Executive Summary

This thesis is based on a special issue of the *Journal of Banking & Finance* about "Performance Measurement in the Financial Services Sector" (see Volume 34, Issue 7, 2010). In this special issue the contributions assess efficiency of banking institutions, property-liability, and life insurers and examine the influence of various company characteristics and regulations on the insurers' efficiency.

However, for Switzerland it can be argued that not only banks, property-liability insurers and reinsurers are important intermediaries, but also health insurers. First, the total premium volume for statutory health insurance was over 22 bn. CHF in 2010 (Federal Department of Public Health (2011c)). To compare, the total incurred losses of Swiss reinsurers (domestic and international) was 15 bn. CHF, and that of live insurance 27 bn. CHF in 2010 (Federal Department of Statistics (2011a)). Further, health insurance is a relevant topic for every Swiss resident. Not only because health is said the be the "highest good" (Zweifel et al. (2009)), but also from a financial point of view. On average an adult person paid 3'000 CHF for statutory health insurance in 2010. Political and economic discussions about health care are ongoing. There are very different opinions on what increases efficiency in health insurance. These unresolved issues are also interesting from an academic perspective.

This thesis tries to shed some light on determinants of health insurers' efficiency. For this purpose, the same methodologies are used as in the contributions of the special issue mentioned above. Hence, the analysis is performed in two steps. First, efficiency scores are calculated for all Swiss health insurers operating from 2005 to 2009, using individual level data from the Federal Department of Public Health. Two different methods are applied. The first method is "Stochastic Frontier Analysis" (SFA). It is a parametric approach that relies on econometric panel data estimation of a production and a cost function. The second approach is "Data Envelopment Analysis" (DEA), which is a non-parametric mathematical optimization calculation. As a result technical, cost, and allocative efficiency scores are estimated and computed, respectively. In a second step these efficiency scores are regressed on a number of insurers' characteristics in a Tobit regression. This allows to contribute to several ongoing political and economic discussions regarding efficient provision of health insurance. The main results are the following.

Using insurers' size, in terms of total assets, as an independent variable in the Tobit regression allows to test for economies of scale in the Swiss statutory health insurance industry. This is particularly important because it allows to examine whether a single social health insurer, a so-called "Einheitskasse", would be more efficient than the large number of private insurers operating today. This is in fact proposed by numerous politi-

cians and already was a topic of a former Federal popular vote. However, the results show a significantly negative effect of an insurer's size on efficiency. This implies that a large single social insurer would not be more efficient. Although risk selection, marketing, and acquisition cost would decrease in the short term, in the long term the lack of competition offsets these advantages.

A second major finding is diseconomies of scope. In the efficiency literature for insurance there are two controversial hypotheses regarding economies of scope, the conglomeration hypothesis which advocates in favor of production complementaries when an insurer serves several lines of business, and the strategic focus hypothesis, which arguments that insurers can maximize value by focusing on core businesses and core competencies. However, the results indicate that insurers whose supplementary insurance business is more important in terms of net benefits, ceteris paribus, are less efficient.

Equity capital serves to reduce the probability of default when unexpectedly high losses occur. Relying too much on equity capital the insurer does not use the full potential of leverage (Volkart (2008)). This seems to be the case for Swiss health insurers. The findings show that a higher equity capital ratio in terms of total assets has a negative effect on efficiency. It seems that the insurers could profit more from the potential of leverage. However, this may not be in line with Swiss regulation on equity capital for insurers as a certain proportion of equity is required by the regulator to bear risks and to reduce the probability of default.

Further analyzed insurers' characteristics are administrative expenses and earnings from investments. While for administrative expenses a significantly negative relationship with efficiency is found, the analysis is not able to clearly assess the effects of increased earnings from investments.

Concerning regulation, smaller payments into and higher payments from the risk adjustment scheme are found to increase efficiency of health insurers, ceteris paribus. A very likely reason is that payments into risk adjustment induce negative incentives for efficient supply of health insurance coverage and intermediation, just because the insurer has to forgo a part of its savings and "cross-subsidize" less efficient insurers.

Although these findings are subject to a number of reservations, for example the research approach does not take into consideration preferences of the insureds, the analysis presented in this thesis does shed some light on important questions for the regulator, the health insurers, academia, and the economy as a whole.