

IT cost survey for Swiss banks 2018

Evaluation report (based on 2017 effective data and 2018 budget data)

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Key conclusions 2018

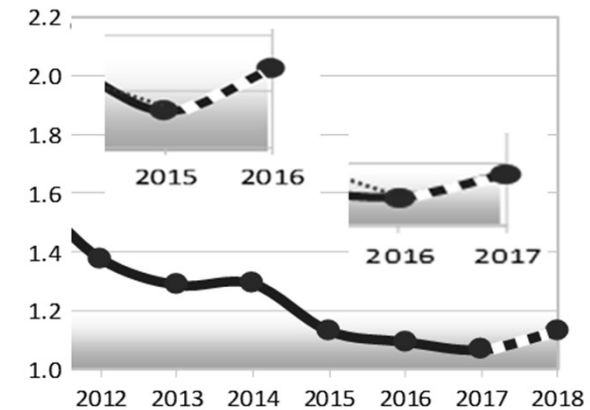
1 - Increasing change capacity remains a key challenge for banks

After 2015 and 2016, 2017 shows the same pattern:

- a falling iR_{adj} : 1.07, down from 1.09 in 2016
- an upward trend for the next year, based on budget figures

We conclude that the implementation of both digitalization and efficiency strategies suffer from IT delivery constraints.

Rethinking the bank's capabilities with a special focus on delivering change is especially crucial for banks aiming at highly cost-effective IT.



2 - Neither choice of core banking solution nor sourcing policy alone are decisive for costs

Contrary to persistent myths, itopia's research does not confirm that either of these dimensions alone put a bank into a leading or trailing position – both from a cost and a profitability perspective.

IT architecture and operating model initiatives to adopt emerging, FINMA compliant Infrastructure-as-a-Service (IaaS) promise higher returns, compared to challenging traditional outsourcer's pricing or core banking vendor's maintenance fees.

3 - Banks with superior IT Governance outperform peers

Efficient development and use of both inhouse capabilities and outsourced services are both dependent on excellence in IT governance. In addition to pure IT cost efficiency, we conclude that effective project portfolio optimization, forward-looking architecture and active management of sourcing relationships lead to higher IT productivity in the long run.

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Focus: Mastering IT cost drivers

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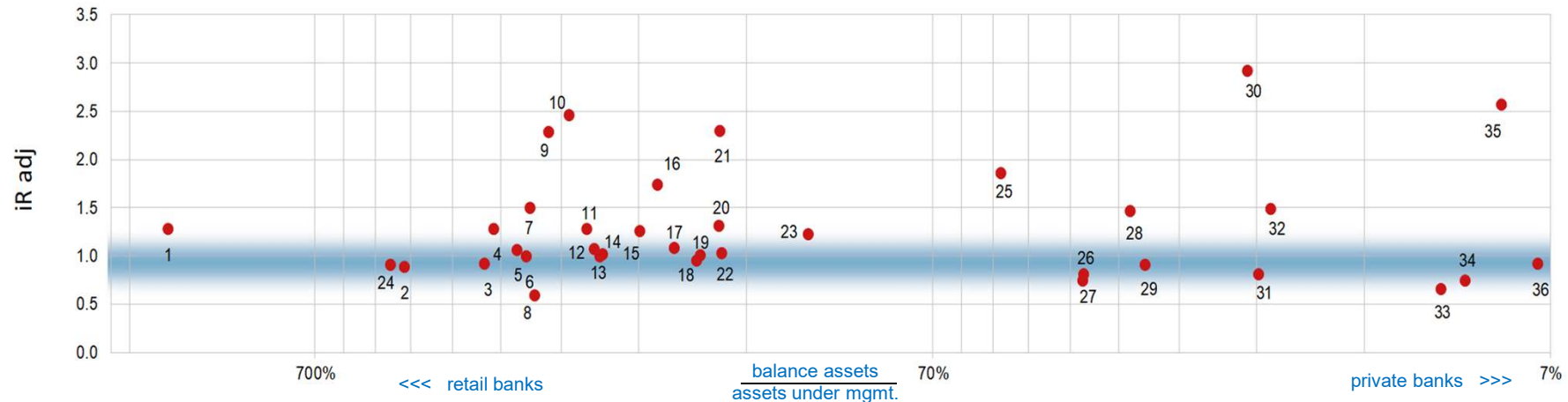
Introduction

| | |
|---------------------------|--|
| itopia | <ul style="list-style-type: none"> - Small independent Swiss consulting company with 15 professionals - Specialized in IT governance, project services and risk management |
| IT cost survey | <ul style="list-style-type: none"> - Performed on a yearly basis since the year 2000, with more than 12'000 data points - Participants are smaller (< 300 FTEs) to bigger (>900 FTEs) retail and private banks - Pragmatic approach: questionnaire with nine raw data and profile for bank complexity |
| participants 2017/2018 | <ul style="list-style-type: none"> - 36 banks: 23 (rather) retail banks, 13 (rather) private banks - High constancy and comparability: $\frac{3}{4}$ of year 2000 participants are still participating today |
| iR = itopia Ratio | <ul style="list-style-type: none"> - Main coefficient used in the itopia IT cost report - Based on IT costs, balance sheet total and assets under management - We consider this coefficient to be better than volatile earning-based ratios (e.g. cost-income-ratio) |
| Cost for data feed | Data feed expenses are considered “business costs”. Therefore these costs are reported in an own section and they are not included in the IT costs in all IT cost related analyses. |
| iR_{raw} | $iR_{\text{raw}} = \frac{\text{IT costs excl. data feed}}{1.1 \times (\text{balance_assets}) + 0.3 \times (\text{assets_under_management})}$ |
| iR_{adj} | <ul style="list-style-type: none"> - To allow comparability of banks, the bank complexity (f_{Bank}) taken into account - Bank complexity is derived from a profile assessed by the bank itself |

$$iR_{\text{adj}} = \frac{\text{IT costs excl. data feed}}{1.1 \times (\text{balance_assets}) + 0.3 \times (\text{assets_under_management})} \times \frac{1}{f_{\text{Bank}}}$$

Year 2017

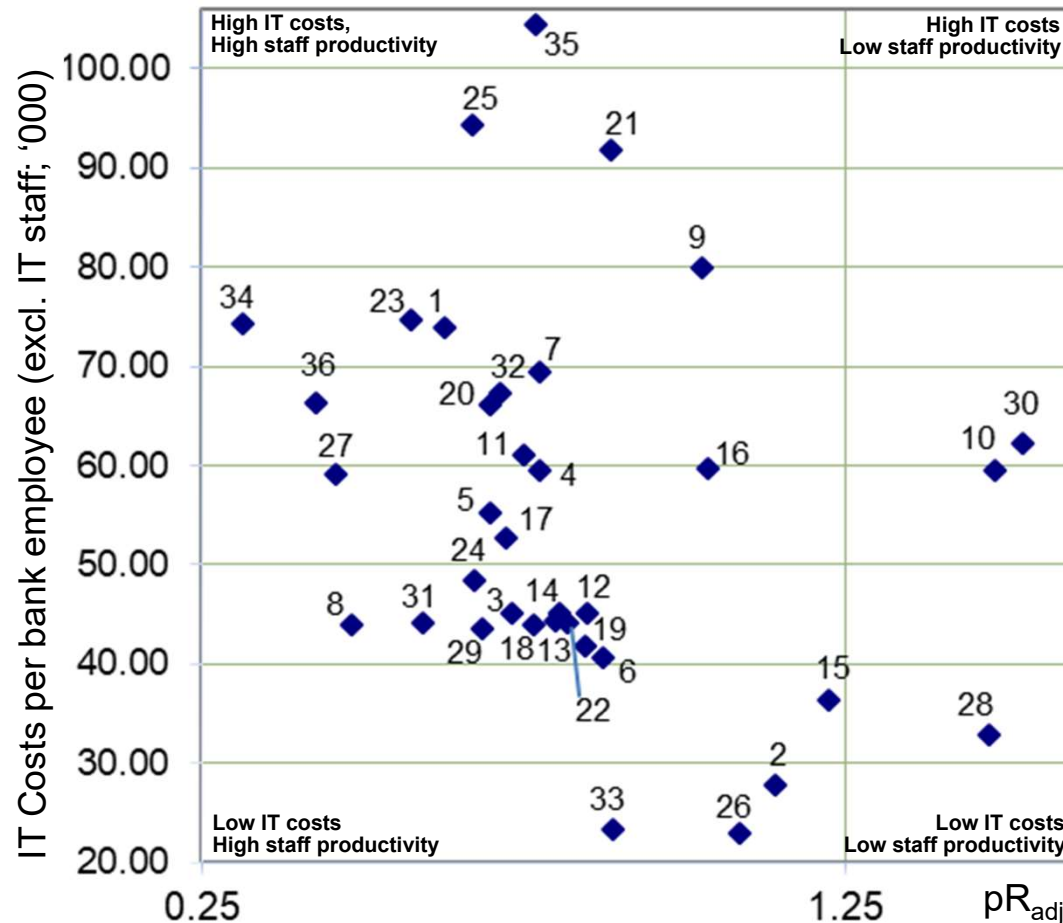
IT cost coefficient iR_{adj} (grouped along business model)



- The sorting criteria on this slide is balance assets divided by assets under management. The horizontal distance is measured in percentage. Thus the closer two banks are, the more similar is their ratio of balance assets to assets under management, and consequently their business model.
- The red dots represent the adjusted IT cost coefficient iR_{adj} .
The blue band represents the target zone for iR_{adj} : an ideal-typical bank would have an iR_{adj} of 1.0.
A bank with an iR_{adj} of 2.0 spends +100% more on IT than an ideal-typical bank with an iR_{adj} of 1.0.
- 15 banks (7 retail, 8 private banks) have an iR_{adj} of at or below 1.0. The previous year showed 16 banks (8 retail, 8 private banks) in that band. This indicates that iR_{adj} has bottomed out from a bank perspective.
- 5 banks have an iR_{adj} of 2.0 or above (3 retail, 2 private banks). Compared to last year, this represents a trend reversal (in 2016 4 banks were above an iR_{adj} of 2.0: 2 retail, 2 private banks).

Year 2017

IT costs per bank employee (excl. IT staff) in relation to pR_{adj}



This chart shows **IT costs per bank employee** (excl. IT staff) in relation to the **staff productivity** pR_{adj} of the bank.

Room for strategical and/or tactical improvements have banks with:

- **High IT costs per bank employee** and **low staff productivity**. IT investments may not be targeting productivity levers effectively.
- **Low IT costs per bank employee** and **low staff productivity**. IT may be getting insufficient management attention and funding to support the bank's overall operational excellence ambitions.

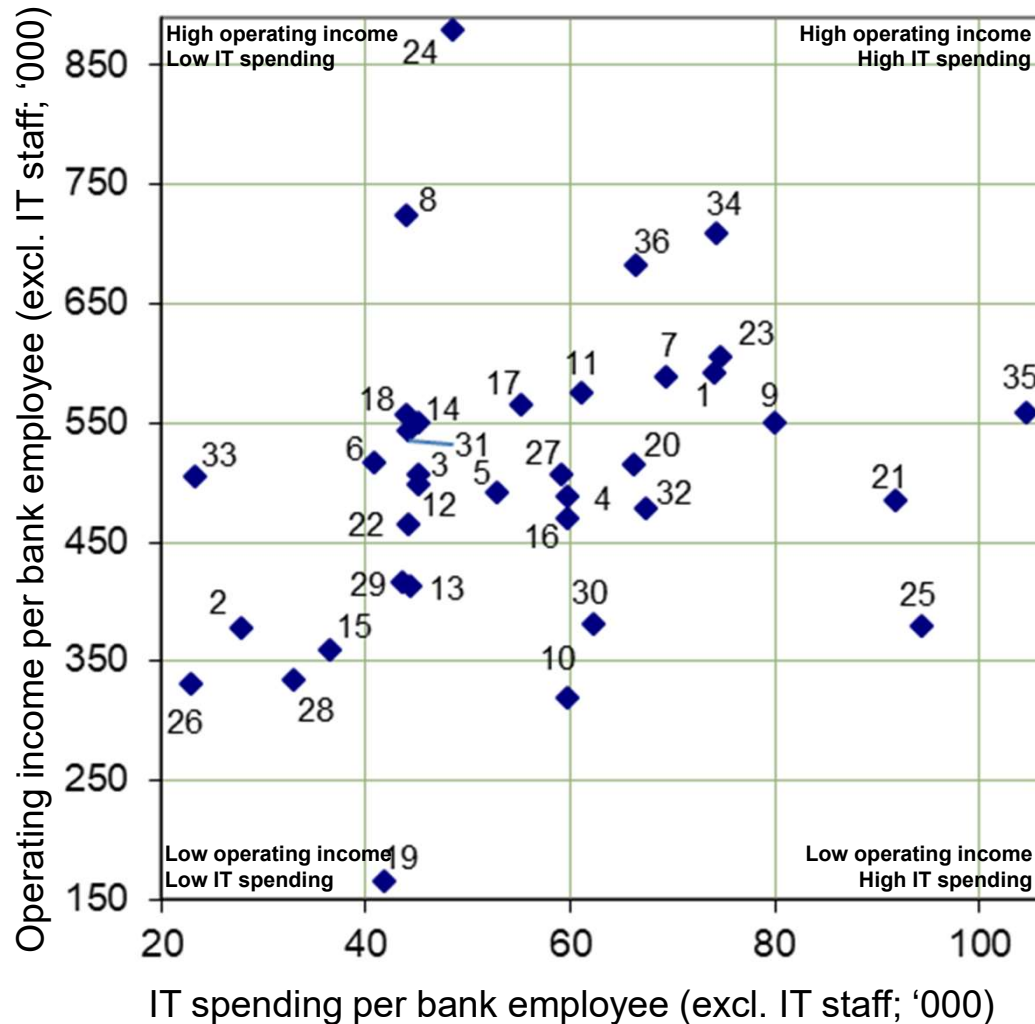
Optimally, automation and digitalization initiatives lead to above-average staff productivity, more than offsetting the higher IT expenses. Still, cost savings may be achieved by adjusting the quality of IT services [provided vs. required] and removing redundancy.

Some banks have **low IT costs per bank employee** and a **high staff productivity**. That seems to be the silver bullet. However, banks in this position should be vigilant and monitor both operational risks as well as market shifts.

$$pR_{adj} = \frac{\# \text{ bank employees excl. IT staff}}{30 \times (\text{balance_assets}) + 10 \times (\text{assets_under_management})} \times \frac{1}{f_{Bank}}$$

Year 2017

Operating income / IT costs - per bank employee (excl. IT staff)



This chart presents a more detailed correlation analysis of **IT spending and business value generation**.

Ideally, a bank can transform its IT expenditure into an at least proportional increase in business value, represented here by operating income.

The differences in business value generation are considerable among the banks.

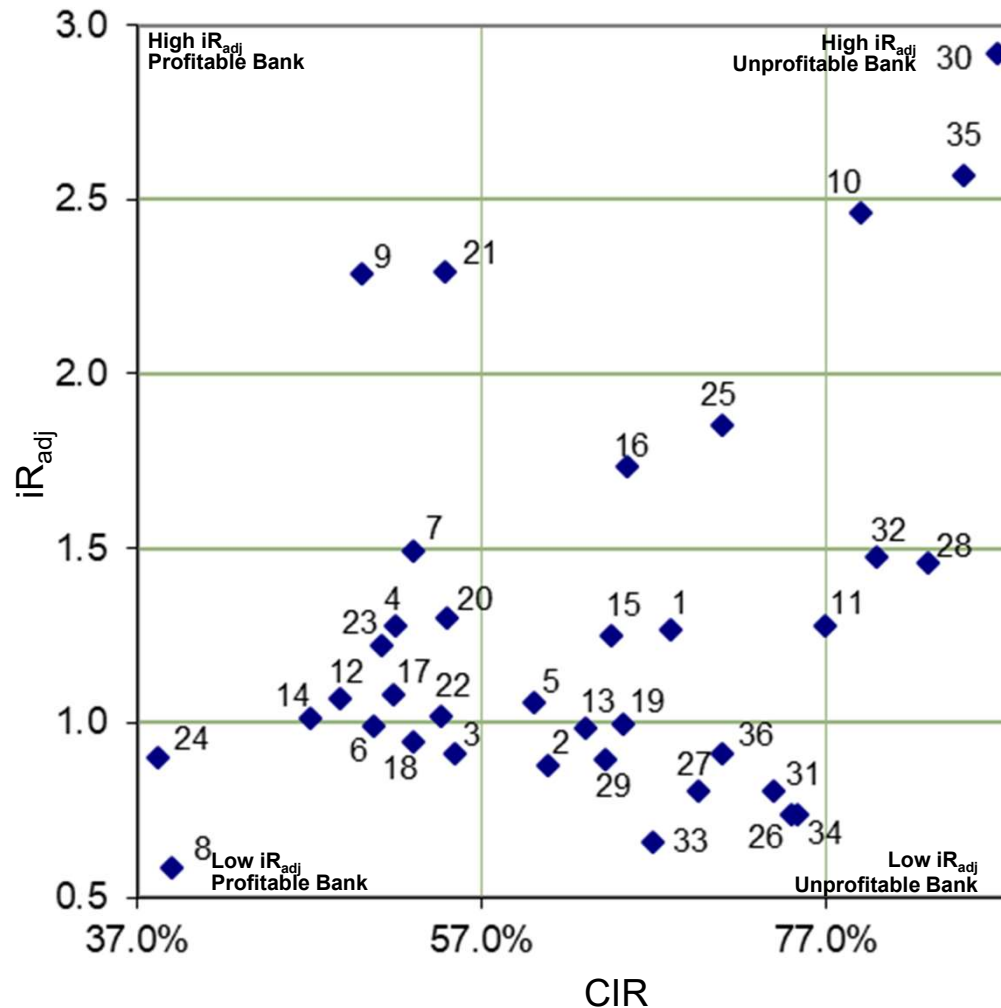
For example: Per CHF 1 spent on IT, bank #33 manages an operating income of more than CHF 21'500. Bank #19 however, supports less than CHF 4'000 of operating income.

Although this large difference cannot be explained by only looking at the smart use of technology, it is a clear indication of the significant potential of IT as a business enabler.

This observation is not specific to a business model. Among the best performing banks we find both retail banks as well as private banks. Exploiting IT potential for competitive advantage in their specific markets seems to be making the difference.

Year 2017

iR_{adj} in relation to cost income ratio CIR



This chart sets the IT efficiency ratio iR_{adj} in relation to the **cost-income ratio** of the bank.

Room for strategic and/or tactical improvements have banks with:

- **High iR_{adj} and a high CIR:** (Re)focus the project portfolio for IT projects that contribute to an increase in effectiveness and efficiency, and increase the bank's profitability,
- **Low iR_{adj} and a high CIR:** Although IT is efficient in itself, the bank might not be leveraging IT as an enabler of additional revenues.

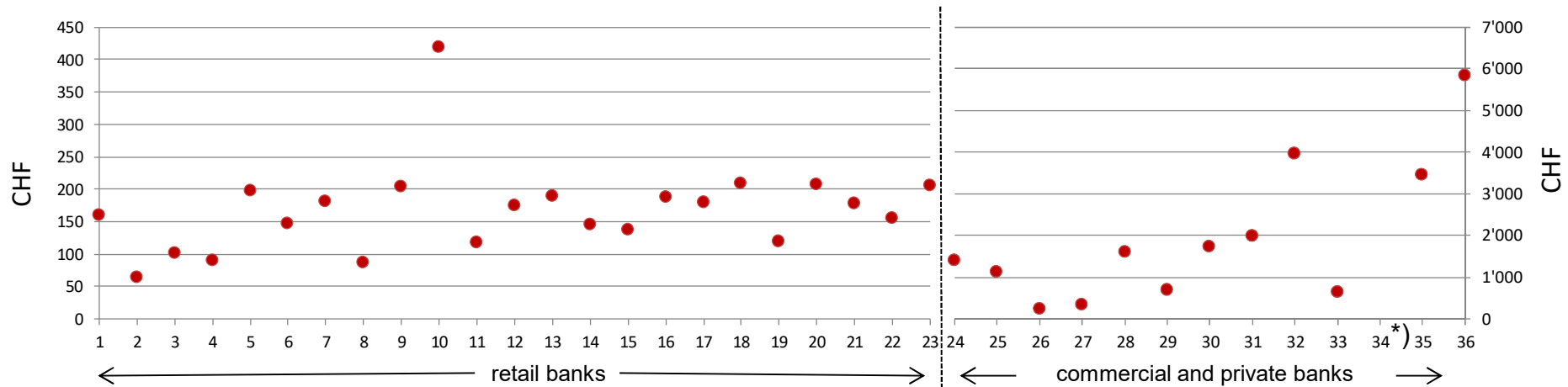
Banks that know how to use IT to exploit for new market opportunities may incur **higher IT costs**, but are **profitable** at the same time.

Banks that balance all costs well while achieving high profitability represent the best in class.

Banks in a comfortable financial position may take the chance to address operational risks or invest additional resources to proactively explore opportunities caused by new market trends.

Year 2017

IT costs per customer - retail banks vs. private banks

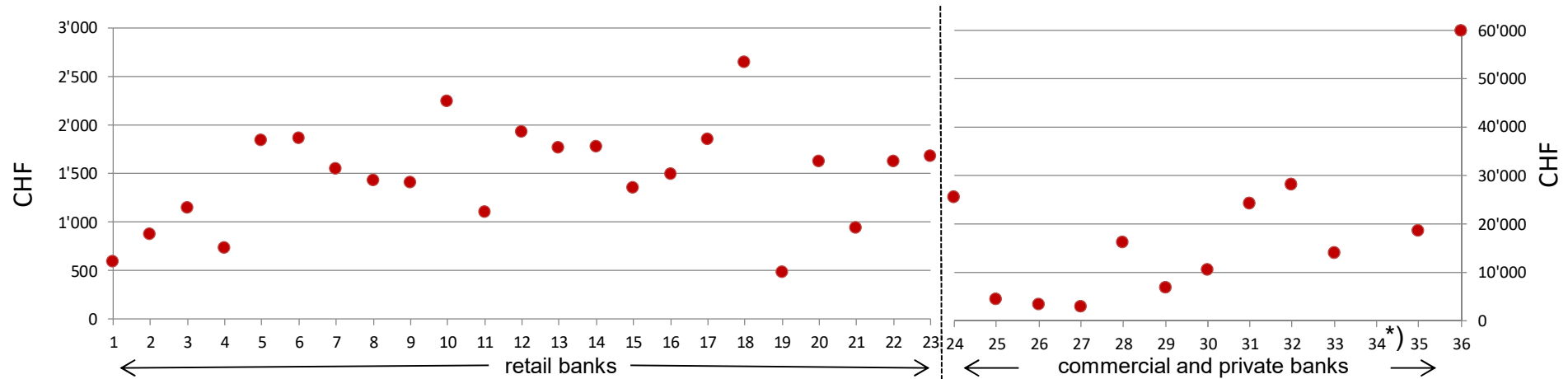


- IT expenses per active customer are considerably lower at retail banks, compared to private banks.
- Among retail banks the IT costs per active customer vary between almost CHF 70 and approx. CHF 420. Most retail banks spend around CHF 160 (average) on IT per year and active customer.
- Among private banks the IT costs per active customer vary between CHF 220 and more than CHF 5'800. This spread is huge: However, almost half of the private banks spend under CHF 2'000 on IT per year and active customer.
- This huge difference between retail and private banks can be understood by looking at the revenues per active customer on the next slide.

*) Bank ID 34 has not provided number of customers

Year 2017

Operating income per customer - retail banks vs. private banks

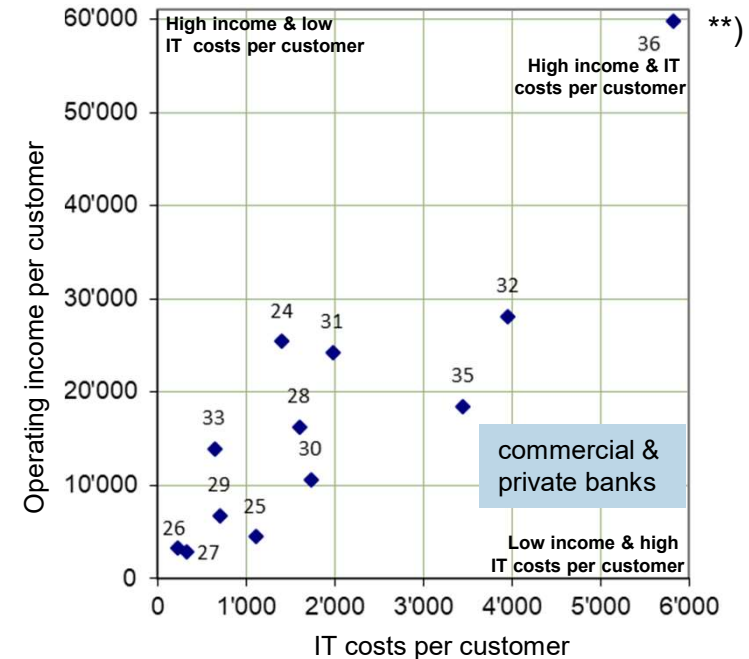
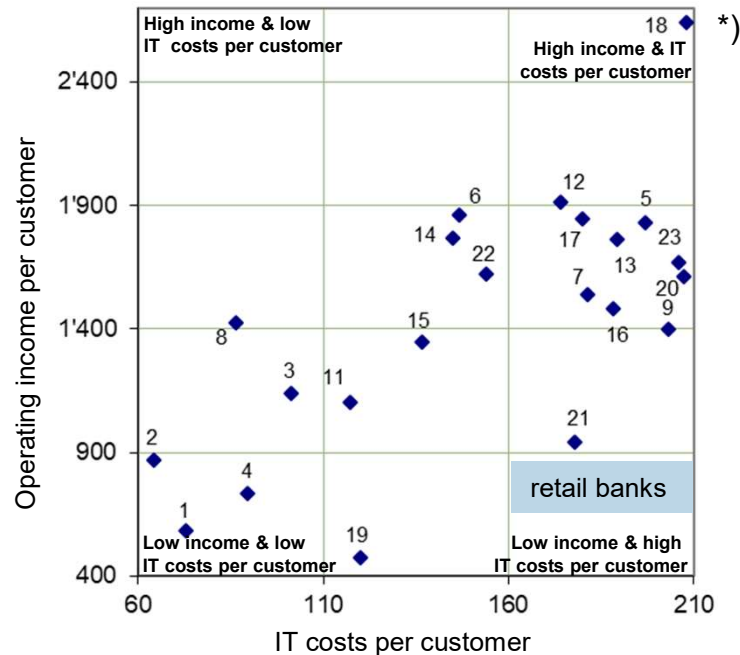


- The operating income per active customer shows a similar pattern as the IT costs per customer on the previous page.
- Operating income per active customer are considerably lower at retail banks, compared to private banks.
- Among retail banks the operating income per active customer varies between CHF 500 and CHF 2'600. Most retail banks earned around CHF 1'000 to 2'000 per year and active customer. The overall average operating income per active customer in retail banks is CHF 1'500.
- Among private banks the operating income per active customer varies between CHF 3'000 and CHF 60'000. The spread is huge as well: Nevertheless, the majority of private banks earn below CHF 20'000 per year and active customer, with an overall average of CHF 18'000.
- A consolidated view on operating income and IT costs per customer can be found on the next page.

*) Bank ID 34 has not provided number of customers

Year 2017

Operating income in relation to IT costs per customer



These charts show **operating income** in relation to **IT expenditure** of the bank, both **per active customer**.

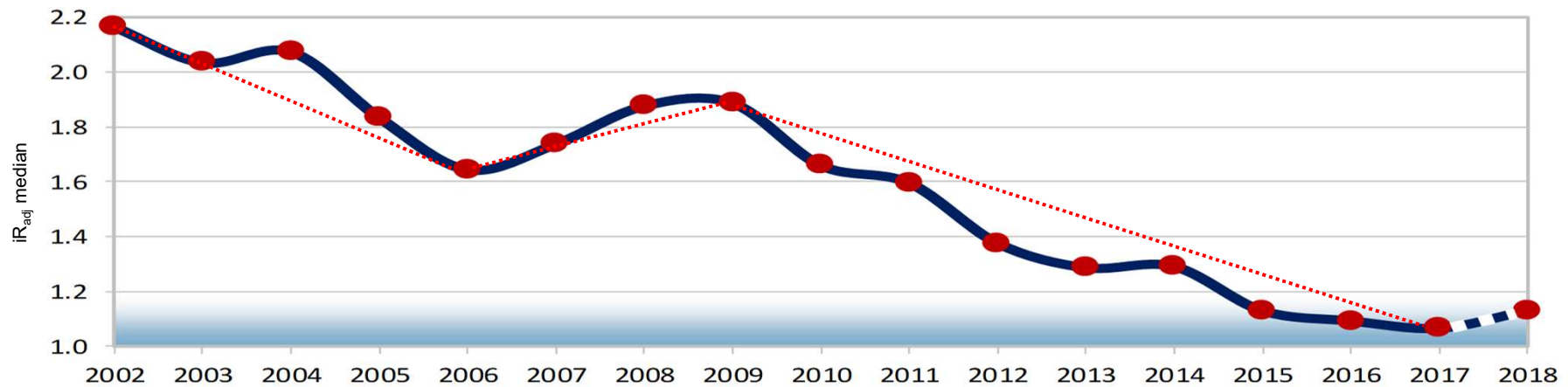
Room for strategical and/or tactical improvements have banks with a **low income** and **high IT costs per active customer**. This may result from missing IT initiatives driving product innovation and customer profitability.

Banks achieving **high operating income** while incurring **high IT costs per active customer** are doing well. However, actively managing IT expenditure may contribute to an even higher overall profitability.

*) Bank ID 10 is out of range; values are operating income per customer CHF 2'239 / IT costs per customer CHF 419.

**) Bank ID 34 has not provided number of customers.

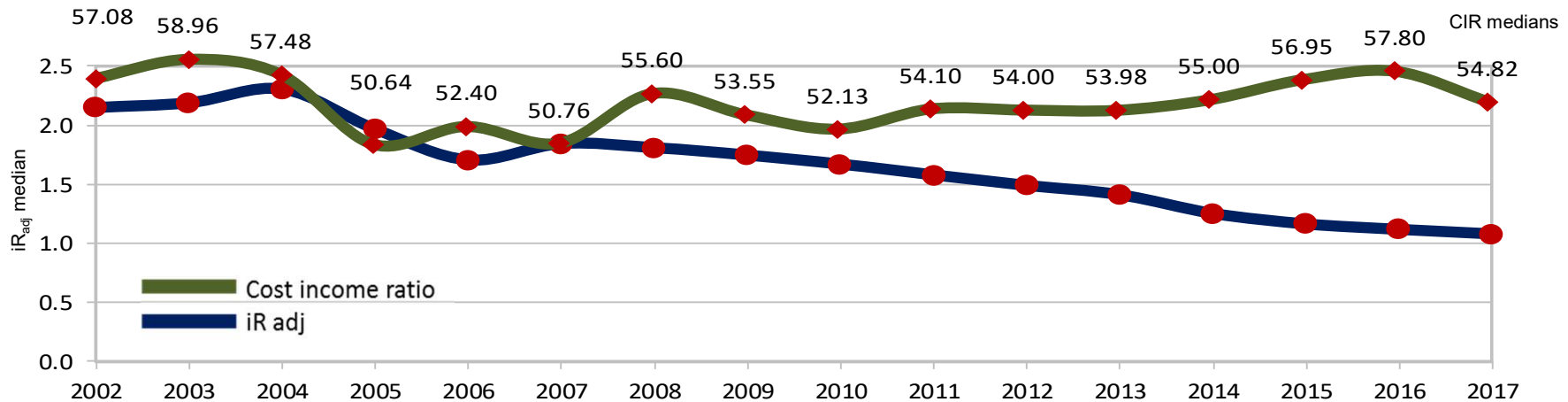
Time series IT cost coefficient iR_{adj}



- Red dots: adjusted IT cost coefficient iR_{adj} calculated as medians for all participating banks, with an outlook into 2018 based on available budget figures.
- 2002 to 2006 and 2009 to 2016 were periods with accelerated improvement of the iR_{adj} at an average of approx. 6% p.a. In 2017 iR_{adj} has still decreased from 1.09 to 1.07, now at a slower pace. Between 2007 and 2009 the downward trend was interrupted, and the IT cost efficiency iR_{adj} worsened.
- Even though the iR_{adj} value for 2017 decreased again from 1.09 in 2016 to 1.07, submitted budget data indicate a trend to an iR_{adj} of 1.13 for 2018. However, we observed the same pattern in 2017 and 2016 survey data. Despite increasing budgets in these years, actual spend resulted in a decreasing iR_{adj} .
- 12 retail banks and 3 private banks have still a rising iR_{adj} value compared to 2016. 17 of the participating banks have managed to lower again their iR_{adj} in 2017 or stayed at same levels.

Time series

IT cost coefficient & cost income ratio – retail banks

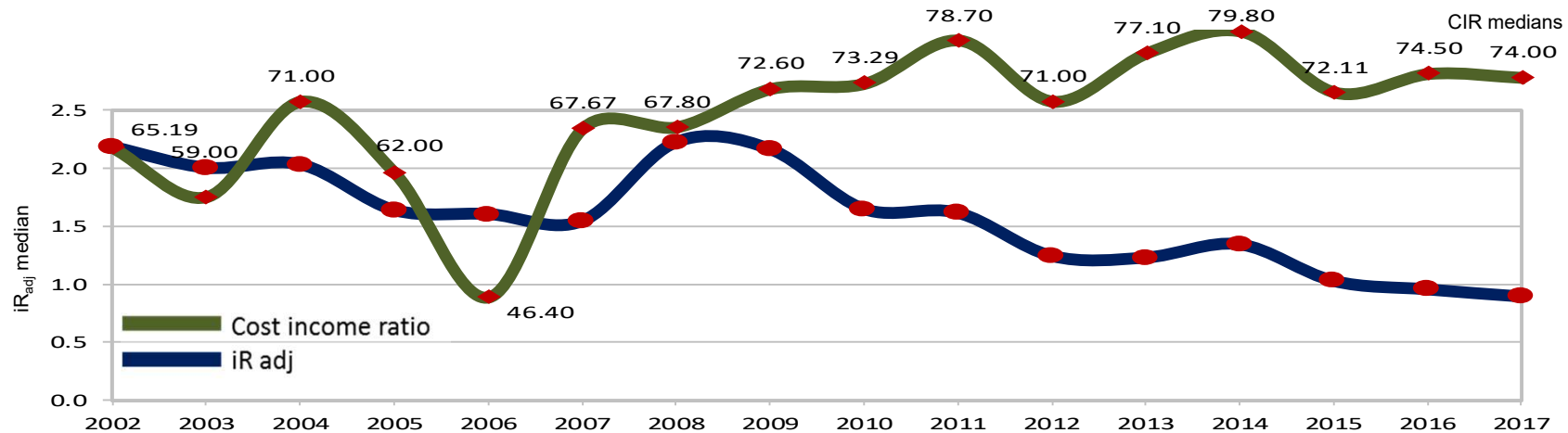


- For retail banks the IT cost coefficient iR_{adj} and the cost income ratio CIR were positively correlated (with 0.70) until 2009. I.e. well managed IT costs*) was correlated with well managed overall operational costs, in the end positively influencing the bank's bottom line.
- From 2010 until 2016 the median of retail banks' CIR rose from 52% to almost 58%. In 2017, this trend reversed to a CIR median of 54.82%. The same trend cannot be observed in private banks' CIR development (see next slide).
- The reason for the considerable short-term improvement of the retail bank's CIRs need further analysis, as the effect cannot be attributed to the minor changes in the survey participant population.

*) an IT governance is implemented that satisfies business demand in an economical way

Time series

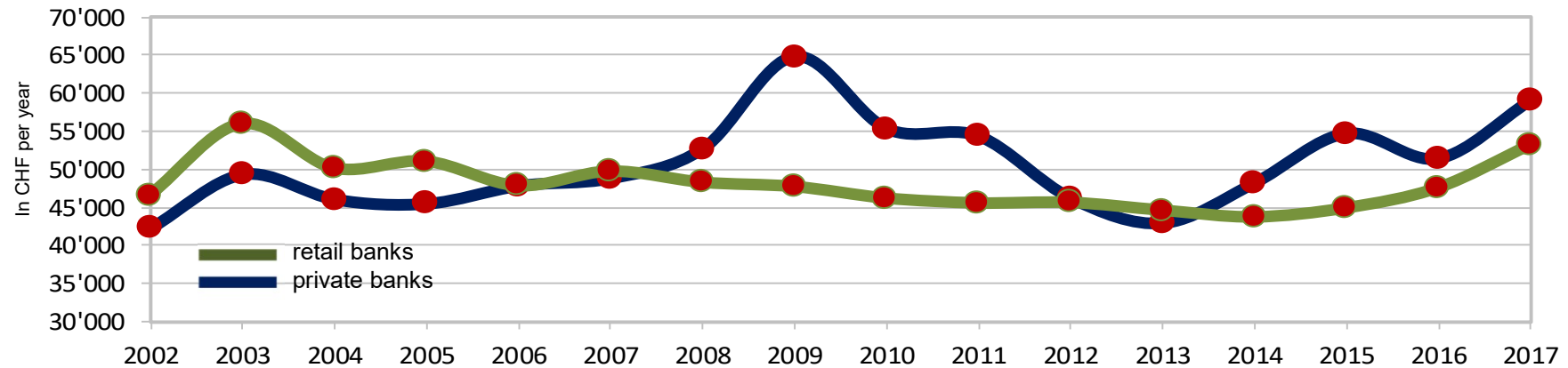
IT cost coefficient & cost income ratio – private banks



- For private banks the IT cost coefficient iR_{adj} and the cost income ratio CIR were loosely correlated over the whole observation period. Quite the contrary, from 2008 onward, the developments of iR_{adj} and CIR diverged.
- From time to time, private banks manage to improve their CIR considerably, e.g. in the years 2006, 2012 and 2015. However, after each decline of the CIR, accompanied by modest declines in iR_{adj} , the private banks' CIR returned to previous levels.
- 2017 figures show that the CIR is slightly decreasing from 74.50% to 74.00%, consistent with the IT cost coefficient iR_{adj} , which also declined from 0.96 to 0.90.

Time series

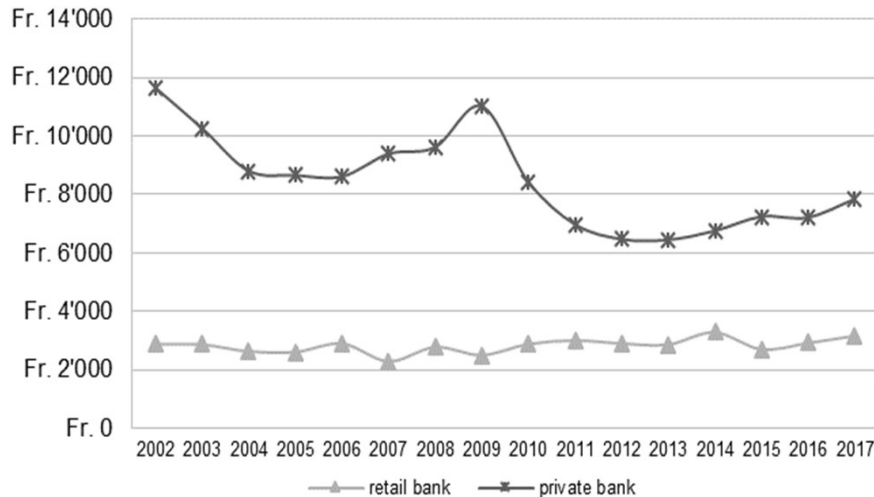
IT costs per bank employee – retail banks vs. private banks



- Until 2006, IT costs per bank employee were considerably higher at retail banks than at private banks (up to 10%).
- After 2007, this trend reversed dramatically, when private banks spent up to 30+% more for IT per bank employee than retail banks.
- In 2012 both bank types had roughly the same value of IT costs per bank employee, but almost 10% lower than in 2007. 2012 and 2013 were the years when IT costs per bank employee started to rise at a faster pace at private banks.
- 2016 figures show convergence of IT costs per bank employee for both bank types.
- In 2017 both retail banks and private banks have spent considerably more on IT per bank employee.
At retail banks the increase is 12% compared to 2016, with unchanged total numbers of bank employees.
At private banks the increase is even 15%, accompanied by an increase of 6% of bank employees compared to 2016.
- In absolute figures, in 2017 private banks have spent CHF 6'281 more per bank employee than retail banks.

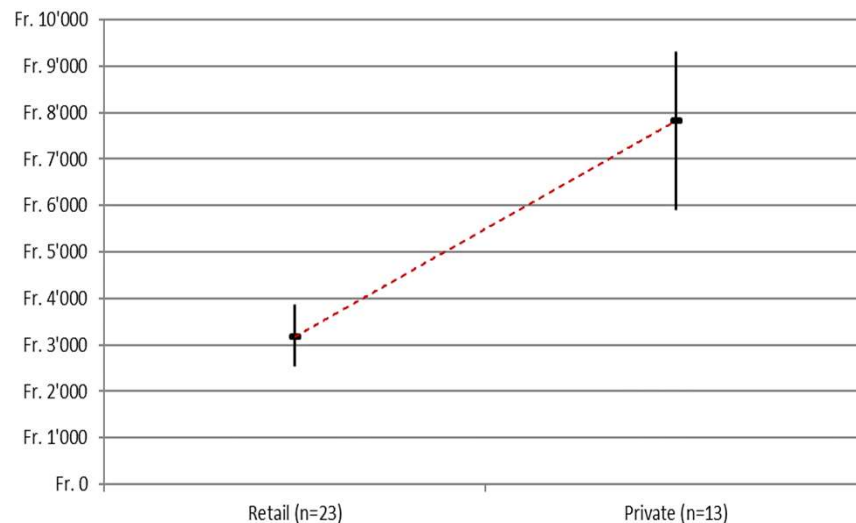
Time series

Costs for data feed per bank employee in relation to bank type



itopia considers cost for data feed as “business costs”.

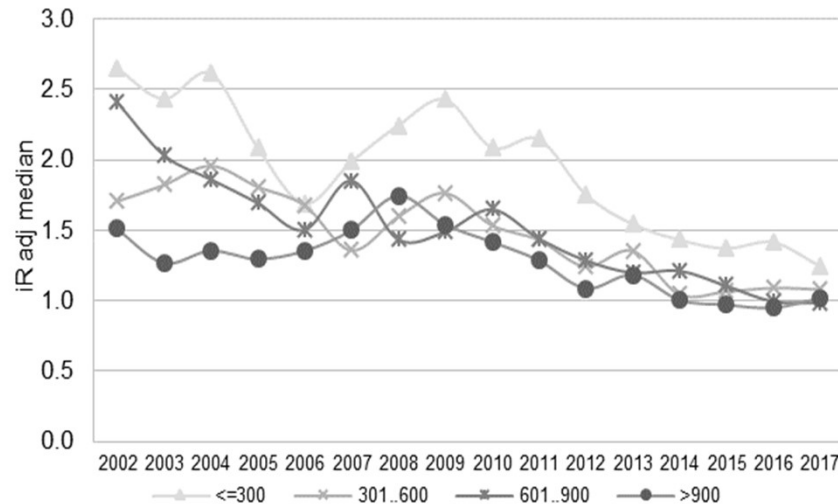
- Costs for data feed per bank employee continue to rise. One reason for that may be the bank’s increased focus on innovation and growth in investment products and asset management services.
- Retail banks spent approx. CHF 3’200 in 2017 (+ 8.8% versus 2016) per bank employee for data feed, whereas private banks spent approx. CHF 7’800 (+ 8.7% compared to 2016, at same levels as retail banks).



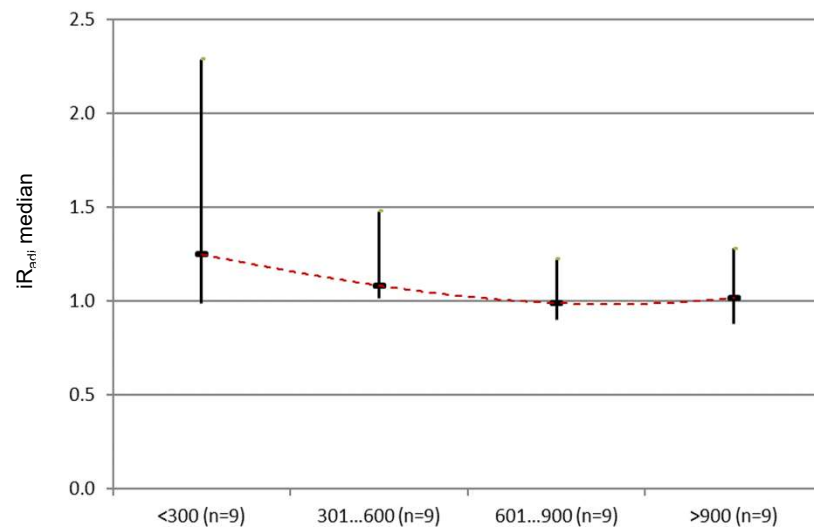
- Private banks show a much higher variance in their data feed costs compared to retail banks. This is because of
 - higher emphasis on justifying need at retail banks, and
 - the extent of international reach.

Time series

IT cost coefficient iR_{adj} in relation to bank size



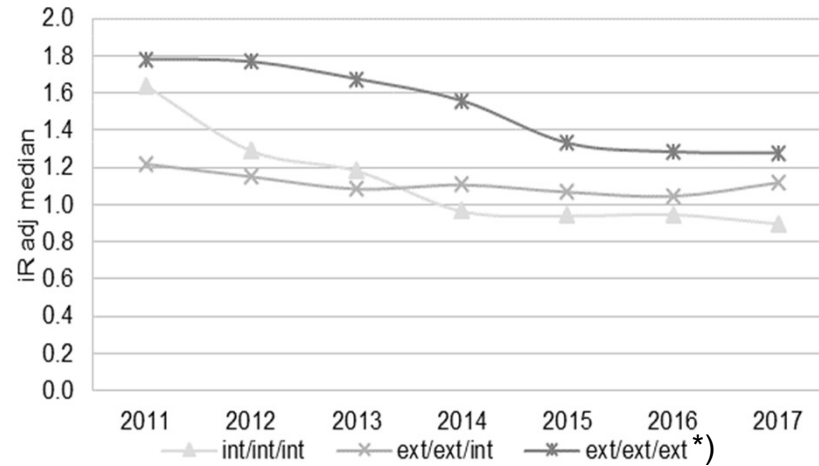
- In 2017, only banks of size >900 FTE experience a worsening (increasing) IT cost efficiency, in contrast to last year's observations.
- At small banks (<300 bank employees / FTE), iR_{adj} decreased from 1.42 in 2016 to 1.25 in 2017, the 300-600 class from 1.09 in 2016 to 1.08 in 2017, and the 601-900 class from 1.00 in 2016 to 0.99 in 2017.
- The large banks (>900 bank employees/FTE) seem to have reached the limits of lowering their iR_{adj} : they experienced an increase in iR_{adj} from 0.95 in 2016 to 1.02 in 2017.



- Comparing all classes for the year 2017, the potential in economies of scale seems to level off at $iR_{adj} = 1.00$.
 - The most IT cost efficient banks are now those in category 601-900, with an iR_{adj} of 0.99.
- Larger banks seem to be more effective at managing their rather complex structures and processes by playing the economies of scale card.
- Compared to 2016 the variances stayed at same levels, except for category >900 banks, where the variance increased from a 0.92 – 1.22 in 2016 to 0.88 – 1.28 in 2017.

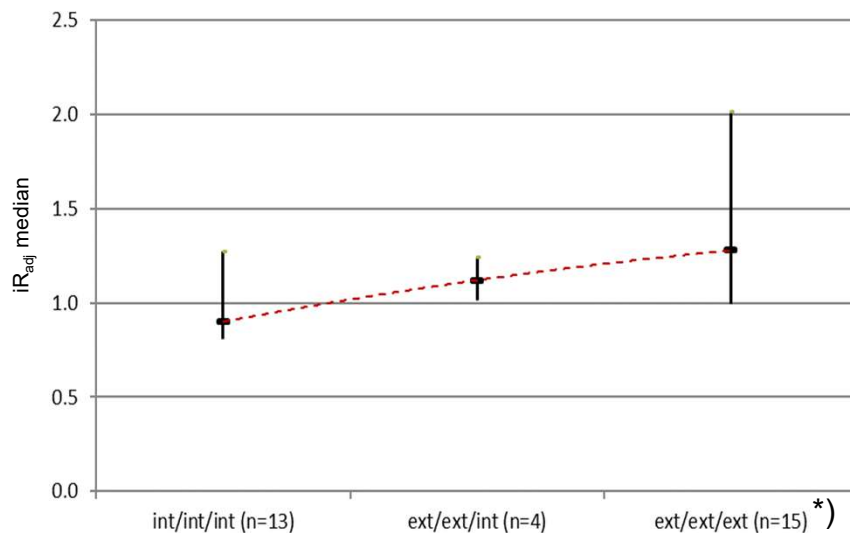
Time series

IT cost coefficient iR_{adj} in relation to IT policy



- Compared to 2016, in 2017, we see a different situation for all**) classes, as follows:

- “int/int/int” class:
 iR_{adj} of banks insourcing IT decreased from 0.95 to 0.90
- “ext/ext/int” class:
 iR_{adj} of banks outsourcing infrastructure and application operations increased from 1.05 to 1.12
- “ext/ext/ext” class:
 iR_{adj} of banks outsourcing all IT remained at 1.28



- “int/int/int” continues to lead in terms of lowest iR_{adj} , but with a larger variance (0.46 in 2017 compared to 0.21 in 2016).
- The sourcing policy “ext/ext/int” remains within the variance of “int/int/int” also in 2017.
- It continues to hold true that banks aiming at a low iR_{adj} while fully outsourcing IT must focus on excellence in IT governance to succeed.

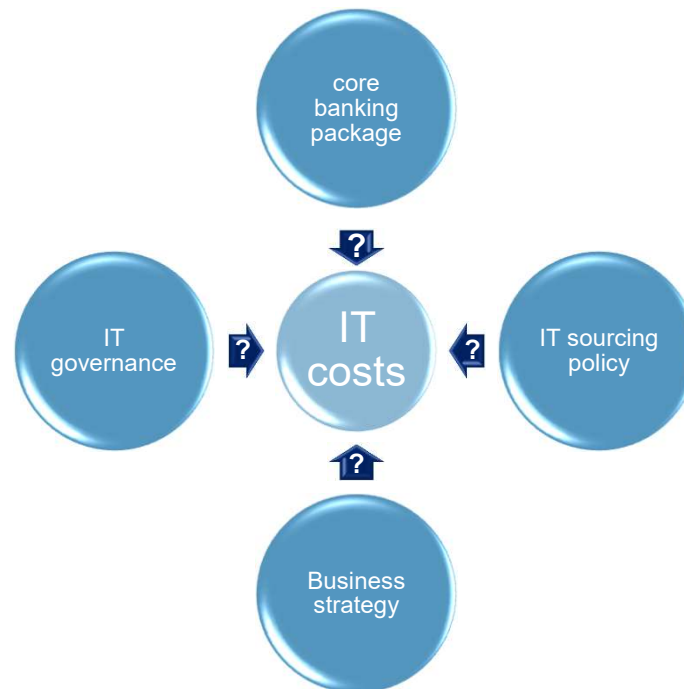
*) Classes: “int” – internally managed, “ext” - outsourced

- 1st sourcing object: Infrastructure operations (ITO)
- 2nd sourcing object: Application operations (AO)
- 3rd sourcing object: Application management (AM)

) 4 banks have **other IT policies with low occurrences, and are not included

Focus: Mastering IT cost drivers

Hypothesis: It is not the core banking package nor the IT sourcing policy alone that drive IT costs of a bank, but the perfect fit of both to the banks' needs¹⁾ and an adequately implemented IT governance²⁾



1) Needs do consider specific business models, size of the bank and company culture.

2) IT governance policies, frameworks and responsibilities must not only be defined and adapted to suit the banks' unique environment but also consistently implemented and regularly challenged on their adequacy.

Mastering IT cost drivers

Summary of the results



The choice of core banking package has no impact on IT cost efficiency.

In the long run, aggregated costs for licenses, implementation, operation and maintenance show no significant difference.

However, the decision on a core banking package does influence the overall cost efficiency of the bank.

The key to this paradox is **adequacy**.

The chosen core banking package must fit the

1. strategic road map of the bank
2. community the bank prefers to be part of
3. remaining peripheral IT systems around the core banking package

The choice of the IT sourcing policy matters if IT cost efficiency is targeted.

Full outsourcing delivers inferior results compared to keeping application management inhouse, or even fully insourcing IT.

Based on our research, we conclude that the two primary sources of comparative advantage are

1. Integration of IT in the bank's organization and communication channels:

The complete IT organization is fully aware of the bank's business strategy and very familiar with the bank's business.

2. Full control of all key elements of IT governance:

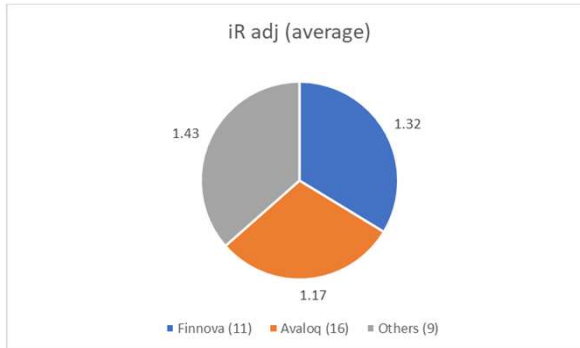
- Mission, IT organization and roles & responsibilities are fully synchronized with the bank's value generation
- Innovation & operations processes, measures and policies are aligned to IT effectivity and efficiency

Nevertheless, exceptions confirm that full outsourcing of IT may lead to similar IT cost efficiencies, provided that

- the bank adopts standard services and refrains from pursuing bank specific innovations
- contract and SLA (re-)negotiations are conducted in a structured and professional manner
- consequent SLA and KPI based supplier management is established
- the bank is part of the respective sourcing supplier's customer community to challenge the sourcing supplier's set-up

Mastering IT cost drivers

Core banking package related conclusions

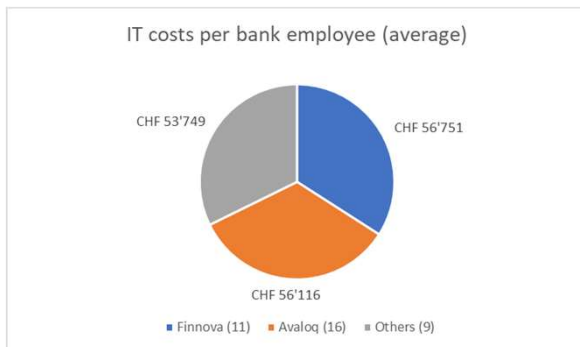


With an iR_{adj} of 1.17 Avaloq banks are considerably ahead of banks with other core banking systems.

The following reasons may be derived from the characteristics:

Avaloq banks predominantly

- range from 601 to over 900 FTE: i.e. advantages from economies of scale
- have “clear cut” sourcing policies: insourcing of application management while outsourcing IT and application operations; or insourcing even all IT services (lowest iR_{adj} in our survey sample)



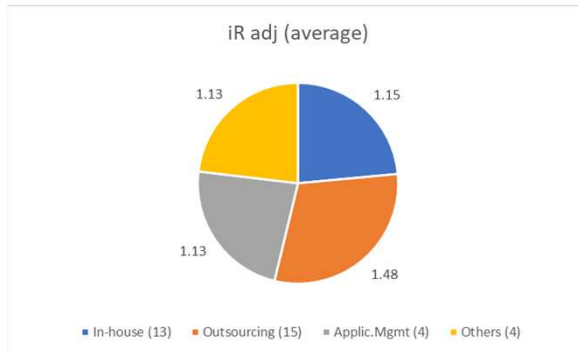
Looking at IT costs per bank employee, banks with “other” (than Avaloq or Finnova) core banking systems are leading, but only by a margin of 4 to 6%. We conclude this stems from a better fit of these very specific core banking packages and three in-house solutions with the banks’ requirements and business processes.

Comparing banks running Avaloq or Finnova core banking platforms, cost differences per bank employee are insignificant (1% difference).

I.e. the choice of a software package does not significantly drive IT costs.

Mastering IT cost drivers

IT sourcing policy related conclusions

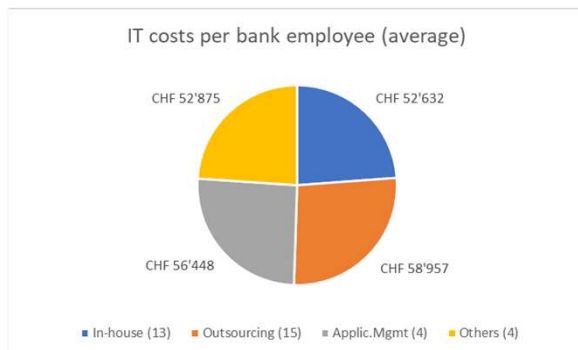


Banks insourcing only application management are slightly better positioned: iR_{adj} of 1.13 compared to an iR_{adj} of 1.15 for banks with full insourcing.

“Other” sourcing policies seem to fit well with the needs of the bank, as they achieve a similarly low iR_{adj} of 1.13.

The main reasons for a low iR_{adj} in an IT sourcing policy context seem to be

1. being near the business users or owning the banks’ business know-how
2. having an IT sourcing policy that is well adapted to the banks’ needs



Looking at IT costs per bank employee, we see full insourcing in a favorable position compared to other sourcing policies, while full outsourcing leads to comparatively high costs.

Even better positioned: Custom sourcing scenarios (“Others”) fitting the banks specific situation.

Cost-effective outsourcing seems to represent a challenge for many banks

- for banks’ IT governance: to capitalize on economies of scale, and
- for sourcing providers: to reach an adequate level of process industrialisation.

Nevertheless, selected banks demonstrate that full outsourcing can be an effective IT sourcing policy.

Therefore, from an IT cost/efficiency point of view an exclusive IT sourcing policy specific advantage is not visible either.

Thank you.

