Niels Bjørn-Andersen (ed.)

CASES ON IT LEADERSHIP:

CIO Challenges for Innovation and Keeping the Lights on

Samfunds litteratur

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Open Sesame: The Journey Towards an Open Platform Strategy – Saxo Bank
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Open Sesame: The Journey Towards an Open Platform Strategy – Saxo Bank

Jonas Hedman and Stefan Henningsson

Introduction

Copenhagen, Saxo Bank Head office, January 2011.
As the meeting broke up, Enterprise Architect Benny Boye Johansen, addressed CIO Mikael Munck: "Mikael, do you have a minute? There is something we want to talk to you about." "Sure, what is it about?" asked Mikael. "Well, you know the API project which we tried to start a couple of years ago? I think it's time to reinitiate that project."

Over the next half hour, Benny Boye Johansen, together with his colleagues Michel André, Chief Technology Officer, and Christian Lund Hammer, Head of Platform Development, explained to Mikael Munck how Open-APIs, were transforming the business landscapes around them. Already, the implications for high-tech companies and the Internet economy were obvious. For companies such as Apple, Google, Facebook and Twitter, the collaborative business models enabled through Open-APIs had come to dominate their respective industries. Financial companies, however, were lagging behind in such transformation towards openness. For Saxo, a financial trading bank, this was both a great opportunity and a major threat. Rightly managed, the technological transition could be used to grow the already successful business of Saxo even further. The history was also replete with examples of companies that had completely flawed the technological transformation of their industries and eventually gone out of business.

Saxo Capital Market Day, Singapore, 17th September 2015
In front of 200 invited guests at the Saxo Bank Market conference at the Marina Bay Sands, Benny Boye Johansen entered the stage. Just minutes before, the hotel's slow and intermittent Internet connection had almost caused him a heart attack. But now it was all working. He squinted against the spotlight to discern the 200 dark suits in the audience and commenced with: "Ladies and gentlemen, thank you very much for joining us here. Today, I'm going to present to you our brand new Open-API. For Saxo Bank, this is an important leap into the future of value co-creation, together with our partners."

Saxo Bank A/S

Saxo Bank A/S is a Danish investment bank specializing in online trading with the mission: "To be the World's most profitable and professional facilitator in the global capital markets." The business is based on a digital platform that allows for trading in a multitude of financial instruments, including Forex, stocks, CFDs, futures, funds, bonds and futures spreads (see Box 1: Saxo Bank business model). Saxo is headquartered in the northern outskirts of Copenhagen and has regional offices in 25 countries throughout the world. The bank has some 1,450 employees.

Saxo Bank is connected to 12 large international banks, 50 exchanges and 25 so-called "alternative trading facilities." "Connected" means that Saxo Bank has the technical infrastructure as well as the legal agreements and operational capabilities necessary to receive price quotes from, and trade instruments on, these venues.

The Saxo Bank IT systems – all developed by the Bank – handle or support all operations necessary to offer trading (order management, trade execution, risk management, back office functions, reporting, reconciliation, etc.) as well as relevant auxiliary functions. Rather than selling the IT system itself, Saxo Bank offers a "cloud solution," whereby Saxo Bank hosts the system and its staff handles all tasks necessary to "keep the engine and all relevant business processes running."

The Saxo Bank trading engine is primarily offered to three customer segments, each accounting for roughly 1/3 of total revenue:

- Private retail clients: Direct clients of Saxo Bank, who use the trading platform for personal trading.
- White Label Clients (WLC): Banks and brokerages, which offer a branded version of Saxo Banks trading platform to their clients. In addition to the trading platform, the WLC's also get access to tools and API's (SOAP Web Services) for managing the clients in Saxo's system, as well as access to various services to aid client engagement.
- Institutional Clients: Financial entities which primarily use Saxo Bank for one of two purposes:
  - Professional management of their corporate investment accounts held with

Saxo Bank. They use the SaxoTrader and SaxoTraderGO trading platforms for proprietary trading.

- Liquidity sourcing/hedging. Other financial institutions connect their systems to Saxo Bank for trading large quantities of currencies and CFD's or simply as a gateway to the exchanges. Such trading is done using the Financial Information eXchange protocol (FIX).

Box 1. Saxo Bank business model

Saxo Bank A/S was founded in 1992 under the name: Midas Fondsmæglerselskab. The initial founders were Lars Seier Christensen, Kim Fournais, and Marc Hauschildt. Marc Hauschildt left the company soon after, but Lars Seier Christensen and Kim Fournais would come to manage the bank for most of the next 20 years.

Initially, Midas operated as a broker of forex products (see Figure 1 for the company timeline). In 1997, it launched one of the first trading platforms for currencies in the world, called Midas Internet Trading System (*MITS*). The idea was to bring transparency to the banking sector by providing ordinary investors with the same tools and market access that professionals have. Since then, the bank has had an extensive focus on IT, viewing themselves as "50% bank and 50% IT."

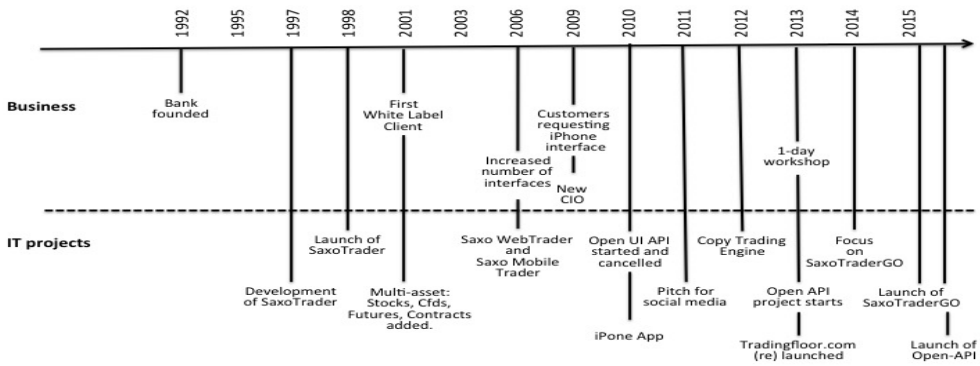

Figure 1. Historical events at Saxo

In 2001, the company was renamed as Saxo Bank. It obtained its own banking license and began to expand its online presence by extending the MITS trading platform with possibilities to trade in additional financial instruments. The MITS trading platform – based on client server technology – was also renamed as SaxoTrader.

At about the same time, Saxo Bank launched yet another innovation, the introduc-

tion of the white label model. In a white label scenario, a third party financial institution, the White Label Client (WLC), can offer the Saxo Bank trading platform to its clients. Saxo Bank adapts the look and feel of the SaxoTrader platform to that of the WLC, and Saxo Bank provides the WLC with Application Programming Interfaces (API) and tools through which the WLC can manage its clients in the Saxo Bank trading system. The responsibility for the legal and financial relationship to the end client, the identity of which is unknown to Saxo Bank, remains with the WLC. Saxo Bank then handles all other aspects of the business: IT hosting, system monitoring, order and risk management, clearing, settlement, reporting, etc. as well as ongoing further development of the IT offering.

In 2006, the online presence took another leap when Saxo launched the web browser client (SaxoWebTrader) and the first mobile client (SaxoMobileTrader). In the following years, Saxo grew and expanded internationally, but focused less on IT innovation. Saxo's existing portfolio of products was continuously updated, but it would be not until 2014 that the next radically different product would be launched. This time, Saxo re-launched TradingFloor.com, making it a social trading site connecting users to share information, tips, and strategies publicly based on their own trades made with real money in their own trading accounts.

In the following year, SaxoWebTrader and SaxoMobileTrader, were replaced with a brand new product suite called: SaxoTraderGO. The new solution was built from scratch using HTML5, allowing it to run effectively in browsers across all form factors, from desktops to tablets, as well as on iOS and Android smartphones.

The Open-API process

The journey towards openness and the launch of the Open-API involved several phases. The background to what eventually would become the Open-API project was to be found in the increased complexity of Saxo Bank's digital platform. Originally they had a setup consisting of one core banking platform and one trading application (SaxoTrader), and they were now moving to a setup with a growing number of trading applications (SaxoTrader, SaxoWebTrader and SaxoMobileTrader), as well as secondary user interfaces developed for promotional purposes. The applications were developed in different programming languages, including C++C# and HTML/JavaScript, and they used different ways to gain access to the internal Saxo Bank systems. These different applications also had different internal ownership.

In 2009, Saxo Bank took the first steps towards what eventually would be the Open-API project. At this time, clients were starting to ask for a native iPhone application to complement the already existing HTML/JavaScript based SaxoMobileTrader. Internally, Saxo Bank started to realize that with a high level of probability, this was just one of many more requests for additional applications.

At this time, Benny Boye Johansen was the Head of Client Applications at Saxo and in this capacity; he was responsible for the web, the mobile, and the downloadable SaxoTrader. Benny understood that adding one more application – i.e. an iPhone app – would add to the complexity of the platform, require yet another type of connection to the core trading platform and would increase maintenance costs.

> As soon as you want to develop a native application it needs access to the trading platform. So if we didn't do something we would have a yet another entry to into the bank [i.e. the trading platform] … So we decided to make an interface that would serve the initial iPhone application and also try to prepare it for the future. We did the first version of the iPhone application, [an iPhone app based on a API showing prices, list of exchanges, and some news] and I tried to get money for doing a more formal Open API project. (Benny Boye Johansen)

Phase 1: API exploration

Mid 2010, Benny was ready to pitch the Open API project:

> It was just about getting a unified entry into Saxo Bank, so all the applications would show the same numbers, and we could add additional applications without also having to add new interfaces (again). (Benny Boye Johansen)

However, the timing for such a suggestion was not right and the pitch never materialized. The reason was that at this point in time, Saxo Bank underwent a large organizational change program. The Client Application Department was transformed into Commercial IT, and the responsibility and ownership of the trading platform, as well as the different applications were also shifted within the bank. Another change was the hiring in November of 2009 of a new CIO, Michael Munch, who initially focused on cutting costs and put a freeze on all IT projects. The new CIO also introduced a new approach of developing IT called: "The Saxo Way of Working."

A few months later when the organizational change program was largely implemented, it was decided to restart the API project. The explicit aim of the project was now to standardize the different interfaces of the trading platform. The former head of Client Applications Department was not involved "because it was deemed to be an infrastructure project, and I was responsible for the UI [user interface]" explained Benny Boye Johansen.

The project ran for six months involving four internal and a few external developers, but it was eventually cancelled after limited progress. There were several views on the failure. One reason was the lack of business ownership, as a result of making the project a technical project. Another reason was the poor requirements specification. The project team was asked "to make a general interface for the whole Saxo Bank

trading system, and that's a big request," Benny Boye Johansen explained. A final explanation was to be found in the governance of the project. Basically, service owners were asked to contribute time and resources, but doing so was voluntary and many service owners therefore prioritized other activities.

As a result of the closed down project, the Open-API as a concept was internally dead. However, in this first attempt, individuals within Saxo gained experience in developing and thinking in terms of Open-API, and the technology and vision still had many proponents within the organization.

Phase 2: Internal vision – Tradingfloor.com

In 2011, Saxo was ready to take the leap into the world of social media with its own social community for financial traders – today called TradingFloor.com. However, the challenges with a social community site regarding the access to the trading platform were partly the same as for the iPhone app. To display trading data and allow for trading activity within the community, integration with the trading platform was needed. There was a risk of ending up with yet another application connecting directly to the platform. Benny Boye Johansen, now Enterprise Architect explained:

> I co-wrote the original business case for the social site, and I was focused on the idea of sharing trades, chart data and comments from real accounts with real money from real traders, our own clients – and that got accepted. This was a good example of yet another Saxo Bank application, which needed access to the internal core Saxo Bank trading information. (Benny Boye Johansen)

If Saxo had continued to work with applications connecting directly to the platform core, Tradingfloor.com would have been connected, as displayed in Figure 2. However, this solution was rejected because of the level of complexity and maintenance cost to which it would have eventually led, as the number of applications was expected to continue to grow. Michel André explained this as: "It's mostly that things take more and more time… There are a lot of duplications." Instead, the development team suggested, and got approval for, developing Tradingfloor.com based on an API solution.

The TradingFloor.com project had in part the same developers as those of the original Open API project. "So we managed to make sure, that the people who got to build the trading part of it, the part that exposes financial data, were still the guys from the original project," Benny Boye Johansen explained.

The development team built the trading part of TradingFloor.com as well as "the Copy Trading Engine," which is the underlying framework that serves and calculates all the data that were shown in TradingFloor.com. In the development of the Copy Trading Engine, the team used some of the design principles from the original Open API project. Technologically, TradingFloor.com is based on HTML5/JavaScript and included APIs for presenting data.

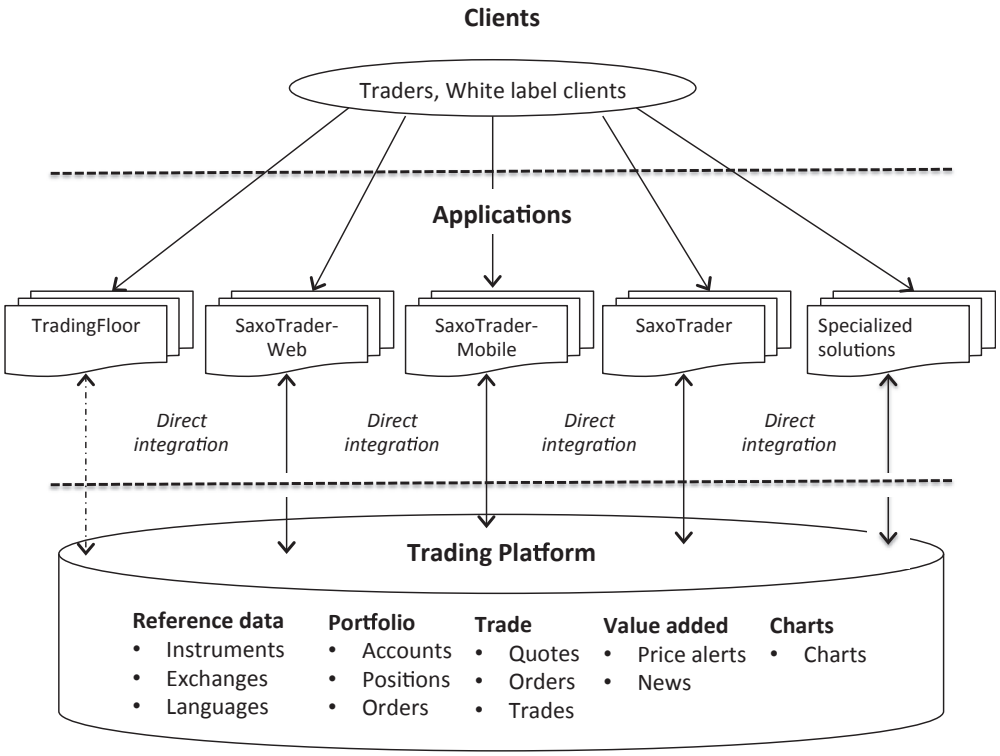

Figure 2. The envisioned – but rejected – addition of TradingFloor.com to the growing number of direct separate integration points to the Saxo Bank infrastructure

Phase 3: External vision – Open-API project

Inspired by how the technology had been used in the TradingFloor.com project, Saxo once again turned its focus to Open-AP. In January 2013, Benny Boye Johansen organized a one-day workshop attended by Mikael Munch, Michel André, Christian Lund Hammer, and some internal technical experts, where the prospect of Open-API as an emergent technology was discussed. Two scenarios were addressed. The first scenario was only to use the technology as an internal architectural principle to enable a steadily growing portfolio of applications. The second scenario was to use the technology also to open up the trading platform for 3rd party developers to create complements to the platform. Within this scenario, the level of openness was further explored. A partial open strategy would be to grant selected 3rd party developers access to the APIs to create complements that were approved by Saxo. A fully open strategy would make the APIs public to anyone with interest in developing complimentary applications.

At this stage, no formal decision was taken about how far to push the openness strategy. As the CTO, Michel André, explained: "The open API or the restructuring

of the way we connect our end user applications makes sense from an internal architectural standpoint… If we were only to use it internally as an architectural pattern it still would make a lot of sense."

After the workshop Benny Boye Johansen was asked to write a business case. The business case pivoted towards internal savings that could be achieved with one standardized interface. The investment committee eventually approved this, and an Open-API Framework & Commercialization project was initiated.

In parallel, Saxo bank was working on a project called: "One bank, One platform" with the objective to standardize the corporate IT infrastructure. Mikael Munck, explained:

> We wanted to normalize our infrastructure, so we had fewer duplicate processes running different places in the bank. And when we had to add new functionality, be it client facing or internal optimization we were going to have an easier task. (Mikael Munch)

The "One bank, One platform" project had two implications for the technological choices in the Open-API Framework & Commercialization project.

> The first was to build the next trading platform on HTML5 and JavaScript rather than writing different native applications for iPhone, Android, Windows Phone, web and other technologies. The other strategic decision was to build this new platform on a modern well documented REST based WebAPI, our Saxo Bank Open-API. (Michel André)

Furthermore, to ensure the best possible performance and lowest latency, it would include push technology (SignalR and WebSockets); for authentication, it would use a combination of industry proven SAML 2 and OAuth 2.0 protocols.

The first real test of the Open-API technology came in the development of the SaxoTraderGO, the new HTML5/Javascript application to replace all other Saxo web and mobile applications. For the first time, everything the user could see was accessed and executed via Open-API. In the media, the new application design and new functionality received substantive attention. The technological solution behind the application was perhaps not that exciting for the everyday user. But for Saxo, and particularly for Michel André and Benny Boye Johansen, this was an essential victory. Financial trading is time critical and requires extensive security. The fact that it was possible to achieve sufficient performance levels through the Open-API technology meant that Saxo could continue to build on its new, future-proof architecture.

> It is important to understand that this is our own API and that there is one API only. We do not use an internal API for our own systems and provide a different one for clients. The functionality of the entire SaxoTraderGO trading platform goes through this API… With Open-API we really are eating our own dog food. (Benny Boye Johansen)

In parallel, the top management at Saxo gradually became more and more positive to the idea of fully using the possibilities to open up for external 3rd party developers. Internally, the technology had proven mature enough to enable financial trading in an efficient, reliable, and secure way. When the project started, this had not been obvious to all executives. In addition, the "API Billionaire's" club was growing, with more instances of how industries could reap the benefits of open innovation through Open-API's.

As explained by Michel André, CTO, neither the technological maturing of Open-API nor the growth in business applications had been certain when Saxo started to embrace the technology:

> With a long lead time it's hard to see the immediate business benefits, and the payoff from investments. But you cannot stop evolving what you have. So we were very much focused at getting immediate benefits. It is very hard to make long term, strategic investments. The idea has enticed everybody. I've always said I think we need to do this, irrespective of how, or why, or in what shape or form we commercialize it. We needed to do this for our own purpose. To be able to be flexible with our own frontends, with our own technology distributing services to clients. (Benny Boye Johansen)

But the eventual solution went beyond being flexible with Saxo's own front-end. Embracing an Open-API strategy that was indeed fully open, Saxo also enabled completely different business model to exist alongside its current one. Christian Lund Hammer, Head of platforms, explained: "We essentially decoupled our infrastructure [trading platform] from the user experience to become a trading facilitator."

Then, on the 17th of September 2015, Saxo launched its Open-API to the public in Singapore. Even though most of the functionality of the current trading platform was already enabled through the APIs used by SaxoTraderGo, opening the API's to the public meant that Saxo also had to increase its focus on supporting a prospective developer community with documentation, tutorials, and forum for interaction. All of this had been prepared in the background and so when Benny Boye Johansen entered the stage in Singapore, his team back home in Copenhagen turned on the switch. From this day on, 3rd party developers could get access the Open-API portal containing documentation, samples and tutorials (https://developer.saxobank.com/sim/openapi/portal/article/).

The structure of the Saxo Bank Open API Platform is described in Figure 3, where

traders can access the trading platform, either directly or through the White Labelling Clients.

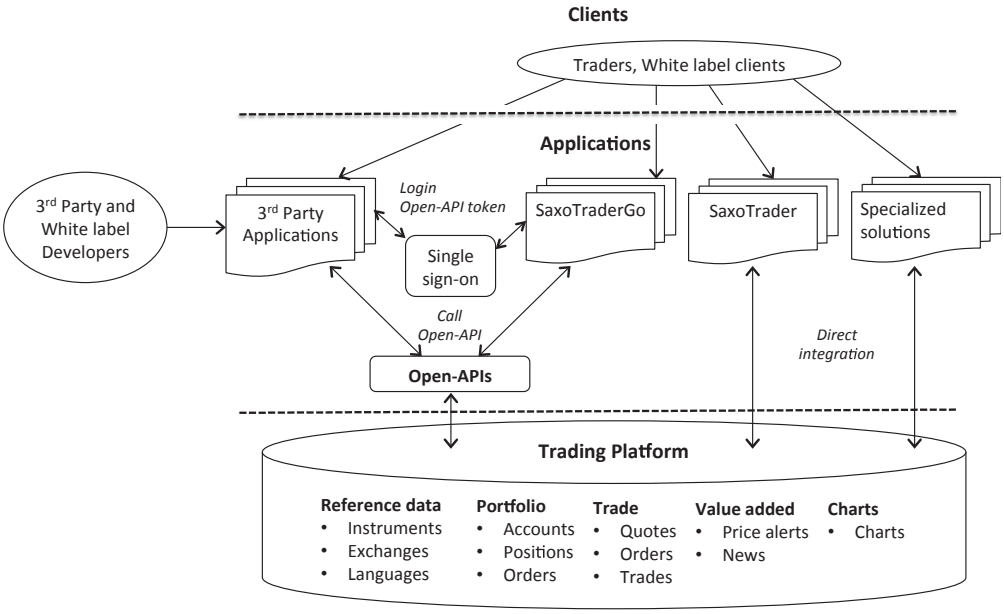

Figure 3. Saxo Bank Open-API and Trading Platform

This was, however, not the end of development. In 2016, Saxo Select was added as another member to the family of applications leveraging OpenAPI. The Saxo Select offering takes the original concept of following the trades of community leaders to a new level. In SaxoSelect, pre-vetted "Strategy Managers" trade with real money on a real Saxo Bank account (the model portfolio), whereas other Saxo Bank clients ("Investors") may choose to allocate a portion of their account value towards one or more of these model strategies. As soon as a Strategy Manager adjusts his/her portfolio, the changes are replicated in real-time down to the relevant Investor(s).

Epilogue: A trading bank or a digital platform provider or both?

As the plane that would take him back to Copenhagen picked up speed on the runway, Benny Boye Johansen finally got a minute to reflect on last year's events. The last years had been hectic, and in particular the last weeks leading up to the unveiling event had been frantic. He could not remember when he had last slept for more than a few hours during the night. But Saxo Bank had come a long way since the meeting in 2011.

Not only had they redefined their internal IT architecture, they had also succeeded in redefining (part of) the bank's business model.

While Benny had been convinced that the open platform, partnership, and value co-creation was the future, not all were convinced that the added complexity and possibly added risk were worth the potential upside. Would the digital platform be attractive enough for 3rd party developers, knowing that Saxo themselves provide – or could decide to provide – similar functionalities? Would the Bank's WLC's embrace the opportunity to build their own complete trading frontend and deliver a truly brand loyal trading experience, or would most WLC's after careful consideration decide that the existing platform branding was sufficient? Would the extra income derived from Open API outweigh the extra cost in having to document, manage, and now support the Open API for external users? These were certainly going to be relevant strategic questions to discuss in the forthcoming months back in Copenhagen.

Benny Boye Johansen could not answer these questions. However, it was clear to him on 17 September 2015 that, regardless of how these discussions played out, already from the next day, the world would look different from what it was only this morning. The platform was now open, and third parties as well as WLCs could start building their solutions right away.

As the plane reached its cruising altitude of 10,000 meters and the fasten-seat belt sign was turned off, Benny Boye Johansen reclined his chair and closed his eyes. There was certainly going to be work to do tomorrow and now he had to do it in his new capacity as Head of Open-API commercialization. The end of one journey is the start of another one.

Questions

1. How has the Open API technology evolved since Saxo started to explore technology?
2. What is the difference between the traditional business model of Saxo Bank and the new business model based on Open APIs?
3. What do you see as the key strategic benefits of having a business model based on Open API?
4. What are the pros and cons of having the traditional and the API-based platform-based business model in parallel?
5. Does an open platform strategy require an approach to systems development different from traditional ones?
6. What are the particular issues when providing Open API's for financial trading and distribution of financial information?

Appendix 1: Key figures and ratios (DKK million)

SAXO BANK GROUP	2014	2013	2012	2011	2010
Operating income	3,006	2,861	2,966	3,526	3,338
EBITDA (1)	1,099	898	605	1,155	1,108
Profit before tax	564	247	152	847	913
Net profit	381	162	80	617	643
Total equity	4,225	3,492	3,364	3,240	2,880
Total assets	36,008	27,746	25,623	27,018	22,437
Clients' collateral deposits	68,227	50,644	40,199	35,275	31,296
Assets under Management (Wealth management)	14,101	12,845	14,633	12,240	12,818
Total capital ratio, Solvency ratio	19.7%	16.2%	13.5%	14.5%	16.5%
Return on equity before tax	14.6%	7.2%	4.6%	27.7%	35.0%
Average number of employees	1,456	1,362	1,522	1,413	964

(1) Net profit before tax, depreciation, amortization, income from associates and joint ventures, non-trading related interest expenses, etc.