INTERNATIONAL ACTUARIAL ASSOCIATION

Case Studies for the Banking Webinar
29 March 2017
16:00 SAST, 15:00 BST

1. Case Study 1: SA Taxi's success story and how an actuary is adding value through innovation

Context: The Chief Risk Officer of SA Taxi, Dawie Spangenberg, is an Actuary and one of the pioneer banking actuaries in South Africa.

Company Background and Business Model

SA Taxi Finance Holdings Pty Ltd's ("**SA Taxi**") is a developmental credit provider and a specialist in its field providing asset-backed financing for minibus taxi vehicles, income generating assets, and together with its allied services supports Small Medium Enterprises ("**SMEs**") within the taxi industry in building sustainable and profitable businesses in South Africa. Being a developmental credit provider, SA Taxi provides credit to these SMEs as many of them are unable to access capital through traditional finance providers given their credit profiles and as these individuals are less likely to service their loans consistently. Through a comprehensive service offering and innovative risk mitigation approach using proprietary data and telematics, SA Taxi is able to provide asset-backed finance to these otherwise excluded SMEs by understanding the actual risk profile of their businesses and underpinning the value of the asset throughout its economic life.

Since its establishment in 1998, SA Taxi has over time vertically integrated its business model across the financial services and vehicle value chain incorporating all aspects of the minibus taxi industry resulting in the retention of the value of the asset while it is financed. The vertically integrated value chain comprises direct vehicle sales (SA Taxi Direct), vehicle and spare parts procurement, and vehicle refurbishment (Taximart), short-term comprehensive insurance (SA Taxi Protect) and telematics. In addition to fixed route minibus taxis, SA Taxi also applies its core competencies and allied services to fund other income-producing assets for SMEs operating point-to-point metered taxis.

Over the years SA Taxi has gained a deep, specialist knowledge developed from its exclusive experience in the South African minibus taxi industry. Through its operations, SA Taxi has generated in-depth client insight via granular telematics, credit, vehicle and other data. These have contributed to enhancing its credit risk assessment and collections capabilities.

SA Taxi's credit granting process considers a number of factors including credit bureau data, route profitability and the vehicle type and the retention of its value for the life of the loan. In this way, SA Taxi assesses the credit worthiness of the SME business as opposed to just focusing on the borrower's credit rating.

SA Taxi seeks to be the preferred provider of financial services to taxi owners through an understanding of their needs, and a superior assessment of the taxi owner's credit capacity thereby supporting SMEs that may not otherwise have access to credit from traditional banks.

Today SA Taxi is the largest financier of minibus taxis in South Africa.

30 September 2016 Published Results underpinned by strong Credit Risk Management

SA Taxi is a vertically integrated minibus and metered taxi platform utilising specialist capabilities and enriched proprietary data to judiciously deploy developmental credit and allied business services to empower small- and medium-sized enterprises (SMEs), ensuring the sustainability of a fundamental mode of transport. SA Taxi's strategic and operational results have translated into pleasing financial performance in 2016, with headline earnings attributable to the group increasing by 20% to R249 million.

SA Taxi's number of active loan clients increased by 2%. The total number of clients was impacted by the active wind-down of SA Taxi's loan portfolio of entry-level vehicles, together with constrained supply of new Toyota minibus taxis as a result of Toyota closing its local assembly facility for five months during the prior year to enable a full plant rebuild. Toyota supply subsequently normalised, with the number of active clients within the Toyota loan portfolio increasing by 9.2% for the year. Growth in gross loans and advances was further positively impacted by Toyota steadily increasing vehicle prices by 13.6% since 1 October 2015, resulting in 15% growth in SA Taxi's gross loans and advances for the year. SA Taxi's R7.2 billion loans and advances portfolio as at 30 September 2016 comprised 26 352 vehicles.

The net interest margin decreased marginally to 11.1%. SA Taxi's average cost of borrowing increased slightly by 60 basis points to 10.6%. This increase is attributable to the 100 basis point increase in the repo rate over the past 12 months, and an increased component of SA Taxi's funding being raised in foreign currency and fully hedged to the South African rand. In addition, with growing concerns of a potential downgrade of South Africa's credit rating, SA Taxi raised more than R3.5 billion of debt during the 2016 financial year, filling most of its annual debt requirements for the 2017 financial year but resulting in excess cash on hand and thus a negative cost of carry. To counter this, SA Taxi selected better quality clients, with the combined effect of the increased funding cost and reduced credit losses yielding an improved risk-adjusted net interest margin of 8.0%, compared to 7.4% in the prior year.

SA Taxi's credit loss ratio continued to improve to 3.1% for the year, compared to 3.9% for the prior year. SA Taxi is able to recover more than 72% of the loan value when re-selling repossessed vehicles, as the security value of a taxi vehicle is enhanced through SA Taxi's mechanical refurbishment centre; now one of the largest Toyota repair centres in Africa. The average cost to repair repossessed stock has continued to decrease due to further efficiencies achieved from SA Taxi's investment into its combined auto body repair and mechanical refurbishment centre, offset slightly by more expensive spare parts procurement as a result of the weaker rand. Further, a positive second-order effect of Toyota increasing new vehicle prices is that pre-owned minibus taxi vehicle prices follow a similar trend, increasing by 10.4% this year in SA Taxi's retail dealership.

The non-performing loan ratio continued to improve, reducing from 18.2% in the prior year to 17.4% due to a combination of continued strong collection performance, loans of superior credit quality being originated via its retail dealership and conservative credit granting criteria, which are continuously enhanced based on the analytics applied to SA Taxi's telematics data. This data is accumulated daily from each minibus taxi and applied to credit scorecards, route profitability assessments, collection strategies and insurance pricing.

A more conservative provisioning methodology against loans and advances was assumed during the 2015 financial year with the early adoption of IFRS 9. This accounting statement requires SA Taxi's loans and advances portfolio to be segregated based on expected credit risk/loss. A greater component of the portfolio is currently categorised as lower risk when compared to the prior year (70.5% currently in the lowest risk stage (being stage 1), versus 68.6% at 30 September 2015), which is driven by SA Taxi's record collection levels, lower non-performing loans and lower credit losses. Due to this, SA Taxi's provision coverage has reduced but remains adequate as evidenced by the better-quality loans and advances portfolio. With provision coverage levels at

6.7%, SA Taxi's after tax credit loss remains conservatively covered at 3.1 times (2015: 3.1 times).

Proprietary telematics data and analytics aids in risk management & decision making

Proprietary telematics data and analytics used throughout the value chain provides critical insight for risk management and business decisions:

- Data collected is applied to the credit vetting process, allowing SA Taxi to better understand credit risk and route profitability.
- Historical data is used to bolster the accuracy in pricing a taxi owner's insurance risk as well as to identify when there is a lack of movement, which could indicate an insurance claim.
- Data is used to obtain an understanding of a minibus taxi's monthly performance before collection action is taken. This background informs how collection agents interact with the taxi owner.
- Live location data along with a driver's historical data are utilised in aiding the vehicle recovery process.

SA Taxi's credit granting philosophy enables it to extend credit in niche, under-served market segments. When deciding to grant credit, it considers the following:

- Profitability of the route
- Suitability of the vehicle
- Credibility of the owner
- Credibility of the Taxi Association

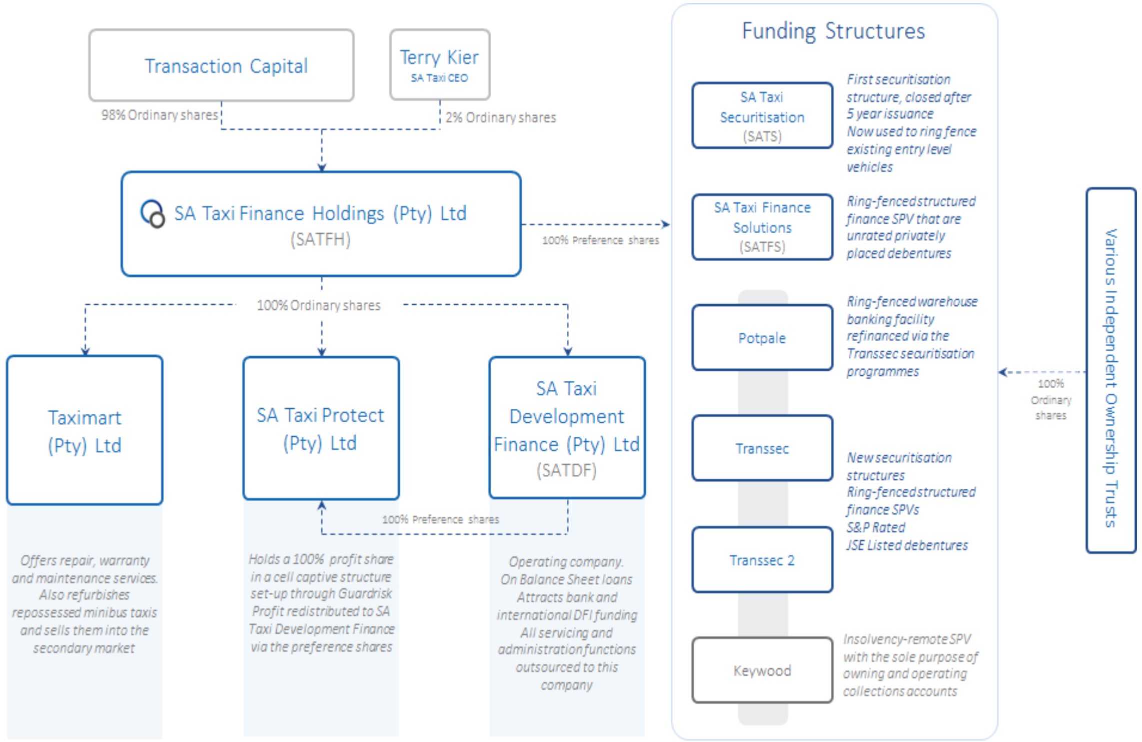
The following is also important in SA Taxi's credit risk management:

- Adherence to set risk appetite and risk strategy through appropriate governance
    - Assurance through independent audit, monitoring specific risk metrics and effective corporate governance frameworks
- Informed decisions through consistent analysis of the book and originations
    - Regular stress testing and evaluation of the book and origination in both the short and long term, embedding scenario-based thinking
- Manged by a sustainable credit origination and management platform
    - Managing the team and systems that deliver ongoing excellence at high volumes by mastering their required competencies

Financial Metrics Snapshot	
Headline earnings – ZAR 249m	**Net asset value** – ZAR 1,142m
Gross loans & advances – ZAR 7.2bn	**Number of loans on book** – 26,352
Non-performing loans – 17.4%	**Credit loss ratio** – 3.1%
Net Interest Margin – 11.1%	**Return on Equity** – 25.4%

Source: Transaction Capital Final Results for year ended 30 September 2016

Funding Overview



Innovative funding solutions

Innovation is encouraged to cultivate unorthodox thinking and develop pioneering funding solutions.

SA Taxi's approach to funding seeks:

- **Diversified and engaged debt investors**
  - Diversification by geography, capital pool, debt investor and funding structure
  - Recurring investment motivated by performance, the ease of transacting and appropriate risk-adjusted returns
  - Transparent and direct relationships with debt investors, and where necessary facilitated by valued intermediaries

- **Judicious risk mitigation**
  - Positive liquidity management between asset and liability cash flows
  - No exposure to overnight debt instruments and limited exposure to short-term instruments
  - No exposure to currency risk and effective management of interest rate risk
  - Minimising roll over risk

- **Optimal capital structures**
  - Bespoke and innovative funding structures to meet investment requirements and risk appetite of a range of debt investors
  - Targeted capital structure per asset class
  - No cross-default or guarantees between structures

Note: SA Taxi is run by a number of professionals including Chartered Accountants and Engineers among them. However, one outstanding Banking Actuary is in the mix as Chief Risk Officer and has added significant value in leading the development of SA Taxi's risk management systems, models and credit granting policies.

2. Case Study 2: African Bank's demise and how Actuaries operating at the right level could have added value

Context: A senior South African Actuary, Peter Temple, was appointed to the Board of South Africa's largest unsecured credit lender in 2016 at the request of the South African Reserve Bank following problems at the unsecured credit lender in 2014.

One of the most senior South African actuaries and a past President of the Actuarial Society of South Africa, Peter Temple, now sits on the Board of African Bank, South Africa's largest unsecured credit lender, following a request by the South African Reserve Bank ("SARB") in 2016 that an actuary be appointed to the Board. Peter also sits on the Group Risk and Capital Management Committee of the Bank.

African Bank ran into capital and liquidity problems in 2014, requiring in excess of R10 billion (U.S. $750 million) to recapitalize, and was rescued by SARB and other larger South African banks who injected the required capital. The bank was put under curatorship during which there was extensive restructuring and two banks were created, a notional "bad bank" housing the non-performing loan book and a functional "good bank" housing the performing loan book.

A commission of enquiry was implemented by SARB and it was led by Advocate JF Myburgh who produced a report on the reasons for the failure of the Bank that was released to the public in May 2016.

The full version of the Myburgh report can be accessed here:

https://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/7288/Report%20-%20Investigation%20in%20terms%20of%20s69A%20of%20the%20Banks%20Act,%2094%20of%201990.pdf

The executive summary can be accessed here:

https://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/7288/4%20-%20Executive%20Summary.pdf

Peter was appointed as a Director on the Board of the good bank in 2016. I had an opportunity to interview Peter recently to reflect on his experiences to date. I had also read the Myburgh report that Peter had read and we drew the following summary:

1. Directors failed in their fiduciary duties
2. Business was conducted negligently and recklessly
3. The CEO's influence over the Board and staff was too great (Myburgh described him as a 'dominant personality')
4. The CEO often disagreed with the Bank's CFO and Auditors
5. The lending practices at the Bank were imprudent with poor credit underwriting
6. Bad debts and impairments were not calculated correctly (they were understated), and the gap between required impairments and reported impairments continued to increase from year to year
7. The bank had bought Ellerines, a struggling furniture business, a few years earlier seemingly with no detailed due diligence conducted, and went on to lend a significant unsecured loan to this business - why did a bank buy a struggling furniture retailer and then lend them a significant loan with no security?
8. The bank's funding model was considered unsustainable based entirely on wholesale funding with no retail deposits
9. The Chief Risk Officer was unqualified and a drunkard - he even arrived to the interview with Myburgh drunk and admitted to it! It basically meant that while he was in the job for

10 years they didn't have a CRO.

Peter went on to highlight what he views as the value that an actuary can add at a bank:

1. Actuaries understand risk and a bank is full of risk!
2. Actuaries understand statistics, data and modelling - they are the basics of an actuary's training and they are the fundamentals of a bank
3. Actuaries are professionals and so hopefully understand and have a better view of how professionals should act when you disagree with an approach
4. Actuaries are trained to ask questions and to be analytical and critical - you need that to challenge the status quo

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