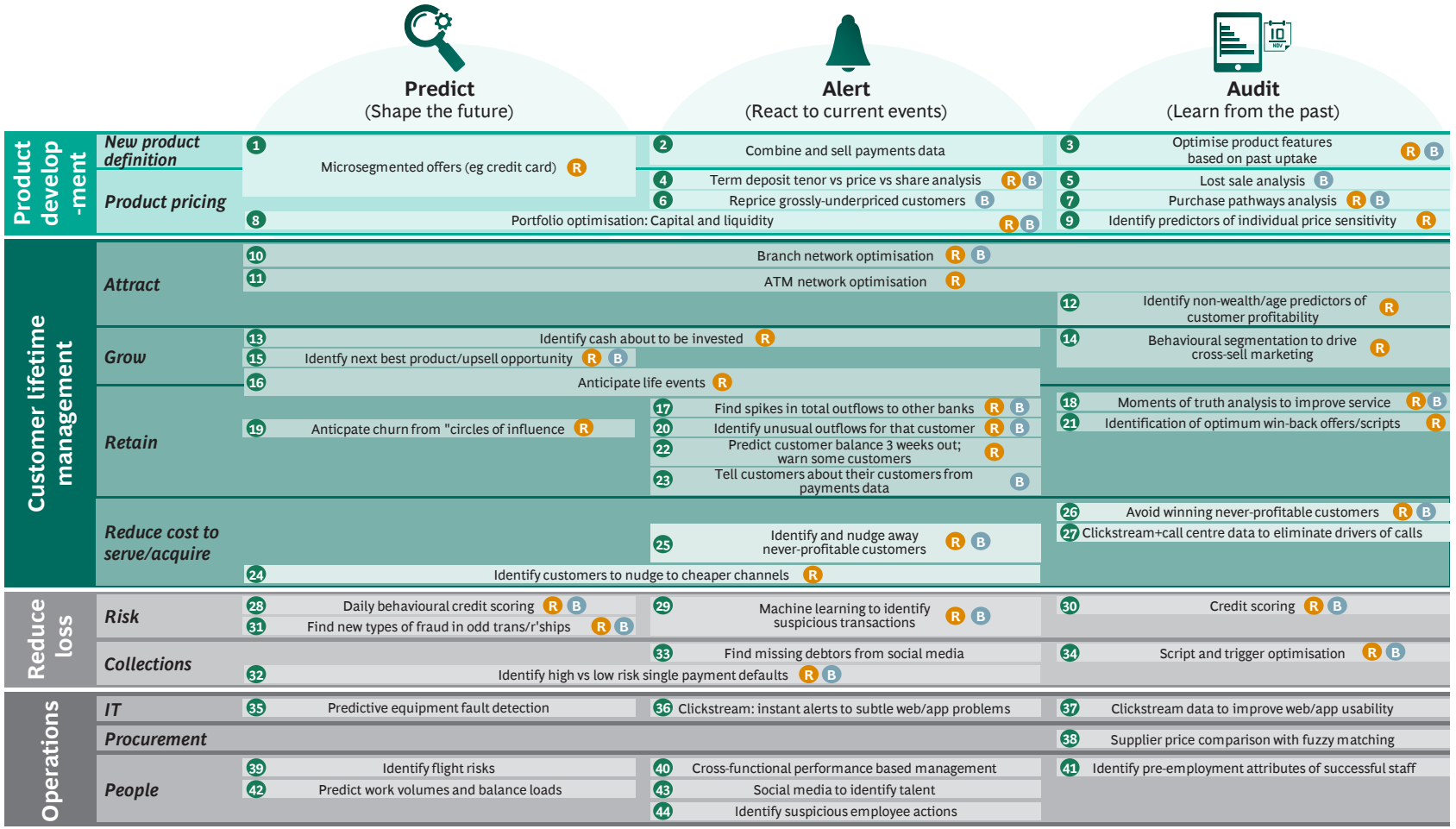


ROA increase by 0.4% is equivalent to Rs. 50,000 Cr and a cumulative benefit of Rs. 3 lac Cr in 5 years for the Indian banking industry

Comprehensively using data across the ROA driver tree can unlock value for the bank significantly. Levers like differential pricing, sharper credit risk assessment and early warning systems will drive ROA improvement through better income and lower NPAs. Customer analytics can help reduce regrettable churn, increase engagement and drive sales. Optimizing physical footprint to drive branch network productivity can reduce cost income ratio and improve efficiency. Our experience indicates that if deployed appropriately, the industry can witness an uplift of 0.4% in ROA over the next five years. Refer to next exhibit for details on potential use cases.

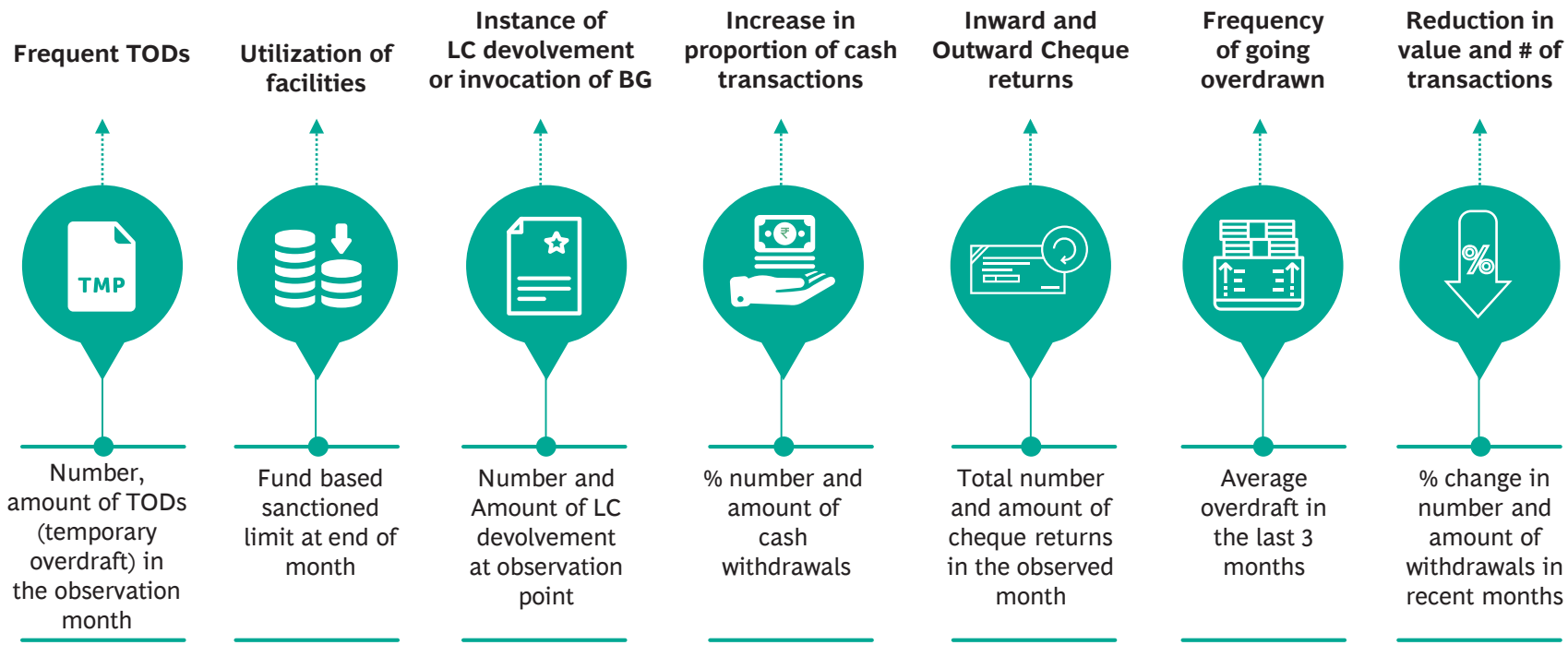
Source: BCG analysis.

Banks globally deploy 44 high priority use cases of big data across the business model components



Source: BCG project experience and research.

Example – Credit Risk Assessment: conduct of account data is most powerful in assessing risks



While the account data can help us improve our reactive and predictive capabilities, it also presents exciting new possibilities for mitigation of risk in the present. Account data along with the right analytical tools will be an enabler for making informed decisions in real time and defending the markets and individual institutions against vulnerability to shocks. Developments in this field can be daunting. However the same is already proving to be safe, effective and value-adding. Account data could provide answers to questions that did not exist at the start.

Source: BCG analysis.

For achieving the full potential: banks need to build 'memory' and 'brain'



Memory

Big Data Lake

Massive repository of internal and third party data of different formats and structures



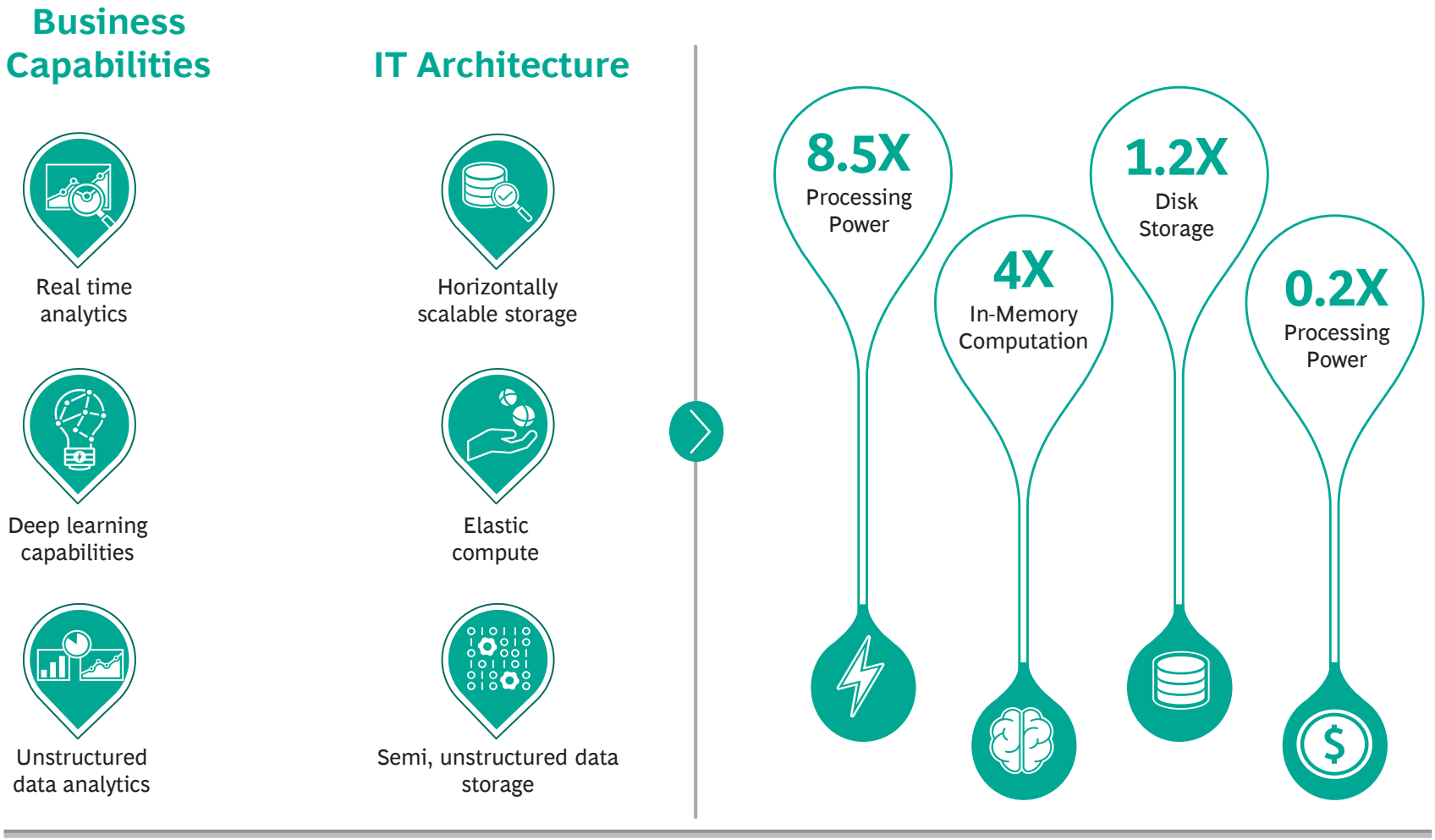
Brain

Analytics

Advanced analytics and machine learning algorithms that use the data to produce insight

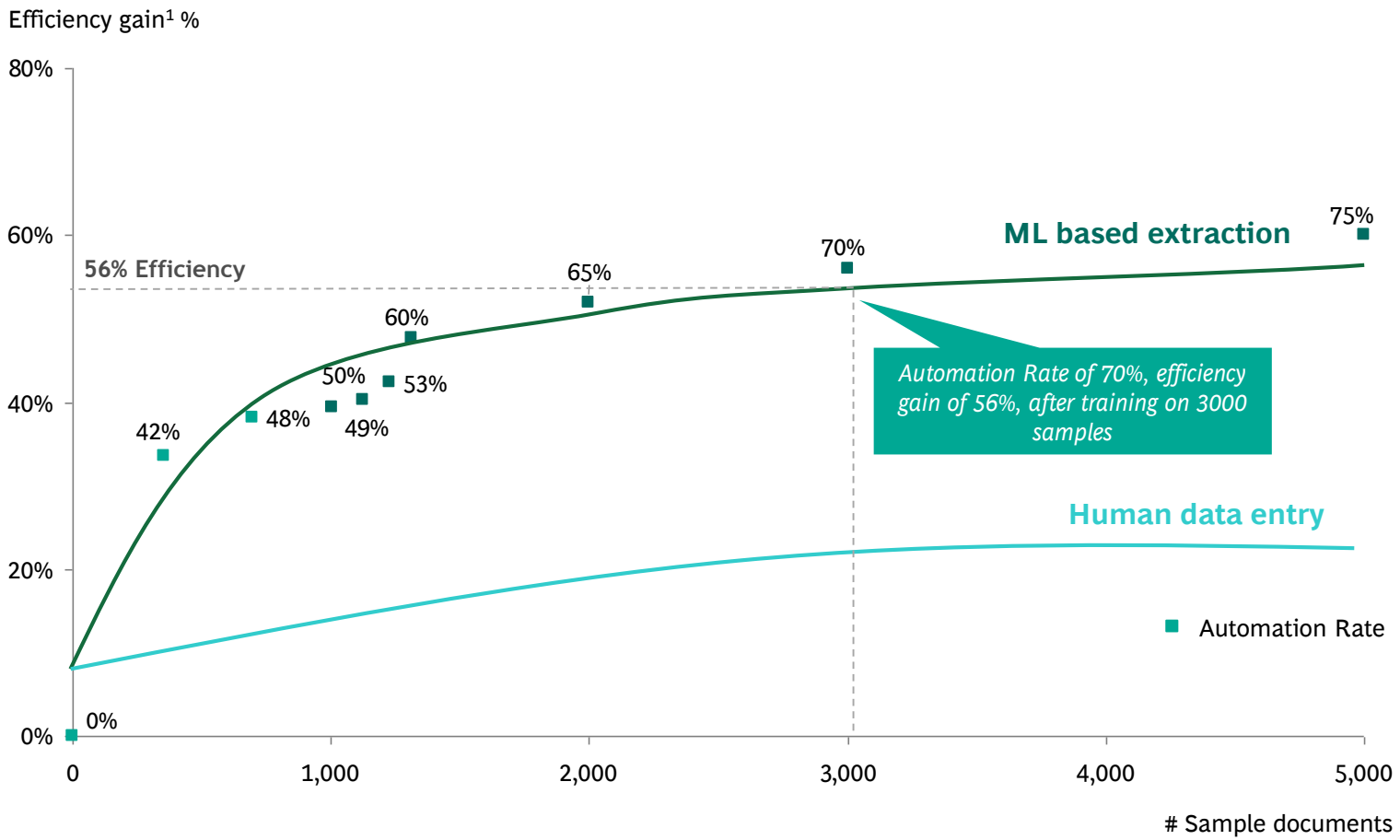
Source: BCG analysis.

Example – Power of data lake: completely new business capabilities built on differentiated data architecture



Source: BCG analysis.

Example – Power of machine learning: efficiency gain for doc. identification, classification and data extraction



Note: 1. Efficiency Gain for ML based extraction: Baseline is data tagging time with zero automation rate, and defined as ratio of time saved on baseline tagging time. Efficiency Gain for Human: Baseline is data entry time during first day of employment, and defined as ratio of time saved with experience on baseline data entry time.
Source: BCG analysis.

Imperative for the Central Government, State Governments, and the regulator (I)

Regional disparity in economic development is the ultimate hurdle. Penetration of retail or MSME credit varies very significantly across states with some of the states reaching very advanced penetration while other trailing behind quite severely. Clearly, despite the overall numbers of credit penetration being low for the country, there is a natural limit to what banks can push on their own. A de-averaged view of credit penetration clearly demonstrates the imperative for structural economic agenda for the central and state governments in spurring development agenda, economic reforms, and job creation.

Bolster surrogate data availability. Bureau infrastructure in the country is world class – thanks to the powerful enabling legislation. Banks and policy makers are yet to full recognize its value and deploy the insights in strategy and policy formulation. Bureaus provide data that is invaluable to banks in lending in absence of reliable financials. Policy makers need to strengthen banks and bureaus with additional data fields to bolster the quality of insights they can infer regarding credit quality of potential borrowers. Potential areas are utility bill payment information, tax information to various government departments making it electronically accessible to potential lenders and transaction and payments data that is very powerful predictor of credit behavior.

Augment bureaus with bond market data. In order to support the development of wholesale funding, access to bureau may be provided to institutional investors in bond market and conversely bond market data submitted to bureau.

Source: BCG analysis.

Imperative for the Central Government, State Governments, and the regulator (II)

Expedite consent architecture to democratize data access. There is significant innovation taking place in retail as well as commercial lending – especially at the lower end of the ticket size spectrum. Such innovation is extremely helpful for inclusion agenda. However, the most precious fuel for such innovation is not risk capital or entrepreneurial spirit but availability of data. Government and Regulator have to create enabling environment to ensure data is made available to the FinTech start-ups. This could take form in two ways:
Expedite the electronic consent architecture so that any customer can provide electronic consent for a potential lender to access her transaction records electronically with the customer's transaction bank and utilities. This will also provide avenue for fee income to the transaction banks and utilities and help monetize their assets. Encourage banks and bureaus to provide data as "public good" to FinTech industry in sand box model.

Strengthen accounting standards and quality. Banks discharge their role with help of supporting infrastructure provided by a host of supporting ecosystem – contract enforcement and bankruptcy resolution, credit rating, information bureau, and accounting & audit service providers. Policy makers need to find ways to take the quality and authenticity of audit and accounting service to the next level to provide bankers with more reliable information to take decisions on. Self-regulatory mechanism of the audit industry has to be bolstered and also higher accountability for quality.

Source: BCG analysis.

GLOSSARY

REVENUE POOLS AT AN INFLECTION

Classification of corporates by size (Revenue in FY2016-17):
Large: Revenue of more than INR 1,000 crores
Mid: Revenue between INR 250–1,000 crores
Small: Revenue INR 250-100 crores
Micro: Revenue of less than 100 crores

Classification of corporate banking products: Lending products include term loans; Transaction banking (credit enabled) include working capital finance, trade finance and supply chain finance; Transaction banking (non–credit enabled) includes cash management, current account, payroll account, forex products and custodial services; Capital market and advisory products include capital market products, insurance and investment managements).

Retail Advances: Includes advances given for home loans, personal loans, education loans, auto loans, credit card loans, loans against deposits & shares, non-agriculture jewel loans and other retail loans.

Micro, Small & Medium Enterprises (MSMEs) Advances: Includes advances given to entities defined as MSMEs by RBI.

Corporate Advances: Includes advances given for working capital and term loans, given for business purposes to corporates other than Micro, Small & Medium Enterprises.

Banking products: Total of 14 products, including personal savings account, current account, credit cards, online banking, online payments, term loans, insurance, mobile banking, working capital finance, point-of-sale terminal, wealth management, online share trading, trade finance, supply chain finance.

Traditional lending segment: Lending products include personal loan, term loan, home loan

Retail Commissions: These consist of fee income earned through mutual fund brokerage, insurance commissions and other miscellaneous retail commissions.

E-Estimated

INDIA'S EDGE IN DIGITAL & DATA

Digital channels: Total of 9 digital channels have been considered above including Internet banking, mobile banking, call center, POS, ATM, cheque deposit machine, cash deposit machine, self service kiosks and passbook printers.

Digital Transactions: These include transactions done through mobile, ECS, POS and Internet banking.

Branch Based Transactions: These include transactions through NEFT (in branch), cheque and cash transactions.

OECD is known as the organization of economic co-operation and development whose work is to promote policies that will improve the economic and social well-being of people around the world.

RETAIL & AGRI CREDIT

HFCs are known as housing finance corporations.

NBFCs: Non-Banking financial companies registered under the companies act engaged in the business of loans and advance but do not hold a banking license.

COMMERCIAL CREDIT

Transaction banking comprises of commercial banking products and services for corporate clients and financial institutions, including domestic and cross-border payments, professional risk mitigation for trade and the provision of trust, agency, depositary, custody and related services.

SMARTER USE OF DATA

Deep learning is a subset of machine **learning** in Artificial Intelligence (AI) that has networks which are capable of **learning** unsupervised from data that is unstructured or unlabeled

API banking allows banking systems to be seamlessly and securely integrated with corporate clients ERP systems and it allows access to the bank's transaction processing services from ERP environment

FOR FURTHER READING

The Boston Consulting Group publishes other reports and articles on related topics that may be of interest to senior executives. Recent examples include:

The Seven Rules of Cost Excellence in Banking
An article by the Boston Consulting Group, August 2017

Getting Bank Automation Beyond the Pilot Phase
An article by the Boston Consulting Group, August 2017

Transforming Bank Compliance with Smart Technologies
A focus by the Boston Consulting Group, July 2017

Global Asset Management 2017: The Innovator's Advantage
A report by the Boston Consulting Group, July 2017

Global Retail Banking 2017:Accelerating Bionic Transformation
A report by The Boston Consulting Group, July 2017

How Banks Can Close the Back Door on Attrition
An article by The Boston Consulting Group, July 2017

Getting Big in Small Business Banking
An article by the Boston Consulting Group, June 2017

Global Wealth 2017: Transforming the Client Experience
A report by The Boston Consulting Group, June 2017

Global Risk 2017: Staying the Course in Banking
A report by The Boston Consulting Group, March 2017

Global Payments 2016: Competing in Open Seas
A report by the Boston Consulting Group in association with SWIFT, September 2016

Digital Payments 2020: The Making of a $500 Billion Ecosystem in India
A report by The Boston Consulting Group in association with Google, July 2016

Will Industry Stacks Be the New Blueprint for Banking?
A perspective by The Boston Consulting Group, June 2016

How Digitized Customer Journeys Can Help Banks Win Hearts, Minds, and Profits
An article by the Boston Consulting Group, June 2016

Digital Technologies Raise the Stakes in Customer Service
A focus by The Boston Consulting Group and NICE, May 2016

Ensuring Digital Readiness in Financial Services
An article by The Boston Consulting Group, April 2016

Fintechs May Be Corporate Banks' Best "Frenemies"
A article by The Boston Consulting Group, February 2016

Digital and beyond: New Horizons in Indian banking
A report by The Boston Consulting Group in association with The Federation of Indian Chambers of Commerce and Industry (FICCI) and Indian Bank's Association (IBA), August 2016

Inclusive Growth with Disruptive Innovations: Gearing up for Digital Disruptions
A report by The Boston Consulting Group in association with FICCI and IBA, August 2015

Digital Banking: Opportunity for Extraordinary Gains in Reach, Service, and Productivity in the Next 5 Years
A report by The Boston Consulting Group in association with FICCI and IBA, September 2014

NOTE TO THE READER

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Haresh Keswani
Bank of Baroda

S B Narayan
Bank of India

Bharati R Patil
Canara Bank

R K Anand
Punjab National Bank

Sanjay Gadge
State Bank of India

Vivek Sinha
Union Bank of India

Medium PSU Banks

Dipti Shrivastava
Allahabad Bank

ACV Subrahmanyam
Andhra Bank

Kirti Shintre
Bank of Maharashtra

Kumar Udayan
Central Bank of India

Sunil Kumar Jadli
Corporation Bank

Virender Kumar Sardana
Dena Bank

Anirudh Behera
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