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Assessing Outsourced Distribution Channels

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ABSTRACT

We respond to recent failed initiatives of the Czech banking market to develop business models for the sale of retail deposit products, based on third-party distribution channels. We argue that the issue is the application of inappropriate capital budgeting methods. While static cost-benefit analysis seems to be generally appropriate for conventional banking projects based on branching or internet, they provide grossly misleading estimates of commissioning expenses, which can lead to completely unrealistic project assessments and poorly designed commission schedules. Alternatively, we derive a dynamic model based on statistical simulation (Monte Carlo) and using a real-life case study to illustrate the impacts of particular value drivers on commissioning costs. Our analysis shows that conventional and simulation-based budgeting generates inverse cost functions over time, and the difference becomes operationally tangible in the second and third year of the project, which is commensurate with the apparent timing of the bank's business strategy revisions. To fulfill the goal of this paper, we demonstrate that statistical simulation is an expedient tool for managerial support and capital budgeting in cases where value drivers are impacted by non-linear dynamic processes.

KEY WORDS: Consumer Banking, Capital Budgeting, Distribution Networks, Sales Outsourcing, Statistical Simulation

JEL Classification: G21, G31, M21

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Introduction

In recent years, a number of banks in the Czech Republic have considered opportunities to distribute their retail deposit products, in particular, popular interest-bearing saving accounts, primarily by means of independent sales force channels (Plhoň, 2010). Several new entrants to this segment of the market, namely, ING, mBank (a Commerzbank group unit) and AXA Bank, have actually chosen to set up their consumer banking businesses utilizing this approach. Such an approach is sometimes used in combination with existing tied insurance agents (ING, AXA), supplemented with internet sales and banking facilities (ING), or rudimentary branch and kiosk coverage (mBank).

Various arguments have been used to substantiate such proposals, commensurate with trends seen in other countries (Deloitte, 2014; Mas & Sladek, 2008; McDonald & Keasey, 2002; Omarini, 2015) and industries (Rogers, 2009). Sales forces ranging from large nationwide organized networks to local outfits and individual operators do exist and have been successfully

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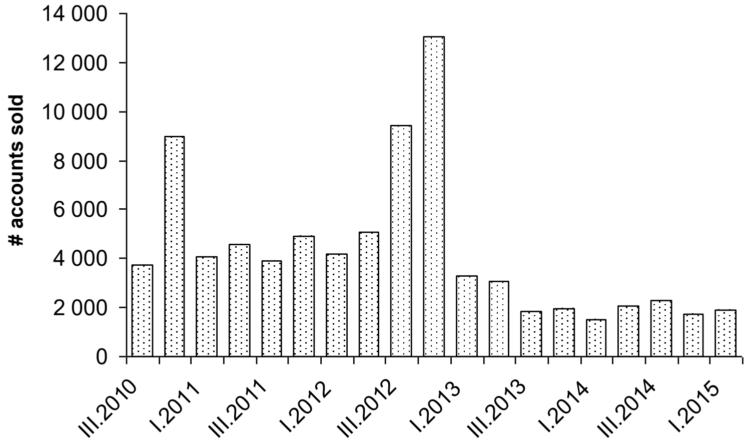

Figure 1. Development of saving account sales by third-party distributors
Source: Adapted from "Finančně poradenský trh [Market in financial consultancy]" by USF (2015). Retrieved from http://www.usfcr.cz/financne-poradensky-trh/

selling financial services and products in the country, thereby acting as an essential distribution vehicle primarily for insurance and pension fund policies as well as construction savings & loans and residential mortgages. The two existing industry associations, namely, Association of Financial Intermediaries and Financial Advisers of Czech Republic [AFIZ] and USF, which jointly represent 26 non-tied networks as well as cca 1,000 individual members, have published aggregate sales figures for 2014, showing that their combined memberships have negotiated 868 thousand contracts in a population of 10.5 million (AFIZ, 2015; Czech Statistical Office [CZSO], 2015; Union of Financial Mediation and Consulting Firms [USF], 2015).

A historically high level of concentration (Řepková, 2012; Schoenmaker & Peek, 2014) in Czech retail banking has also obliged late entrants and aspiring competitors to consider particular innovation strategies, such as specialization, cross-selling or co-branding (CNB, 2012).

Last but not least, outsourcing distribution may be thought to reduce operating leverage of a business project (Anderson & Trinkle, 2005; Helfert, 2001). The substantial fixed costs of branching or establishing dedicated in-house sales forces could thus be avoided, thereby mitigating aggregate business risk.

The present research has been motivated by the fact that regardless of its initial attractiveness, third-party distribution has not made the proven break-through its proponents anticipated. The bank that based its business solely on this model (AXA) wound up closing in December 2013, just three years after its inception, due to gross underperformance (Skalková, 2013). Overall, country-wide sales figures for savings accounts by non-tied distributors had essentially collapsed by mid-2013, as illustrated by Figure 1, reaching a meager 7,586 accounts in 2014, compared to 31,759 in the peak year of 2012 (AFIZ, 2015; USF, 2015); however, total household deposits grew during that same period (CNB, 2015).

The goal of this paper is to design a model suitable for the assessment of a capital budgeting project comprising third-party distribution, consider its practical viability and ease of use; furthermore, the goal is to use an actual business case to test the performance of such a model. Initially, the case will be parametrized and analyzed using conventional budgeting methods, which will show their weaknesses. Consequently, a stochastic model will be developed and applied to properly grasps the dynamics of the problem and provide more realistic results. The quantities and parameters used will be fundamentally based on components of the AXA business case as developed in 2009, making results relevant for further conclusions.

To design the model, we shall use statistical simulation, sometimes called the Monte Carlo method because of its purported inspiration from the casino game, roulette (Metropolis, 1987; Eckhardt, 1987). This particular technique of numerical mathematics has been initially developed by researchers on the Manhattan Project during World War II (Metropolis & Ulam, 1949) and has since become common for applications in a number of scientific and engineering disciplines (Halton, 1970; Mordechai, 2011; Richey, 2010), including, more recently, finance (McLeish, 2005).

From the theoretical point of view, the approach proposed in this paper is innovative because it directly addresses the dynamics of actual processes rather than just variations in banks' balance sheets, which have been analyzed in various contexts by scholars, including Rangarajan (1966), Gambs (1975), Hester and Pierce (1975), Gilkeson, List and Ruff (1999) and Kalkbrener and Willing (2004). The approach bears more resemblance to engineering-based applications such as quality control, which may also result in assessments of value drivers but is usually not used for financial services management (Chen, 2014; Hao, Zhao, Xu & Zheng, 2013; Ivy & Nembhard, 2005; Lesage & Dehombreux, 2015); this approach is also similar to evolutionary population algorithms (Mannion, Ruskin & Pandey, 2000; Mortier, Rossi, Guillot, Gourlet-Fleury & Picard, 2012).

Conventional Project Description and Analysis

The following situation will be examined: a commercial bank considers initiation of a retail saving account business as an independent stand-alone capital budgeting project. Market research indicates that the bank has potential to gradually attract up to 200 thousand accounts with the average initial balance amounting to 50 thousand crowns (CZK).

Financial projections have to be made over several years, and thus, it is necessary to define the number of accounts A_t and their average balance B_t as functions of time. One may reasonably (Falta & Willett, 2013) choose the exponential function (1)

$$(1) \quad A_t = A\,(1 - e^{-\alpha t}),$$

converging towards the target number of accounts A at the rate α, with the initial average balance B_0 growing at the rate β according to (2)

$$(2) \quad B_t = B_0\, e^{-\beta t}.$$

A quarterly breakdown of the bank's business plan over eight years, based on assumptions of A = 200,000, B_0 = CZK 50,000, α = 0.4, and β = 8% would then imply a development of total deposits as indicated in Table 1.

A pro forma budget of such a business can then be set up using customary cost-volume-profit analysis, with some elements of the activity-based costing approach (Drury, 2004; Soin and Scheytt, 2008).

We estimate (all estimates have been based on calibrated Delphi panel evaluations and budgetary assumptions) a constant annual interest margin of μ = 1.25% p.a., fixed overheads of CZK 50 mil./yr., and annual direct costs χ = 0.50% of total deposits, requiring an initial investment of CZK 30 mil. for the conventional (branching) strategy. Assuming a discount rate of 10%, the project has a net present value NPV = CZK 87.7 mil. over the eight-year horizon, assuming a null terminal value. It will be expected to achieve operating profitability in 2.1 years and (non-discounted) break even in 4.8 years.

$$(3) \quad F + C_B \geq R - P.$$

Using total deposits as the key value driver, numerical simulation suggests a linear relationship between percentage changes in NPV and D with sensitivity $\Delta NPV / \Delta D$ = 4.4 (i.e., a 1% decrease in D results in a 4.4% decrease in NPV). Break-even would thus be reached upon a comprehensive 22.5% drop in projected D.

Table 1. Total deposits projection (conventional budgeting)

i	**0**	**1**	**2**	**3**	**4**	**5**	**6**
t [yrs]	0.00	0.25	0.50	0.75	1.00	1.25	1.50
D_i [CZK mil.]	0	971	1,887	2,752	3,571	4,349	5,087
i	**7**	**8**	**9**	**10**	**11**	**12**	**13**
t [yrs]	1.75	2.00	2.25	2.50	2.75	3.00	3.25
D_i [CZK mil.]	5,791	6,462	7,105	7,721	8,313	8,884	9,435
i	**14**	**15**	**16**	**17**	**18**	**19**	**20**
t [yrs]	3.50	3.75	4.00	4.25	4.50	4.75	5.00
D_i [CZK mil.]	9,969	10,487	10,991	11,483	11,964	12,436	12,899
i	**21**	**22**	**23**	**24**	**25**	**26**	**27**
t [yrs]	5.25	5.50	5.75	6.00	6.25	6.50	6.75
D_i [CZK mil.]	13,356	13,807	14,253	14,695	15,134	15,571	16,007
i	**28**	**29**	**30**	**31**	**32**		
t [yrs]	7.00	7.25	7.50	7.75	8.00		
D_i [CZK mil.]	16,442	16,878	17,314	17,752	18,192		

The conclusions from such an analysis are straightforward. The project is deemed to be acceptable based on the positive *NPV* criterion, provided sales targets are met. Admittedly, there does exist a residual interest margin risk (with the break-even interest margin being 1.08% p.a.), requiring caution in terms of pricing strategy and competition benchmarking, but this can serve as further argument for a sales-driven business approach.

Third-Party Distribution Project Analysis

Distribution utilizing third parties (agents) diminishes the project's leverage and thus its financial risk by reducing the required initial investment and overheads. Instead, commissions are paid based on actual sales performance, and part of the business risk is thus borne by the third parties.

Ideally, the bank's and agent's commercial interests would be coupled by deriving the commissioning schedule from the product's main value driver, i.e., the balance of current deposits. Thus, at the end of every year, the average balance on an account would be calculated, and the bank would pay the agent a fixed percentage therefrom. Commission expenses would become the prevailing direct costs of conducting business.

Let us assume that using third-party distribution, overheads would drop by 80% to just CZK 10 mil./yr., the remaining assumptions/parameters remaining unchanged. Retaining the *NPV* of the branching strategy allows for total annual direct costs of 0.77%, which means that the bank would be in a position to offer its agents' commissions up to 0.27% of current deposits. Thus, the bank would still project *NPV* = CZK 87.7 mil. but with substantially less risk, as indicated by the sales sensitivity ΔNPV / ΔD = 2.5 and its break-even point at -40.1% of sales.

Unfortunately, such a commissioning schedule is not viable. One reason is legal issues; due to banking secrecy, a third party cannot possibly obtain unmiti-

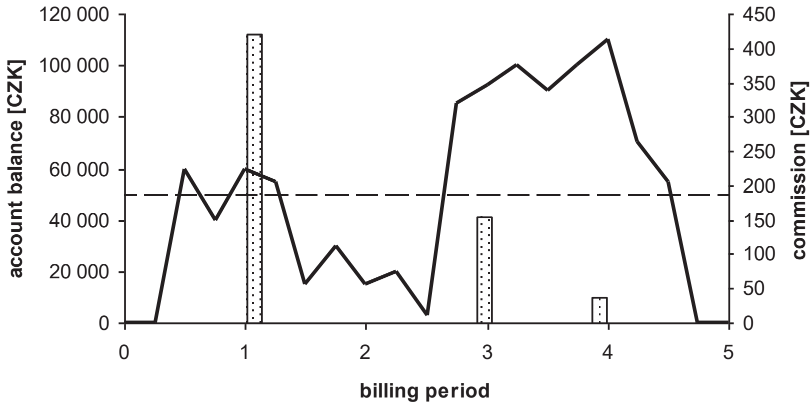

Figure 2. Impact of account volatility on commission cost

gated access to clients' account balances, which are necessary to properly reconcile the commissions claim. Another reason is that such a commissioning schedule goes against generally accepted industry practice, derived primarily from insurance sales, which represent most agents' primary source of income and conform to their rather myopic mode of operation, as well as to the needs of the multilevel structures characteristic for major networks.

It would simply not be worth the effort for most agents to acquire a banking client; for example, if the average account balance reached CZK 50,000, the agent would receive CZK 135 (just €4.90) in a year's time, even if there were an upside potential over the long term. In practice, the bank is only in a position to negotiate schedules comprising a flat commission (i.e., a finder's fee paid to the agent upon the opening of an account), a volume-based commission (i.e., a performance fee based on the deposit increment), or some combination of the two.

A major inconvenience of such an arrangement, however, stems from the fact that neither of these cost drivers translates directly into the total deposit value driver. It is therefore grossly misleading to use conventional-style budgeting for its analysis. To illustrate this point, the bank might conclude that under a flat-fee only system, it would pay total quarterly commissions amounting to the projected increase in the number of accounts multiplied by the flat fee rate (i.e., budget its total commission costs) as in (4)

(4) $\Gamma_i = (A_i - A_{i-1})\ \Pi.$

This finding suggests a capacity to pay commissions of up to Π = CZK 1,400 per account, again using the *NPV* = CZK 87.7 mil. branch network-based benchmark. Such a figure actually seems competitive even when compared to commissions on products, which are generally much more profitable from the financial institutions' point of view. However, such reasoning is fundamentally flawed.

In particular, the net increment in the number of accounts includes account closings. Thus, more accounts have to be opened and paid for, which is a factor that becomes more significant in later years of the project. Making the same point from a different perspective, it seems unrealistic to run a sustainable business that would spend CZK 27 mil. on commissions in the first quarter, CZK 4 mil. in the 20th quarter and just over CZK 1 mil. in 8 years' time.

Similarly, if the bank were to choose a schedule based purely on net incremental deposits, its calculation could be based on (5)

(5) $\Gamma_i = (D_i - D_{i-1})\ \pi$,

allowing for performance fee rates up to π. = 1.66%. Again, such an intuitive approach would be incorrect, due to the volatility of saving accounts. Sooner or later, the balance on any account is due to decrease, and it is unrealistic to assume that most agents would be readily prepared to refund the bank based on its claim of realized "negative balance increments."

Let us further illustrate the issue by using a combined schedule of Π = CZK 300 and π = 0.2% and the average anticipated balance of CZK 50,000 deposited with the bank over the account's life. A naïve calculation would assume total commissioning costs on that account of CZK 400, consisting of a CZK 300 flat fee and a CZK 100 acquisition fee (CZK 50,000 × 0.2%). However, the actual account balance might develop e.g., as in Figure 2 (thick line, rather than the dashed line). Even though the average balance (i.e., source of revenue for the bank) remains unchanged, actual commission payments (graph columns) would total CZK 610 when all the pertaining billing periods (e.g., quarterly) are summed.

The essential weakness of the conventional budgeting approach thus stems from the fact that saving accounts tend to behave erratically, which strongly understates the budget whenever conventional, i.e., static analytical methods are used.

Statistical Modeling of Distribution Costs

Accordingly, an alternative mode to study and quantify the impacts of commissioning schedules on costs and performance, has been designed, using statistical simulation.

The model has been set up to perform a number of simulation runs, commensurate with the target number of accounts A or its multiples (i.e., $n = \mu\ A$ runs with μ set as a natural number). In the present case, we use $\mu = 1$, which, with $n = A$ = 200,000, assures reasonable accuracy of the *NPV* estimate (mean error CZK 0.25 mil.), as well as processing times, when using specialized simulation software (Mun, 2006; Charnes, 2012).

Each simulation run represents the dynamics of a single account maintained with the bank over 32 quarterly periods (for the sake of process optimization, the same account can technically be used by different clients upon former clients' account closings, without loss of generality). Under this model framework, any client's modeled behavior is defined by three random processes characterizing the initial account balance (deposit), development of that balance over time, and the account-closing event.

Accounts are modeled so that their total number at the end of each period t fits the function $A_t = A\ (1 - e^{-\alpha t})$. This value thus grows asymptotically, in accordance with the business plan assumption, which facilitates calibration.

The initial deposit is characterized as a random value with mean B_t and standard deviation σ_B following a log-normal distribution, ensuring positive initial deposits. Again, there is an assumption of $B_t = B_0\ e^{-\beta t}$, calibrated against the business plan.

Intertemporal balance changes (until termination) on any given account $\mathrm{d}b_i$ are described as a geometric diffusion process, defined by a stochastic differential function, where $\mathrm{d}w$ is generated as Gaussian random variable (testing the model on several alternative distribution functions, it has been shown not to be distribution-sensitive when calibrated on low-order moments). Therefore, the current balance always depends on the previous balance, a trend parameter β, and volatility σ according to the function (6)

(6) $\mathrm{d}b_i\ /\ b_i = \beta\ \mathrm{d}t + \sigma\ \mathrm{d}w$.

Ultimately, account closings are characterized as a Poisson process event, where the probability of closing an account within a period ΔT from its opening equals (7)

(7) $\mathrm{P}(z) = \omega\ e^{-\omega\Delta T}$.

The point of time in which any particular account will be closed can then be determined using a standardized, uniformly distributed random number U using the inverted function (8)

Table 2. Functional and stochastic parameters of the simulation

A	200,000	B_0	CZK 50,000
α	0.4	β	8%
σ	50%	σ_B	CZK 30,000
ω	0.4		

Table 3. Project assessment variants

Distribution	Calculation	*NPV*	Oper. Break-even
Branches	Conventional	CZK 87.7 mil.	2.1 yrs
Third-party	Conventional	CZK 232.5 mil.	1.2 yrs
	Simulation ($\sigma = 50\%$, $\omega = 0.4$)	CZK 9.5 mil.	2.7 yrs
	Simulation ($\sigma = 10\%$, $\omega = 0.4$)	CZK 10.6 mil.	2.7 yrs
	Simulation ($\sigma = 50\%$, $\omega = 0.2$)	CZK 13.1 mil.	2.7 yrs

(8) $T = -\ln U / \omega.$

The impact of the account volatility factors, using parameters summarily listed in Table 2, can now be clearly illustrated and compared to the results of the static budgeting approach, assuming a commissioning schedule that combines Π = CZK 300 and π = 0,2%.

Conventional budgeting, as applied earlier, suggests an *NPV* = CZK 232.5 million, operating profitability in 1.2 years and break-even in just 3 years, which is clearly superior to the branching strategy. However, the use of simulation dramatically changes this result. With a projected *NPV** = CZK 9.5 million, it not only diminishes the project's perceived value substantially but also makes it even less valuable than branching.

These results and further simulations shown in the latter rows of Table 3 demonstrate that this fundamental conclusion is not particularly sensitive in terms of the model's stochastic parameters' estimation. Even extreme parameter adjustments result in simulated *NPV* ranging from CZK to 9.5 million to CZK 13.1 million, any of which would lead to reconsideration of the business plan in practice.

To illustrate the essential difference between the two analytical approaches used for assessing third-party distribution, Figure 3 compares the temporal development of total commission payments; the dashed line representing conventional budgeting and the full line representing smoothed simulation. While the former assumes that costs would decline, simulation correctly captures their growth in time.

Finally, even though the *NPV* calculations seem to suggest an inferior, but still positive result for third-party distribution, it should be emphasized that this business model induces an agency situation (Eisenhardt, 1989; Krafft, Albers, & Lal, 2004), which may lead to further deterioration due to perverse incentives of agents, a factor not specifically dealt with in this paper. Nevertheless, certain abuses, including openings of underperforming accounts and proselytizing of customers between different product providers, seem to thrive in insurance and mortgage sales (Mašek, 2015; Pokorný, 2014).

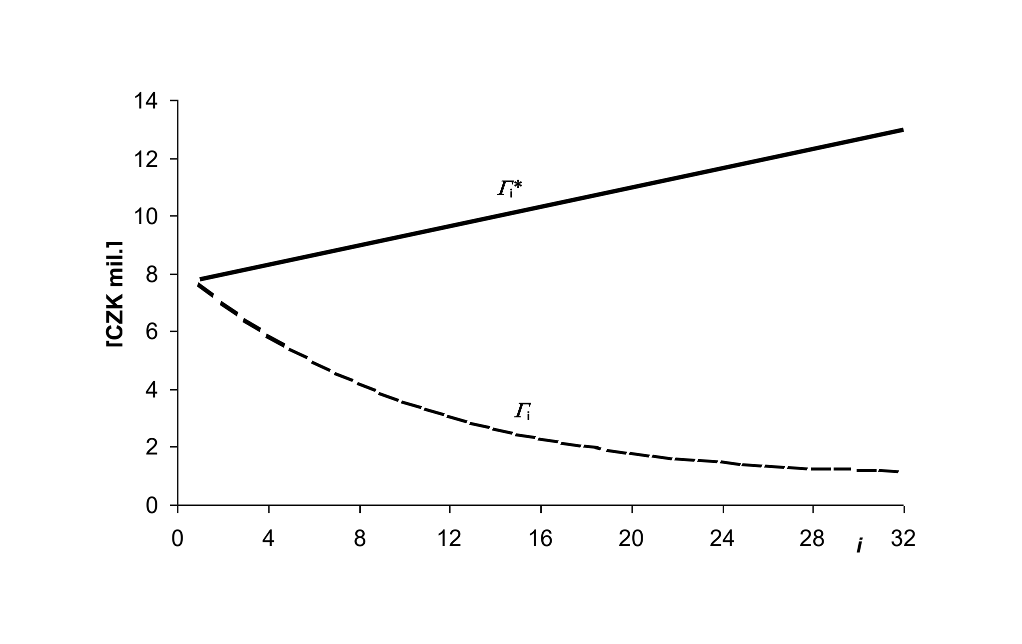

Figure 3. Commissioning costs projections

Conclusion

We have developed a model to solve a capital budgeting problem encountered by a bank intent on outsourcing its deposit-sales business. The resulting figures and, in particular, contradictory decision-making outcomes, clearly illustrate the inadequacy of conventional costing approaches and suggest the necessity of innovative solutions. More generally, we have shown statistical simulation to be a viable and comprehensive tool for managerial support and improved business projections wherever value drivers are impacted by non-linear dynamic processes. In contrast to conventional budgeting, simulation captures actual process dynamics, which provides much more realistic results.

In the context of actual market developments, where banks have not succeeded in meeting their commercial objectives, it is striking that conventional and simulation-based budgeting generate inverse cost functions in time. This discrepancy becomes manifest in the second and third year of the project, which is commensurate with apparent revisions of bank's business strategies in the Czech Republic.

Several contentious issues may arise with using the statistical simulation model, merited primarily by parametrization assumptions and lack of feedback, which may ignore potential agency problems. Additionally, quantitative methods tend to disregard sundry strategic considerations that are not explicitly embraced by the model, such as global positioning, brand development or cross-selling potential. However, statistical simulation does clearly outperform any form of conventional static analysis, due to its addressing the dynamics of the underlying processes.

In practical application, developing simulation models in the present context may serve several distinct purposes. In addition to improving financial projections used for capital budgeting, as shown in this paper, they may facilitate quantitative comparisons using various commission schedules and their sensitivities towards particular behavioral assumptions, as well as analyzing and quantifying the impacts of potentially effective and negotiable commercial measures such as counterparty segmentation, account-pool based commissioning or variants of deferred remuneration. Further development can possibly expand their role from that of an alternative to conventional capital budgeting to a comprehensive instrument of strategic decision-making in the area of distribution-channel management.

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