University of Zurich[UZH]

Faculty of Law - Institute of Criminology

Survey to assess the level and impact of crimes against businesses in Switzerland

Giang Ly Isenring, Giulia Mugellini, Martin Killias

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Executive summary

What is the study about?

The purpose of this research is to measure the level and the types of crime committed by employees against Swiss businesses in both commercial and financial sectors between 2008 and 2010.

Methodology: Survey – Sample – Response rates

The online survey was conducted on a **total of 3'850 retail stores and 4'329 financial companies.** The overall **response rate** is **27.3%** (31.5% for the financial sector and 22.5% for the commercial sector).

Victimization rates

Overall 24.1% of the businesses interviewed have suffered at least one crime or violation committed by employees from 2008 to 2010**.**

During this period (2008 to 2010), **25.3% of the retail stores have been victims at least once of offences** committed by employees.

In the financial business sector, this rate was 7.2%. Swiss banks present the highest victimization rate within the financial sector: 43.8%.

The highest costs as a consequence of offences committed by employees are experienced by financial businesses. 18.9% of them reported that the crimes experienced cost between CHF 100'000 and CHF 500'000.

Reporting to the police

Only 8.1% of the financial companies reported the offence to the police and 4.7% of them confirmed having reported an offence to the FINMA (the Swiss Financial Market Supervisory Authority)

21.3% of the retail stores reported the crime incident to the police.

Predictors of company victimization

Size of the firm: small firms (less than ten employees) are less victimized of offences and violations committed by employees.

Annual turnover of the firm: firms with a lower annual turnover (less than CHF 50 million) are less victimized.

Location of the firm: retail stores located in a residential area are less victimized.

Size of the area of location: firms located in smaller areas (less than 50'000 inhabitants) are less victimized.

Measures of prevention: overall a very large majority of the businesses (more than 90%) have at least one measure of prevention.

It is observed that the likelihood of a firm with at least one measure of prevention (security systems, controlling measures or organizational measures) to become a victim is higher than for firms having adopted none of these measures. This positive association between the presence of the measures of prevention and the victimization could be attributed to an active reaction of victimized businesses to better protect themselves after an incident of crime.

Corporate culture: firms with a family-spirit corporate culture are less victimized.

Profile of the offenders

In the financial sector, the proportion of male offenders is more important than the one of female offenders. However, in the workforce's distribution the proportion of men and women are almost identical.

Even if, in the workforce, **the highest percentage of employees is between 41 and 50 years old, the majority of offenders in both sectors are younger** (from 20 to 40 years old).

In both sectors **most of the offenders possess a professional /apprenticeship degree as well as the majority of the workforce.** However, the percentage of employees with a University degree in the workforce is more important than among the offenders.

Most of the offenders are Swiss as the distribution of Swiss employees in the workforce is clearly predominant. However, **the percentage of offenders who are foreigners is higher than their share in the workforce, especially in the commercial sector.**

In the commercial sector, **offenders in lower hierarchical positions are overrepresented** as compared to the workforce. However, **in the financial sector, the percentage of upper-level managers who had committed a crime or violation is higher than in the workforce.**

In the commercial sector, most offenders have been with the firm between one and three years while in the workforce the highest percentage refers to employees having worked for the firm over more than five years. Lack of loyalty could be the key explanation of a perpetration of crime in this sector.

In the financial sector, at first glance, we observe the same trend. Among the workforce **the majority of employees worked for the firm for more than five years, while offenders with less than three years of service present the highest percentage.** The commission of a crime, as in the commercial sector could be fuelled by a lack of loyalty toward the firm.

However, among **financial firms,** if we take a look at the distribution of the **annual salary,** the distributions of both the **workforce and** the **offenders seem to match for the category of salaries higher than CHF 100'000. Yet, the proportion of offenders earning between CHF 50'000 and 75'000 is much higher than the one of the workforce.** This finding suggests that upper-level managers are more likely to commit a crime when they have been in the firm for less than three years. Probably because of the short duration of their employment, their salaries are not yet as high as they might have expected. This could be one of the triggers for committing an offence.

Introduction

In 2010, an initiative by the Institute of Criminology at the University of Zurich, to measure the extent of business crime and its impact across the commercial and financial sectors, was financed by the Swiss National Science Foundation. The project "*Survey to assess the level and impact of crimes against business in Switzerland*" was granted and was designed to be a pilot study for future regular European Business Crime Surveys. Through controlled experiments and in coordination with TRANSCRIME (Joint Research Centre on Transnational Crime), this study aims at developing and improving the methodology of the first EU survey on crime against business.

This report presents the findings of this national survey on crime against business, committed by employees, in the commercial and financial sectors in Switzerland. The study took place from January 2010 to March 2012 and collected data on crimes experienced by businesses from 2008 to 2010.

In particular, the core objectives of the research are:

- ✓ To provide a better understanding of the nature of crimes against business and identify the crime types (both conventional, such as theft, and non-conventional, such as corruption, extortion or money laundering), which mostly affect businesses in Switzerland (the "*which are the types of crime"* question).
- ✓ To examine the characteristics of the businesses victimized, such as their area of location, size, activity sector, level of turnover, measures of prevention (the "*which are the businesses victims of crime"* question)
- ✓ To identify predictors of crime which place responsibility on the situation or environment in which the crime occurs, to understand why some business types appear to experience higher victimization rates than others, within some kind of theoretical framework, such as the situational production of risk known as the routine activities theory (the *"why are some business victims"* question).
- ✓ To place emphasis on understanding the impact and the extent of crime against businesses (the *"what is the impact of crime"* question).
- ✓ To provide a systematic review of the measures that can be taken to reduce crimes against business and suggest a better strategy of prevention (the "*how to reduce crime against business*" question).
- ✓ To identify the characteristics of the employees who committed the crime, in order to recognize potential risk factors often seen to be individualistic correlates of criminality (self-control, prior involvement with the criminal justice system and/or prior history of violent behaviors, history of drug or alcohol abuse). Some criminological theories such as self-control theory, life-course theory will be used to understand the "*who are the offenders*" question.
- ✓ To determine whether and how different types of corporate culture could influence the employees' likelihood of committing crimes against their companies (the "*what is the corporate culture of the businesses victims of employee offences*" question).

PRESENTATION OF THE RESEARCH

Businesses sit at the heart of communities, providing jobs and opportunities while contributing to their social and economic development and growth. Crime against businesses reduces benefits from economic activities through illegitimate allocation of resources and products. It includes a variety of offence types, committed either by employees or by offenders from the general public. All forms of business crime affect the ability of companies to do business and can, therefore, deprive communities of needed amenities. Just as crime against individuals reduces the quality of life of victims and households, and, indirectly, of the community at large, crime against business can produce a real drawback on economic activity and a community's well-being.

Despite these evident problems and even though crime against business forms a significant part of criminal activities, research into crime against companies has been slower to develop than research on crime against individuals.

In particular, research on crime against business and on economic or white-collar crime suffers from two main draw-backs. One is an excessively moralistic discourse, the other one a cruel lack in empirical knowledge[1]. Further, the current mainstream is focused on exclusively punitive responses and remedies[2]. This is largely true also in Switzerland even though there has been an increase of awareness and interest among the business sector.

In 1994, Switzerland participated in the first international Business Crime Survey, carried out in England and Wales, Germany, the Netherlands, Italy, Czech Republic and Hungary, under the coordination of the Home Office[3]. This survey covered only limited samples of businesses in the retail sector and the hotel/restaurant/bar sector, of approximately 500 units per country. It used a similar methodology as the one applied for the International Crime Victimization Surveys that started in 1989[4]. Among its main findings was the discovery that businesses are far more often victims of property offences (including burglary and vandalism) than private households, and that the exclusive focus on crime directed at households or individuals is hard to justify. For example, the domestic burglary rate of private households was in the range of one to three percent in the participating countries, whereas between 13 and 47 percent of retail shops suffered from burglary at least once per year[5]. Unfortunately, this type of surveys is not carried out regularly in several countries, yet. The only exceptions are the Netherlands, where the "Monitor Crime in the Business Sector" (MCB) is yearly conducted since 2004, and England and Wales, where the "Commercial Victimization Survey" has been conducted in 2002 and 2012[6].

Private companies such as *KPMG* and *Price-Waterhouse-Coopers* have rapidly filled the gap and conducted several surveys among businesses, showing dramatically high prevalence rates of economic crime at every sweep[7]. The findings of these surveys, although highly publicized in the

[1] For example, the work by E. WYSS, *Kriminalität als Bestandteil der Wirtschaft. Eine Studie zum Fall Werner K. Rey*, Pfaffenweiler: Centaurus 1999. This study is based on one (!) case, but concludes with far-reaching statements.

[2] KILLIAS M.,"Von 'White-Collar Crime' zur Organisierten Kriminalität: Zeitgenössische Inkarnationen des Bösen", in *FS N. Schmid*, Zürich: Schulthess 2001, 71-85.

[3] VAN DIJK J.J.M & TERLOUW G.J., "An international perspective of the business community as victims of fraud and crime, *Security Journal* 7, 1996, 157-67.

[4] VAN DIJK J.J.M., MAYHEW P., KILLIAS M., *Experiences of Crime Across the World*, Deventer (NL)/Boston: Kluwer, 1990

[5] KILLIAS M., *La criminalisation de la vie quotidienne et la politisation du droit pénal*, Bâle: Helbling & Lichtenhahn 1995 (Zeitschrift f. schweiz. Recht 129 II (1995), 365–458).

[6] SHURY J. ET AL., Crime against retail and manufacturing premises: findings from the 2002 Commercial Victimization Survey, London: Home Office Online Report 37/05.

[7] PRICEWATERHOUSECOOPERS, *European Economic Crime Survey 2001*, and *Global Economic Crime Survey 2007 (www.pwc.ch)*. According to this study, the victimization rate among the largest firms was said to be nearly 40%.

media[8], are strongly misleading due to serious flaws in the survey methodology. The rates and risks of economic crime are, thus, grossly inflated. The present research is also an attempt to produce data that go beyond the "propaganda numbers" of firms who use "research" as a tool to promote their own products (namely controlling). Wrong (i.e. possibly inflated) numbers are in some way no less deplorable than the total absence of empirical findings.

In the beginning of 2008, the European Union has awarded TRANSCRIME (Joint Research Centre on Transnational Crime, Università Cattolica del Sacro Cuore e Università degli Studi di Trento) with a study on "The Development of an EU Survey to assess the level and impact of crimes against business", covering all the 27 EU member states and the three candidates countries. In 2007/2008, TRANSCRIME also designed and carried out the first business crime survey in Italy[9].

Following this important development in the research field on crime against business at EU level, in 2009 the first Swiss Business Crime Survey (SBCS) started being developed within the Institute of Criminology, under the supervision of Professor Martin Killias, and of the second author of this report.

The Swiss survey was designed, in coordination with TRANSCRIME, in a way to learn more not only on crime within the business sector, but also on ways to improve the methodology for this kind of surveys. The Swiss survey is focused on offences committed by employees against their employers, or against any regulation that rules their employers' operations. Obviously, not all business crime is committed by employees, but during the design of the project, it became fairly soon clear that not all forms of economic crime could be analyzed at the time. Since most criminal operations within the business sector involve at least one actor among a company's staff, it was felt that looking at employee's behavior may be a promising starting point.

Although the present project deals with different survey's methodological issues and with the identification of feasible and efficacy ways to better measure offences within companies, it is also strongly focused on the promotion of crime prevention techniques. Therefore, the results of this research could provide relevant information for improving crime prevention measures within the businesses, as well as advancing policy-making in this regard.

Moreover, as far as it is the first large-scale business victimization survey, specifically focused on crimes committed by employees, it was also designed in a view to help developing the methodology of a future European survey on this research topic.

It is worth noting that this research greatly benefited from the first author's doctoral dissertation, that included a survey among the retail and the financial (banking) sectors in Geneva, where the focus had also been on employees' misbehavior[10], and from the second author's doctoral dissertation on "Measuring crime against business in the EU: the problem of comparability" and her participation in the first Italian and European business crime surveys' projects.

[8] Several newspapers have published these studies on their front page, such as Tages-Anzeiger. Others, such as the Neue Zürcher Zeitung have welcomed them with uncritical enthusiasm in their business pages.

[9] MUGELLINI G, *Le imprese vittime di criminalità in Italia*, Transcrime Report N. 16, 2012.

[10] ISENRING G.-L., *Les délits commis par les employés dans les secteurs commercial et financier*. Etude du droit suisse, Bern : Stämpfli 2007

1 Research questions

This study seeks to answer the following research questions:

- ✓ *What is the level and which are the types of crime against businesses? How important are the business crime incidence, prevalence and concentration in Switzerland?*
- ✓ *What is the financial impact of crime against businesses?*
- ✓ *Which are the businesses affected by crimes/violations committed by employees? Which are the risk factors which could influence the businesses' victimization rate?*
- ✓ *Why are some business victims of crime?*
- ✓ *How to reduce crime against business? How useful are the measures of prevention in reducing the crime risk?*
- ✓ *Who are the offenders? What is the profile of the offenders?*
- ✓ *Is there any correlation between the victimization and the corporate culture or philosophy of the firm?*

2 Advantages and disadvantages of victimization surveys

Over the last 45 years, victimization surveys have gradually become accepted as a major innovation in the measurement and assessment of crime-related issues. As a matter of fact, victimization surveys deal with issues related to crime, rather than "crime" itself, as they address experiences of incidents among the population, using operational definitions of crime which try not using legal terms.[11] The advantages of victimization surveys are numerous:

- ✓ To obtain alternative sources of information on crime, besides police records and administrative statistics.
- ✓ To learn about unreported and unrecorded crime.
- ✓ To understand the characteristics of the victims, of the offenders, and of the specific situations where the crime happened.
- ✓ To measure repeated and multiple victimization
- ✓ To measure the fear of crime.
- ✓ To measure the satisfaction with police performance
- ✓ To obtain data collected through standard methodologies and therefore comparable across different regions and countries,

Moreover, victimization surveys have the advantage of being flexible. They can be used standard or in modules at need. They can be easily combined with the victimization experiences and personal characteristics such as life style and risk-taking behaviors. The list of the victimization surveys' advantages is long as victimization surveys provide relevant and additional answers to crime data traditionally based on police-recorded crimes' statistics, and are also able to enhance the comparability of crime data across countries. Indeed, their development has dramatically changed the definition of crime and the availability of information about it. [12]

However, in spite of those numerous advantages, victimization surveys still have some disadvantages and limitations, mainly related to methodological problems and to the fact that they are carried out on a sample of individuals and, thus, reflect crime problems as perceived and

[11] AROMAA K., *Victimization survey – what are they good for?,* TEMIDA, page 85-94, June 2012

[12] YANG S.M. & HINKLE J.C., Issues in Survey Design: Using Surveys of Victimization and Fear of Crime as Examples, *Handbook of Survey Methodology for the Social Sciences,* L. Gideon (eds.), 2012

remembered by them. Furthermore, most countries have failed to make systematic use of this instrument. Such a useful instrument still has a hard time to gain recognition as one of the central and necessary criminal policy information sources due to some reasons. One of them is the fact that victimization surveys require an extra budget and a specialized production body which needs to be created in a routine basis and which is not the case so far. Furthermore, in order to make the best out of victimization surveys, special skills and training are needed and the latter is usually not yet available. Another disadvantage of victimization surveys is that a bad design of surveys could affect the results. The imperfections in the design of questionnaires are considered one major source of bias.

METHODOLOGY

In order to study the victimization of crime against businesses, it was planned to conduct a national survey using a web-based (on-line) questionnaire to be compiled by the security managers, CEO or owners of retail shops, banks and providers of financial services.
The initial sample of the survey included 8,179 premises, randomly selected from the lists of firms operating in the above-mentioned sectors, across all the 26 Swiss cantons. The sample was supposed to cover the French, German, Italian and Romansh Swiss linguistic regions.
As the project concerns offences committed by employees in the commercial and financial sectors, which are considerably different, the sampling methodology had to be developed in a quite innovative way. The same was true regarding the questionnaires, since the problems that can be observed in commercial units (shops and retail stores) differ considerably from those existing in firms offering rather abstract financial services (banks, asset management firms, and trust fiduciary firms). Therefore, special questionnaires were designed for each sector included in our sample.

1 First step of the project: gaining the support of businesses' associations

In order to obtain optimal support in contacting potential respondents and in motivating them to participate in the survey, several business associations were initially contacted. For the banking sector, after numerous meetings and contacts with the **Association of Swiss bankers**, the support from the **Security Commission**, **the Foreign Bank Association** and the **RBA Holding Association** was obtained.
The same procedure has been undertaken with the **Swiss Union of Fiduciaries** and the **Association of Swiss Asset Managers**, which agreed in sustaining the project.
However, the way and the conditions of their support have varied slightly across sectors. The Association of Swiss Bankers and the Swiss Union of Fiduciaries have accepted to send out a newsletter to all members encouraging them to respond to the survey questionnaire. The Association of Swiss Asset Managers, on the other hand, has only agreed to provide the e-mail addresses of all of their members. For this matter, a data privacy agreement was signed, stating that these e-mail addresses could have been used only twice (a first time to send out the questionnaire and a second time for only one reminder), and should have been deleted right after use.
This step of research took quite longer than planned as decisions of supporting the study have been processed through different levels. More time was also needed to obtain the approval of the Presidents of each of these Associations on the contents of the survey questionnaire (who, besides chairing their Associations, have a full-time job in a financial firm).
Afterwards, contacts were made with the Chiefs of Security departments of Coop, Manor, Fly (chain of furniture supply belonging to the Manor group) in order to encourage them to participate in the research. Manor and Fly were interested in completing the questionnaire but Coop refused to give out information on their victimization levels.
It is interesting to notice that the banking sector turned out to be particularly cooperative. This was achieved without facing substantial requests concerning the contents of the questionnaire. It seems that this sector has realized that studies like this are in their best interest, not only because it may show that crime is less frequent among bankers than often presumed in the public, but also because prevention is a higher priority given the high potential of nuisance of criminal employees.

2 Design of the questionnaires

In a first step, different questionnaires for the commercial and the financial sectors have been set. As there is considerable internal heterogeneity inside the banking sector, it became clear that offences by employees must as well show great diversity across this sector. Indeed, there are not only a few large "retailer" banks with many local branches (Filialen), such as UBS, CS, Raiffeisen, the cantonal banks and the RBA Holding banks; but also several large foreign banks with only representative offices in Switzerland were taken into consideration. Therefore, different sub-samples out of these several sectors were drawn and two different questionnaires for the banking sector were developed: (1) the *headquarter questionnaire* and (2) the *branch questionnaire*.

Both questionnaires include questions related to the bank's general background, such as the number of employees, the location, the revenues of the bank and information on the strategies of prevention implemented. The core of both questionnaires is focused on questions to obtain data on the victimization rate for different types of crime and violations committed by employees inside the bank. The questionnaires include also a set of questions aimed at collecting information on the characteristics of the offenders (e.g. gender, age, marital status, hierarchical position within the business, annual salary, etc.) and on their modus operandi, (place and time of perpetration of the offence, whether it was planned before, etc.). As the Headquarter questionnaire is designed for headquarters of all the bank members of the Swiss Association of Bankers, questions about offences and circumstances included are only relevant at this level, given that the main objective here is to get insights on the "big picture". The Branch questionnaire designed for branches gives more focus on details linked to the victimization at the level of the branch (in particular the most serious offence that happened over the three last years).

For instance, in the Headquarter questionnaire, questions about the author are more general, whereas this same section in the Branch questionnaire includes numerous detailed questions about the personal history of the wrongdoer and the circumstances in which the most serious offence was committed. The Headquarter questionnaire also allows acquiring overall information on the corporate culture and the prevention philosophy of the headquarter bank. Meanwhile, the Branch questionnaire considers detailed information on the efficiency of measures of prevention implemented before and/or after an incident.

Trust fiduciary companies and asset management firms share the same questionnaire, which is quite similar to the one of the commercial sector but with more questions specific to each sector[13].

3 Implementation of the technical platform

The questionnaire on-line was implemented using two different soft-wares: Lime Survey and NetQ Survey. The Lime Survey software was used for the bank sector and the NetQ for the other financial sector and the commercial sector. Each questionnaire was translated into four languages (French, German, Italian and English). The use of two separate soft-wares turned out to be necessary since Lime Survey was not powerful enough to generate the whole questionnaire in four languages and for both sectors (financial and commercial) with several sub-sectors. If the download of Lime Survey was free of charge, NetQ, however, had to be bought and installed with the help of the IT Team of the University. The software once acquired had been used by the whole team for one year. Though Lime

[13] Each questionnaire is attached to this report: Attachment 1, 2, etc.

Survey and Net Q are designed to be user friendly, learning how to use them and, most of all, how to implement the whole survey online was very time-consuming. One person of the research team was, therefore, completely assigned for this specific technical task. Furthermore, it took a large amount of time to test the questionnaire and to make sure that data collection could proceed without any technical incident. After testing the questionnaire on our own server, it was sent out to a group of compliance officers of several banks.

4 Data collection

The collection of the data was mainly performed through the compilation of the on-line questionnaire. A paper questionnaire was also used to collect information on the businesses which did not answer to the on-line interview.

The data collection was initially addressed to the financial companies. Upon the complete data collection of the financial firms, the survey was then carried out on businesses belonging to the commercial sector.

In both cases the data collection proceeded as follows:

- ✓ An electronic mail was sent to all the owners/managers of the sampled companies. In this electronic mail, the project and its objectives were introduced. The respondents were asked to participate to the survey within a month. A link to the online questionnaire was included in the mail.
- ✓ Three weeks after the first wave, another email was sent to all the sampled businesses.
- ✓ Three weeks after, a first reminder was sent to all the sampled companies. It consisted in a postal letter addressed to the owners/managers of the firms, including a link to the online questionnaire as well as a username and password.
- ✓ Three weeks after the first reminder, the same procedure was repeated but, this time, the letter was addressed only to those companies which did not participate to the study, yet (thanks to the use of usernames and passwords).
- ✓ Three weeks after the second reminder, paper questionnaires were sent out to the non-respondents.
- ✓ The final wave of reminder mainly consisted in phone calls to the owners/managers to convince them to participate in the survey.

5 Sample profile and weighted population

5.1 Initial sample

The Swiss business crime survey covers businesses belonging to two main economic sectors: the commercial sector (retail stores) and the financial sector (banks and other providers of financial services).
On the basis of the NOGA classification (General Classification of Economic Activities) 2008, the following Table describes the specific economic activities covered and sampled within the SBCS. With regards to the financial sector, the economic activities covered by the survey represent only one third of the businesses included in the following NOGA titles.

Table 1 - NOGA 2008 economic activities covered by the SBCS

NOGA activities	Description	Title
Commercial sector	Retail sale of car and light motor vehicle (< 3,5t)	Title 451102 of NOGA 2008
	Retail sale of other motor vehicles (> 3.5t)	Title 451902 of NOGA 2008
	Wholesale trade of motor vehicle parts and accessories	Title 453100 of NOGA 2008
	Retail trade of motor vehicle parts and accessories	Title 453200 of NOGA 2008
	Wholesale trade, except of motor vehicles and motorcycles	Title 46 of NOGA 2008
	Retail trade, except of motor vehicles and motorcycles	Title 47 of NOGA 2008 with the exception of 479100 - Retail sale via mail order houses or via Internet
Financial sector	Financial service activities, except insurance and pension funding	Title 64 of NOGA 2008
	Legal and accounting activities	Title 69 of NOGA 2008

Source: "NOGA 2008 General Classification of Economic Activities Titles" - Swiss Federal Statistical Office

Contrary to population or household surveys where population registers, phone directories or random digit numbers can be used, there is no "easy" list where to identify the survey's sample for retail stores, banks or providers of financial services.
In the present case, we have obtained support from the Federal Office of Statistics who, acting as a national bureau of census, has developed a sample of firms of several sectors. Regarding banks and providers of financial services, it turned out that professional (branch) associations are best suited in offering support not only in locating respondents, but also in motivating them to participate.
The sampling procedure for the commercial sector proceeded as follows:

- ✓ The Federal Office of Statistics developed a random sample of 3'433 postal addresses of the economic activities corresponding to the commercial sector and mentioned in the Table above.
- ✓ As far as the SBCS was designed as "on-line" survey, the email addresses of these 3'433 retail stores were searched by using Google or the Swiss directories and Yellow pages. 1'781 e-mail addresses out of 3'433 were finally obtained.
- ✓ 2'000 postal addresses were bought from the Swiss Chamber of Commerce. Out of these, 1'169 e-mail addresses were obtained through web searches.
- ✓ Other 900 e-mail addresses were obtained through the Geneva and Ticino Chamber of Commerce.

- ✓ All these procedures provided a total of 3'850 e-mail addresses for the commercial sector.
- ✓ For the financial sector, the sample is composed of the following sub-samples:
- ✓ A sample of 360 independent banks, members of the Swiss Association of Bankers (available on this organization's membership directory).
- ✓ A sample of 227 foreign banks that are not members of the Swiss Association of Bankers but are included on the list of FINMA. Among these 227 banks, 70 are members of the Foreign Banks Association, who agreed to write a letter of support and to provide postal addresses for the mail survey.
- ✓ A sample of 28 large Swiss banks headquarters (UBS, Crédit Suisse, Raiffeisen) with many branches, plus a selection of 100 branches of the above mentioned Swiss banks.
- ✓ 97 branches of the Cantonal Banks and 47 branches of Regional Banks (RBA Holding, Clientis, Valiant), randomly selected across the country.
- ✓ 76 branches of smaller banks, such as Coop, Migros, Leumi, Geneva Money Bank, Julius Baer, Bâloise Bank.
- ✓ PostFinance has received the Headquarter questionnaire, but no branches (post offices) were contacted.
- ✓ Beyond the banking sector, 2'481 trust fiduciary companies, which are members of the Swiss Union of Fiduciaries, have been approached, as well as 1'110 asset management companies, listed on the membership directory of the Association of Swiss Asset Managers.

Table 2 - Reference population and initial sample for the SBCS

	Universe (reference population covered by the SBCS)	**N initial sample**
Commercial sector	57498	3850
Financial sector	4329	4329
Bank Branches	350	350
Bank Headquarters	360	360
Swiss Banks[14]	28	28
Asset managers	1110	1110
Fiduciaries	2481	2481
TOTAL	**61827**	**8179**

The total sample of the SBCS counts a total of 8'179 companies: 4'329 firms or branches belonging to the banking sector and to the other financial providers and 3'850 retail stores.

[14] The"Swiss Banks" category includes all the larger Swiss banks, namely: UBS, Credit Suisse, the 24 Cantonal Banks, Raiffeisen Bank and Migros Bank.

5.2 Sampling weights

5.2.1.1 Why calculating sampling weights?

Usually they are needed to correct for imperfections in the sample that might produce bias and other departures between the sample and the reference population. Such imperfections include the selection of units with unequal probabilities, non-coverage of the population, and non-response. In other words, the purposes of weighting are:

- ✓ to compensate for unequal probabilities of selection.
- ✓ to compensate for (unit) non-response.
- ✓ to adjust the weighted sample distribution for key variables of interest (in this case for **Linguistic Regions and Largest Cantons**) so that it conforms to a known population distribution (Swiss businesses).

5.2.1.2 Main decisions taken to calculate sampling weights for the SBCS

- ✓ **Level of territorial aggregation for which sampling weights are calculated**: on the basis of the sample bases allowing reliable analyses, it has been decided to calculate the sampling weights for the three Linguistic Regions (German, French, Italian&Romansh[15]) and for the six largest cantons[16] of Zurich, Geneva, Basel (Stadt & Land), Bern, St. Gallen and Vaud (see Table below).
- ✓ **Economic sectors for which sampling weights are calculated**: 1) Bank Branches; 2) Asset Managers; 3) Fiduciaries; 4) Commercial sector. The Bank Headquarters and the Swiss Banks will be treated and analyzed as case studies as the final responses are quite low.
- ✓ **Sample to be weighted**: the sampling weights have been calculated for the Final Sample = N of businesses answering to the question on victimization (Both yes or no). This number will be multiplied for the sampling weights calculated in order to obtain a final sample which reflects the distribution of the reference population (Universe).
- ✓ **Universe or Reference population** = N of existing businesses in Switzerland covered by the SBCS. The information on the reference population is necessary to calculate the total "Coefficient to relate the sample to the universe".
  The data of the reference population for the Commercial Sector were provided by the Federal Office of Statistics; for the Banks, the Asset Managers and Fiduciaries the reference population is equal to the sampled population. Indeed, it was decided to cover all the businesses belonging to these sectors.

Table 3 - Distribution of active enterprises by economic sector covered by the SBCS (reference population). Year 2008

	TOTAL
Commercial sector	**57498**
Financial sector	**4329**
TOTAL	**61827**

Source: Federal Office of Statistics - Registre des entreprises et des établissements (REE)

[15] The Italian and Romansh regions have been aggregated to obtain more consistent data.

[16] Largest cantons are intended here as those having a number of inhabitants higher than 450,000.

- ✓ **Distribution of the Reference population in each Swiss Canton**. N of existing businesses in each Swiss Canton covered by the SBCS. This information is necessary to calculate the "Structural Coefficients" for each Canton and Region. This information was obtained through the following procedures: A) For **Banks Branches** the % distribution by cantons has been calculated starting from the information available in the list of addresses, and the figures for each canton have been summed up to obtain the figures for the Linguistic Regions; B) for the **Commercial sector** the distribution of existing businesses in each cantons was taken from the STAT-TAB[17] service of the National Statistical Office and is referred to the year 2008. It includes businesses belonging to the Wholesale and retail trade and repair of motor vehicles and motorcycles (Title 45 of NOGA 2008); Wholesale trade, except of motor vehicles and motorcycles (Title 46 of NOGA 2008) and Retail trade, except of motor vehicles and motorcycles (Title 47 of NOGA 2008). C) For the **Asset Managers** and **Fiduciaries** the distribution of the existing businesses across cantons has been taken on the dedicated websites.

Table 4 - Cantons by linguistic Regions used for the analysis in this report

N	Code Cantons	Canton	Code Linguistic Regions	Linguistic Regions
1	AG	Aargau	1	German
2	AI	Appenzell Innerrhoden	1	German
3	AR	Appenzell Ausserrhoden	1	German
4	BE	Bern	1	German
5	BL	Basel-Landschaft	1	German
6	BS	Basel-Stadt	1	German
7	FR	Friburg	1	German
8	GE	Geneva	2	French
9	GL	Glarus	1	German
10	GR	Graubünden/ Grigioni / Grischun	3	Italian&Romansh
11	JU	Jura	2	French
12	LU	Lucern	1	German
13	NE	Neuchâtel	2	French
14	NW	Nidwalden	1	German
15	OW	Obwalden	1	German
16	SG	St. Gallen	1	German
17	SH	Schaffhausen	1	German
18	SO	Solothurn	1	German
19	SZ	Schwyz	1	German
20	TG	Thurgau	1	German
21	TI	Ticino	3	Italian&Romansh
22	UR	Uri	1	German
23	VD	Vaud	2	French
24	VS	Wallis	2	French
25	ZG	Zug	1	German
26	ZH	Zürich	1	German

Source: Swiss Federal Statistical Office

5.2.1.3 How the sampling weights are calculated

The sampling weights are the mathematical products of the total Coefficient to relate the sample to the universe and the Structural Coefficients.

[17] http://www.bfs.admin.ch/bfs/portal/en/index/infothek/onlinedb/stattab.html.

- ✓ **Coefficient to relate the sample to the universe** = N of businesses covered by the survey and belonging to a specific economic sector / N. of businesses answering the survey in this specific sector.
- ✓ **Structural Coefficients by Cantons =** ratio between the % of existing businesses in each Canton and the % of businesses answering to the survey in the same Canton.

5.3 Final sample profile

The Tables below show the final sample profile (number of respondents to the SBCS) (S) and the weighted population (universe) by economic sector and linguistic regions (W). The percentages represent the proportion of the population universe who have been interviewed (S/W). For example, in relation to bank branches in the German region, 89 branches were interviewed, representing 36.8% of the total number of existing bank branches in the German region.

Table 5 - Sample profile (S) and weighted population of the SBCS by economic sectors and linguistic regions

	Switzerland		German		French		Italian&Romansh	
	S	W	S	W	S	W	S	W
Commercial sector	865 1.5%	57498	464 1.2%	39627	278 2.1%	13005	123 2.5%	4866
Financial sector[18]	1292 32.8%	3941	850 34.6%	2457	291 27.7%	1049	151 34.7%	435
Bank Branches	131 37.4%	350	89 36.8%	242	30 40.0%	75	12 36.4%	33
Asset managers	301 27.1%	1110	156 30.8%	507	109 23.3%	468	36 26.7%	135
Fiduciaries	860 34.7%	2481	605 35.4%	1708	152 30.0%	506	103 38.6%	267
TOTAL	**2157** **3.5%**	**61439**	**1314** **3.1%**	**42084**	**569** **4.0%**	**14054**	**274** **5.2%**	**5301**

Table 6 - Sample profile and weighted population of the SBCS by economic sectors and largest Cantons

	Switzerland		Zurich		Geneva		Basel (Stadt&Land)		Bern		Vaud		St. Gallen	
	S	W	S	W	S	W	S	W	S	W	S	W	S	W
Commercial sector	865 1.5%	57498	134 1.4%	9896	138 3.8%	3629	33 1.1%	3056	54 0.9%	6241	86 1.6%	5241	35 1.0%	3448
Financial sector	1292 32.8%	3941	321 37.1%	866	165 27.2%	607	58 29.1%	199	90 29.8%	302	85 32.3	263	56 30.3%	185
Bank Branches	131 37.4%	350	46 72.6%	63	23 86.7%	27	7 32.4%	22	10 18.4%	54	7 14.5	48.3	10 59%	17
Asset managers	301 27.1%	1110	84 28.2%	298	83 21.7%	382	15 34.8%	43	7 36.3%	19	21 30.0	70	2 17%	12
Fiduciaries	860 34.7%	2481	191 37.9%	504	59 29.7%	199	36 26.8%	134	73 32.0%	228	57 39.3	145	44 28%	156
TOTAL	**2157** **3.5%**	**61439**	**455** **4.2%**	**10762**	**303** **7.2%**	**4236**	**91** **2.8%**	**3255**	**144** **2.2%**	**6543**	**171** **3.1%**	**5504**	**91** **2.5%**	**3633**

[18] For Financial sector is intended here those business belonging to Swiss banks (the"Swiss Banks" category includes all the larger Swiss banks, namely: UBS, Credit Suisse, the 24 Cantonal Banks, Raiffeisen Bank and Migros Bank), Bank headquarters, Bank branches, Asset managers, Fiduciaries.

RESPONSE RATES

The response rate is the ratio between the number of firms answering the question on victimization and the number of businesses sampled.
It is important to recall that the participation to the survey was not mandatory. For this reason, there was no specific reason to doubt the pertinence and the honesty of the collected answers, as managers could have refused to participate in the study, instead of providing false information.
It is interesting to report that the most frequent reasons of non-participation to the survey given were: "protection of data and information" and "protection of the firm's reputation".

1 Characteristics of the final sample

1.1 Economic sectors

Table 7 - Response rates by economic sector. Absolute numbers and % of the initial sample

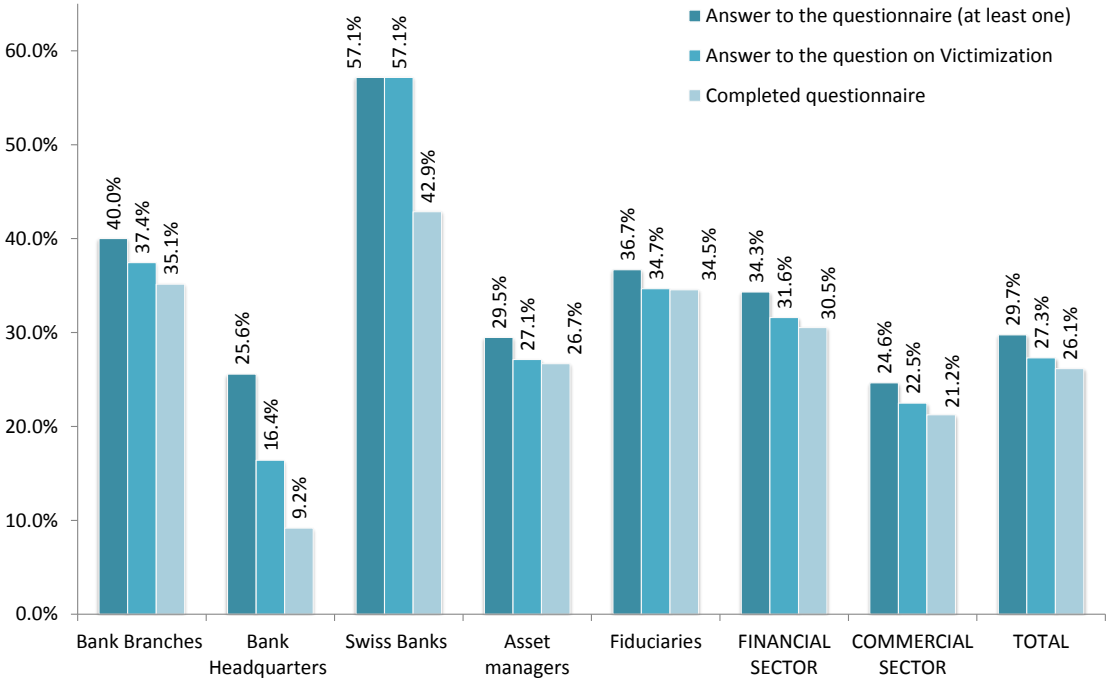
	Reference population covered by the SBCS	N initial sample	At least one answer to the questionnaire	Answer to the question on Victimization	Completed questionnaire
Commercial sector	57498	3850	948	865	**817**
			24.6%	22.5%	**21.2%**
Financial sector	4329	4329	1485	1367	**1321**
			34.3%	31.6%	**30.5%**
Bank Branches	350	350	140	131	**123**
			40.0%	37.4%	**35.1%**
Bank Headquarters	360	360	92	59	**33**
			25.6%	16.4%	**9.2%**
Swiss Banks[19]	28	28	16	16	**12**
			57.1%	57.1%	**42.9%**
Asset managers	1110	1110	327	301	**296**
			29.5%	27.1%	**26.7%**
Fiduciaries	2481	2481	910	860	**857**
			36.7%	34.7%	**34.5%**
TOTAL	**61827**	**8179**	**2433**	**2232**	**2138**
			29.7%	**27.3%**	**26.1%**

Generally speaking 29.7% of the businesses sampled have started to compile the questionnaire, 27.3% answered the question on their experience of victimization, between 2008 and 2010, and 26.1% of the initial sample completed the questionnaire. Compared to other surveys, this response rate is very high given the difficulties in motivating firms (and managers) to answer questionnaires dealing with such sensitive topics, and also given the methodology used for the data collection (Computer Assisted Telephone Interviewing - CAWI). For example, the response rate of the first Italian Business Crime Survey (2009), using the web questionnaire, was around 14%. In Europe, the pilot European

[19] The"Swiss Banks" category includes all the larger Swiss banks, namely: UBS, Credit Suisse, the 24 Cantonal Banks, Raiffeisen Bank and Migros Bank.

Business Crime Survey, registered a slightly higher response rate (27%), but it has to be highlighted that before the online questionnaire the companies were screened through telephone interviews. In particular, the sampled firms were initially contacted by phone, and asked to answer the screening section of the questionnaire. Afterwards, only the companies declaring to have been victims of crime were further interviewed through the online survey.

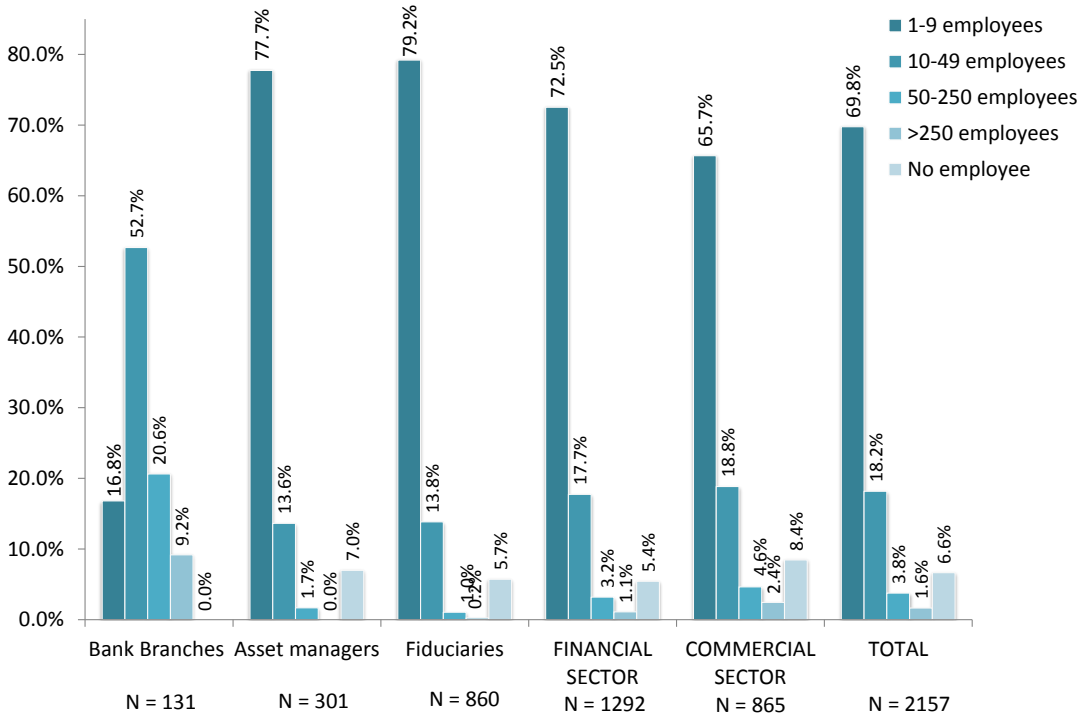
Figure 1 - Response rates by economic sector. % of the initial sample and of the number of businesses answering the question on victimization



Considering the answers to the question on victimization, it clearly emerged, from the Figure above, that the financial sector presents higher response rates (to the questions on victimization) than the commercial one (31.6% against 22.5%).
Within the financial sector the Swiss Banks are those presenting the highest response rates (57.1%), followed by Bank Branches (37.4%) and Fiduciaries (34.7%). The Bank Headquarters are those presenting the lowest response rates (16.4%).

1.2 Size of the business

Figure 2 - Respondents by size of the business (number of employees) and economic sector. % of the total number of respondents in each economic sector[20]



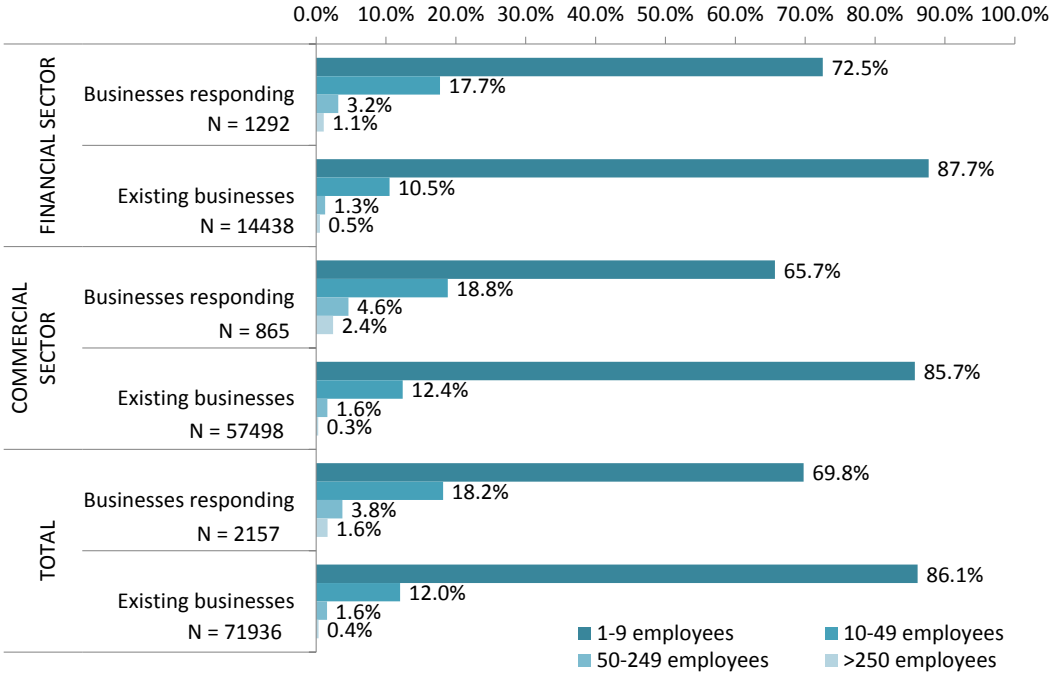
The Figure above shows that, overall, in both economic sectors, the majority of respondents are micro businesses with less than 10 employees. Indeed, 65.7% of respondents in the commercial sector and 72.5% in the financial one are micro businesses. While 2.4% of respondents among retail stores and 1.1% among financial companies are large businesses, with more than 250 employees.

Comparing the distribution of businesses responding to the survey and the distribution of active enterprises, by size (see Figure below), it is evident that the pattern analyzed above reflects the general distribution of Swiss firms by size, where the majority of existing companies are small firms with less than ten employees (86.8%), while only 0.4% are large businesses, with more than 250 employees.

Therefore, proportionally, micro firms, have a lower response rate than larger companies.

[20] The total N for the financial sector includes here the data for: bank branches, asset managers and fiduciaries. The data for Swiss banks and bank headquarters are reported in a separate Figure below.

Figure 3 - Distribution of the businesses responding to the SBCS[21] and of to the active enterprises (reference population)[22] by economic sector and size. Year 2008

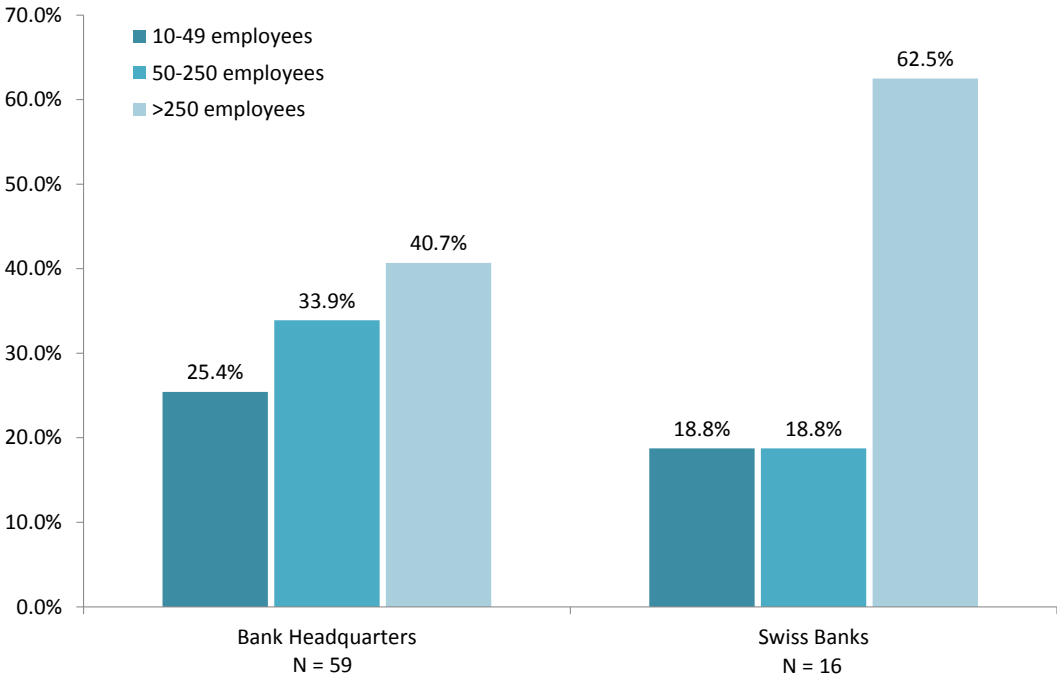


Source: SBCS data and Federal Office of Statistics - Registre des entreprises et des établissements

[21] The total N of businesses responding the survey in the financial sector, reported in this Figure, does not include the number of bank headquarters and bank branches.

[22] The total N of existing businesses for the commercial sector reported in this Figure corresponds to the N of businesses listed in Table 2 of this report. With regard to the financial sector, it should be mentioned again that the total N of businesses reported in this Figure does not exactly correspond to the universe of the SBCS but, the percentage distribution of businesses by size, is supposed to be similar to that related to the universe of the survey.

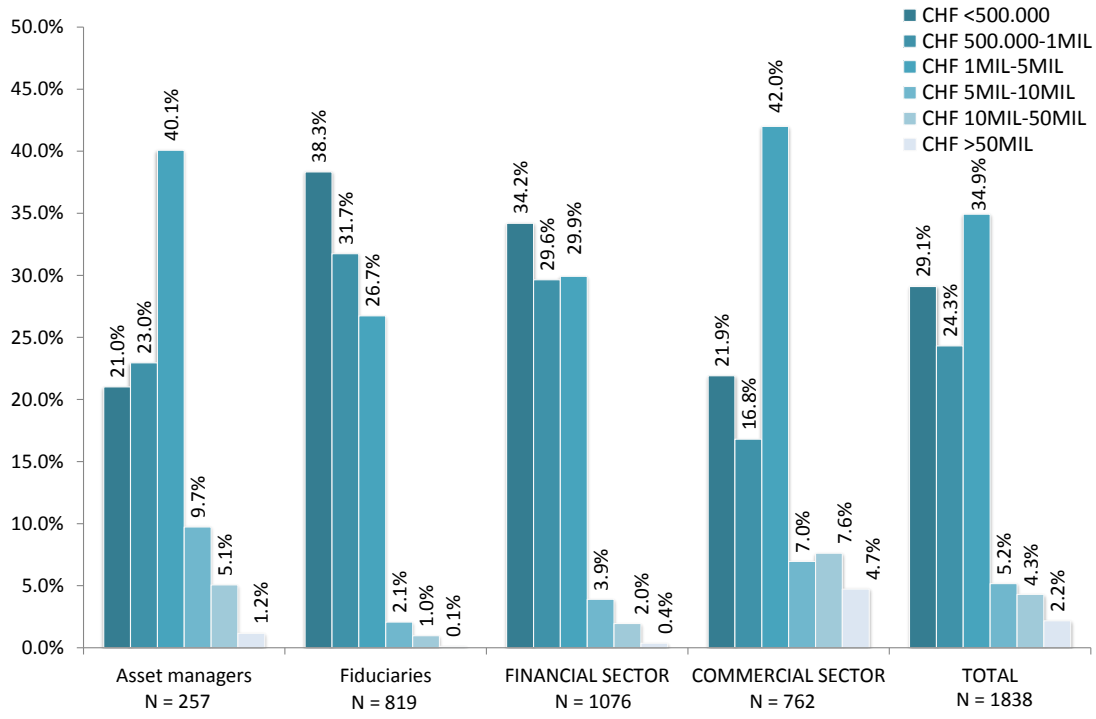
Figure 4 - Respondents by size of the bank. Absolute numbers and % of the total number of respondents for Bank Headquarters and Swiss Banks



Considering the bank headquarters and large Swiss banks, the majority of respondents in the SBCS sample are banks with more than 250 employees.

1.3 Annual Turnover

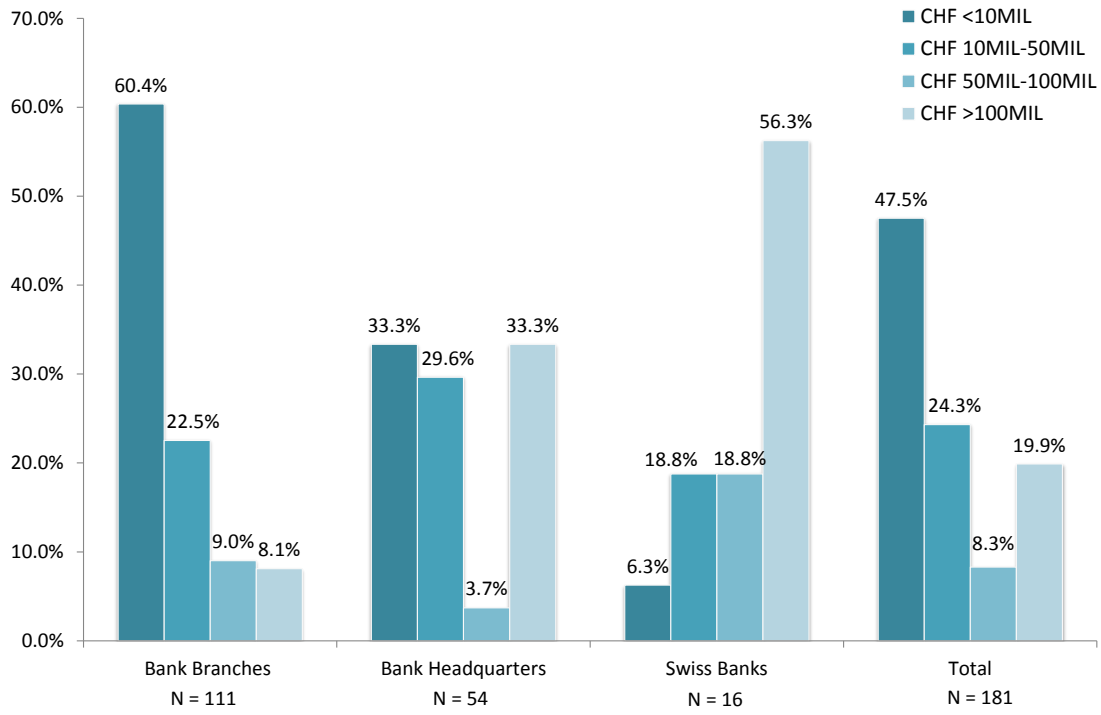
Figure 5 - Respondents by annual turnover and by economic sector of the business. % of the total number of respondents in each sector[23]



When analyzing the distribution of businesses respondents by their annual turnover, there is not a clear pattern. Indeed, among retail stores, the majority of respondents are firms with an annual turnover between CHF 1 and 5 million (42%), the same is observed for the asset management firms (40.1%), while in the case of fiduciaries, those with an annual turnover under CHF 500'000 were more likely to participate in the survey (38.3%).

[23] The total N for this variable is lower than total number of respondents in these sectors because of some missing answers.

Figure 6 - Respondents by annual turnover of the banks. % on the total number of respondents for bank branches, bank headquarters and Swiss banks[24]



With regard to the bank sector, the majority of respondents are banks with an annual turnover less than CHF 10 million (47.5%). However, the trend is evidently influenced by the data for the bank branches. Indeed, in the case of Swiss large banks the majority of respondents have a turnover higher than CHF 100 million, and among bank headquarters the percentage of respondents with a turnover lower than CHF 10 million is the same as that for those with a turnover higher than CHF 100 million (33.3%).

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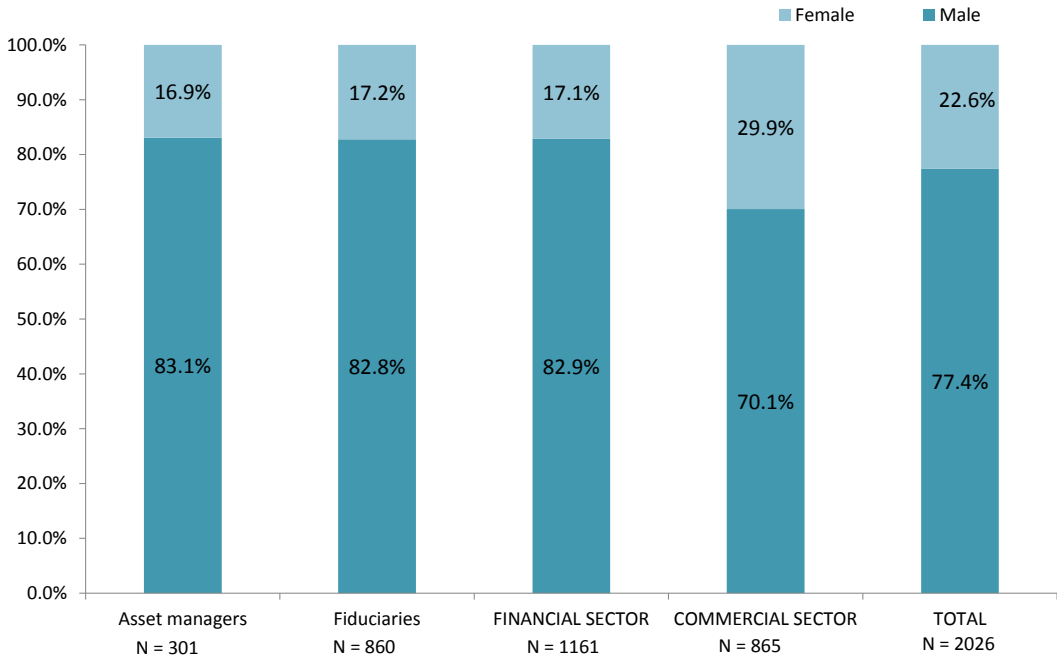
[24] The total N of answers for this variable is lower than total number of respondents in these sectors because of some missing answers.

2 Characteristics of the respondents

2.1 Gender of respondents[25]

Figure 7 - Gender of respondents by economic sector. % of the total number of respondents in each sector[26]

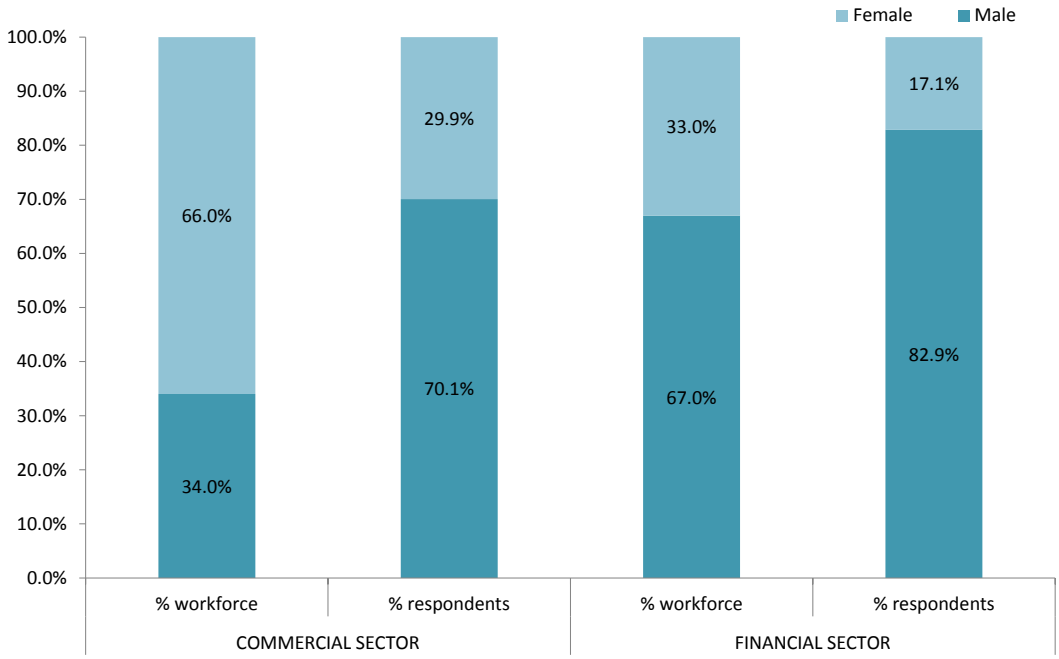


In both the economic sectors the majority of respondents are male; 70.1% among retail stores and 82.9% among financial companies.

[25] This information on respondents is not available for the Banks.

[26] Only analyses on Asset managers, Fiduciaries and businesses belonging to the Commercial sector are performed here. Banks have been put aside due to a lack of data on the gender of the respondents.

Figure 8 - Gender distribution of the workforce and of the respondents by economic sector. Year 2010

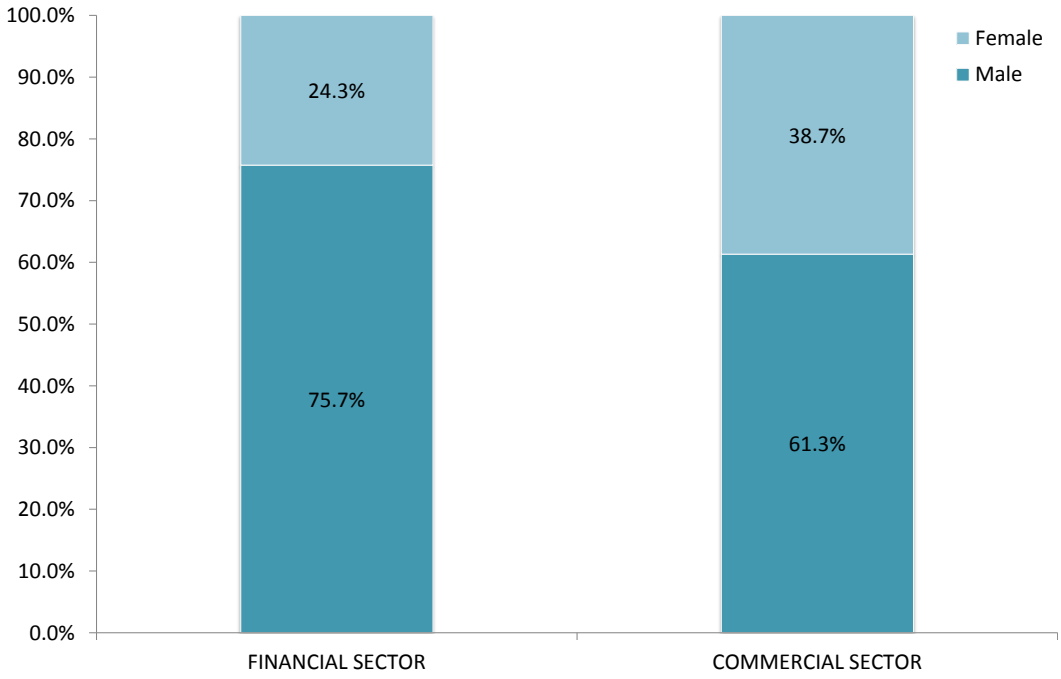


Source: Swiss Labor Force Survey, SLFS – Federal Office of Statistics

Taking into consideration the Swiss statistics of the employed population by economic sector[27] (Figure above), in 2010 around 54% of the work force is female in the commercial sector and 43% in the financial sector.
Therefore, if the proportion of respondents nearly matches the gender distribution of employees in the financial sector, it is exactly the opposite in the commercial sector: there are more male respondents even if the majority of employees are female.
This is due to the fact that even if the employees in the commercial sector are mainly females, males occupy the highest hierarchical positions and the respondents to the survey belong to these positions (see Figures 9, 10 and 11 below).

[27] Source: *Source: Swiss Labor Force Survey, SLFS – Federal Office of Statistics*

Figure 9 - Gender distribution of the directors/up-level management (workforce) by economic sector. Year 2010



Source: Swiss Labor Force Survey, SLFS – Federal Office of Statistics

2.2 Hierarchical position of respondents[28]

Figure 10 - Hierarchical position of respondents. % of the total number of respondents for asset managers and fiduciaries[29]

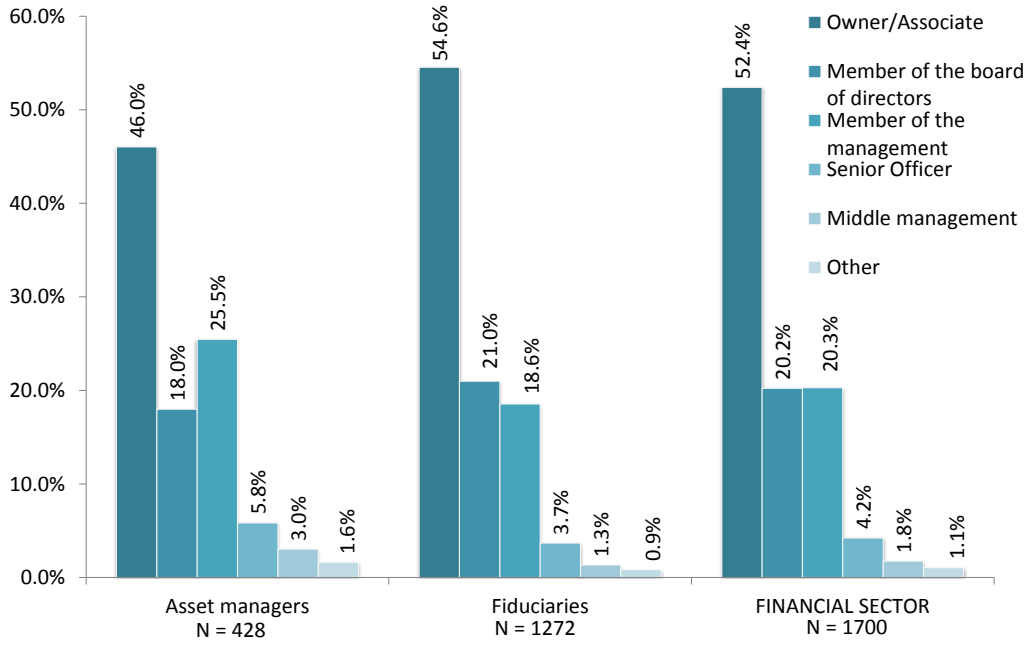
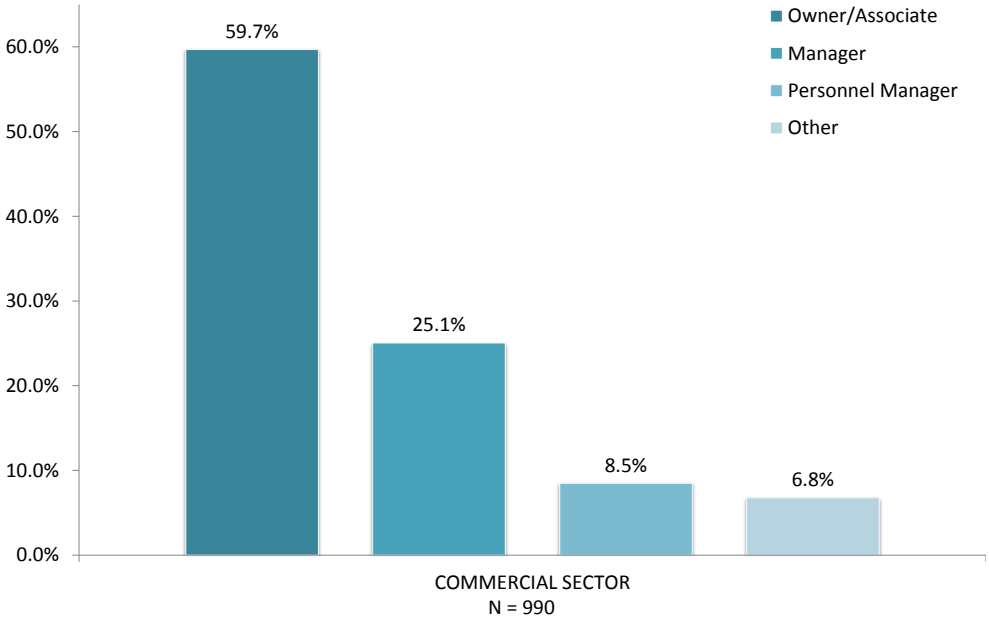


Figure 11 - Hierarchical position of respondents. % of the total number of respondents in the commercial sector[30]



[28] This information on respondents is not available for the Banks.

[29] The total N of answers for this variable is higher than total number of respondents for Asset Managers and Fiduciaries because for this question multiple answers were possible.

[30] The total N of answers for this variable is higher than total number of respondents in the Commercial sector because for this question multiple answers were possible.

The Figures above show that the owners and associates partners of a business have been the most likely to answer the questionnaire, among fiduciaries companies (46%), asset management firms (54.6%), and retail stores (59.7%).
This is probably due to the fact that the survey was intentionally addressed to the persons occupying the highest hierarchical positions within the company, who are supposed to know more information on the security systems and victimization level of the firm, than other employees.

MAIN FINDINGS OF THE SURVEY

This chapter presents the main findings of the Swiss business crime survey; it is organized in four main sections:

- ✓ SECTION 1 focuses on the analysis of the characteristics and predictors of crimes committed by employees against Swiss businesses, through both descriptive and inferential statistics.
- ✓ SECTION 2 identifies the profile of the offenders against Swiss businesses and presents some qualitative observations on seven large Swiss banks.
- ✓ SECTION 3 describes how the offences have been discovered, to which relevant authorities they have been reported and which factors influence the reporting behavior of Swiss companies.
- ✓ SECTION 4 lists the specific measures of crime prevention adopted by Swiss firms, and clarifies relationships if any between the characteristics of the companies and the specific measures implemented.

1 Characteristics of victimization and offences against business in Switzerland

Introduction

This section analyses the main characteristics of crime against Swiss businesses committed by employees, through descriptive and inferential statistics.
In particular, the section deals with: a) the Swiss businesses' victimization rates for employee offences, between 2008 and 2010 (three years); b) the types of employee offences affecting Swiss businesses; c) the incidence and concentration of victimization; d) the financial impact of victimization on Swiss businesses; e) the predictors of the overall level of victimization, f) the predictors of specific types of crime (theft, fraud, unfair competition and complex crimes).
The analyses will be mainly presented at the aggregated national level (Switzerland); even if for some specific variables will be also described the situation across the three linguistic regions[31] and across the six largest cantons[32]. The analyses will compare the Figures, on the above-mentioned issues, for two main economic sectors: the commercial sector and the financial one. Moreover, separated analyses will be also provided for specific types of business belonging to the financial sector, namely Swiss banks[33]; Bank branches, Bank headquarters, Asset Managers and Fiduciaries.

[31] Three linguistic regions have been considered: 1) French, 2) German and 3) Italian and Romansh. The latters have been aggregated to obtain more consistent data.

[32] Largest cantons are intended here as those having a number of inhabitants higher than 450'000.

[33] In the"Swiss Banks" category, we include all the large main Swiss banks, namely UBS, Credit Suisse, the 24 Cantonal Banks, Raiffeisen Bank and Migros Bank.

1.1 Victimization rates (prevalence rates)

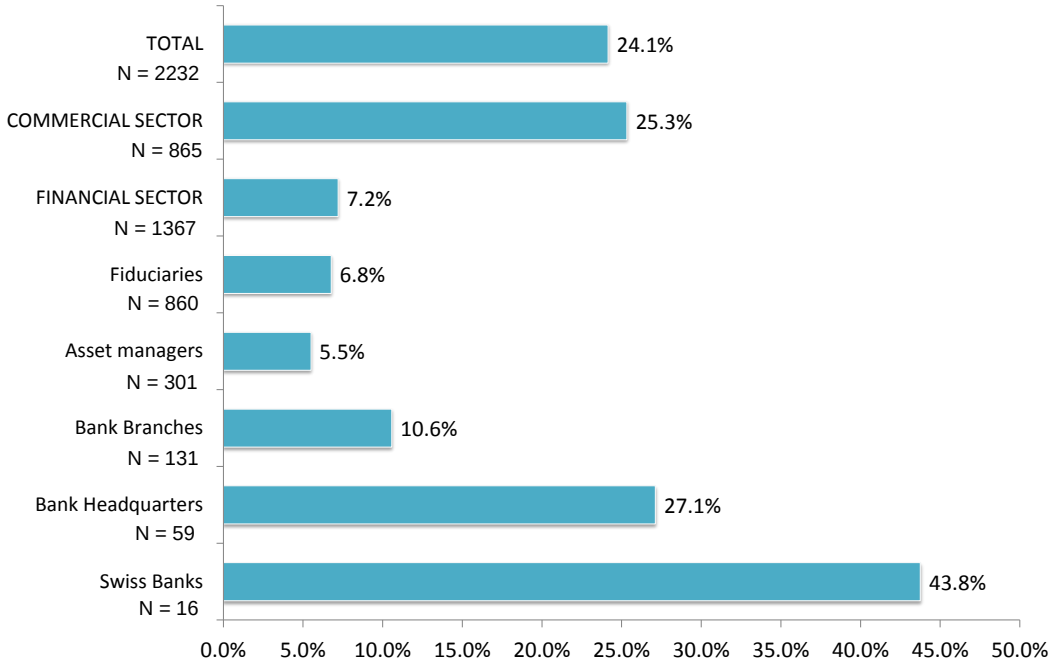
1.1.1 Three years victimization rates

1.1.1.1 Three years victimization rates by economic sector

Table 8 - Victimization rates by economic sector[34]. Years 2008-2010 - Absolute numbers and % of the total number of respondents weighted and non-weighted per sector

	N	% of business victimized (Not-weighted data)	% of business victimized (Weighted data)
Commercial sector	**865**	26.9%	25.3%
Financial sector	**1367**	8.6%	7.2%
Swiss Banks	**16**	43.8%	-
Bank Headquarters	**59**	27.1%	-
Bank Branches	**131**	14.5%	10.6%
Asset managers	**301**	5.6%	5.5%
Fiduciaries	**860**	6.7%	6.8%
TOTAL	**2232**	**15.7%**	**24.1%**
AVERAGE (between % in the Commercial and Financial sector)		**17.7%**	**16.0%**

Figure 12 - Victimization rates by type of business. Years 2008-2010 - %[35] of the total number of respondents in each sector

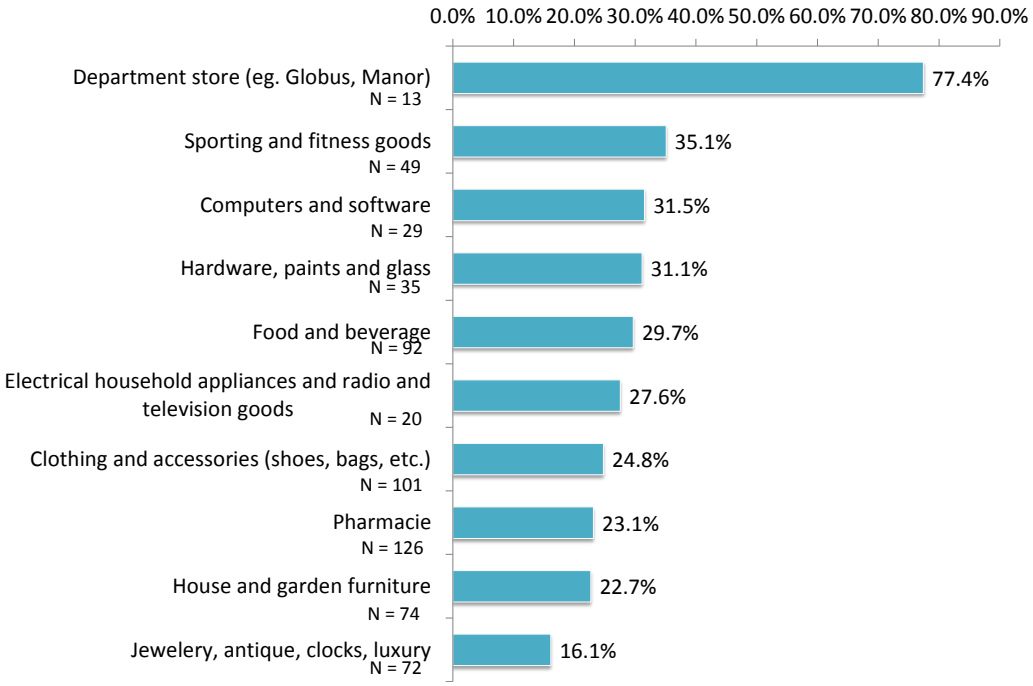


[34] Businesses victimized at least once between 2008 and 2010.

[35] Weighted data.

Generally speaking, considering all the economic sectors covered by the SBCS, 24.1% of the businesses interviewed has suffered at least one crime between 2008 and 2010 (see Table above).
However, it is evident that this percentage is strongly influenced by the victimization rate of the businesses belonging to the commercial sector, which is the most victimized one (25.3% premises has suffered at least one crime between 2008 and 2010). In the financial sector, 7.2% of the businesses were victimized at least once in the past three years. The Bank Branches are those presenting the highest victimization rate within the financial sector (10.6%), together with the Swiss banks (43.8%) and bank headquarters (27.1%), which, however present lower absolute numbers to draw reliable conclusions.

Figure 13 - Victimization rates by type of retail[36].Years 2008-2010. %[37] of the total number of respondents in each type of retail store



Focusing on the specific type of retail stores victimized between 2008 and 2010, it emerges that the highest victimization rates belong to the department stores such as Globus and Manor (77.4%), followed by those stores specialized in sporting and fitness goods (35.1%) and by those selling computers and software (31.5%). The lowest victimization rates are registered for retail stores selling jewelry, antique, clocks and luxury goods (16.1%), which probably have very sophisticated measures of prevention, such as alarms and CCTV systems.

[36] This analysis includes only those activities for which more than 10 businesses answered the questionnaire.

[37] Weighted data.

1.1.1.2 Three years victimization rates by linguistic Regions and by largest Cantons[38]

Figure 14 - Businesses victimized at least once between 2008-2010 by linguistic region - %[39] of the total number of respondents by linguistic region and economic sector

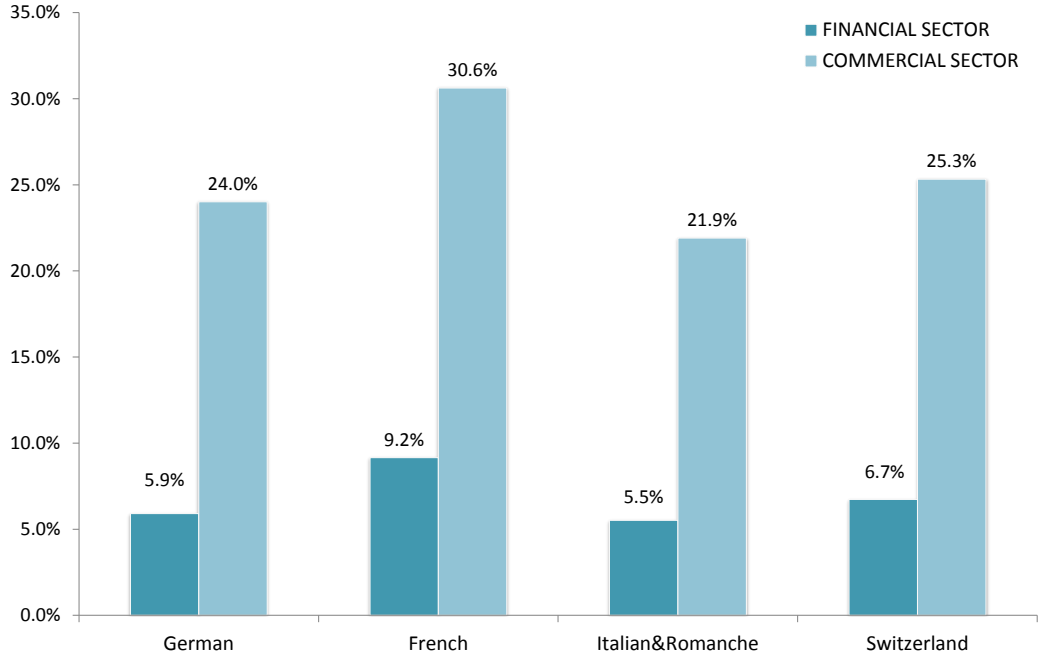


Table 9 - Victimization rates by linguistic regions[40] and by sector. Years 2008-2010- Absolute numbers and % of the total number of respondents weighted and non-weighted per region and per macro-sector

Economic sector and linguistic region	N	% of business victimized (Not-weighted data)	% of business victimized (Weighted data)
FINANCIAL SECTOR			
German	850	6.6%	5.9%
French	291	11.0%	9.2%
Italian&Romansh	151	4.0%	5.5%
Switzerland	**1292**	**7.3%**	**6.7%**
COMMERCIAL SECTOR			
German	464	25.4%	24.0%
French	278	31.3%	30.6%
Italian&Romansh	123	22.8%	21.9%
Switzerland	**865**	**26.9%**	**25.3%**

The French-speaking region has the highest victimization rate in both financial and commercial sectors (respectively 9.2% and 30.6%), comparing to the German (respectively 5.9% and 24%) and

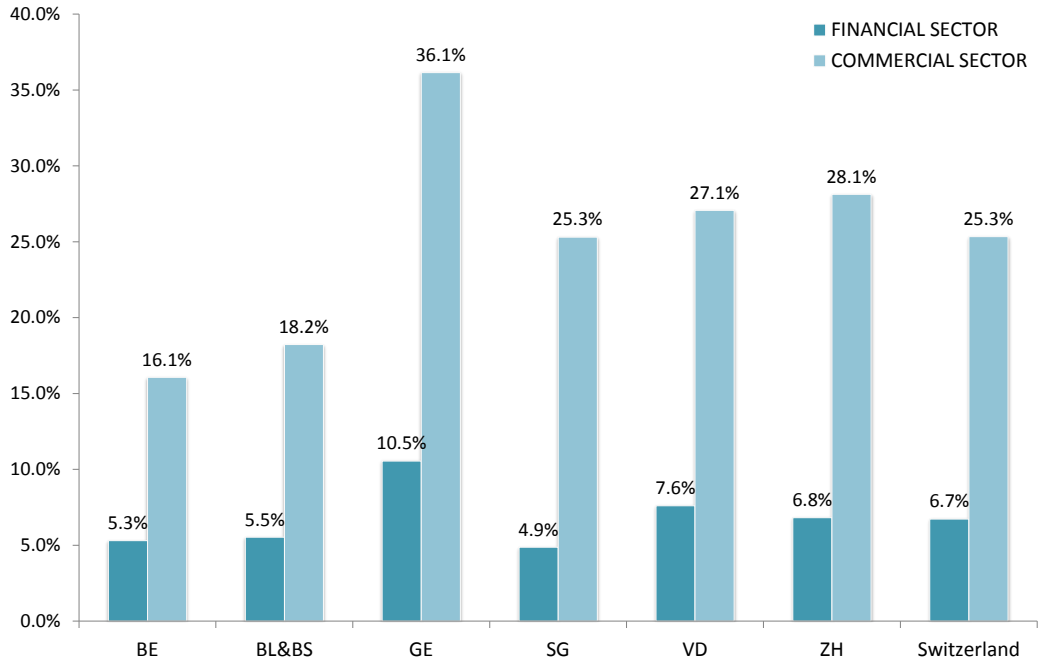
[38] To allow the representativeness of the data at regional and cantonal levels, this analysis has been conducted only on weighted cases, therefore the data for Swiss Banks (16 cases) and Bank Headquarters (59 cases) are not included in this analysis.

[39] Weighted data.

[40] Businesses victimized at least once in the last between 2008 and 2010.

Italian-Romansh (5.5% and 21.9%) speaking regions. In Geneva, the victimization rate was respectively 36.1% for the commercial sector and 10.5% for the financial sector. If we compare these Figures to the ones obtained for Geneva in 2005[41], the victimization rate in the commercial sector has dropped (50% in 2005) as well as the one in the financial sector (20% in 2005).

Figure 15 - Business victimized at least once between 2008-2010 by largest cantons - %[42] of the total number of respondents per canton and macro-sector



[41] The Geneva Business Crime Survey was carried out in 2005, assessing the situation on employee offences in both commercial and financial sectors from 2001 to 2005. The sample included 543 businesses (G.L. Isenring, PhD Dissertation, Offence committed by employees in the commercial and financial sectors in the canton of Geneva, Stämpfli, 2006)

[42] Weighted data.

Table 10 - Victimization rates by largest cantons[43]. Years 2008-2010 - Absolute numbers and % of the total number of respondents weighted and non-weighted per canton and macro-sector

Largest cantons	N	% of business victimized (Not-weighted data)	% of business victimized (Weighted data)
FINANCIAL SECTOR			
BE	90	5.6%	5.3%
BL&BS	58	6.9%	5.5%
GE	165	12.7%	**10.5%**
SG	56	5.4%	4.9%
VD	85	8.2%	**7.6%**
ZH	321	7.8%	**6.8%**
COMMERCIAL SECTOR			
BE	54	18.5%	16.1%
BL&BS	33	18.2%	18.2%
GE	138	33.3%	**36.1%**
SG	35	25.7%	25.3%
VD	86	26.7%	**27.1%**
ZH	134	28.4%	**28.1%**

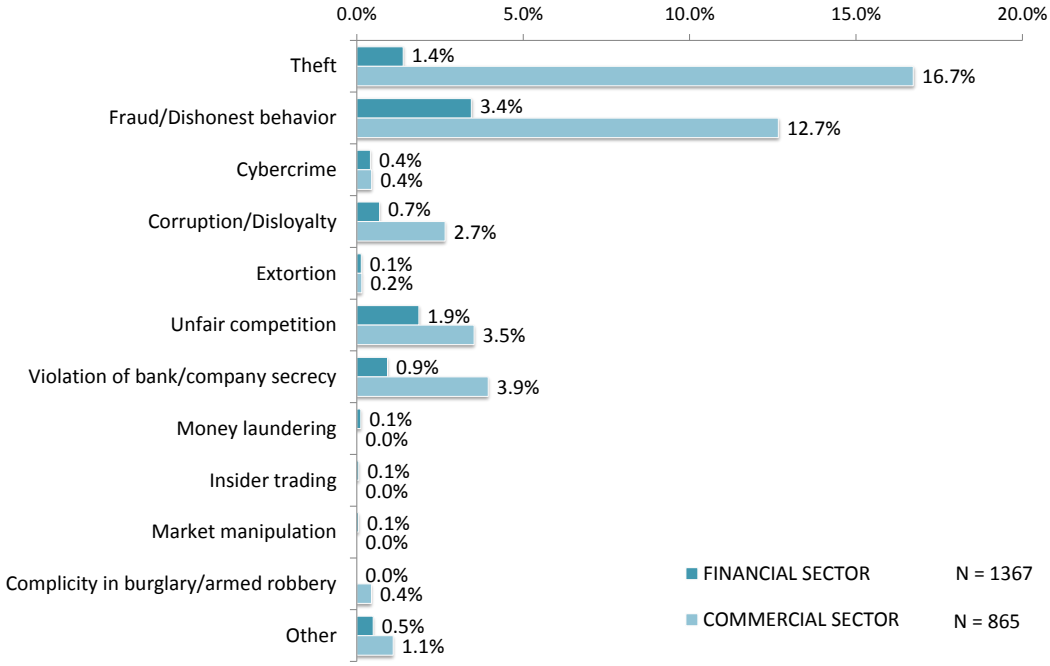
As shown in the Figure and in the Table above, in the financial sector, Geneva is the canton which had experienced the highest rate of offences committed by employees against businesses (10.5%), followed by the canton of Vaud (7.6%) and of Zurich (6.8%).

Among retail stores, the canton of Geneva also knows the highest victimization rate (36.1%), followed by the canton of Zurich (28.1%) and the canton of Vaud (27.1%).

[43] Businesses victimized at least once in the last between 2008 and 2010.

1.1.1.3 Three years victimization rates by type of crime and economic sector

Figure 16 - Victimization rates by type of crime and economic sector. Years 2008-2010 - %[44] of the total number of respondents to the survey in each sector



[44] Weighted data.

Table 11 - Victimization rates by type of crime and economic sector. Years 2008-2010 - Absolute numbers[45] and %[46] of the total number of respondents to the survey in each sector

	Theft	Fraud/Dishonest behavior	Cybercrime	Corruption/Disloyalty	Extortion	Unfair competition	Violation of bank secrecy	Money laundering	Insider trading	Market manipulation	Complicity in burglary	Other	TOTAL N of RESPONDENTS
Commercial sector	**151**	**125**	**6**	**28**	**2**	**36**	**37**	**0**	**0**	**0**	**4**	**11**	**865**
	16.7%	**12.7%**	**0.4%**	**2.7%**	**0.2%**	**3.5%**	**3.9%**	**0.0%**	**0.0%**	**0.0%**	**0.4%**	**1.1%**	
Financial sector	**25**	**67**	**11**	**7**	**3**	**29**	**21**	**4**	**2**	**2**	**0**	**11**	**1367**
	1.4%	**3.4%**	**0.4%**	**0.7%**	**0.1%**	**1.9%**	**0.9%**	**0.1%**	**0.1%**	**0.1%**	**0.0%**	**0.5%**	
Swiss Banks[47]	0	6	2	1	1	1	3	0	0	0	0	2	**16**
	0.0%	37.5%	12.5%	6.3%	6.3%	6.3%	18.8%	0.0%	0.0%	0.0%	0.0%	12.5%	
Bank Head.[48]	0	9	0	0	0	4	4	1	0	1	0	3	**59**
	0.0%	15.3%	0.0%	0.0%	0.0%	6.8%	6.8%	1.7%	0.0%	1.7%	0.0%	5.1%	
Bank Branches	8	12	7	1	0	1	6	3	2	1	0	2	**131**
	3.0%	4.7%	2.7%	3.7%	0.0%	0.4%	2.3%	1.2%	0.7%	0.4%	0.0%	0.9%	
Asset managers	2	7	1	2	1	6	3	0	0	0	0	3	**301**
	0.7%	2.2%	0.3%	0.6%	0.2%	2.2%	0.9%	0.0%	0.0%	0.0%	0.0%	1.0%	
Fiduciaries	15	33	1	3	1	17	5	0	0	0	0	1	**860**
	1.5%	3.4%	0.1%	0.3%	0.1%	1.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.1%	
TOTAL	**176**	**192**	**17**	**35**	**5**	**65**	**58**	**4**	**2**	**2**	**4**	**22**	**2232**
	15.7%	**12.1%**	**0.4%**	**2.5%**	**0.2%**	**3.4%**	**3.8%**	**0.0%**	**0.0%**	**0.0%**	**0.4%**	**1.1%**	

The Figure and the Table above show the percentage of victims, of the total number of respondents to the survey, by type of crime and by economic sector of the business.
It clearly emerges that the frequency of different types of crime is strictly dependent on the economic sector of the businesses. For example, the most frequent crimes affecting the commercial sector are theft (16.7%) and fraud (12.7%), while for the financial sector they are fraud (3.4%) and unfair competition (1.9%).

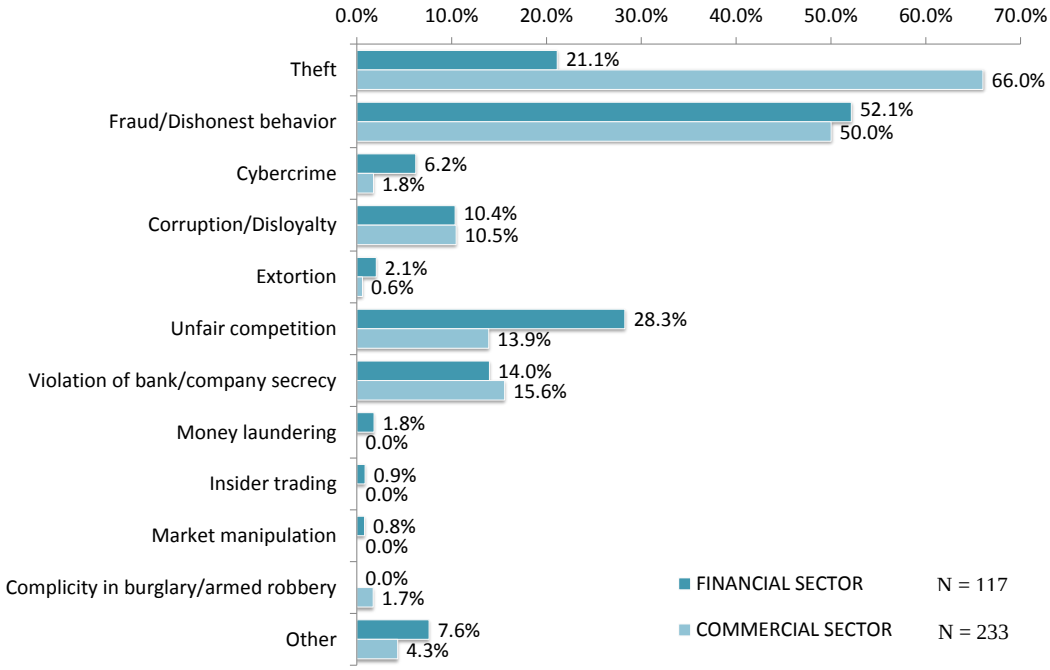
[45] Not-weighted data.

[46] Weighted data.

[47] Not-weighted numbers and percentages.

[48] Not-weighted numbers and percentages.

Figure 17 - Frequency of victimization by type of crime and economic sector. Years 2008-2010 - %[49] of the total number of businesses victimized



The graph above represents the frequency of each type of crime among those businesses victimized at least once between 2008 and 2010. In the commercial sector, the types of crime most frequent among businesses victimized are theft, fraud and violation of company secrecy. Indeed, 66% of businesses victimized between 2008 and 2010 declared to have been victims of a theft, 50% of a fraud and 15.6% of violation of the company secrecy. In the financial sector, 52.1% of firms victims suffered a fraud, 28.3% of unfair competition and only 21.1% of theft.
The Table below includes the Not-weighted absolute numbers and the weighted percentages for each specific economic sector.

[49] Weighted data.

Table 12 - Frequency of victimization by type of crime and economic sector. Years 2008-2010. Absolute numbers[50] and %[51] on the number of businesses victimized

	Theft	Fraud/Dishonest behav.	Cybercrime	Corruption/ Disloyalty	Extortion	Unfair competition	Violation of bank secrecy	Money laundering	Insider trading	Market manipulation	Complicity in burglary	Other	TOTAL N of VICTIMS
Commercial sector	**151**	**125**	**6**	**28**	**2**	**36**	**37**	**0**	**0**	**0**	**4**	**11**	**233**
	66.0%	**50.0%**	**1.8%**	**10.5%**	**0.6%**	**13.9%**	**15.6%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**4.3%**	
Financial sector	**25**	**67**	**11**	**7**	**3**	**29**	**21**	**4**	**2**	**2**	**0**	**11**	**117**
	21.1%	**52.1%**	**6.2%**	**10.4%**	**2.1%**	**28.3%**	**14.0%**	**1.8%**	**0.9%**	**0.8%**	**0.0%**	**7.6%**	
Swiss Banks	0	6	2	1	1	1	3	0	0	0	0	2	**7**
	0.0%	85.7%	28.6%	14.3%	14.3%	14.3%	42.9%	0.0%	0.0%	0.0%	0.0%	28.6%	
Bank Head.	0	9	0	0	0	4	4	1	0	1	0	3	**16**
	0.0%	56.3%	0.0%	0.0%	0.0%	25.0%	25.0%	6.3%	0.0%	6.3%	0.0%	18.8%	
Bank Branches	8	12	7	1	0	1	6	3	2	1	0	2	**19**
	28.0%	44.3%	25.2%	35.2%	0.0%	3.7%	21.9%	11.5%	6.8%	3.7%	0.0%	8.1%	
Asset managers	2	7	1	2	1	6	3	0	0	0	0	3	**17**
	13.0%	39.2%	5.5%	11.3%	3.5%	39.3%	16.7%	0.0%	0.0%	0.0%	0.0%	18.0%	
Fiduciaries	15	33	1	3	1	17	5	0	0	0	0	1	**58**
	25.5%	56.8%	2.0%	5.4%	1.7%	30.5%	9.0%	0.0%	0.0%	0.0%	0.0%	1.8%	
TOTAL	**176**	**192**	**17**	**35**	**5**	**65**	**58**	**4**	**2**	**2**	**4**	**22**	**350**
	65.2%	**50.1%**	**1.9%**	**10.5%**	**0.6%**	**14.2%**	**15.6%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**4.4%**	

1.1.1.4 Frequency of different incidents of crime

The previous sections focus on the victimization rates (or prevalence rates[52]) and on the frequency of victimization by macro-categories of crime: theft, fraud, unfair competition, etc.

From the results of the previous analyses, it is possible to state, for example, that 16.7% of the total number of commercial business interviewed (865) experienced **at least one theft** between 2008 and 2010, and that the victims of theft represent 66% of the total number of victims among commercial companies. However, it is not possible to understand what kind of theft was the most frequent among the victimized businesses.

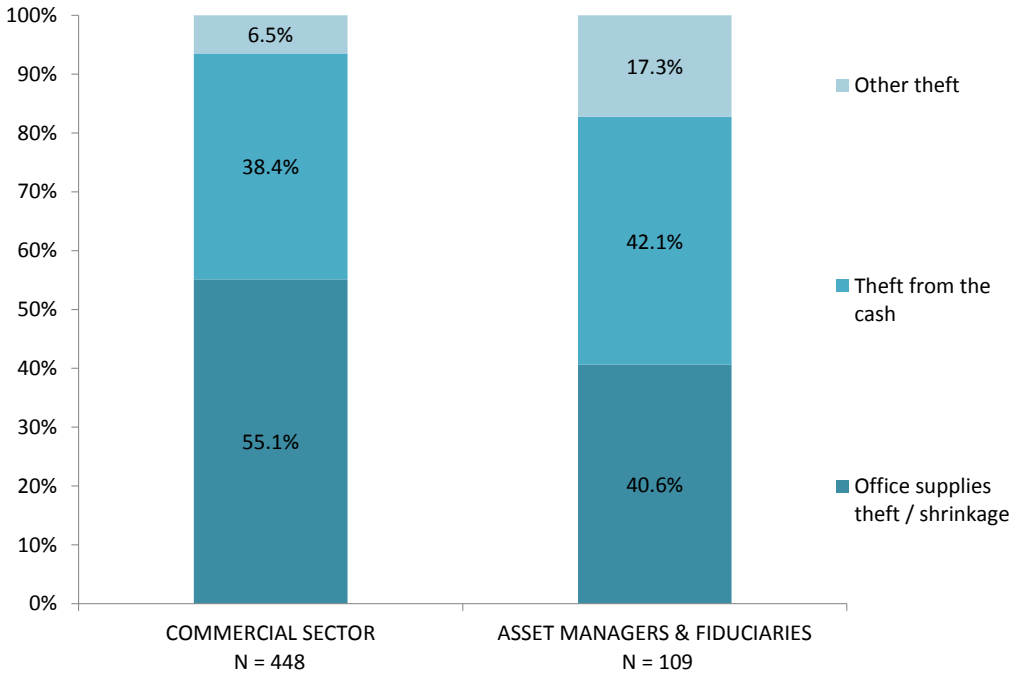
The aim of this section is to provide an overview of the frequency of different incidents of theft, fraud and unfair competition experienced by the victims of crime. This analysis has not been performed for the other types of crime because the low absolute numbers did not allow reliable results.

[50] Not-weighted data.

[51] Weighted data.

[52] The crime victimization or crime prevalence rate is calculated as the percentage of businesses declaring to have suffered at least one type of crime during a specific reference period (in this case between 2008 and 2010) out of the total number of businesses that completed the questionnaire.

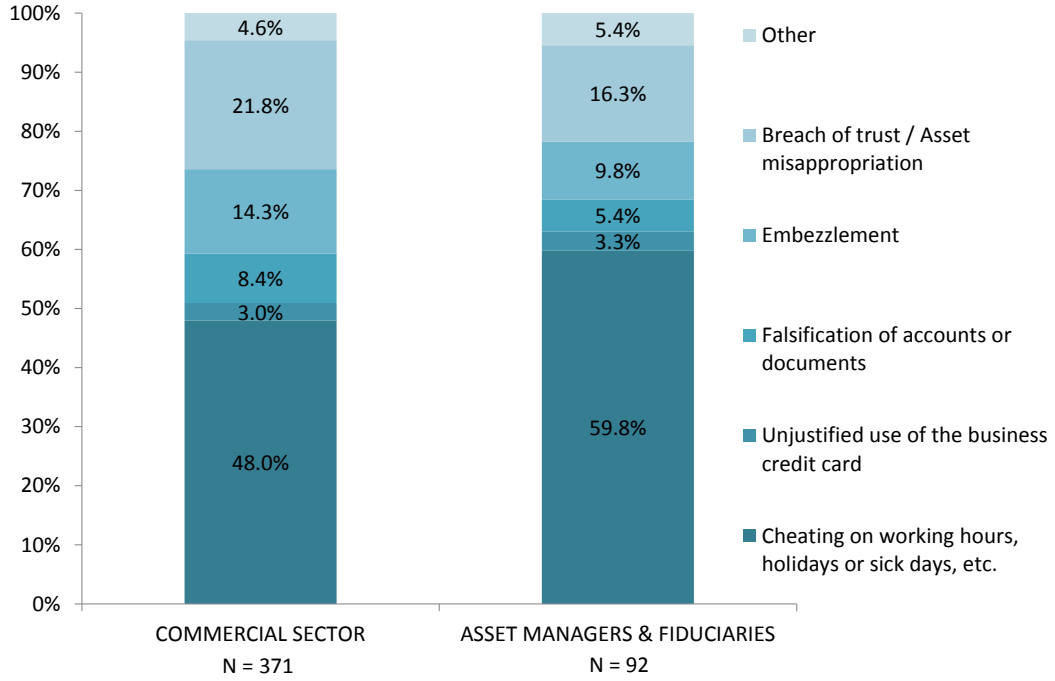
*Figure 18 - Frequency of different incidents of **theft** by economic sector. Years 2008-2010. %[53] of the total number of businesses victims of each incidents of theft*



According to the Figures above the majority (55.1%) of commercial victim firms have experienced different theft, such as an office supplies theft, followed by theft from the cash machine. On the contrary, among asset management and fiduciaries firms the most frequent incident of theft was theft of money from the cash machine (42.1%).

[53] Weighted data.

*Figure 19 - Frequency of different incidents of **fraud** by economic sector. Years 2008-2010. %*[54] *of the total number of businesses victims of each incidents of fraud*



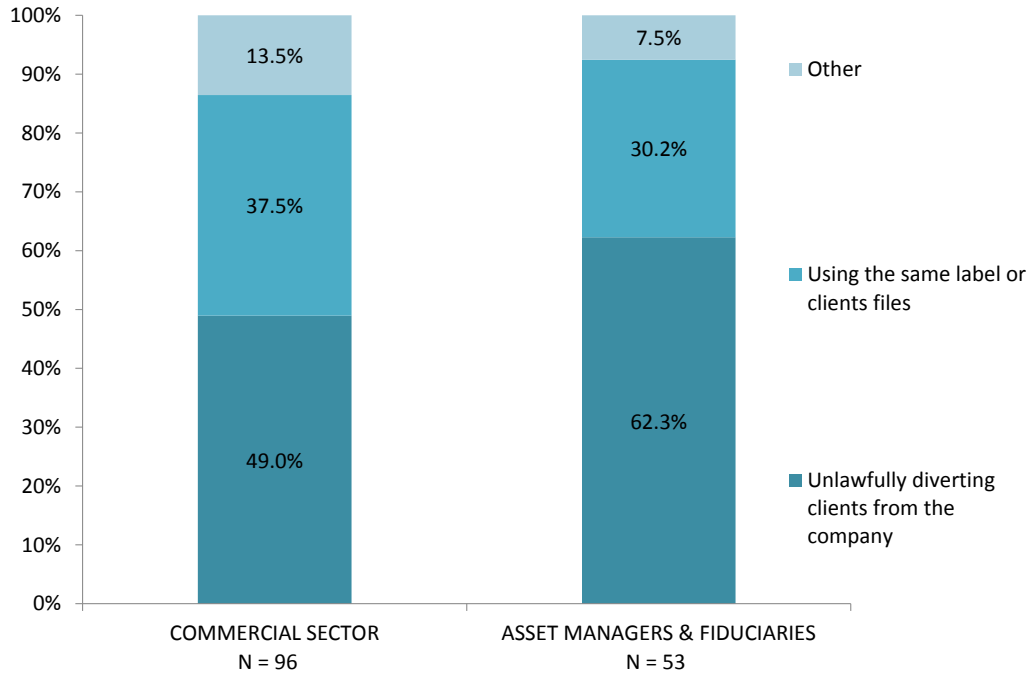
With regard to fraud, in both sectors the most frequent incident of fraud is "Cheating on working hours, holidays or sick days, etc." (48% among commercial companies, and 59.8% among asset managers and fiduciaries). Actually, this is not a serious type of fraud but it is probably the "easiest" misbehavior and therefore the most frequent.

However, the second most recurrent type of fraud is a quite serious one: asset misappropriation, which includes the misuse or theft of assets belonging to a company. Indeed, 21.8% of firms victims of frauds in the commercial sector and 16.3% among asset managers reported to have experienced it between 2008 and 2010.

Embezzlement is also quite frequent in both sectors.

[54] Weighted data.

*Figure 20 - Frequency of different incidents of **unfair competition**. Years 2008-2010. %[55] of the total number of businesses victims of each incidents of unfair competition*



Considering unfair competition, both sectors show similar patterns. The most frequent incident is "Unlawfully diverting clients from the company" (49% in the commercial sector and 62.3% in the financial sector), followed by "Using the same label or client files" (37.5% and 30.2%, respectively).

[55] Weighted data.

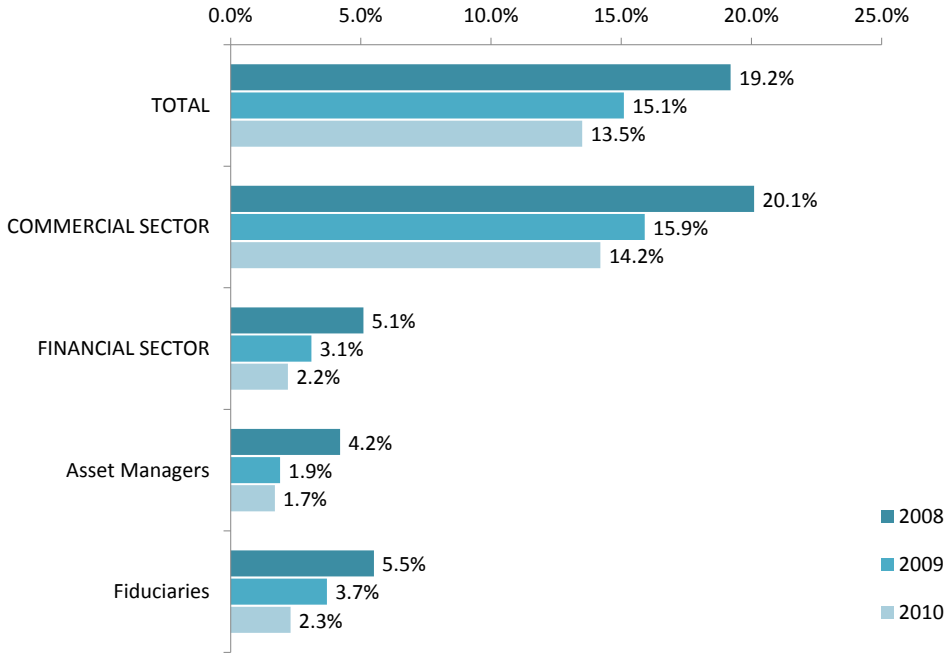
1.1.2 Annual victimization rates

1.1.2.1 Annual victimization rates by economic sector[56]

Table 13 - Annual victimization rates by economic sector[57] - Years 2008, 2009, 2010 - %[58] of the total number of respondents by economic sector

		% of business victimized			
	N	2008	2009	2010	% change (2008-2010)
Commercial sector	**865**	20.1%	15.9%	14.2%	**-29.5%**
Financial sector	**1161**	5.1%	3.1%	2.2%	**-56.9%**
Asset managers	**301**	4.2%	1.9%	1.7%	-59.5%
Fiduciaries	**860**	5.5%	3.7%	2.3%	-58.2%
TOTAL	**2026**	**19.2%**	**15.1%**	**13.5%**	**-34.9%**
AVERAGE (of the percentages in the Commercial and Financial sector)		**12.6%**	**9.5%**	**8.2%**	

Figure 21 - Annual victimization rates by economic sector - Years 2008, 2009, 2010 -%[59] of the total number of respondents in each sector



[56] The data for the annual victimization rates are not available for the bank sector. Therefore, the following analyses consider the commercial sector and the asset managers and fiduciaries.

[57] Businesses victimized at least once between 2008 and 2010.

[58] Weighted data.

[59] Weighted data.

The Table and the Figure above show the annual victimization rates for each of the three years covered by the SBCS (2008, 2009 and 2010). **On average it is around 16.7% in the commercial sector and 3.5% among asset management firms and fiduciaries.**

As already registered for the three years victimization rate, **the commercial sector is the most victimized one, with 20.1% of companies victims of at least one crime in 2008, 15.9% in 2009 and 14.2% in 2010. The annual rates for asset managers and fiduciaries are more than four times lower (5.1% in 2008; 3.1% in 2009; 2.2% in 2010).** Asset management firms are those presenting the lowest victimization rates.

A **general decreasing trend of around 35% for the total victimization rates also emerges** from the Figure above.

According to the data collected on Swiss companies, from 2008 to 2010, this decrease was definitely more consistent among financial companies (56.9%), rather than among commercial ones (29.5%).

The fact that the highest victimization rates are recorded for the year 2008 could suggest the influence of some sort of memory decay in the respondents to the survey. For example, the so called "backward telescoping effect" happens when events are recalled as occurring further in the past than reality[60]. However, in the majority of victimization surveys, last year events are the most easily recalled in the interviewees' memory, the "forward telescoping effect" is usually most common than the "backward telescoping effect". This consideration supports the reliability of the decreasing trend in the victimization of businesses between 2008 and 2010.

Moreover, the fact that very often businesses have specific registers where they collect the information on the crimes and violations experienced in the previous years, and the fact that this trend recurs in all sectors and for the majority of respondents, further confirm the reliability of this decrease in the data.

Generally speaking, also administrative statistics on crimes reported to the police show a stable or slightly decreasing trend, for crimes such as fraud[61], extortion[62], unfair competition[63] between 2008 and 2010. Even if this data are not only collected on businesses but on the whole Swiss population, they could give an overview of the general crime trend in Switzerland and a partial explanation to the decrease of crime against business.

However, the reduction in employee offences registered by the SBCS could be mainly explained by an increased companies' awareness of the costs of crime and the consequent development of proper measures of prevention and controls on the employees. Indeed, according the SBCS' results, more than 40% of both financial and commercial companies adopted new measures of prevention as a reaction to previous crime incidents, and this efficiently impacted on the probability of being victims again (see section 4.4.1)

[60] UNODC, 2010, *Manual on Victimization Surveys*, UN Geneva, p. 47. Killias & al, 2012. *Grundriss der Kriminologie*.Berne: Staempfli, 3rd Edition, 2012

[61] Art. 146, Art. 147, Art. 149, Art. 150, Art. 163 StGB.

[62] Art. 156 StGB.

[63] Art. 158 StGB.

1.1.2.2 Annual victimization rates by linguistic Regions[64]

Figure 22 - Annual victimization rates in the commercial sector by linguistic region - Years 2008, 2009, 2010 - %[65] of the total number of respondents by linguistic region

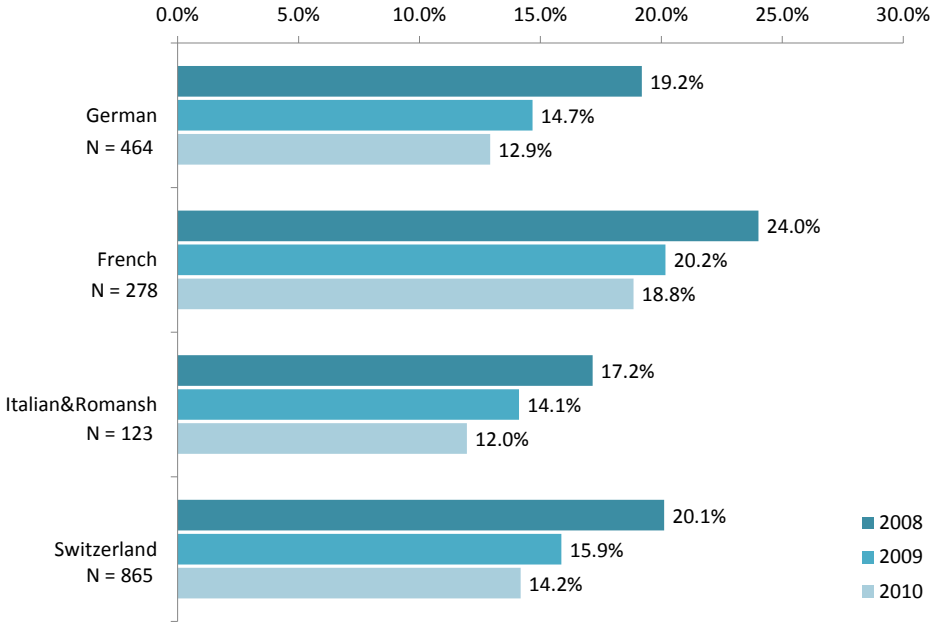
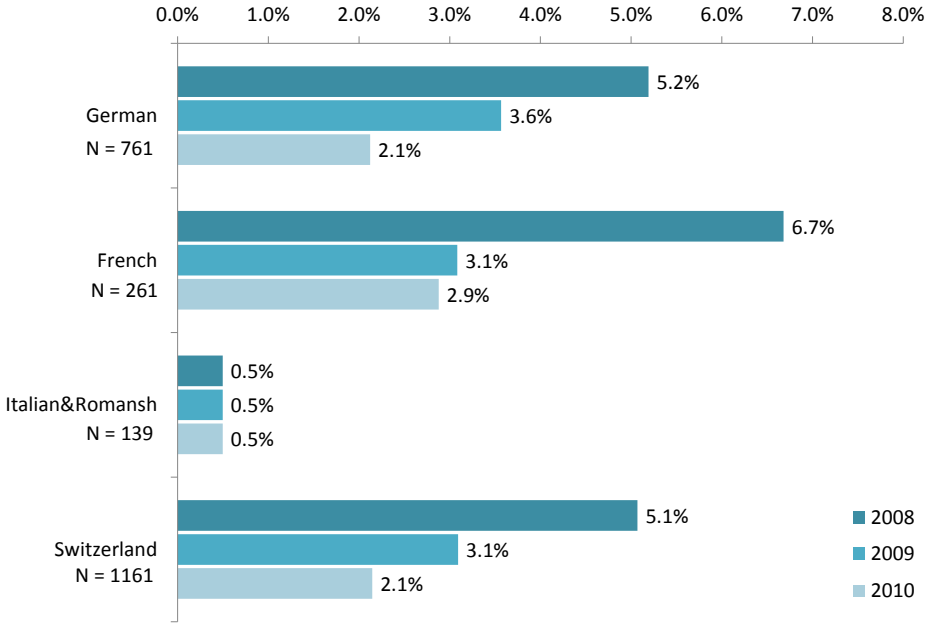


Figure 23 - Annual victimization rates among asset managers and fiduciaries by linguistic region - Years 2008, 2009, 2010 - %[66] of the total number of respondents by linguistic region



[64] Data on the victimization rates for the largest cantons are not significant due to the high disaggregation level.

[65] Weighted data.

[66] Weighted data.

As already noticed when analyzing the three-years victimization rates, the French-speaking region shows the highest values of victimization, in the commercial sector, for all the three years considered, followed by the German speaking one and the Italian and Romansh speaking. With regard to the financial companies, those located in the French region registered the highest victimization rates in 2008 and 2010, while in 2009 the German speaking region was the most victimized. In the Italian and Romansh area, one company had experienced at least one crime during each of the considered year, which represents the percent of 0.5.

Table 14 - % change between 2008 and 2010 by linguistic regions and economic sector

Economic sector and linguistic region	% change (2008-2010)
FINANCIAL SECTOR (asset managers and fiduciaries)	
German	-59.1%
French	-56.9%
Italian&Romansh	0.0%
Switzerland	**-57.7%**
COMMERCIAL SECTOR	
German	-32.7%
French	-21.5%
Italian& Romansh	-30.3%
Switzerland	**-29.5%**

The highest decrease in the victimization rates is registered for the German-speaking region, in both sectors. Apparently, the financial companies experienced a decrease in crime which is almost double with respect to the commercial sector. However, as already addressed above, this data should be considered with caution due to potential problems of memory decay or telescoping effect. Moreover, the disaggregation of the data by year and region inevitably weakens the reliability of the data.

1.1.2.3 Annual victimization by type of crime and economic sector

Figure 24 - Victimization rates by type of crime in the commercial sector - Years 2008, 2009, 2010 - %[67] of the total number of respondents in the commercial sector

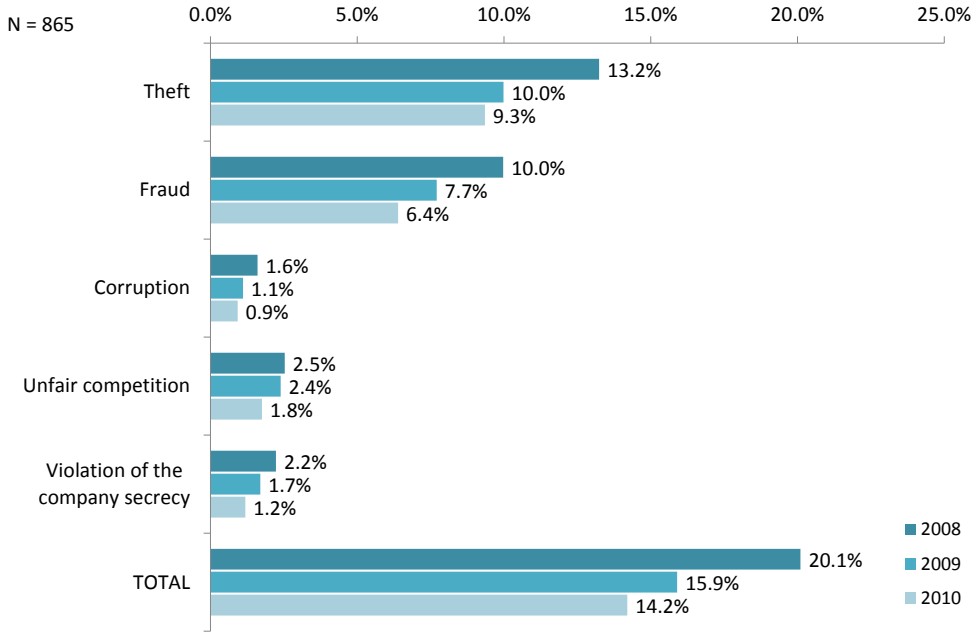
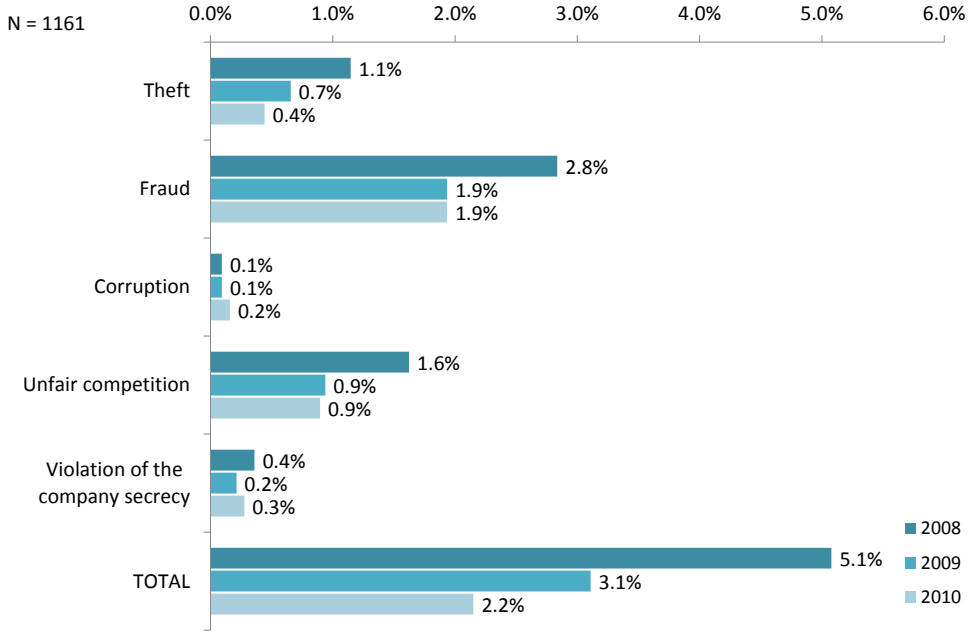


Figure 25 - Victimization rates by type of crime among asset managers and fiduciaries - Years 2008, 2009, 2010 - %[68] of the total number of respondents among asset managers and fiduciaries



[67] Weighted data.

[68] Weighted data.

The average annual rate for theft and fraud in the commercial sector is respectively 10.9% and 8%.
This result is in line with the data collected by the Italian Business Crime Survey in 2008-2009[69]. Indeed, in Italy, on a total of 509 commercial businesses victims of theft, 7% (35) declared that the last incident of theft was committed by an employee, and only 9 out of 272 (3.3%) that the last incident of fraud was perpetrated by an employee. While across Europe the victimization rates for these two crimes perpetrated by employees are definitely higher. According to the results of the European Business Crime Survey(EU BCS) [70], 43.4% of the businesses in the wholesale and retail trade had experienced at least one theft by employees and 43% of them at least one fraud by employees.
Considering Swiss financial companies, the average annual victimization rate is 0.7% for theft by employees and 2.2% for fraud by employees.
Even in this case Switzerland shows lower victimization rates than those registered by the EU BCS. Indeed, among financial companies[71] in Europe, there are on average 3.1% of businesses which experienced a theft by employees and 5.2% a fraud by employees.

Table 15 - % change between 2008 and 2010 by type of crime and economic sector

Economic sector and linguistic region	% change (2008-2010)
FINANCIAL SECTOR (asset managers and fiduciaries)	
Theft	-8.9%
Fraud	-2.5%
Corruption	N.S.[72]
Unfair competition	30.4%
Violation of the company secrecy	N.S. [73]
COMMERCIAL SECTOR	
Theft	0.1%
Fraud	-9.1%
Corruption	-18.2%
Unfair competition	-1.6%
Violation of the company secrecy	-24.8%

Coming to the analysis of the crime rates in Switzerland, it can also be noticed that **all the types of crime in the commercial sector decreased since 2008**, besides thefts which are almost stable (see Table below). **The highest decrease is registered for violation of the company secrecy (-24.8%) and corruption (-18.2%).** In **the financial sector, only unfair competition is increasing since 2008 of about 30%.** Even if this crime is decreasing in absolute values, when considering the ratio on the total annual number of victims, it shows an increase.

[69] The Italian Business Crime Survey (ItBCS) is the first survey on crime against business developed in Italy. It was financed by the Italian Ministry of the Interior and carried out by the Università Cattolica - Transcrime (Joint Research Centre on Transnational Crime) in 2008 and 2009.

[70] The European Business Crime Survey (EUBCS) is the first pilot survey on crime against business carried out in Europe. It was financed by the European Commission and piloted, in 2012, by Gallup Europe and Transcrime, on twenty EU member states (Austria, Belgium, Bulgaria, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom).

[71] This covered Financial and Insurance activities in the 20 countries mentioned above.

[72] Not significant because of too few cases per year.

[73] Not significant because of too few cases per year.

Figure 26 - Frequency of different types of crime in the commercial sector - Years 2008, 2009, 2010 - %[74] of the total number of businesses victimized in the commercial sector

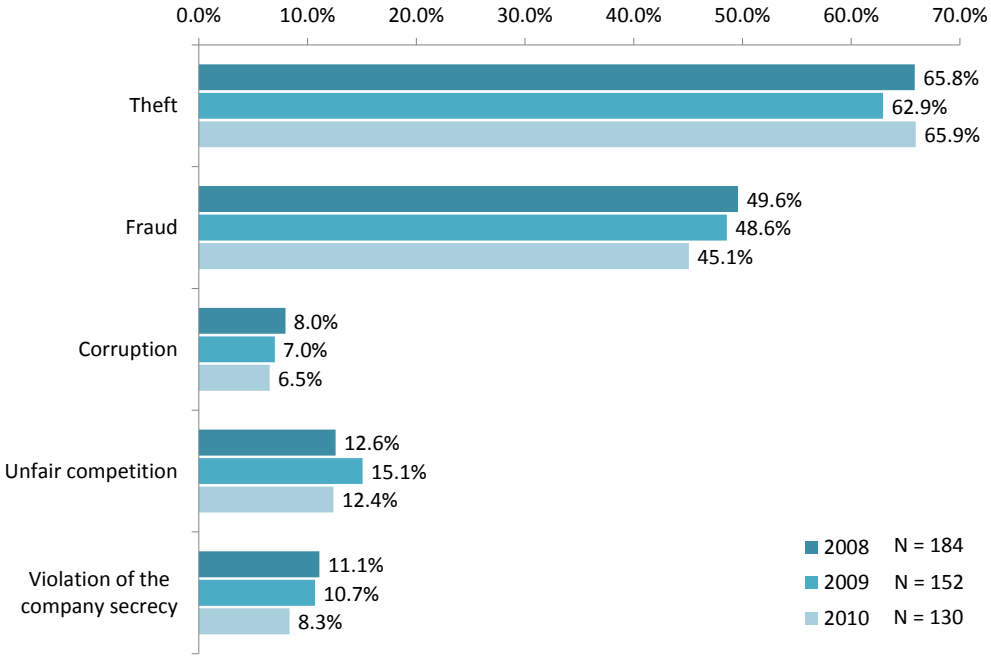
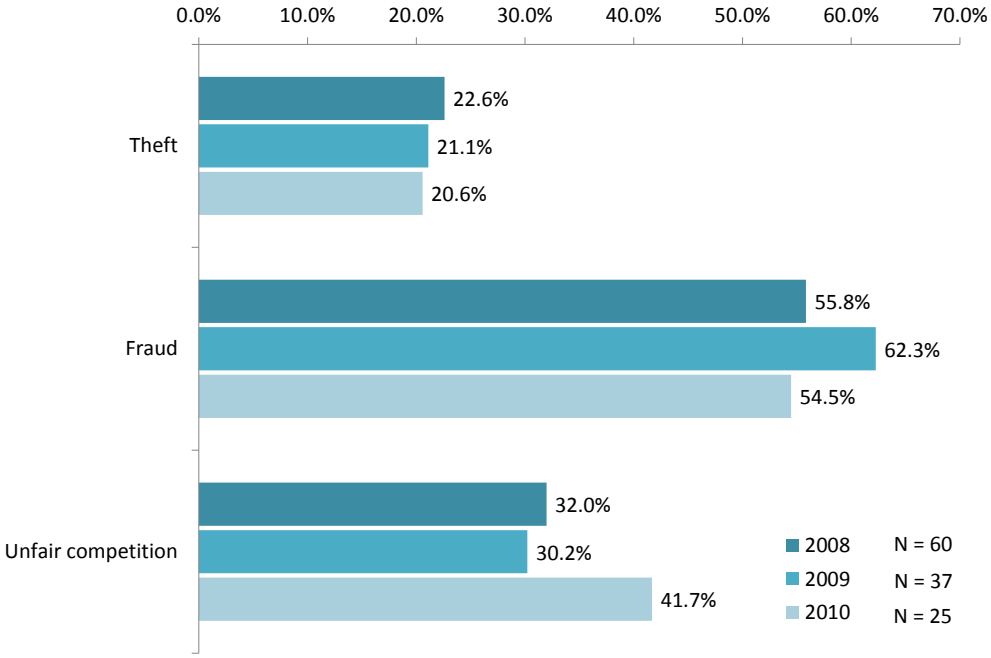


Figure 27 - Frequency of different types of crime among asset managers and fiduciaries - Years 2008, 2009, 2010 - %[75] of the total number of businesses victimized among asset managers and fiduciaries



[74] Weighted data.

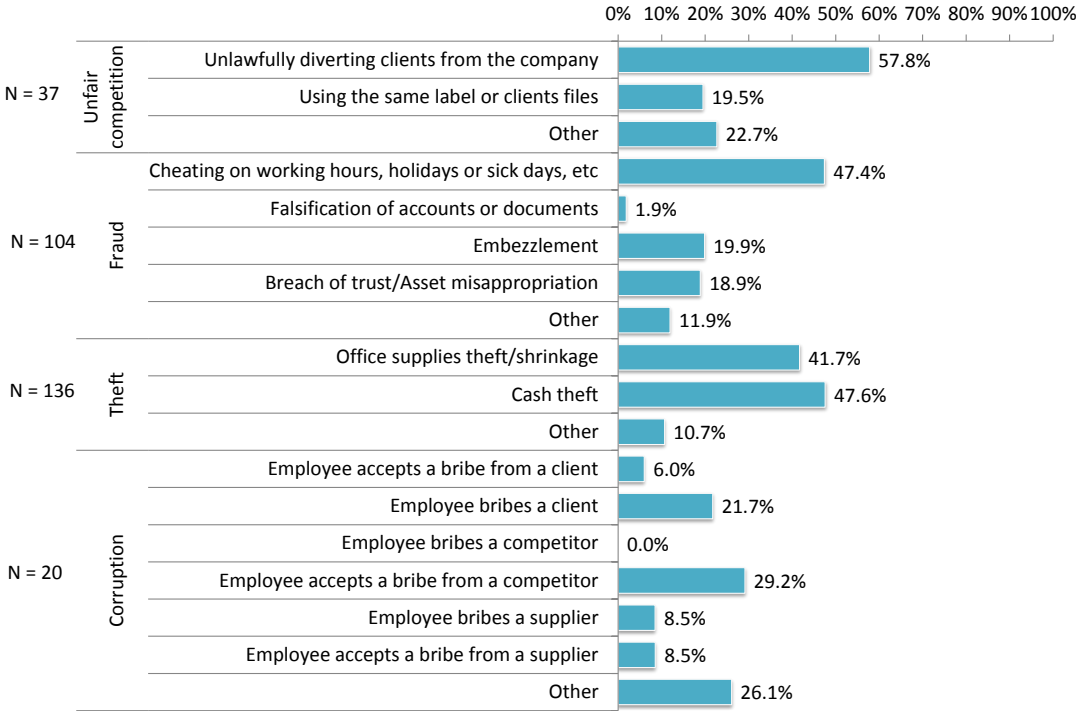
[75] Weighted data.

The Figures above show the frequency of businesses victimized for each specific type of crime on the total number of victims in each economic sector.
It is evident that while among commercial businesses the most frequent crimes were theft and fraud for all the three years considered, financial firms were mainly victims of fraud and unfair competition.

1.1.3 Victimization of the most serious offence

This chapter identifies which offence is considered the most serious one among those experienced by Swiss businesses between 2008 and 2010.

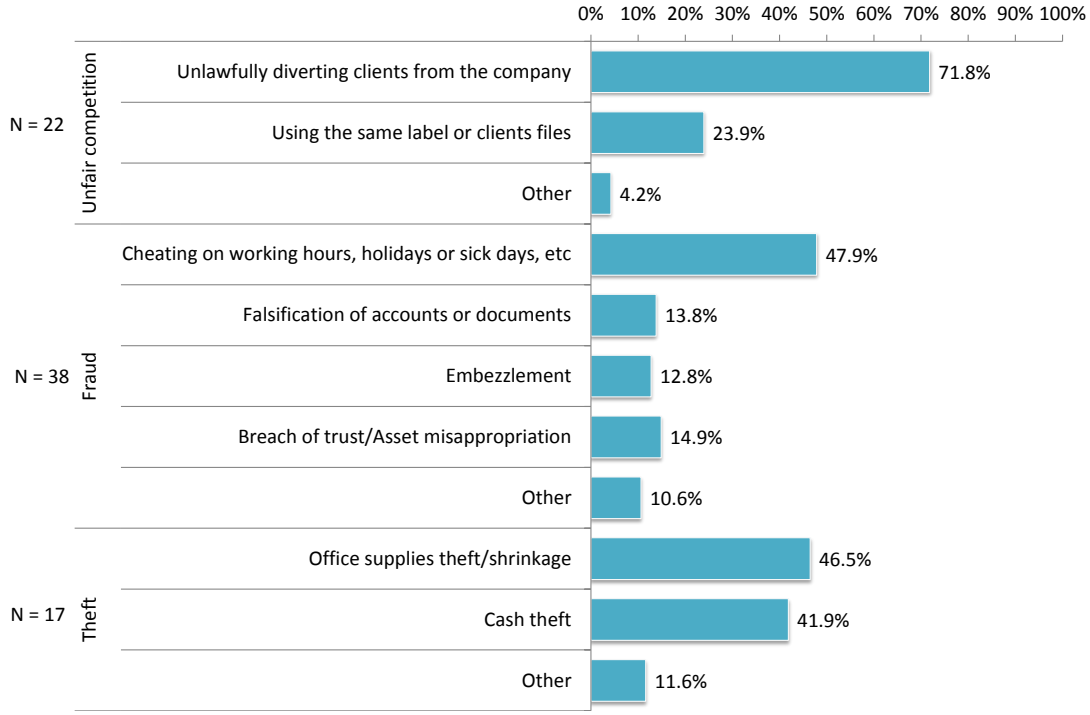
Figure 28 - Most serious offences experienced by businesses in the commercial sector - %[76] of the total number of offences for each category of crime[77]



[76] Weighted data.

[77] This analysis includes only those types of crime for which the absolute numbers were >5.

Figure 29 - Most serious offences experienced by businesses in the financial sector[78] - %[79] of the total number of offences for each category of crime[80]



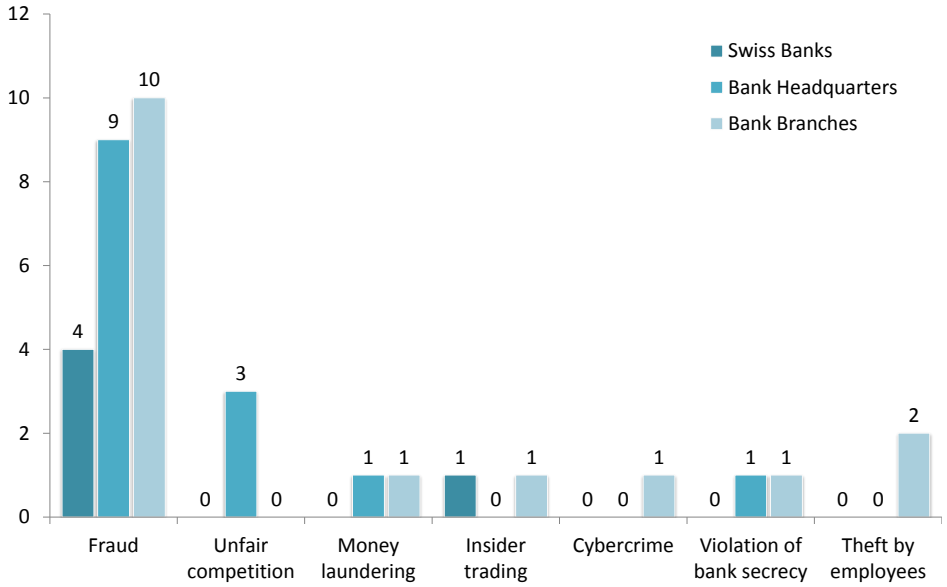
Looking at the Figures above, it emerges that the most serious offence of unfair competition is related to "Unlawfully diverting clients from the company", both in the financial (71.8%) and in the commercial sector (57.8%). The second most serious incident of unfair competition in both sectors is "Using the same business' label or the clients' files".
With regard to frauds, the most serious incident for businesses belonging both to the commercial and to the financial sector is "Cheating on working hours, holidays, etc." (47.4% and 47.9%). In the case of theft, shrinkage and cash theft are considered among the most serious incidents.
With regard to corruption, in the commercial sector 29.2% of businesses victims of this crime declare that the most serious incident is when employees accept a bribe from a competitor.

[78] For this variable (Most serious crime) the financial sector includes only Asset managers and Fiduciaries but not Banks, which have been analyzed above.

[79] Weighted data.

[80] This analysis includes only those types of crime for which the absolute numbers were >5.

Figure 30 - Most serious offences suffered by businesses in the Bank sector. Absolute numbers[81]



In the case of Swiss Banks, Bank Headquarters and Bank Branches the data illustrates the most serious crime among theft, fraud, cybercrime, corruption, extortion, unfair competition, violation of bank secrecy, money laundering, insider trading, market manipulation, complicity in burglary. From the Figure above, it is evident that the most serious crime experienced by banks in Switzerland is fraud.

Considering the financial and the commercial sector (Figures below), the data on the most serious crime indicates the most serious incident for each offence category mentioned above.

[81] This analysis focuses on absolute not-weighted numbers because the number of answers is too low for allowing statistically reliable percentages.

1.2 Incidence[82] and concentration[83] of victimization

This report focuses on three different crime counts that are essential for fully understanding crime levels and patterns:

- ✓ **Crime prevalence**, which refers to the proportion of people (or targets, e.g. households, properties or cars), in a specific area, who are victimized at least once during a given period of time. E.g. among Swiss businesses interviewed, 24.2% has been victims of at least one crime between 2008 and 2010. Prevalence = Number of Victims divided by the Number of Potential Targets.
- ✓ **Crime concentration**, which refers to the number of incidents per victim. E.g. each victimized business experienced an average more than one incident of theft. Concentration = Number of Crimes incidents divided by the Number of Victims
- ✓ **Crime incidence**, which is the product of crime prevalence and crime concentration. It refers to the number of crime incidents that have occurred in a given area. Incidence is usually expressed as a rate per head of population (or per business). E.g. 65 out of 100 retail stores experienced more than one incident of crime[84].

The **crime prevalence** has been presented and analyzed in the previous section (1.1) of this report, which shows that 24.2% of Swiss financial and commercial businesses have been victims of at least one crime between 2008 and 2010.

The patterns of the crime incidence and concentration is explored in this section, for different offence types, as an accurate picture of business crime trends can only be achieved by analyzing all three crime counts.

It has to be highlighted that, with regard to the data of this survey, it was not possible to calculate the exact number of crimes per respondent and the exact number of crimes per victim because the variable "Frequency of victimization" is not cardinal but categorical (it presents four categories: Once, 2-5 times, 6-20 times, more than 20 times).

Therefore, the **incidence of victimization** has been calculated as the ratio between the number of businesses declaring to have suffered one specific crime only "once" or "more than once" and the total number of respondents to the survey

The **concentration of victimization** has been calculated as the ratio between the number of businesses declaring to have suffered one specific crime only "once" or "more than once" and the total number of victims for each specific type of crime. This measure also represents the level of multi-victimization for a given type of crime.

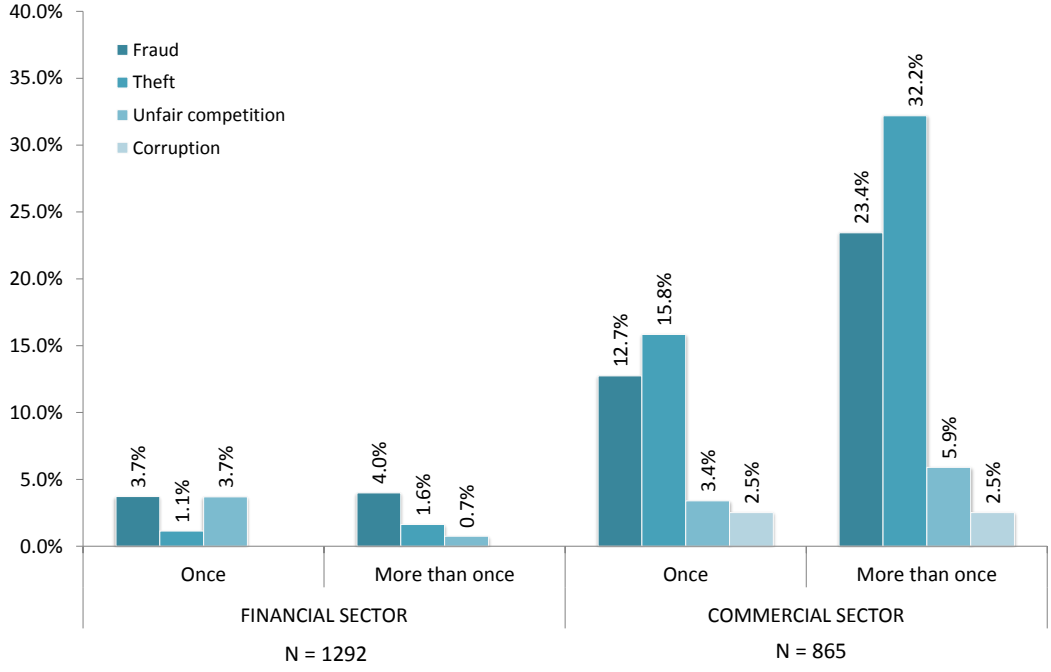
The Figures below compare the incidence and concentration of victimization of businesses belonging to the commercial and to the financial sector, by types of crime.

[82] Average number of crimes for each respondent.

[83] Average number of crimes for each victimized business.

[84] Rogerson, 2004 http://extra.shu.ac.uk/ndc/downloads/reports/RR45.pdf.

Figure 31 - Incidence of victimization for each type of crime. Years 2008, 2009, 2010 - %[85] of businesses victimized[86] of the total number of respondents, for the frequency of crime[87]



In the commercial sector, 32.2% of respondents experienced different incidents of theft more than once between 2008 and 2010 (against 15.8% of businesses which have experienced them only once). The percentage of respondents experiencing incidents of fraud more than once is also higher than the percentage of firms suffering this offence only once (23.4% against 12.7%). The same applies in the case of unfair competition (5.9% against 3.4%). While, in the case of corruption the percentages are equivalent (2.5%).

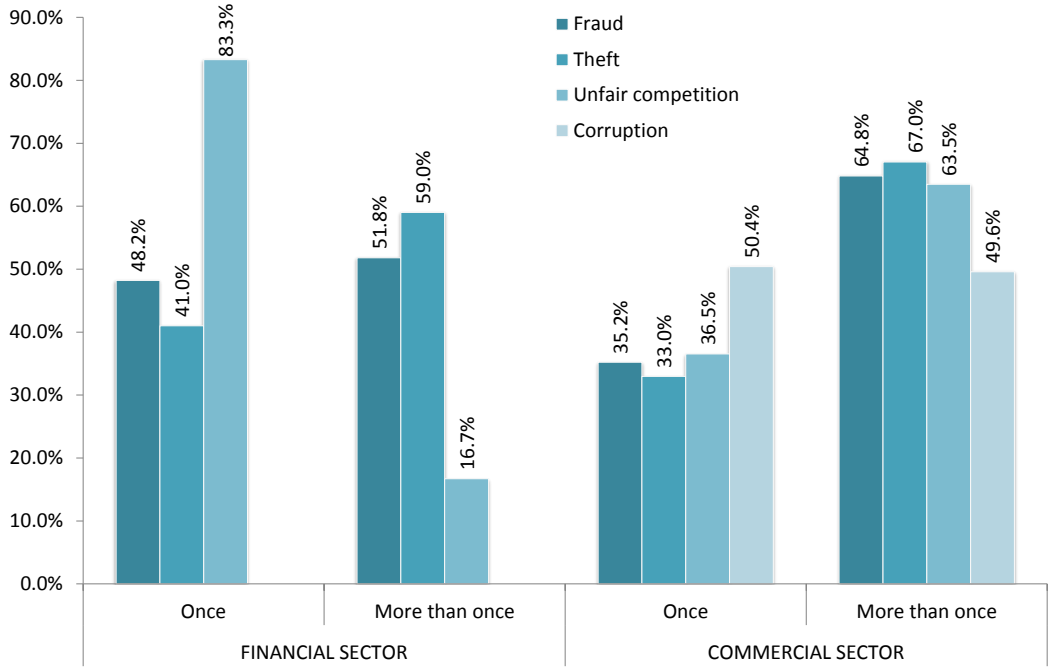
In the financial sector the situation is the same, with the exception of unfair competition, which is more likely to occur only once.

[85] Weighted data.

[86] The number of victims represents here the sum of businesses which have experienced, once or more than once, a specific type of crime. E.g. in the case of theft, the N is equal to the sum of businesses victims of shrinkage, theft of money from the cash and other types of theft, experienced between 2008 and 2010.

[87] This analysis considers only those types of crime presenting absolute Not-weighted numbers >5.

Figure 32 - Concentration of incidents of crime. Years 2008, 2009, 2010 - %[88] of businesses victimized[89] on the total number of victims for each type of crime, for the frequency of crime



The data in the Figure above shows the concentration of crime incidents on the businesses victimized. It clearly demonstrates that multi-victimization is fairly frequent and that firms victims of crime once are more likely to be the targets of further incidents.

Indeed, in the commercial sector, the majority of businesses victims of crime experienced it more than once between 2008 and 2010; and this is true for all the types of offence considered. **Corruption is the only exception, as it was likely to happen only once (50.4%).** The highest concentration is related to theft; indeed, 67% of victims experienced it more than once between 2008 and 2010.

Businesses in the financial sector are also likely to be multi-victimized for theft (59%) and fraud (51.8%); **only unfair competition is likely to occur only once in 83.3% of cases**.

It is interesting to highlight that the same frequency of businesses victims of a specific type of crime is likely to recur during each of the three years considered (2008, 2009, and 2010). This could suggest that if a firm suffers a crime more than once during a specific year, it is likely that it will experience again the same crime, approximately the same number of times, during the following years.

[88] Weighted data.

[89] The number of victims represents here the sum of businesses which have experienced, once or more than once, a specific type of crime. E.g. in the case of theft, the N is equal to the sum of businesses victims of shrinkage, theft of money from the cash and other types of theft, experienced between 2008 and 2010. The analysis considers only those types of crime presenting absolute Not-weighted numbers >5. The absolute numbers for each type of crime and sector are reported here. FINANCIAL SECTOR: N victims of fraud = 112, N victims of theft = 45, N victims of unfair competition = 53. COMMERCIAL SECTOR: N victims of fraud = 371, N victims of theft = 448, N victims of unfair competition = 96, N victims of corruption = 58.

Figure 33 - Annual concentration of crimes in the commercial sector. Years 2008, 2009, 2010 - %[90] of the total number of businesses victimized in the commercial sector

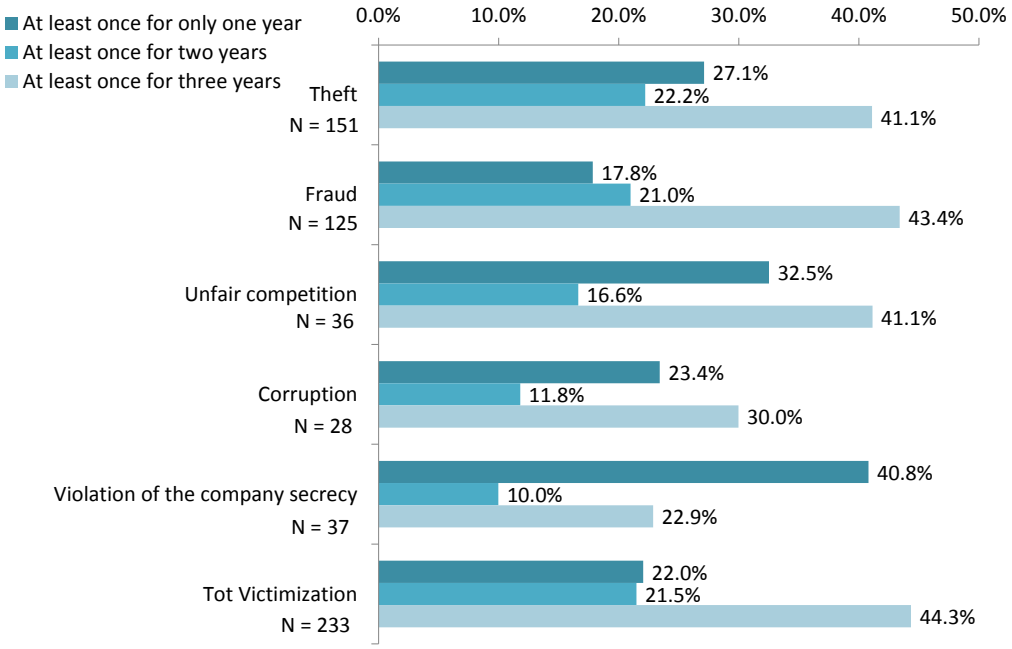
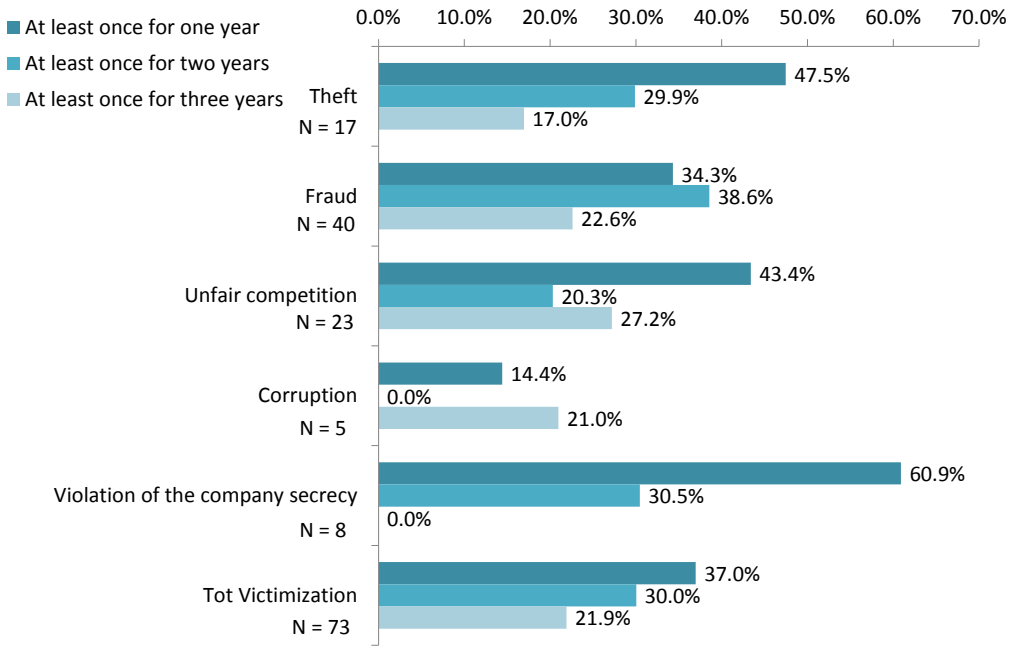


Figure 34 - Annual concentration of crimes among asset managers and fiduciaries. Years 2008, 2009, 2010 - %[91] of the total number of businesses victimized among asset managers and fiduciaries



[90] Weighted data.

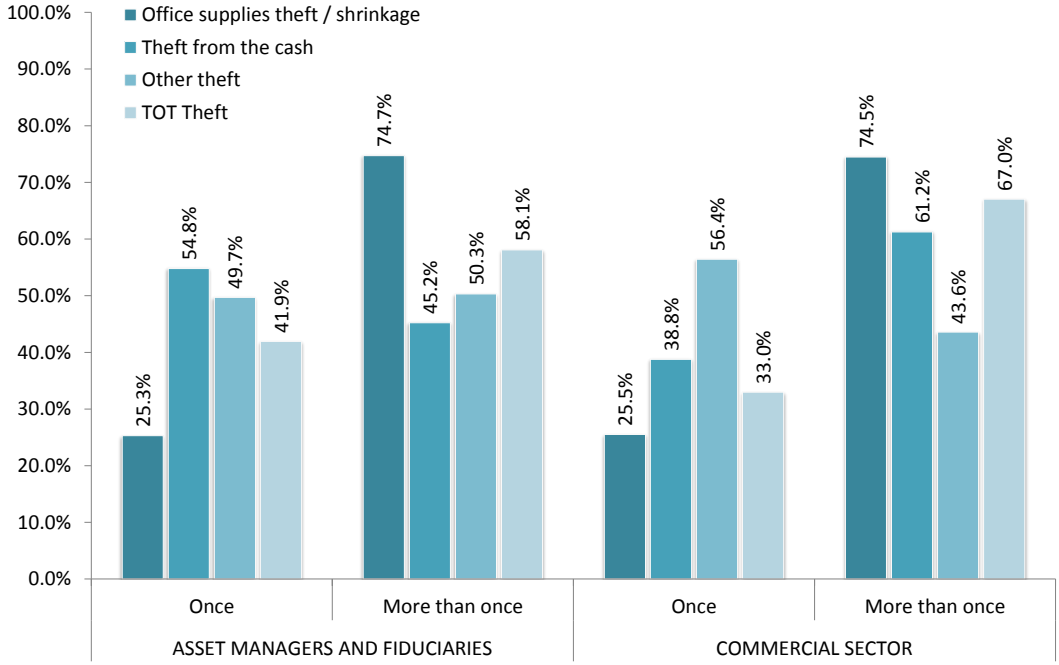
[91] Weighted data.

Given that the majority of the businesses interviewed reported to have been multi-victimized during a reference period of three years (2008-2010), the Figures above clarify whether the multi-victimized companies have experienced the offences during only one year, for two years or during all the three years covered by the survey.
Considering the overall level of victimization, the majority of the commercial companies victimized (44.3%) has experienced at least one crime during all the three years considered. This applies for all the types of crime analyzed above, with the exception of violation of the company secrecy, which was likely to happen during only one year.
Differently from the patterns analyzed for the commercial companies, **among asset managers and fiduciaries the victims of crime tend to have experienced the incidents mainly during only one year (37%), rather than during all the three years considered (21.9%).** This could be attributed to the fact that financial firms have more efficient systems for detecting employees who committed crimes or for reacting to crime incidents by implementing necessary measures of prevention to avoid further incidents. Indeed, 60% of financial companies declared to have discovered the offences through internal control, against 56% of commercial companies. It appears that financial firms are probably running more controls on employees, which could help in identifying the offenders and thus reduce the risk for further victimization.

As far as the concentration of crime events strictly depends on the specific types of offence considered, the following analyses focus on the frequency of crime incidents of each different category of theft, fraud and unfair competition[92].

[92] This analysis considers only the commercial businesses and asset managers and fiduciaries because the data for banks are not reliable at this level of disaggregation.

Figure 35 - Concentration of incidents of theft. Years 2008, 2009, 2010 - %[93] of businesses victimized of each specific type of theft[94] on the total number of victims, for the frequency of crime



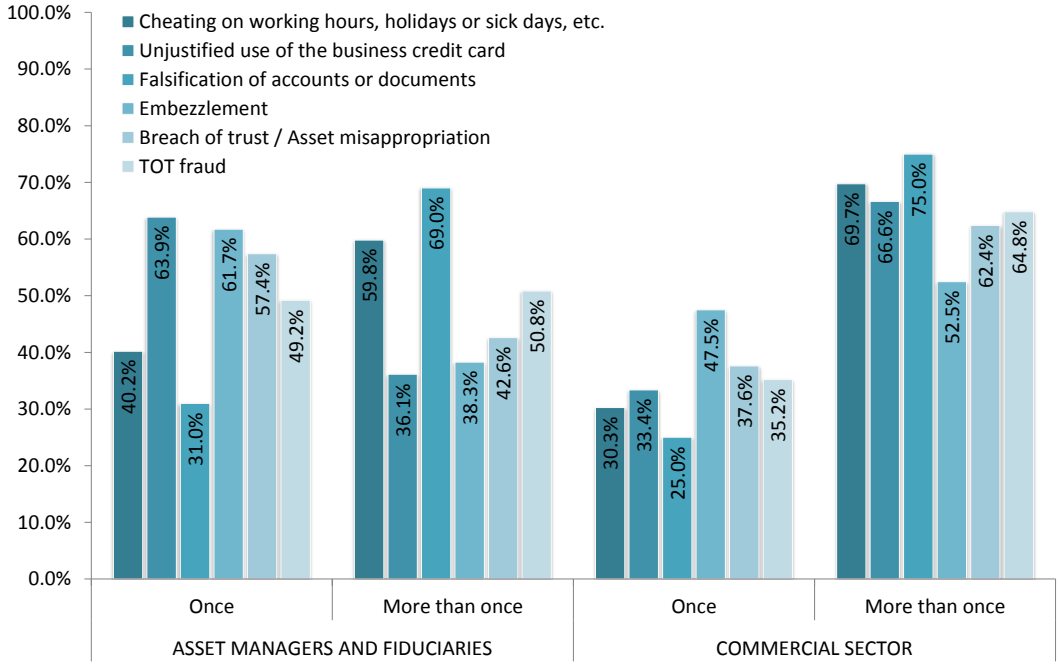
In both sectors the majority of businesses are multi-victimized of "office supplies theft / shrinkage". Indeed, both among commercial firms and asset managers and fiduciaries more than 74% declared to have experienced this type of theft more than once between 2008 and 2010. This is, indeed, the most frequent type of theft perpetrated by employees and, as far as it is very difficult to be prevented, it is likely to occur more than once in the same company.

Among asset managers and fiduciaries the other types of theft usually happened only once, while 61.2% of commercial firms declared to have experienced also "theft from the cash machine" more than once. This result could be explained by the fact that among financial firms is less frequent to have a cash machine and cash money available, than in retail stores.

[93] Weighted data.

[94] The absolute numbers for each specific type of theft and sector are reported here. FINANCIAL SECTOR: N victims of "office supplies theft / shrinkage" = 15, N victims of "theft from the cash machine" = 16, N victims of "other theft" = 6, N of victims of all the types of theft = 45. COMMERCIAL SECTOR: N victims of "office supplies theft / shrinkage" = 247, N victims of "theft from the cash machine" = 172, N victims of "other theft" = 29, N of victims of all the types of theft = 448.

Figure 36 - Concentration of incidents of fraud. Years 2008, 2009, 2010 - %[95] of businesses victimized of each specific type of fraud[96] on the total number of victims, for the frequency of crime



Even in the case of fraud, there are some specific types of misbehavior which are more likely to recur rather than others.
In particular, "Cheating on working hours, holidays or sick days" was happening more than once among 59.8% of asset managers and 69.7% of commercial companies, as well as "Falsification of accounts or documents"[97] (69% of financial companies and 75% of commercial ones experienced it more than once).
In the commercial sector also the "Unjustified use of the business credit card" is more likely to recur more than once in 66.6% of the cases, and the "Breach of trust / Asset misappropriation" in 62.4%.

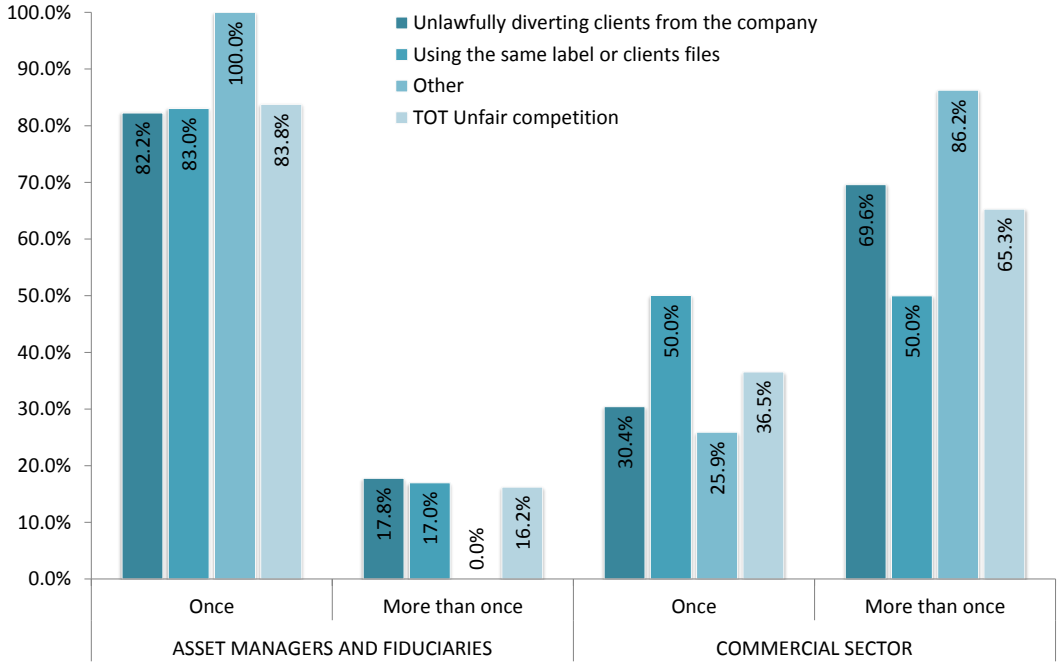
Again, there are evidences that the commercial firms are more exposed to different types of theft and fraud, and even more frequently than financial businesses.

[95] Weighted data.

[96] The absolute numbers for each specific type of fraud and sector are reported here. FINANCIAL SECTOR: N victims of "Cheating on working hours, holidays or sick days, etc." = 55, N victims of "Unjustified use of the business credit card" = 3, N victims of "Falsification of accounts or documents" = 5, N victims of "Embezzlement" = 9, N of victims of "Breach of trust / Asset misappropriation" = 15, N of victims of "other frauds" = 5, N of victims of all the types of fraud = 112. COMMERCIAL SECTOR: N victims of "Cheating on working hours, holidays or sick days, etc." = 178, N victims of "Unjustified use of the business credit card" = 11, N victims of "Falsification of accounts or documents" = 31, N victims of "Embezzlement" = 53, N of victims of "Breach of trust / Asset misappropriation" = 81, N of victims of "other frauds" = 17, N of victims of all the types of fraud = 371.

[97] To be considered that the N for this type of fraud is very low in both sectors (3 among asset managers and fiduciaries and 31 among commercial businesses).

Figure 37 - Concentration of incidents of unfair competition. Years 2008, 2009, 2010 - %[98] of businesses victimized of each specific type of unfair competition[99] on the total number of victims, for the frequency of crime



Generally speaking, among asset managers and fiduciaries it is rare that events of unfair competition happened more than once on the same victim. Indeed, more than 80% of victims of both "Unlawfully diverting clients from the company" and "Using the same label or client files" experienced them only once.

This is probably due to the fact that the majority of financial business victims of unfair competition (40.8%) have run a legal action against the offender as soon as they discovered the crime. This kind of reaction is pretty harsh but evidently useful to prevent and discourage the commission of other crimes of these types (see section 3.2).

In the commercial sector, even in this case, the majority of companies have experienced the different types of unfair competition more than once; demonstrating how multi-victimization is more concentrated on this type of business.

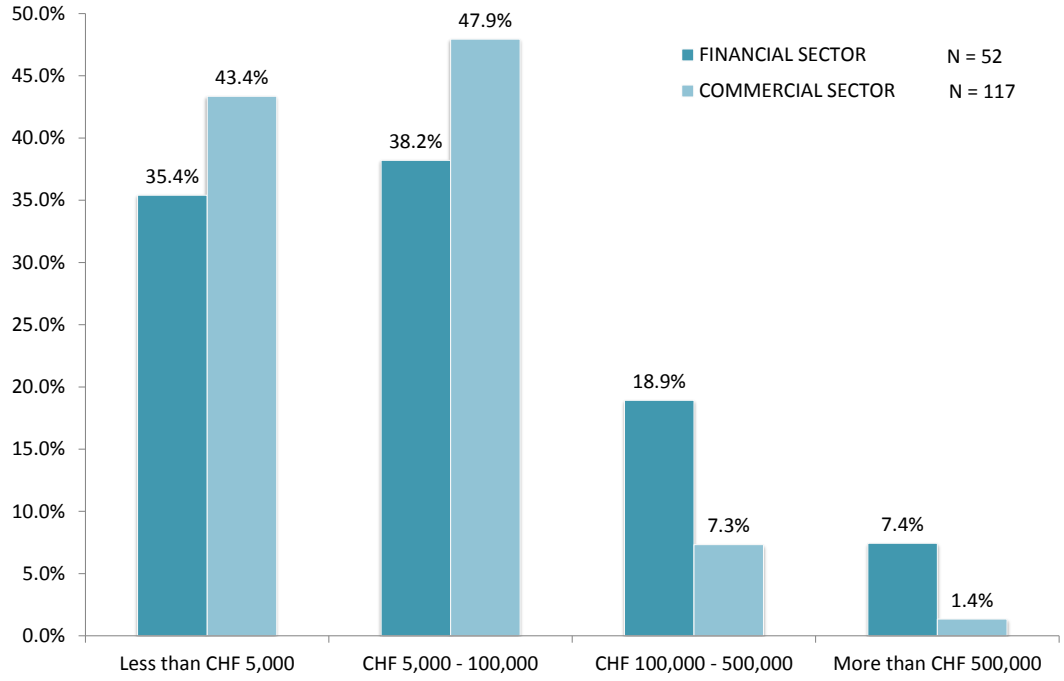
[98] Weighted data.

[99] The absolute numbers for each specific type of unfair competition and sector are reported here. FINANCIAL SECTOR: N victims of "Unlawfully diverting clients from the company" = 33, N victims of "Using the same label or clients files" = 16, N victims of "Other incidents of unfair competition" = 4, N of victims of all the types of unfair competition = 53. COMMERCIAL SECTOR: N victims of "Unlawfully diverting clients from the company" = 47, N victims of "Using the same label or clients files" = 36, N victims of "Other incidents of unfair competition" = 13, N of victims of all the types of unfair competition = 96.

1.3 Financial impact of victimization

The financial impact of victimization has been measured, in this survey, through two different questions: "Was there any quantifiable damage as a consequence of crime" and, if yes, "How can you quantify the damage in financial terms?"[100]. In the case of the banks, the questions referred, generally, to all the incidents of all the types of crime experienced since 2008. In the case of asset managers, fiduciaries and retail stores, the two questions were asked for each specific type of crime, separately. However, the analysis below refers only to the costs for theft and fraud due to a very high amount of missing data (non-response) for the other types of crime.

Figure 38 - Financial impact of victimization, between 2008 and 2010, by economic sector. %[101] of the total number of businesses victimized at least once in each sector



The Figure above shows that the highest costs as a consequence of crime are experienced by businesses in the financial sector. Indeed, for 18.9% of businesses operating in this sector, the crimes experienced between 2008 and 2010 cost between CHF 100,000 and 500,000 and for 7.4% they cost more than CHF 500,000.
The retail stores present higher percentages for costs between CHF 5,000 and 100,000.
It can be assumed that, even if the incidence of crime is higher among commercial businesses, its costs are more awkward for the financial companies.

[100] This question provided close categories for answer, depending on the type of business.

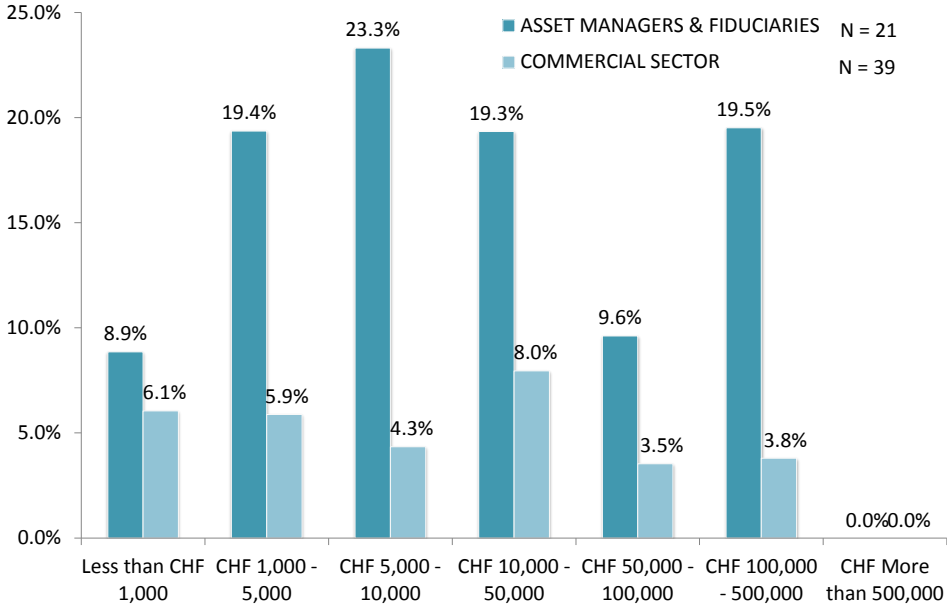
[101] Weighted data.

Figure 39 - Financial impact of victimization, between 2008 and 2010, for the banks. %[102] of the total number of banks victimized at least once between 2008 and 2010

The Figure above focuses on the financial impact of victimization among banks. It is evident the very high cost of crime among bank, which could also be explained by the higher incidence of crime in this sector, than among asset managers and fiduciaries.

[102] Weighted data.

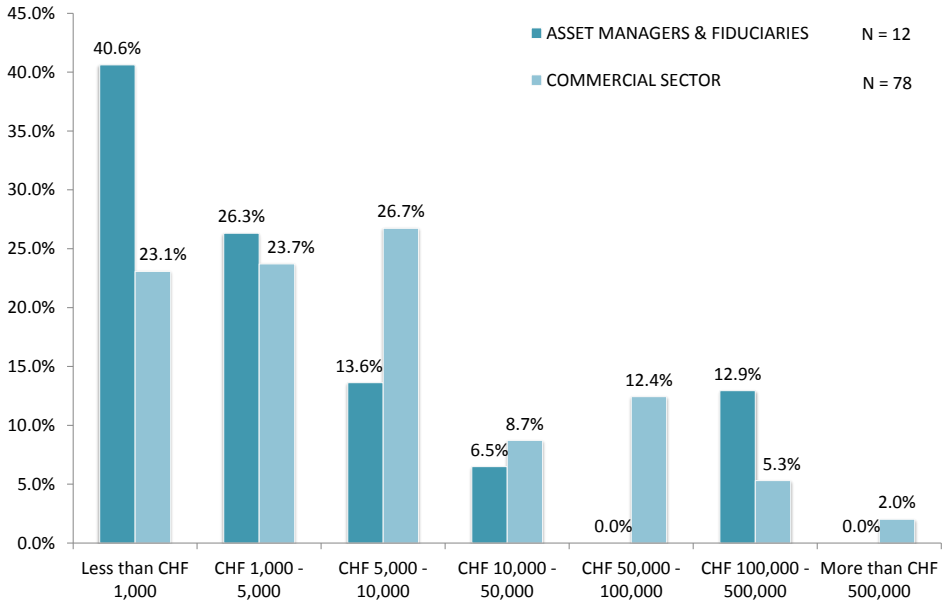
Figure 40 - Financial impact of fraud between 2008 and 2010. %[103] of the total number of businesses victimized at least once for fraud between 2008 and 2010 in each sector



In line with the previous results, it is evident that the highest cost for fraud hit asset managers and fiduciaries. Indeed, 19.5% have suffered frauds which cost between CHF 100,000 and 500,000 for the company, between 2008 and 2010, against only 3.8% of retail stores.

[103] Weighted data.

Figure 41 - Financial impact of theft between 2008 and 2010. %[104] of the total number of businesses victimized at least once for theft between 2008 and 2010 in each sector



In the case of theft (Figure above), it is less evident which sector is more afflicted by costs as a consequence of crime.

The majority of asset managers and fiduciaries (40.6%), declared to have lost less than CHF 1,000 as a consequence of theft between 2008 and 2010, but the percentage of financial companies which have lost between CHF 100,000 and 500,000, is also quite important (12.9%). The majority of retail stores (26.7%) have suffered theft which cost between CHF 5,000 and 10,000, but it should be noticed that theft is the most frequent crime among companies in this sector.

[104] Weighted data.

1.4 Predictors of the overall level of victimization by economic sector[105]

This chapter focuses on the identification of the main predictors of employee offences against Swiss commercial and financial companies.
As predictors, are intended here the independent variables (independent variables) which could explain variations in the distribution of a specific variable (dependent variable).
The statistical methods used to test the association between the selected variables, are based on the analysis of cross-tabulations and association's coefficients such as the Chi-square, the Phi coefficient, Cramer V and Odds ratio (see Annex 2 for further explanations). The conventional levels of confidence taken into consideration for refusing the null hypothesis are $p<0.01$ and $p<0.05$.
Binary logistic regression will also be performed to assess the effect of each independent variable on the dependent one, when the others are controlled.

1.4.1 Definition of the variables

This section analyses the specific characteristics of a business which could influence the likelihood of being victim of at least one crime between 2008 and 2010.
The analyses are focused on 1'091 asset management firms and fiduciaries (financial sector) and 792 retail stores (commercial sector) with at least one employee.

The dependent variable is the overall victimization level, which represents the number of businesses which have been victims of at least one crime between 2008 and 2010.

The independent variables, selected on the basis of their availability in the SBCS dataset, and statistical consistency, as well as the relevant literature are:

- ✓ ***The area where the business is located.*** This variable presents four categories:
  1. *City center*
  2. *Residential area*
  3. *Industrial area*
  4. *Other*
- ✓ ***The number of inhabitants of the place where the company is located.*** This variable has five categories:
  1. Less than 10'000 inhabitants
  2.10'000-20'000 inhabitants
  3. 20'000-50'000 inhabitants
  4. 50'000-100'000 inhabitants
  5. More than 100'000 inhabitants
- ✓ ***Size of the business***. Indicates the number of full-time employees working within the business and presents four categories:
  1. 1-9 employees
  2. 10-49 employees
  3. 50-250 employees

[105] This section includes analyses which distinguish between asset managers and fiduciaries, considered together as companies belonging to the financial sector, and businesses belonging to the commercial sector. Data on banks cannot be analyzed through bivariate and multivariate analysis techniques because of scarce number of cases which would not allow significant analyses. Those data will be analyzed in a specific section of the report.

4. More than 250 employees

- ✓ ***Annual turnover***. Indicates the average annual turnover of the companies and presents six categories:
  1. Less than CHF 500'000
  2. CHF 500'000-1 million
  3. CHF 1-5 million
  4. CHF 5-10 million
  5. CHF 10-50 million
  6. More than CHF 50 million[106]
- ✓ ***Security systems***. Refers to the presence/absence of at least one measure of prevention among physical security systems (anti-theft devices, alarms, cameras, etc.) and computer security devices/systems (anti-virus, anti-spam filters, limited access, filters for Internet navigation, etc.) within the business at the time of the interview. It's a dummy-coded variable (1. *Yes;* 0. *No).*
- ✓ ***Control systems***. Refers to the presence/absence of at least one measure of prevention, focused on the control of the employees and their work, among regular controls and audits, regular controls of stocks and merchandise (only for businesses in the commercial sector) and systematic check of new employees within the business at the time of the interview. It's a dummy-coded variable (1. *Yes;* 0. *No).*
- ✓ ***Organizational measures***. Refers to the presence/absence of at least one measure of prevention, at the organizational and procedural level (very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts). It's a dummy-coded variable (1. *Yes;* 0. *No).*
- ✓ ***Corporate culture***. Indicates the types of corporate culture adopted by businesses. This variable presents four categories:
  1. Dynamic and entrepreneurial culture
  2. Competitive culture
  3. Rules and formal policies culture
  4. Family culture

The bivariate analysis will be carried out first considering all the categories of the independent variables, as described above, and then, in order to obtain more significant results and in order to focus on the most specific and relevant features of each variable, it will concentrate on only one specific modality.
In order to consider the presence/absence of a specific feature related to each variable, the categories of the independent variables will be treated as single dummy-coded variables themselves (e.g. the category 1-9 employees of the variable size of the business will be treated as dummy-coded variable indicating the presence/absence of businesses with 1-9 employees. Its categories will be: 1. Yes, 0. No).

[106] A statistical analysis of the distribution of this variable by economic sector of the business can be found in the section III - RESPONSE RATES, chapter 1.3.

1.4.2 Predictors of the overall victimization in the commercial sector

1.4.2.1 Bivariate analysis

At a bivariate level all the selected independent variables present a significant association with the overall victimization among businesses in the commercial sector. In particular, those presenting the strongest bivariate association are: the size of the business, the presence of physical security systems within the firm, and the annual turnover.

The association between the size of the company and victimization indicates that **micro businesses are less victimized than larger businesses**.

Victimization is also positively associated with the presence of physical security systems, meaning that **among businesses with security systems there are more firms victims of crime**. This association could be explained by the fact that, probably, the companies adopt these security systems only once a crime incident has happened or, it may also be the case that these firms are more at risk of victimization for other reasons which could be then controlled through the multivariate analysis or which are not possible to be controlled within the SBCS dataset.

The annual turnover also shows a positive association with victimization, in particular, **companies presenting an annual turnover higher than CHF 50 million are more likely to have been victims of a crime between 2008 and 2010.**

Business location and overall victimization

*Table 16 - **Overall victimization** by location of the business in the commercial sector. % on the total number of respondents by location*

	Area of location				Total
Victimization	**City center**	**Residential area**	**Industrial area**	**Other**	
No	265	143	113	43	564
	70.3%	77.7%	66.9%	69.4%	71.2%
Yes	112	41	56	19	228
	29.7%	**22.3%**	**33.1%**	30.6%	28.8%

Chi-square= 5.617 DF=3 P=0.132 (n.s.)
Phi = 0.084 P=0.132 (n.s.)
Cramer V = 0.084 P=0.132 (n.s.)

Among retail stores, the relationship between the location and the likelihood of being victim of a crime is not significant at the established level of confidence of 0.05.

In order to obtain more significant results a different analysis with dummy-coded independent variable, corresponding to the presence/absence of businesses in the residential area is performed below.

*Table 17 - **Overall victimization** by residential areas. % on the total number of respondents by residential areas*

Victimization	Residential area		Total
	No	Yes	
No	421	143	564
	69.2%	77.7%	71.2%
Yes	187	41	228
	30.8%	**22.3%**	28.8%

Chi-square= 4.948 DF=1 P<0.05
Phi = -0.079 P<0.05
Cramer V = 0.079 P<0.05
Odds ratio = 0.645 95% CI [0.438, 0.951]

Analyzing the relationship between businesses located in a residential area and their level of victimization, it emerges a significant and negative association between the two variables (Phi = -0.079). In particular, only 22.3% of businesses located in a residential area have been victims of at least one crime between 2008 and 2010, against 30.8% of companies not located in a residential area.
Therefore, among retailers, **being located in a residential area reduces the risk of victimization of 1.5 times (Odds ratio).**

Number of inhabitants of the area of location and overall victimization

*Table 18 - **Overall victimization** by N of inhabitants of the area of location of the retail stores. % on the total number of respondents by N of inhabitants of the area of location*

Victimization	Number of inhabitants					Total
	<10'000	10'000 - 20'000	20'000 - 50'000	50'000 - 100'000	>100'000	
No	210	110	71	23	128	542
	77.8%	74.3%	69.6%	57.5%	63.7%	71.2%
Yes	60	38	31	17	73	219
	22.2%	25.7%	30.4%	42.5%	36.3%	28.8%

Chi-square= 20.941 DF=5 P<0.01
Phi = 0.166 P<0.01
Cramer V = 0.166 P<0.01

The size of the area where the business is located, in terms of number of inhabitants, positively influences the victimization risk. In particular, **the larger the area where the company is located, the higher the percentage of businesses victimized**. In the areas with between 50'000 and 100'000 inhabitants and in those with more than 100'000, the percentages of victimization are the highest ones, respectively 42.5% and 36.3%, against 22.2% in areas with less than 10'000 inhabitants and 25.7% of those between 10'000 and 20'000 inhabitants.

*Table 19 - **Overall victimization** by areas of location with more than 50'000 inhabitants. % on the total number of respondents by areas of location with more than 50'000 inhabitants*

	More than 50'000 inhabitants		Total
Victimization	**No**	**Yes**	
No	391	151	542
	75.2%	62.7%	71.2%
Yes	129	90	219
	24.8%	**37.3%**	28.8%

Chi-square= 12.628 DF=1 P<0.001
Phi = 0.129 P<0.001
Cramer V = 0.129 P<0.001
Odds ratio = 1.807 95% CI [1.301, 2.508]

Focusing only on the relationship between the areas with more than 50'000 inhabitants (those presenting the highest percentages of victimization according to the previous analysis) and the victimization rates, a significant and positive association between the two variables is detected. Indeed, **businesses located in areas with more than 50'000 inhabitants are 1.8 times more likely to be victims of crime.** This is probably due to the fact that where there are more inhabitants there are also bigger companies that are probably the most victimized. Therefore, the relationship between this two variables should be then controlled for the size of the business.

Size of the business and overall victimization

*Table 20 - **Overall victimization** by size of businesses in the commercial sector. % on the total number of respondents by size*

	Size of the business				Total
Victimization	**1-9 employees**	**10-49 employees**	**50-250 employees**	**>250 employees**	
No	440	98	20	6	564
	77.5%	60.1%	50.0%	28.6%	71.2%
Yes	128	65	20	15	228
	22.5%	39.9%	50.0%	**71.4%**	28.8%

Chi-square= 48.015 DF=3 P<0.001
Phi = 0.246 P<0.001
Cramer V = 0.246 P<0.001

As shown in the Table above, the bigger the size of the business, the higher the percentage of business victimized. Indeed, 71.4% of retailers with more than 250 employees have been victims, while only 22.5% of micro businesses suffered a crime.
The Chi-square test confirms the significance of this relationship. Moreover, comparing the Cramer V coefficient of this relationship with that related to the area of location of the business, it is shown that the association is higher in this case (0.246 vs. 0.079).
In order to better understand the influence of the largest (more than 250 employees) and smallest (1-9 employees) size of the business on the likelihood of victimization, a different analysis with dummy-coded independent variable which is the presence/absence of these characteristics among businesses, is performed below.

*Table 21 - **Overall victimization** by large businesses (more than 250 employees). % on the total number of respondents by large businesses*

	Size – More than 250 employees		Total
Victimization	**No**	**Yes**	
No	558	6	564
	72.4%	28.6%	71.2%
Yes	213	15	228
	27.6%	**71.4%**	28.8%

Chi-square= 19.133 DF=1 P<0.001
Phi = 0.155 P<0.001
Cramer V = 0.155 P<0.001
Odds ratio = 6.549 95% CI [2.508; 17.102]

The analysis above confirms what has been detected through the preliminary analysis on the relationship between the size of the business and the victimization risk: **71.4% of large businesses have been victims of at least one crime between 2008 and 2010, against 27.6% of businesses presenting a smaller size.**
The Chi-square test shows the presence of a significant, positive association between large businesses and victimization; in particular, businesses with more than 250 employees have a probability of being victims more than six times higher than for smaller businesses.
In addition, the Table below shows the negative association between micro-businesses and victimization rate. Only 22.5% of micro businesses have been victims against 44.6% of larger companies. In particular, the probability for these firms of being victims is almost three times lower than for larger companies.

*Table 22 - **Overall victimization** by micro businesses (1-9 employees). % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Victimization	**No**	**Yes**	
No	124	440	564
	55.4%	77.5%	71.2%
Yes	100	128	228
	44.6%	**22.5%**	28.8%

Chi-square= 38.299 DF=1 P<0.001
Phi = -0.220 P<0.001
Cramer V = 0.220 P<0.001
Odds ratio = 0.361 95% CI [0.260; 0.502]

The value of the Cramer V coefficient allows to state that this variable is the one presenting the strongest association with victimization rate, if compared to the other variables considered in this section: area of location (section 2.1.1.), turnover of the business (section 2.1.3. below) and measure of prevention (section 2.1.4. below).

Annual turnover and overall victimization

*Table 23 - **Overall victimization** by annual turnover of the businesses in the commercial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						Total
Victimization	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	
No	90	96	229	37	33	13	498
	78.3%	80.7%	72.2%	69.8%	56.9%	36.1%	71.3%
Yes	25	23	88	16	25	23	200
	21.7%	19.3%	27.8%	30.2%	43.1%	**63.9%**	28.7%

Chi-square= 35.724 DF=5 P<0.001
Phi = 0.226 P<0.001
Cramer V = 0.226 P<0.001

The analysis above shows that the higher the annual turnover, the greater the risk of victimization for the companies. In particular, **63.9% of the retailers with an annual turnover higher than CHF 50 million have been victims of crime, while only 21.7% of those presenting a turnover lower than CHF 500'000.**
In order to better understand the influence of this specific level of turnover on the likelihood of victimization, a different analysis with dummy-coded independent variable, corresponding to the presence/absence of this characteristic among businesses, is performed below.

*Table 24 - **Overall victimization** by businesses with a high turnover (more than CHF 50 million). % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Victimization	**No**	**Yes**	
No	551	13	564
	72.9%	36.1%	71.2%
Yes	205	23	228
	27.1%	**63.9%**	28.8%

Chi-square= 22.666 DF=1 P<0.001
Phi = 0.169 P<0.001
Cramer V = 0.169 P<0.001
Odds ratio = 4.755 95% CI [2.364; 9.564]

The probability of being victim is almost five times higher for businesses with a turnover above CHF 50 million, than for companies having a lower turnover. Indeed, if 63.9% of firms with this high turnover have been victimized, only 27.1% of companies with a lower turnover suffered a crime committed by employees.

Security systems for crime prevention and overall victimization

Among commercial companies which were victims of a crime between 2008 and 2010, 66.6% were victims of theft and 50% were victims of fraud. Therefore, the presence of security systems such as anti-theft devices, alarms, cameras as well as the presence of computer security systems can be a good predictor of the victimization risk among these firms.

*Table 25 - **Overall victimization** by security systems in the commercial sector. % on the total number of respondents by security systems*

	Security systems (physical and computer)		Total
Victimization	**No**	**Yes**	
No	285	279	564
	80.1%	64.0%	71.2%
Yes	71	157	228
	19.9%	**36.0%**	28.8%

Chi-square= 24.673 DF=1 P<0.001
Phi = 0.177 P<0.001
Cramer V = 0.177 P<0.01
Odds ratio = 2.259; 95% CI [1.632, 3.127]

The Table above presents a significant positive relationship between the selected variables. Indeed, **businesses with at least one security system are two times more at risk of victimization in comparison to companies without any security systems**.
Giving that the most frequent crime, among retailers, is theft, the following analysis focuses only on the physical security systems, such as anti-theft alarms, cameras, etc.

*Table 26 - **Overall victimization** by physical security systems in the commercial sector. % on the total number of respondents by physical security systems*

	Physical security systems		Total
Victimization	**No**	**Yes**	
No	410	154	564
	78.4%	57.2%	71.2%
Yes	113	115	228
	21.6%	**42.8%**	28.8%

Chi-square= 38.741 DF=1 P<0.001
Phi = 0.221 P<0.001
Cramer V = 0.221 P<0.01
Odds ratio = 2.709; 95% CI [1.970, 3.727]

Even in this case, the results of the Chi-square test show the significance of the association between the two variables.
In the commercial sector, 42.8% of the businesses having at least one measure of prevention (e.g. anti-theft alarms, cameras, etc.) at present had been victims of at least one crime between 2008 and 2010, against 21.6% of the businesses which do not have any of these measures. In particular, the value of the odds ratio shows that the probability of being victims is 2.7 times higher for businesses which have at least one of these measures than for those which do not have any of these measures.

Three main hypotheses could be considered to explain this positive (even if weak) association between the presence of measures of prevention and victimization rates among businesses:
1) The majority of businesses having these measures of prevention are medium and large size businesses which present also the highest victimization rates. This hypothesis will be verified through the multivariate analysis.
2) The majority of businesses having these measures of prevention are those with the highest annual turnover, which are also those presenting the highest victimization rates. This hypothesis will be verified through the multivariate analysis.
3) The third hypothesis refers to the fact that companies could have taken these measures of prevention after the incident happened; in order to prevent potential new ones. Therefore, there could be a relationship between the presence of measures of prevention and victimization rates because the business victimized tend to adopt new measures of prevention after having experienced a crime. This is partly demonstrated by the data as 33.1% of commercial business victims of theft have adopted at least one new physical measure of prevention after the crime incident (see section 4.4.2.).

Control systems for crime prevention and overall victimization

Regularly controlling the employees and their work and carefully selecting the new employees before hiring them are among the most frequent measures of crime prevention among businesses.
The relationship between the control systems and the victimization rates is significant and positive. The more the companies have these systems of control the more they are victimized.
As in the case of the security systems, this could be due to the fact that these measures of prevention are adopted once the firm has already experienced the crime incident.

*Table 27 - **Overall victimization** by control systems in the commercial sector. % on the total number of respondents by control systems*

	Control systems		Total
Victimization	**No**	**Yes**	
No	276	288	564
	76.9%	66.5%	71.2%
Yes	83	145	228
	23.1%	33.5%	28.8%

Chi-square= 10.291 DF=1 P<0.01
Phi = 0.114 P<0.01
Cramer V = 0.114 P<0.01
Odds ratio = 1.674; 95% CI [1.220, 2.297]

Organizational measures for crime prevention and overall victimization

The way how the work of the employees is organized, in terms of rules and procedures, and how consolidated is the relationship between employees and managers, as well as the presence of a good system of salary, could also influence the companies' likelihood of being victims of employee offences. The Table below presents a significant positive relationship between the organizational and procedural measures of crime prevention and victimization rates.

*Table 28 - **Overall victimization** by organizational and procedural measures in the commercial sector. % on the total number of respondents by control systems*

	Organizational and procedural measures		Total
Victimization	**No**	**Yes**	
No	252	312	564
	80.3%	65.3%	71.2%
Yes	62	166	228
	19.7%	**34.7%**	28.8%

Chi-square= 20.752 DF=1 P<0.001
Phi = 0.162 P<0.001
Cramer V = 0.162 P<0.001
Odds ratio = 2.163; 95% CI [1.546, 3.025]

Corporate culture and overall victimization

*Table 29 - **Overall victimization** by corporate culture in the commercial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Victimization	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	113	52	39	341	545
	71.5%	61.9%	72.2%	73.2%	71.5%
Yes	45	32	15	125	217
	28.5%	38.1%	27.8%	26.8%	28.5%

Chi-square= 4.453 DF=3 P=0.216 (n.s.)
Phi = 0.076 P=0.216 (n.s.)
Cramer V = 0.076 P=0.216 (n.s.)

The analysis shows a non-significant association between the corporate culture and the likelihood of being victim of a crime among retailers.
When performing the analysis considering each category as a separated dummy-coded variable, the only one presenting a significant association with victimization level is the presence of a competitive culture (emphasizing the productivity, tasks and objectives accomplishments).
In particular, looking at the Table below, it appears a positive association between the victimization rate and the presence of a competitive culture. Therefore, it could be hypothesized that employees who feel under pressure for the accomplishments of their tasks and objectives and who work in a competitive environment are more likely to commit crime within the company. The reliability of this bivariate association should then be checked through the multivariate analysis.

*Table 30 - **Overall victimization** by competitive culture in the commercial sector. % on the total number of respondents by competitive culture*

	Competitive culture		Total
Victimization	**No**	**Yes**	
No	512	52	564
	72.3%	61.9%	71.2%
Yes	196	32	228
	27.7%	**38.1%**	28.8%

Chi-square= 3.971 DF=1 P<0.05
Phi = 0.071 P<0.05
Cramer V = 0.071 P<0.05
Odds ratio = 1.608; 95% CI [1.005, 2.572]

1.4.2.2 Multivariate analysis

This section analyses the result of a binary logistic regression (see Annex 3 for further details) in order to estimate the probability that a business would have been victim of a crime, on the basis of the specific characteristics of the business itself, such as its size, its turnover, its location and the presence of measures of prevention. In particular, the dependent variable (DV) is the overall victimization level, indicating if a business has been victim of at least one crime between 2008 and 2010 (1=Yes, 0=No), while the independent variables are: Area of location_Residential (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000; Size_Micro businesses (1=Yes, 0=No); Turnover_More than CHF 50 million (1=Yes, 0=No); Physical measures of prevention (anti-theft alarms, cameras, etc.) (1=Yes, 0=No), Control systems (1=Yes, 0=No), Organization measures (1=Yes, 0=No); Competitive corporate culture (1=Yes, 0=No).
The sample of 750 cases[107] is sufficiently wide to avoid numerical problems, according to the Peduzzi et al. (1996)[108] "rule"[109].

*Table 31 - Main results of the binary logistic regression – **Overall victimization level in the commercial sector***

	Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
								Lower limit	Upper limit
Step 4[d]	Organizational measures	.718	.196	13.381	1	.000	2.050	1.395	3.011
	Size_Micro_businesses	-.827	.186	19.701	1	.000	.437	.303	.630
	Physical security systems	.726	.180	16.238	1	.000	2.066	1.452	2.940
	N of inhabitants of the area of location_More than 50,000	.700	.182	14.768	1	.000	2.014	1.409	2.878
	Konstante	-1.412	.237	35.620	1	.000	.244		

Note: Model Chi-square= 90.887, p< .001. -2 Log-Likelihood= 794.738. Cox & Snell R-Square= 0.114, Nagelkerkes R-Square= 0.165.

The results of the regression model show that the major contribution to the prediction of victimization comes from the variable "Size_Micro businesses" (Chi-square = 38.147), followed by "Physical security systems" (Chi-square = 25.364), "Organizational measures" (Chi-square = 13.974) and "N of inhabitants of the area of location" (Chi-square = 13.402). The other independent variables: Area of location_Residential; Turnover_More than CHF 50 million; Control systems and Competitive corporate culture, do not significantly contribute to the model.
The value of the Chi-square coefficient shows the reduced value of the -2 log-likelihood (90.887) and, thus, indicates an improvement in the model in comparison to the one including only the constant (for further explanation on the coefficients see Annexes 2 and 3). The Chi-square coefficient presents a

[107] Twelve cases (1.6% of the total) which present standardized residuals for the binary logistic regression higher than 2.5 have been excluded from the analyses, to obtain more significant results.

[108] Peduzzi P, Concato J, Kemper E, Holford TR, Feinstein AR (1996) 'A simulation study of the number of events per variable in logistic regression analysis'. *Journal of Clinical Epidemiology* 49:1373-1379.

[109] The minimum number of cases to include in the analysis is: N = 10 k / p, where **p** is the smallest of the proportions of negative or positive cases in the population and **k** the number of covariates (the number of independent variables). In this case, where k=9 and p=0.168 (16.8%), the minimum N should be 535.

statistical significance at $p<0.001$, witnessing the presence of a statistical relationship between the dependent variable and the combination of the independent variables.

The Nagelkerkes R-Square coefficient indicates that the proportion of variance accounted for the dependent variable based on the predictive power of the independent variables included in the model is around 16.5% (for further explanations on the coefficient see Annexes 2 and 3). This value is not very high, indicating a limited predictive power of the regression model. Other variables, which are not included in the present survey, would have been probably needed to better explain the phenomenon under consideration. Therefore, even if the regression model is statistical significance (see the value of the chi-square coefficient), it is suggested to interpret with caution the values of the predictors' coefficients analyzed below because they could be influenced by latent variables not included in the model.

Considering the B coefficients of the four predictors of victimization (see Table above), all of them have a relatively low standard error and the p-values < 0.01. Therefore, the size of the company, specific measures of prevention and the number of inhabitants of the area of location have an influence on the victimization of employee offences against Swiss commercial businesses.

In particular, the Exp(B) of the Size_Micro businesses, indicates that **the odds of being victim of a crime for businesses with more than 9 employees is more than two times higher than for micro-businesses,** when the other variables in the model are controlled. This means that micro businesses are less likely to be victimized.

The Exp(B) of the N of inhabitants shows that **the odds of being victimized is two times greater for businesses located in areas with more than 50,000 inhabitants**, when the other variables are controlled.

While for **businesses having at least one physical security system, the odds of being victimized is two times higher than for businesses holding none of those systems**. The same applies for **businesses having at least one organizational measure for crime prevention; they are two times more likely to be victimized.**

As already addressed above, this result could be explained by the fact that the businesses could have taken measures of prevention after the incident happened, in order to prevent potential new ones. Therefore, there could be a relationship between the presence of measures of prevention and the victimization level because the business victimized tends to adopt new measures after having experienced a crime. This is partly demonstrated by the data. Indeed, even if around 79.3% had at least one measure of prevention before the incident happened (see section 4.3.1), 47.4% have adopted a new one just after the crime incident (see section 4.4.1).

1.4.3 Predictors of the overall victimization in the financial sector[110]

1.4.3.1 Bivariate analysis

At a bivariate level five out of eight of the selected independent variables present a significant association with the overall victimization level, among businesses in the financial sector: the number of inhabitants of the area of location, the size and the annual turnover of the company, the security systems and the corporate culture.
The area of location, the systems of control of the employees' work and the organizational and procedural measures of crime prevention are not statistically associated with the overall victimization level among asset managers and fiduciaries.
In particular, the main results indicate that:

- ✓ micro businesses are less victimized than larger businesses;
- ✓ companies with a higher turnover are more likely to be victimized;
- ✓ firms having security systems for crime prevention are more victimized;
- ✓ businesses emphasizing a corporate culture based on loyalty and tradition are less victimized.

Number of inhabitants of the business location and overall victimization

The number of inhabitants of the area where the business is located is not significantly associated with the victimization rates among businesses in the financial sector.
However, when focusing only on the areas with more than 50'000 inhabitants, a significant positive relationship appears between the two variables.

*Table 32 - **Overall victimization** by area of location with more than 50'000 inhabitants. % on the total number of respondents by area of location with more than 50'000 inhabitants*

	More than 50,000 inhabitants		Total
Victimization	**No**	**Yes**	
No	619	386	1005
	95.1%	91.0%	93.5%
Yes	32	38	70
	4.9%	**9.0%**	6.5%

Chi-square= 6.907 DF=1 P<0.01
Phi = 0.080 P<0.01
Cramer V = 0.080 P<0.01
Odds ratio = 1.904 95% CI [1.170, 3.100]

As in the case of retail stores, being located in areas with more than 50'000 inhabitants increases the likelihood of being victims of crime. In particular, **financial companies located in these areas are almost two times more at risk of being victims than firms located in smaller areas.**

[110] The financial sector includes here only asset managers and fiduciaries.

Size of the business and overall victimization

*Table 33 - **Overall victimization** by size of the businesses in the financial sector. % on the total number of respondents by size*

Victimization	Size of the business				Total
	1-9 employees	10-49 employees	50-250 employees	>250 employees	
No	869	136	12	2	1019
	95.0%	85.0%	85.7%	100.0%	93.4%
Yes	46	24	2	0	72
	5.0%	15.0%	**14.3%**	.0%	6.6%

Chi-square= 23.470 DF=3 P<0.001
Phi = 0.147 P<0.001
Cramer V = 0.147 P<0.001

Financial companies with more than nine employees show higher victimization rates. Indeed, 15% of firms with 10-49 employees and 14.3% of those with 50-250 employees have been victims of a crime, while only 5% of micro business suffered a crime. The Chi-square test confirms the significance of this relationship.

*Table 34 - **Overall victimization** by micro businesses (less than 9 employees). % on the total number of respondents by micro businesses*

Victimization	Size – Less than 9 employees		Total
	No	Yes	
No	150	869	1019
	85.2%	95.0%	93.4%
Yes	26	46	72
	14.8%	**5.0%**	6.6%

Chi-square= 22.743 DF=1 P<0.001
Phi = -0.144 P<0.001
Cramer V = 0.144 P<0.001
Odds ratio = 0.305 95% CI [0.183; 0.509]

According to the Table above, 14.8% of businesses with more than nine employees have been victims of at least one crime between 2008 and 2010, against 5% of micro businesses. Indeed, **companies with more than nine employees are more than three times at risk of victimization.**

Annual turnover and overall victimization

*Table 35 - **Overall victimization** by annual turnover of the businesses in the financial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						Total
Victimization	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	
No	292	298	292	38	19	2	941
	94.8%	95.5%	90.7%	90.5%	90.5%	66.7%	93.4%
Yes	16	14	30	4	2	1	67
	5.2%	4.5%	9.3%	9.5%	9.5%	33.3%	6.6%

Chi-square= 11.375 DF=5 P<0.05
Phi = 0.106 P<0.05
Cramer V = 0.106 P<0.05

Also among businesses in the financial sector the higher the annual turnover of a company, the higher the risk of victimization. However, there are too less firms with a turnover higher than CHF 5 million to allow a significant interpretation of the coefficients related to the Table above.
Therefore, a different analysis with dummy-coded variable, corresponding to the presence/absence of businesses with a turnover lower than CHF one million (representing those firms with the lowest victimization rates), is performed below.

*Table 36 - **Overall victimization** by businesses with a low turnover (less than CHF 1 million). % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Victimization	**No**	**Yes**	
No	351	590	941
	90.5%	95.2%	93.4%
Yes	37	30	67
	9.5%	**4.8%**	6.6%

Chi-square= 8.487 DF=1 P<0.01
Phi = -0.092 P<0.01
Cramer V = 0.092 P<0.01
Odds ratio = 0.482 95% CI [0.293; 0.795]

The Chi-square test confirms the significance of the bivariate association between turnover and victimization. In particular, **the probability of being victim of a crime is more than two times higher for businesses with a turnover higher than CHF one million**, than for those companies having a lower turnover. Indeed, only 4.8% of firms with a "low" turnover have been victimized while 9.5% of companies with a higher turnover suffered at least one employee offence.

Security systems for crime prevention and overall victimization

Among financial companies which were victims of a crime between 2008 and 2010, 52.1% were victims of fraud and 21.1% were victims of a theft. Therefore, even in this case, the presence of security systems for crime prevention such as the presence of computer security systems, as well as anti-theft devices, alarms and cameras can be a good predictor of the victimization risk among financial firms.

*Table 37 - **Overall victimization** by security systems in the financial sector. % on the total number of respondents by security systems*

	Security systems (physical and computer)		Total
Victimization	**No**	**Yes**	
No	304	715	1019
	97.1%	91.9%	93.4%
Yes	9	63	72
	2.9%	8.1%	6.6%

Chi-square= 9.876 DF=1 P<0.01
Phi = 0.095 P<0.01
Cramer V = 0.095 P<0.01
Odds ratio = 2.976; 95% CI [1.461, 6.061]

As in the case of retail stores**, financial businesses with at least one security system are almost three times more at risk for victimization in comparison to companies without any security systems.**
Also in this case, this positive association could be explained considering that businesses victimized might adopt new security measures after having experienced a crime.

Corporate culture and overall victimization

*Table 38 - **Overall victimization** by type of corporate culture in the financial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Victimization	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	123	123	95	625	966
	87.9%	89.1%	96.0%	95.0%	93.3%
Yes	17	15	4	33	69
	12.1%	10.9%	4.0%	**5.0%**	6.7%

Chi-square= 14.647 DF=3 P<0.01
Phi = 0.119 P<0.01
Cramer V = 0.119 P<0.01

According to the Chi-square test presented in the Table above, the type of corporate culture adopted by a company significantly influences the likelihood of being victims of employee offences. In particular, it is important to notice that **businesses adopting a family corporate culture (based on**

loyalty and tradition) are the least victimized[111] (5.0%), while those presenting a dynamic and entrepreneurial culture are the most victimized (12.1%).
In order to further understand this association, the analysis of the relationship between the presence/absence of a family corporate culture and the victimization level is performed below.

*Table 39 - **Overall victimization** by family culture in the financial sector. % on the total number of respondents by family culture*

	Family culture		Total
Victimization	**No**	**Yes**	
No	394	625	1019
	91.0%	95.0%	93.4%
Yes	39	33	72
	9.0%	**5.0%**	6.6%

Chi-square= 6.751 DF=1 P<0.01
Phi = -0.079 P<0.01
Cramer V = 0.079 P<0.01
Odds ratio = 0.533 95% CI [0.330, 0.862]

The value of the Chi-square coefficient shows a statistically significant and negative association between the presence of a corporate culture based on loyalty and tradition and the likelihood of being victims among financial firms.
The probability of being victim for a firm whose corporate culture is not based on loyalty and tradition is two times higher than for the one having chosen this type of corporate culture. Indeed, within our sample, financial businesses with a corporate culture based on loyalty and tradition tend to have a lower victimization risk.
It is important to notice that also the dummy-coded variable representing companies emphasizing a dynamic and a competitive corporate culture are significantly associated with the victimization in the financial sector. In particular, they present a positive association, meaning that **those companies focused on an entrepreneurial spirit and those focused on productivity, tasks and objectives accomplishment, are more likely to have experienced a crime between 2008 and 2010.**
The multivariate analysis will include only the variable representing those businesses adopting a corporate culture based on loyalty and tradition, as it seems to act as protective factors for crime against financial companies.

[111] The percentage in relation to the corporate culture based on the application of rules could not be considered statistically reliable because of the very low number of cases (4).

1.4.3.2 Multivariate analysis

This section focuses on the results of the binary logistic regression (see Annex 3 for further details) carried out on a sample of 999 asset managers and fiduciaries. The dependent variable (DV) is the overall victimization rate among asset management firms and fiduciaries (whether the business has been victim of at least one crime between 2008 and 2010), while the independent variables are: Area of location_Residential (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000 ((1=Yes, 0=No); Size_Micro businesses (1=Yes, 0=No); Turnover_Less than CHF 1 million (1=Yes, 0=No); Security systems (1=Yes, 0=No), Control systems (1=Yes, 0=No), Organizational measures (1=Yes, 0=No), Family corporate culture (1=Yes, 0=No).
The Table below summarizes the results of the regression model.

Table 40 - Main results of the binary logistic regression – ***Overall victimization level in the financial sector***

Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
							Lower limit	Upper limit
Family corporate culture	-1.999	.514	15.150	1	.000	.135	.050	.371
Size_Micro businesses	-2.097	.473	19.700	1	.000	.123	.049	.310
Control systems	-2.725	.590	21.357	1	.000	.066	.021	.208
Security systems	-	-	-		.994	-	-	-
Influential cases[112]	-	-	-	-	.994	-	-	-
Constant	-18.046	1981	.000	1	.993	.000		

Note: Model Chi-square= 338.514, p< .001. -2 Log-Likelihood= 152.965. Cox & Snell R-Square= 0.287, Nagelkerkes R-Square= 0.740.

The Chi-square test shows an improvement in the predictive power of the model, significantly reducing the value of the -2 log-likelihood by 338.514 (for further explanation on the coefficients see Annexes 2 and 3). Moreover, the model is statistically significant at the conventional level of $p<0.001$, which indicates the presence of a statistical relationship between the dependent variable and the combination of the independent variables.
Focusing on the predictor's coefficient, all of them present relatively low standard errors and p-values < 0.05. Therefore, **the size of the companies, the presence of a family corporate culture and of specific measures of prevention have a significant influence on the victimization of employee offences against Swiss financial businesses.**
In particular, the Exp(B) of the Size_Micro businesses, indicates that **the odds of being victim of a crime for businesses with more than nine employees are eight times higher than for micro-businesses**, when the other variables in the model are controlled. This means that micro businesses are less likely to be victimized.

[112] This variable represents 43 cases presenting high standardized residuals (higher than 3), as well as leverage statistics higher than three times its calculated expected value ($3(k+1)/n$). They have been included in the regression model to keep their effect under control and obtain more significant and reliable results. Moreover, they may represent the presence of some latent variables which are not present in the SBCS database but which could influence the variables included in the model.

The Exp(B) of the Family corporate culture suggests that **businesses adopting a corporate culture based on loyalty and tradition are less likely of being victimized than businesses not having this specific corporate culture.**
Also **control systems**, such as audit systems and regular controls of employees, have a negative effect on victimization rates. Indeed, businesses adopting these types of control are less likely to suffer an employee offence. In other words, **the odds of being victims of crime for companies not adopting these measures of control are higher than for those firms adopting them.** This indicates that the presence of both family corporate culture and control systems has a negative effect on victimization.
This result indicates the importance of both measures of prevention and corporate culture in predicting victimization among businesses in the financial sector; while in the commercial sector the corporate culture is not relevant in explaining victimization.

1.5 Predictors of specific types of offence: theft, fraud and complex crimes

This section aims at understanding if there are some specific predictors for specific types of crime against businesses in both commercial and financial sectors.
The statistical methods used to test the association between the selected variables, are based on the analysis of cross-tabulations and association's coefficients such as the Chi-square, the Phi coefficient, Cramer V and Odds ratio (see Annex 2 for further information on the statistical coefficients. The conventional levels of confidence taken into consideration for refusing the null hypothesis are $p<0.01$ and $p<0.05$
Binary logistic regression will also be performed to assess the effect of each independent variable on the dependent one, when the others are controlled.

1.5.1 Definition of the variables

The bivariate analysis focuses on theft, fraud and unfair competition, as dependent variables, because the other types of crime present too few cases (less than forty) to obtain statistically significant results. The independent variables are the same included in the analyses developed within the previous chapter; however, the analysis is focused on the dummy-coded version of these variables:

- ✓ Area of location_Residential (1=Yes, 0=No);
- ✓ Inhabitants of the area of location_More than 50,000 (1=Yes, 0=No);
- ✓ Size_Micro businesses (1=Yes, 0=No);
- ✓ Turnover_More than CHF 50 million (1=Yes, 0=No) in the commercial sector; Turnover_Less than CHF 1 million (1=Yes, 0=No) in the financial sector
- ✓ Security systems (1=Yes, 0=No),
- ✓ Control systems (1=Yes, 0=No),
- ✓ Organizational measures (1=Yes, 0=No),
- ✓ Competitive corporate culture (1=Yes, 0=No) in the commercial sector; family corporate culture (1=Yes, 0=No) in the financial sector.

1.5.2 Predictors of theft in the commercial sector

1.5.2.1 Bivariate analysis

The analysis of this chapter is focused on theft committed by employees against commercial businesses. The total number of incidents of theft considered here is 151.
At a bivariate level all the considered independent variables, except the business location, present a significant association with theft among retail stores.
Each specific analysis is reported below.

Number of inhabitants of the business location and theft

*Table 41 - **Theft** by N of inhabitants of the area of location of the businesses in the commercial sector. % on the total number of respondents by N of inhabitants of the area of location*

	More than 50,000 inhabitants		Total
Victimization	**No**	**Yes**	
No	433	184	617
	83.3%	76.3%	81.1%
Yes	87	57	144
	16.7%	**23.7%**	18.9%

Chi-square= 5.141 DF=1 P<0.05
Phi = 0.082 P<0.05
Cramer V = 0.082 P<0.05
Odds ratio = 1.542 95% CI [1.059; 2.245]

Also when focusing only on the incidents of theft, it appears a significant positive association between businesses located in areas with more than 50,000 inhabitants and the victimization rates. In particular, 23.7% of companies operating in large areas have been victims of at least one incident of theft between 2008 and 2010, against 16.7% of businesses operating in smaller areas. **The odds of being victims of theft for businesses located in areas with more than 50,000 inhabitants are 1.5 times higher than for companies located in smaller areas.** Indeed, the value of the Chi-square is significant, indicating the presence of a positive reliable relationship between these two variables.

Size of the business and theft

*Table 42 - **Theft** by micro businesses (less than 1-9 employees) in the commercial sector. % on the total number of respondents by micro businesses*

	Size – Micro businesses		Total
Victimization	**No**	**Yes**	
No	149	492	641
	66.5%	86.6%	80.9%
Yes	75	76	151
	33.5%	**13.4%**	19.1%

Chi-square= 42.069 DF=1 P<0.001
Phi = -0.230 P<0.001
Cramer V = 0.230 P<0.001
Odds ratio = 0.307 95% CI [0.212; 0.443]

The size of the business is a good predictor for victimization also in the case of theft. Indeed, according to the Table above**, businesses with more than nine employees are three times more likely to be victims of theft.** If the percentage of micro businesses victims of crime is around 13%, the value for larger companies is equal to 33.5%.

Annual turnover and theft

*Table 43 - **Theft** by businesses with a high turnover (more than CHF 50 million) in the commercial sector. % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Victimization	**No**	**Yes**	
No	625	16	641
	82.7%	44.4%	80.9%
Yes	131	20	151
	17.3%	**55.6%**	19.1%

Chi-square= 32.544 DF=1 P<0.001
Phi = 0.203 P<0.001
Cramer V = 0.203 P<0.001
Odds ratio = 5.964 95% CI [3.010; 11.817]

Also the turnover shows a significant association with theft in the commercial sector, even if the size of the business has a stronger relationship with this type of crime (Phi=0.230 against 0.203).
According the this analysis**, companies with a turnover higher than CHF 50 million are almost six times more likely to have suffered a theft between 2008 and 2010.**
This may be explained by the fact that wholesale and retail stores have more products and also more cash to deal with, which represent opportunities for employees' theft.

Physical security systems and theft

*Table 44 - **Theft** by physical security systems in the commercial sector. % on the total number of respondents by physical security systems*

	Physical security systems		Total
Victimization	**No**	**Yes**	
No	456	185	641
	87.2%	68.8%	80.9%
Yes	67	84	151
	12.8%	**31.2%**	19.1%

Chi-square= 39.0342 DF=1 P<0.001
Phi = 0.222 P<0.001
Cramer V = 0.222 P<0.001
Odds ratio = 3.090; 95% CI [2.148; 4.446]

When focusing on the incidents of theft, the analysis concentrates only on the physical security systems, such as anti-theft alarms, cameras, etc., because these are measures of prevention which are more likely to affect the incidence of theft.

As already noticed for the overall victimization rate, there is a significant positive association between the presence of these security systems within the business and the likelihood of being victimized (**companies with these systems are three times more likely to have been victims of a theft, than firms with none of these measures**). As hypothesized above, this may be due to the tendency of businesses of adopting these measures of prevention only once the incident has already happened.

Control systems and theft

*Table 45 - **Theft** by control systems in the commercial sector. % on the total number of respondents by control systems*

	Control systems		Total
Victimization	**No**	**Yes**	
No	310	331	641
	86.4%	76.4%	80.9%
Yes	49	102	151
	13.6%	**23.6%**	19.1%

Chi-square= 12.485 DF=1 P<0.001
Phi = 0.126 P<0.001
Cramer V = 0.126 P<0.001
Odds ratio = 1.950; 95% CI [1.341; 2.834]

The same reasoning as above applies when analyzing the relationship between theft and measures of control, such as audit systems and controls of stocks.

Organizational measures of prevention and theft

*Table 46 - **Theft** by organizational measures for crime prevention in the commercial sector. % on the total number of respondents by organizational and procedural measures*

	Organizational measures		Total
Victimization	**No**	**Yes**	
No	278	363	641
	88.5%	75.9%	80.9%
Yes	36	115	151
	11.5%	**24.1%**	19.1%

Chi-square= 19.478 DF=1 P<0.001
Phi = 0.157 P<0.001
Cramer V = 0.157 P<0.001
Odds ratio = 2.446; 95% CI [1.631; 3.670]

Also the organizational measures of prevention, such as very hierarchical systems of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts, seem to have a positive association with theft, confirming the hypothesis considered in the previous sections.

Corporate culture and theft

*Table 47 - **Theft** by competitive culture in the commercial sector. % on the total number of respondents by family culture*

	Competitive culture		Total
Victimization	**No**	**Yes**	
No	581	60	641
	82.1%	71.4%	80.9%
Yes	127	24	151
	17.9%	**28.6%**	19.1%

Chi-square= 5.503 DF=1 P<0.05
Phi = 0.083 P<0.05
Cramer V = 0.083 P<0.05
Odds ratio = 1.830; 95% CI [1.098; 3.050]

The presence of a competitive corporate culture, emphasizing productivity, tasks and objectives accomplishments, is associated with the victimization for theft among retail stores. Indeed, **businesses focused on this type of culture are 1.8 times more likely to be victims of theft than companies emphasizing another kind of corporate culture.**

1.5.2.2 Multivariate analysis

This section focuses on the results of the binary logistic regression carried out on a sample of 750[113] commercial companies. The dependent variable (DV) is the victimization rate for theft committed by employees (businesses victims of at least one theft by employees between 2008 and 2010), while the independent variables are those considered above: Area of location_Residential (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000 (1=Yes, 0=No); Size_Micro businesses (1=Yes, 0=No); Turnover_More than CHF 50 million (1=Yes, 0=No); Physical security systems (1=Yes, 0=No), Control systems (1=Yes, 0=No), Organizational measures (1=Yes, 0=No), Competitive corporate culture (1=Yes, 0=No).

Table 48 - Main results of the binary logistic regression – ***Predictors of theft in the commercial sector***

Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
							Lower limit	Upper limit
Size_Micro businesses	-.943	.207	20.701	1	.000	.389	.259	.585
Organizational measures	.712	.236	9.096	1	.003	2.039	1.283	3.239
N of inhabitants of the area of location_More than 50,000	.464	.208	4.982	1	.026	1.590	1.058	2.390
Physical security systems	.811	.205	15.603	1	.000	2.250	1.505	3.364
Konstante	-1.891	.276	47.030	1	.000	.151		

Note: Model Chi-square=75.724, p< .001. -2 Log-Likelihood= 640.384. Cox & Snell R-Square= 0.096, Nagelkerkes R-Square= 0.156.

The Table above provides information on the regression model including four independent variables which mainly contributed to the prediction of theft among commercial businesses. In particular, the major contribution to the prediction of theft committed by employees comes from the variable "Size_Micro businesses" (Chi-square = 39.178), followed by "Physical security systems" (Chi-square = 22.387), "Organizational measures" (Chi-square = 9.251) and "N of inhabitants of the area of location" (Chi-square = 4.980). The other independent variables do not significantly contribute to the explanation of the variation in the victimization for theft committed by employees[114].

The Chi-square test shows an improvement in the predictive power of the model, significantly reducing the value of the -2 log-likelihood by 75.724 (for further explanation on the coefficients see Annexes 2 and 3). The model is statistically significant at the conventional level of $p<0.001$, indicating the presence of a statistical relationship between the dependent variable and the combination of the independent variables.

The Nagelkerkes R-Square coefficient indicates that the percentage of variance accounted for the dependent variable based on the predictive power of the independent variables in the model is around 15.6% (for further explanation on the coefficients see Annexes 2 and 3).

Considering the B coefficients of the three predictors included in the model, all of them have a relatively low standard error and a p-value < 0.05. Indeed, the size of the business, the presence of

[113] Twelve cases (1.6% of the total) which presented standardized residuals for the binary logistic regression higher than 2.5 have been excluded from the analyses, to obtain more significant results.

[114] In this specific model, three variables have been excluded because of their not significant contribution: Area of location_Residential; Turnover_More than CHF 50 million; Control systems, N of inhabitants_More than 50,000, Competitive corporate culture.

organizational measures of prevention and the size of the area of location have a significantly influence on the theft committed by employee against Swiss commercial businesses.
In particular, the Exp(B) of the Size_Micro businesses, indicates that **the odds of being victim of a crime for businesses with more than nine employees are 2.6 times higher than for micro-businesses,** when the other variables are controlled. This means that micro businesses are less likely to be victims of theft.
The Exp(B) of the N of inhabitants shows that **the odds of being victimized is 1.5 times greater for businesses located in areas with more than 50,000 inhabitants,** when the other variables are controlled.
For businesses having at least one organizational measures of prevention, as well as for those presenting some physical security system, **the odds of being victimized are twice higher than for businesses holding none of those measures.**
These results further highlight the tendency of business victimized to adopt new measures after having experienced a crime. Indeed, 56.3% commercial businesses have adopted new preventive strategies after the crime incident (see section 4.4.1).
To conclude, it is interesting to notice that, when controlling for the other independent variables, the **turnover of the business turns out not be a significant predictor for theft anymore**, even if it presented a strong bivariate association with this offence.

1.5.3 Predictors of fraud in the commercial sector

1.5.3.1 Bivariate analysis

The analysis of this chapter is focused on fraud committed by employees against commercial businesses. The total number of incidents of fraud considered here is 122.
Also in this case, at a bivariate level all the considered independent variables, except for the business location, computer security systems and the presence of a family corporate culture, present a significant association with fraud among retail shops.
Each specific analysis is reported below.

Number of inhabitants of the business location and fraud

*Table 49 - **Fraud** by N of inhabitants of the area of location of the businesses in the commercial sector. % on the total number of respondents by N of inhabitants of the area of location*

	More than 50,000 inhabitants		Total
Victimization	**No**	**Yes**	
No	458	187	645
	88.1%	77.6%	84.8%
Yes	62	54	116
	11.9%	**22.4%**	15.2%

Chi-square= 14.009 DF=1 P<0.001
Phi = 0.136 P<0.001
Cramer V = 0.136 P<0.001
Odds ratio = 2.133 95% CI [1.426; 3.190]

The victimization for fraud committed by employees is also positively associated to business located in areas with more than 50,000 inhabitants. In particular, 22.4% of shops operating in large areas have been victims of at least one incident of fraud between 2008 and 2010, against 11.9% of shops operating in smaller areas. **The odds of being victims of fraud for businesses located in areas with more than 50,000 inhabitants are two times higher than for companies located in smaller areas.**

Size of the business and fraud

*Table 50 - **Fraud** by micro businesses (1-9 employees) in the commercial sector. % on the total number of respondents by micro businesses*

	Size – Micro businesses		Total
Victimization	**No**	**Yes**	
No	173	497	670
	77.2%	87.5%	84.6%
Yes	51	71	122
	22.8%	**12.5%**	15.4%

Chi-square= 12.997 DF=1 P<0.001
Phi = -0.128 P<0.001
Cramer V = 0.128 P<0.001
Odds ratio = 0.485 95% CI [0.325; 0.722]

The statistical significance of the Chi-square test indicates that the victimization for fraud and micro business are negatively correlated. Indeed, the percentage of micro businesses victims of fraud is 12.5%, while the value for larger shops is 22.8%. **Shops with more than nine employees are two times more likely to be victims of fraud.**

Annual turnover and fraud

*Table 51 - **Fraud** by businesses with a high turnover (more than CHF 50 million) in the commercial sector. % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Victimization	**No**	**Yes**	
No	648	22	670
	85.7%	61.1%	84.6%
Yes	108	14	122
	14.3%	**38.9%**	15.4%

Chi-square= 15.962 DF=1 P<0.001
Phi = 0.142 P<0.001
Cramer V = 0.142 P<0.001
Odds ratio = 3.818 95% CI [1.895; 7.692]

According to the Table above, **shops with a turnover greater than CHF 50 million are almost four times more likely to have suffered a fraud** between 2008 and 2010. As in the case of theft, it can be hypothesized that larger companies in terms of turnover have more opportunities for employees' frauds.

Control systems and fraud

*Table 52 - **Fraud** by control systems in the commercial sector. % on the total number of respondents by control systems*

	Control systems		Total
Victimization	**No**	**Yes**	
No	317	353	670
	88.3%	81.5%	84.6%
Yes	42	80	122
	11.7%	**18.5%**	15.4%

Chi-square= 6.197 DF=1 P<0.01
Phi = 0.093 P<0.001
Cramer V = 0.093 P<0.001
Odds ratio = 1.711; 95% CI [1.143; 2.560]

The same reasoning as above applies when analyzing the relationship between fraud and control measures, such as audit systems: the association is positive but this is probably due to the adoption, or implementation, of these measures after the crime incident.

Organizational measures of prevention and fraud

*Table 53 - **Fraud** by organizational and procedural measures for crime prevention in the commercial sector. % on the total number of respondents by organizational and procedural measures*

	Organizational and procedural measures		Total
Victimization	**No**	**Yes**	
No	282	388	670
	89.8%	81.2%	84.6%
Yes	32	90	122
	10.2%	**18.8%**	15.4%

Chi-square= 10.850 DF=1 P<0.01
Phi = 0.117 P<0.01
Cramer V = 0.117 P<0.01
Odds ratio = 2.044; 95% CI [1.328; 3.147]

Also the organizational measures of prevention, such as very hierarchical systems of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts, seems to have a positive association with fraud, confirming the hypothesis considered in the previous sections.

Corporate culture and fraud

*Table 54 - **Fraud** by competitive culture in the commercial sector. % on the total number of respondents by competitive culture*

	Competitive culture		Total
Victimization	**No**	**Yes**	
No	607	63	670
	85.7%	75.0%	84.6%
Yes	101	21	122
	14.3%	**25.0%**	15.4%

Chi-square= 6.640 DF=1 P<0.05
Phi = 0.092 P<0.05
Cramer V = 0.092 P<0.05
Odds ratio = 2.003; 95% CI [1.171; 3.427]

The results presented in the Table above, further confirm the association between a competitive corporate culture and the likelihood of victimization among retail stores. A positive association was registered for the overall victimization level, for theft and this last analysis reveals that also fraud is related with this type of corporate culture. In particular, firms emphasizing this type of culture are two times more likely to experience a fraud.

1.5.3.2 Multivariate analysis

The model coefficients are too weak to allow a reliable interpretation of the predictors' coefficients.

1.5.4 Predictors of complex crimes in the commercial sector

1.5.4.1 Bivariate analysis

This chapter considers specific types of crime, here defined as *complex crimes* or *non-conventional crime*, to distinguish them from the more common and conventional crime such as theft, and to highlight the complexity of these acts. **These complex crimes are: corruption, extortion, unfair competition, violation of the company secrecy.**
In particular, this chapter is focused on those businesses, in the commercial sector, which have experienced at least one of these crimes between 2008 and 2010. Among these companies, 71 have experienced at least one of the crimes mentioned above; 6 of them have experienced more than one. The most frequent among these crimes are: the violation of the company secrecy (37 incidents) and the unfair competition (36 cases).
At a bivariate level, the following six independent variables present significant association with these complex crimes: number of inhabitants of the area of location; size of the business; turnover (more than 5 million); security systems; organizational measures of prevention; corporate culture.
The association with the other considered variables is not significant at the conventional level of confidence of 0.05.

Number of inhabitants of the business location and complex crimes

*Table 55 - **Complex crime** by N of inhabitants of the area of location of the businesses in the commercial sector. % on the total number of respondents by N of inhabitants of the area of location*

	More than 50,000 inhabitants		Total
Victimization	**No**	**Yes**	
No	483	209	692
	92.9%	86.7%	90.9%
Yes	37	32	69
	7.1%	**13.3%**	9.1%

Chi-square= 7.585 DF=1 P<0.01
Phi = 0.100 P<0.01
Cramer V = 0.100 P<0.01
Odds ratio = 1.999 95% CI [1.212; 3.296]

The likelihood, for retail shops, of being victims of complex crimes is positively associated to shops located in larger areas. In particular, 13.3% of shops operating in large areas have been victims of at least one incident of fraud between 2008 and 2010, against 7.1% of those operating in smaller areas. **The odds of being victims of fraud for businesses located in areas with more than 50'000 inhabitants are almost two times higher than for companies located in smaller areas**.

Size of the business and complex crimes

*Table 56 - **Complex crimes** by micro businesses (1-9 employees) in the commercial sector. % on the total number of respondents by micro businesses*

	Size – Micro businesses		Total
Victimization	**No**	**Yes**	
No	191	530	721
	85.3%	93.3%	91.0%
Yes	33	38	71
	14.7%	**6.7%**	9.0%

Chi-square= 12.731 DF=1 P<0.001
Phi = -0.127 P<0.001
Cramer V = 0.127 P<0.001
Odds ratio = 0.415 95% CI [0.253; 0.681]

As already registered for the overall victimization level, for theft and fraud, also the victimization for complex crimes and micro business are negatively correlated. Indeed, the percentage of micro businesses victims of fraud is 6.7%, while the value for larger companies is 14.7%. **Businesses with more than nine employees are 2.4 times more likely to be victims of complex crimes.**

Annual turnover and complex crimes

*Table 57 - **Complex crimes** by businesses with a high turnover (more than CHF 5 million) in the commercial sector. % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Victimization	**No**	**Yes**	
No	511	125	636
	92.7%	85.0%	91.1%
Yes	40	22	62
	7.3%	**15.0%**	8.9%

Chi-square= 8.515 DF=1 P<0.01
Phi = 0.110 P<0.01
Cramer V = 0.110 P<0.01
Odds ratio = 2.248 95% CI [1.290; 3.920]

According the Table above, retails stores with a turnover higher than CHF 5 million are more than two times more likely to have suffered a complex crime between 2008 and 2010.

Security systems and complex crimes

*Table 58 - **Complex crimes** by security systems in the commercial sector. % on the total number of respondents by security systems*

	Security systems (physical and computer)		Total
Victimization	**No**	**Yes**	
No	335	386	721
	94.1%	88.5%	91.0%
Yes	21	50	71
	5.9%	**11.5%**	9.0%

Chi-square= 7.448 DF=1 P<0.01
Phi = 0.097 P<0.01
Cramer V = 0.097 P<0.01
Odds ratio = 2.066; 95% CI [1.216; 3.512]

As already hypothesized above, the positive and significant association between the presence of security systems and the victimization for complex crimes, may be due to the tendency of businesses of adopting these measures of prevention only once the incident has already happened.

Organizational measures of prevention and complex crimes

*Table 59 - **Complex crimes** by organizational and procedural measures for crime prevention in the commercial sector. % on the total number of respondents by organizational and procedural measures*

	Organizational and procedural measures		Total
Victimization	**No**	**Yes**	
No	294	427	721
	93.6%	89.3%	91.0%
Yes	20	51	71
	6.4%	**10.7%**	9.0%

Chi-square= 4.294 DF=1 P<0.05
Phi = 0.074 P<0.05
Cramer V = 0.074 P<0.05
Odds ratio = 1.756; 95% CI [1.025; 3.007]

Also the organizational measures of prevention seem to have a positive association with complex crimes, confirming the hypothesis considered in the previous sections.

Corporate culture and complex crimes

*Table 60 - **Complex crimes** by family culture in the commercial sector. % on the total number of respondents by family culture*

	Family culture		Total
Victimization	**No**	**Yes**	
No	287	434	721
	88.0%	93.1%	91.0%
Yes	39	32	71
	12.0%	**6.9%**	9.0%

Chi-square= 6.104 DF=1 P<0.05
Phi = -0.088 P<0.05
Cramer V = 0.088 P<0.05
Odds ratio = 0.543; 95% CI [0.332; 0.886]

Differently from the overall victimization level and from the other types of crime experienced by retail stores, analyzed above, the complex crimes present a significant and negative association with the presence of a family corporate culture.
This interestingly suggests that the presence of a corporate culture based on trust, loyalty and tradition could prevent employees to be involved in crimes such as corruption, extortion, unfair competition, and violation of the company secrecy.
On the contrary, as shown in the Table below, **the presence of a dynamic culture, based on innovation and development, is associated with higher victimization rate for complex crimes.** This relationship is significant and could be probably connected to the fact that companies focused on innovation and development present also more opportunity to commit these types of crime.

*Table 61 - **Complex crimes** by dynamic culture in the commercial sector. % on the total number of respondents by dynamic culture*

	Dynamic culture		Total
Victimization	**No**	**Yes**	
No	587	134	721
	92.6%	84.8%	91.0%
Yes	47	24	71
	7.4%	**15.2%**	9.0%

Chi-square= 9.373 DF=1 P<0.01
Phi = 0.109 P<0.01
Cramer V = 0.109 P<0.01
Odds ratio = 2.237; 95% CI [1.332; 3.786]

1.5.4.2 Multivariate analysis

The model coefficients are too weak to allow a reliable interpretation of the predictors' coefficients.

1.5.5 Predictors of theft in the financial sector

1.5.5.1 Bivariate analysis

At a bivariate level there are only two variables presenting a significant association with theft among financial firms: the number of inhabitants of the location and the size of the business. In the former case the association is positive, meaning that **businesses located in areas with more than 50'000 inhabitants are more at risk of being victims of theft then businesses located in areas with a lower number of inhabitants**. The latter association is negative, meaning that **micro businesses are less at risk for theft than larger businesses[115].**
The association with the other independent variables is not significant at the level of confidence of 0.05. For the sake of clarity, the results of these analyses are anyway reported below.

[115] The small number of financial companies victims of theft might have affected the reliability of these analyses, therefore, the results have to be interpreted with caution.

Number of inhabitants of the business location and theft

*Table 62 - **Theft** by N of inhabitants of the area of location of the businesses in the financial sector. % on the total number of respondents by N of inhabitants of the area of location*

	More than 50,000 inhabitants		Total
Victimization	**No**	**Yes**	
No	645	413	1058
	99.1%	97.4%	98.4%
Yes	6	11	17
	0.9%	**2.6%**	1.6%

Chi-square= 4.616 DF=1 P<0.05
Phi = 0.066 P<0.05
Cramer V = 0.066 P<0.05
Odds ratio = 2.863 95% CI [1.051; 7.801]

As in the case of the overall victimization rate, being located in areas with more than 50'000 inhabitants increases the likelihood of being victims of theft. In particular, **financial companies located in these areas are almost three times more at risk of being victims than firms located in smaller areas**.

Size of the business and theft

*Table 63 - **Theft** by micro businesses (1- 9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – 1- 9 employees		Total
Victimization	**No**	**Yes**	
No	168	906	1074
	95.5%	99.0%	98.4%
Yes	8	9	17
	4.5%	**1.0%**	1.6%

Chi-square= 12.208 DF=1 P<0.001
Phi = - 0.106 P<0.001
Cramer V = 0.106 P<0.001
Odds ratio = 0.209 95% CI [0.079; 0.548]

Micro businesses are significantly less at risk of being victims of theft than larger businesses. In particular, **businesses with more than nine employees are 4.8 times more at risk for theft than micro businesses.**

1.5.5.2 Multivariate analysis

The number of businesses victims of theft (17) is too low for carrying out a logistic regression and obtaining statistically significant results.

1.5.6 Predictors of fraud in the financial sector

1.5.6.1 Bivariate analysis

At a bivariate level there are three variables presenting a significant association with fraud among businesses in the financial sector: the size of the business, the presence of computer security systems within the firm, and the presence of a family corporate culture.
With regard to the association between the size of the company and fraud, it appears that, as in the case of theft, **micro businesses are less at risk for this type of crime than larger businesses**.
In relation to the presence of security systems, the association is positive, meaning that **among businesses with security systems there are more firms victims of fraud**. As already mentioned, this association could be explained by the fact that, probably, the companies adopt these security systems only once the crime incident has happened or, it may also be the case that these firms are more at risk of victimization for other reasons which could be then controlled through the multivariate analysis or which are not possible to be controlled within the SBCS dataset.
It is interesting to notice that, while in the case of theft there was no association with the family corporate culture, **fraud presents a significant and negative association with the presence of a corporate culture based on loyalty and tradition**. Therefore, from this preliminary bivariate analysis, it appears that the presence of a family corporate culture could act as protective factor against fraud among financial companies but not against theft.
The association with the other independent variables is not significant at the level of confidence of 0.05.

Size of the business and fraud

*Table 64 - **Fraud** by micro businesses (less than nine employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – 1- 9 employees		Total
Victimization	**No**	**Yes**	
No	164	888	1052
	93.2%	97.0%	96.4%
Yes	12	27	39
	6.8%	**3.0%**	3.6%

Chi-square= 6.405 DF=1 P<0.05
Phi = -0.077 P<0.05
Cramer V = 0.077 P<0.05
Odds ratio = 0.416 95% CI [0.206; 0.837]

Even when **considering the victimization for fraud, micro businesses are significantly less at risk than larger businesses**: only 3% of micro companies have suffered at least one fraud between 2008 and 2010, against 6.8% of larger businesses.

In particular, **companies with more than nine employees are 2.4 times more at risk for fraud than micro businesses.** However, the association between these variables appears less strong than the one registered for theft (Cramer V for theft = 0.106 against 0.077 for fraud).

Computer systems and fraud

*Table 65 - **Fraud** by computer security systems in the financial sector. % on the total number of respondents by security systems*

	Computer security systems		Total
Victimization	**No**	**Yes**	
No	323	729	1052
	98.5%	95.5%	96.4%
Yes	5	34	39
	1.5%	**4.5%**	3.6%

Chi-square= 5.720 DF=1 P<0.05
Phi = 0.072 P<0.05
Cramer V = 0.072 P<0.05
Odds ratio = 3.013; 95% CI [1.168; 7.774]

According to the Table above, 4.5% of firms having computer security systems, have been victims of a fraud, against 1.5% of businesses not presenting this type of preventive measure. The Chi-square statistics is significant even if the small number of cases for those businesses victims adopting the security systems might influence the reliability of this analysis.

Corporate culture and fraud

*Table 66 - **Fraud** by family culture in the financial sector. % on the total number of respondents by family culture*

	Family culture		Total
Victimization	**No**	**Yes**	
No	410	642	1052
	94.7%	97.6%	96.4%
Yes	23	16	39
	5.3%	**2.4%**	3.6%

Chi-square= 6.285 DF=1 P<0.05
Phi = -0.076 P<0.05
Cramer V = 0.076 P<0.05
Odds ratio = 0.444; 95% CI [0.232; 0.851]

Among financial companies adopting a corporate culture based on loyalty and tradition, the probability of being victims of fraud is 0.444 times lower than for firms not adopting this type of corporate culture. In other words, **businesses without a family culture are more than two times more likely to be victims of fraud.**
Comparing this result with that obtained for theft, which was not significant, it can be stated that **the protective effect of a family corporate culture is significant only against fraud committed by employees.** This is even more interesting if we consider that the majority of frauds committed by

employees is related to "Cheating the business on working hours, holidays or sick days, etc." followed by "Breach of trust/Asset misappropriation" and that these crimes are also considered as the most serious types of fraud. It is clear that if employees are fairly treated in an honest and transparent environment, they would less likely feel frustrated and less likely need to cheat the company where they are working.

1.5.6.2 Multivariate analysis

The number of cases of businesses victims of fraud (39) is too low for carrying out a logistic regression and obtaining statistically significant results.

1.5.7 Predictors of unfair competition in the financial sector

1.5.7.1 Bivariate analysis

At a bivariate level there are only two variables presenting a significant association with unfair competition among businesses in the financial sector: the size of the business and the presence of security systems within the firm.
As for previous analyses on other types of crime it appears that **micro businesses are less at risk for unfair competition than larger businesses and that among businesses with security systems there are more firms victims of this type of crime.** However, it has to be mentioned that the wide confidence interval for the odds ratio does not allow a correct interpretation of these results. Moreover, the very low number of cases suggests interpreting with caution the results of these associations.
The association with the other independent variables is not significant at the level of confidence of 0.05.

Size of the business and unfair competition

*Table 67 - **Unfair competition** by micro businesses (less than 9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – Less than 9 employees		Total
Victimization	**No**	**Yes**	
No	169	900	1069
	96.0%	98.4%	98.0%
Yes	7	15	22
	4.0%	**1.6%**	2.0%

Chi-square= 4.083 DF=1 P<0.05
Phi = -0.061 P<0.05
Cramer V = 0.061 P<0.05
Odds ratio = 0.402 95% CI [0.162; 1.002]

The Table above shows that micro businesses are also less likely to be victims of unfair competition. However, the confidence interval of the odds ratio does not allow reliable interpretation of this coefficient.

Security systems and unfair competition

Table 68 - ***Unfair competition*** *by security systems in the financial sector. % on the total number of respondents by security systems*

	Security systems (physical and computer)		Total
Victimization	**No**	**Yes**	
No	311	758	1069
	99.4%	97.4%	98.0%
Yes	2	20	22
	0.6%	**2.6%**	2.0%

Chi-square= 4.215 DF=1 P<0.05
Phi = 0.062 P<0.05
Cramer V = 0.062 P<0.05
Odds ratio = 4.103; 95% CI [0.953; 17.659]

According to the Table above, 2.6% of firms having security systems, have been victims of a unfair competition, against 0.6% of businesses not presenting this type of measures of crime prevention. The Chi-square statistics is significant even if the small number of cases for those businesses victims adopting the security systems could influence the reliability of this analysis. Moreover, the confidence interval of the odds ration does not allow a reliable interpretation of this coefficient.

1.5.7.2 Multivariate analysis

The number of cases of businesses victims of unfair (22) is too low for carrying out a logistic regression and for obtaining statistically significant results.

1.5.8 Predictors of complex crimes in the financial sector

1.5.8.1 Bivariate analysis

This chapter identifies the predictors for *complex crimes* or *non-conventional crimes* (corruption, extortion, unfair competition, violation of the company secrecy) among financial companies.
The analysis takes into consideration those businesses that have experienced at least one of these crimes between 2008 and 2010, among asset managers and fiduciaries. In particular, 30 companies have experienced at least one of the crimes mentioned above; five of them have experienced more than one. The most frequent among these crimes are: unfair competition (22 cases) and violation of the company secrecy (7 incidents).
At a bivariate level, the following four independent variables present significant association with the complex crimes: size of the business; turnover (more than 1 million); security systems; corporate culture
The association with the other considered variables is not significant at the conventional level of confidence of 0.05.

Size of the business and complex crimes

*Table 69 - **Complex crimes** by micro businesses (1-9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – Micro businesses		Total
Victimization	**No**	**Yes**	
No	164	897	1061
	93.2%	98.0%	97.3%
Yes	12	18	30
	6.8%	**2.0%**	2.7%

Chi-square= 12.989 DF=1 P<0.001
Phi = -0.109 P<0.001
Cramer V = 0.109 P<0.001
Odds ratio = 0.274 95% CI [0.130; 0.580]

As already registered for the overall victimization, theft, fraud and unfair competition; the size of the business is also a good predictor for complex crimes. In particular, only 2% of company with a maximum of nine employees has been victims of one of these crimes, against 6.8% of firms with more than nine employees.

Annual turnover and complex crimes

*Table 70 - **Complex crimes** by businesses with a low turnover (less than CHF 1 million) in the financial sector. % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Victimization	**No**	**Yes**	
No	373	609	982
	96.1%	98.2%	97.4%
Yes	15	11	26
	3.9%	**1.8%**	2.6%

Chi-square= 4.156 DF=1 P<0.05
Phi = -0.064 P<0.05
Cramer V = 0.064 P<0.05
Odds ratio = 0.449 95% CI [0.204; 0.988]

Companies with a turnover lower than CHF 1 million are less likely to experience complex crimes such as corruption, extortion, unfair competition and violation of the company secrecy. In particular, **businesses with a higher turnover are 2.2 times more at risk for these types of crime**.
Therefore, the "wealth" of a company could act as an incentive for employees to commit these crimes.

Security systems and complex crimes

*Table 71 - **Complex crimes** by security systems in the financial sector. % on the total number of respondents by security systems*

	Security systems (physical and computer)		Total
Victimization	**No**	**Yes**	
No	310	751	1061
	99.0%	96.5%	97.3%
Yes	3	27	30
	1.0%	**3.5%**	2.7%

Chi-square= 5.267 DF=1 P<0.05
Phi = 0.069 P<0.05
Cramer V = 0.069 P<0.05
Odds ratio = 3.715; 95% CI [1.119; 12.336]

As already hypothesized above, the positive and significant association between the presence of security systems and the victimization for complex crime, may be due to the tendency of businesses of adopting these measures of prevention only once the incident has already happened.

Corporate culture and complex crimes

*Table 72 - **Complex crimes** by family culture in the financial sector. % on the total number of respondents by family culture*

	Family culture		Total
Victimization	**No**	**Yes**	
No	413	648	1061
	95.4%	98.5%	97.3%
Yes	20	10	30
	4.6%	**1.5%**	2.7%

Chi-square= 9.380 DF=1 P<0.01
Phi = -0.093 P<0.01
Cramer V = 0.093 P<0.01
Odds ratio = 0.319; 95% CI [0.148; 0.688]

The Table above further confirms that the presence of a corporate culture based on loyalty and tradition negatively influences the likelihood of victimization for businesses in the financial sector, also in the case of complex crimes. Indeed, **the odds of being victim of this type of crime are three times higher for companies which do not have this type of culture than for those adopting it.**
It should be noticed that also **the presence of a dynamic culture, based on innovation and development**, is associated with the victimization for complex crimes, but in this case the relationship is positive, indicating that **businesses emphasizing this type of corporate culture are more likely to experience complex crimes than companies focused more on another type of culture.**

1.5.8.2 Multivariate analysis

The number of businesses victims of complex crimes in the financial sector (30) is too low for carrying out a logistic regression and obtaining statistically significant results.

1.6 Key facts – Victimization and offences

	FINANCIAL SECTOR	COMMERCIAL SECTOR
Three years victimization rate (2008-2010)	**7.2%**	**25.3%**
Annual victimization rate	**3.5%**	**16.7%**
Most frequent types of crime	1. Fraud (52.1%) 2. Unfair competition (28.3%)	1. Theft (66%) 2. Fraud (50%)
Most serious type of fraud	Cheating on working hours, holidays, etc.	Cheating on working hours, holidays, etc.
Most serious type of theft	Cash theft	Office supplies theft
Most serious type of unfair competition	Unlawfully diverting clients from the company	Unlawfully diverting clients from the company
Multi-victimization rate for theft (2008-2010)	**59%**	**67%**
Multi-victimization rate for fraud (2008-2010)	**51.8%**	**64%**
Multi-victimization rate for unfair competition (2008-2010)	**16.7%**	**63.5%**
Predictors of the overall level of victimization	•Family corporate culture **-** •Micro businesses **-** •Area of location with more than 50,000**+** •Control systems **-** •Security systems **+**	•Organizational measures of prevention + •Micro businesses - •Physical security systems + •Area of location with more than 50,000 +
Predictors of theft	N.S.	•Micro businesses - •Organizational measures + •Area of location with more than 50,000 + •Physical security systems +

2 The profile of the offenders

Introduction

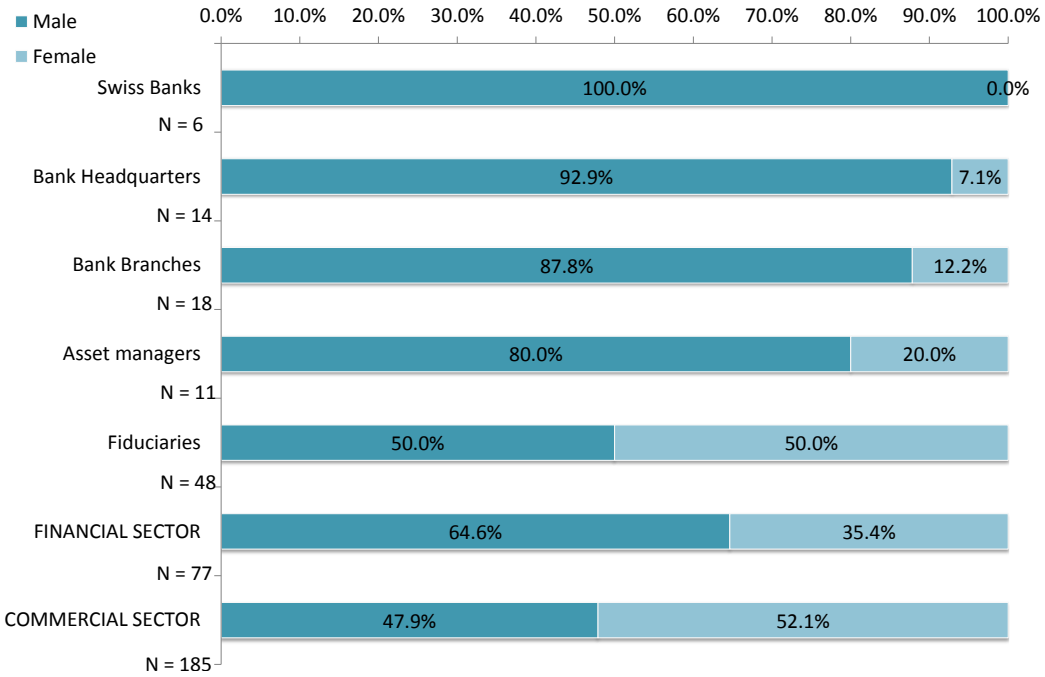
This section draws the profile of the wrongdoer, in terms of his/her own personal characteristics and in terms of the modus operandi used to develop the crime.
In particular, the first section provides information on the most frequent personal characteristics of the offenders of the most serious incident of crime, by economic sector and by type of offence. The analysis is developed on a total of 185 known offenders in the commercial sector and 95 in the financial one (asset managers and fiduciaries).
The second section focuses on the modus operandi of the offenders, such as the place where the crime happened, the time, whether the offender acted alone or with accomplishes, whether the offender planned in advance to commit it or not. These analyses are based on a total of 142 known offenders among commercial companies and on 71 know offenders among financial firms.

2.1 Characteristics of the offenders

Focusing on the characteristics of the employees who committed the offence (considered as the most serious by the businesses interviewed) many differences emerged depending on the economic sector and on the type of crime considered.
To understand whether these differences are influenced by specific characteristics of the workforce in the two economic sectors, the distribution of offenders and that of workforce are compared for each variable considered below.

2.1.1 Gender

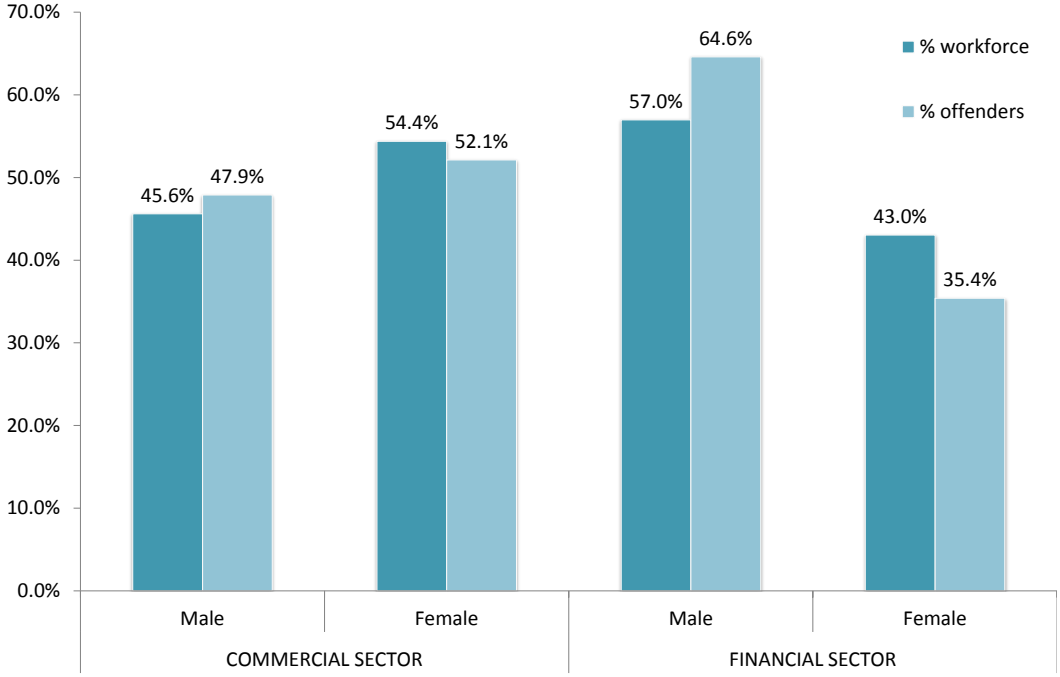
Figure 42 - Gender of the offenders by economic sector. %[116] of the number of businesses victimized at least once between 2008 and 2010



According to the Figure above, considering the overall victimization rates, in the financial sector 64.6% of the offenders are male while in the commercial one, the majority of the offenders (52.1%) are female.
To understand whether these differences are due to a different gender distribution in the workforce, the two distributions are compared in the Figure below.

[116] Weighted data.

Figure 43 - Gender of the workforce and gender of the offenders by economic sector. %[117] of the total number of workforce and of businesses victimized at least once between 2008 and 2010



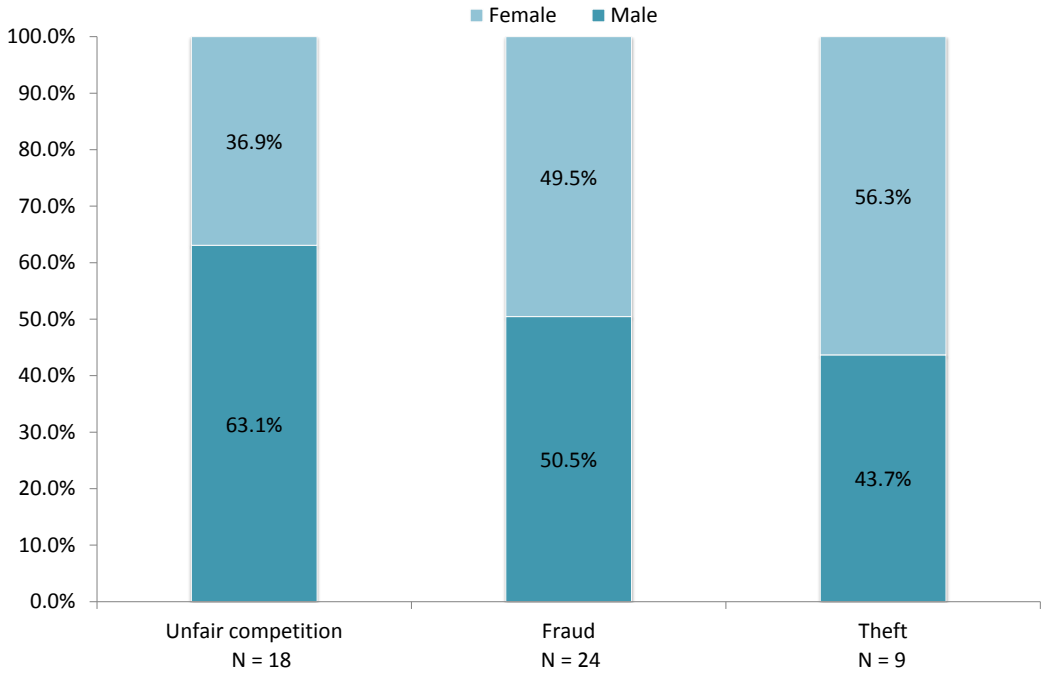
Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

Comparing the gender distribution of offenders to the gender distribution of the employed population by economic sector[118], the proportion of offenders nearly matches the gender distribution in both sectors. However, in the financial sector the percentage of male offenders is definitely higher than the percentage of female (64.6% against 35.4%), but this difference is not so evident in the gender distribution of the workforce (57% against 43%). Among financial companies, the concentration in the male category is 1.4 times higher for the offenders than for the workforce.
Therefore, it can be stated that, independently from the gender distribution of the workforce, in the financial sector male employees tend to be more likely to commit a crime than females. This could be due to the fact that male employees in the financial sector usually occupy higher hierarchical position than females (see Figure 9), and, as demonstrated in section 2.1.7, employees in high hierarchical positions have more opportunities to commit specific types of fraud and other crimes within financial companies.

[117] Weighted data.

[118] Source: Federal Office of Statistics – Report on employment and income 2001.

Figure 44 - Gender of the offenders in the financial sector by types of crime. %[119] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[120]



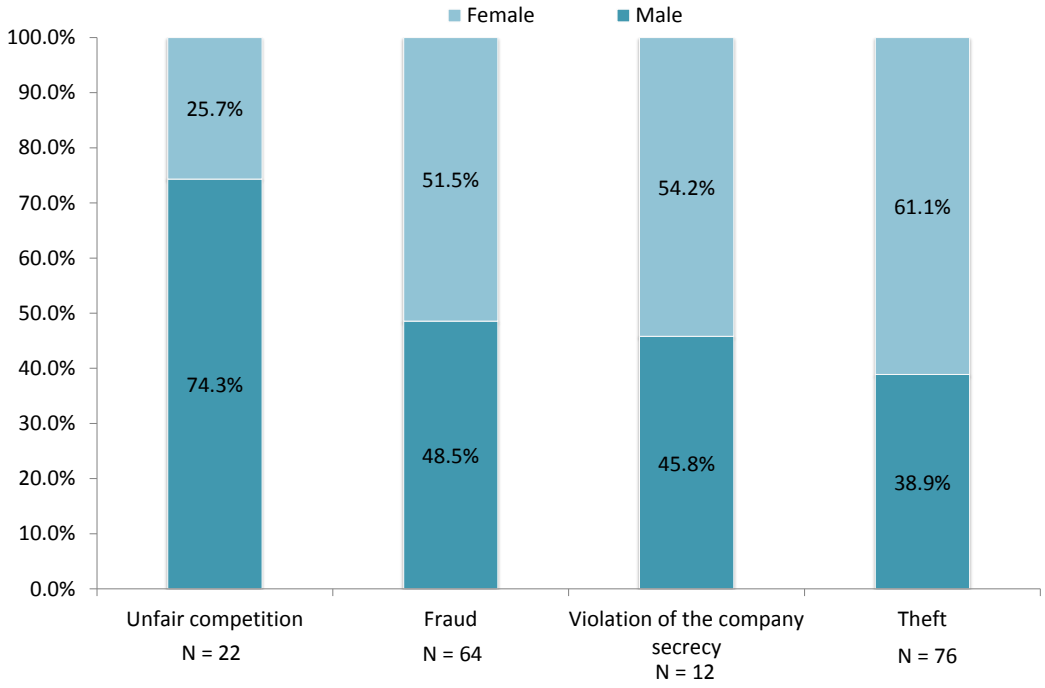
In the financial sector, the highest percentage of male offenders is registered for unfair competition (63.1%) and fraud (50.5%), while theft is mostly committed by female employees (56.3%).

As already mentioned above, this distribution is strongly influenced by the fact that male employees occupy higher hierarchical position than females within financial companies, and they have more opportunities (such as the access to sensitive data or clients' accounts information) to commit specific types of crime such as fraud or unfair competition.
On the other side, the commission of theft usually does not require particular privileges related to the hierarchical position.

[119] Weighted data.

[120] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

Figure 45 - Gender of the offenders in the commercial sector by types of crime. %[121] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[122]



In the commercial sector, the majority of all the types of crime considered have been committed by female employees: 61.1% in the case of theft, 54.2% in the case of violation of the company secrecy and 51.5% in the case of fraud. The only exception is unfair competition, which was committed by males in 74.3% of incidents.

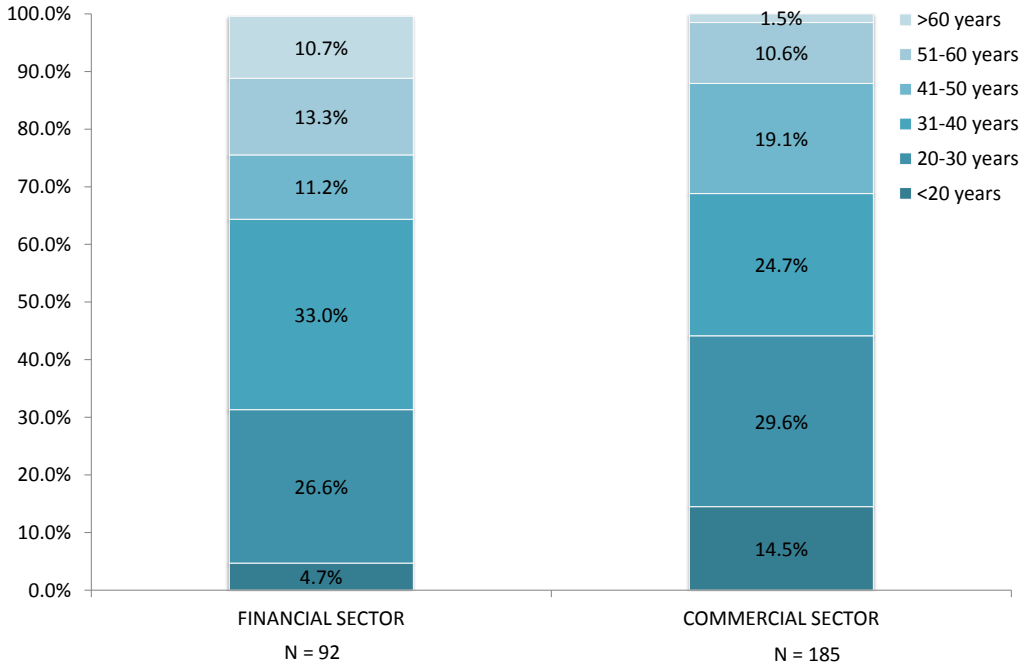
Even in this case, the distribution is mainly influenced by the opportunities related to the hierarchical position occupied by the offender rather than on his/her gender. Indeed, the commission of unfair competition offences requires being in the position to access sensitive information within the company, and usually these positions are covered by male employees (see Figure 9).

[121] Weighted data.

[122] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

2.1.2 Age

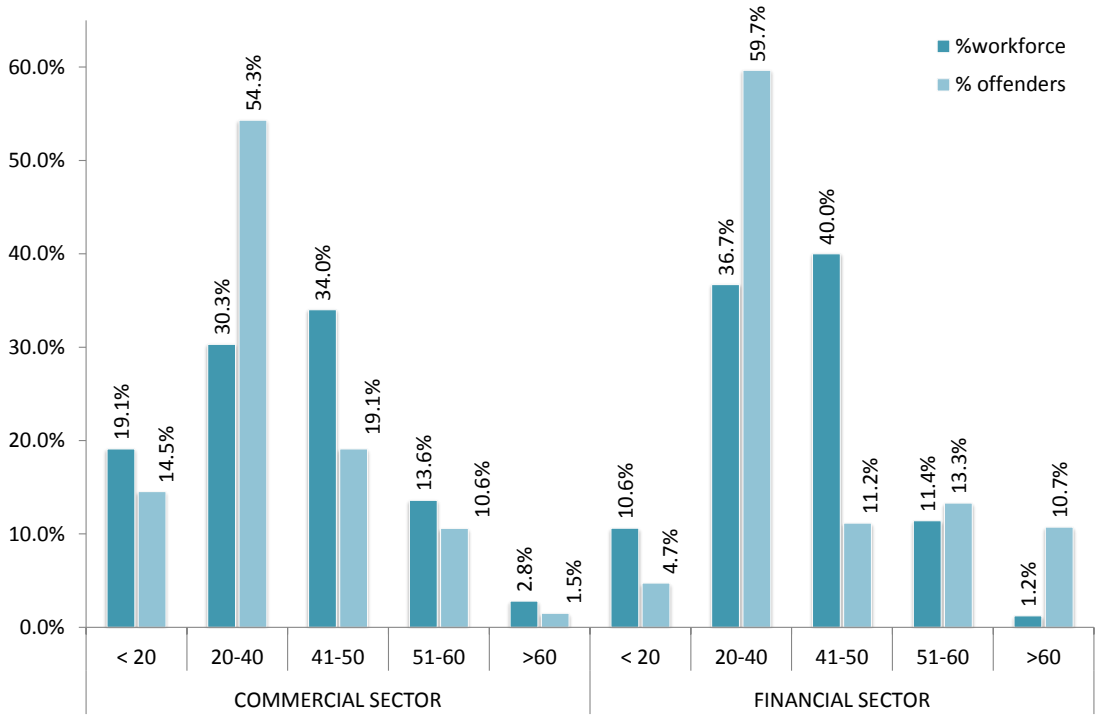
Figure 46 - Age of the offenders by economic sector. %[123] of the number of businesses victimized at least once between 2008 and 2010



According to the Figures above, on average, 28.9% of the authors of crime against businesses are between 31 and 40 years old.
However, if we look at the commercial sector, the highest percentage of offenders is younger than average, indeed, 29.6% of wrongdoers are between 20 and 30 years old. Moreover, among financial businesses the percentage of offenders older than 60 years old is ten times higher than among commercial companies.
This is probably due to the fact that in the commercial sector the majority of offenders are "simple" employees, while in the financial sector they belong to higher hierarchical positions, which are usually occupied by senior people. Moreover, it should also be highlighted that among financial businesses there is a higher frequency of crimes, such as unfair competition, which usually requires more "expertise" and the "privileges" of the highest hierarchical positions to be committed

[123] Weighted data.

Figure 47 - Age of the workforce and of the offenders by economic sector. %[124] of the total number of workforce and on businesses victimized at least once between 2008 and 2010



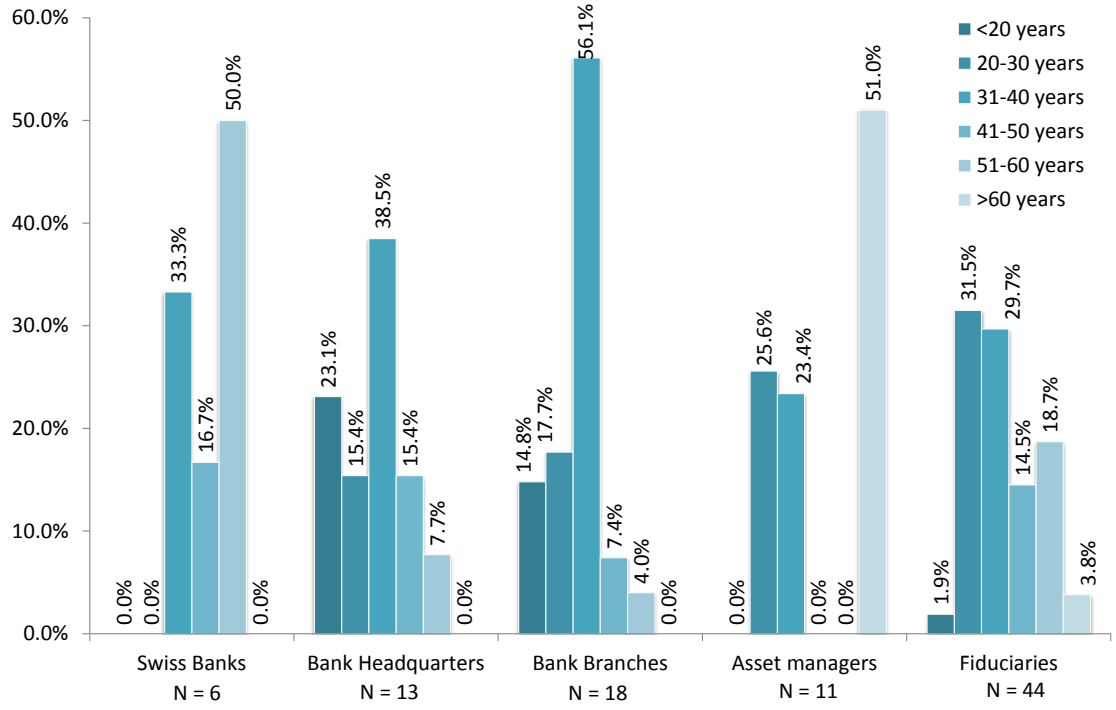
Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

Comparing the age distribution of offenders to the age distribution of the workforce by economic sector[125] (Figure above), it is interesting to notice that, even if in both sectors the majority of employees are between 41 and 50 years old, the highest percentages of offenders are between 20 and 40 years old. Therefore, it could be hypothesized that, independently from the workforce distribution, in both sectors, employees between 20 and 40 years old are more likely to commit offences than older employees. Even if, in the financial sector the percentage of offenders older than sixty years old is more than ten times higher than the percentage of the workforce of the same age.

[124] Weighted data.

[125] Source: Federal Office of Statistics – Report on employment and income 2001.

Figure 48 - Age of the offenders by type of businesses operating in the financial sector. %[126] of the number of businesses victimized at least once between 2008 and 2010



Focusing only on the financial sector, it emerges that among large Swiss banks the majority of offenders have between 51 and 60 years (50%), while among bank branches and headquarters they are definitely younger (between 31 and 40 years old).

Also among asset managers, the average age of offenders is very high, indeed, in 51% of cases, offenders are more than 60 years old.

Fiduciaries are those presenting the youngest offender, in 31.5% of case they are between 20 and 30 years old.

[126] Weighted data.

Figure 49 - Age of the offenders in the financial sector by types of crime. %[127] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[128]

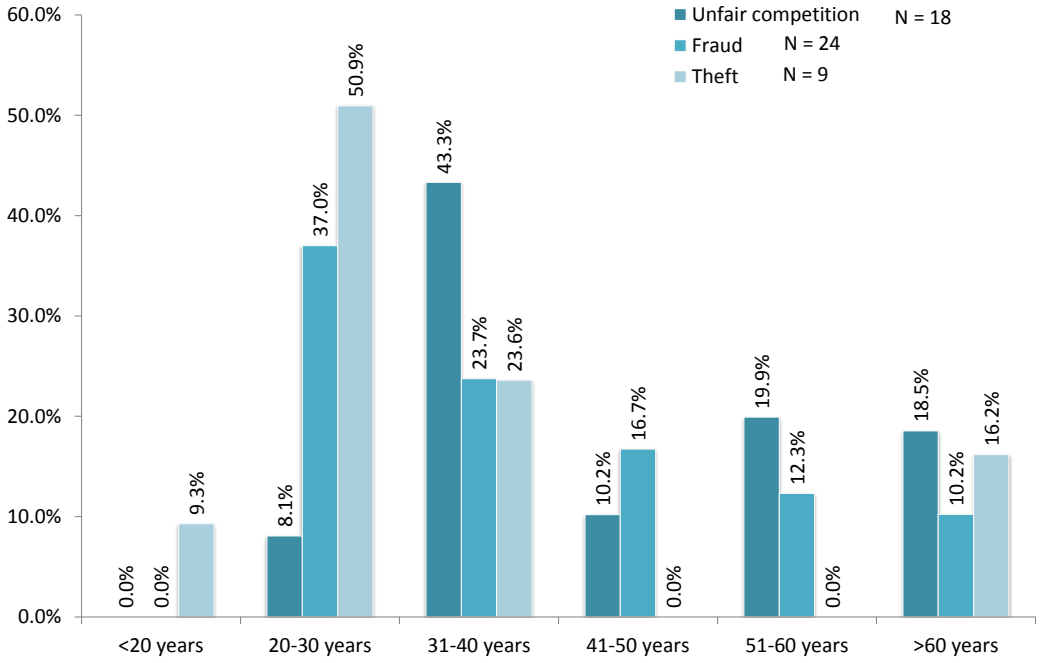
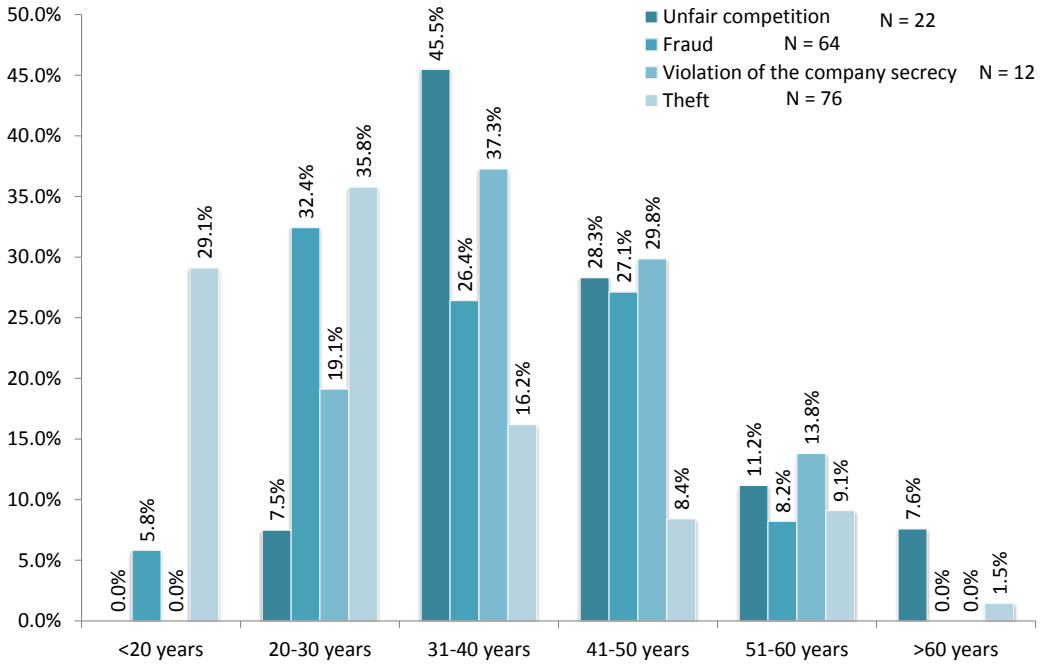


Figure 50 - Age of the offenders in the commercial sector by types of crime. %[129] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[130]



[127] Weighted data.

[128] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

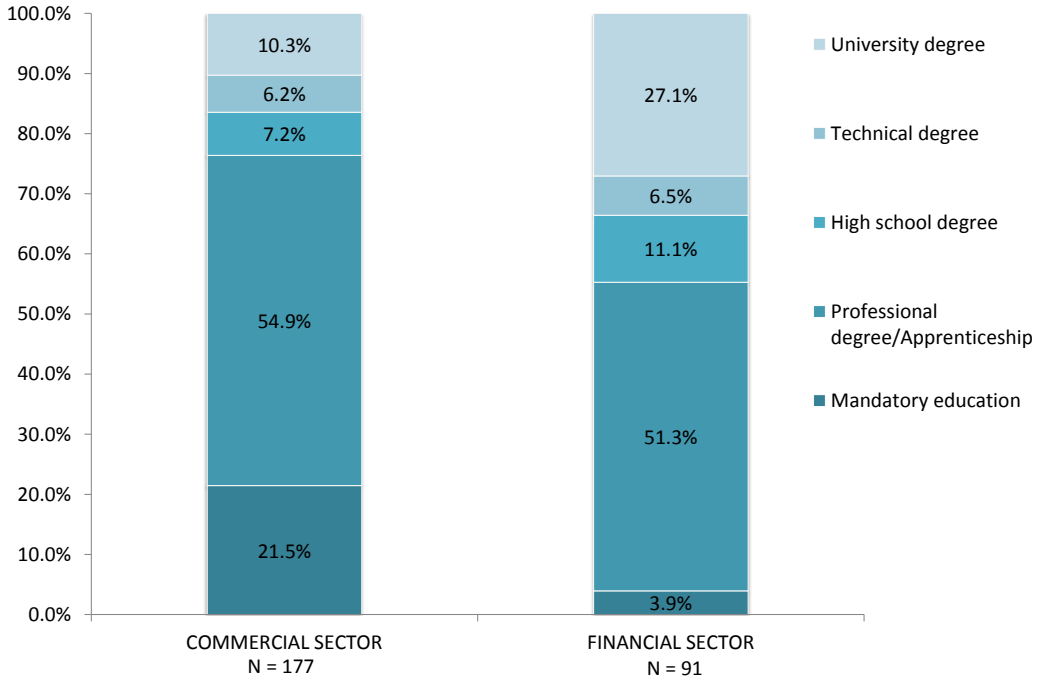
[129] Weighted data.

[130] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

The Figures above reinforce what has been noticed at the beginning of this section.
Indeed, among financial companies, 43.3% of unfair competition incidents have been committed by employees aged between 31 and 40 years, and almost 20% by persons aged 51-60 years, while the majority of theft has been perpetrated by younger employees (20-30 years).
The same applies among retail stores: the highest percentage of unfair competition and violation of the company secrecy incidents, have been committed by employees between 31 and 40 years old (45.5% and 37.3%), followed by 41-50 years old (28.3% and 29.8%), while the majority of the authors of theft have less than 30 years.

2.1.3 Education

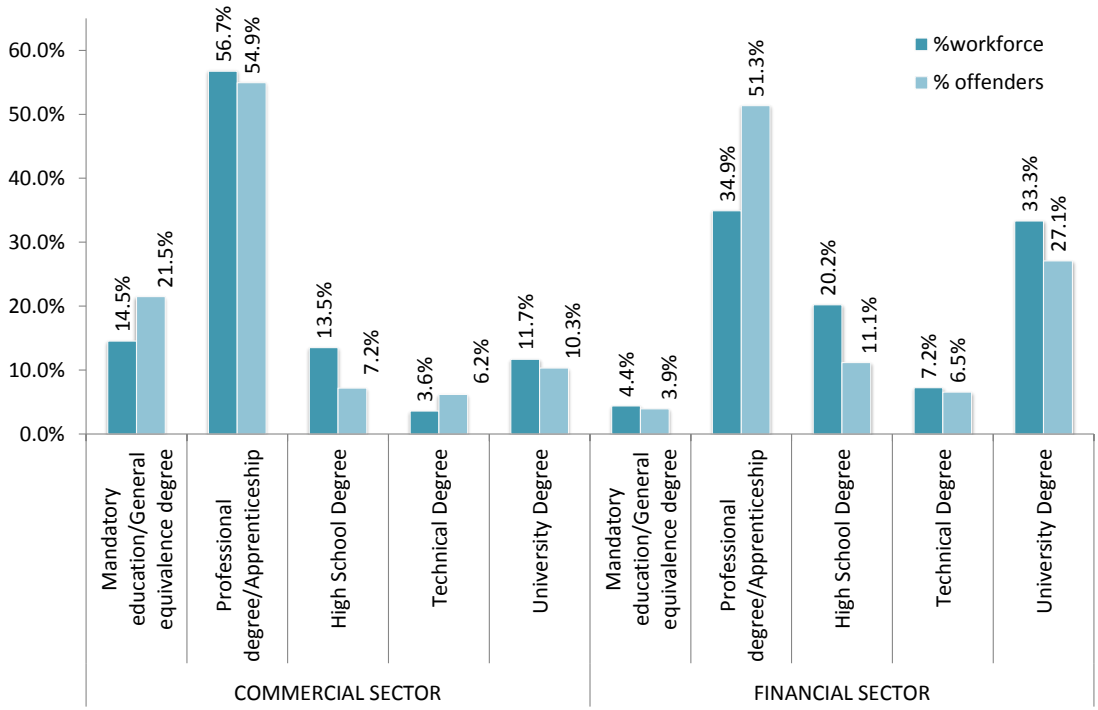
Figure 51 - Level of education of the offenders by economic sector. %[131] of the number of businesses victimized at least once between 2008 and 2010



In the commercial sector, the majority of the offenders have gotten a professional degree or an apprenticeship (55.3%); only 9.2% have a University degree. In the financial sector, we can find the same pattern concerning the professional degree and apprenticeship, as 51.3% of the offenders is part of this category, however, the percentage of offenders having a University degree is almost three times higher than in the commercial sector (27.1% against 10.3%).

[131] Weighted data.

Figure 52 - Level of education of the workforce and of the offenders by economic sector – %[132] of the total number of workforce and of the number of businesses victimized at least once between 2008 and 2010



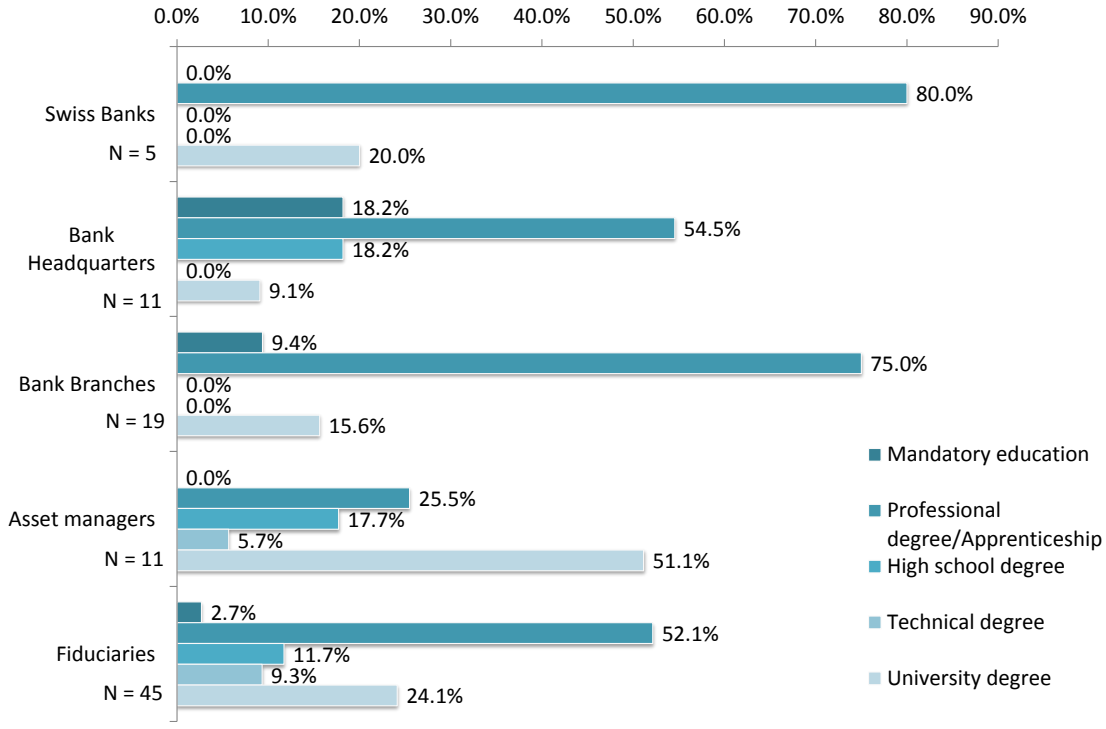
Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

When comparing the distribution of the level of education of the workforce with the one of the offenders, it can be noticed that, among retail stores, the proportion of offenders with a professional degree/apprenticeship is quite similar (56.7% against 54.9%). In the financial sector, the proportion of offenders with a professional degree is definitely higher (51.3% against 34.9%). Therefore, it can be assumed that among financial companies, employees with a professional degree are more likely to commit a crime.
There is obvious strong evidence in the second most frequent educational level of the offenders; in the commercial sector it is the mandatory school, while in the financial sector the university degree.

It should also be noticed that, in both sectors, the proportion of offenders with a University degree is slightly lower than the one of the workforce (11.7% against 9.2% for the commercial sector and 33.3% against 27.1% for the financial sector).

[132] Weighted data.

Figure 53 - Level of education of the offender by type of business in the financial sector. %[133] of the number of businesses victimized at least once between 2008 and 2010



Also when considering the different types of businesses in the financial sector, the majority of offenders hold a professional degree or an apprenticeship, in all sectors. The only difference regards the asset management firms, where 51.1% of wrongdoers have an University degree.

[133] Weighted data.

Figure 54 - Level of education of the offenders in the financial sector by types of crime. %[134] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[135]

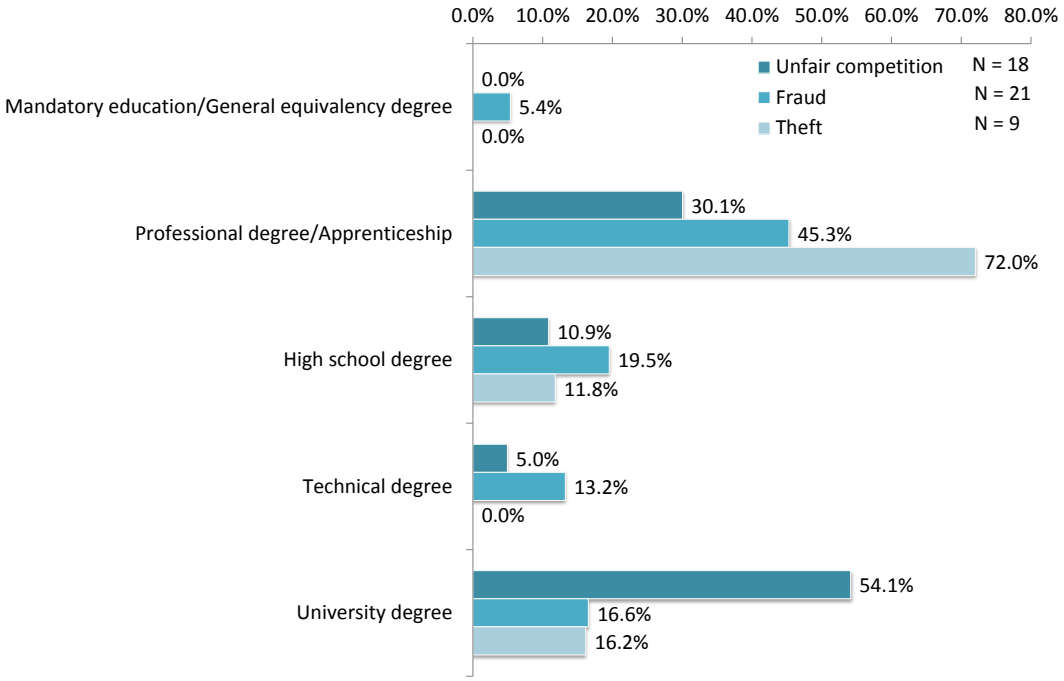
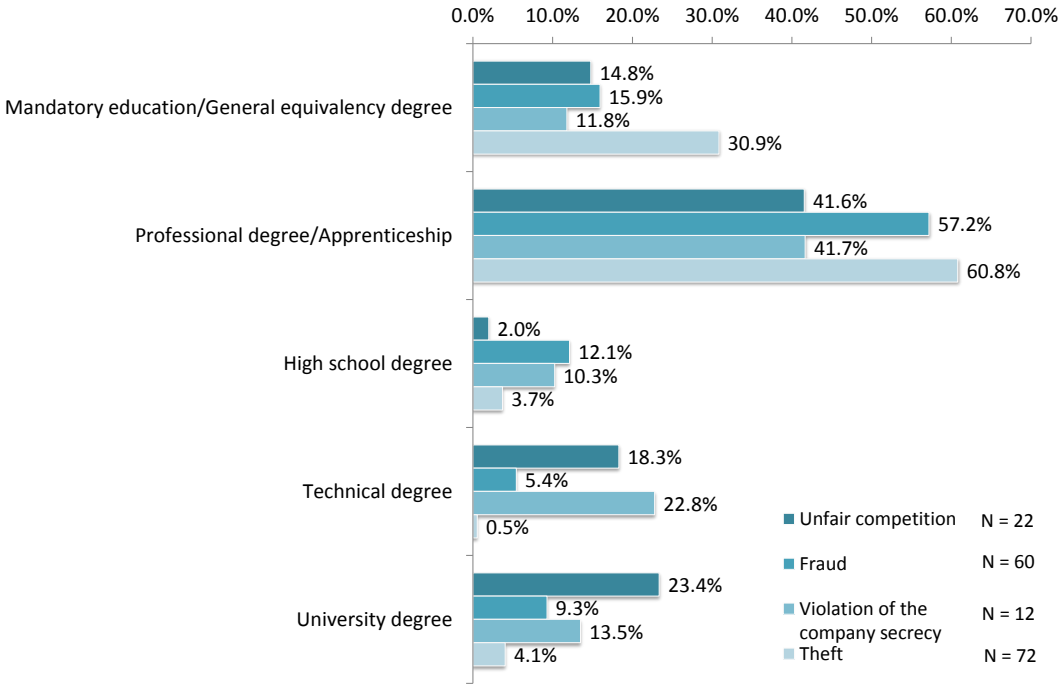


Figure 55 - Level of education of the offenders in the commercial sector by types of crime. %[136] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[137]



[134] Weighted data.

[135] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

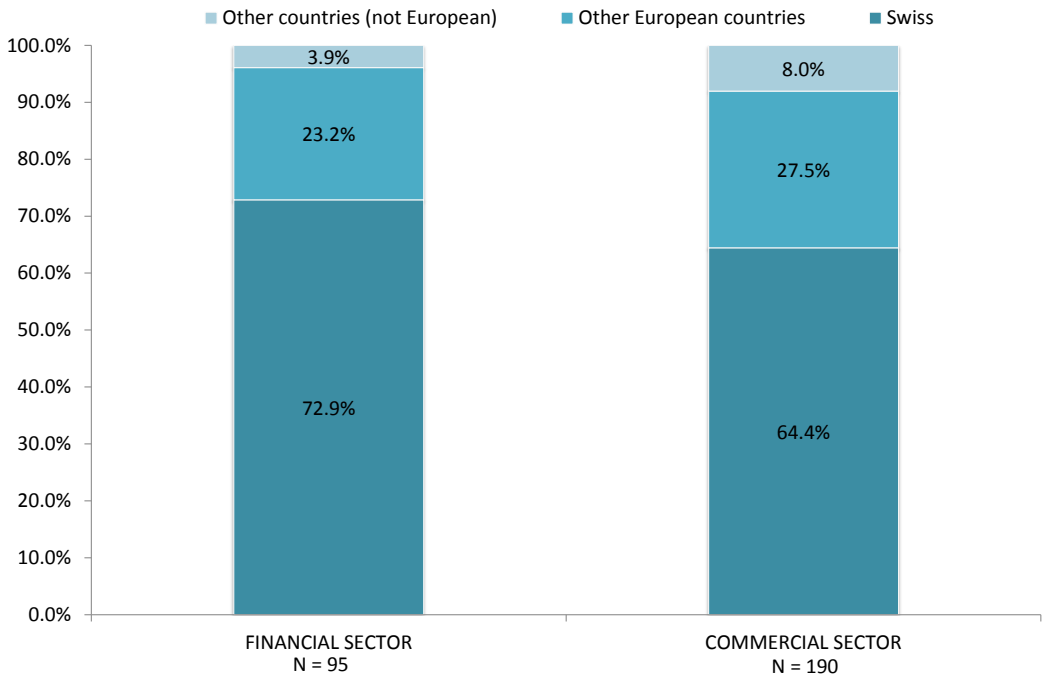
[136] Weighted data.

[137] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

Among financial businesses, the level of education of offenders changes pretty much when considering the different types of crime. Indeed, if in 72% of cases the authors of theft hold a professional degree or an apprenticeship, the majority (54.1%) of the authors of unfair competition have a university degree.
Among retail stores these differences are less evident as the majority of incidents of all types of crime have been committed by employees holding a professional degree or an apprenticeship. However there is also a quite high share of authors of violations of the company secrecy who hold a technical degree (22.8%) and of authors of unfair competition with a university degree (23.4%).

2.1.4 Nationality

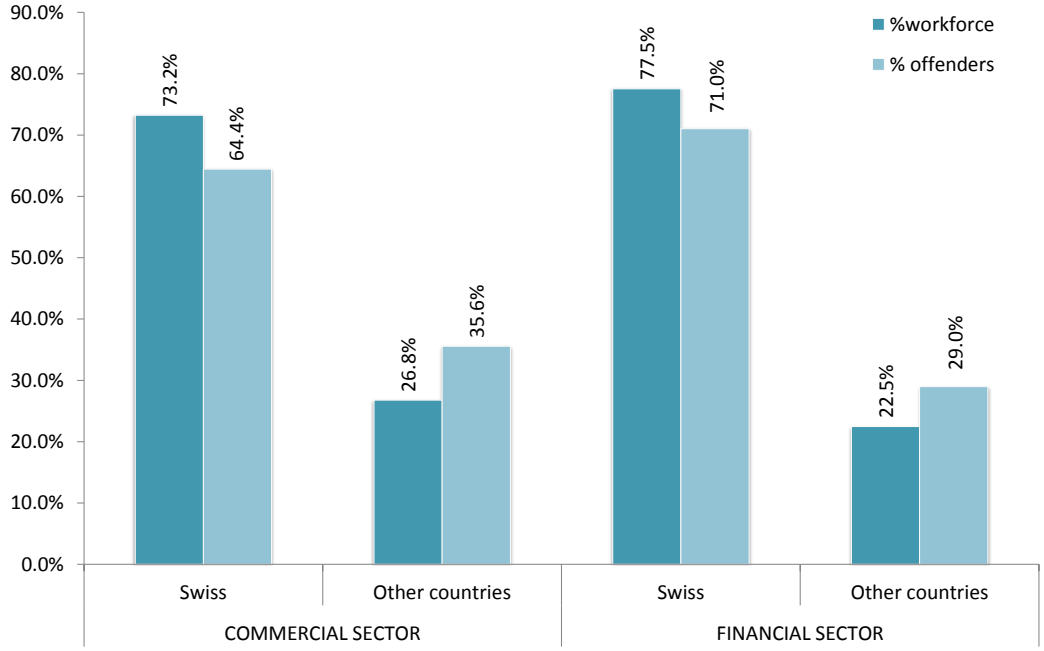
Figure 56 - Nationality of the offenders by economic sector. %[138] of the number of businesses victimized at least once between 2008 and 2010 in each sector



The majority of the offenders in both commercial and financial sectors are Swiss (64.4% and 72.9%). Among retail stores the percentage of offenders coming from other European countries is four percentage points higher than among financial companies (27.5% against 23.2%), as well as the level of wrongdoers coming from other non-European countries (8% against 3.9%).

[138] Weighted data.

Figure 57 - Nationality of the workforce and of the offenders by economic sector – %[139] of the total number of workforce and of the number of businesses victimized at least once between 2008 and 2010 in each sector



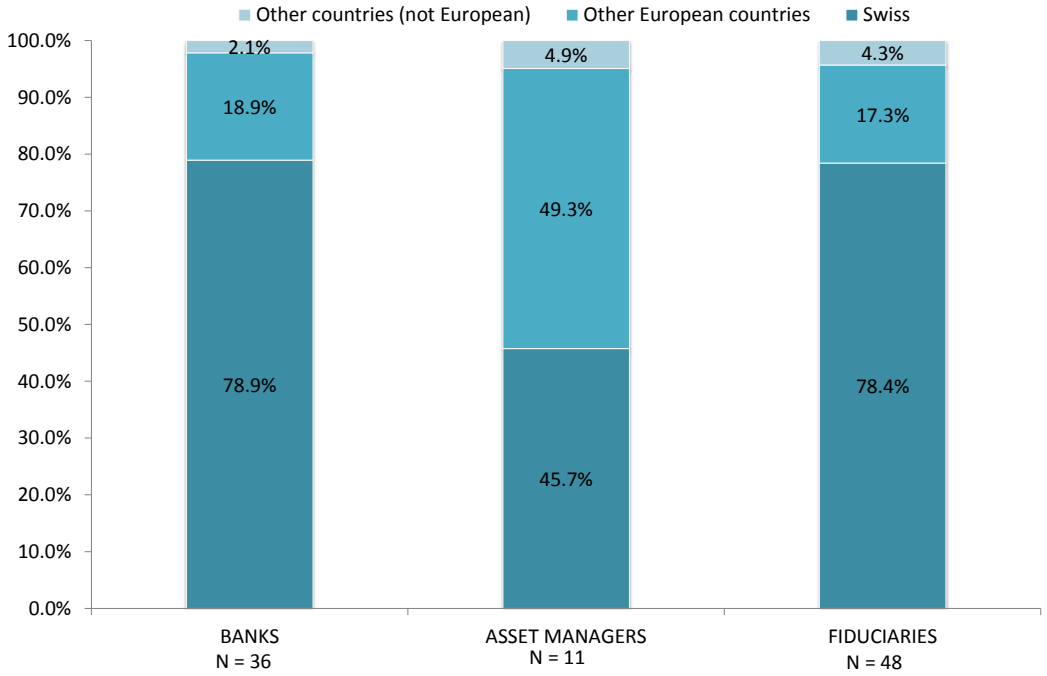
Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

Comparing the distribution of the nationality of offenders and workforce by economic sector[140] (Figure above), it is evident that the most frequent nationality among both workforce and offenders is the Swiss one.
However, among offenders the percentage of foreigners is higher, especially within the commercial sector (35.6% of foreigner offenders against 26.8% of foreigner employees). In the financial sector, the percentage of foreigners is also higher than the one of the workforce (29% of foreigner offenders against 22.5% of foreigner employees).

[139] Weighted data.

[140] Source: Federal Office of Statistics – Report on employment and income 2001.

Figure 58 - Nationality of the offenders by businesses in the financial sector. %[141] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



Within the financial sector, banks and fiduciaries, present the lowest percentages of foreigner offenders (21% and 21.6%), while among asset management firms, the offenders are more likely to come from other European countries (49.3%) than to be originally from Switzerland.

[141] Weighted data.

Figure 59 - Nationality of the offenders among asset managers and fiduciaries by type of crime[142]. %[143] of the number of asset managers and fiduciaries victimized at least once between 2008 and 2010

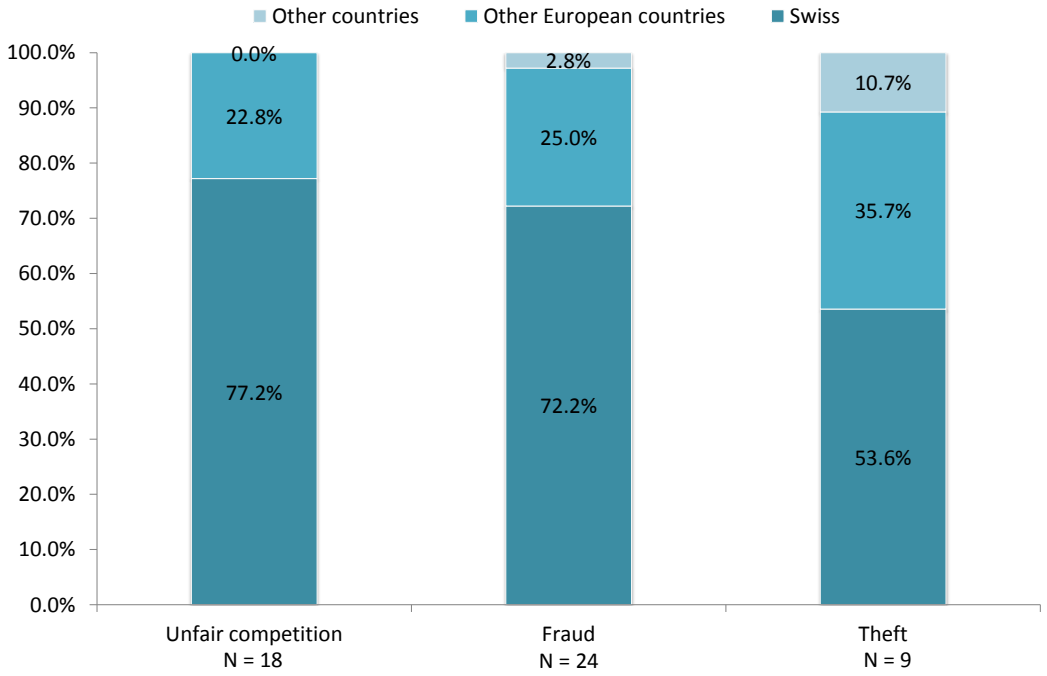


Figure 60 - Nationality of the offenders by businesses in the commercial sector and by type of crime[144]. %[145] of the number of businesses victimized at least once between 2008 and 2010in the commercial sector

[142] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[143] Weighted data.

[144] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

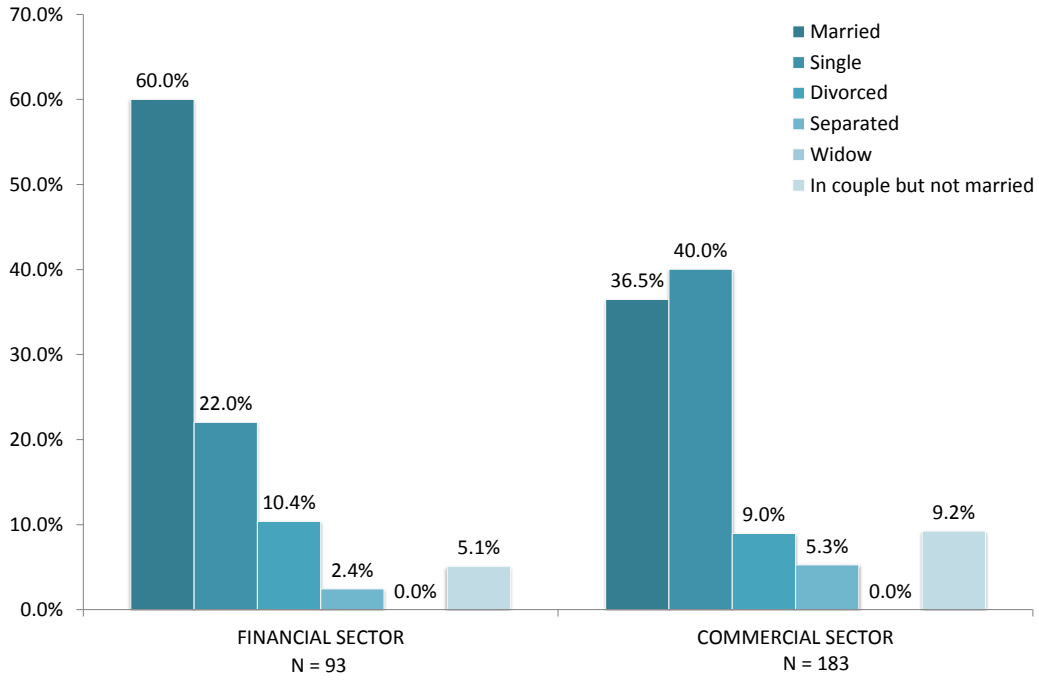
[145] Weighted data.

Analyzing the distribution of the wrongdoers' nationality by type of crime, it emerges that, in the financial sector, offenders of fraud, unfair competition and theft are most likely to be Swiss. However, we can notice very high shares of authors of thefts who are from other European countries (35.7%) and from other countries non-European countries (10.7%).

Also among retail stores, the majority of offenders, for all the considered types of crime, are Swiss. In particular, the highest percentage of Swiss offenders is registered for theft (71.4%), while the highest proportion of non-Swiss offenders is registered for unfair competition and fraud (47.9% and 35.5%).

2.1.5 Marital status

Figure 61 - Marital status of the offenders by economic sector. %[146] of the number of businesses victimized at least once between 2008 and 2010 in each sector

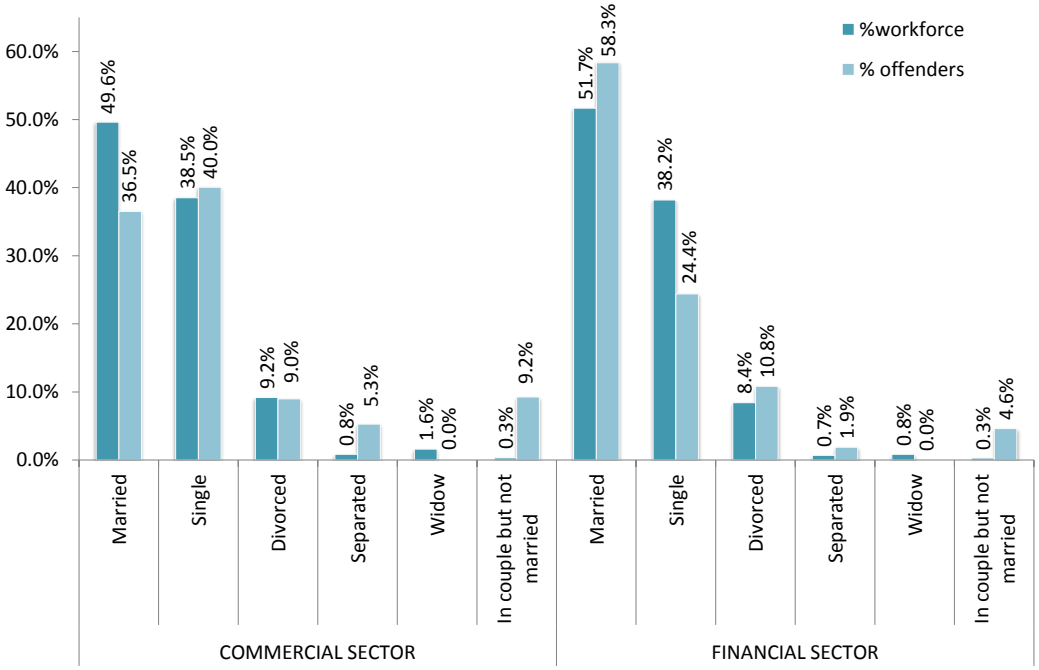


Among financial companies[147], the majority of offenders are married (60%), while among retail stores are single (40%).

[146] Weighted data.

[147] The financial sector includes banks, asset managers and fiduciaries.

Figure 62 - Marital status of the workforce and of the offenders by economic sector – %[148] of the total number of workforce and of the number of businesses victimized at least once between 2008 and 2010 in each sector



Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

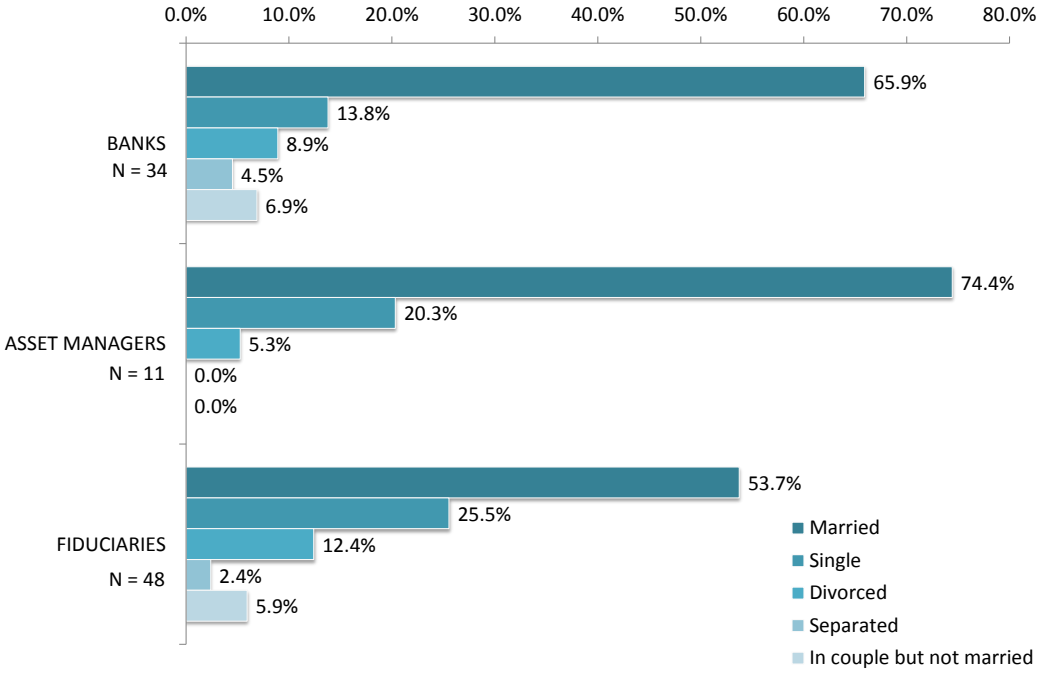
Comparing the distribution of the marital status of workforce and offenders in the commercial and financial sector, it emerges that, in the financial sector the two distributions almost coincide, as the majority of both employees and offenders are married. However, it has to be highlighted that the percentage of married offenders is much higher than the percentage of married employees (51.7% against 58.3%).

In the commercial sector, even if the majority of employees are married (49.6%), the highest percentage of offenders is single (40%).

This could depend on many other variables, for example the age, indeed, usually very young people are not married and 44.1% of offenders in the commercial sector are younger than 30 years old, while in the financial sector they are mainly older than 31. The hierarchical position could be another reason, indeed, a more stable and well paid job could influence the probability of getting married, and in the financial sector 36.7% of offenders are in the upper levels of the business management, while only 14.8% in the commercial sector (see Figures 71, 72).

[148] Weighted data.

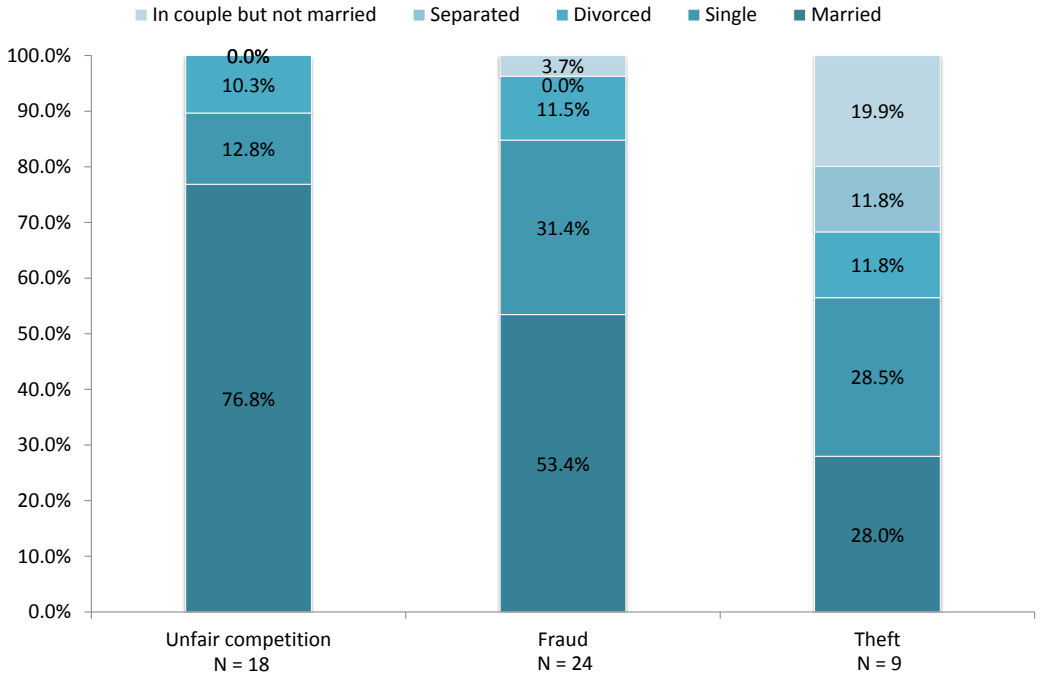
Figure 63 - Marital status of the offenders by businesses in the financial sector. %[149] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



The majority of the offenders in the financial are married with the highest percentage in the asset management firms (74.4%). The proportions of single and divorced offenders are the highest in fiduciaries (respectively 25.5% and 12.4%).

[149] Weighted data.

Figure 64 - Marital status of the offenders among asset managers and fiduciaries, by type of crime[150]. %[151] of the number of asset managers and fiduciaries victimized at least once between 2008 and 2010

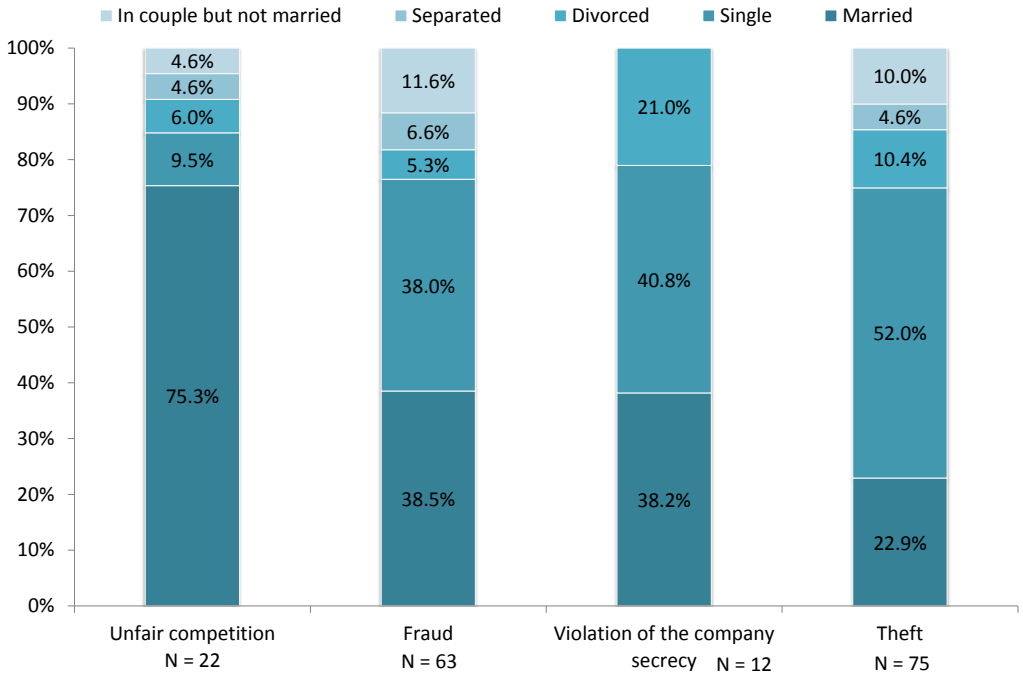


Among asset managers and fiduciaries, the majority of offenders for unfair competition and fraud are married (76.8% and 53.4%), while in the case of theft, the highest percentage of offenders are single (28.5%). As already mentioned above, it might be possible that the offenders of fraud and unfair competition are managers in higher level of hierarchy, hence older in age.

[150] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[151] Weighted data.

Figure 65 - Marital status of the offenders by businesses in the commercial sector and by type of crime[152]. %[153] of the number of businesses victimized at least once in the last three



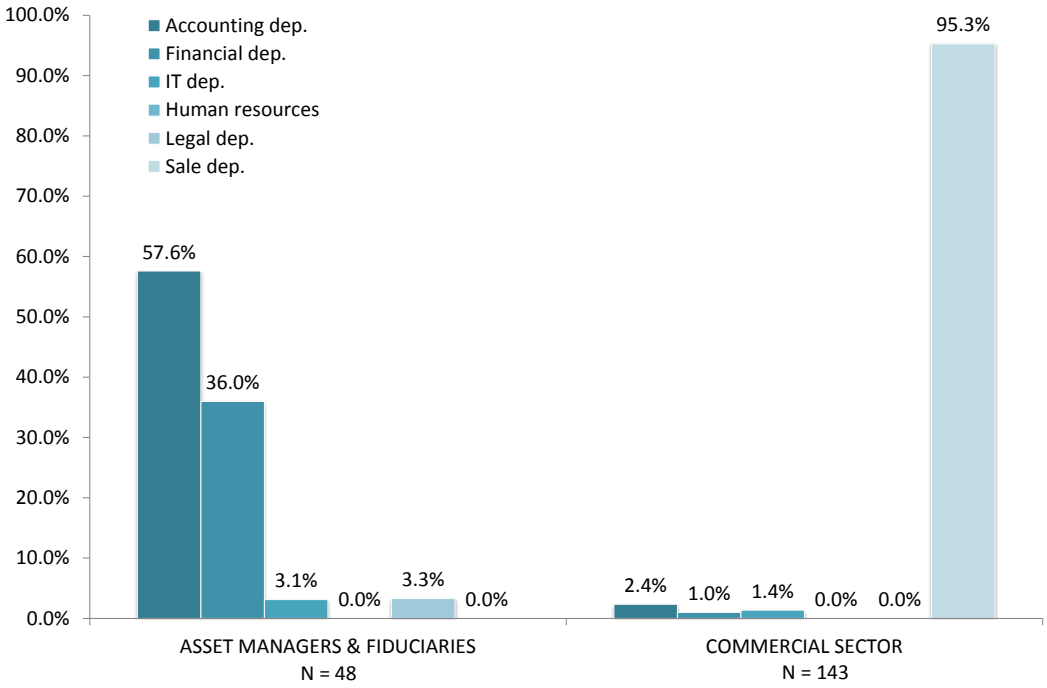
Also among retail stores, the marital status of the offenders seems to be strictly dependent on the type of crime considered.
It is evident from the Figure above that in the different economic sectors, more than 75% of offenders responsible for unfair competition are married, while in the case of theft, the majority is single (52%).

[152] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[153] Weighted data.

2.1.6 Department

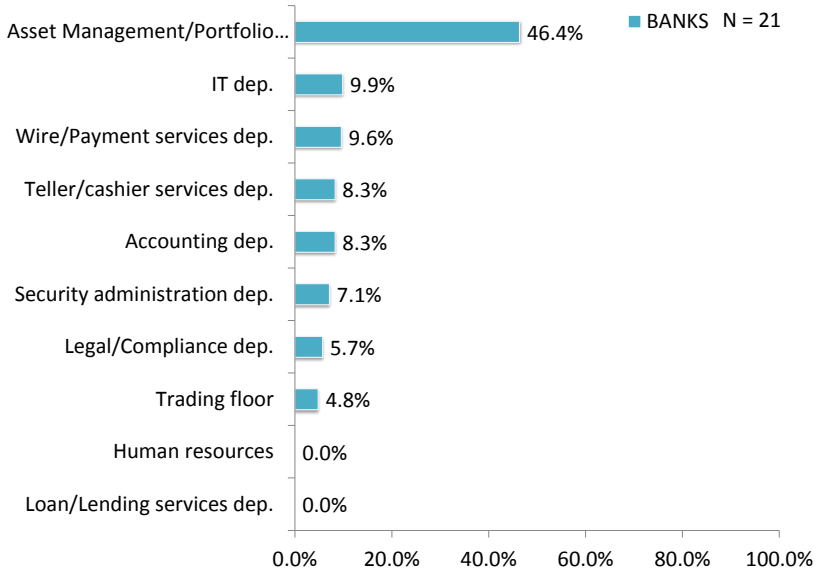
Figure 66 - Department where the offender was working by economic sector. %[154] of the number of businesses victimized at least once between 2008 and 2010 in each sector



The type of department where the offender was working changes in relation to the considered economic sector.
Indeed, considering asset managers and fiduciaries, the majority of offenders were working in the accounting department (57.6%) and financial department (36%), while within the commercial sector almost all the offenders were working in the sales department (95.3%).

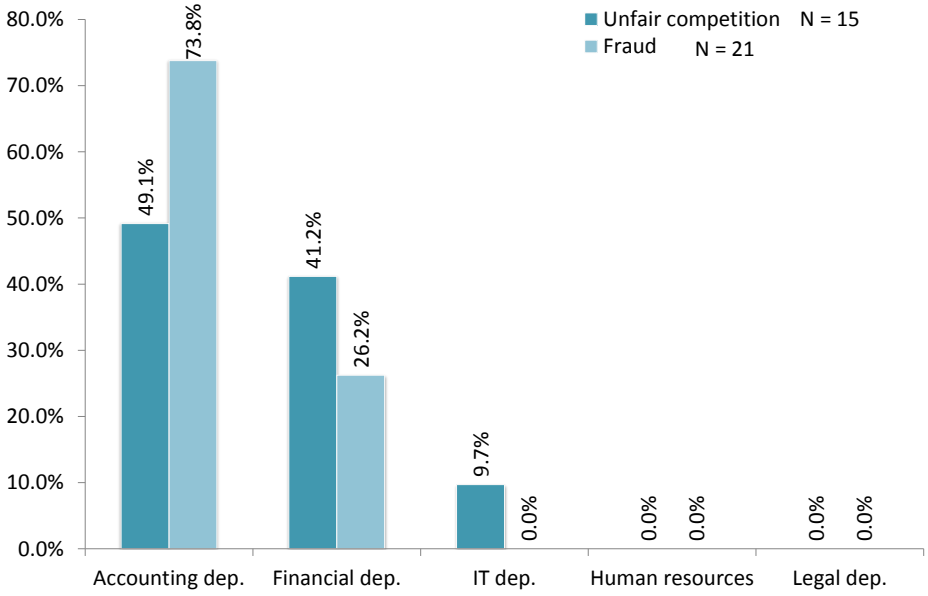
[154] Weighted data.

Figure 67 - Bank's[155] department where the offender was working. %[156] of the number of banks victimized at least once between 2008 and 2010



Among banks 46.4% of offenders were working within the asset management and portfolio management department.

Figure 68 - Department where the offender was working among asset managers and fiduciaries by type of crime[157]. %[158] of the number of asset managers and fiduciaries victimized at least once between 2008 and 2010



[155] This analysis does not include Swiss banks (all the larger Swiss banks, namely: UBS, Credit Suisse, the 24 Cantonal Banks, Raiffeisen Bank and Migros Bank).

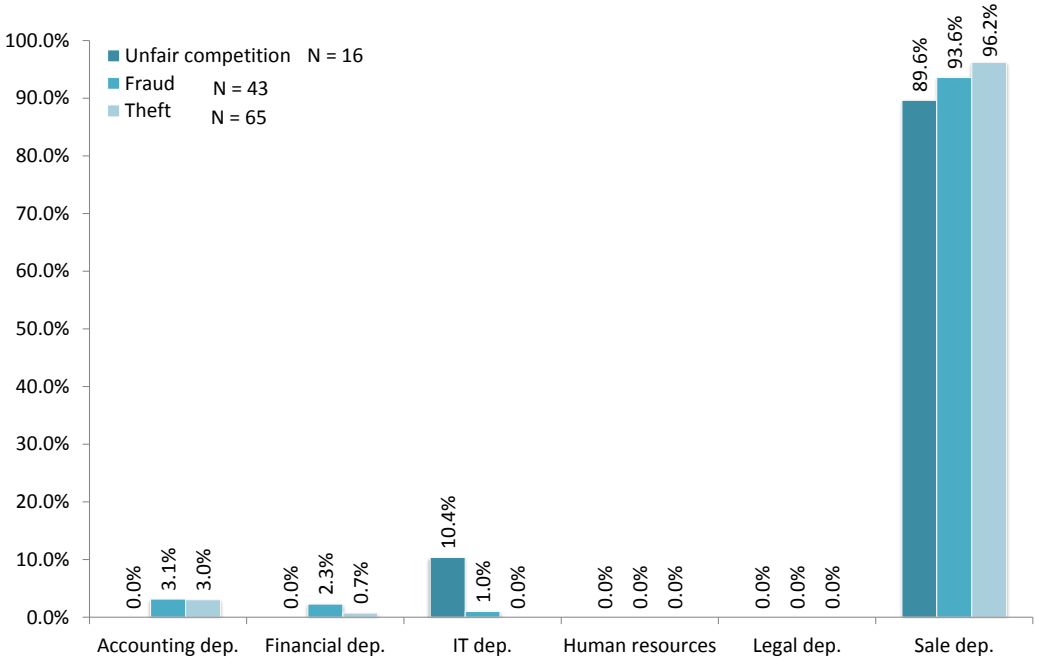
[156] Weighted data.

[157] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[158] Weighted data.

The Figure above highlights the distribution of offenders of specific types of crime, by type of department. As far as among asset managers and fiduciaries the most frequent crimes are unfair competition and fraud, and as these crimes are strictly related to the management of the financial resources and activities of the firm, it is likely that the majority of offenders committing these types of crime was working within the accounting and financial departments (49.1% and 73.8%).

Figure 69 - Department where the offender was working in the commercial sector by type of crime[159]. %[160] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector



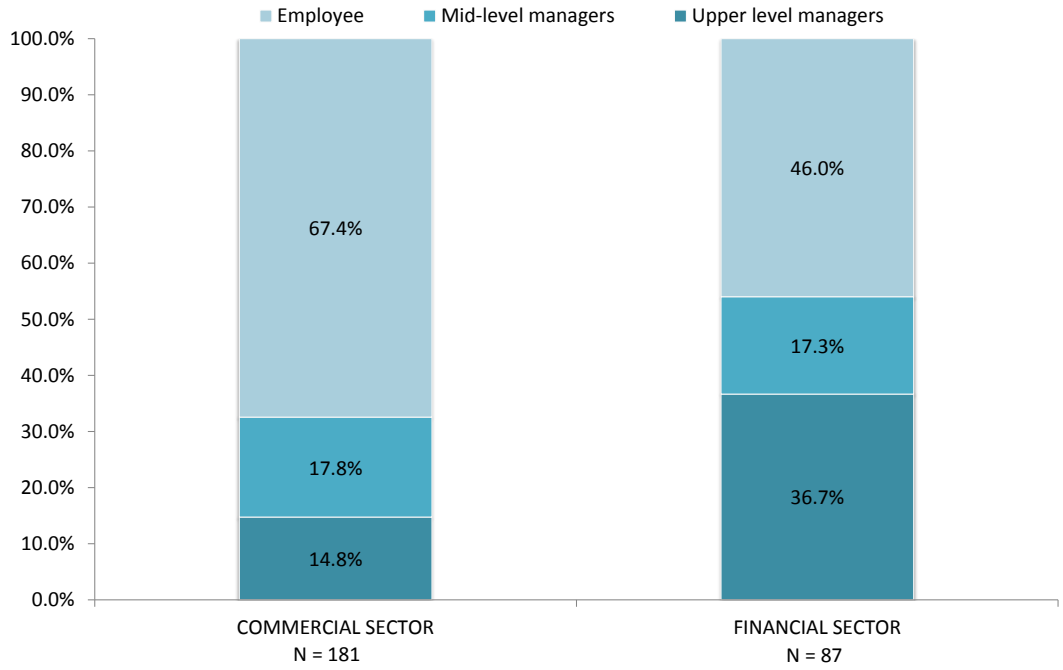
In the commercial sector, independently of the type of crime, the sales department is where the majority of offences occurred. This can be due to the fact that the majority of employees work in that department.

[159] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[160] Weighted data.

2.1.7 Hierarchical position

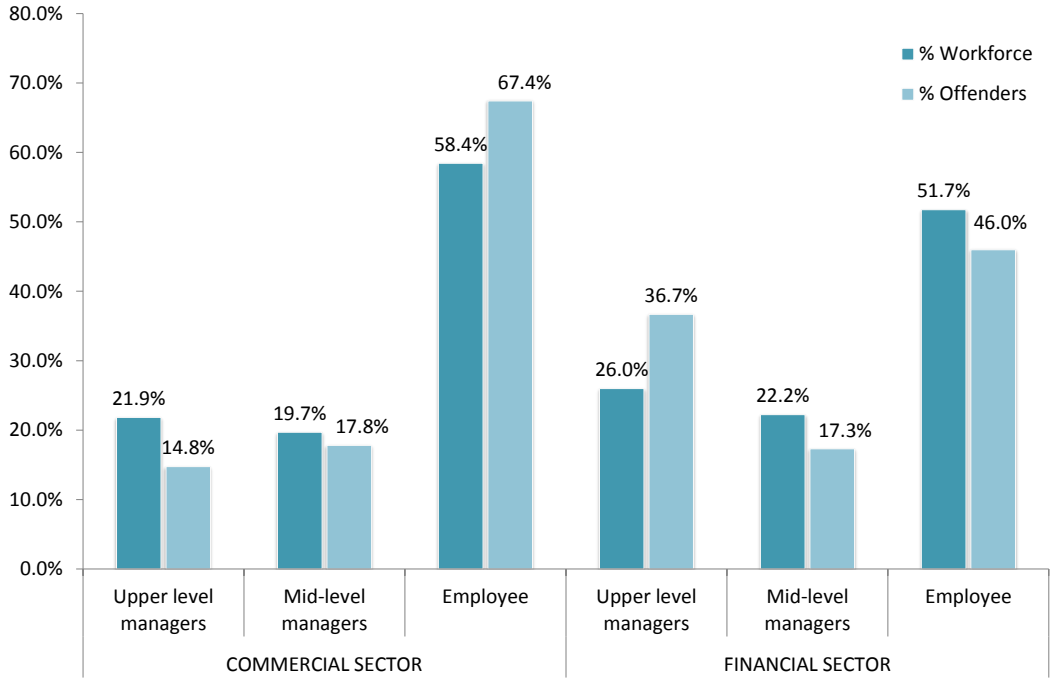
Figure 70 - Hierarchical position of the offenders by type of economic sector. %[161] of the number of businesses victimized at least once between 2008 and 2010



The majority of the offenders in both commercial and financial sectors are employees (46% and 67.4%). The proportion of upper-level offenders is much higher in the financial sector (36.7% vs. 14.8%).

[161] Weighted data.

Figure 71 - Hierarchical position of the workforce and of the offenders by economic sector. %[162] of the total number of workforce and on businesses victimized at least once between 2008 and 2010

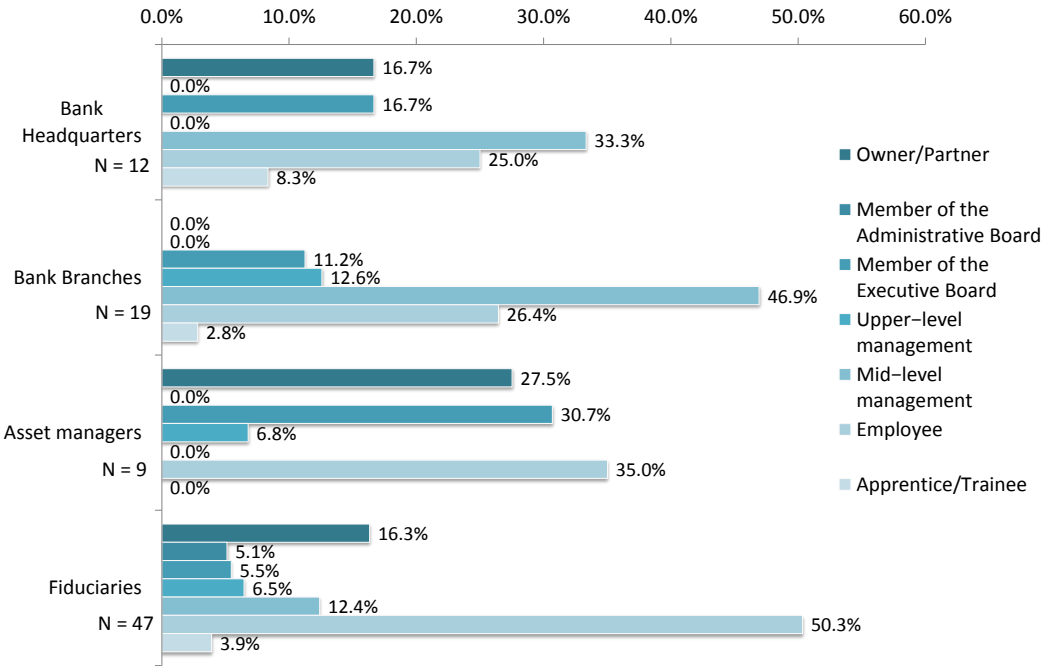


Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

The Figure above shows the hierarchical position of the workforce as compared to the one of the offenders, by economic sectors. In the commercial sector, the distribution of the workforce is slightly different from the one of offenders. We can see that the proportion of employees in the workforce is smaller than the one of the offenders who are employees (58.4% against 67.4%), while the proportions of upper level managers and mid-level managers in the workforce are more important than the one of offenders in the same management position (21.9% against 14.8% and 19.7% against 17.8%). Regarding the financial sector, the results are slightly different. The percentages of employees and of mid-level managers in the workforce are higher than the ones presenting the offenders in our study, respectively 51.7% against 46% and 22.2% against 17.3%. The proportion of offenders who are in the upper level managers is however higher than the ones in the workforce (36.7% against. 26%).
To summarize, the concentration in the employees' category is almost twice higher for the offenders than for the workforce; while in the financial sector, the concentration in the upper level category is 1.6 times higher for the offenders than for the workforce.

[162] Weighted data.

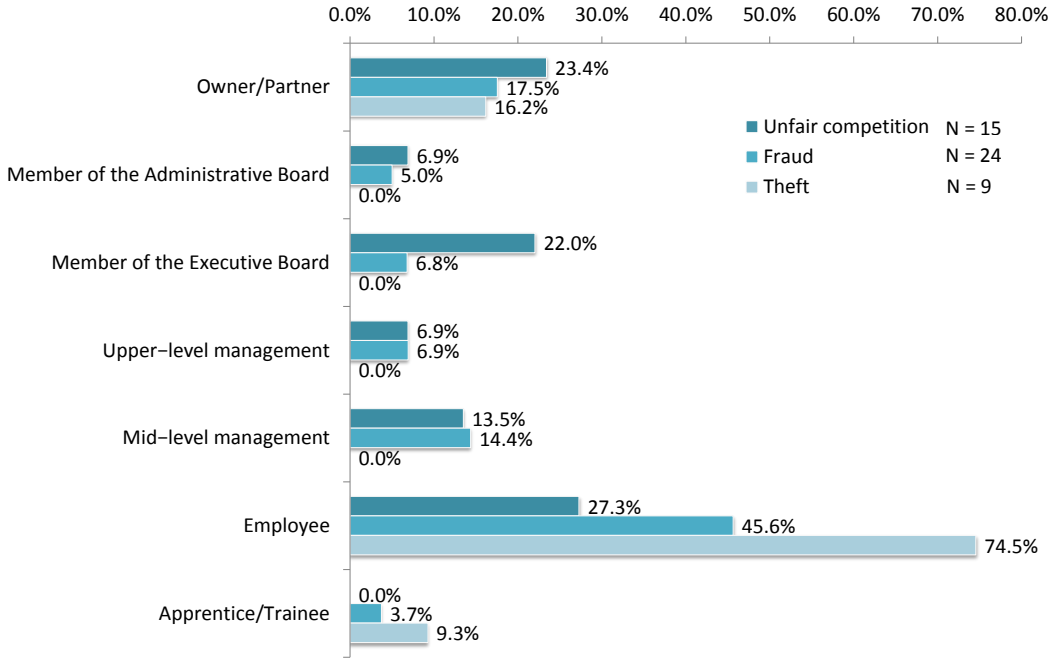
Figure 72 - Hierarchical position of the offenders by type of business in the financial sector. %[163] of the number of businesses victimized at least once between 2008 and 2010 in each sector



Analyzing the distribution of the hierarchical position of offenders in the different type of financial businesses, many differences emerge. In particular, if in asset management firms the highest percentage of offenders is among employees (35% and 50.3%); in bank branches and bank headquarters, offenders are more likely to belong to the mid-level management (46.9% and 33.3%).
It is also interesting to notice that among asset managers there is a high percentage of offenders belonging to the Executive Board (30.7%) and 27.5% of them were owners or partners of the companies. Among fiduciaries, the second most frequent hierarchical position of offenders is owner or partner (16.3%).

[163] Weighted data.

Figure 73 - Hierarchical position of the offenders in the financial sector by types of crime. %[164] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[165]

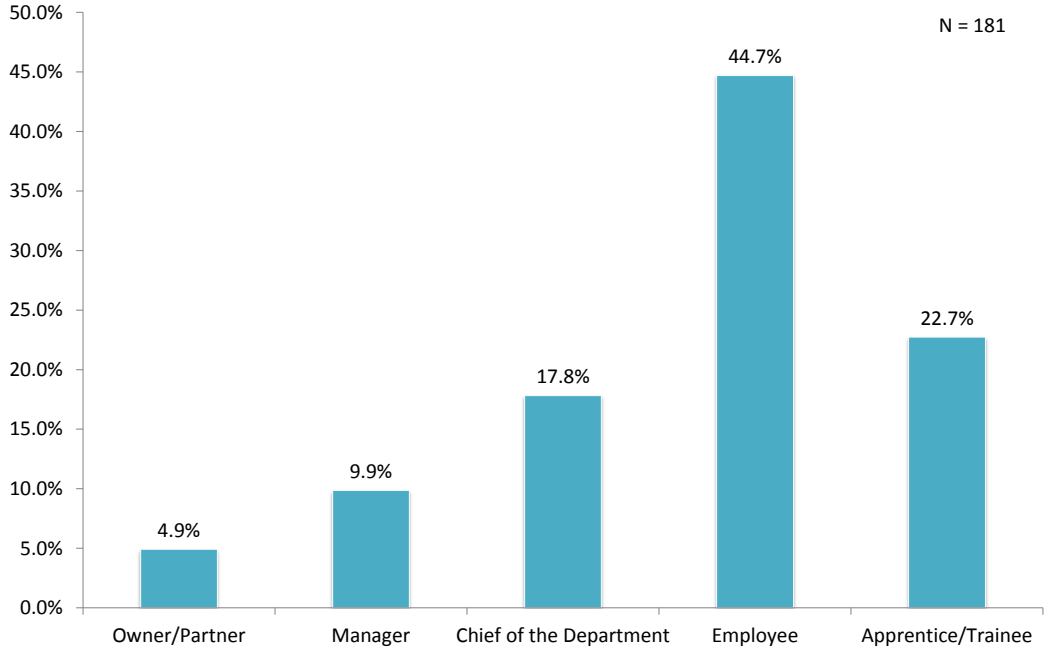


In the financial sector, 27.3% of unfair competition offences are committed by employees who are not in a management position, 23.4% by the owners or partners of the company and 22% by a member of the Executive Board.
In relation to fraud, 45.6% is perpetrated by employees, 17.5% by owners or partners and 14.4% by mid-level managers. 74.5% of theft is committed by employees and only 16.2% by owners/or partners.

[164] Weighted data.

[165] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

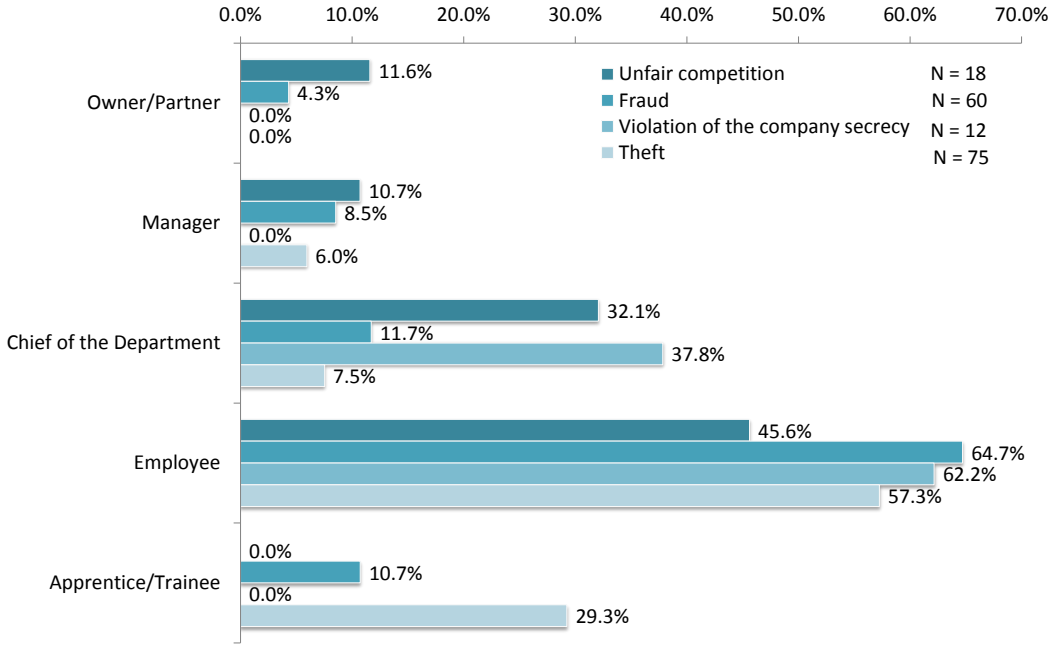
Figure 74 - Hierarchical position of the offenders in the commercial sector. %[166] of the number of businesses victimized at least once between 2008 and 2010 in the Commercial sector



In the commercial sector, the majority of the offenders are not in a management position; they are rather employees (44.7%) and trainees (22.7%).

[166] Weighted data.

Figure 75 - Hierarchical position of the offenders in the commercial sector by types of crime. %[167] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[168]



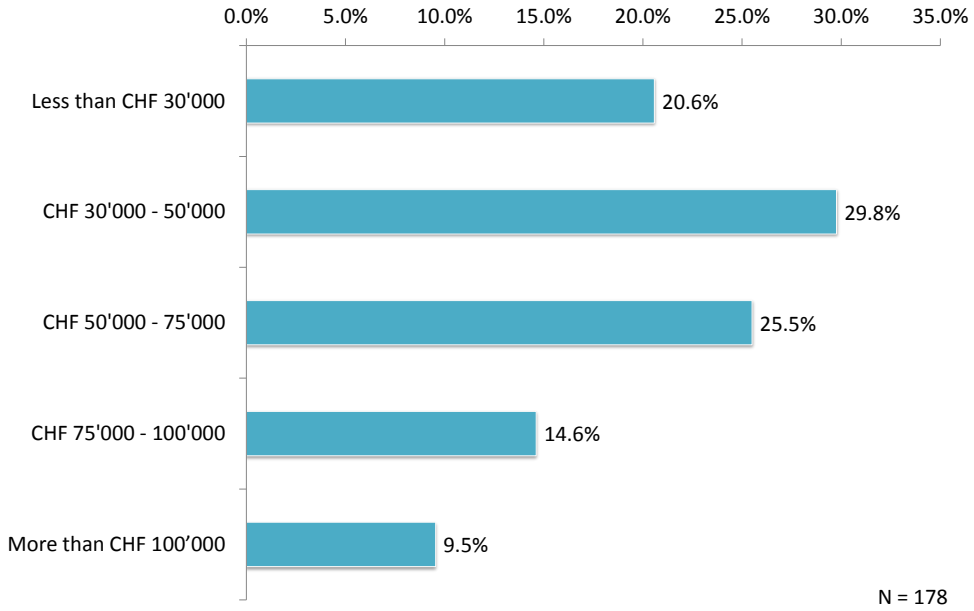
Among retail stores, all the types of crime are mainly committed by "simple" employees.
However, when considering unfair competition and violation of the company secrecy, there are also high percentages of offenders who were Chief of the department (32.1% and 37.8%).
In the case of theft, 29.3% of wrongdoers were apprentices or trainees.

[167] Weighted data.

[168] Due to some missing data the Figures in this Table and in the Figure below should be interpreted with caution.

2.1.8 Salary

Figure 76 - Annual salary of the offenders in the commercial sector[169]. %[170] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[171]



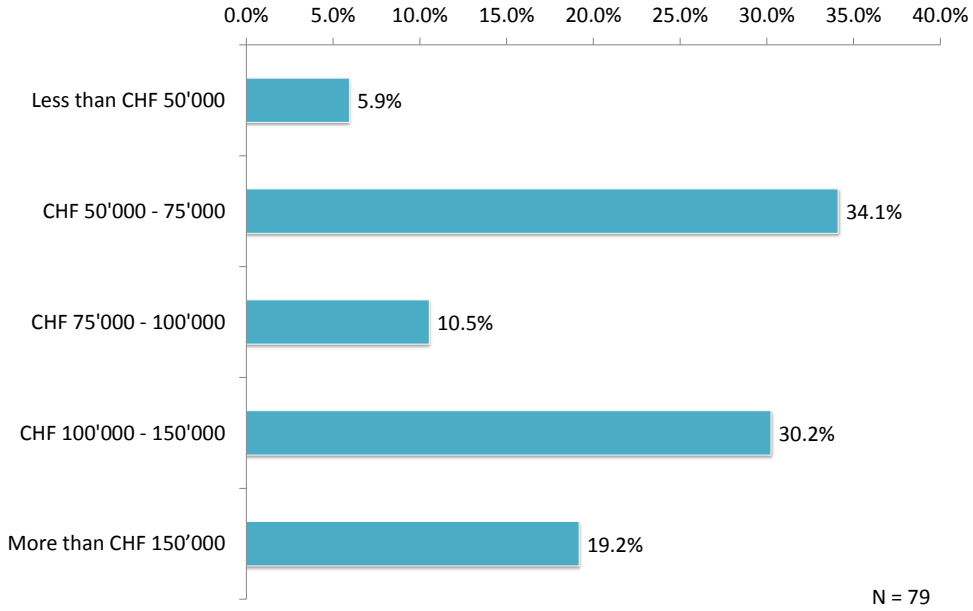
According to business representatives, in the commercial sector, the highest percentage of offenders earned an annual salary between CHF 30,000 and 50,000 (29.8%). Only 9.5% of offenders were earning a salary higher than CHF 100,000 a year.

[169] The data in the Figure represent the N of businesses, in the commercial sector, victims of at least one crime, answering the question about the salary of the offenders of the crime they consider the most serious among those suffered between 2008 and 2010.

[170] Weighted data.

[171] Due to some missing data (55) the data in this Figure should be interpreted with caution.

Figure 77 - Annual salary of the offenders by businesses in the financial sector[172]. %[173] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[174]



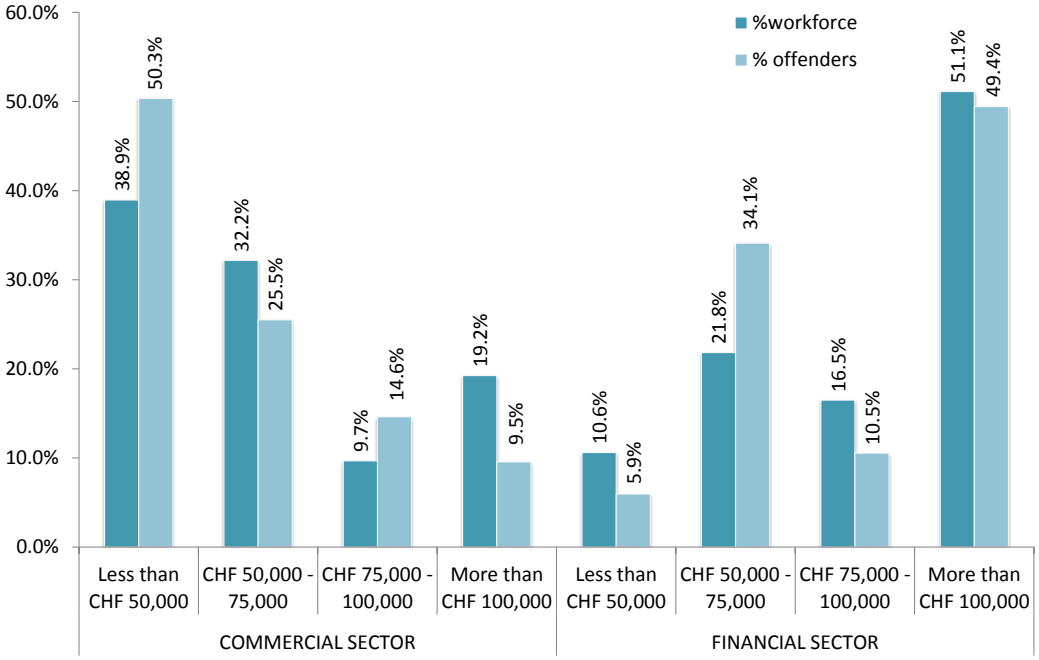
In the financial sector the most frequent category of salary earned annually by the offenders are between CHF 50,000 and 75,000 and between CHF 100,000 and 150,000; on average, almost two times higher than those observed in the commercial sector.
This result is in line with the analysis on the hierarchical position of the offenders (Figure 56). Indeed, in the commercial sector 67.4% (against 46% in the financial sector) of offenders are employees, who usually earn less than people occupying higher hierarchical positions.

[172] The data in the Figure represent the N of businesses, in the Financial sector (Swiss banks, bank branches, asset managers, fiduciaries), victims of at least one, answering the question about the salary of the author of the crime they consider the most serious among those suffered between 2008 and 2010.

[173] Weighted data.

[174] Due to some missing data (38) the data in this Figure should be interpreted with caution.

Figure 78 - Annual salary of the workforce and of the offenders by economic sector. %[175] of the total number of workforce and on businesses victimized at least once between 2008 and 2010 in each sector



In the Figure above, the distribution of the annual salary of the workforce and of the offenders in both commercial and financial sector has being compared.

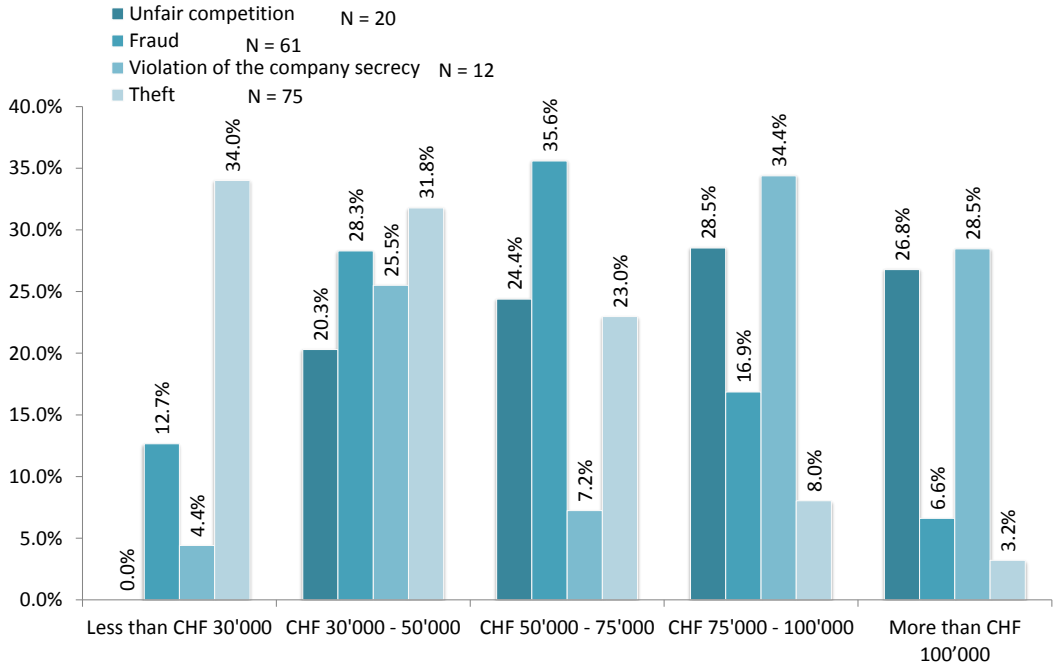
Among retail stores, the percentage of offenders earning an annual salary less that CHF 50'000, and the one with a salary between CHF 75'000 and CHF 100'000, are higher than the ones registered for the workforce (respectively 50.3% against 38.9% and 14.6% against 9.7%). In relation to the ranges of salary between CHF 50'000 and 75'000, and more than CHF 100'000, the proportion of the workforce is greater than the one of the offenders.

In the financial sector, the opposite is observed. The proportion of employees earning less than CHF 50'000 is almost double than the one of offenders earning the same range of salary (10.6% against 5.9%). The same tendency is observed for the range of salary between CHF 75'000 and 100'000 (16.5% against 10.5%), while the proportion of offenders with a salary between CHF 50'000 and 75'000 is much higher than the one of the workforce (34.1% against 21.8%).

However, if we compare the concentrations in the highest and lowest categories of salary of the two distributions, among retail stores, the concentration in the low-salary category is almost three times higher for offenders than for the workforce, while in financial companies the opposite tendency is noted: the concentration in the high-salary category is almost two times higher for offenders than for the workforce.

[175] Weighted data.

Figure 79 - Annual salary of the offenders in the commercial sector by types of crime. %[176] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[177]



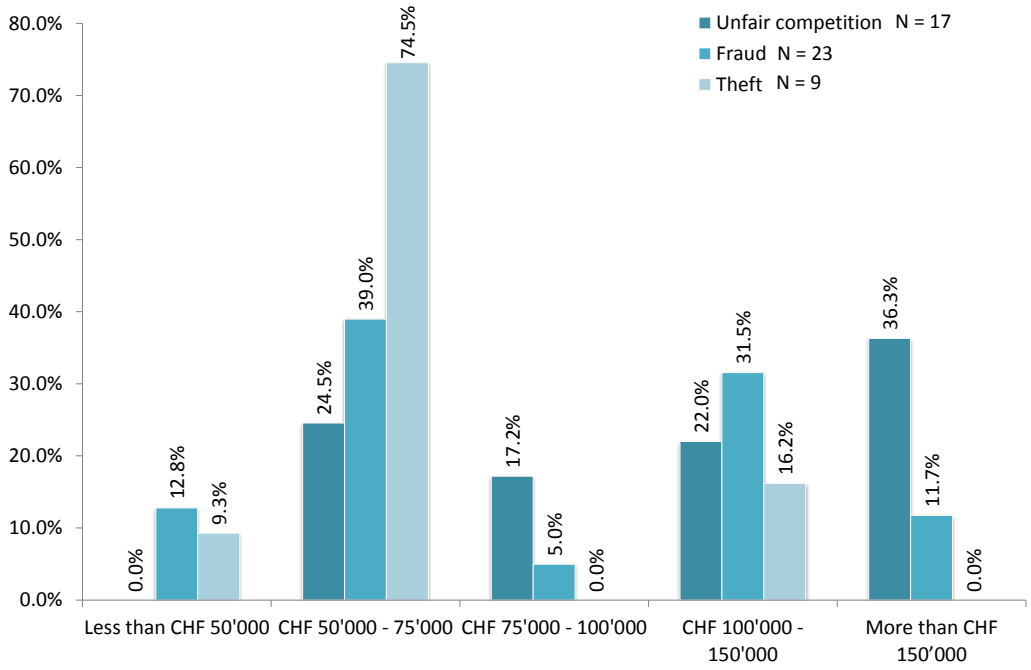
The distribution of the offenders by salary changes considerably when focusing on the different types of crime.

In the case of unfair competition and violation of the company secrecy, the offenders of the most serious crime earn an annual salary higher than CHF 75,000, while the majority of the offenders of the most serious theft earn less than CHF 30,000 per year.

[176] Weighted data.

[177] Due to some missing data (55) the data in this Figure should be interpreted with caution.

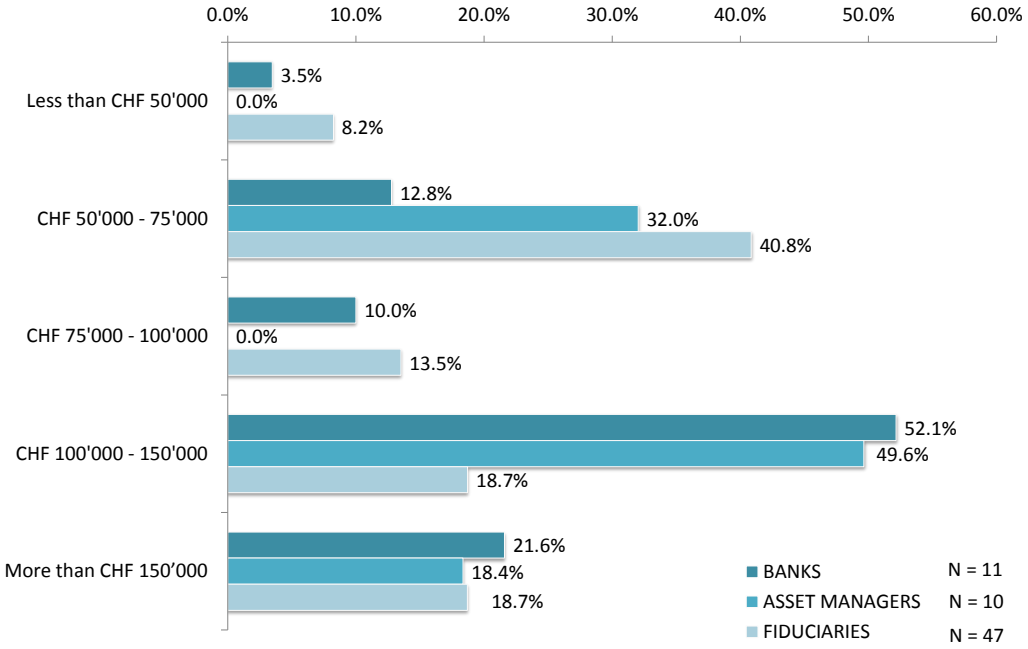
Figure 80 - Annual salary of the offenders in the financial sector by types of crime. %[178] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



As in the case of the commercial sector, analyzing the distribution of offenders by salary distinguishing by type of crime, it emerges that for unfair competition and fraud the majority of offenders earn very high salary (more than CHF 100,000), while in the case of theft 74.5% of them earn between CHF 50,000 and 75,000 a year.

[178] Weighted data.

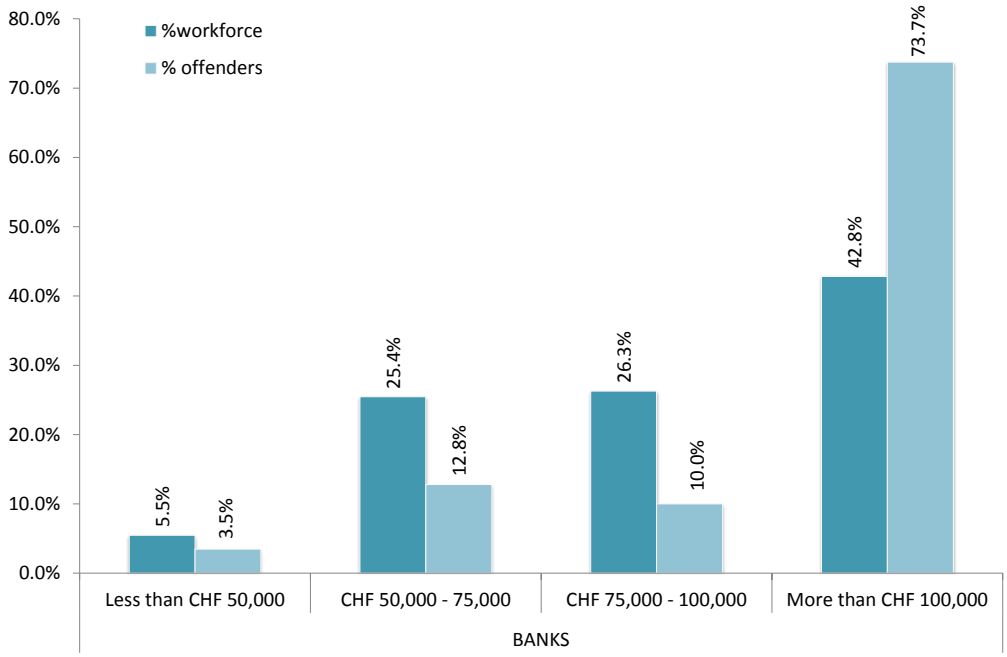
Figure 81 - Annual salary of the offenders by type of business in the financial sector. %[179] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



Focusing on the salary of offenders within banks, it is worth noting that the majority of them earn between CHF 100'000 and CHF 150'000 annually, while 21.6% have an annual salary of more than CHF 150'000 per year.

[179] Weighted data.

Figure 82 - Annual salary of the workforce and of the offenders working in banks. %[180] of the total number of workforce and on businesses victimized at least once between 2008 and 2010 in each sector

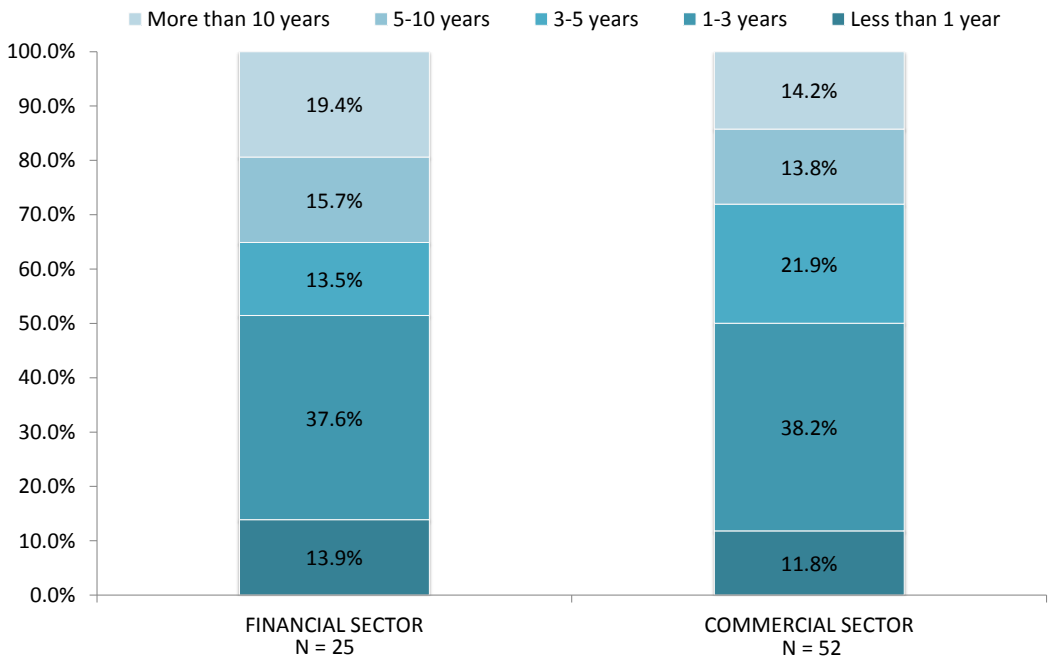


In the banking sector, the percentage of offenders with an annual salary higher than CHF 100'000 is much more important than the one in the workforce (73.7% vs. 42.8%). This means that, independently from the workforce distribution, the majority of offenders among banks earn more than CHF 100,000 per year.

[180] Weighted data.

2.1.9 Years of service

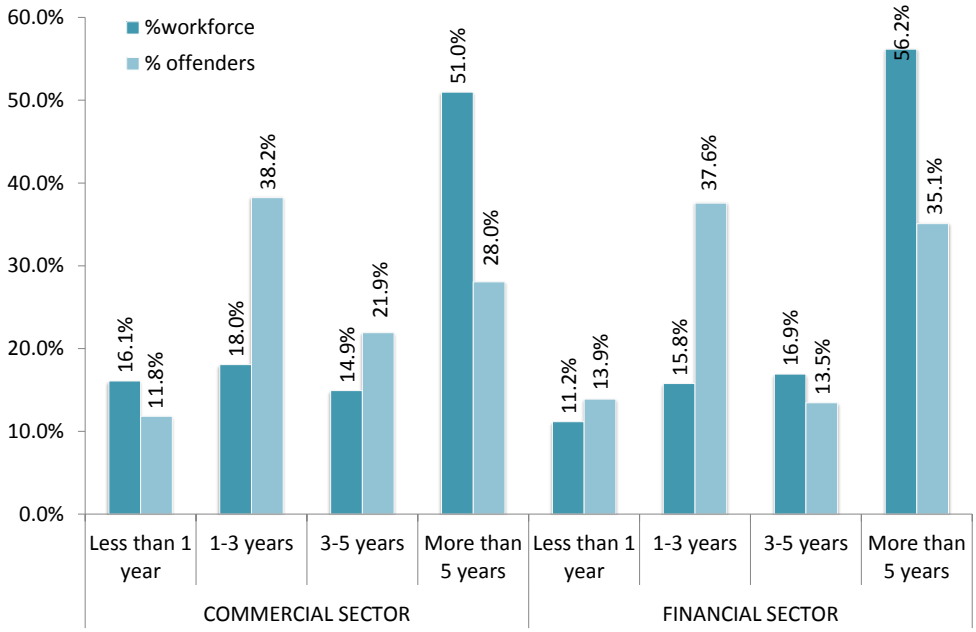
Figure 83 - Years of service of the offender by economic sector. %[181] of the number of businesses victimized at least once between 2008 and 2010 in each sector



According to business representatives, both in the financial and commercial sectors the majority of offenders counted between one and three years of service within the business (37.6% and 38.2%).

[181] Weighted data.

Figure 84 - Years of service in the workforce and of the offenders by economic sector – %[182] of the total number of workforce and of the number of businesses victimized at least once between 2008 and 2010 in each sector

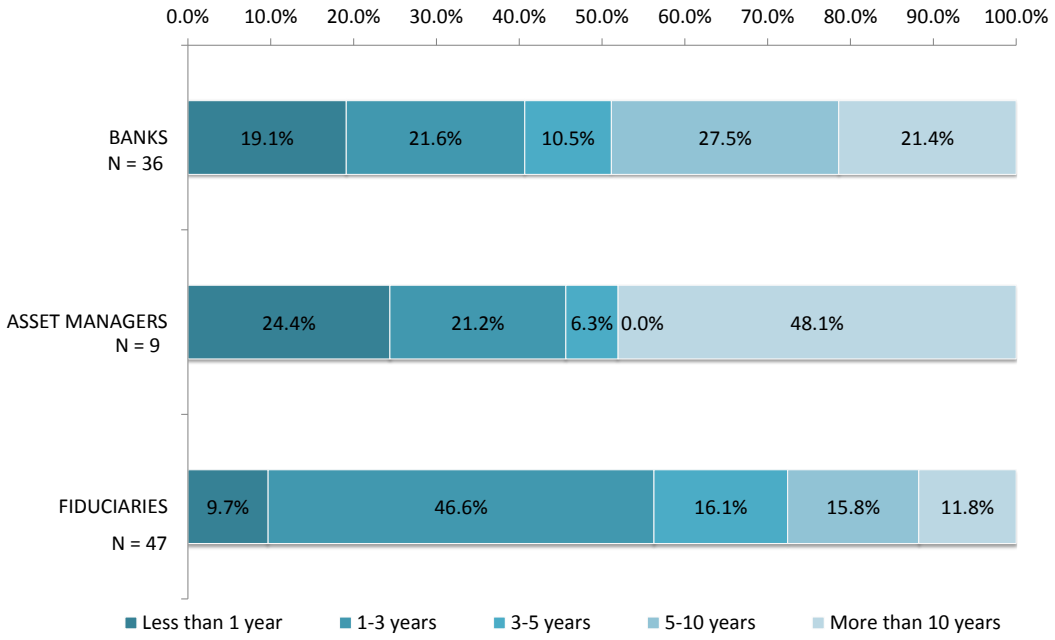


Source: Swiss Labor Force Survey, SLFS – Federal Statistical Office and SBCS data

Comparing the distribution of offenders by years of service with the one of the workforce, both present some differences. In both sectors, the majority of offenders work for the business between one and three years (38.2% among retail stores and 37.6% among financial businesses), even if the majority of employees has "more than 5 years of service within the company" (51% in the commercial sector and 56.2% in the financial one). In particular, the concentration in the 1-3 years category is almost four times higher for offenders than for the workforce, in both sectors.

[182] Weighted data.

Figure 85 - Years of service of the offenders by businesses in the financial sector. %[183] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



Among banks, the majority of offenders have been working for the company between five and ten years (27.5%), 21.6% between one and three years and 21.4% for more than ten years. Among asset management companies, 48.1% of offenders have worked for the firm for more than ten years. It seems like the know-how and the trust/confidence of the managers are most likely to be the conditions to commit some specific offences, more frequent in this sector, such as unfair competition and fraud. In relation to fiduciaries an opposite pattern can be noticed: offenders are more likely to be employees who had not been working for the firm for a long time. Indeed, 46.6% of offenders in this sector have been with the firm only between one and three years.

[183] Weighted data.

Figure 86 - Years of service of the offenders among asset managers and fiduciaries and by type of crime[184]. %[185] of the number of businesses victimized at least once between 2008 and 2010 among asset managers and fiduciaries

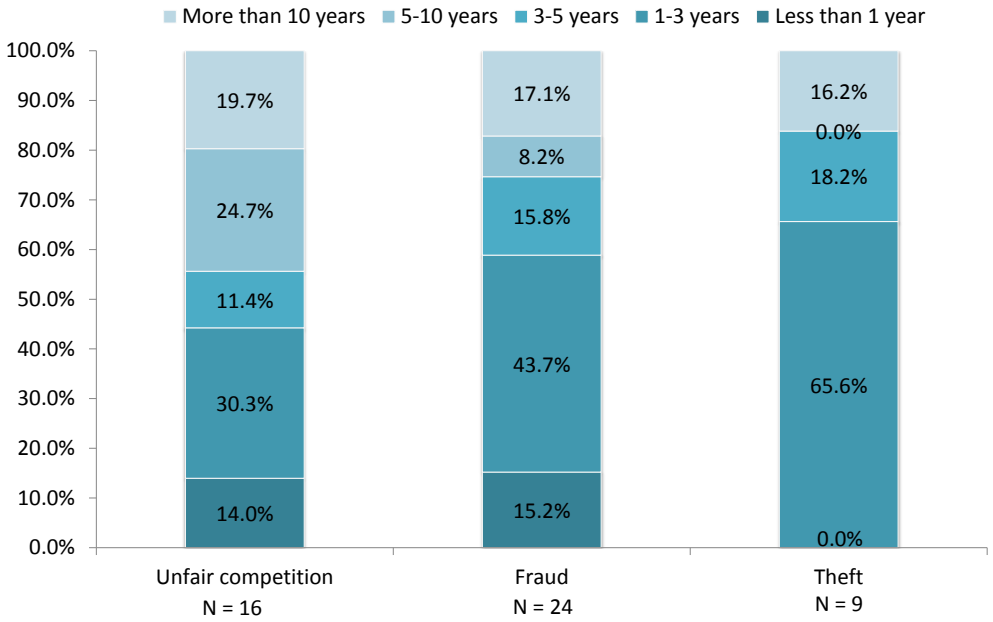
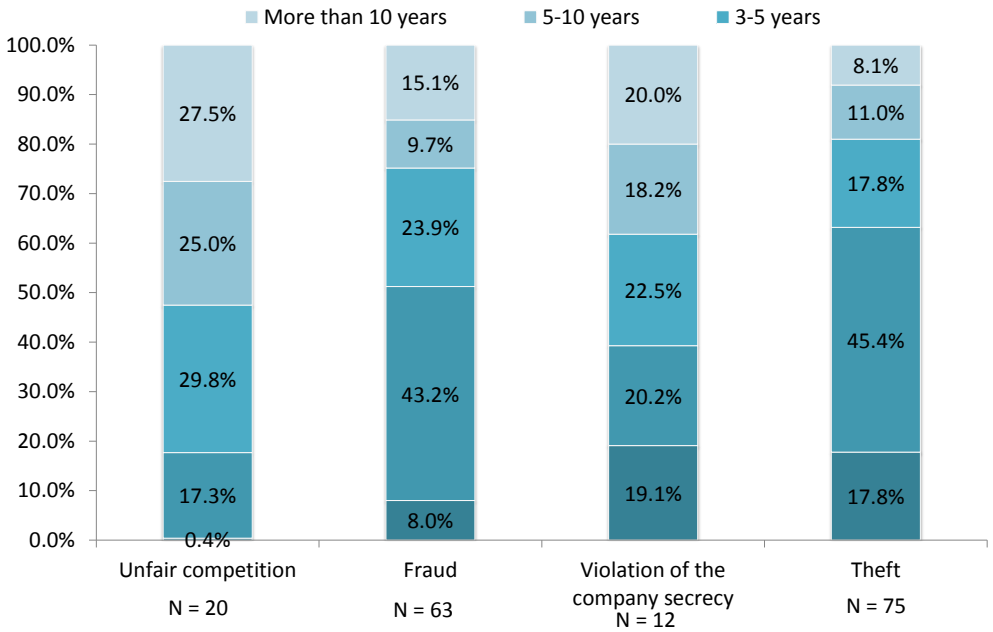


Figure 87 - Years of service of the offenders by businesses in the commercial sector and by type of crime[186]. %[187] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector



[184] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[185] Weighted data.

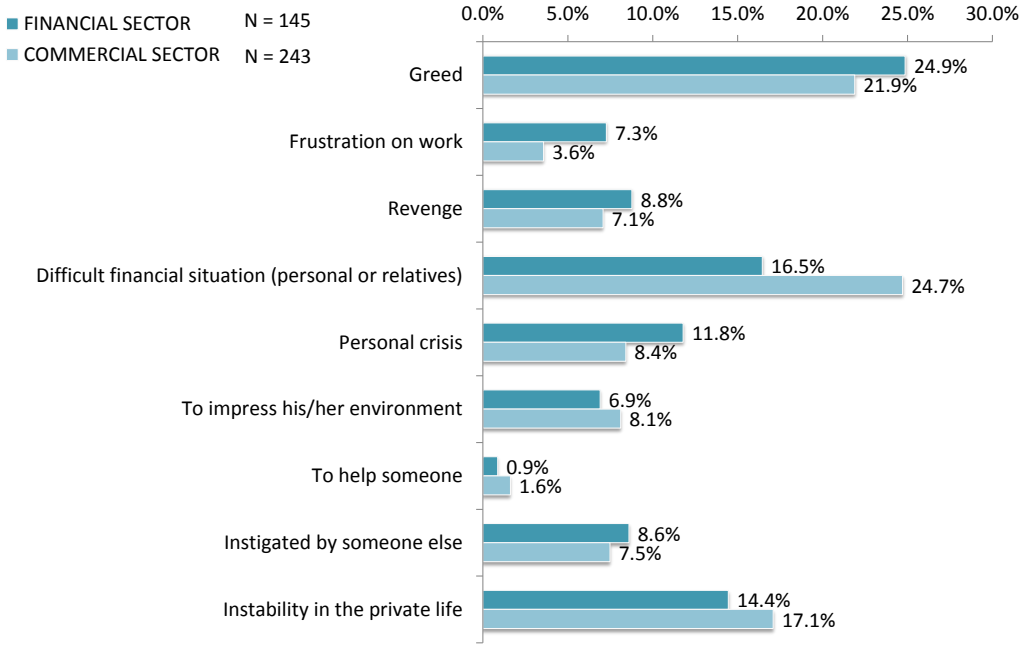
[186] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[187] Weighted data.

Among financial companies, the majority of offenders, for all the types of crime, used to work for the firm between one and three years. In particular, the highest percentage is registered for theft (65.6%). However, when considering unfair competition there is also a high share of offenders who were working within the company between five and ten years (24.7%) and for more than ten years (19.7%). In the commercial sector, 45.4% of theft and 43.3% of fraud were committed by employees having been working for the firms between one and three years; while 29.8% of cases of unfair competition were perpetrated by employees working for the business between three and five years and 27.5% by employees with more than ten years of service within the firm.

2.1.10 Reasons for committing the offence

Figure 88 - Motivations of the offenders for committing the offence, by economic sector. %[188] of the number of businesses victimized at least once between 2008 and 2010 in each sector[189]

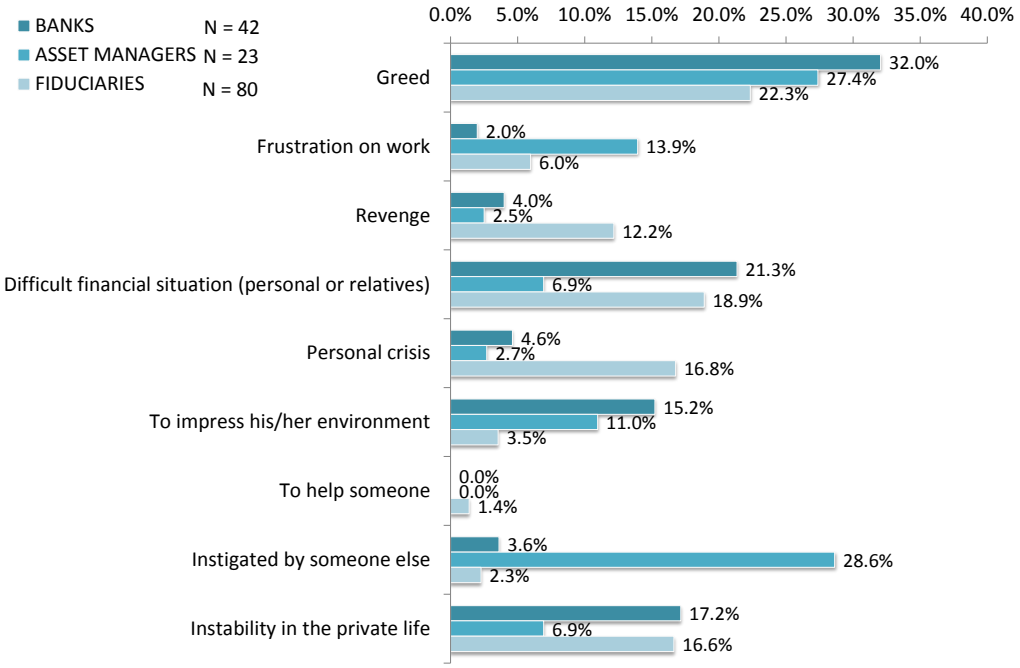


According to the respondents to the survey, in the financial sector the most frequent motivation for committing the offence was greed (24.9%), followed by a difficult financial situation of the employee or of his/her relatives (16.5%). Among retail stores, the opposite tendency is observed; the first reason for committing the offence seems to be a difficult financial situation (24.7%) while the second one is greed (21.9%). The third reason, in both sectors, is the instability in the private life of the employee (14.4% in the financial sector and 17.1% in the commercial one).
The less frequent motivation is "to help someone else".

[188] Weighted data.

[189] The absolute numbers (N) included in this graphs are higher than the total N of business victimized in each sector, because for this question multiple answers were allowed.

Figure 89 - Motivations of the offenders for committing the offence, by businesses in the financial sector. %[190] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector[191]

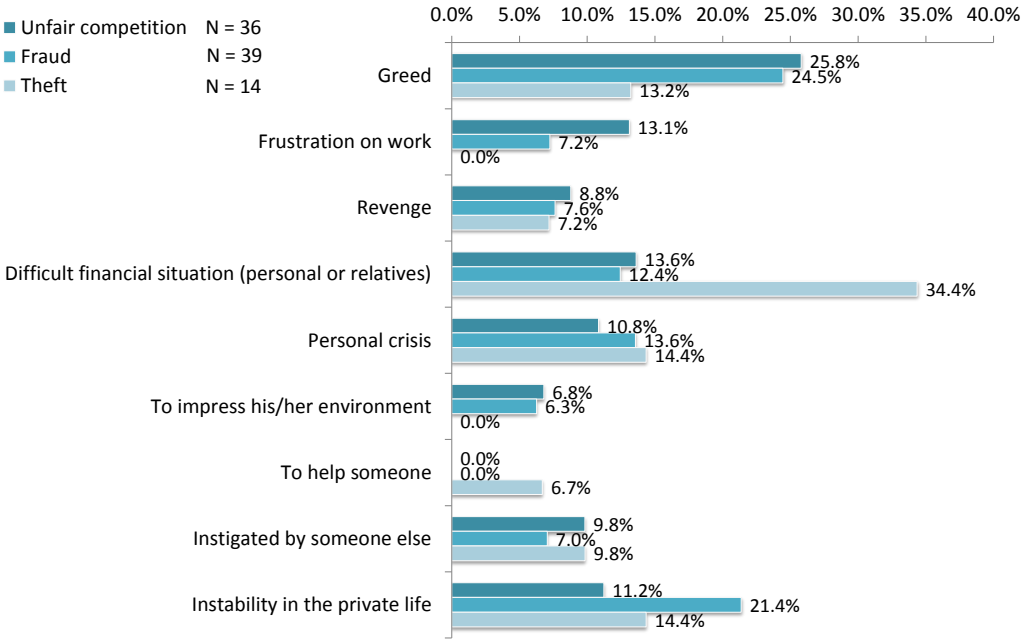


Focusing only on financial firms, the most evident difference concerns the asset managers, for which the most frequent motive is "the instigation of the employee by someone else".
Moreover, it should be highlighted that among fiduciaries the percentage of victims stating that the offence was committing for revenge is particularly high (12.2%) as well as the value for "frustration at work" among asset managers (13.9%).
These values could be explained by the distribution of the reasons of committing the offence by type of crime (Figure below).

[190] Weighted data.

[191] The absolute numbers (N) included in this graphs are higher than the total N of business victimized in each sector, because for this question multiple answers were allowed.

Figure 90 - Motivations of the offenders for committing the offence among asset managers and fiduciaries, by type of crime[192]. %[193] of the number of businesses victimized at least once between 2008 and 2010 among asset managers and fiduciaries[194]



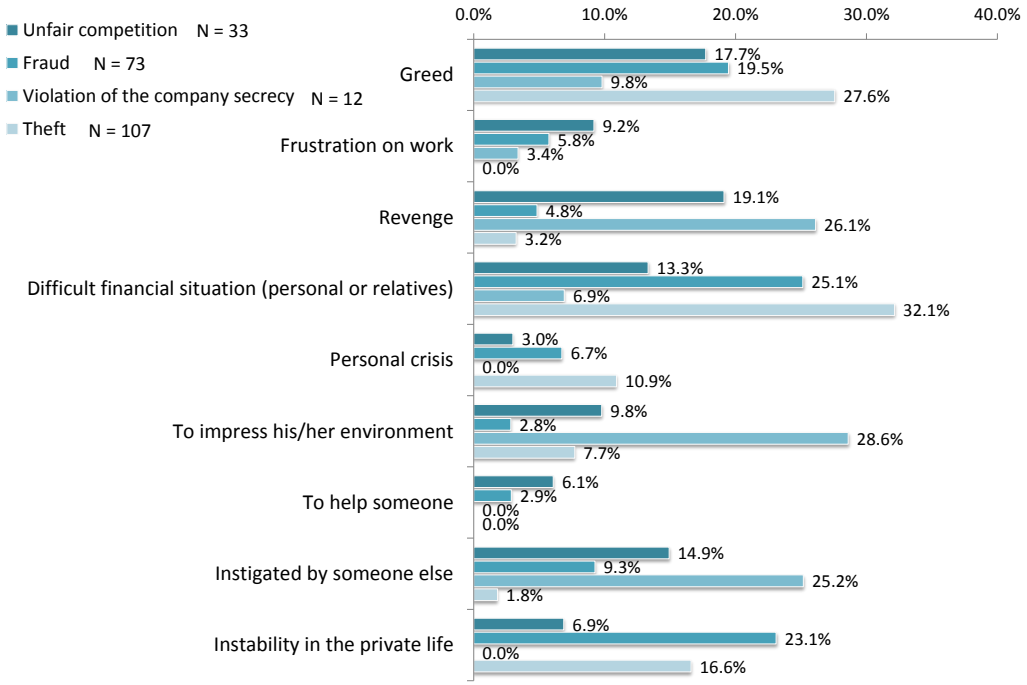
Considering unfair competition and fraud, the most frequent motivation for committing the offence is greed (25.8% and 24.5%), while in the case of theft the main reason is related to the difficult financial situation of the employee or of his/her relatives.
In the case of unfair competition, offender's "frustration at work" is accountable as the most common motivation. This suggests that this type of crime probably originates as a reaction of the employee's frustration against his firm.

[192] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

[193] Weighted data.

[194] The absolute numbers (N) included in this graphs are higher than the total N of business victimized in each sector, because for this question multiple answers were allowed.

Figure 91 - Motivations of the offenders for committing the offence among businesses in the commercial sector, by type of crime[195]. %[196] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector[197]



Among retail stores, it can be observed a high percentage of employees having committed specific crimes against the business's trust, such as unfair competition and/or violation of the company secrecy, out of revenge.
In the case of theft, employees acted wrongly because they were in a difficult financial situation (32.1%).
Considering fraud, the most frequent motivation is also the difficult financial situation (25.1%), but the second most common one is "instability in the private life".

[195] The crimes analyzed in this Figure are those presenting the more consistent number of cases.

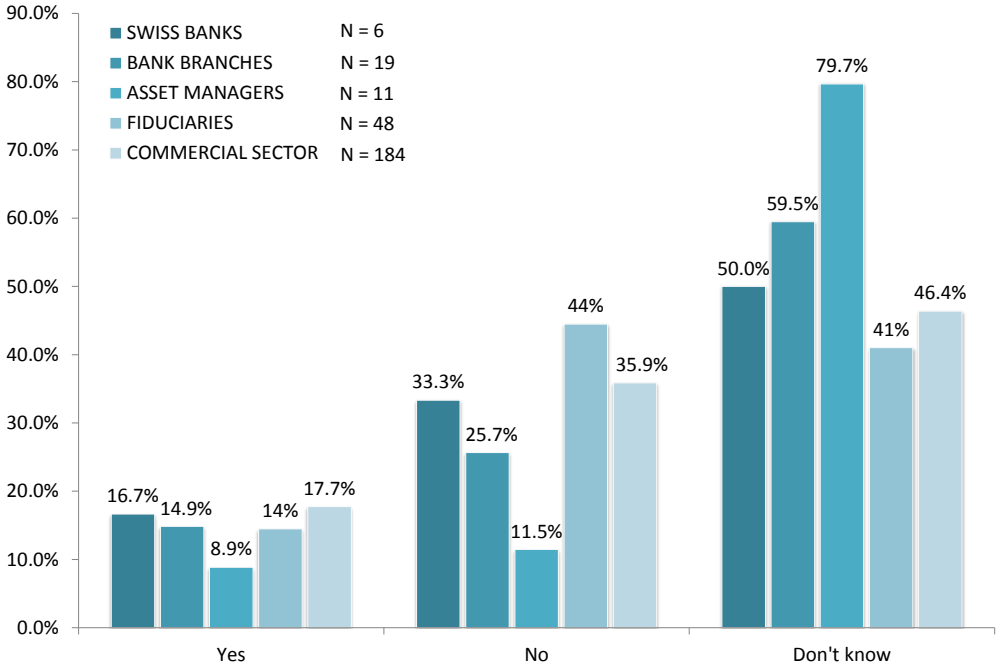
[196] Weighted data.

[197] The absolute numbers (N) included in this graphs are higher than the total N of business victimized in each sector, because for this question multiple answers were allowed.

2.1.11 Personal history

In order to understand the reasons for committing an offence, different information on the personal history of the offenders was collected. For this purpose, two main questions have been included in the survey questionnaire: "Did the wrongdoer undergo a stressful event during the period preceding his act?" and "Did the wrongdoer have any addiction problems?".
In the majority of cases the respondents (business managers) were not aware about this information on the offenders. Those who had some knowledge of this information declared that in the majority of cases there were no stressful events and/or addictions. However, due to the low number of answers, and as far as they reflect the memories and judgment of respondents, this data should be interpreted with caution.

Figure 92 - Suspected stressful events experienced by the offenders before committing the offence, by economic sector. %[198] of the number of businesses victimized at least once between 2008 and 2010 in each sector[199]

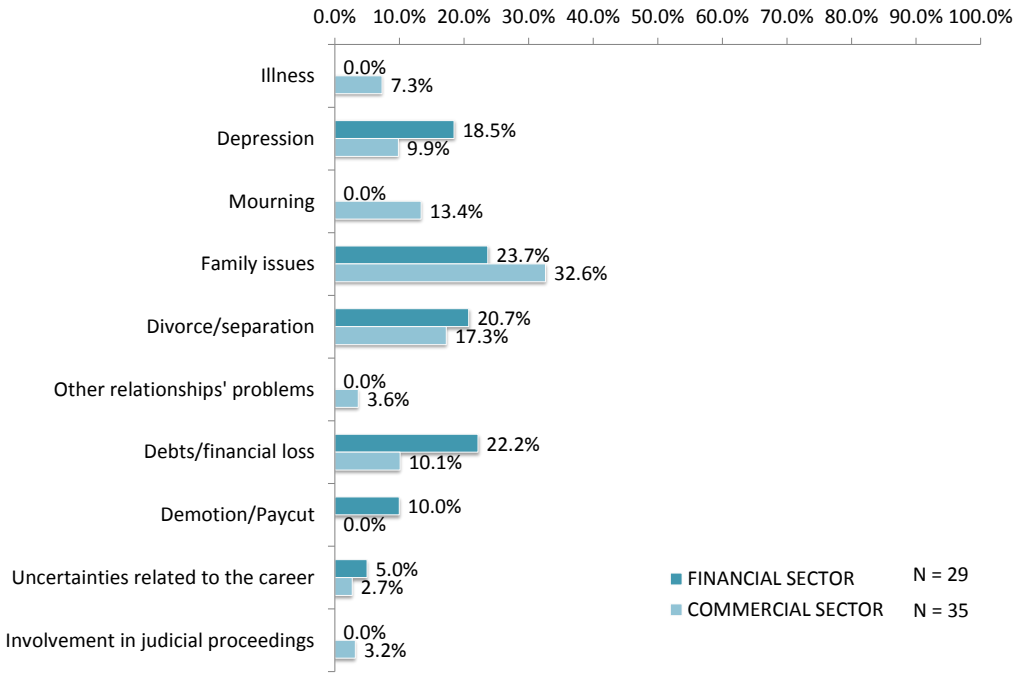


Among all economic sectors, the majority of respondents declared that they were not aware about the stressful events experienced by the offenders before committing the offence (item: "Don't know").

[198] Weighted data.

[199] Due to the very low number of answers to this question, the following analysis should be considered with caution.

Figure 93 - Types of suspected stressful events experienced by the offenders before committing the offence, by economic sector. %[200] of the number of businesses victimized at least once between 2008 and 2010 in each sector[201]



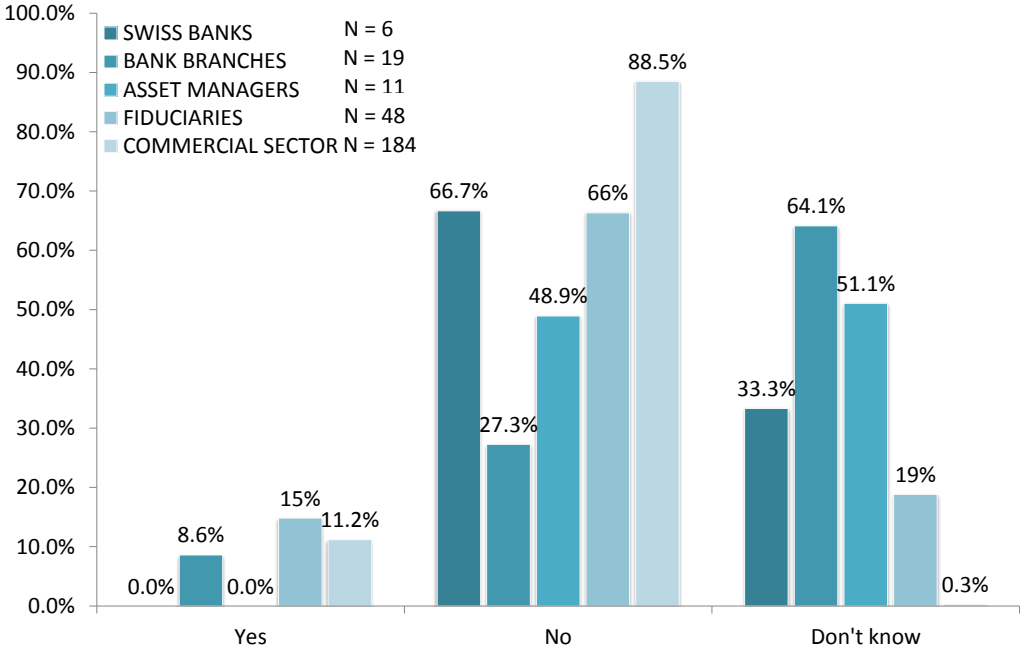
In both sectors, for those cases where the existence of a stressful events was known, the most quoted were family issues (32.6% in the commercial sector and 23.7% in the financial one), followed by divorce/separation in the commercial sector (17.3%) and debts or financial loss in the financial sector (22.2%).

In the commercial sector the third most quoted type of stressful events experienced by the offenders, before committing the offence, is mourning (13.4%), while in the financial sector, a divorce or a separation (20.7%) is commonly cited.

[200] Weighted data.

[201] Due to the very low number of answers to this question, the following analysis should be considered with caution.

Figure 94 - Suspected addiction problems of the offenders, by economic sector. %[202] of the number of businesses victimized at least once between 2008 and 2010 in each sector[203]

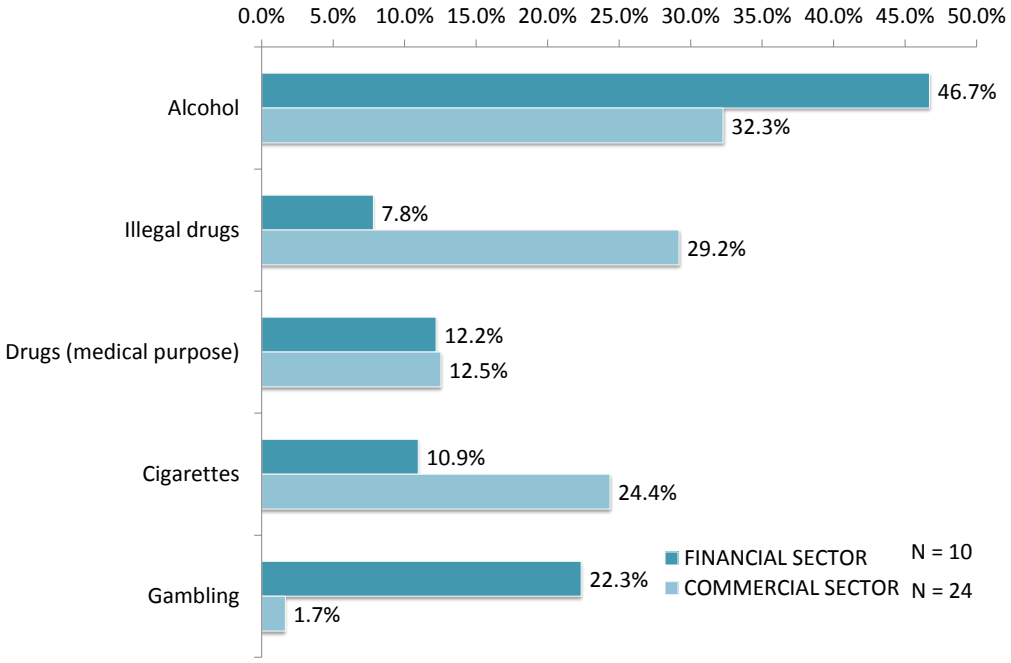


Differently from the previous question, the majority of respondents declared that the offenders did not have any addictions (with the exceptions of bank branches and asset management firms where respondents mainly do not know about this information).

[202] Weighted data.

[203] Due to the very low number of answers to this question, the following analysis should be considered with caution.

Figure 95 - Types of suspected addiction problems of the offenders, by economic sector. %[204] of the number of businesses victimized at least once between 2008 and 2010 in each sector[205]



Concerning the addiction problems of the offenders, in the financial sector 46.7% of them had an alcohol addiction against 32.3% in the commercial sector.
In the commercial sector, 29.2% seem to have had problems with illegal drugs, while in the financial sector, the second most frequent addiction problem is gambling, which could also be one of the causes of the "debts and losses" listed among the most frequent motivations for committing offences in that sector.

[204] Weighted data.

[205] Due to the very low number of answers to this question, the following analysis should be considered with caution.

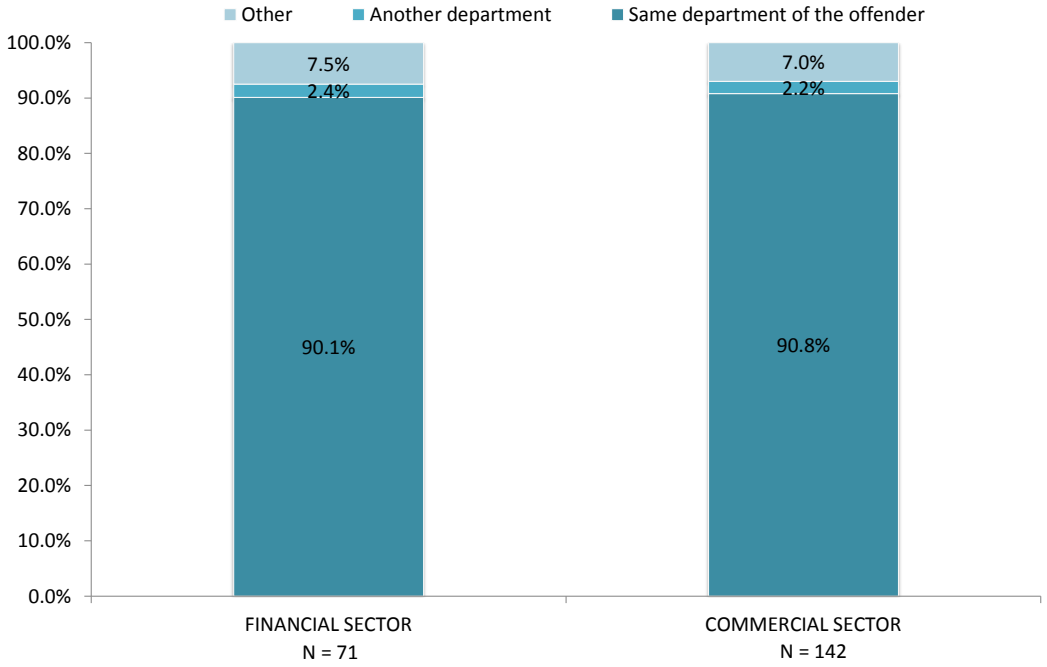
2.2 Modus operandi of the offenders

This section will provide an analysis of the modus operandi of the offenders while committing a crime within their business.
In particular this section will focus on all the types of crime experienced by the businesses and will answer the following questions:

- ✓ "In which department did the wrongdoer/s commit the offence/s?"
- ✓ "Did the wrongdoer/s commit the offence/s during working hours?"
- ✓ "Did the wrongdoer/s commit the offence/s with accomplices?"
- ✓ "Was/were the offence/s planned long before the commission?"

2.2.1 Place of perpetration

Figure 96 - Place of perpetration of the offences by economic sector. %[206] of the total number of businesses victimized at least once between 2008 and 2010 in each sector



The Figure above shows that, in both sectors, more than 90% of the offences[207] experienced by Swiss businesses (and for which an offender was known) have been committed in the same department where the offender was working.

[206] Weighted data.

[207] This information was collected only for cybercrime, fraud, theft and „other offences".

Figure 97 - Place of perpetration of the offence, by type of crime in the financial sector. %[208] of the total number of businesses victimized at least once between 2008 and 2010 in the financial sector

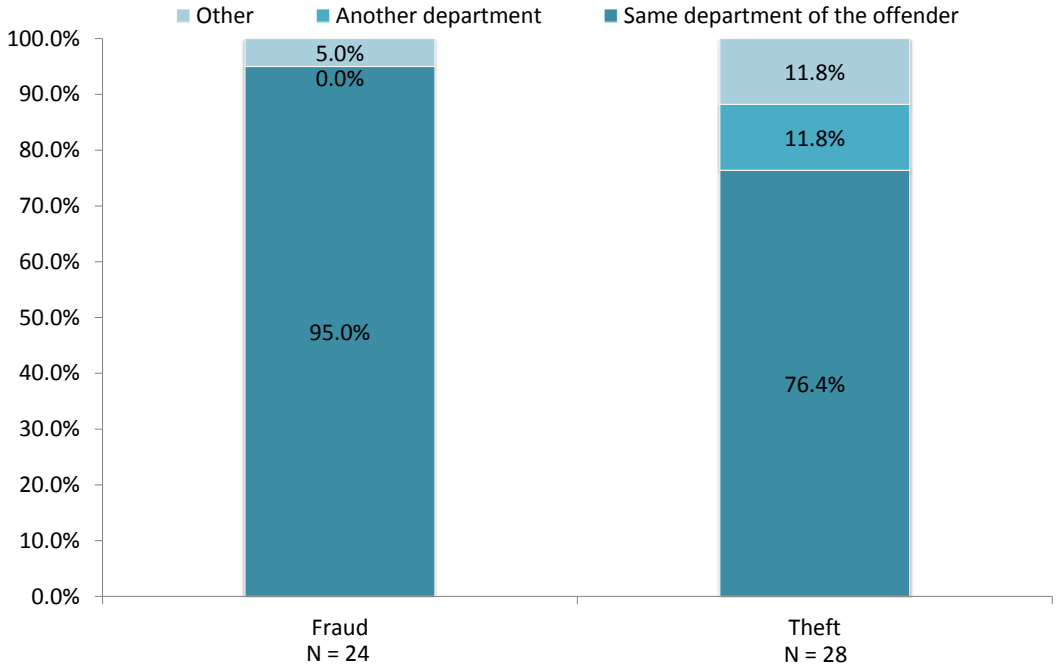
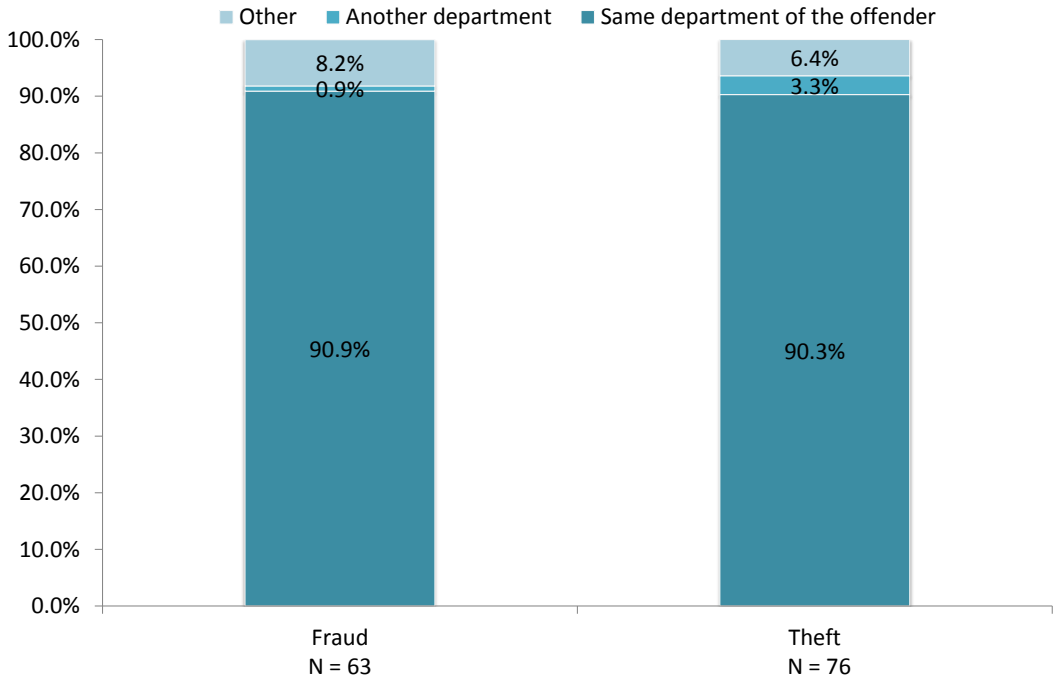


Figure 98 - Place of perpetration of the offence, by type of crime in the commercial sector. %[209] of the total number of businesses victimized at least once between 2008 and 2010 in the commercial sector



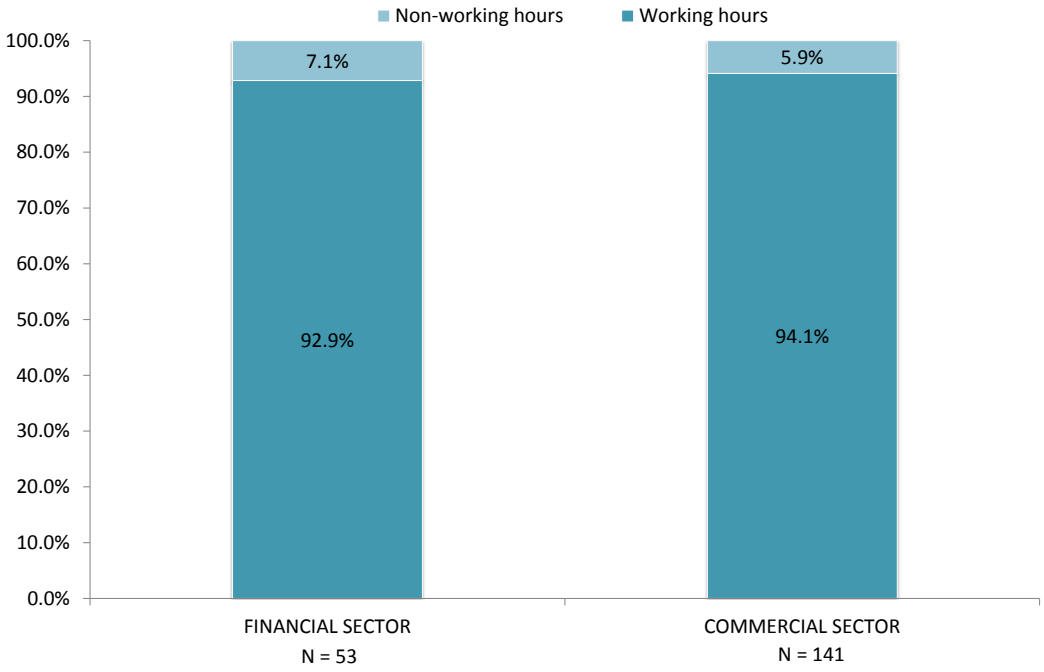
[208] Weighted data.

[209] Weighted data.

In both sectors, both fraud and theft are mainly committed by employees within the same department where they were working. However, in the financial sector, it is evident that the percentage of theft perpetrated in another department is higher than the one in the commercial sector (23.6% against 9.7%), as show in Figures 97 and 98.

2.2.2 Time of perpetration

Figure 99 - Time of perpetration of the offences by economic sector. %[210] of the total number of businesses victimized at least once between 2008 and 2010 in each sector



More than 90% of the offences[211] experienced by businesses (and for which an offender was known), in both sectors, have been committed during working hours.

[210] Weighted data.

[211] This information was collected only for cybercrime, fraud, theft and „other offences".

Figure 100 - Time of perpetration of the offence, by type of crime in the financial sector. %[212] of the total number of businesses victimized at least once between 2008 and 2010 in the financial sector

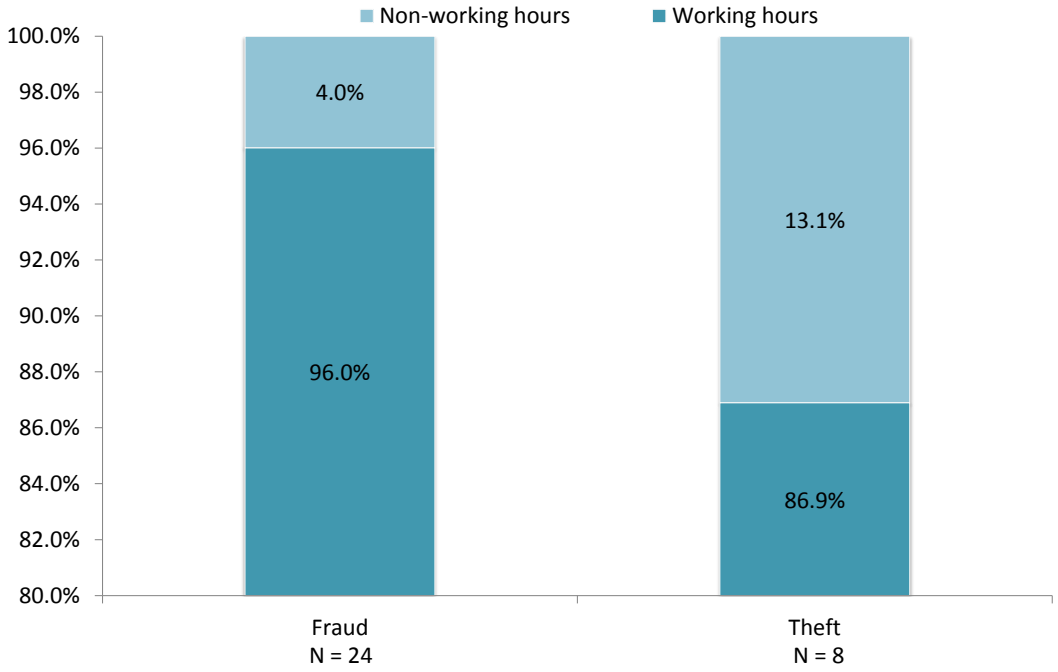
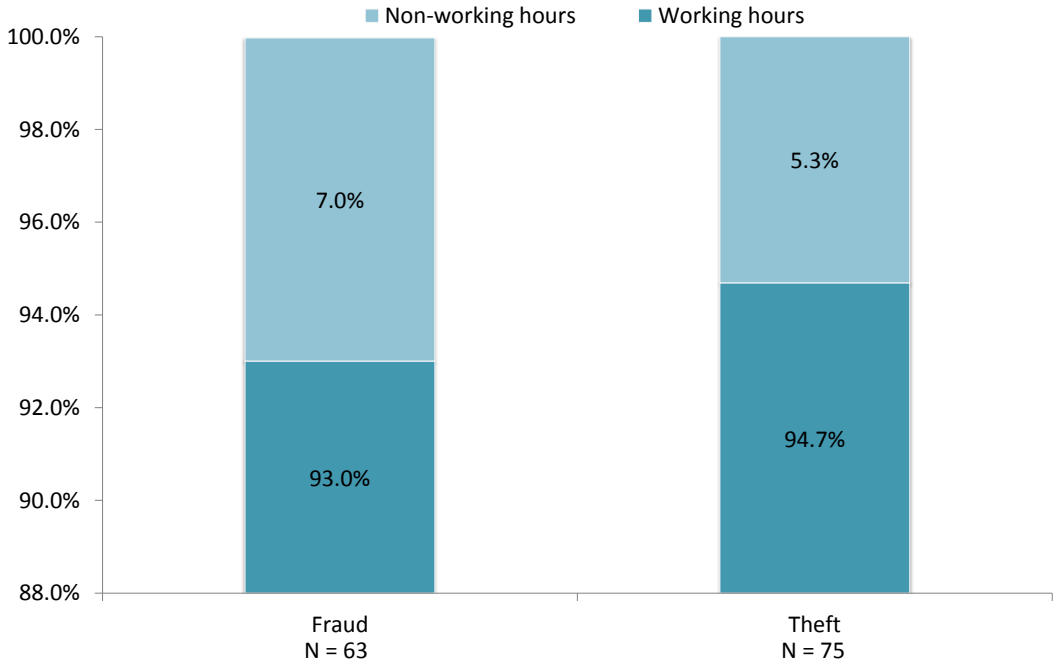


Figure 101 - Time of perpetration of the offence, by type of crime in the commercial sector. %[213] of the total number of businesses victimized at least once between 2008 and 2010 in the commercial sector



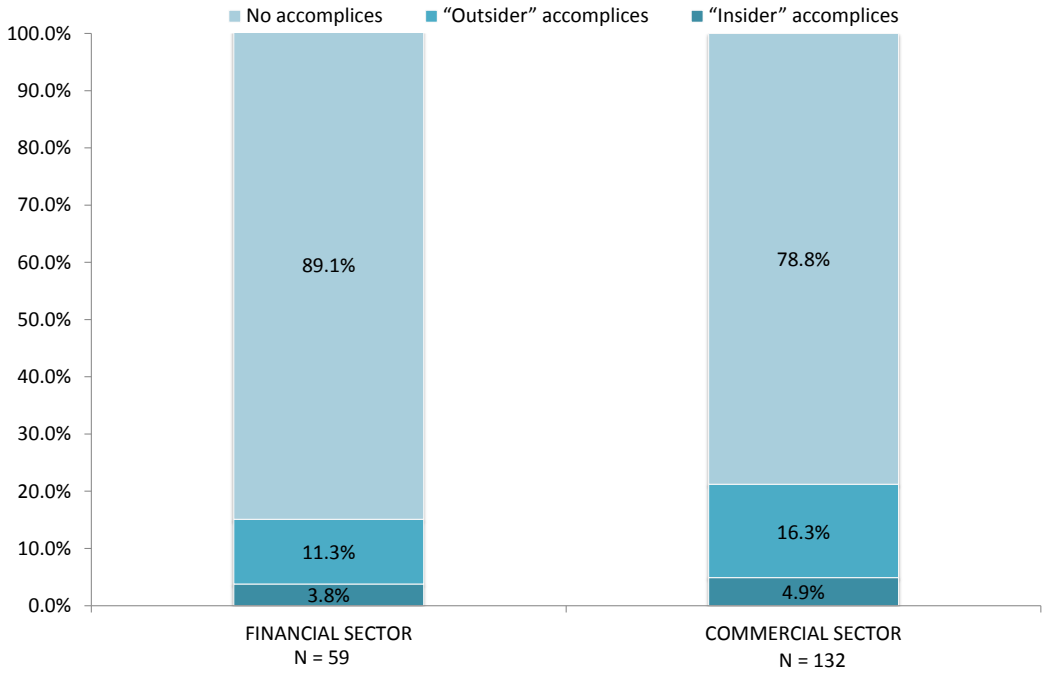
[212] Weighted data.

[213] Weighted data.

When analyzing the time of perpetration of the offence by type of crime, in both sectors and for both theft and fraud, the crime was committed during working hours. However, in the financial sector the share of theft committed outside the working hours is higher than in the commercial sector.
Considering the results of the previous analysis on the place of perpetration, it can be hypothesized that these offences, perpetrated outside the working hours, are those committed outside their own department. Indeed, in order to commit crimes in another department (which is not familiar to the employee), it is more likely to do it outside the working hours while the colleagues are absent, especially if committing a theft.

2.2.3 Act committed alone or with accomplices

Figure 102 - Presence of accomplices during the perpetration of the offences by economic sector. %[214] of the total number of businesses victimized at least once between 2008 and 2010 in each sector

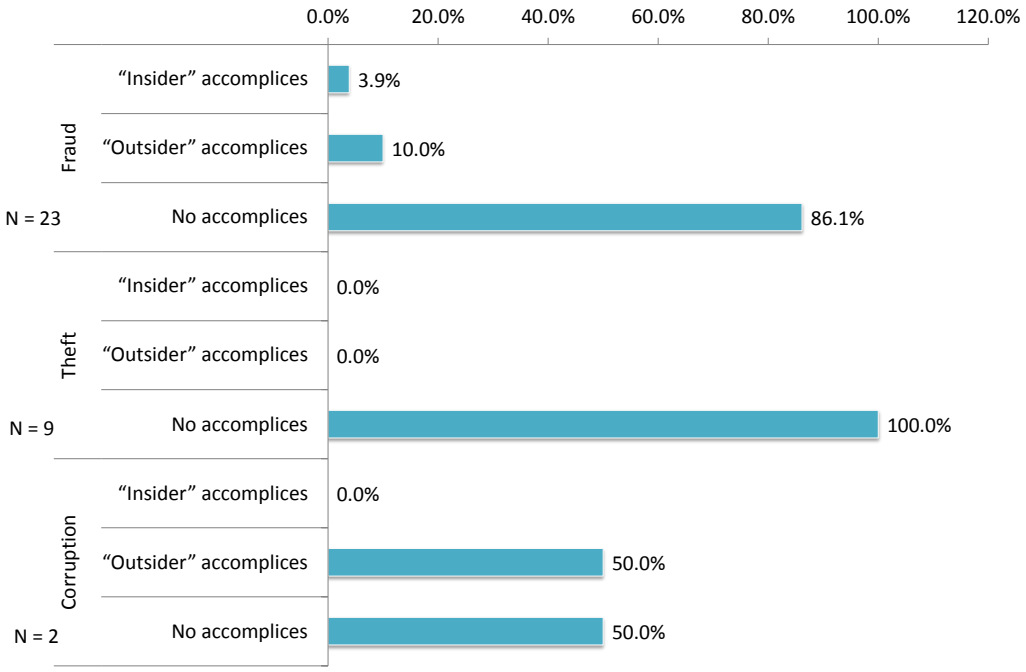


In the majority of cases[215] the offender commits the offence alone (89.1% in the financial sector and 78.8% in the commercial one).
The highest percentage of offences committed with the involvement of accomplices, either insider or outsider, is recorded in the commercial sector (21.2%). When accomplices were involved, they were mainly persons outside the business (16.3% in the commercial sector and 11.3% in the financial sector).

[214] Weighted data.

[215] This information was collected only for cybercrime, fraud, theft and „other offences".

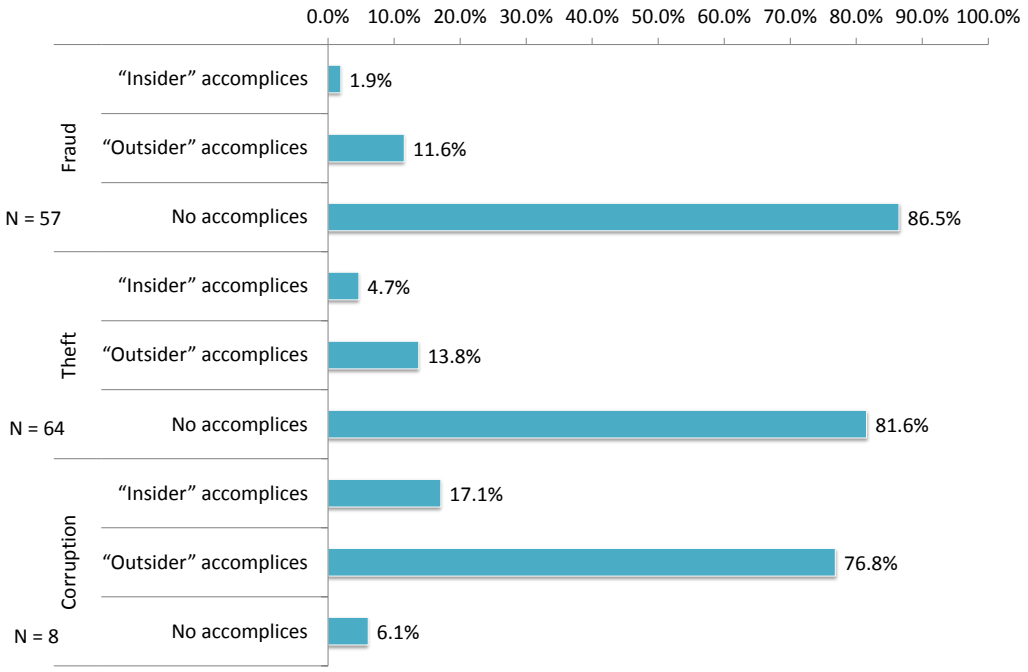
Figure 103 - Presence of accomplices during the perpetration of the offences by type of offence in the financial sector. %[216] of the total number of businesses victimized at least once between 2008 and 2010 in the financial sector



The Figure above shows that among financial firms, the majority of cases of fraud and theft were committed by one employee alone (86.1% and 100%), while, in the case of corruption the act was committed by the employee together with external accomplice.

[216] Weighted data.

Figure 104 - Presence of accomplices during the perpetration of the offences by type of offence in the commercial sector. %[217] of the total number of businesses victimized at least once between 2008 and 2010 in the commercial sector

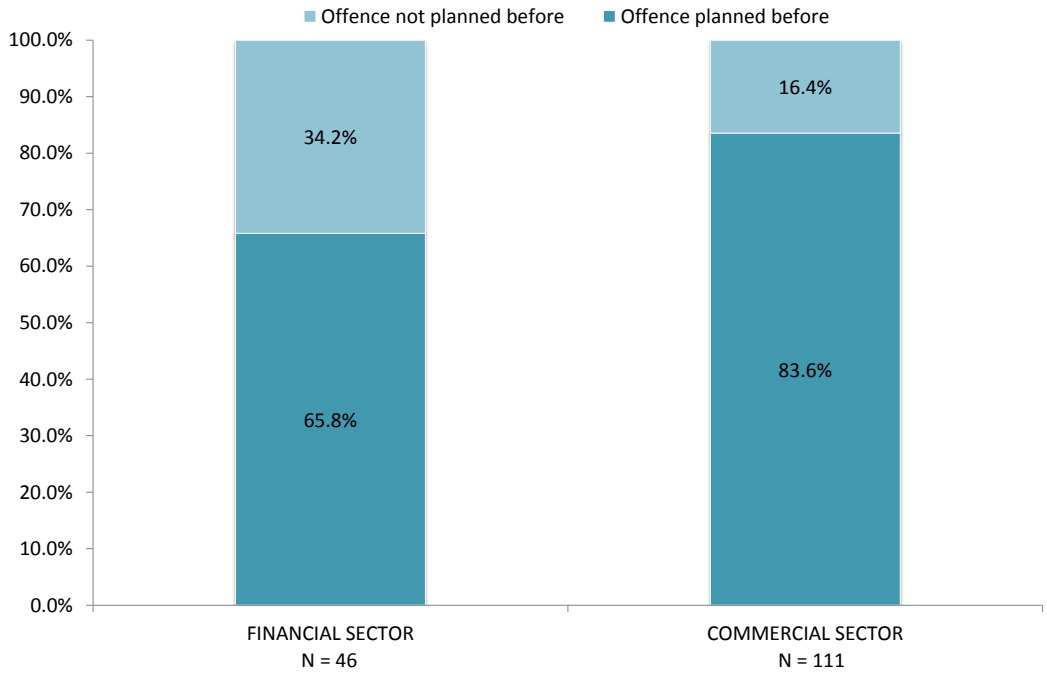


Also among retail stores, the majority of cases of fraud and theft were committed by one employee alone (86.5% and 81.6%), while, in the case of corruption 76.8% of the cases were committed together with external accomplices. Even if the total number of cases is quite low (N = 8), this information is interesting because it reflects the characteristics of the crime itself and the involvement of a third party in the act of corruption: "bribe a third party in order to obtain a favor for the company; or accept a bribe to favor a third party to the detriment of the company".

[217] Weighted data.

2.2.4 Premeditation of the act

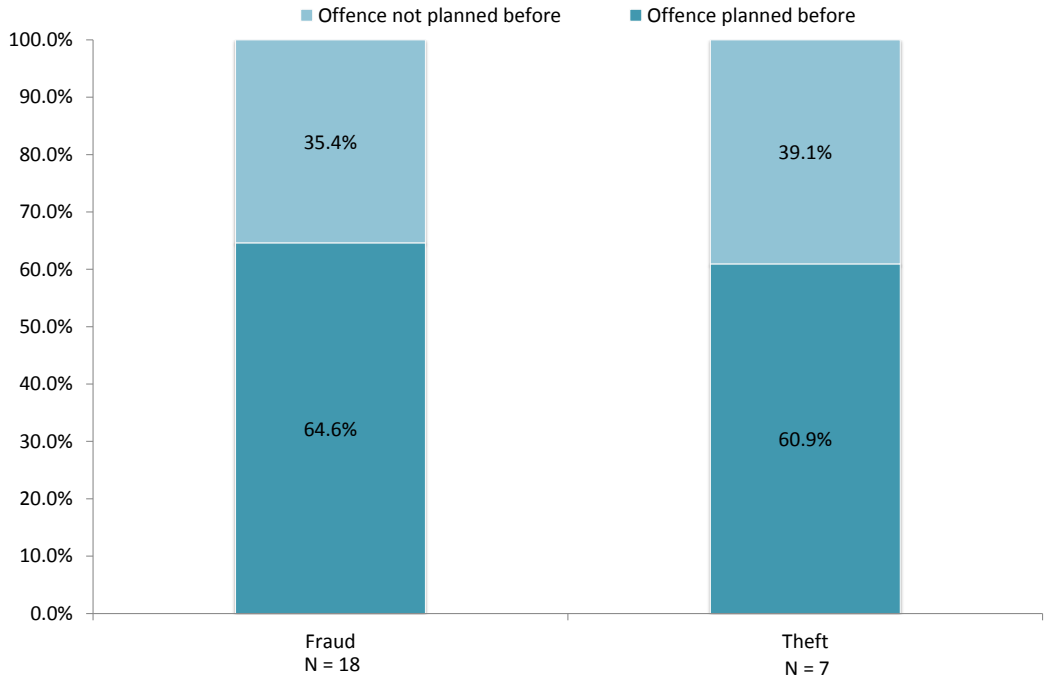
Figure 105 - Premeditation of the offences by type of sector. %[218] of the total number of businesses victimized at least once between 2008 and 2010 in each sector



According to the opinion of the business managers interviewed, in the financial sector 65.8% of the offences was planned long before the commission, and the same is observed in the commercial sector (83.6%).

[218] Weighted data.

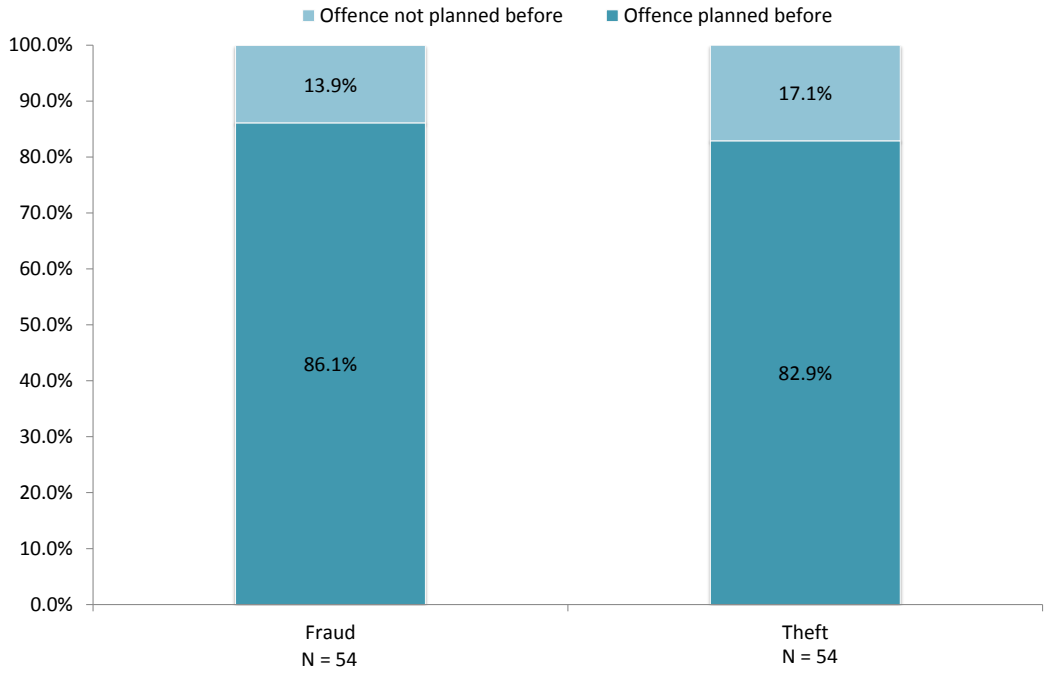
Figure 106 - Premeditation of the offence by type of crime in the financial sector. %[219] of the total number of businesses victimized at least once between 2008 and 2010 in the financial sector



Analyzing the percentage of offences premeditated in the financial sector, it emerges that a high share of both fraud and theft were not planned long before. If theft appears as the type of crime less premeditated in the financial sector, a fraud requires a better and longer planning.

[219] Weighted data.

Figure 107 - Premeditation of the offence by type of crime in the commercial sector. %[220] of the total number of businesses victimized at least once between 2008 and 2010 in the commercial sector



In the commercial sector the percentage of both fraud and theft premeditated is definitely higher than among financial companies. Indeed, only 13.9% of frauds and 17.1% of theft were not planned in advance.

[220] Weighted data.

2.3 Summary of the main results on the profile of the offenders

On the basis of the results of the descriptive analysis developed in the previous two sections, the following paragraphs summarize the main characteristics and modus operandi of the offenders, by economic sectors and by type of crime.

2.3.1 Characteristics of the offenders by economic sector

The Table below shows the most frequent characteristics of the employees who committed the most serious incident, among all types of crime included in the survey and experienced by businesses from 2008 to 2010.

Table 73 - Characteristics of the offenders by economic sector. %[221] of the number of businesses victimized at least once between 2008 and 2010 in each sector

Characteristics of the offenders	FINANCIAL SECTOR	COMMERCIAL SECTOR
Gender	**Male** (64.6%; N=77)	**Female** (52.1%; N=185)
Age	**31-40 years** (33.0%; N=92)	**20-30 years** (29.6%; N=185)
Level of education	**Professional degree / Apprenticeship** (51.3%; N=91)	**Professional degree / Apprenticeship** (54.9%; N=177)
Nationality	**Swiss** (72.9%; N=95)	**Swiss** (64.4%; N=190)
Marital status	**Married** (60.0%; N=93)	**Single** (40.0%; N=183)
Department	**Accounting department** (57.6%; N=48)	**Sale department** (95.3%; N=143)
Years of service	**1-3 years** (37.6%; N=25)	**1-3 years** (38.2%; N=52)
Hierarchical position	**Employee** (46.0%; N=87)	**Employee** (67.4%; N=181)
Salary	**More than CHF 100,000** (49.4%; N=79)	**CHF 30,000-50,000** (29.8%; N=178)
Reason for committing the offence	**Greed** (24.9%; N=145)	**Difficult financial situation** (24.7%; N=243)
Stressful events	**Family issues** (23.7%; N=29)	**Family issues** (32.6%; N=35)
Suspected addiction	**Alcohol** (46.7%; N=10)	**Alcohol** (32.3%; N=24)

In the financial sector, offenders tend to be Swiss male employees, between 31 and 40 years old, holding a professional degree or an apprenticeship, married, working for the company between one and three years, belonging to the accounting department, not in a high hierarchical position, with an annual salary of more than CHF 100'000 and committing the offence out of greed.
While, in the commercial sector the offenders tend to be Swiss female employees, between 20 and 30 years old, with a professional degree or an apprenticeship, single, working in the sale department

[221] Weighted data.

between one and three years, not in high hierarchical position, earning between CHF 30'000 and 50'000 per year and committing the offence because of a difficult financial situation.

It is interesting to notice that there are some relevant differences between the profiles of the offenders in the two economic sectors, which are strictly associated with the characteristics of the workforce in each sector but which could also suggest how to orient the application of specific measures of prevention in each sector.

In particular, the prevalence of female offenders in the commercial sector could be related to the fact that, in this sector, 54.4% of the workforce is female, while in the financial one, only 43%.

Offenders in the commercial sector tend to be younger than those in the financial one, and this could also be due to a majority of employees between 20 and 30 years old hired in the commercial sector.

The difference in the department where the offenders were working is also strictly associated to the fact that in the commercial sector the majority of the employees work in the sales department.

However, the variations in the motives of the act are more peculiar. In the financial sector, where the average annual salaries are higher and where the companies usually manage important amounts of money and assets, the most frequent reason is greed. While, in the commercial sector, the motive is mostly related to a difficult financial situation of the employee or of his/her family, especially considering that the majority of offenders are mainly single women. This could also be one of the reasons why the most frequent type of crime in this sector is theft; indeed, it provides the offender with an immediate and quick benefit. Meanwhile, in the financial sector the most frequent crimes are fraud and unfair competition which are more elaborated crimes the offender could not immediately benefit any advantage.

2.3.2 Characteristics of the offenders by type of crime and economic sector

The Tables below suggest that there is a specific profile of offender for each specific type of crime. The most evident differences in the characteristics of the offenders emerge between theft and unfair competition.

Table 74 - Characteristics of the offenders of specific types of crime in the financial sector. %[222] of the number of businesses victims of at least one of each of these crimes between 2008 and 2010

Characteristics of the offenders in the FINANCIAL SECTOR	THEFT	FRAUD	UNFAIR COMPETITION
Gender	**Female** (56.3%; N=9)	**Male** (50.5%; N=24)	**Male** (63.1%; N=18)
Age	**20-30 years** (50.9%; N=9)	**20-30 years** (37%; N=24)	**31-40 years** (43.3%; N=18)
Level of education	**Professional degree / Apprenticeship** (72%; N=9)	**Professional degree / Apprenticeship** (45.3%; N=21)	**University degree** (54.1%; N=18)
Nationality	**Swiss** (53.6%; N=9)	**Swiss** (72.2%; N=24)	**Swiss** (77.2%; N=18)
Marital status	**Single** (28.5%; N=9)	**Married** (53.4%; N=24)	**Married** (76.8%; N=18)
Department	N.A.	**Accounting department** (73.8%; N=21)	**Accounting department** (49.1%; N=15)
Years of service	**1-3 years** (65.6%; N=9)	**1-3 years** (43.7%; N=24)	**1-3 years** (30.3%; N=16)
Hierarchical position	**Employee** (75.4%; N=9)	**Employee** (45.6%; N=24)	**Owner/partner/Member of the Admin. Board** (30.3%; N=15)
Salary	**CHF 50,000-75,000** (74.5%; N=9)	**CHF 50,000-75,000** (39%; N=23)	**More than 150,000** (36.5%; N=17)
Reason for committing the offence	**Difficult financial situation** (34.4%; N=14)	**Greed** (24.5%; N=39)	**Greed** (25.8%; N=36)

In the financial sector the most evident differences relate to the offenders of theft and unfair competition.
Indeed, while the majority of frauds and unfair competition's incidents have been committed by male offenders, in the case of theft, they are mainly females, single, earning between CHF 50,000 and 75,000 and in a difficult financial situation.
The offenders of unfair competition are older than those of fraud and theft, more educated, in a higher hierarchical position and they earn up to three times more.

[222] Weighted data.

Table 75 - Characteristics of the offenders of specific types of crime in the commercial sector. %[223] of the number of businesses victims of at least one of each of these crimes between 2008 and 2010

Characteristics of the offenders in the COMMERCIAL SECTOR	THEFT	FRAUD	UNFAIR COMPETITION
Gender	**Female** (61.1%; N=76)	**Female** (51.5%; N=64)	**Male** (74.3%; N=22)
Age	**20-30 years** (35.8%; N=76)	**20-30 years** (32.4%; N=64)	**31-40 years** (45.5%; N=22)
Level of education	**Professional degree / Apprenticeship** (60.8%; N=72)	**Professional degree / Apprenticeship** (57.2%; N=60)	**Professional degree / Apprenticeship** (41.6%; N=22)
Nationality	**Swiss** (71.4%; N=74)	**Swiss** (64%; N=67)	**Swiss** (52.1%; N=24)
Marital status	**Single** (52%; N=75)	**Married** (39.5%; N=63)	**Married** (75.3%; N=22)
Department	**Sale department** (96.2%; N=65)	**Sale department** (93.6%; N=43)	**Sale department** (89.6%; N=16)
Years of service	**1-3 years** (45.4%; N=75)	**1-3 years** (43.2%; N=63)	**3-5 years** (29.8%; N=20)
Hierarchical position	**Employee** (57.3%; N=75)	**Employee** (64.7%; N=60)	**Employee** (45.6%; N=18)
Salary	**Less than CHF 30,000** (34%; N=75)	**CHF 50,000-75,000** (35.6%; N=61)	**CHF 75,000-100,000** (28.5%; N=20)
Reason for committing the offence	**Difficult financial situation** (32.1%; N=107)	**Difficult financial situation** (25.1%; N=73)	**Revenge** (19.1%; N=33)

Considering the commercial sector, unfair competition and theft are again those offences showing the most peculiar differences in comparison to the "average" profile of the offender.
In particular, even if the majority of offenders for theft and fraud are females, when considering unfair competition, 74% of offenders are males. Moreover they were working for the company for a longer period and they had a salary three times more than that earned by offenders of fraud and theft. The reason for offending is also different; indeed, the most frequent motive is revenge.

[223] Weighted data.

2.3.3 Modus operandi of the offenders by economic sector

The Table below shows the most frequent modus operandi of offenders committing the most serious incident among all types of crime included in the survey and experienced by businesses between 2008 and 2010.

Table 76 - Modus operandi of the offenders by economic sector. %[224] of the number of businesses victimized at least once between 2008 and 2010 in each sector

Modus operandi of the offenders	FINANCIAL SECTOR	COMMERCIAL SECTOR
Place	**Same department where the offender was working** (90.1%; N=71)	**Same department where the offender was working** (90.8%; N=142)
Time	**Working hours** (92.9%; N=53)	**Working hours** (90.8%; N=141)
Alone/with Accomplices	**Alone** (89.1%; N=59)	**Alone** (78.8%; N=132)
Premeditation	**Premeditated** (83.6%; N=46)	**Premeditated** (65.8%; N=111)

With regards to the modus operandi of the offenders, there are no significant differences between the two economic sectors. Indeed, the majority of offenders in both sectors premeditated the act long before, they committed it in the same department where they were working, during working hours and mostly alone.
From this analysis, an offender who tends to be well organized, because of the premeditation of the act, and above any suspicion, because he/she could commit the offence during working hours, in a known environment, emerges.

[224] Weighted data.

2.3.4 Modus operandi of the offenders by type of crime225 and economic sector

As shown in the Tables below, the modus operandi of the offenders in both sectors, and for both fraud and theft, is in line with the average modus operandi discussed in the previous section. The only exception regards corruption in the commercial sector. Indeed, even if the majority of crimes are committed by the employees, alone, this specific offence is committed with external accomplices in 76.8% of the considered cases. This result reflects the characteristics of the crime itself "bribe a third party in order to obtain a favor for the company; or accept a bribe to favor a third party to the detriment of the company".

Table 77 - Modus operandi of the offenders by type of crime in the financial sector. %[226] of the number of businesses victimized at least once between 2008 and 2010 in the financial sector

Modus operandi of the offenders	THEFT	FRAUD	CORRUPTION
Place	**Same department of the offender** (76.4%; N=28)	**Same department of the offender** (95%; N=24)	**N.A.**
Time	**Working hours** (86.9%; N=8)	**Working hours** (96%; N=24)	**N.A.**
Alone/with Accomplishes	**Alone** (100%; N=28)	**Alone** (86.1%; N=23)	**N.A.**
Premeditation	**Premeditated** (60.9%; N=7)	**Premeditated** (64.6%; N=18)	**N.A.**

Table 78 - Modus operandi of the offenders by type of crime in the commercial sector. %[227] of the number of businesses victimized at least once between 2008 and 2010 in the commercial sector

Modus operandi of the offenders	THEFT	FRAUD	CORRUPTION
Place	**Same department of the offender** (90.3%; N=76)	**Same department of the offender** (90.9%; N=63)	**N.A.**
Time	**Working hours** (94.7%; N=75)	**Working hours** (93%; N=63)	**N.A.**
Alone/with Accomplishes	**Alone** (81.6%; N=64)	**Alone** (86.5%; N=57)	**With external accomplishes** (76.8%; N=8)
Premeditation	**Premeditated** (82.9%; N=54)	**Premeditated** (86.1%; N=54)	**N.A.**

[225] Details on the modus operandi of the offenders were asked only for cybercrime, fraud and theft. In the case of corruption it was asked whether the offender committed the offence with accomplices or not. The data for cybercrime are not presented because of the very low number of cases.

[226] Weighted data.

[227] Weighted data.

2.4 Qualitative analyses of employee offences in some large Swiss banks

In this chapter we present in details some data collected from seven large Swiss banks. These banks by the time had accepted to provide us with more thorough information and insight either on the problematic of employee offences, measures of prevention or the victimization of these offences. In order to keep the anonymity of the banks, we will avoid all names and refer to the banks' answers as "Bank 1", "Bank 2", and so on.

2.4.1 Bank 1

The questionnaire was filled out for all the branches and by a mid-level manager.
The bank has more than 500 employees and manages more than CHF 100 million of total revenues.
For the general prevention, the bank has implemented both control strategies and staff-related strategies. Control strategies such as a very hierarchical system of internal functioning, the "four-eyes" principle, regular controls and audits, physical security system, computer security devices, systematic check of new employees before hiring and developing the practice of "whistle-blowers" are present in the bank. Concerning the staff-related strategies, a well-defined code of conducts, a well-defined staff policies and procedures, a clear and easy system of communication between management and employees, a transparency of staff and business management, a good system of salary and an attitude of gratitude toward employees are used in Bank 1. These strategies of prevention are considered to be fairly effective. Only the "four eyes" principles, regular controls and audits, physical and computer security systems are considered very effective.
In the bank, policies of prevention such as a strong commitment to crime prevention, intolerance of irregularities, zero-tolerance philosophy, and organization climate supportive of honesty, integrity values, staff training and education are very developed. The hiring process of check of new employees (calling the former employer, asking for the criminal record and the credit check) is used systematically in this bank.
The answer related to the bank's corporate culture could not be obtained.
Since 2008, the bank has been victim from two to twenty times of fraud, respectively of falsification of accounts or documents, embezzlements, breach of trust/asset misappropriation, as well as from two to twenty times of violations of the bank secrecy.
Three cases of fraud from the most serious one to the least serious incident were reported here in the questionnaire.
The most serious case of fraud is related to embezzlement. A client advisor conducted unauthorized and fraudulent activities to the detriment of clients. He compensated without the agreement of the authority, the management board and the clients for investments losses by transferring assets from other "shadow accounts". This incident was considered particularly serious as it damaged the image and the reputation of the bank and caused an important financial impact which was more than CHF 500'000. The incident was discovered thanks to internal controls. The author of this incident was male, Swiss, married, between 51 and 60 years old, with children. He held a professional degree. He had acted alone without any help of accomplices, during working hours and the offence occurred within his department. The motive was probably due to his difficult personal financial situation. The offence however did not seem to be planned in advance. He was a client advisor in the mid-level management position, who had been working for the bank for more than ten years. He was considered a fairly conscientious employee. His annual salary was more than CHF 150'000. After the

incident, the department had tightened internal and operational controls. The author of the offence was dismissed and the incident was reported to the authorities.
The least serious incident reported was the cash theft committed by an employee who took money from the cashier while her colleague was having a coffee break. Even though the offence was qualified as the least serious, it still had a negative impact on the image and reputation of the bank, not to mention a financial impact. The offence was discovered because the employee had admitted the act. The financial damage was estimated to be up to CHF 5'000 and 10'000. The offender was female, Italian, in couple, between 31 and 40 years old, no children. She possessed a professional degree. She acted alone, during the working hours, in her own department. The offence was not planned in advance. The motives for committing the act were due to her difficult financial situation and the one of her relatives. She was an employee with more than ten years in the bank, working in the client advisory department, with a salary between CHF 75'000 and 100'000.- . She was known to have had a very good relationship with colleagues and to have been a conscientious employee. Apparently she had not been going through a stressful event in her life.
The third case considered as an average case was also an embezzlement from an employee who had transferred money from the company account to his private account. The amount transferred was estimated between CHF 10'000 and 50'000 CHF. The act was discovered thanks to internal controls. The offender was male, Swiss, married, between 31 and 40 years old, with children, with a professional degree. The act was committed within his department, during the working hours. He was in a difficult financial situation by the time. He was working for the accounting department for more than ten years and occupied a mid-level management position. He was known to have had a very good relationship with his former colleagues and to have been a conscientious person.

2.4.2 Bank 2 (Cantonal bank)

The questionnaire was filled out by an upper-level manager (Director).
The bank employs more than 500 employees and has a total of revenues between CHF 50 and 100 million.
The bank has implemented the "four eyes" principle, regular controls and audits, physical and computer security devices as well as an systematic check of new employees at the time of hiring. The staff-related strategies used are well-defined codes of conduct and well-defined staff policies and procedures. A very hierarchical system of internal functioning is considered fairly effective as well as the following strategies: computer security devices, systematic check of new employees, "whistle-blowers" practices, transparency of staff and business management, good system of salary. Strategies which are found to be not very effective are more staff-oriented strategies such as well-defined codes of conduct, well-defined staff policies and procedures, a clear system of communication between management and employees and a grateful attitude towards employees. However the "four-eyes" principle, regular controls and audits, and physical security system (anti-theft devices, alarms, etc.) are considered highly effective measures of prevention.
In the bank 2, intolerance of irregularities policy is very developed. A strong commitment to crime prevention, staff training as related to crime prevention, effective lines of communications between management and employees, the zero-tolerance philosophy (all infractions even minor ones will be dealt with officially) are only fairly developed. It is thought that the non-existent or weak internal control and risk assessment system as well as some external factors (weak economy, unemployment, etc.) and internal factors (lack of strong management, incompetence) could facilitate the commission of violations or crimes by employees.

During the hiring process, calling the previous employer to obtain further information is used systematically in the bank, but not asking for a criminal record and running a credit check on the new employee.
The bank has adopted a corporate culture with emphasis on productivity, task and objective accomplishments and competitive spirit.
The bank has experienced offences committed by employees during 2004 and 2005 but not during 2008 and 2010.

2.4.3 Bank 3 (Cantonal bank)

The questionnaire was filled out by an upper-level manager (Director).
The bank employs between 250 and 500 employees and its total of revenues sums up to CHF 50 – 100 million.
The bank has adopted all the staff-oriented strategies and control strategies with the exception of the systematic check of new employees before hiring and the "whistle-blowers" practice. These two strategies are also considered as not very effective as opposed to other strategies. The bank expressed the feeling that the strategies once implemented could create a climate of mistrust, yet their efficiency is not necessarily guaranteed.
Concerning the policies of prevention, the bank has so far not encouraged at all employees to report all incidents or used any identity check before hiring new employees. The staff training and education, a strong commitment to crime prevention, an organizational climate supportive of values such as honesty, integrity, an effective line of communication between staff and management are fairly developed in the bank. Non-existent or weak internal controls are considered factors contributing to the commission of employee offences.
The bank has adopted a competitive spirit as corporate culture with emphasis on productivity and accomplishments.
The bank has not been affected by violation of crime committed by an employee between 2008 and 2010.

2.4.4 Bank 4

The questionnaire was filled out by an upper-level manager.
The bank employs more than 500 employees and its total of revenues is more than CHF 100 million.
The bank had been victim of cash theft (two to five times), cheating on working hours, vacations days (six to twenty times), fraud/breach of trust, asset misappropriation (two to five times), cybercrime/access with data theft (once), cybercrime/abuse of the system for personal reasons (six to twenty times), extortion (two to five times).
The most serious offence reported to us in the questionnaire is the asset misappropriation fraud which had caused a serious financial impact. The fraud consisted of using false signatures to transfer and steal the money. The offence was discovered by the client of the bank. The amount of the fraud summed up to CHF 1 million. However the staff of the bank was not informed of the incident. The fraud was reported to the Head Office of the bank. After thorough internal investigations, legal actions were taken and the offender was immediately dismissed.
The author of the fraud was male, Swiss, between 31 and 40 years old. He had completed a banking apprenticeship. The fraud was committed without accomplices, during the working hours, in the

department where the author was working, which is the asset management department. According to the Management, the fraud was planned long time in advance. Besides greed, the offender was also in a personal difficult financial situation.
The offender had been working for the bank less than one year. He was a mid-level manager and had a position where he could work alone most of the times. He had operational access to all levels of information and data in the bank. He had an annual salary between CHF 100'000 – 150'000. He was not considered as a very conscientious employee and seemed to have a fair relationship with colleagues. He did not get any promotion since his initial appointment. He seemed to have gone through some debts and financial loss. He did not seem to have any other addictions.
Before the incident, the bank has been implemented the following control measures such as the "four-eyes" principle, regular controls and audits, physical security system and computer security devices. As relating to the staff-oriented measures, the bank has adopted well-defined codes of conduct, well-defined staff policies and procedures, transparency of staff and business management, a good policy of salary. No new measures of prevention were implemented after the incident because the management board thinks that the efficiency of new measures is not necessarily guaranteed.
Weak controls, a lack of a risk assessment system as well as the presence of some factors such as a weak economy, high rate of unemployment, lack of management, incompetence are considered as factors facilitating the commission of violations or employee offences.
At the moment of the interview, all of the above-mentioned were still present in the bank with even a systematic check of new employees at the time of hiring. Asking for the criminal record of prospective employees and calling the former employer for further information are also used systematically.
The bank has adopted a corporate culture based on the application of rules and formal policies in order to maintain the good operation and stability of the bank. However, the managers also put the emphasis on loyalty and tradition with a family spirit commitment.

2.4.5 Bank 5 (Cantonal bank)

The questionnaire was filled out by an upper-level manager (Director).
Bank 5 employs more than 250 employees, located downtown, with a surface of more than 1000 m2. The total of revenues of the bank exceeds CHF 100'000.-
The bank has been victim of fraud, in particular breach of trust/asset misappropriation, six to twenty times since 2008.
The most serious offence shared is the fraud. This act has been considered as serious because it had caused damages to the image/reputation as well as the functioning of the bank, loss of trust among employees. Money was stolen and transferred to private account using fake signatures. The offence was discovered when the client checked his account statement. The amount of the fraud was estimated between CHF 500'000 – CHF 1 million. The staff of the bank was duly informed of the fraud. The incident was then reported to the FINMA, the Head Office as well as the police. Legal actions were taken after internal investigations and the offender was immediately dismissed.
The author of the fraud is male, Swiss, married, between 31 and 40 years old, with no children. He had a banking apprenticeship as education. The act was committed without accomplices, during the working hours, in his department. The fraud was a long planned in advance act. The motives of the author were unknown. He was working by the time in the investment advisory department. He had been working for the bank for three years and occupied a mid-level management position. He used to work in a team. He had access to data and information at all levels in the bank. His annual salary was between CHF 75'000 – 100'000 and had not gotten any promotion since his appointment. He was

considered to have had a very good relationship with his colleagues and a fairly conscientious employee. He did not seem to have any particular addiction.
The bank has adopted all control and staff-oriented measures suggested in the questionnaire (four-eyes principle, regular controls and audits, security system, computer security devices, well-defined codes of conduct, well-defined staff policies and procedures, good system of salary, gratitude towards employees for their work and efforts). After the incident, the bank had employed more strict and more regular controls and audits. Since then, no new incident was reported. The mentioned measures of prevention at the moment of the interview were still present in the bank.
During the hiring process, it is known that the bank systematically asks for the criminal record as well as a credit check on the new employee. Calling the former employer is also used but in a less systematic way.
The bank opted for corporate culture based on tradition and loyalty with emphasis on a family spirit and a strong moral cohesion within the bank.
Weak controls and a lack of gratitude toward employees are considered to be the trigger of violations and employee crimes.

2.4.6 Bank 6 (cantonal bank)

The questionnaire was filled out by an upper-level manager (Director).
The bank has more than 500 employees and a total of revenues of more than CHF 100 million.
In terms of general prevention, the bank has implemented all the control and staff-related measures suggested in the questionnaire with the exception of a well-defined code of conduct.
The following measures are considered very effective: "four-eyes" principle, regular controls and audits, security system, computer security devices, well-defined staff policies and procedures, clear and easy system of communication between management and staff, gratitude towards employees for their work and efforts. A very hierarchical system of internal functioning, a systematic check of new employees at the time of hiring, encouragement and protection of "whistle-blowers", transparency of staff and business management, good salary system are strategies which are considered fairly effective. Having well-defined codes of conduct is said to be not effective at all. This interesting remark however has not been explained by the respondent.
In the bank intolerance of irregularities and effective line of communication between management and staff are very developed, as opposed to the zero-tolerance policy which is not at all developed. A strong commitment to crime prevention, a supportive organizational system for honesty, integrity and equality, staff training and education are policies which are only fairly developed.
Non-existent or weak internal controls and a weak risk assessment system, lack of management, incompetence, and lack of gratitude towards employees are factors which might facilitate the commission of violations or employee crimes according to the respondent.
The bank uses systematically all the hiring procedures to check new employees (asking for a criminal record, calling the former employer, running a credit check).
The corporate culture adopted in the bank emphasizes on a competitive spirit, focused on productivity and objective accomplishments.
¨The bank has experienced several types of offences since 2008, in particular corruption (accepting a bribe to favor a third party to the detriment of the bank – two to twenty times), unfair competition (unlawfully diverting clients from the bank, two to twenty times), and violation of bank secrecy (two to twenty times). However these cases are considered as minor cases.

The most serious offence reported here is a case of money laundering. An employee directed transactions over accounts of several clients. The offence was discovered thanks to a denunciation of other employees and had caused damages to the bank as related to the image and reputation as well as a financial impact. The cost of the offence was estimated more than CHF 500'000.-
The author of the act was male, Italian, married, between 41 and 50 years old, with children. His level of education was a professional degree in banking. The act was committed during working hours with help with outsider accomplices. The motive of the act was greed. He used to work in the private banking. He had been with the bank for one to three years and occupied a mid-level management position. He did have an operational access to all levels of information and data in the bank. He had received a promotion since his initial appointment. He was described to be a fairly conscientious employee with a very good relationship with his colleagues.
According to the respondent, the following attitudes could be applied to the author: acting impulsively, thinking more of himself than of other persons, getting angry easily rather than discussing calmly when facing difficulties, lying.
Before the incident, the bank had already implemented the following measures of prevention, in particular the "four-eyes" principle, regular controls and audits, security system, computer security devices, systematic check of new employees, well-defined staff policies and procedures, clear and easy system of communication, transparency of staff and business management, good system of salary, gratitude towards employees. Since the incident, the bank has enhanced the controls and particularly has adopted a very hierarchical system of internal functioning (each operation has to be verified and approved at every level). Since then, no new incident was detected.

2.4.7 Bank 7

The questionnaire was filled out by an upper-level manager (Director).
The bank employs more than 500 employees with a total of revenue over CHF 100 million.
For the general prevention, the bank has implemented all the control measures suggested in our questionnaire except for a very hierarchical system of internal functioning, a systematic check of new employees. Staff-oriented strategies such as well-defined staff policies and procedures, a clear and easy system of communications between management and employees, good system of salary, gratitude towards employees, were also present in the bank. The physical security system (alarms, anti-theft devices) is considered very effective while well-defined codes of conduct and other staff-oriented strategies are not very effective according to the respondent.
The bank has fairly developed some of the following policies: a strong commitment to crime prevention, intolerance of irregularities, organizational climate supportive of values such as honesty, integrity, convey to staff what is unacceptable conduct, effective line of communication between management and employees, staff training and education. The zero-tolerance philosophy and the systematic check of new employees are not very developed in the bank.
Non-existent or weak internal controls might facilitate the commission of violations or crimes by employees according to the respondent.
In this bank, during the process of hiring new employees, asking for the criminal record of the person, running the credit check on the person are rarely if not even never used. Calling the previous employer is used sometimes.
The corporate culture based on loyalty and tradition with a strong family spirit seems best define the bank.

In terms of victimization of employee offences, the bank has experienced since 2008 some violations: fraud (falsification of accounts and documents, embezzlement) two to twenty times, and once a violation of the bank secrecy.
The most serious incident reported in the questionnaire is the fraud, in particular embezzlement. A manager manipulated and transferred money from the client's account to his private account. This incident had a serious financial impact as well as a reputational impact on the image of the bank. The amount of the damage was estimated over CHF 500'000.-. The fraud was accidentally discovered.
The offender was male, Swiss, married, between 41 to 50 years old. He got a professional banking degree. The act was committed without any accomplices, during the working hours and within his department which is the investment advisory desk. The wrongdoer seemed to have had a difficult financial situation. He also committed the act to fulfill the wishes of his children. He had been working for the bank for more than ten years and occupied a mid-level management position. He indeed had access to all levels of information and data in the bank. He also got a promotion since his initial appointment with the bank. He was known to have had good relationship with his colleagues and to have been a conscientious person. He did not have any addiction problems. He was dismissed after the incident. No information was given related to whether the offence was reported to the police or not.
Before the incident had happened, the bank had already implemented the following measures of prevention: "four-eyes" principle, regular controls and audits, security system (alarms, cameras), computer security devices, clear and easy system of communication between management and staff, gratitude towards employees. No new measures of prevention were implemented after the incident.
The least serious incident was also embezzlement with transfers from the cashier account to private account by pretending that the bank was assaulted. The financial impact was estimated between CHF 100'000 – 500'000. The act was accidentally discovered. The respondent did not mention whether the offence was reported to the police or not.
The author of the offence was male, Swiss, single, between 20 and 30 years old. He had a professional banking degree. He committed the act within his department but not during the working hours. He used to be a cashier with no hierarchical ranking position. He did however have an operational access to all levels of information and data in the bank. Very few information were known on the author.
Another serious act reported in the questionnaire was a case of violation of bank secrecy where an employee of the bank had sent an account statement to a wrong client, revealing by mistake the identity of other clients and in the same way violated the bank secrecy. The act had caused damages to the professional image of the bank. The act was accidentally discovered. The author was unknown.

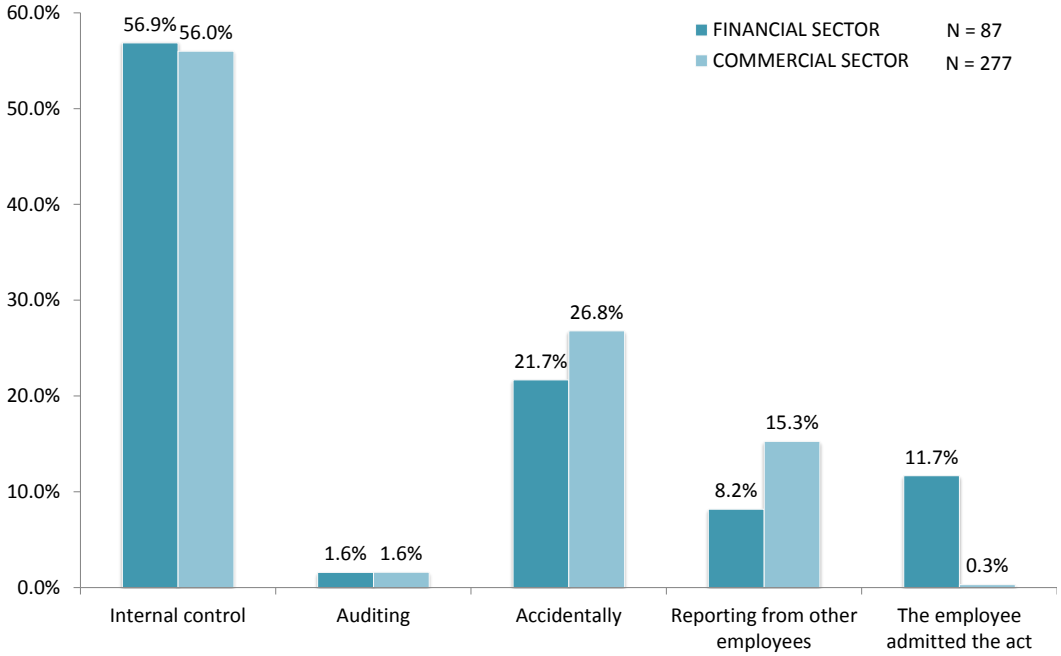
3 Discovery of the offence and Reporting to the relevant authorities

Introduction

This section focuses on how Swiss commercial and financial businesses found out about the offences committed by employees, and on how they reacted to the crimes suffered. It deeply analyzes the level of reporting to the police and the reasons for not reporting. Moreover it identifies the variables affecting the reporting behavior of Swiss companies.
In particular, the section deals with: a) the discovery of the offences experienced between 2008 and 2010; b) the actions taken after the discovery of the offence: reporting to the police, reporting to the FINMA, reporting to the insurance; c) the predictors of the reporting behavior.
The analyses will be mainly presented at the aggregated national level (Switzerland) by economic sectors (commercial and financial).

3.1 Discovery of the offence

Figure 108 - How the offence was discovered by sector. %[228] of the total number of businesses victimized at least once for theft between 2008 and 2010 in each sector

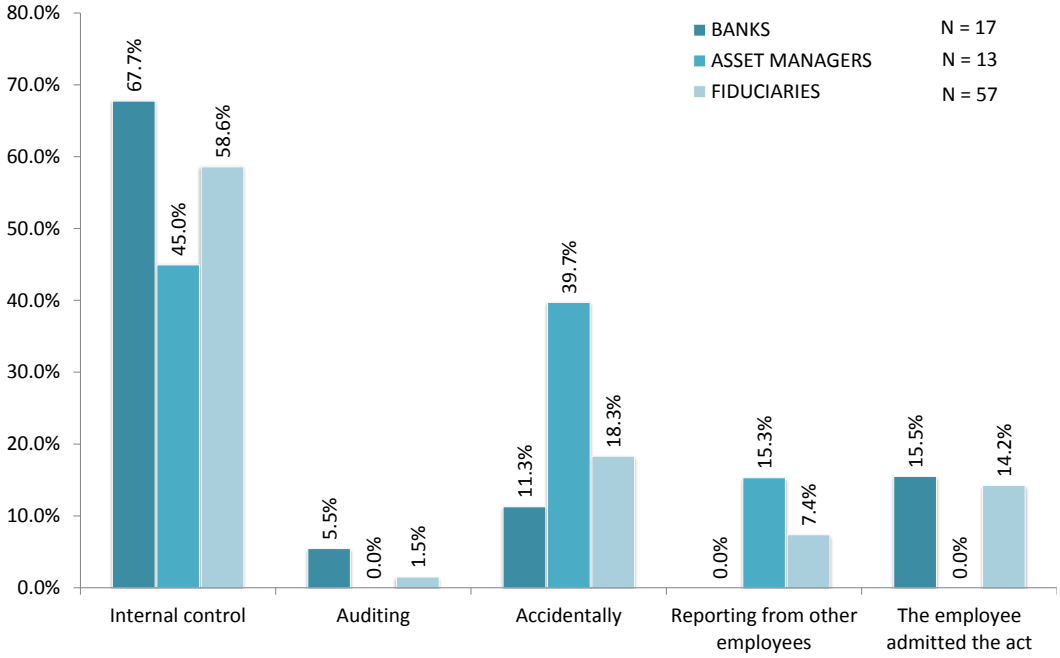


The Figure above shows that, in both sectors, the majority of offences were discovered by internal controls (56.9% in the financial sector and 56.0% in the commercial one), and more than 20% of cases were discovered accidentally (21.7% in the financial sector and 26.8% in the commercial one).

[228] Weighted data.

The main differences between the two sectors are related to the third way of discovering the offence; in the financial sector in 11.7% of the cases the employee admitted the act (vs. 0.3% in the commercial sector), while in the commercial the third most frequent way of discovering the offence (15.3%) was through the denunciation of other employees (vs. 8.2% in the financial sector).
Therefore, among retail stores there are fewer employees who admitted of having committed the offence, but more cases of reporting from other employees.

Figure 109 - How the offence was discovered among businesses in the financial sector. %[229] of the total number of businesses victimized at least once for theft between 2008 and 2010 in the financial sector

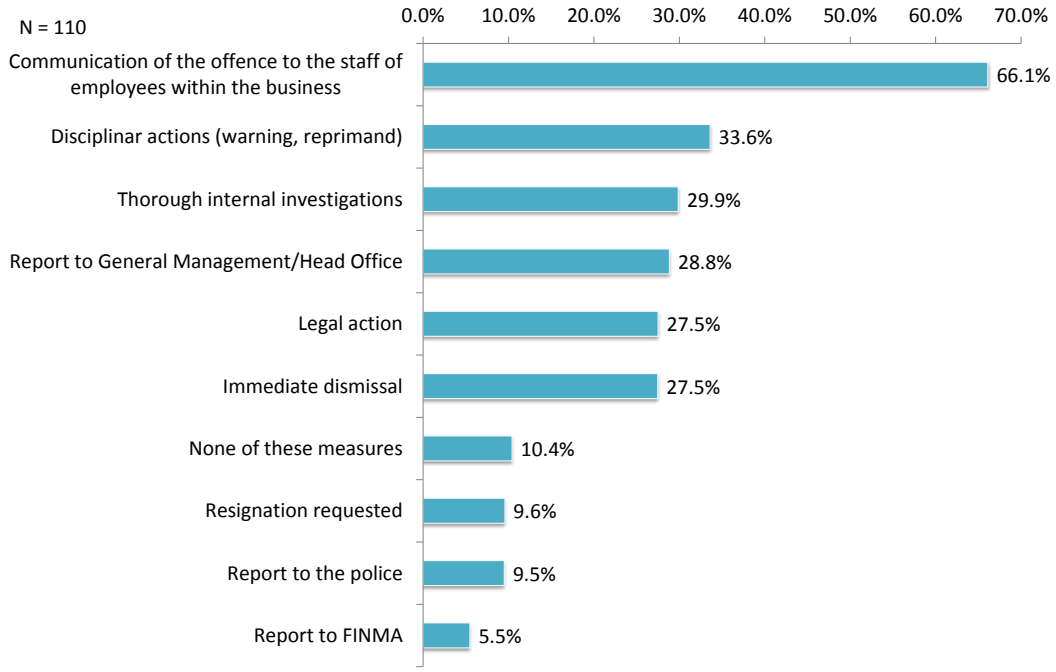


When focusing on financial business, it emerges that the most frequent way of discovering an offence is by internal controls. However, for asset managers and fiduciaries offences are discovered mostly by accident, or reported by other employees; while in banks the confession of the employee is more common.
Perhaps these differences, especially the higher percentages of offences discovered accidentally or reported from other employees in the commercial sector, also have to do with the business "environment". Indeed, in the commercial sector misbehavior is more visible for colleagues than in the financial one, particularly given that the majority of crimes against commercial businesses are theft, while among financial companies are frauds. The commission of thefts produces, indeed, more visible evidences, than the commission of a fraud, which could be noticed by employees.

[229] Weighted data.

3.2 Actions taken after the discovery of the offence

Figure 110 - Actions taken after the discovery of the offence in the financial sector[230] - %[231] of the total number of victims in the financial sector



In the financial sector, once the offence discovered, the most frequent action taken is the communication of the incident to the staff (66.1%), in 33.6% of the cases a disciplinary action has been taken, as well as some thorough internal investigations (29.5%). The offence is also reported to the General Management or the Head Office at a slightly lower percentage (28.8%). A legal action and immediate dismissal have been applied in 27.5% of the companies.
Worth noting the extremely low percentages of reporting to FINMA (5.5%) and to the police (9.5%), which could be explained either by the lack of time of business managers to deal with reporting procedures and/or by fear for the company's reputation (see chapters below for further details on the reasons for reporting and not-reporting).

[230] In relation to this analysis, the financial sector includes Bank headquarters, bank branches, asset managers and fiduciaries.

[231] Weighted data.

Figure 111 - Actions taken after the discovery of the offence by type of businesses in the financial sector[232] - %[233] of the total number of victims in each type of business of the financial sector

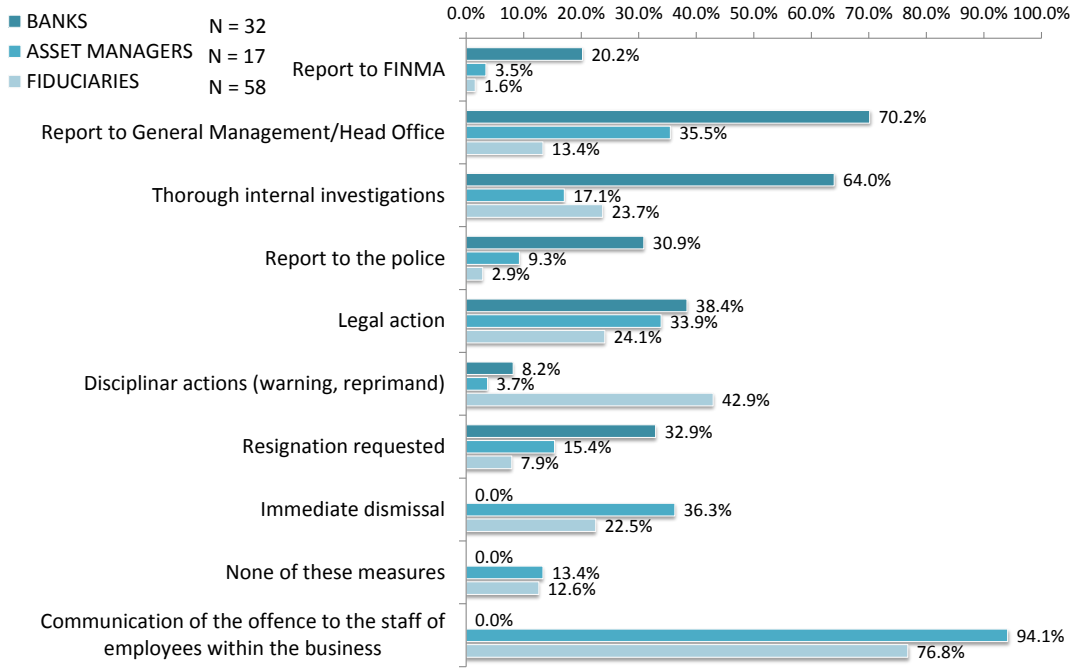
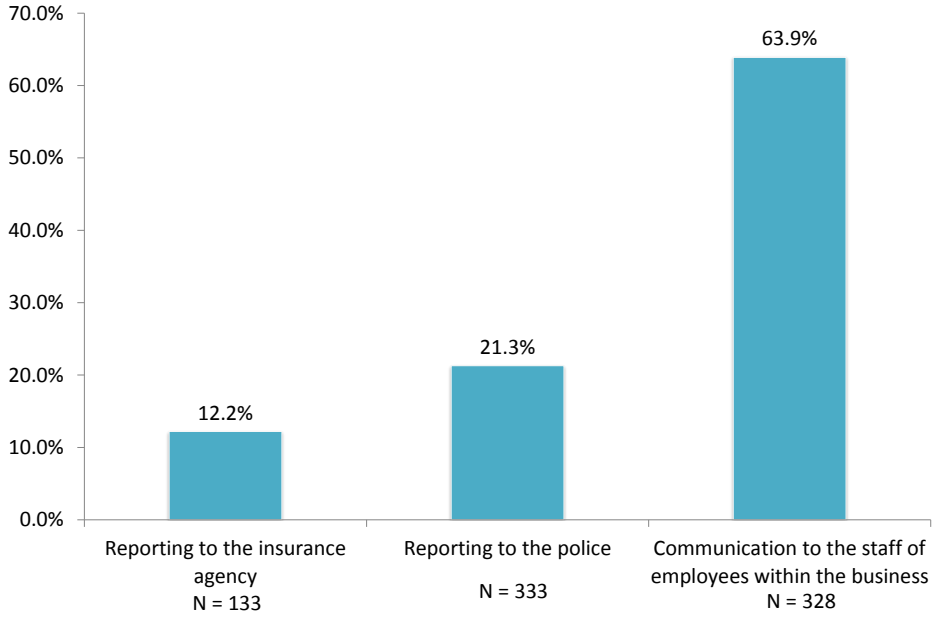


Figure 112 - Actions taken after the discovery of the offence in the commercial sector - %[234] of the total number of victims in the commercial sector[235]



[232] In relation to this analysis, the financial sector includes Bank headquarters, bank branches, asset managers and fiduciaries.

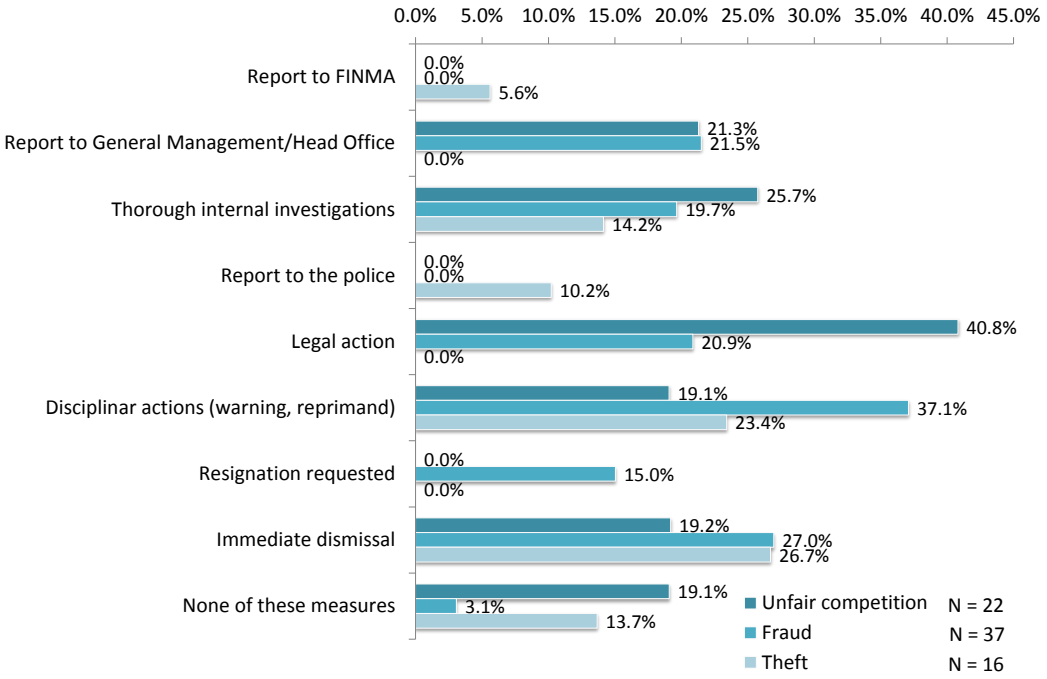
[233] Weighted data.

[234] Weighted data.

[235] The absolute numbers (N) included in this graphs for the "reporting to the police" and the "communication to the staff…" are higher than the total N of business victimized in the commercial sector because for this question multiple answers were allowed. The absolute numbers (N) included in this graphs for "reporting to the insurance agency" is lower than the total number of victims as not all the businesses victimized have insurance.

In the commercial sector, when an offence is discovered, it is communicated in 63.9% of cases, following by 21.3% of reporting to the police. Only 12.2% declared having reported it to an insurance agency.

Figure 113 - Actions taken after the discovery of the offence among asset managers and fiduciaries, by type of crime - %[236] of the total number of victims among asset managers and fiduciaries[237]

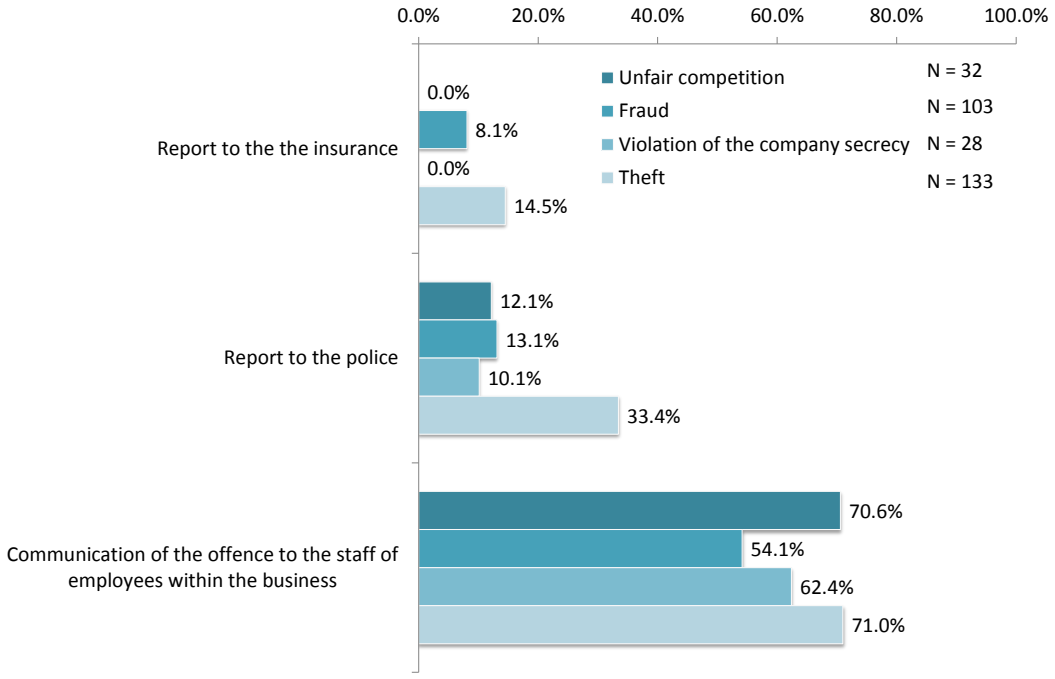


Among asset managers and fiduciaries, once the offence discovered, in 40.8% of the cases of unfair competition, a legal action has been taken by the company; 25.7% of businesses runs thorough investigation and 21.3% reported the crime to the Head Office. In the case of fraud, 37.1% of firms run a disciplinary action, 27% of them immediately dismissed the offender, and 21.5% reported the crime to the General Management. For theft, the most frequent actions taken were an immediate dismissal of the employee (26.7%) and a disciplinary action (23.4%).

[236] Weighted data.

[237] The absolute numbers (N) included in this graphs are lower than the total N of asset managers and fiduciaries victims of each specific type of crime (Tab. 21) due to some non-response.

Figure 114 - Actions taken after the discovery of the offence among businesses in the commercial sector, by type of crime - %[238] of the total number of victims of each specific type of crime in the commercial sector[239]



Theft is mostly communicated to the staff (71%). It is reported to the police (33.4%) and also to the insurance (14.5%). The offence of violation of the company secrecy is the least reported to the police (10.1%). The offence the least communicated to the staff is fraud (54.1%).

[238] Weighted data.

[239] The absolute numbers (N) included in this graphs are lower than the total N of businesses victimized in the commercial sector of each specific type of crime (Tab. 21) because of some non-response.

3.2.1 Reporting to the police

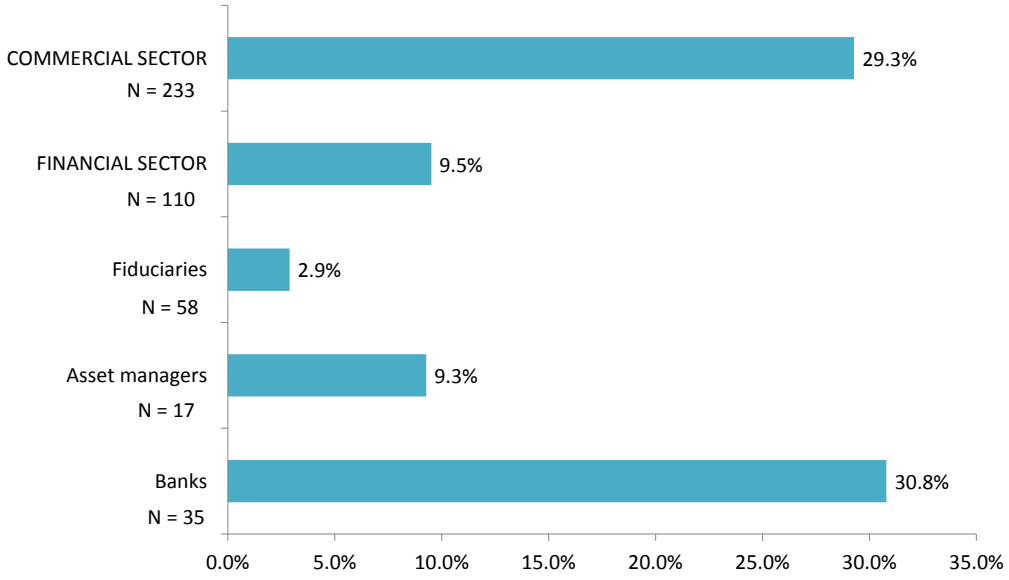
One of the most important advantages of victimization surveys is the possibility to identify and to analyze also the crimes which were not reported to the police (and which are, therefore, not included in police records), and thus to estimate the level of the "dark Figure" (the number of offences not reported to the police forces).
This chapter is specifically focused on the level of reported crimes to the police and on the reasons for reporting or not reporting the offences.
Generally speaking, there are several factors which could affect the propensity of reporting a crime to the police or not:

- ✓ The type and the seriousness of the crime event. For example, usually completed crimes are more reported than attempted ones, as well as those which implied serious consequences for the victim.
- ✓ The amount of damage as a consequence of the crime event (see chapter 3.3). For example, the Italian victimization surveys on individuals, clearly shows that between 60% and 90% of victims tended to report crimes with damages higher than €500[240].
- ✓ The presence of a crime insurance for which a police report is required for obtaining the reimbursement.
- ✓ The level of trust in the work of the police. Previous bad experiences or the perception of police's inefficiency could represent strong disincentives to report the crime.
- ✓ Personal reasons, such as the involvement in the crime commission (e.g. in the case of bribery and corruption or extortion), or, in relation to businesses, the fear for reputational damages and the need to preserve the clients' trust.
- ✓ The awareness of gaining concrete advantages or to avoid specific problems with the reporting to the police, such as the need to see the offender arrested and punished, or the need to retrieve the booty or the documents stolen.

All these aspects will be depicted in the following pages by analyzing the answers of the Swiss companies on the questions related to main reasons for reporting or not reporting the offences.

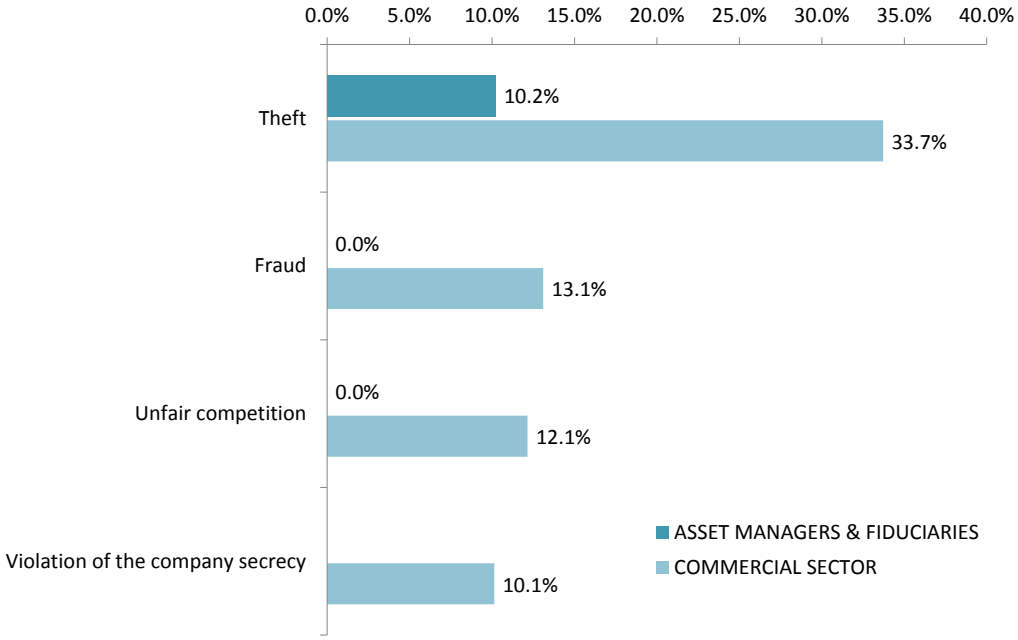
[240] Istat, 2010, *Reati, vittime e percezione della sicurezza*, p.4.

Figure 115 - Reporting to the police by economic sector - % on the total number of victims in each economic sector



The Figure above shows the percentage of victims reporting the crime to the police. The highest reporting rate is registered for the commercial businesses (29.3%), and, within the financial sector, for the banks (30.8%), where the financial impact of crime is probably higher than in other sectors.
This result is in line with similar studies in other countries; the U.S. Chamber of Commerce reported that, in the U.S., 75% of employee-related crimes go unnoticed (Inc. Magazine, 1999). It also demonstrates that crimes against business are very often not reported to the police, and, as a consequence, not properly analyzed and studied.

Figure 116 - Reporting to the police by type of crime and economic sector - % on the total number of victims by type of crime and economic sector



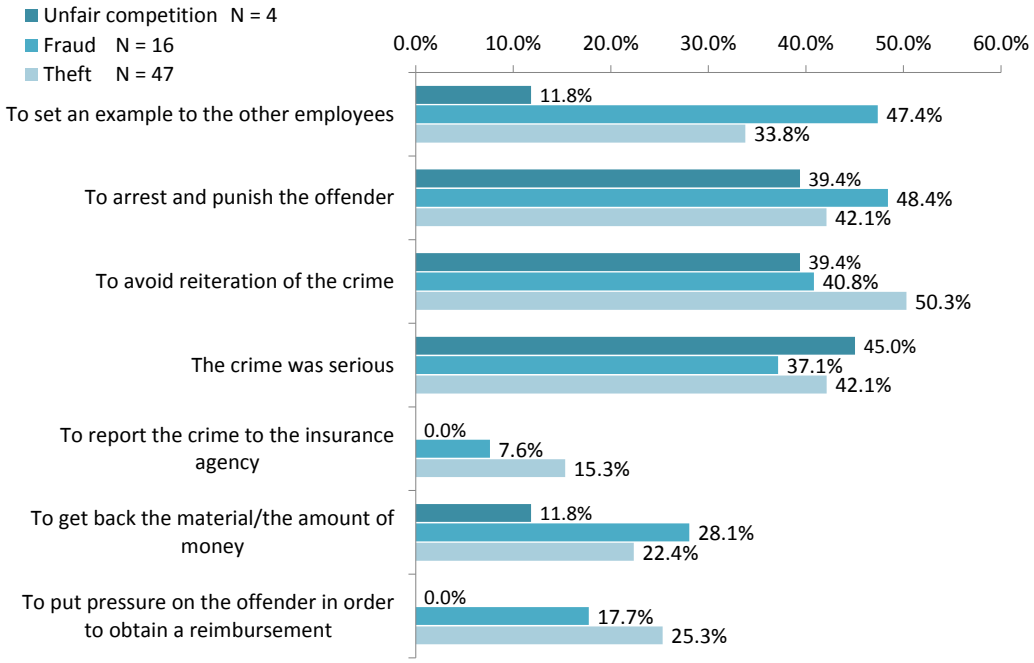
When analyzing the reporting behavior by type of crime, thefts present the highest reporting rate in both sectors. Usually this is due to the fact that a theft is easier to be detected and it displays concrete indications, as something "physical" has been stolen (the money or other objects). Moreover, theft is a type of crime for which businesses are usually insured and this probably explains its higher reporting rates. Indeed, the police report is needed to file the insurance claim. An additional reason could be related to the fact that the disclosure of the incidents of theft does not imply a potential reputational damage as in the case of fraud or unfair competition, and therefore the company is less reluctant to report it.

In the commercial sector 33.7% of businesses have reported theft to the police, while only 10.2% of the financial firms did it.

It is worth noting that no financial business victims of fraud and unfair competition had reported the crime to the police. This finding highlights the fact that businesses prefer to deal with the incident by themselves, through their own internal processes, especially in the case of fraud and unfair competition as in such cases the reputation of the company could strongly be affected. The non-reporting of the offence could also be the way to preserve the clients' trust.

Indeed, according to other surveys' results, crimes committed by employees are the least reported to the police because the companies do not want to disclose their internal problems. The last Commercial Victimization Survey (CVS), carried out on businesses in England and Wales in 2012, shows that only 25% of thefts by employees and around 38% of frauds by employees were reported to the police. In particular, theft by employees is the least reported offence after online crimes (Home Office, 2013, p. 22). Also in Europe, theft and fraud by employees are the least reported to the police, with a rate of 2.6% and 4.8 respectively% (Gallup & Transcrime, 2012).

Figure 117 - Reasons for reporting the crime to the police in the commercial sector[241] - % on the total number of victims in the commercial sector



Among commercial businesses the main reasons of reporting the crime incidents to the police are: the seriousness of the offences, the need to avoid reiteration of the crime and the willingness to arrest and punish the offender.
In particular, 50.3% of the businesses reported the incidents of theft to the police in order to avoid the repetition of the crime, 42.1% reported the incident because it was serious and because they wanted the offender to be arrested and punished. Worth noting is that only 15.3% reported the crimes to the police with the hope to get compensation by their insurance.
In the case of fraud, the majority of the businesses reported it to the police in order to see the offender arrested and punished (48.4%), but also to set an example to the other employees (47.4%).
Only four out of 36 incidents of unfair competition have been reported to the police; the main reason of reporting was the seriousness of the offence (45%). This result also shows that unfair competition is perceived as one of the most serious offences committed by employees.

[241] This information is not available for financial businesses

Table 79 - Reasons for not reporting the crime to the police in the commercial sector[242] - % on the total number of victims in the commercial sector

Reasons for not reporting the crime to the police	Theft	Fraud	Corruption	Unfair competition	Violation of company secrecy
The crime was not so serious	11.5%	**32.5%**	**19.1%**	0.0%	**24.8%**
The offender has been dismissed	**19.8%**	**19.9%**	**31.4%**	**39.8%**	**38.1%**
The offender reimbursed	**36.6%**	12.2%	0.0%	0.0%	0.0%
The police would not have been able to solve the crime	11.3%	14.4%	9.0%	17.5%	11.5%
Previous bad experiences	3.4%	4.5%	0.0%	0.0%	0.0%
Lack of time	11.0%	7.0%	**17.3%**	3.9%	14.6%
Fear of reprisals	0.0%	2.3%	0.0%	0.0%	0.0%
To avoid bad publicity/for the sake of discretion	8.3%	5.0%	6.9%	**21.5%**	9.4%
The business does not have any insurance	2.0%	6.6%	4.5%	10.4%	10.8%
Lack of evidence	**27.5%**	**19.1%**	3.4%	**20.4%**	**23.4%**
To avoid being involved in legal proceedings with the police	6.4%	6.7%	11.1%	5.7%	1.8%
Other	15.9%	14.3%	11.2%	16.9%	18.3%
N	**82**	**80**	**15**	**26**	**25**

The most frequent reasons for not reporting the crime incidents to the police, among commercial companies, are: the dismissal of the employee who committed the crime, the lack of evidence and the lack of seriousness of the crime.

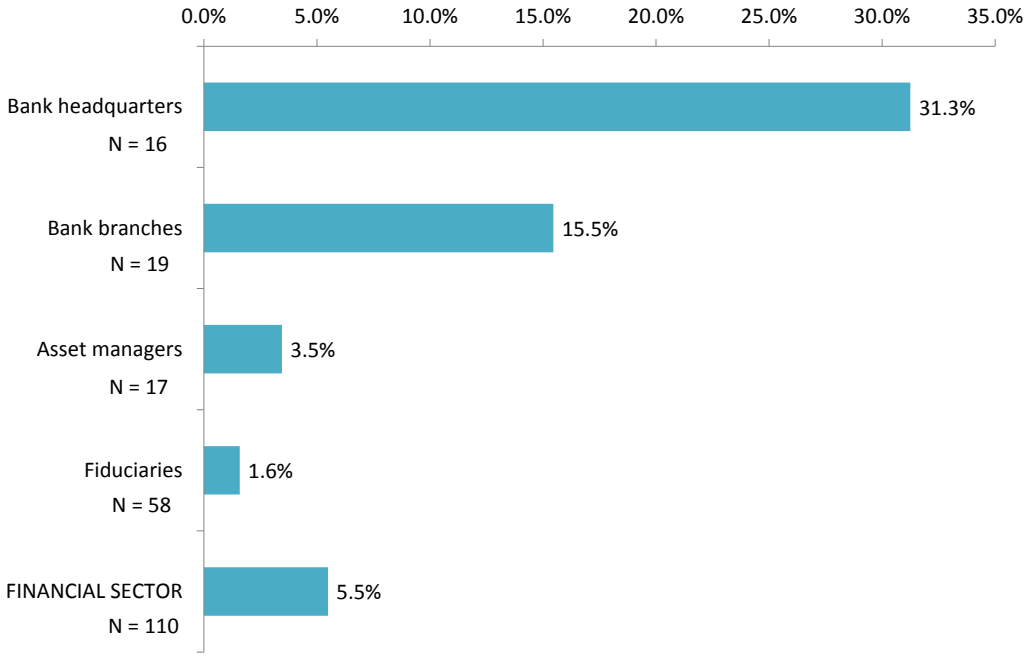
Analyzing the reasons related to each type of crime, 36.6% of the businesses which did not report theft declared to not have done it because the offender had reimbursed the damage, 27.5% because of lack of evidence and19.8% because the offender had been dismissed.

The main reason for not reporting fraud is the lack of seriousness of the incidents (31.4%), while in the case of unfair competition and violation of the company secrecy, the companies did not report them because the author of crime had been identified and dismissed. The second most frequent reason for not reporting an act of unfair competition to the police is to avoid bad publicity and to maintain discretion (21.5%).

[242] This information is not available for financial businesses

3.2.2 Reporting to FINMA[243]

Figure 118 - Reporting to FINMA in the financial sector - % on the total number of victims in the financial sector



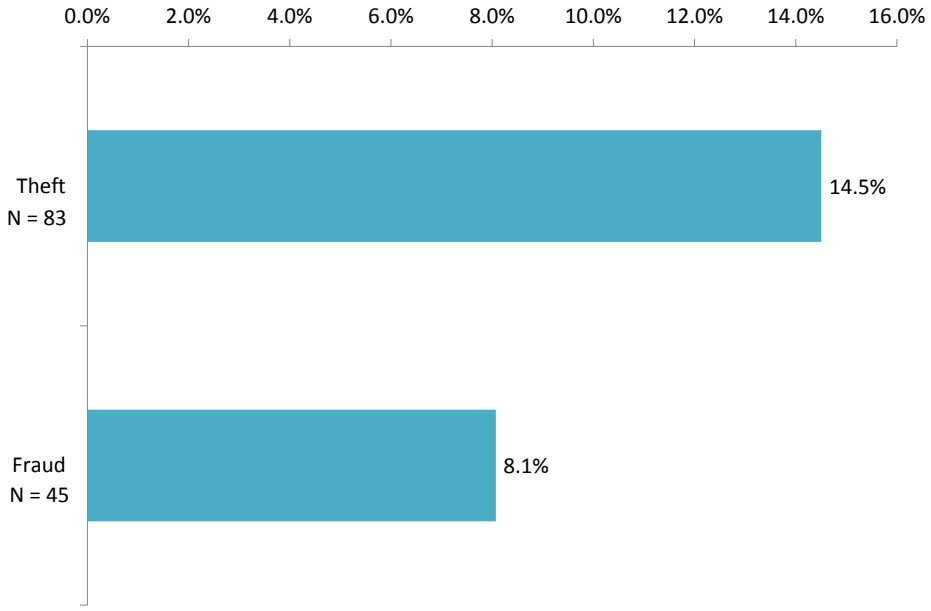
Only 5.5% of the financial firms said having reported the offence to the FINMA (the Swiss Financial Market Supervisory Authority)[244]. This may be due to the will of protecting the firm's reputation or because of the heavy administrative work generated by the reporting process.
Bank headquarters present the highest percentage of reporting (31.3%), while the lowest one is registered for fiduciaries (1.6%).
The Figure below further demonstrates how low the percentages of reporting to FINMA are. No cases of fraud, unfair competition, corruption and violation of the company secrecy, experienced by asset management firms and fiduciaries, have been reported to FINMA. There is only one incident of theft (out of 15) reported by fiduciaries and one case of extortion by asset managers.

[243] This section focuses only on asset management firms and fiduciaries.

[244] According to the *Federal Act on Combating Money Laundering and Terrorist Financing in the Financial sector*, the reporting to FINMA is compulsory when a business detects any kind of money laundering offences. The reporting of the crimes is also compulsory for the external controllers up to a certain amount.

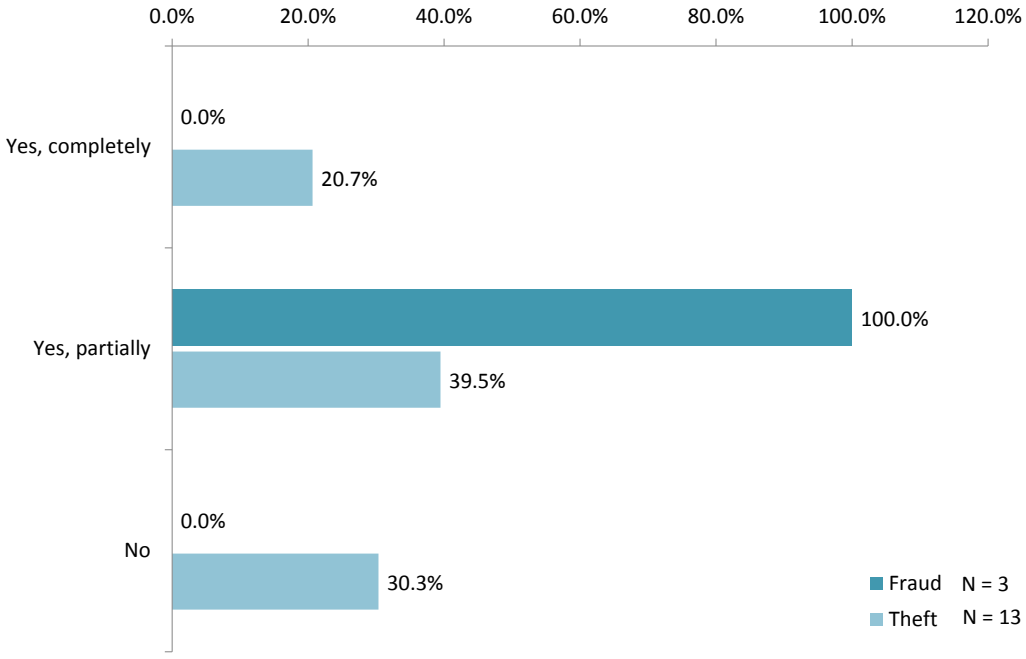
3.2.3 Reporting to Insurance Agencies[245]

Figure 119 - Reporting to the insurance agency by type of crime in the commercial sector - % on the total number of victims by type of crime



As already addressed above, only 14.5% of commercial businesses victims of theft, and 8.1% victims of fraud, reported the incidents to the insurance agency.

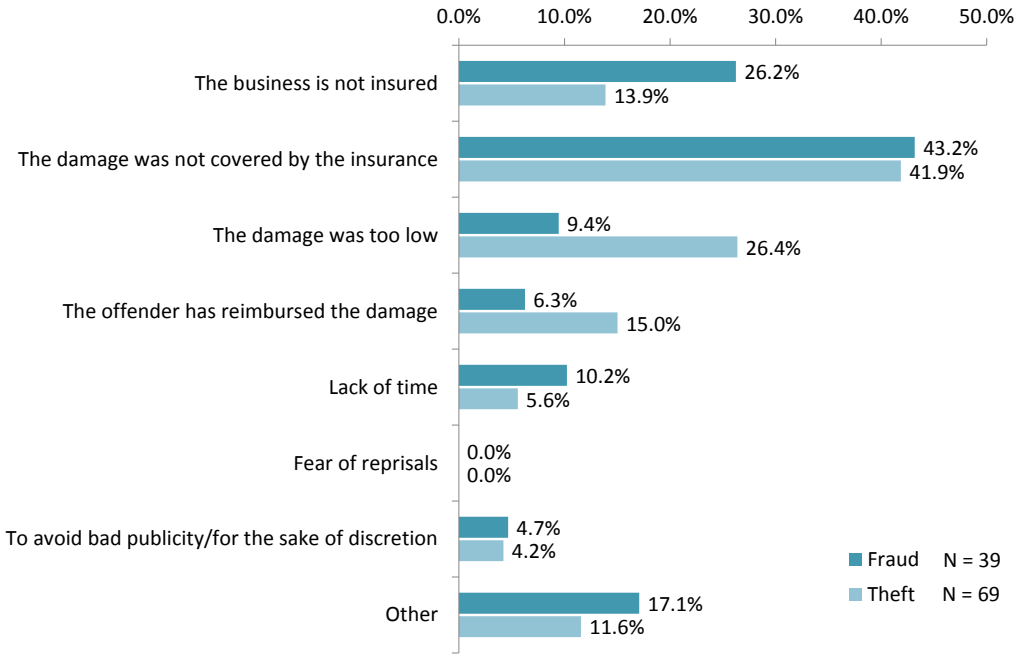
Figure 120 - Commercial business reimbursed by the insurance agency by type of crime - % on the total number of victims reporting the crime to the insurance



[245] This analysis could focus only on commercial businesses.

This Figure gives an idea of how many businesses victims of crime have been reimbursed by the insurance.
In the case of fraud, all the incidents have been partially refunded (3 out of 3), while in the case of theft 30.3% of incidents have not been repaid, 39.5% only partially and 20.7% completely reimbursed.

Figure 121 - Reasons for not reporting the crime to the insurance agency by type of crime - % on the total number of victims not reporting the crime to the insurance



The most frequent reason quoted for not reporting the incidents for both theft (41.9%) and fraud (43.2%) refer to the fact that the specific damage was not covered by the insurance.
In relation to fraud, the second most frequent reason is that the business was not insured (26.2%), while in the case of theft (26.4%) it refers to the fact that the damage as a consequence of the incident was insignificant. 15.1% of the businesses did not report the theft to the insurance because the offender had reimbursed the damage.

3.3 Predictors of reporting to the police for theft and fraud by economic sector[246]

This chapter is focused on the identification of the main predictors of the reporting behavior among the Swiss commercial and financial firms.
As already mentioned in chapter 1.3, predictors are considered here the independent variables which could explain variations in the distribution of a specific phenomenon (dependent variable).
In particular, this chapter aims at verifying the presence of any statistical association between the amount of damage as a consequence of theft and fraud and the likelihood of reporting them to the police. Indeed, as previously mentioned, the seriousness of the crime incident, in terms of economic damage to the company, is one of the most frequent reasons of reporting the offence to the police. Businesses are usually insured for high economic costs as a consequence of crime, and the police report is usually needed in order to file an insurance claim and thus to be reimbursed.
This chapter also analyses the relationship between the reporting behavior of Swiss companies and their structural characteristics (size, turnover, etc.), as well as their location and corporate culture.
The statistical methods used to test the association between the selected variables, are based on the analysis of cross-tabulations and association coefficients such as the Chi-square, the Phi coefficient, Cramer V and Odds ratio (see Annex 2 for further information on these statistical coefficients). The conventional levels of confidence taken into consideration for refusing the null hypothesis are $p<0.01$ and $p<0.05$.
Binary logistic regression will also be performed to assess the effect of each independent variable on the dependent one, when the others are controlled.

3.3.1 Definition of the variables

This section analyzes the specific characteristics of Swiss businesses which could have influenced the likelihood of reporting the most serious incident of theft and fraud to the police.
The dependent variable is the reporting to the police, which represents the number of businesses which have reported to the police the most serious incident of theft and fraud, experienced between 2008 and 2010.
The independent variables, selected on the basis of their availability within the SBCS dataset, and their statistical consistency, as well as on the basis of the relevant scientific literature are:

- ✓ ***Damage as a consequence of the most serious incident of crime experienced between 2008 and 2010.*** It has seven categories:
  1. *Less than CHF 1000*
  2. *CHF 1000 - 5000*
  3. *CHF 5000 - 10'000*
  4. *CHF 10'000 - 50'000*
  5. *CHF 50'000 - 100'000*
  6. *CHF 100'000 - 500'000*
  7. *More than 500'000 CHF*

[246] This section includes analyses which distinguish between asset managers and fiduciaries, considered together as companies belonging to the financial sector, and businesses belonging to the commercial sector. Data on banks cannot be analyzed through bivariate and multivariate analysis techniques because of scarce number of cases which would not allow significant analyses. Those data will be analyzed in a specific section of the report.

- ✓ ***The location of the business.*** This variable presents four categories:
  1. *City center*
  2. *Residential area*
  3. *Industrial area*
  4. *Other*
- ✓ ***The number of inhabitants of the business's location.*** This variable has five categories:
  1. *Less than 10'000 inhabitants*
  2.*10'000-20'000 inhabitants*
  3. *20'000-50'000 inhabitants*
  4. *50'000-100'000 inhabitants*
  5. *More than 100'000 inhabitants*
- ✓ ***Size of the business***. Indicates the number of full-time employees working within the business and presents four categories:
  1. *1-9 employees*
  2. *10-49 employees*
  3. *50-250 employees*
  4. *More than 250 employees*
- ✓ ***Annual turnover***. Indicates the average annual turnover of the companies and presents six categories:
  1. *Less than CHF 500'000*
  2. *CHF 500'000-1 million*
  3. *CHF 1-5 million*
  4. *CHF 5-10 million*
  5. *CHF 10-50 million*
  6. *More than CHF 50 million*[247]
- ✓ ***Security systems***. Refers to the presence/absence of at least one measure of prevention among physical security systems (anti-theft devices, alarms, cameras, etc.) and computer security devices/systems (anti-virus, anti-spam filters, limited access, filters for Internet navigation, etc.) within the business at the time of the interview. The variable is dummy-coded (1. *Yes;* 0. *No).*
- ✓ ***Control systems***. Refers to the presence/absence of at least one measure of prevention, focused on the control of the employees and their work, among regular controls and audits, regular controls of stocks and merchandise (only for businesses in the commercial sector) and systematic check of new employees within the business at the time of the interview. The variable is dummy-coded (1. *Yes;* 0. *No).*
- ✓ ***Organizational measures***. Refers to the presence/absence of at least one measure of prevention, at the organizational and procedural level (very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts). The variable is dummy-coded (1. *Yes;* 0. *No).*

a) ***Corporate culture***. Indicates the types of corporate culture adopted by businesses. This variable presents four categories:

1. *Dynamic and entrepreneurial culture*
2. *Competitive culture*

[247] A statistical analysis of the distribution of this variable by economic sector of the business can be found in the section III - RESPONSE RATES, chapter 1.3.

3. *Rules and formal policies culture*
4. *Family culture*

The bivariate analyses will be first carried out considering all the categories of the independent variables, as described above, and then, in order to obtain more significant results, and to focus on the most specific and relevant features of each variable, the analyses will concentrate on only one specific modality.

In order to do so, the categories of the independent variables will be treated as single dummy-coded variables (e.g. the category 1-9 employees of the variable size of the business will be treated as dummy-coded variable indicating the presence/absence of businesses with 1-9 employees. Its categories will be: 1. Yes, 0. No).

3.3.2 Predictors of reporting to the police for theft in the commercial sector

3.3.2.1 Bivariate analysis

The bivariate analyses on the predictors of the reporting for theft in the commercial sector are focused on around 129 commercial businesses victims of crime.

At a bivariate level, there are five independent variables presenting a significant bivariate association with the reporting rates to the police for theft. The reporting behavior is positively associated with:

- ✓ damages of theft higher than CHF 10,000
- ✓ firms with more than 250 employees
- ✓ firms with a turnover higher than 50 million
- ✓ firms locating in industrial areas with more than 50,000 inhabitants.

The strongest bivariate association is registered between the reporting rates and the amount of damage.

Economic damage and reporting to the police

*Table 80 - **Reporting of theft to the police** by the amount of damage in the commercial sector. % on the total number of victims of theft*

	Amount of damage for theft					Tot
Reporting theft to the police	**Less than CHF 1'000**	**CHF 1000 – 5'000**	**CHF 5'000 – 10'000**	**CHF 10'000 - 50'000**	**More than CHF 50'000**	
No	14	10	15	5	2	46
	82.4%	55.6%	75.0%	55.6%	16.7%	60.5%
Yes	3	8	5	4	10	30
	17.6%	44.4%	25.0%	44.4%	**83.3%**	39.5%

Chi-square= 17.875 DF=6 P<0.01
Phi = 0.485 P=0.01
Cramer V = 0.485 P=0.01

Among commercial businesses, the relationship between the amount of damage caused by theft and the likelihood of reporting the incident to the police is positive and significant. Only 17.6% of victims

which experienced damage lower than CHF 1,000 reported the theft to the police, while 83.3% of those who suffered damages above CHF 50,000 informed the police about the offence.
In order to obtain more significant results, an analysis with dummy-coded independent variable, corresponding to the presence/absence of damages higher than CHF 10,000 is performed below.

*Table 81 - **Reporting of theft to the police** by damages higher than CHF 10,000 in the commercial sector. % on the total number of victims of theft*

	Damages higher than CHF 10,000		Total
Reporting theft to the police	**No**	**Yes**	
No	39	7	46
	70.9%	33.3%	60.5%
Yes	16	14	30
	29.1%	**66.7%**	39.5%

Chi-square= 8.981 DF=1 P<0.005
Phi = 0.344 P<0.005
Cramer V = 0.344 P<0.005
Odds ratio = 4.875 95% CI [1.659, 14.324]

Analyzing the relationship between commercial firms experiencing damages of theft higher than CHF 10,000 and their level of reporting to the police, it emerges a significant and positive association between the two variables. In particular, 66.7% of businesses reported the incident of theft to the police when damages exceeded CHF 10,000, against 29.1% of companies which suffered damages lower than CHF 10,000.
Therefore, **commercial businesses which suffered losses due to theft of more than CHF 10,000 are almost five times more likely to report the incident to the police than companies experiencing a lower damage.**
As already addressed, this is probably due to the fact that higher damages are more likely to be covered by the insurance. A police report is, therefore, needed to file the insurance claim.

Location of the business and reporting to the police

*Table 82 - **Reporting of theft to the police** by area of location of the commercial business. % on the total number of victims of theft*

	Area of location				Total
Reporting theft to the police	**City center**	**Residential area**	**Industrial area**	**Other**	
No	49	17	11	5	82
	70.0%	77.3%	45.8%	38.5%	63.6%
Yes	21	5	13	8	47
	30.0%	22.7%	**54.2%**	61.5%	36.4%

Chi-square= 9.832 DF=3 P<0.05
Phi = 0.276 P<0.05
Cramer V = 0.276 P<0.05

The Table above shows a positive association between the location of the business and the likelihood of reporting theft to the police. 54.2% of commercial companies located in industrial areas have, indeed reported the incident of theft to the police, against only 30% of those located in the city center and 22.7% in residential areas.

*Table 83 - **Reporting of theft to the police** by business located in industrial areas. % on the total number of victims*

	Industrial area		Total
Reporting theft to the police	**No**	**Yes**	
No	71	11	82
	67.6%	45.8%	63.6%
Yes	34	13	47
	32.4%	**54.2%**	36.4%

Chi-square= 4.003 DF=1 P<0.05
Phi = 0.176 P<0.05
Cramer V = 0.176 P<0.05
Odds ratio = 2.468 95% CI [1.002, 6.076]

In particular, **companies located in industrial areas are 2.5 times more likely to report the theft to the police**. As businesses located in industrial areas are the most victimized, the finding concurs with what we have found in previous chapters on predictors of victimization.

Size of the area of location and reporting to the police

*Table 84 - **Reporting of theft to the police** by N of inhabitants of the area of location. % on the total number of victims of theft*

	Number of inhabitants					Total
Reporting theft to the police	**1'000 - 10'000**	**10'000 - 20'000**	**20'000 - 50'000**	**50'000 - 100'000**	**>100'000**	
No	24	18	12	8	17	79
	75.0%	75.0%	70.6%	72.7%	43.6%	64.2%
Yes	8	6	5	3	22	44
	25.0%	25.0%	29.4%	27.3%	**56.4%**	35.8%

Chi-square= 10.703 DF=4 P<0.05
Phi = 0.295 P<0.05
Cramer V = 0.295 P<0.05

The size of the area where the business is located, in terms of number of inhabitants, positively influences the reporting behavior of commercial business. In particular, the higher the number of inhabitants in the area where the company is located, the higher the percentage of businesses reporting theft to the police. Indeed, in areas with more than 100'000 inhabitants the reporting rate is 56.4% while in smaller areas the reporting rate is only 25%.

*Table 85 - **Reporting of theft to the police** by areas of location with more than 50'000 inhabitants. % on the total number of victims of theft*

	More than 50'000 inhabitants		Total
Reporting theft to the police	**No**	**Yes**	
No	54	25	79
	74.0%	50.0%	64.2%
Yes	19	25	44
	26.0%	**50.0%**	35.8%

Chi-square= 7.422 DF=1 P<0.01
Phi = 0.246 P<0.01
Cramer V = 0.246 P<0.01
Odds ratio = 2.842 95% CI [1.327, 6.089]

Focusing only on the relationship between the areas with more than 50'000 inhabitants and the reporting rates, the significant and positive association between the two variables is evident. Indeed, **businesses located in areas with more than 50'000 inhabitants are 2.8 times more likely to report the crime to the police**. This is probably due to the fact that the larger the area of location, the more important the concentration of bigger firms which are also the most victimized and, as a consequence, the higher the reporting rate. Therefore, the relationship between these two variables should be then controlled for the size of the business.

Size of the business and reporting to the police

*Table 86 - **Reporting of theft to the police** by size of businesses in the commercial sector. % on the total number of victims of theft*

	Size of the business				Total
Reporting theft to the police	**1-9 employees**	**10-49 employees**	**50-250 employees**	**>250 employees**	
No	51	20	8	1	80
	79.7%	55.6%	53.3%	8.3%	63.0%
Yes	13	16	7	11	47
	20.3%	44.4%	46.7%	**91.7%**	37.0%

Chi-square= 24.485 DF=3 P<0.001
Phi = 0.439 P<0.001
Cramer V = 0.439 P<0.001

As shown in the Table above, **the bigger the size of the business, the higher the percentage of companies reporting the incident of theft to the police**. Indeed, **91.7%% of retailers with more than 250 employees have reported it to the police against only 20.3% of micro businesses**.
The Chi-square test confirms the significance of this relationship. Moreover, comparing the Cramer V coefficient of this relationship with those related to the other variables analyzed above, it is evident that the association is higher in this case (0.439 vs. 0.246, 0.176 and 0.344).
In order to better understand the influence of micro businesses (less than 9 employees) on the reporting behavior, a different analysis with dummy-coded independent variable is performed below.

*Table 87 - **Reporting of theft to the police** by micro businesses (less than 9 employees). % on the total number of victims of theft*

	Size – Less than 9 employees		Total
Reporting theft to the police	**No**	**Yes**	
No	30	52	82
	46.9%	80.0%	63.6%
Yes	34	13	47
	53.1%	**20.0%**	36.4%

Chi-square= 15.279 DF=1 P<0.001
Phi = -0.344 P<0.001
Cramer V = 0.344 P<0.001
Odds ratio = 0.221 95% CI [0.101; 0.482]

The analysis above confirms that **only 20% of micro businesses reported the incident of theft to the police, against 53.1% of businesses presenting a larger size.**
In particular, the odds of reporting the crime to the police show that **businesses with ten or more employees are 4.5 times more likely to report a theft to the police**.
Indeed, in small businesses, the offender is more likely to be known. Known offenders are generally less often reported because the company can follow its internal procedure to deal with the offence, by warning the perpetrator or dismissing him/her. On the contrary, in larger firms, the offender is usually unknown and helps from the police is sought to clear the offence. Moreover, damages may be more significant in larger firms.

Annual turnover and reporting to the police

*Table 88 - **Reporting of theft to the police** by annual turnover of the businesses in the commercial sector. % on the total number of victims of theft*

	Annual turnover of the business						
Reporting theft to the police	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	**Total**
No	8	10	37	3	9	6	73
	61.5%	90.9%	75.5%	33.3%	64.3%	31.6%	63.5%
Yes	5	1	12	6	5	13	42
	38.5%	9.1%	24.5%	66.7%	35.7%	**68.4%**	36.5%

Chi-square= 18.522 DF=5 P<0.005
Phi = 0.401 P<0.005
Cramer V = 0.401 P<0.005

The reporting behavior is also positively influenced by the turnover of the company; the higher the annual turnover, the higher the reporting rates to the police. In particular, **68.4% of the retailers with an annual turnover higher than CHF 50 million have reported the incident of theft to the police**. The value of the Cramer V also highlights the high association between the two variables.

*Table 89 - **Reporting of theft to the police** by businesses with a high turnover (more than CHF 50 million). % on the total number of victims of theft*

	Turnover – More than CHF 50 million		Total
Reporting theft to the police	**No**	**Yes**	
No	76	6	82
	69.1%	31.6%	63.6%
Yes	34	13	47
	30.9%	**68.4%**	36.4%

Chi-square= 9.844 DF=1 P<0.005
Phi = 0.276 P<0.005
Cramer V = 0.276 P<0.005
Odds ratio = 4.843 95% CI [1.697; 13.819]

The analysis above, with the dummy-coded independent variable, indicates that **commercial companies with a turnover higher than CHF 50 million are 4.8 times more likely to report the crime to the police, than companies having a lower turnover**.
However, as demonstrated by the following multivariate analysis, the positive association between the reporting behavior and the business turnover is a spurious relationship, actually due to the positive association of these two variables with the size of the company.

3.3.2.2 Multivariate analysis

In this chapter a binary logistic regression on 75 commercial businesses victims of theft is performed to identify the predictors of the reporting levels to the police for theft.
In particular, the dependent variable (DV) is the reporting rate to the police for theft, indicating if a business reported the most serious incident of theft to the police (1=Yes, 0=No), while the independent variables are: Damages as a consequence of theft_More than CHF 10,000; Area of location_Industrial (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000; Size_Micro businesses (1=Yes, 0=No); Turnover_More than CHF 50 million (1=Yes, 0=No); Family corporate culture (1=Yes, 0=No).

*Table 90 - Main results of the binary logistic regression – **Predictors of reporting to the police for theft in the commercial sector***

Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
							Lower limit	Upper limit
Damages for theft_More than CHF 10.000	1.532	.610	6.317	1	.012	4.628	1.401	15.283
Size_Micro_businesses	-1.243	.573	4.700	1	.030	.289	.094	.888
Family corporate culture	-1.307	.556	5.520	1	.019	.271	.091	.805
Constant	.211	.446	.223	1	.637	1.234		

Note: Model Chi-square=19.143, p< .001. -2 Log-Likelihood= 80.942. Cox & Snell R-Square= 0.225, Nagelkerkes R-Square= 0.306.

The Table above refers to the most predictive regression model, including three independent variables. In particular, the major contribution to the prediction of the reporting to the police comes from the variable "Damages for theft_More than CHF 10,000" (Chi-square = 7.861), followed by "Family corporate culture" (Chi-square = 6.253) and "Size_Micro business" (Chi-square = 5.029). The other independent variables: Area of location_Industrial; Turnover_More than CHF 50 million; N of inhabitants of the area of location_More than 50,000, do not significantly contribute to the explanation of the reporting behavior of commercial companies.

The value of the Chi-square coefficient shows that the value of the -2 log-likelihood is reduced by 19.143, in comparison to the model including only the constant. All the three models considered above present a statistical significance at $p<0.01$, which indicates the presence of a statistical relationship between the dependent variable and the combination of the independent variables.

The Nagelkerkes R-Square coefficient indicates that the proportion of variance accounted for the dependent variable based on the predictive power of the independent variables is around 30.6%. This value is quite high if we consider the nature of the data collected (sociological data collected through victimization surveys) and demonstrates the influence of the considered independent variables on the businesses' reporting behavior.

Considering the B coefficients of the three predictors included in this model, all of them have a relatively low standard error and the p-values < 0.05. Therefore, the damage as a consequence of crime, the size of the business and the corporate culture has a significant influence on the reporting behavior of Swiss commercial businesses.

In particular, the Exp(B) of the "Damages for theft", indicates that **the odds of reporting theft to the police if damages exceed CHF 10,000, is 4.6 times higher than if damages are lower,** when the other variables in the model are controlled. **This means that the higher the damages, the higher the likelihood of crime reporting to the police.**

The Exp(B) of the Size_Micro businesses, indicates that **for businesses with ten or more employees the odds of reporting the theft to the police is 3.5 times higher than for micro businesses,** when the other variables in the model are controlled. This means that micro businesses are less likely to report the crime incident to the police, even if the amount of damage is considered.

The Exp(B) of the Family corporate culture suggests that **businesses not adopting a corporate culture based on loyalty and tradition are 3.7 times more likely to report the theft committed by employees to the police. Companies based on a family corporate culture are, therefore, less likely to report the employee offence to the police.**

These results are useful to identify the factors which influence the reporting behavior of Swiss businesses when dealing with offences committed by employees.

Logically, the damage as a consequence of crime has the strongest effect on the reporting decision because the higher the damage the higher the need and the possibility to get an insurance reimbursement, for which a police report is required.

What has not been so much statistically predicted and discussed among existing studies is the influence of the corporate culture on the likelihood of reporting the employee offences to the police.

According to the SBCS data, the family spirit adopted by some companies generally refrain them to report the offender to the police, even if the damages as a consequence of crime are higher than CHF 10,000. One assumption could be that companies adopting a family corporate culture tend to deal with the employee offence through internal procedures, rather than involving the police or other authorities. This could also be a way to prevent reputational damages and to avoid being involved in costly legal proceedings.

3.3.3 Predictors of the reporting to the police for fraud in the commercial sector

3.3.3.1 Bivariate analysis

The bivariate analyses of the predictors relating to the reporting behavior for fraud focus on around 96 commercial businesses victims of this type crime.
At a bivariate level, there are five independent variables presenting a significant bivariate association with the reporting rates to the police for fraud. The reporting behavior is positively associated with:

- ✓ damages of fraud higher than CHF 10,000
- ✓ firms with more than 250 employees
- ✓ firms with a turnover higher than 50 million
- ✓ firms locating in areas with more than 50,000 inhabitants
- ✓ firms adopting a corporate culture based on innovation and development

The strongest bivariate association is registered between the reporting rates and the amount of damage.

Economic damage and reporting to the police

*Table 91 - **Reporting of fraud to the police** by the amount of damage in the commercial sector. % on the total number of victims of fraud*

	Amount of damage for fraud						
Reporting fraud to the police	**Less than 1'000 CHF**	**1000 – 5'000 CHF**	**5'000 – 10'000 CHF**	**10'000 - 50'000 CHF**	**50'000 - 100'000 CHF**	**100'000 - 500'000 CHF**	**Tot**
No	7	4	6	6	0	3	26
	100.0%	80.0%	85.7%	66.7%	.0%	50.0%	70.3%
Yes	0	1	1	3	3	3	11
	.0%	20.0%	14.3%	**33.3%**	**100.0%**	**50.0%**	29.7%

Chi-square= 12.314 DF=6 P<0.05
Phi = 0.577 P=0.05
Cramer V = 0.577 P=0.05

As already noticed for the incidents of theft, in the case of fraud the relationship between the amount of damage and the likelihood of reporting the crime to the police is also positive and significant. None of the commercial businesses which experienced damage lower than CHF 1,000 reported the fraud to the police, but the reporting rate increases when damages are higher than CHF 10,000.

*Table 92 - **Reporting of fraud to the police** by damages higher than CHF 10,000 in the commercial sector. % on the total number of victims of fraud*

	Damages higher than CHF 10,000		Total
Reporting fraud to the police	**No**	**Yes**	
No	17	9	26
	89.5%	50.0%	70.3%
Yes	2	9	11
	10.5%	**50.0%**	29.7%

Chi-square= 6.894 DF=1 P<0.01
Phi = 0.432 P<0.01
Cramer V = 0.432 P<0.01
Odds ratio = 8.500 95% CI [1.054, 48.049]

Indeed, analyzing the relationship between damages of fraud higher than CHF 10,000 and the likelihood of reporting the crime to the police, the two variables present a significant and positive association. In particular, 50% of commercial businesses reported the incident of fraud to the police when the damages were higher than CHF 10,000, against only 10.5% if damages were lower than CHF 10,000.

Size of the area of location and reporting to the police

*Table 93 - **Reporting of fraud to the police** by areas of location with more than 50'000 inhabitants. % on the total number of victims of fraud*

	More than 50'000 inhabitants		Total
Reporting fraud to the police	**No**	**Yes**	
No	44	33	77
	91.7%	75.0%	83.7%
Yes	4	11	15
	8.3%	**25.0%**	16.3%

Chi-square= 4.673 DF=1 P<0.05
Phi = 0.225 P<0.05
Cramer V = 0.225 P<0.05
Odds ratio = 3.667 95% CI [1.072, 12.547]

The association between the size of the area where the business is located and the reporting rates is significant only when considering the dummy-coded variable "*areas with more than 50,000 inhabitants*". In particular, **businesses located in areas with more than 50'000 inhabitants are 3.7 times more likely to report a fraud to the police.**

Size of the business and reporting to the police

*Table 94 - **Reporting of fraud to the police** by size of businesses in the commercial sector. % on the total number of victims of fraud*

	Size of the business				Total
Reporting fraud to the police	**1-9 employees**	**10-49 employees**	**50-250 employees**	**>250 employees**	
No	51	17	5	5	78
	91.1%	81.0%	71.4%	50.0%	83.0%
Yes	5	4	2	5	16
	8.9%	19.0%	28.6%	**50.0%**	17.0%

Chi-square= 11.019 DF=3 P<0.05
Phi = 0.342 P<0.05
Cramer V = 0.342 P<0.05

In line with the analysis for theft, also in the case of fraud the size of the company shows a significant and positive association with the reporting behavior.
Indeed, **50% of retailers with more than 250 employees have reported the incident of fraud to the police, against only 8.9% of micro businesses**.
In order to better understand the influence of micro businesses (less than nine employees) on the reporting behavior, a different analysis with dummy-coded independent variable is performed below.

*Table 95 - **Reporting of fraud to the police** by micro businesses (less than 9 employees). % on the total number of victims of fraud*

	Size – Less than 9 employees		Total
Reporting fraud to the police	**No**	**Yes**	
No	30	50	80
	73.2%	90.9%	83.3%
Yes	11	5	16
	26.8%	**9.1%**	16.7%

Chi-square= 5.322 DF=1 P<0.05
Phi = -0.253 P<0.05
Cramer V = 0.235P<0.05
Odds ratio = 0.273 95% CI [0.086; 0.861]

The analysis above confirms that **only 9.1% of micro businesses reported the incident of fraud to the police, against 26.8% of larger retail stores.**
In particular, the odds of reporting the crime to the police show that **businesses with ten or more employees are 3.7 times more likely to report a fraud to the police**.
This result is in line with the analysis on the reporting behavior for theft. Indeed, considering both offences, the size of the business strongly influences the reporting behavior.
As already addressed above, this could be due to different reasons: in small businesses, the offender is more likely to be known and the company can warn or punish him through its internal procedure rather than by reporting him/her to the police; moreover, small companies are more focused on a

family corporate culture, based on loyalty and tradition, which refrain business managers to report the employee offence to the police (as demonstrated through the multivariate analysis for theft).

Annual turnover and reporting to the police

*Table 96 - **Reporting of fraud to the police** by businesses with a high turnover (more than CHF 50 million). % on the total number of victims of fraud*

	Turnover – More than CHF 50 million		Total
Reporting fraud to the police	**No**	**Yes**	
No	72	8	80
	87.8%	57.1%	83.3%
Yes	10	6	16
	12.2%	**42.9%**	16.7%

Chi-square= 8.095 DF=1 P<0.05
Phi = 0.290 P<0.05
Cramer V = 0.290 P<0.05
Odds ratio = 5.400 95% CI [1.550; 18.813]

The relationship between the firm's turnover and the reporting rates is significant only when considering the dummy-coded variable "*firms with a turnover higher than CHF 50 million*".
The analysis above indicates that 42.9% of **commercial businesses with a turnover higher than CHF 50 million reported the fraud to the police against 12.2% of those having a lower turnover**.
As in the case of theft, it is likely that this bivariate association is actually due to the size of the business, which is negatively related with both the turnover and the reporting behavior.

Corporate culture and reporting to the police

*Table 97 - **Reporting of fraud to the police** by businesses with a corporate culture based on innovation and development. % on the total number of victims of fraud*

	Corporate culture – Innovation and development		Total
Reporting fraud to the police	**No**	**Yes**	
No	69	11	80
	87.3%	64.7%	83.3%
Yes	10	6	16
	12.7%	**35.3%**	16.7%

Chi-square= 5.161 DF=1 P<0.05
Phi = 0.232 P<0.05
Cramer V = 0.232 P<0.05
Odds ratio = 3.764 95% CI [1.139; 12.440]

According to the Table above, commercial firms adopting a corporate culture focused on innovation and development are more likely to report the incident of fraud to the police

3.3.3.2 Multivariate analysis

The number of businesses reporting the fraud to the police (16) is too low to allow a logistic regression with statistically significant and consistent results.

3.3.4 Predictors of the reporting behavior in the financial sector

As already addressed in section 3.2, among financial firms the reporting rates to the police and to FINMA are extremely low, even when considering the most reported incidents as in the case of thefts and fraud.
In particular, among 18 firms victims of theft, only one had reported the crime to the FINMA and only two to the police. Among 37 firms victims of fraud, none had reported the incident either to the FINMA or to the police.
These results do not allow conducting more sophisticated statistical analyses on the reporting behavior of financial businesses, but if we look at the variable indicating the amount of cost of the damage, it seems that the reporting behavior of the financial firms is not influenced by the costs of crime. Indeed, among 16 firms victims of theft 12 declared to have had some economic damage as a consequence of crime (even if in the majority of cases it was lower than CHF 10,000). Among 37 companies victims of fraud 22 had declared some damage (10 of them have had damages higher than CHF 10,000). In spite of the economic damages, it is worth noting that none of them had reported the incidents to the police or to the FINMA.

3.4 Key facts - Discovery of the offence and reporting to the relevant authorities

	FINANCIAL SECTOR	COMMERCIAL SECTOR
How the offence was discovered	Internal controls (56%)	Internal controls (56.9%)
Reporting rate to the police	9.5%	29.3%
Most reported crime to the police	Theft (10.2%)	Theft (33.7%)
Main reasons for not reporting to the police	N.A.	• The crime was not serious • The offender has been dismissed • The offender reimbursed • To avoid bad publicity/for the sake of discretion • Lack of evidence
Reporting rate to FINMA	5.5%	N.A.
Predictors of reporting theft to the police	N.A.	• Damages for theft higher than CHF 10,000 + • Micro businesses - • Family corporate culture -

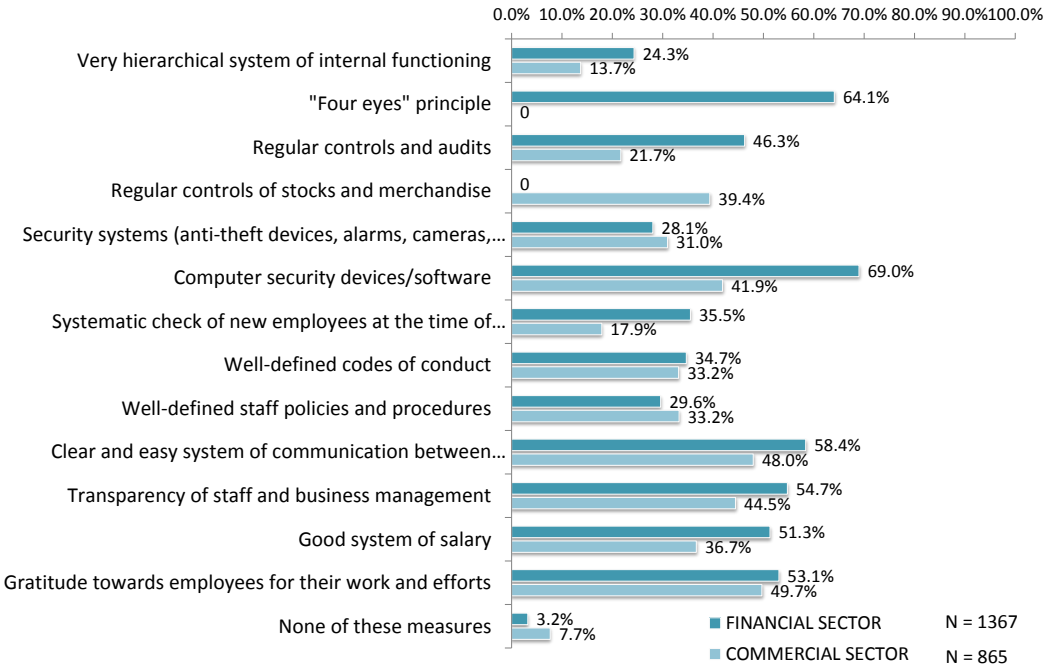
4 Strategies of prevention

Introduction

This section provides relevant information on the different types of measures of prevention adopted by Swiss commercial and financial in order to avoid or to reduce employees' offences. Moreover it identifies the variables affecting the presence of specific preventive strategies.
In particular, the section focuses on: a) the types of measures of prevention existing within businesses at the time of the interview, by type of crime; b) the measures of prevention existing within businesses before the discovery of the offence; c) the measures of prevention taken by businesses after the discovery of the offence; d) the predictors of the presence of specific measures of crime prevention. The analyses will be mainly presented at the aggregated national level (Switzerland) by economic sectors (commercial and financial).

4.1 Existing strategies of prevention

Figure 122 - Measures of prevention existing in the businesses at the time of the interview, by economic sector - %[248] of the total number of respondents to the survey in each sector



Generally speaking, only 3.2% of the financial companies interviewed and 7.7% of retail stores declared to have no measures for crime prevention.

[248] Weighted data.

In the financial sector, the most frequently used measure is installing computer security devices or software (69%), followed by the "four-eyes" principle, which is a very common practice especially among banks (64.1%).
58.4% of the businesses in the financial sector also have a clear and easy system of communication between management and employees in order to prevent offences. Transparency of staff and management is also highly adopted (54.7%).
Overall, measures of prevention are less widely used in retail stores than in financial companies. Surprisingly, only 39.4% of the retail stores have regular controls of stocks and merchandise. The percentage of stores having installed a security system such as anti-theft devices, alarms or cameras is also relatively low (31%). It can be also noticed that those measures of prevention related to the human resources aspect are more common in the commercial sector. Indeed, measures such as having a clear and easy system of communication between management and employees (48%), transparency of staff and management (44.5%), gratitude towards employees (49.7%) are more present than those related to physical and computer security.

Table 98 - Measures of prevention existing in the businesses of the financial sector at the time of the interview - %[249] of the total number of respondents to the survey in the financial sector

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear and easy system of communication between	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Swiss Banks[250]	**37.5%**	**87.5%**	81.3%	75.0%	75.0%	56.3%	62.5%	81.3%	68.8%	62.5%	75%	75%	0%	**16**
Bank Head.[251]	**16.9%**	61.0%	**62.7%**	52.5%	**62.7%**	40.7%	40.7%	45.8%	42.4%	37.3%	32.2%	33.9%	0%	**59**
Bank Branche	**42.9%**	88.3%	**90.6%**	68.9%	86.4%	65.3%	64.7%	67.9%	69.2%	56.9%	65.2%	56.9%	0.7%	**131**
Asset managers	**25.1%**	61.6%	70.7%	44.2%	**74.4%**	40.5%	55.2%	35.3%	54.1%	54.3%	53.6%	47.2%	2.2%	**301**
Fiduciaries	21.4%	61.7%	28.4%	14.2%	**64.2%**	28.8%	**20.9%**	**20.9%**	59.1%	55.0%	48.6%	55.5%	4.1%	**860**

If we get a closer look to the measures of prevention used in the different financial sectors, banks have the highest percentage of measures implemented, and fiduciaries the lowest one.

[249] Weighted data.

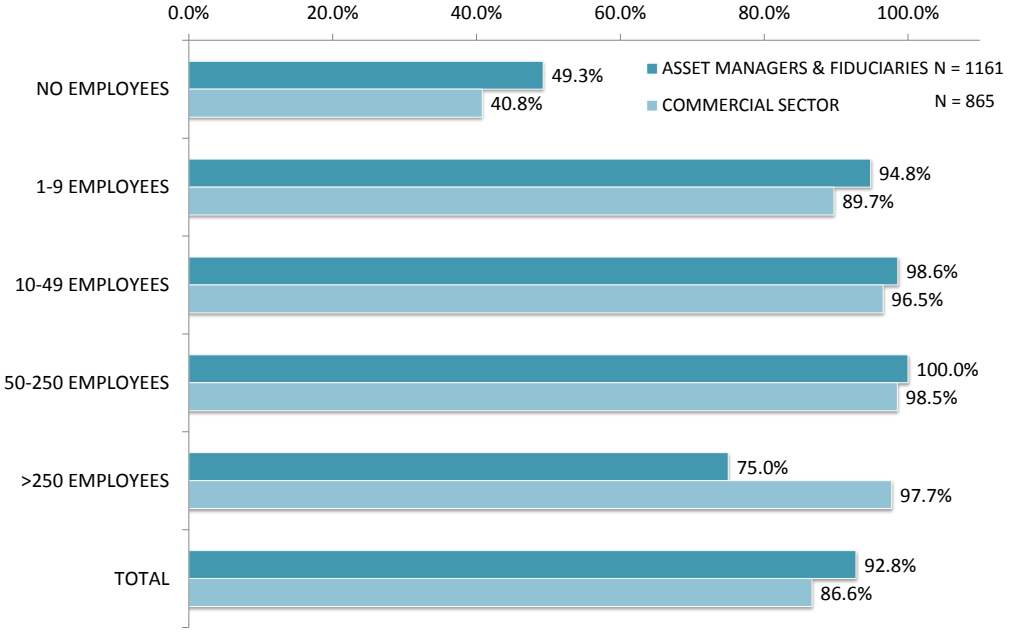
[250] Not-weighted numbers and percentages.

[251] Not-weighted numbers and percentages.

Swiss Banks use the "four-eyes principle" measure to control almost all transactions (87.5%).
Regular controls and auditing are also very common in Swiss bank branches (90.6%).
74.4% of the asset management firms have installed computer security devices and software.
Fiduciaries seem to have a system of code of conduct, staff policies and procedures less defined than other financial firms (20.9%).
For all financial businesses, the lowest percentage of measure of prevention is the very hierarchical system of internal functioning.

4.1.1 Existing strategies of prevention by size of the business

Figure 123 - Businesses having at least one measure of crime prevention, by size and economic sector- %[252] of the total number of respondents to the survey by size and economic sector[253]

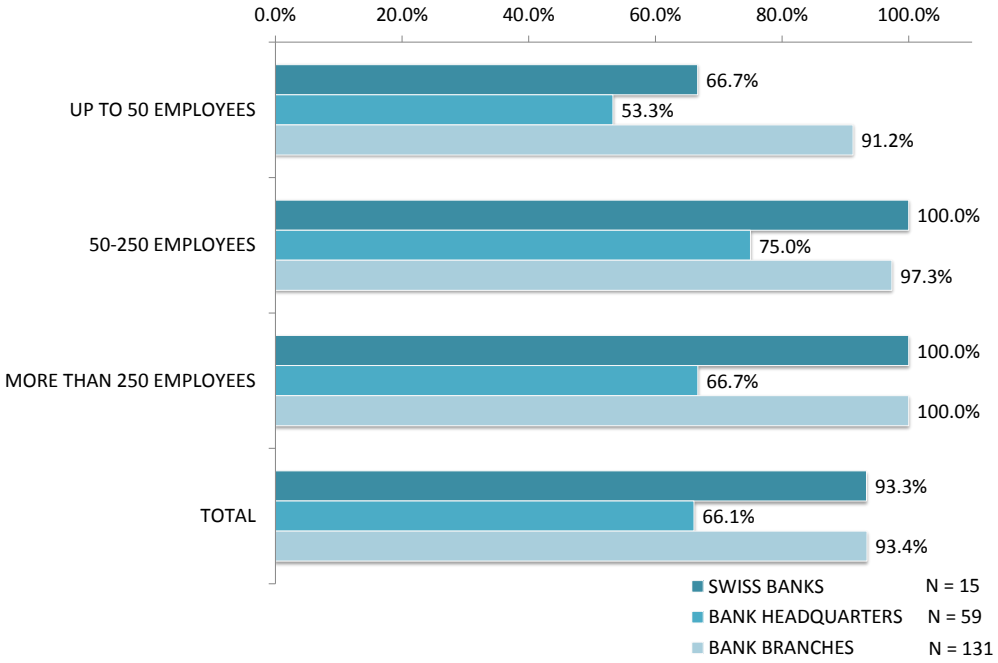


The Figure above illustrates the percentage of businesses having at least one measure of prevention at the time of the interview.
Generally speaking, among asset managers and fiduciaries, 92.8% of businesses had at least one measure of prevention at the time of the interview. Among retail stores this percentage is slightly lower, anyhow, 86.6% of retailers presented at least one measure of prevention.
The graph shows a clear trend among all businesses: the larger the business is, the more likely is to adopt at least one measure of prevention.

[252] Weighted data.

[253] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. Moreover, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

Figure 124 - Businesses having at least one measure of crime prevention, by size, among banks - %[254] of the total number of respondents to the survey by size and economic sector[255]



The trend mentioned above in relation to the presence of at least one measure of prevention by the size of the business, is evident also among banks.
In particular, it is worth noting that among the Swiss banks and the Bank Headquarters with more than fifty employees, the totality of them had at least one measure of prevention at the time of the interview.

[254] Weighted data.

[255] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

Table 99 - Measures of prevention existing in the financial sector at the time of the interview, by size of the business - %[256] of the total number of respondents to the survey in the financial sector[257]

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Financial sector[258]	20.9%	57.2%	39.3%	22.8%	62.2%	30.5%	34.5%	24.5%	53.2%	50.5%	46.2%	48.7%	3.2%	**1365**
1-9 empl.	20.3%	60.0%	38.7%	20.4%	64.5%	31.4%	34.3%	21.4%	57.3%	54.8%	48.3%	52.9%	2.4%	**973**
10-49 empl.	27.2%	60.9%	46.1%	31.7%	66.8%	32.3%	39.8%	37.7%	54.2%	48.8%	51.7%	47.4%	0.0%	**247**
50-250 empl.	19.0%	41.5%	38.7%	27.5%	42.3%	31.7%	34.5%	35.9%	25.4%	25.4%	30.3%	25.4%	0.0%	**64**
>250 empl	15.3%	59.7%	65.3%	59.7%	65.3%	48.6%	54.2%	62.5%	51.4%	45.8%	47.2%	47.2%	0.0%	**47**
NO empl.	11.2%	15.5%	16.5%	11.7%	27.7%	5.3%	12.6%	2.4%	11.2%	13.6%	9.7%	9.7%	28.2%	**70**

In the financial sector, the majority (more than 60%) of the businesses, of almost all sizes, has implemented some computer security and devices. For firms with less than ten employees, the "four-eyes" principle and a clear and easy system of communication between management and staff are the second most common measures of prevention (60% and 57.3%). For firms with more than 250 employees, the regular controls of the employees and audit systems, is as important as having computer security devices and systems (65.3%), while the second most used measure of prevention is adopting a well-defined code of conduct (54.2%).

[256] Weighted data.

[257] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

[258] It includes asset managers, fiduciaries and banks.

Table 100 - Measures of prevention existing in the commercial sector at the time of the interview, by size of the business - %[259] of the total number of respondents to the survey in the financial sector[260]

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls of stocks and merchandise	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Commerc. sector	13.7%	21.7%	39.4%	31.0%	41.9%	17.9%	33.2%	33.2%	48.0%	44.5%	36.7%	**49.7%**	7.7%	**865**
1-9 empl.	11.7%	15.7%	35.8%	26.4%	36.1%	15.6%	31.1%	27.2%	**46.3%**	44.7%	36.0%	**51.6%**	5.5%	**568**
10-49 empl.	18.5%	37.5%	57.9%	47.4%	**64.4%**	26.3%	42.2%	54.1%	**64.7%**	53.8%	46.7%	59.4%	1.7%	**163**
50-250 empl.	29.5%	60.2%	67.1%	59.9%	**82.4%**	31.4%	53.3%	78.7%	**69.6%**	52.7%	60.9%	57.4%	0.0%	**40**
>250 empl	52.2%	**81.6%**	76.3%	60.3%	**87.9%**	40.3%	85.1%	86.4%	56.0%	66.7%	65.1%	70.1%	2.3%	**21**
NO empl.	1.4%	1.1%	8.7%	12.3%	11.3%	6.3%	8.2%	2.9%	17.8%	16.7%	5.8%	10.7%	**37.2%**	**73**

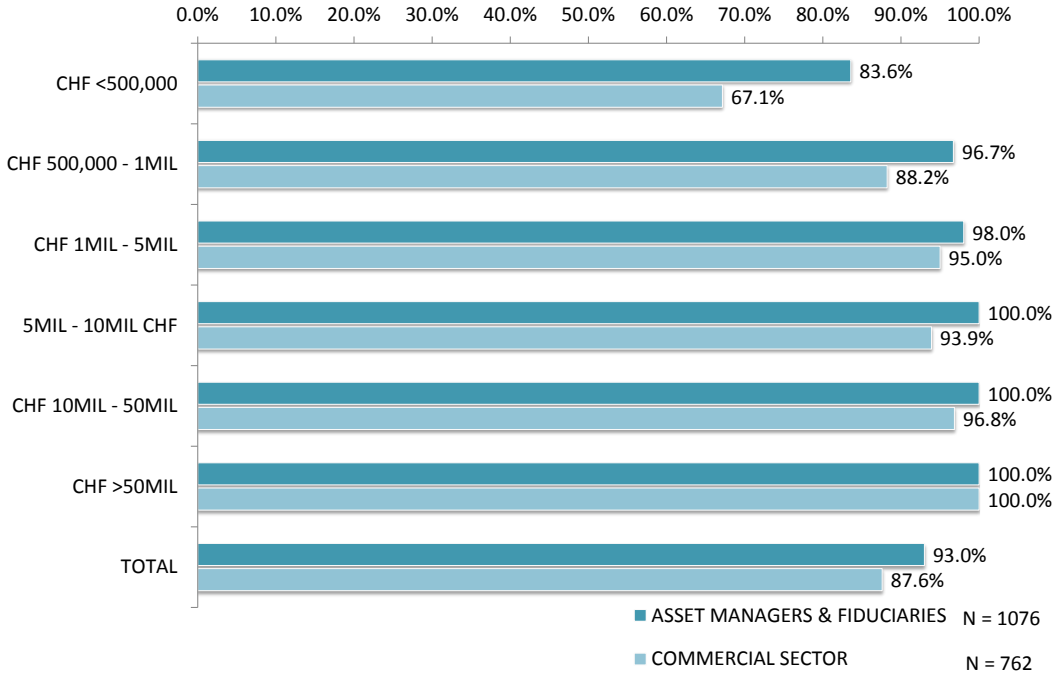
In the commercial sector, the most commonly used measure of prevention is a measure related to the human/social aspect: gratitude towards employees for their work (49.7%). For retail stores of middle size (up to 50 employees), the most used measure of prevention is having a clear and easy system of communication between management and staff (64.7%), while in larger businesses (from 50 to 250 employees, and more than 250 employees), computer security and devices are more likely to be implemented (respectively 82.4% and 87.9%). In general the most quoted measures of prevention are either having a computer security or devices, having a clear system of communication between management and staff, and the "four-eyes" principle.

[259] Weighted data.

[260] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

4.1.2 Existing strategies of prevention by annual turnover

Figure 125 - Businesses having at least one measure of prevention, by turnover and economic sector - %[261] of the total number of respondents to the survey by turnover and economic sector[262]



As shown in the Figure above, the higher the turnover the more likely for the firm to have at least one measure of prevention. Retail stores have slightly less implemented measure of prevention than the asset management firms and fiduciaries.

[261] Weighted data.

[262] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of turnover on the total number of respondents by turnover.

Table 101 - Measures of prevention existing among asset managers and fiduciaries at the time of the interview, by turnover - %[263] of the total number of respondents among asset managers and fiduciaries by turnover[264]

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Asset managers and	21.7%	61.8%	39.9%	21.9%	**66.9%**	31.7%	35.5%	24.7%	57.4%	55.1%	50.1%	53.4%	3.6%	**1076**
CHF <1 mil	17.6%	53.9%	31.9%	14.3%	**58.7%**	27.2%	28.2%	16.2%	52.0%	50.1%	39.9%	48.0%	5.6%	**687**
CHF 1mil-	27.3%	73.8%	49.2%	29.5%	**80.0%**	35.9%	42.5%	33.7%	66.9%	63.0%	65.9%	62.8%	0.5%	**322**
CHF >5mil	33.5%	80.0%	70.9%	57.0%	**83.9%**	53.9%	70.0%	62.2%	63.5%	65.2%	71.3%	61.7%	0.0%	**67**

The presence of computer security devices is the most common measure of prevention among asset management firms and fiduciaries (overall 66.9%) with the highest percentage in firms with a turnover above CHF 5 million.

[263] Weighted data.

[264] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

Table 102 - Measures of prevention existing in the commercial sector at the time of the interview, by turnover - %[265] of the total number of respondents in the commercial sector by turnover[266]

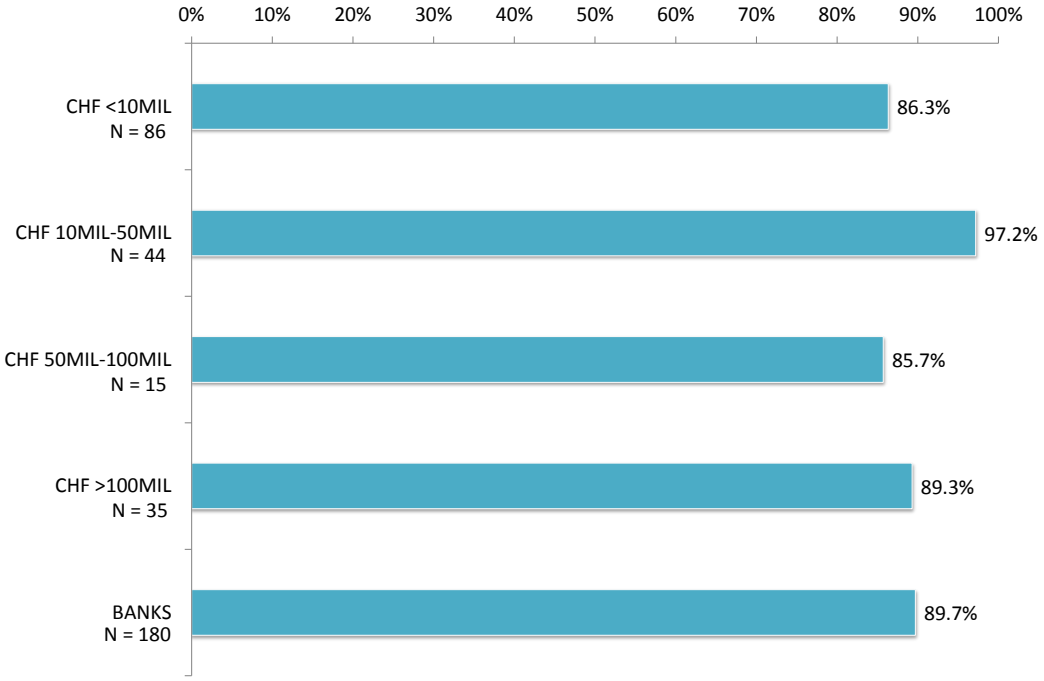
	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls of stocks and merchandise	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Commercial sector	12.9%	22.0%	40.5%	31.5%	42.3%	18.2%	33.4%	33.1%	49.1%	46.2%	37.6%	**50.7%**	7.7%	**762**
CHF <1 mil	6.5%	9.0%	25.1%	18.9%	23.8%	12.6%	26.4%	16.5%	**38.9%**	35.2%	23.6%	38.3%	14.5%	**295**
CHF 1mil-	12.6%	19.8%	44.8%	33.7%	45.6%	16.9%	34.2%	34.9%	50.2%	53.1%	44.2%	**59.1%**	3.1%	**320**
CHF >5mil	27.7%	55.7%	64.1%	53.8%	75.4%	33.3%	46.9%	65.2%	**69.1%**	54.8%	53.0%	58.7%	3.1%	**147**

In the commercial sector, 69.1% of businesses with a turnover greater than CHF 5 million have adopted a clear and easy system of communication between management and employees. The gratitude toward employees for their efforts and work is the second most used measure of prevention among retail stores (overall 50.7% and even 59.1% for businesses with a turnover between CHF 1 and 5 million).

[265] Weighted data.

[266] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

Figure 126 - Measure of prevention by turnover among banks - %[267] of the total number of respondents to the survey among banks by turnover[268]



The majority of banks with a turnover lower than CHF 10 million is likely to adopt the "four-eyes" principle as measure of prevention, while banks with higher turnovers are more likely to regularly control the work of the employees and to adopt audit systems.

76.8% of banks with a turnover higher than CHF 100 million is more likely to adopt many different types of measures of prevention, such as: regular controls of the employees and audit systems, security systems, computer security devices and software, well-defined staff policies and procedures.

[267] Weighted data.

[268] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of turnover on the total number of respondents by turnover.

Table 103 - Measures of prevention at the time of the interview by turnover among banks - %[269] of the total number of respondents to the survey among banks by turnover[270]

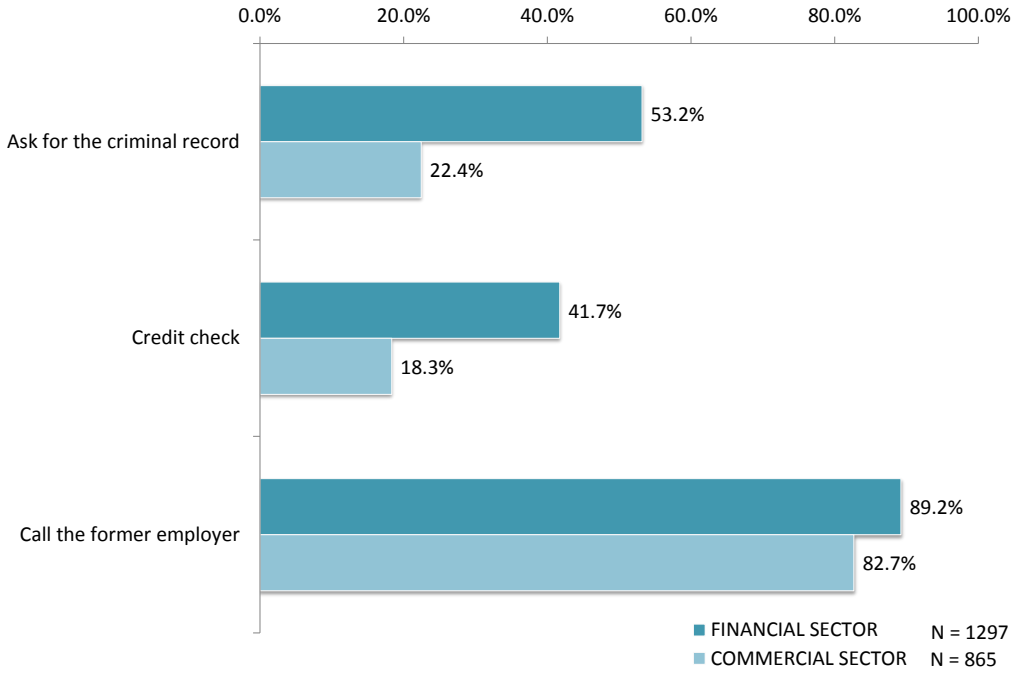
	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	None of these measures	TOTAL N of Respondents
Banks	5.7%	**23.8%**	25.1%	19.9%	22.5%	18.9%	20.7%	20.9%	19.6%	16.8%	16.3%	16.0%	0.0%	**180**
CHF <10mil	4.9%	**9.8%**	8.8%	7.3%	7.8%	5.9%	5.9%	7.3%	8.8%	7.3%	3.9%	4.4%	0.0%	**86**
CHF 10mil-	4.7%	18.9%	**20.8%**	8.5%	17.0%	12.3%	12.3%	10.4%	11.3%	10.4%	15.1%	13.2%	0.0%	**44**
CHF 50mil-	15.0%	50.0%	70.0%	50.0%	50.0%	65.0%	**70.0%**	60.0%	40.0%	15.0%	20.0%	20.0%	0.0%	**15**
CHF >100mil	7.1%	75.0%	**76.8%**	**76.8%**	**76.8%**	62.5%	73.2%	**76.8%**	67.9%	64.3%	62.5%	62.5%	0.0%	**35**

[269] Weighted data.

[270] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

4.2 Measures of prevention before hiring an employee

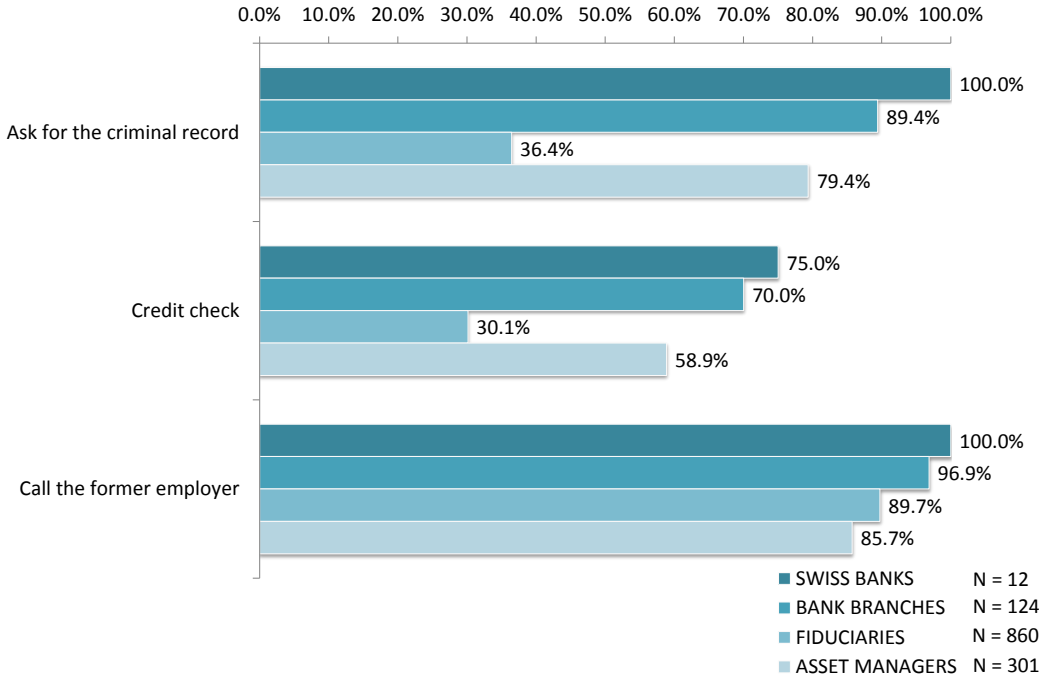
Figure 127 - Measures of prevention before hiring an employee by economic sector - %[271] of the total number of respondents to the survey in each sector



Before hiring an employee, the majority of Swiss firms call the former employer (89.2% in the financial sector and 82.7% in the commercial sector). In the financial sector, asking for the criminal record is also widely common (53.2%). In the commercial sector managers also ask for the criminal record and a credit check before hiring but in a smaller proportion (22% and 18.3%).

[271] Weighted data.

Figure 128 - Measures of prevention before hiring an employee among businesses in the financial sector - %[272] of the total number of respondents to the survey in the financial sector

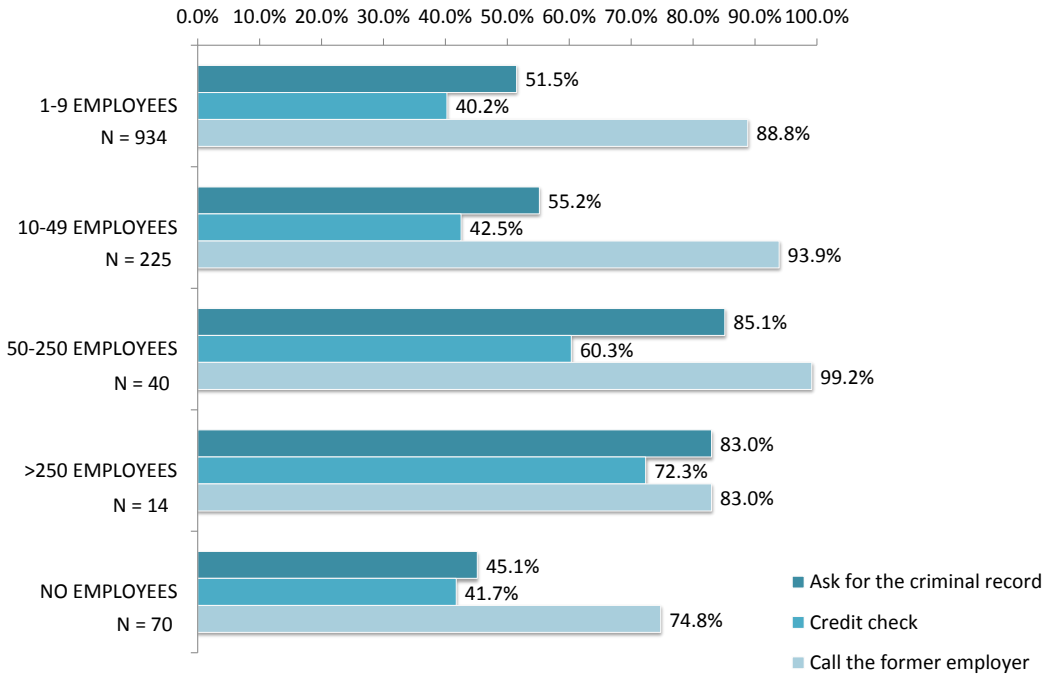


According to the Figure above, fiduciaries firms have the lowest percentage of measures used before hiring an employee (36.4% asking for the criminal record, 30.1% asking for a credit check). The most common measure is calling the former employer (100% used in Swiss banks). 100% of Swiss banks also ask for the criminal record.

[272] Weighted data.

4.2.1 Measures of prevention before hiring an employee by size of the business

Figure 129 - Measures of prevention before hiring an employee in the financial sector, by size of the business - %[273] of the total number of respondents to the survey in the financial sector by size[274]

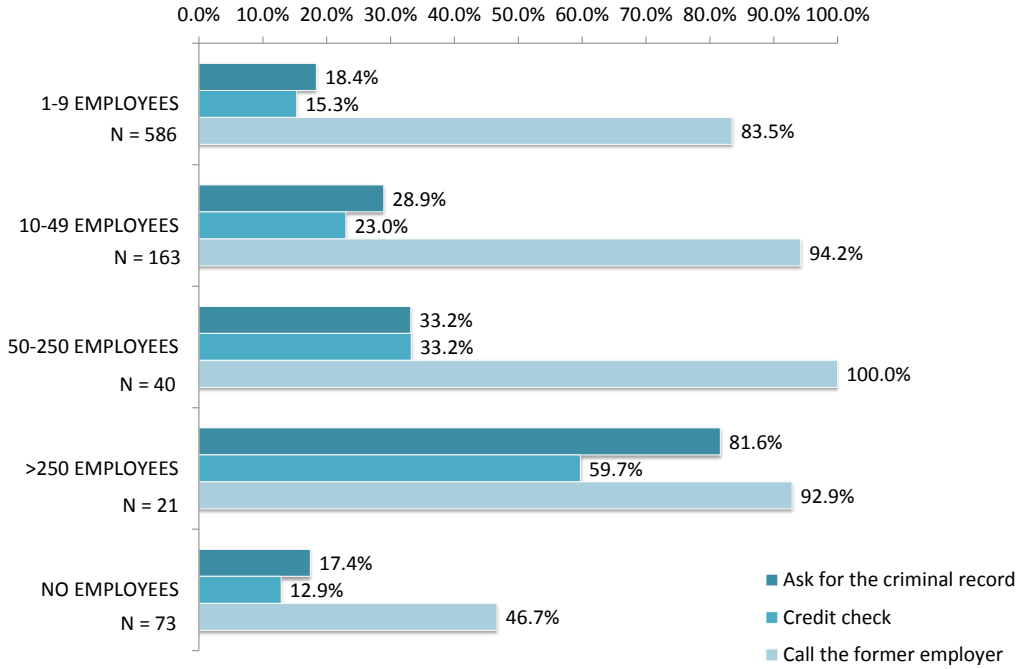


In the financial sector, calling the former employer is the most used measure of prevention before hiring an employee, independently from the size of the firm. However, large firms are also likely to ask for the criminal record or to run a credit check.

[273] Weighted data.

[274] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

Figure 130 - Measures of prevention before hiring an employee in the commercial sector, by size of the business - %[275] of the total number of respondents to the survey in the commercial sector by size[276]



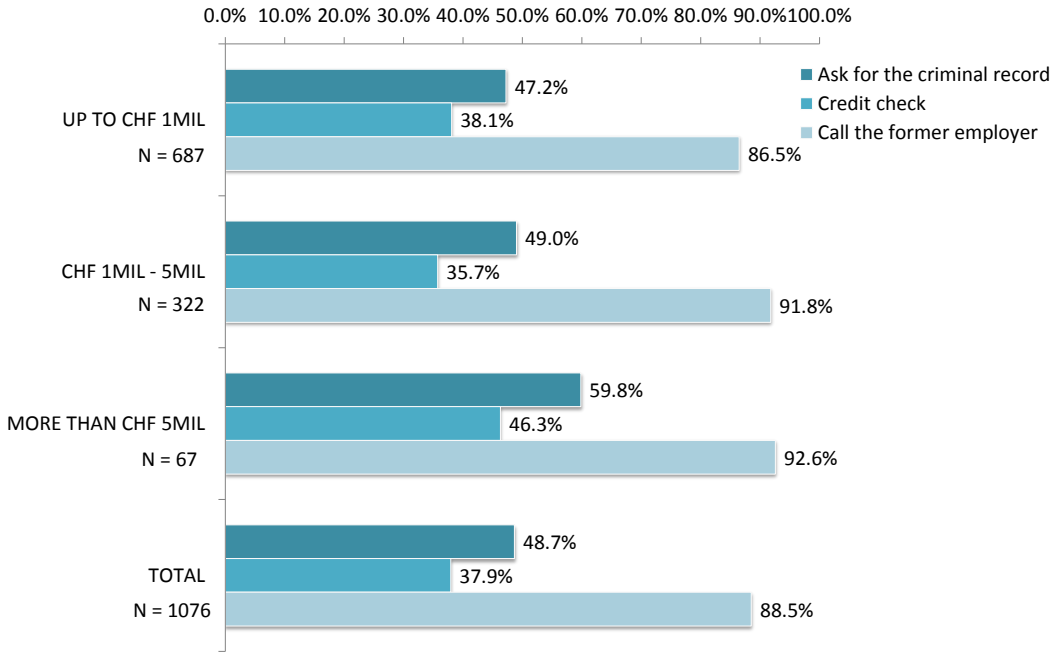
In the commercial sector, likewise the financial sector, the most used measure before hiring a new employee is also to call the former employer. For the two other measures (asking for the criminal record and the credit check), they are less common.

[275] Weighted data.

[276] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category of size on the total number of respondents by size.

4.2.2 Measures of prevention before hiring an employee by annual turnover

Figure 131 - Measures of prevention before hiring an employee existing among asset managers and fiduciaries, by turnover - %[277] of the total number of respondents among asset managers and fiduciaries by turnover[278]

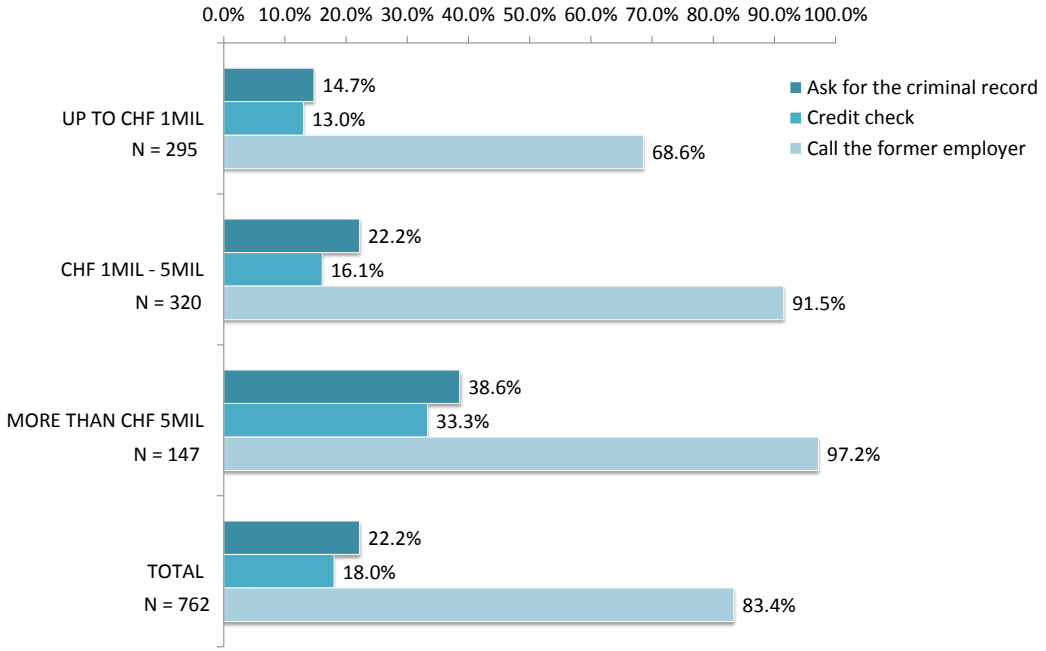


The fiduciaries and asset management firms also largely use the measures of prevention before hiring an employee but in smaller proportion than banks. Calling the former employer is the measure of prevention the most used especially in firms with a turnover more than CHF 50 million (100%).

[277] Weighted data.

[278] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

Figure 132 - Measures of prevention before hiring an employee existing in the commercial sector, by turnover - %[279] of the total number of respondents in the commercial sector by turnover[280]

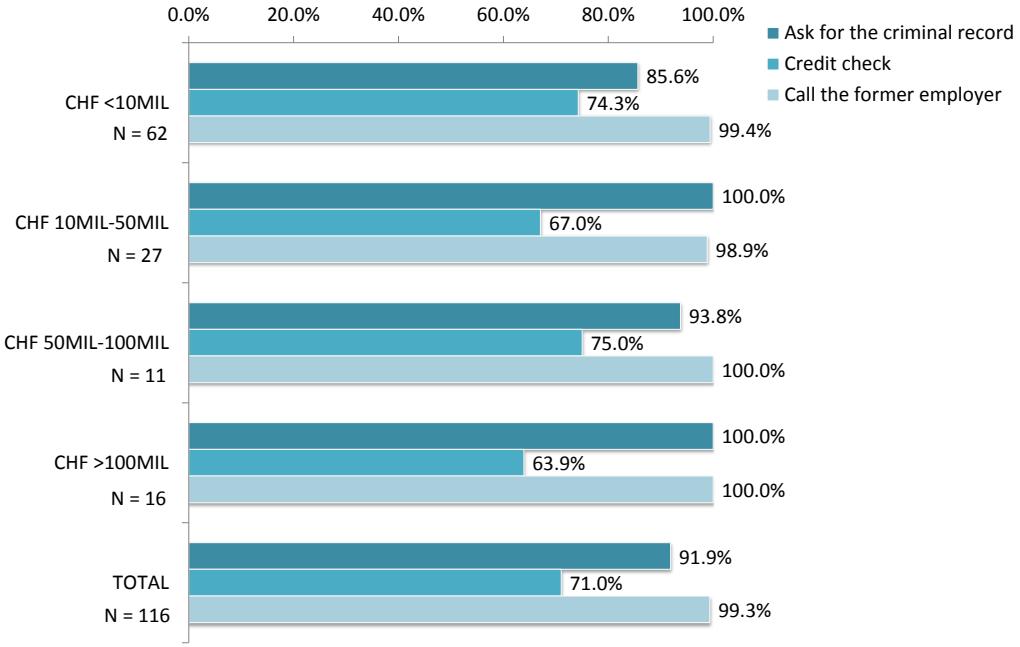


In the commercial sector, before hiring an employee, retail stores with an annual turnover more than 5 million of CHF are 97.2% to call the former employer. This measure is very common in Swiss firms no matter how important is the annual turnover (91.5% and 68.6%). However, we can observe that retail stores with an annual turnover greater than CHF 5 million use more widely the other measures such as asking for the criminal record or running a credit check on the employee than small stores.

[279] Weighted data.

[280] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

Figure 133 - Measures of prevention before hiring an employee existing among banks[281], by turnover - %[282] of the total number of respondents to the survey among banks by turnover[283]



Swiss banks indeed apply largely the measures of prevention before hiring an employee such as asking for the criminal record, processing a credit check or calling the former employer. In large and smaller banks, calling the former employer to check on a new employee reaches 100%. The method of verifying the state of debts and credit is also largely used but with a lower percentage (from 60% to 75%). The totality of large banks (with turnover over CHF 100 million) asks for the criminal record before hiring a new employee.

[281] The analysis for banks excludes here the data for bank headquarters because of missing information.

[282] Weighted data.

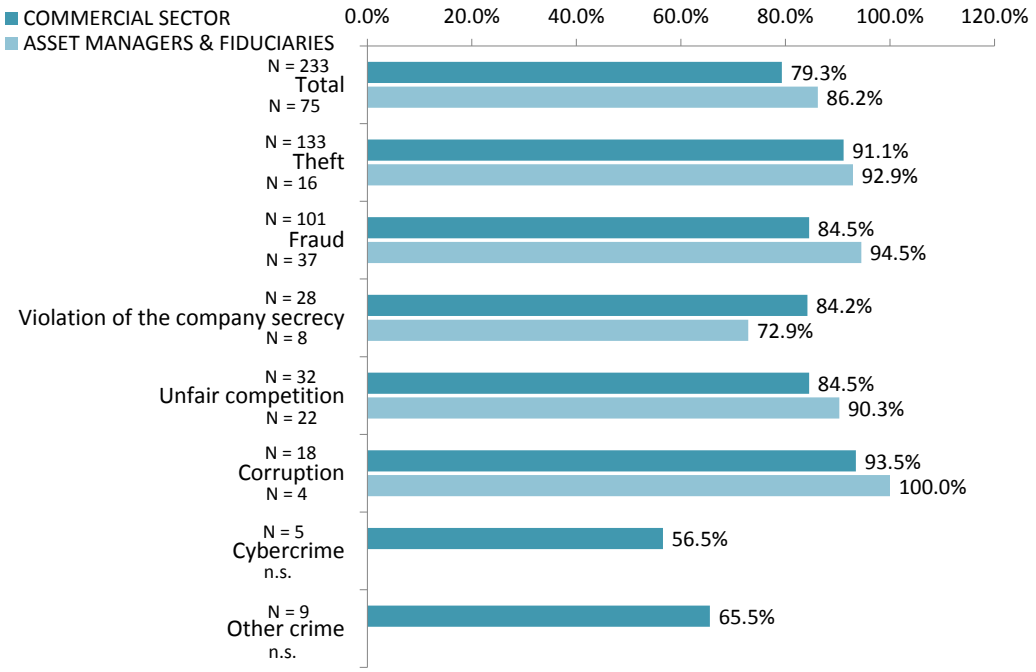
[283] The sum of the different categories of measures of prevention is not equal to 100% because multiple answers to this question were allowed. However, the different percentages have been calculated as the ratio of each category and the total number of respondents by turnover.

4.3 Measures of prevention existing before the discovery of the offence

This section focuses on the measures of prevention already existing within businesses before they experienced a crime incident.
In particular, it analyzes the percentages of Swiss companies which already had at least one measure of crime prevention before a specific offence has happened.
It also describes the specific types of measure existing within companies in relation to a particular type of crime.

4.3.1 At least one measure of prevention existing before the crime incident by type of crime and economic sector

Figure 134 - Businesses having at least one measure of prevention before the crime incident, by type of crime[284] and economic sector. % on the total number of victims by type of crime and economic sector



The level of measures of prevention already existing within businesses before the crime incident is very high in both sectors. Indeed, 86.2% asset management firms and fiduciaries and 79.3% commercial businesses had at least one measure of crime prevention before a specific crime has happened.
Generally speaking, the financial companies have the highest percentages of measures of prevention for all the types of crime considered, with the exception of violation of the company secrecy.

[284] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 4.

In both sectors, theft and fraud show the highest level of measures of prevention existing among businesses. These types of crime could be, indeed, efficiently prevented by adopting tailored measures of crime prevention.

4.3.2 Specific measures of prevention existing before the crime incident by type of crime and economic sector

Table 104 - Specific measures of prevention existing before the crime incident in the commercial sector, by type of crime[285] - %[286] of the total number of victims[287] in the commercial sector

	Very hierarchical system of internal functioning	Regular controls and audit systems	Regular controls of stocks of goods	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear and easy system of communication between management	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work and efforts	Other	TOTAL N of Victims
Theft	14.9%	34.9%	**50.1%**	42.1%	33.2%	12.8%	**43.6%**	**46.0%**	40.5%	33.8%	39.0%	36.9%	5.0%	**133**
Fraud	14.2%	36.2%	36.0%	31.1%	31.7%	10.8%	37.5%	**39.4%**	**38.4%**	37.8%	**46.4%**	35.9%	0.0%	**101**
Unfair competition	8.8%	29.3%	16.8%	17.1%	24.4%	11.4%	**36.8%**	**39.7%**	**35.8%**	34.9%	32.4%	19.3%	3.3%	**32**
Violation of the company secrecy	20.6%	13.2%	22.7%	27.5%	30.9%	7.4%	29.7%	**37.3%**	**42.4%**	32.4%	**36.3%**	13.9%	1.5%	**28**
Corruption	23.7%	35.5%	24.4%	36.1%	22.6%	11.7%	**50.9%**	**44.6%**	36.0%	24.3%	**38.9%**	29.4%	2.8%	**18**
Total	15.0%	32.5%	38.2%	34.1%	30.5%	11.4%	**39.4%**	41.7%	**38.5%**	33.9%	**40.0%**	32.0%	2.9%	**329[288]**

The most frequent measures of crime prevention existing among commercial companies before the victimization event are mainly related to the guarantee of a good system of salary (40%), well-defined codes of conduct (39.4%) and a clear and easy system of communication between the management and employees (38.5%). Therefore, commercial firms base their prevention strategies on fairness, good organization and clear communication among employees.
Focusing on the different types of offence some differences emerge. In the case of theft, for example, the majority of firms adopted regular controls of stock of goods (50.1%), because the majority of thefts target the merchandise of a specific company.

[285] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 18.

[286] Weighted data.

[287] The percentages have been calculated on the number of businesses which experienced at least one of the selected crimes and which answered to the question on the measures of prevention implemented after the discovery of the offence.

[288] Total number of responses includes also multiple answers.

In the case of fraud, the organizational measures and a good system of salary prevail on the other strategies. The same applies for unfair competition, violation of the company secrecy and corruption.

Table 105 - Specific measures of prevention existing before the crime incident among asset managers and fiduciaries, by type of crime[289] - %[290] of the total number of victims[291] among asset managers and fiduciaries

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	Other	TOTAL N of Victims
Theft	11.2%	**46.7%**	24.2%	17.6%	**49.3%**	4.9%	26.8%	16.0%	19.2%	**29.1%**	18.2%	26.7%	5.3%	**16**
Fraud	15.7%	**51.6%**	39.8%	20.1%	**49.6%**	20.5%	44.0%	29.4%	38.1%	39.3%	38.9%	**48.3%**	0.0%	**37**
Unfair competition	10.5%	**48.6%**	33.9%	35.6%	**60.9%**	27.2%	38.7%	37.5%	**62.2%**	41.5%	45.9%	30.9%	8.7%	**22**
Violation of the company secrecy	16.1%	**36.5%**	26.8%	25.8%	25.8%	16.1%	**38.7%**	25.8%	26.3%	**36.0%**	25.8%	26.3%	13.2%	**8**
Total	13.4%	**48.3%**	33.9%	24.5%	**50.3%**	19.0%	38.8%	28.8%	**40.1%**	37.7%	35.7%	37.2%	4.8%	**83[292]**

Differently from commercial firms, the majority of the financial ones tend to adopt concrete computer security systems and devices for the prevention of crimes (50.3%). They also relied on the "four eyes principle" (48.3%) and on clear and easy system of communication between the management and the employees (40.1%).
These crime preventive measures are also the most present in the case of theft, fraud and unfair competition.

[289] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 8.

[290] Weighted data.

[291] The percentages have been calculated on the number of businesses which experienced at least one of the selected crimes and which answered to the question on the measures of prevention implemented after the discovery of the offence.

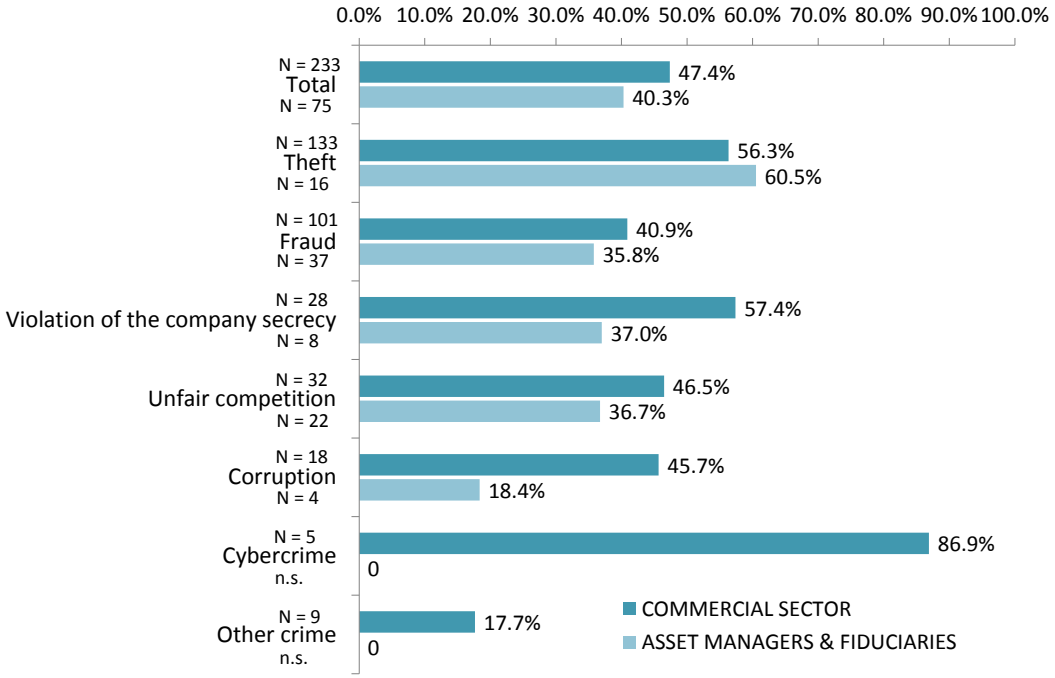
[292] The total number of responses includes also multiple answers.

4.4 Measures of prevention taken after the discovery of the crime incident

This section focuses on the measures of prevention taken by the businesses victims of crime only after the discovery of the crime incident.
In particular, it analyzes the percentages of Swiss companies which adopted at least one new measure of crime prevention after the crime incident happened, by type of offence and economic sector.
It also describes the specific types of measure adopted in response to the particular types of crime experienced.
To conclude, it addresses the reasons why some companies did not adopt any new measures of prevention after the crime incident.

4.4.1 At least one measure of prevention taken after the discovery of the offence by type of crime and economic sector

Figure 135 - Businesses adopting new measures of prevention after the discovery of the crime incident, by type of crime[293] and economic sector. % on the total number of victims by type of crime and economic sector

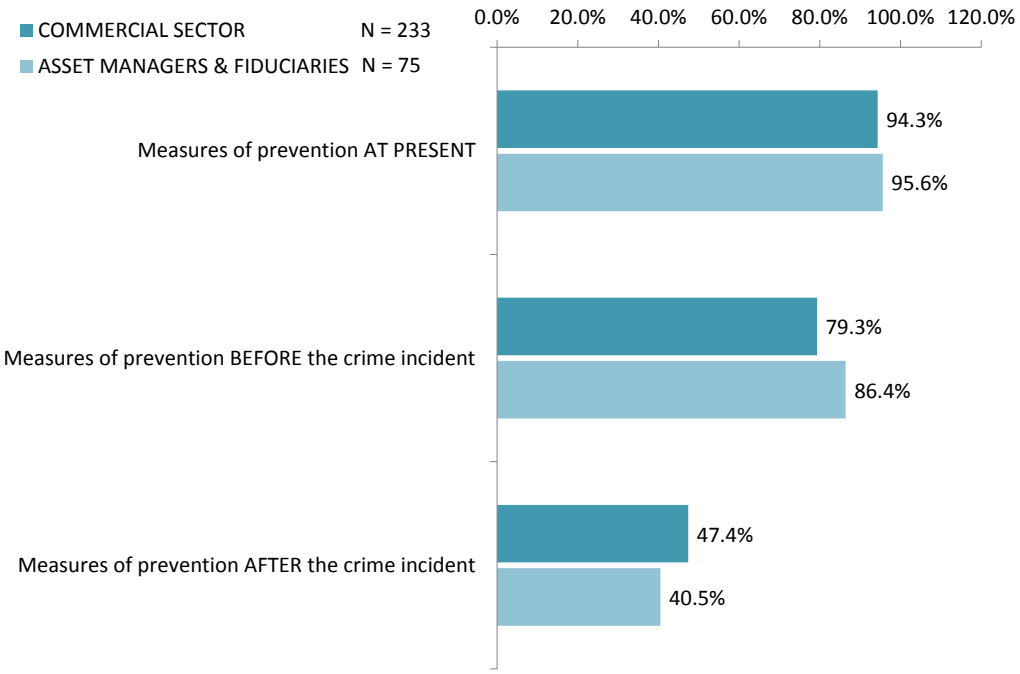


Generally speaking, the level of crime prevention measures implemented as a consequence of the crimes suffered is quite high. In both sectors more than 40% of the victims adopted new measures as a reaction to the employee offence.
It is worth noting that in the commercial sector the percentage of businesses having taken new measures of crime prevention after the incident is higher than among asset managers and fiduciaries (47.4% against 40.5%), but this is probably due to the fact they had to compensate the lack of

[293] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 4.

measures existing before the crime incident. Indeed, as shown in the previous chapter and in the Figure below, while among asset management firms and fiduciaries 86.4% of victims had some measures of prevention already before the crime incident happened, among commercial firms this percentage is lower (79.3%).
Commercial businesses show the highest percentages of victims adopting new measures of crime prevention after the discovery of the offence for every type of crime, besides theft. In this case, 60.5% of asset management firms and fiduciaries victims of theft adopted new measures, against 56.3% of commercial companies.
Moreover, in both sectors, theft is the type of crime for which the highest percentage of businesses adopted new measures of prevention after the discovery of the incident. Indeed, theft could efficiently be prevented by running specific controls or adopting specific precautionary measures (which are analyzed in details section 4.4.1).

Figure 136 - Businesses adopting new measures of prevention after the discovery of the crime incident, compared to those already existing before the crime and those existing at present within the businesses. % on the total number of victims by economic sector



The Figure above shows the percentages of firms victims with at least one measure of prevention at present, before the crime incident, and also those which adopted new measures after the offence was discovered.
In both sectors, more than 90% of business victims of crime have at least one measure of prevention, at present. The percentage of asset managers and fiduciaries is slightly higher than the one of commercial businesses (95.6% against 94.3%).
As already noticed above, the percentage of commercial business victims having adopted new strategies of prevention after the discovery of the offence is higher than that of financial firms (47.4% against 40.5%), but this is likely to depend on the lower presence of measures before the crime incident happened (79.3% among commercial companies against 86.4% in financial companies).

It has to be highlighted that the implementation of new measures of prevention, which are probably more tailored on the crime problems of a specific company, seems to efficiently prevent further episodes of victimization. Indeed, according to the financial businesses interviewed, the firms which implemented new measures of prevention did not suffer any other crimes between 2008 and 2010. Only 2 out of 15 financial companies, having implemented new measures of prevention, have been victims again of theft between 2008 and 2010; and only 4 out of 37 have been victims again of fraud between 2008 and 2010.
In the commercial sector, the situation is slightly different. Indeed, even if no business experienced unfair competition and corruption again after the implementation of new measures of prevention; 24.4% reported to have suffered fraud again, 19.1% theft, and 7.3% some violation of the company secrecy[294], between 2008 and 2010. Given the high odds of re-victimization among victims in general[295], these rates are remarkably low.

4.4.2 Specific measures of prevention taken after the discovery of the offence by type of crime

This section shows which specific measures of prevention have been taken after the discovery of a particular crime.

Table 106 - Specific new measures of prevention adopted after the discovery of the offence in the commercial sector, by type of crime[296] - %[297] of the total number of victims[298] in the commercial sector

	Very hierarchical system of internal functioning	Regular controls and audit systems	Regular controls of stocks of goods	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear and easy system of communication between management	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work and efforts	Other	TOTAL N of Victims
Theft	17.5%	**35.6%**	**24.1%**	**33.1%**	8.4%	10.4%	20.6%	19.3%	9.0%	1.9%	5.1%	9.9%	17.7%	**77**
Fraud	**21.5%**	**29.3%**	20.6%	13.9%	3.9%	8.8%	18.7%	**28.1%**	15.7%	12.2%	6.1%	6.1%	13.1%	**43**
Unfair competition	13.4%	**29.4%**	15.8%	3.1%	**32.7%**	24.9%	24.8%	**29.0%**	11.3%	4.1%	4.1%	0.0%	27.6%	**14**
Violation of the company secrecy	24.5%	23.7%	0.0%	13.7%	**31.9%**	17.6%	**47.2%**	**43.3%**	10.9%	7.4%	0.0%	0.0%	14.7%	**15**
Corruption	6.2%	14.3%	0.0%	6.2%	**44.9%**	0.0%	31.6%	14.3%	31.6%	14.3%	**45.9%**	**48.9%**	8.2%	**8**
Total	18.6%	**30.0%**	18.6%	21.8%	13.4%	11.4%	**23.8%**	**24.2%**	12.6%	6.0%	6.6%	8.7%	18.0%	**165[299]**

[294] The data for the other types of crime are not enough to allow significant analyses.

[295] Killias & al, Grundriss der Kriminologie.Berne: Staempfli, 3rd edition, 2012

[296] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 8.

[297] Weighted data.

[298] The percentages have been calculated on the number of businesses which experienced at least one of the selected crimes and which answered to the question on the measures of prevention implemented after the discovery of the offence.

Overall, among commercial businesses, the measure of prevention most frequently adopted after the discovery of a crime incident is the application of "Regular controls and audit systems" (30%), which is actually one of the most common ways to regularly check the work of the employees and, thus, avoid misconducts. "Well-defined staff policies and procedures" (24.2%) and "Well-defined codes of conduct" (23.8%) are also frequently developed as a reaction to a crime incident.
Focusing on each specific type of crime: in the case of theft and fraud the most frequent reaction among commercial businesses is the development of "Regular controls and audit systems" (35.6% and 29.3%).
Moreover, as predictable, after the discovery of a theft by employees, 33.1% of commercial companies adopted some "Security systems" such as anti-theft devices, cameras, alarms, etc., and 24.1% started running "Regular controls of stocks of goods".
Among the "Other" measures of prevention taken by commercial companies after the discovery of theft, the use of serial numbers on the goods, the use of safe (strongbox) in accounting, the obligation for employees to report on every specific operation with the cash machine (not only receipts of sold products but also the compilation of specific dossier on the characteristics of the sold goods), and the obligation for all the employees to reimburse any shortages in the cash machine (this happened in a micro business), should be mentioned as good practices for crime prevention.
After the discovery of a fraud by employees, 28.1% of businesses established "Well-defined staff policies and procedures" and 21.5% the "Very hierarchical system of internal functioning". The very low percentage of firms adopting "Computer security devices/software" after the discovery of a fraud (3.9%), further highlights that the majority of frauds among commercial businesses are not committed through computers but are mainly related to cheating on sick days and holidays.
However, the majority of business victims of unfair competition (32.7%) adopted some "Computer security devices/software" after the discovery of the crime incident. This type of measure of prevention is also implemented by 31.9% of victims of violation of the company secrecy, and by 44.9% of victims of corruption. These results suggest that these three types of crime usually developed through the use of computers. It is worth noting that the majority of victims of corruption tend to react to this offence by increasing the gratitude towards the employees, both symbolic (48.9%) and economic (45.9%).
In the case of unfair competition and violation of the company secrecy, the interviewed companies also declared to have reacted by limiting the access to sensitive data and by creating an automated reporting system for each unauthorized access to computerized records.

[299] The total number of responses includes also multiple answers.

Table 107 - Specific new measures of prevention adopted after the discovery of the offence among asset managers and fiduciaries, by type of crime[300] - %[301] of the total number of victims[302] among asset managers and fiduciaries

	Very hierarchical system of internal functioning	"Four eyes" principle	Regular controls and audits	Security systems (anti-theft devices, alarms, cameras, etc.)	Computer security devices/software	Systematic check of new employees at the time of hiring	Well-defined codes of conduct	Well-defined staff policies and procedures	Clear &easy system of communication management-employees	Transparency of staff and business management	Good system of salary	Gratitude towards employees for their work…	Other	TOTAL N of Victims
Theft	**11.2%**	5.3%	4.9%	**17.3%**	5.3%	6.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	**19.7%**	**16**
Fraud	5.7%	5.7%	**9.7%**	3.3%	4.9%	**13.1%**	**12.7%**	2.4%	8.1%	4.9%	4.8%	4.9%	6.8%	**37**
Unfair competition	5.0%	5.0%	**11.5%**	5.0%	8.8%	8.9%	**13.4%**	5.0%	8.9%	8.6%	0.0%	**12.5%**	9.4%	**22**
Violation of the company secrecy	0.0%	0.0%	**10.7%**	0.0%	**10.7%**	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**26.3%**	**8**
Total	5.3%	4.4%	**9.3%**	5.4%	6.0%	**9.3%**	**10.4%**	2.2%	5.4%	4.1%	1.9%	5.0%	10.6%	**91[303]**

Among asset managers firms and fiduciaries, the most frequent types of measures of prevention taken after the discovery of a crime committed by employees are: "Well-defined codes of conduct" (10.4%), "Systematic checks of new employees at the time of hiring" (9.3%) and "Computer security devices/software" (9.3%). This last strategy highlights the difference in the characteristics of the offences experienced by commercial and financial firms. Indeed, among financial companies the use of the computer to commit a crime, or the violation of the computer system, is more frequent and harmful.

After an incident of theft, the majority of financial businesses adopted some "Security systems" (17.3%), such as anti-theft devices, alarms, cameras (among the category "Other" related to theft, the interviewees also reported the use of strongbox for ensuring the safety of the cash); while 11.2% developed "Very hierarchical system of internal functioning". Some other companies just recalled basic notions of security.

In the case of fraud the majority of businesses invested in the improvement of "organizational measures" for crime prevention. For example, 13.1% started running "Systematic check of new employees at the time of hiring", 12.7% "Well-defined codes of conduct" and 9.7% "Regular controls and audit systems". The same strategies have been adopted after the discovery of unfair competition incidents, with the addition of "Gratitude towards employees for their work". This is worth noting if

[300] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 8.

[301] Weighted data.

[302] The percentages have been calculated on the number of businesses which experienced at least one of the selected crimes and which answered to the question on the measures of prevention implemented after the discovery of the offence.

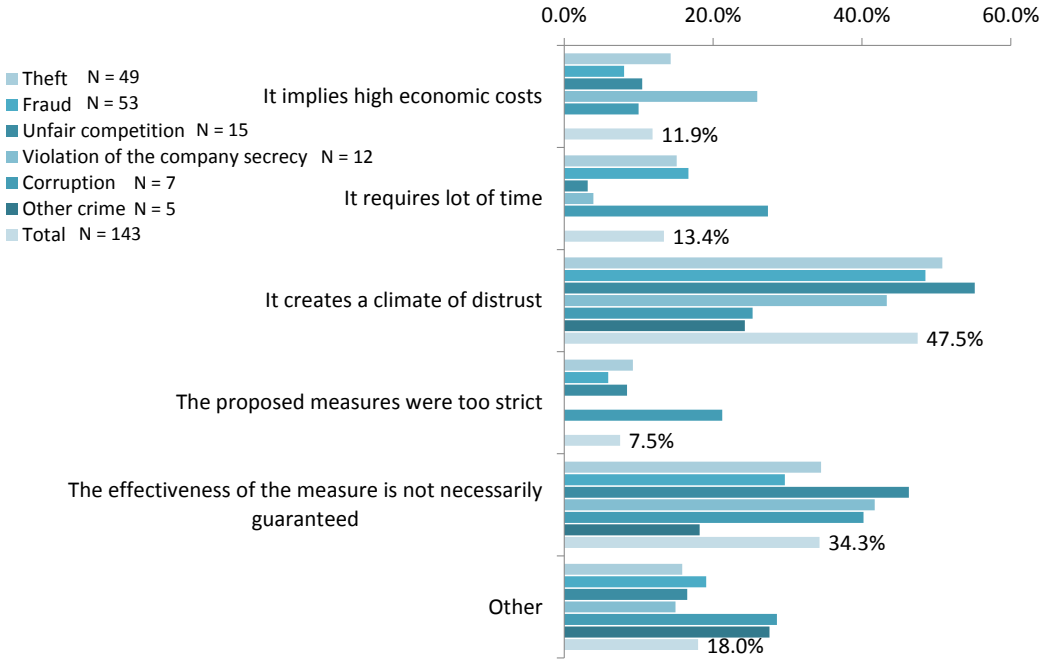
[303] The total number of responses includes also multiple answers.

considering that the majority of unfair competition incidents are usually committed by employees for revenge.
In the case of violation of the company secrecy, besides "Regular controls and audit systems" (10.7%), financial companies tend also to adopt "Computer security devices/software" (10.7%), because many incidents are committed through the use of computer systems. Some other firms declared to have changed the custodian bank after the discovery of the crime.

4.4.3 Reasons why not implementing new measures of prevention after the crime incident

Companies declaring the non-application of any new measures of prevention after the discovery of the offence have been asked to report the main reasons for their decision. This section analyzes the answers to this specific question.

Figure 137 - Reasons why no new measures of prevention have been implemented after the discovery of the offence among commercial businesses, by type of crime[304] - %[305] of the total number of victims among commercial businesses



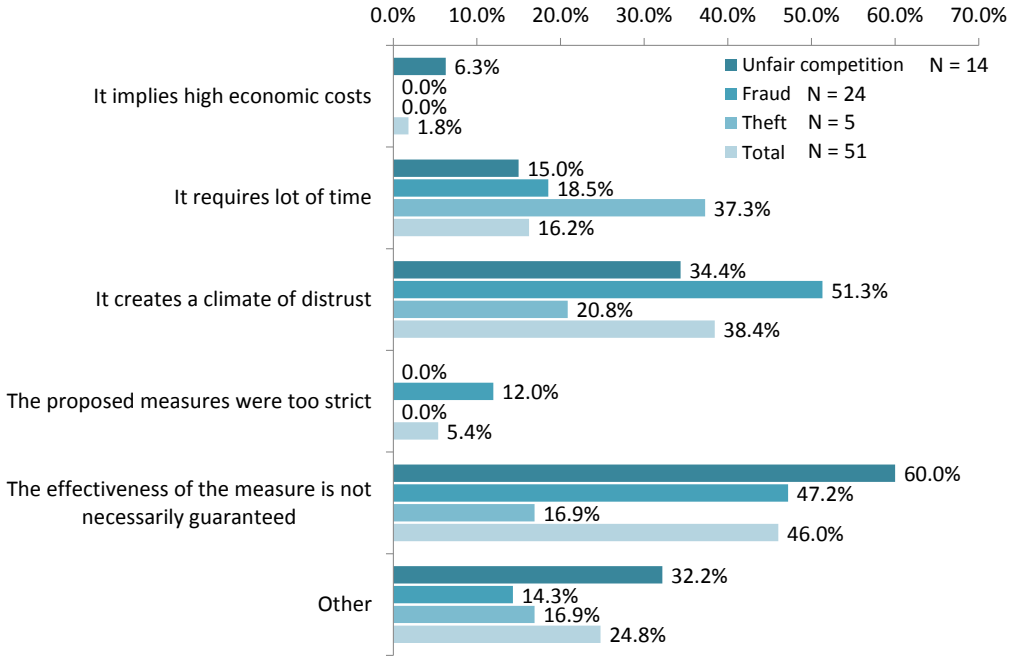
Overall, the majority of commercial companies decided to not implement new measures of crime prevention because this could have created a climate of distrust among employees (47.5%), and because the effectiveness of the new measures was not guaranteed (34.3%). The need for the company to maintain a good climate among employees clearly emerged from this analysis.
The waste of time seems also to worry the companies, more than the economic costs (13.4% against 11.9%). Among the "Other" reasons for not implementing new measures of prevention the businesses

[304] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 5.

[305] Weighted data.

reported that the existing strategies were efficiently enough, or that the majority of the employees belong to the owner's family.

Figure 138 - Reasons why no new measures of prevention have been implemented after the discovery of the offence among asset managers and fiduciaries, by type of crime[306] - %[307] of the total number of victims among asset managers and fiduciaries



Differently from commercial businesses, among financial ones, the main reason for not implementing new measures of crime prevention is the lack of guarantee of their effectiveness (46%), especially in the case of theft (60%). The avoidance of creating a climate of distrust (38.4%) follows, especially in relation to fraud (51.3%).

[306] The analysis covers only the types of crime presenting absolute Not-weighted number equal or higher than 5.

[307] Weighted data.

4.5 Which measure of prevention for which business?

This section analyzes the businesses' characteristics which mostly influences the presence of specific measures of crime prevention within the firms.
The statistical methods used to test the association between the selected variables, are based on the analysis of cross-tabulations and association's coefficients such as the Chi-square, the Phi coefficient, Cramer V and Odds ratio (for further information on these statistical coefficients see Annex 2). The conventional levels of confidence taken into consideration for refusing the null hypothesis are $p<0.01$ and $p<0.05$.
Binary logistic regression will also be performed to assess the effect of each independent variable on the dependent one, when the others are controlled.

4.5.1 Definition of the variables

This section analyzes which are the specific characteristics of a business which could influence the presence of specific measures of prevention within the company at the time of the interview
The analyses are focused on 1161 asset managers and fiduciaries (financial sector) and 865 businesses belonging to the commercial sector.

The dependent variables are the following:

- ✓ *Total measures of prevention*. It represents the number of businesses which had at least one measure of prevention at the time of the interview. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Security systems.* It refers to the presence of at least one measure of crime prevention among physical security systems (anti-theft devices, alarms, cameras, etc.) and computer security devices/systems (anti-virus, anti-spam filters, limited access, filters for Internet navigation, etc.) within the business at the time of the interview. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Control systems*. It refers to the presence of at least one measure of crime prevention, focused on the control of the employees and their work, among regular controls and audits, regular controls of stocks and merchandise (only for businesses in the commercial sector) and systematic check of new employees within the business at the time of the interview. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Organizational measures*. It refers to the presence of at least one measure of crime prevention, at the organizational and procedural level, among very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts. It's a dummy-coded variable (1=Yes, 0=No).

The independent variables are the same which have been considered in the previous chapters in relation to the business victimization, and they represent the specific characteristics of the businesses and the characteristics of the area where the businesses are located. :

- ✓ *The area where the business is located.* This variable presents four categories: 1. City centre, 2. Residential area, 3. Industrial area, 4. Other.
- ✓ *The number of inhabitants of the area where the company is located.* This variable has five categories: 1. Less than 10,000 inhabitants; 2. 10,000-20'000 inhabitants; 3. 20,000-50,000 inhabitants; 4. 50,000-100,000 inhabitants; 5. More than 100,000 inhabitants.

- ✓ *Size of the business.* It indicates the number of full-time employees working within the business. It presents five categories: 1. 1-9 employees, 2. 10-49 employees, 3. 50-250 employees, 4. More than 250 employees, 5. No employees[308]. As far as this analysis is focused on the relationship with crimes committed by employees, the category 5 "No employees" will not be considered.
- ✓ *Annual turnover.* It indicates the average annual turnover of the companies. This variable presents six categories: 1. Less than CHF 500,000, 2. CHF 500,000-1 million, 3. CHF 1-5 million, 4. CHF 5-10 million, 5. CHF 10-50 million, 6. More than CHF 50 million.[309]
- ✓ *Security systems.* It refers to the presence of at least one measure of crime prevention among physical security systems (anti-theft devices, alarms, cameras, etc.) and computer security devices/systems (anti-virus, anti-spam filters, limited access, filters for Internet navigation, etc.) within the business at the time of the interview. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Control systems.* It refers to the presence of at least one measure of crime prevention, focused on the control of the employees and their work, among regular controls and audits, regular controls of stocks and merchandise (only for businesses in the commercial sector) and systematic check of new employees within the business at the time of the interview. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Organizational measures.* It refers to the presence of at least one measure of crime prevention, at the organizational and procedural level, among very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts. It's a dummy-coded variable (1=Yes, 0=No).
- ✓ *Corporate culture.* It indicates the types of corporate culture adopted by businesses. This variable presents four categories: 1. Dynamic and entrepreneurial culture, 2. Competitive culture, 3. Rules and formal policies culture, 4. Family culture.

[308] A statistical analysis of the distribution of this variable by economic sector of the business can be found in the section III - RESPONSE RATES, chapter 1.2.

[309] A statistical analysis of the distribution of this variable by economic sector of the business can be found in the section III - RESPONSE RATES, chapter 1.3.

4.5.2 Which measures of prevention for which business in the commercial sector

4.5.2.1 Bivariate analysis

Following the same organization as in the previous sections, the bivariate analysis will be carried out first considering all the categories of the independent variables. To obtain more significant results and to focus on the most specific and relevant features of each variable, further analyses on only one specific variables' modality will be performed.

Area where the business is located and measures of prevention

Among business in the commercial sector, the relationship between the area where the business is located and its likelihood of adopting at least one measure of prevention, overall, is not significant at the established level of confidence of 0.05.
Also the results of the analysis with the dummy-coded independent variable, corresponding to the presence/absence of businesses in the residential area (as this is the category presenting the highest % of companies having at least one measure of prevention) is not significant.

However, focusing only on those businesses adopting "security systems", both physical and computer, as measures of prevention, the association with the area of location of the company turns out to be significant (see Table below).

*Table 108 - **Security systems** by area of location of the businesses in the commercial sector. % on the total number of respondents by area of location*

	Area of location				Total
Security systems	**City center**	**Residential area**	**Industrial area**	**Other**	
No	201	111	66	35	413
	48.4%	54.7%	37.3%	50.0%	47.7%
Yes (at least one)	214	92	111	35	452
	51.6%	45.3%	**62.7%**	50.0%	52.3%

Chi-square= 11.892 DF=3 P<0.01
Phi = 0.117 P<0.01
Cramer V = 0.117 P<0.01

The Table above shows that the percentage of businesses adopting at least one security system is significantly higher among companies located in industrial areas. Indeed, 62.7% of firms situated in these areas had at least one of these measures of prevention at the time of the interview.

*Table 109 - **Security systems** by industrial area of location. % on the total number of respondents by industrial area of location*

	Industrial area		Total
Security systems	**No**	**Yes**	
No	347	66	413
	50.4%	37.3%	47.7%
Yes	341	111	452
	49.6%	**62.7%**	52.3%

Chi-square= 9.754 DF=1 P<0.002
Phi = 0.106 P<0.01
Cramer V = 0.106 P<0.01
Odds ratio = 1.711 95% CI [1.219, 2.403]

Focusing only on those businesses located in industrial areas or not, the association is still significant. In particular, **the likelihood of adopting security systems is 1.7 times higher for businesses located in industrial areas rather than for those situated in residential areas or in the city center.**

*Table 110 - **Control systems** by area of location of the businesses in the commercial sector. % on the total number of respondents by area of location*

	Area of location				Total
Control systems	**City center**	**Residential area**	**Industrial area**	**Other**	
No	192	116	78	33	419
	46.3%	57.1%	44.1%	47.1%	48.4%
Yes (at least one)	223	87	99	37	446
	53.7%	**42.9%**	**55.9%**	52.9%	51.6%

Chi-square= 8.344 DF=3 P<0.05
Phi = 0.098 P<0.05
Cramer V = 0.098 P<0.05

Also in the case of "control systems", aimed at regularly checking the work of the employees, there is a significant association with the area of location of the company.
As show in the Table above, the majority of businesses adopting these systems are located in industrial area (55.9%), while those situated in residential area are less likely to adopt them (42.9%).
In particular, a significant negative association is registered for those businesses located in residential areas; indeed, they are 0.633 times less likely to adopt control systems rather than companies located in different areas (Table below).

*Table 111 - **Control systems** by residential area of location. % on the total number of respondents by residential area of location*

	Residential area		Total
Control systems	**No**	**Yes**	
No	303	116	419
	45.8%	57.1%	48.4%
Yes	359	87	446
	54.2%	**42.9%**	51.6%

Chi-square= 8.045 DF=1 P<0.01
Phi = -0.096 P<0.01
Cramer V = 0.096 P<0.01
Odds ratio = 0.633 95% CI [0.461, 0.869]

Number of inhabitants of the place where the company is located and measures of prevention

*Table 112 - **Total measures of prevention** by N of inhabitants of the area of location of the businesses in the commercial sector. % on the total number of respondents by N of inhabitants of the area of location*

	Number of inhabitants						Total
Measures of prevention	**Less than 1,000 inhabitants**	**1,000 - 10,000 inhabitants**	**10'000 - 20'000 inhabitants**	**20'000 - 50'000 inhabitants**	**50'000 - 100'000 inhabitants**	**More than 100'000 inhabitants**	
No	5	34	34	10	2	29	114
	20.8%	12.6%	20.2%	8.7%	4.5%	13.7%	13.7%
Yes	19	236	134	105	42	182	718
	79.2%	87.4%	79.8%	91.3%	**95.5%**	86.3%	86.3%

Chi-square= 12.941 DF=5 P<0.05
Phi = 0.125 P<0.05
Cramer V = 0.125 P<0.05

The size of the area where the business is located, in terms of number of inhabitants, positively influences the likelihood of adopting at least one measure of prevention. In particular, in the areas with a number of inhabitants between 50,000 and 100,000 and in those between 20,000 and 50,000, the percentages of companies with measures of prevention are the highest ones, respectively equal to 95.5% and 91.3%.

However, it is interesting to notice that, when focusing on the specific types of measures of prevention, only the physical and computer security systems present a significant association with the number of inhabitants of the area of location of the company, and only when considering those areas with more than 50,000 inhabitants.

*Table 113 - **Security systems** by areas of location with more than 50,000 inhabitants. % on the total number of respondents by areas of location with more than 50,000 inhabitants*

	More than 50,000 inhabitants		Total
Security systems	**No**	**Yes**	
No	288	107	395
	49.9%	42.0%	47.5%
Yes	289	148	437
	50.1%	**58.0%**	52.5%

Chi-square= 4.485 DF=1 P<0.05
Phi = 0.073 P<0.05
Cramer V = 0.073 P<0.05
Odds ratio = 1.378 95% CI [1.024, 1.856]

Indeed, **businesses located in areas with more than 50,000 inhabitants are almost 1.4 times more likely to adopt at least one security systems**. This is probably due to the fact that usually the larger the area, the more important the concentration of bigger companies which are also those more targeted by crime.

Size of the business and measures of prevention

As it was already noticed, when analyzing the predictors for the victimization rates, the size of the business is one of the variables mostly influencing the organization of a company and its crime risk.
Even with regards to the measures of prevention adopted by the Swiss firms, the size of the business presents the highest levels of association, especially when considering the distinction between micro businesses and larger companies.

*Table 114 - **Total measures of prevention** by micro businesses (1-9 employees). % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Measures of prevention	**No**	**Yes**	
No	51	68	119
	17.2%	12.0%	13.8%
Yes	246	500	746
	82.8%	**88.0%**	86.2%

Chi-square= 4.444 DF=1 P<0.05
Phi = 0.072 P<0.035
Cramer V = 0.072 P<0.035
Odds ratio = 1.524 95% CI [1.028; 2.260]

According to the Table above, 88% of micro businesses have at least one measure of prevention. Therefore, generally speaking, it seems that **micro businesses are more likely to adopt measures of crime prevention than larger ones**.
However, when considering the specific different types of crime prevention measures, the association appears the other way round.

*Table 115 - **Security systems** by micro businesses (1-9 employees). % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Security systems	**No**	**Yes**	
No	107	306	413
	36.0%	53.9%	47.7%
Yes	190	262	452
	64.0%	**46.1%**	52.3%

Chi-square= 24.896 DF=1 P<0.001
Phi = -0.170 P<0.001
Cramer V = 0.170 P<0.001
Odds ratio = 0.482 95% CI [0.361; 0.644]

When focusing on the **presence of security systems** within the business, **46.1% of micro businesses adopt them against 64% of larger businesses**.

*Table 116 - **Control systems** by micro businesses (1-9 employees). % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Control systems	**No**	**Yes**	
No	117	302	419
	39.4%	53.2%	48.4%
Yes	180	266	446
	60.6%	**46.8%**	51.6%

Chi-square= 14.817 DF=1 P<0.001
Phi = -0.131 P<0.001
Cramer V = 0.131 P<0.001
Odds ratio = 0.573 95% CI [0.430; 0.761]

Also in the case of audit systems and regular controls of new employees, **larger businesses are more likely to adopt them**.

*Table 117 - **Organizational measures** by micro businesses (1-9 employees). % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Organizational measures	**No**	**Yes**	
No	108	265	373
	36.4%	46.7%	43.1%
Yes	189	303	492
	63.6%	**53.3%**	56.9%

Chi-square= 8.421 DF=1 P<0.01
Phi = -0.099 P<0.01
Cramer V = 0.099 P<0.01
Odds ratio = 0.653 95% CI [0.490; 0.872]

The negative association between micro businesses and the presence of organizational measures of prevention is less evident. Indeed, more than half of micro companies considered had at least one organizational measure at the time of the interview. However, **firms with more than nine employees are significantly more likely to adopt one of these measures**.

Annual turnover and measures of prevention

The annual turnover is considered one of the best predictors to explain the presence of measures of crime prevention within a business. Indeed, high turnovers are usually associated with higher opportunities for crime as well as with the presence of more economic resources, which could be spent in the installation and organization of specific security measures.

*Table 118 - **Total measures of prevention** by annual turnover of the businesses in the commercial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						
Measures of prevention	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	**Total**
No	52	18	19	4	2	0	95
	31.1%	14.1%	5.9%	7.5%	3.4%	.0%	12.5%
Yes	115	110	301	49	56	36	667
	68.9%	85.9%	94.1%	92.5%	96.6%	**100.0%**	87.5%

Chi-square= 76.772 DF=5 P<0.001
Phi = 0.317 P<0.001
Cramer V = 0.317 P<0.001

The analysis above shows that **the higher the annual turnover of a business, the higher the percentage of businesses adopting at least one measure of prevention**. In particular, 100% of retailers with an annual turnover greater than CHF 50 million had at least one measure of prevention, against 68.9% of those with a turnover less than CHF 500.000.

*Table 119 - **Total measures of prevention** by businesses with a high turnover (more than CHF 50 million). % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Measures of prevention	**No**	**Yes**	
No	119	0	119
	14.4%	.0%	13.8%
Yes	710	36	746
	85.6%	**100.0%**	86.2%

Chi-square= 5.992 DF=1 P<0.05
Phi = 0.083 P<0.05
Cramer V = 0.083 P<0.05
Odds ratio = 1.051 95% CI [1.034; 1.068]

The analysis with the dummy-coded independent variable shows again the presence of a positive and significant association between the two variables.

*Table 120 - **Security systems** by annual turnover of the businesses in the commercial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						Total
Security systems	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	
No	118	78	140	17	9	1	363
	70.7%	60.9%	43.8%	32.1%	15.5%	2.8%	47.6%
Yes	49	50	180	36	49	35	399
	29.3%	39.1%	56.3%	67.9%	84.5%	**97.2%**	52.4%

Chi-square= 104.675 DF=5 P<0.001
Phi = 0.371 P<0.001
Cramer V = 0.371 P<0.001

The association between the turnover and the presence of security systems is significantly stronger than the one registered for the general measures of prevention (Cramer V equal to 0.371 instead of 0.083). Indeed, if only 29.3% of the companies with a turnover lower than CHF 500,000 have adopted security systems, while this percentage reaches 97.2% for firms with a turnover higher than CHF 50 million

In particular, analyzing the results of the analysis presented in the Table below, **the likelihood of adopting at least one security system for businesses with a high turnover is more than 34 times higher than for companies with a lower turnover**. Given the confidence interval size the value of the Odds ratio should be interpreted with caution.

*Table 121 - **Security systems** by businesses with a high turnover (more than CHF 50 million). % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Security systems	**No**	**Yes**	
No	412	1	413
	49.7%	2.8%	47.7%
Yes	417	35	452
	50.3%	**97.2%**	52.3%

Chi-square= 30.445 DF=1 P<0.001
Phi = 0.188 P<0.001
Cramer V = 0.188 P<0.001
Odds ratio = 34.580 95% CI [4.716; 253.587]

*Table 122 - **Control systems** by annual turnover of the businesses in the commercial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						Total
Control systems	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	
No	108	83	139	18	9	2	359
	64.7%	64.8%	43.4%	34.0%	15.5%	5.6%	47.1%
Yes	59	45	181	35	49	34	403
	35.3%	35.2%	56.6%	66.0%	84.5%	**94.4%**	52.9%

Chi-square= 90.415 DF=5 P<0.001
Phi = 0.344 P<0.001
Cramer V = 0.344 P<0.001

Also in the case of control systems, **the higher the turnover, the higher the likelihood of the use of controlling systems.**
In particular, focusing on the results of the analysis presented in the Table below, **the likelihood of adopting at least one control system for retail stores with a high turnover is more than seventeen times higher than for businesses with a smaller turnover**. However the confidence interval size suggests interpreting the value of the Odds ratio with caution.

*Table 123 - **Control systems** by businesses with a high turnover (more than CHF 50 million). % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Control systems	**No**	**Yes**	
No	417	2	419
	50.3%	5.6%	48.4%
Yes	412	34	446
	49.7%	**94.4%**	51.6%

Chi-square= 27.659 DF=1 P<0.001
Phi = 0.179 P<0.001
Cramer V = 0.179 P<0.001
Odds ratio = 17.206 95% CI [4.107; 72.065]

*Table 124 - **Organizational measures** by annual turnover of the businesses in the commercial sector. % on the total number of respondents by annual turnover*

	Annual turnover of the business						Total
Organizational measures	**<500'000 CHF**	**500'000 - 1 million CHF**	**1 - 5 million CHF**	**5 - 10 million CHF**	**10 - 50 million CHF**	**More than 50 million CHF**	
No	103	66	121	14	12	2	318
	61.7%	51.6%	37.8%	26.4%	20.7%	5.6%	41.7%
Yes	64	62	199	39	46	34	444
	38.3%	48.4%	62.2%	73.6%	79.3%	**94.4%**	58.3%

Chi-square= 69.478 DF=5 P<0.001
Phi = 0.302 P<0.001
Cramer V = 0.302 P<0.001

The association between the **presence of organizational measures of prevention** and the turnover is less strong than for the previous two cases. But **the turnover still has a positive and significant effect**.

*Table 125 - **Organizational measures** by businesses with a high turnover (more than CHF 50 million). % on the total number of respondents by businesses with a high turnover*

	Turnover – More than CHF 50 million		Total
Organizational measures	**No**	**Yes**	
No	371	2	373
	44.8%	5.6%	43.1%
Yes	458	34	492
	55.2%	**94.4%**	56.9%

Chi-square= 21.613 DF=1 P<0.001
Phi = 0.158 P<0.001
Cramer V = 0.158 P<0.001
Odds ratio = 13.711 95% CI [3.287; 57.696]

Corporate culture and measures of prevention

The association between measures of prevention and corporate culture emerges only when considering specific types of measures of prevention separately, and, in particular, only in relation with the security systems and organizational measures.

*Table 126 - **Security systems** by corporate culture in the commercial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Security systems	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	73	22	22	268	385
	42.2%	25.3%	40.0%	52.8%	46.8%
Yes	100	65	33	240	438
	57.8%	**74.7%**	60.0%	**47.2%**	53.2%

Chi-square= 25.904 DF=3 P<0.001
Phi = 0.177 P<0.001
Cramer V = 0.177 P<0.001

Retail stores based on a competitive corporate culture (emphasizing the productivity, tasks and objectives accomplishments) **are those presenting the highest level of security systems** (74.7%), while **those adopting a family corporate culture** (emphasizing loyalty and tradition) **are less likely to have the security systems** (47.2%). This could be due to the fact that the presence of a corporate culture based on loyalty and tradition already act as protective factor against crime by employees, as demonstrated in the previous chapters. Moreover, a family corporate culture is generally more present within micro-businesses which also have the lowest level of security systems.

*Table 127 - **Security systems** by competitive culture in the commercial sector. % on the total number of respondents by competitive culture*

	Competitive culture		Total
Security systems	**No**	**Yes**	
No	391	22	413
	50.3%	25.3%	47.7%
Yes	387	65	452
	49.7%	**74.7%**	52.3%

Chi-square= 19.555 DF=1 P<0.001
Phi = 0.150 P<0.001
Cramer V = 0.150 P<0.001
Odds ratio = 2.985; 95% CI [1.804, 4.939]

When performing the analysis considering each category as a separated dummy-coded variable, it appears that **businesses adopting a competitive corporate culture are almost three times more likely to have security systems**.

*Table 128 - **Security systems** by family culture in the commercial sector. % on the total number of respondents by family culture*

	Family culture		Total
Security systems	**No**	**Yes**	
No	145	268	413
	40.6%	52.8%	47.7%
Yes	212	240	452
	59.4%	**47.2%**	52.3%

Chi-square= 12.384 DF=1 P<0.001
Phi = -0.120 P<0.001
Cramer V = 0.120 P<0.001
Odds ratio = 0.613; 95% CI [0.466, 0.805]

While those adopting a corporate culture based on loyalty and tradition are 0.613 times less likely to have this type of measures of prevention. As already hypothesized, employees who feel under pressure for the accomplishments of their tasks and objectives and who work in a competitive environment are more likely to commit crime and, therefore, the company is more willing to adopt security systems to prevent employee offences.

*Table 129 - **Organizational measures** by corporate culture in the commercial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Organizational measures	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	55	30	19	234	338
	31.8%	34.5%	34.5%	46.1%	41.1%
Yes	118	57	36	274	485
	68.2%	65.5%	65.5%	**53.9%**	58.9%

Chi-square= 13.913 DF=3 P<0.01
Phi = 0.130 P<0.01
Cramer V = 0.130 P<0.01

Organizational measures of prevention and corporate culture are also significantly associated among commercial businesses.
In particular, **retail stores based on dynamic and entrepreneurial culture** (emphasizing innovation and development) **are those presenting the highest level of organizational measures** (68.2%), such as very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts. This could be mainly explained considering that retail stores which are frequently innovating and developing their structure and objectives, need to have very well defined systems of functioning and codes of conduct to face the continuous change.
Those adopting a family corporate culture (emphasis on loyalty and tradition) **are the least likely to have organizational measures of prevention** (53.9%).

*Table 130 - **Organizational measures** by dynamic and entrepreneurial culture in the commercial sector. % on the total number of respondents by dynamic and entrepreneurial culture*

	Dynamic and entrepreneurial culture		Total
Organizational measures	**No**	**Yes**	
No	318	55	373
	46.0%	31.8%	43.1%
Yes	374	118	492
	54.0%	**68.2%**	56.9%

Chi-square= 11.317 DF=1 P<0.01
Phi = 0.114 P<0.01
Cramer V = 0.114 P<0.01
Odds ratio = 1.824; 95% CI [1.281, 2.597]

Further analyses show that **businesses adopting a dynamic and entrepreneurial culture are 1.8 times more likely to have organizational measures of prevention**.

*Table 131 - **Organizational measures** by family culture in the commercial sector. % on the total number of respondents by competitive culture*

	Family culture		Total
Organizational measures	**No**	**Yes**	
No	139	234	373
	38.9%	46.1%	43.1%
Yes	218	274	492
	61.1%	**53.9%**	56.9%

Chi-square= 4.342 DF=1 P<0.05
Phi = -0.071 P<0.05
Cramer V = 0.071 P<0.05
Odds ratio = 0.747; 95% CI [0.567, 0.983]

While those adopting a corporate culture based on loyalty and tradition are 0.747 times less likely to have this type of measures of prevention.

4.5.2.2 Multivariate analysis

The following sections present the results of the binary logistic regression performed considering the different types of measures of prevention as dependent variables and the dummy-coded version of the following variables: "Area where the business is located"; "Number of inhabitants of the place where the company is located"; "Size of the business"; "Annual turnover"; "Corporate culture", as independent variables, "Victimization_At least one employee offence" as independent variables.
The aim of the section is to understand which specific characteristics of a business influencing the presence of measures of prevention are, taking the victimization rates in consideration.

TOTAL MEASURES OF PREVENTION in the commercial sector

The model's coefficients are too weak to allow a reliable interpretation of the predictors' coefficients. This suggests that the selected independent variables are not adequate to predict the level of the total measures of prevention in the commercial sector.

SECURITY SYSTEMS in the commercial sector

This binary logistic regression has been carried out on a sample of 750[310] commercial companies.
The dependent variable (DV) is the presence of security systems (both physical security systems and computer security devices/systems) within the business at the time of the interview, while the independent variables are: Area of location_Industrial (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000 (1=Yes, 0=No); Size_Micro businesses (1=Yes, 0=No); Turnover_More than CHF 50 million (1=Yes, 0=No), Family corporate culture (1=Yes, 0=No), "Victimization_At least one employee offence" (1=Yes, 0=No).

Table 132 - Main results of the binary logistic regression – ***Predictors of Security measures of prevention in the commercial sector***

Variables in the equation		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
								Lower limit	Upper limit
Step 4	Victimization_At least once	.526	.179	8.624	1	.003	1.692	1.191	2.404
	Size_Micro businesses	-1.063	.194	29.940	1	.000	.345	.236	.506
	Turnover_More than CHF 50 million	20.062	7026.658	.000	1	.998	N.S.	.000	.
	Family culture	-.373	.160	5.438	1	.020	.689	.504	.942
	Konstante	1.038	.198	27.595	1	.000	2.825	1.038	.198

Note: Model Chi-square=97.595, p< .001. -2 Log-Likelihood= 947.124. Cox & Snell R-Square= 0.121, Nagelkerkes R-Square= 0.161.

The major contribution to the prediction of the presence of security systems within Swiss commercial businesses comes from the variables: "Size_Micro businesses" (Chi-square = 66.173), followed by "Turnover_More than CHF 50 million" (Chi-square = 17.293), Victimization_At least one employee offence" (Chi-square = 8,677) and "Family corporate culture" (Chi-square = 5.453). The other independent variables do not significantly contribute to the explanation of the presence of security systems within the firms[311].
The model including these four variables is statistically significant at the conventional level of p<0.01 and it contributed to the reduction of the -2 Log-Likelihood by 97.595 (for further explanation on the coefficients see Annexes 2 and 3).

[310] One cases (0.1% of the total) presenting standardized residuals for the binary logistic regression higher than -6.5 have been excluded from the analyses, to obtain more significant results.

[311] In this specific model, three variables have been excluded because of their not significant contribution: Area of location_Industrial and N of inhabitants_More than 50,000.

The Nagelkerkes R-Square value indicates that the percentage of variance accounted for the dependent variable based on the predictive power of the independent variables in the model is around 16.1%. As already mentioned above, this value is not very high and it indicates a limited predictive power of the regression model. Therefore, it is suggested to interpret with caution the values of the predictors' coefficients analyzed below because they could be influenced by other variables not included in the model (for further explanation see Annexes 2 and 3).
Considering the B coefficients of the four predictors included in the model, all of them have a relatively low standard error and a p-value < 0.05; besides the variable "Turnover_More than CHF 50 million". This coefficient will not be interpreted because its value is not reliable (for further explanation on the coefficient see Annexes 2 and 3).
However, it can be stated that the victimization level, the size of the business and the presence of a corporate culture based on loyalty and tradition, have a significant effect on the adoption of security systems by Swiss commercial businesses.
In particular, the Exp(B) of the "Victimization", suggests that **retail stores which have experienced at least one employee offence, between 2008 and 2010, are 1.7 times more likely to adopt security systems than not victimized companies.**
The value of the Exp (B) for the "Size_Micro businesses", indicates that this variable has a negative effect on the presence of security systems. In particular, **businesses with more than nine employees are 2.9 times more likely to adopt security systems than micro-businesses, independently from the victimization experience**.
The presence of a **corporate culture based on loyalty and tradition has a negative impact on the existence of security systems**, too**.** Indeed, **companies having this specific culture are less likely to adopt both physical and computer security systems to control the employees' work** (firms not presenting this culture are 1.5 times more likely to adopt these measures). This result further demonstrates that a corporate culture based on loyalty and tradition could be considered a good protective factor. Indeed, as demonstrated above, it is not only negatively correlated to the victimization level but also with the presence of security systems.

CONTROL SYSTEMS in the commercial sector

This section analyzes the results of the binary logistic regression, carried out on a sample of 759[312] commercial companies, to understand the presence of specific systems for controlling the employees' work. The independent variables taken into consideration are: Area of location_Industrial (1=Yes, 0=No); Inhabitants of the area of location_More than 50,000 (1=Yes, 0=No); Size_Micro businesses (1=Yes, 0=No); Turnover_More than CHF 50 million (1=Yes, 0=No), Family corporate culture (1=Yes, 0=No), "Victimization_At least one employee offence" (1=Yes, 0=No).

Table 133 - Main results of the binary logistic regression – ***Predictors of Control measures in the commercial sector***

Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. EXP(B)	
							Lower limit	Upper limit
Size_Micro businesses	-1.033	.184	31.460	1	.000	.356	.248	.511
Turnover_More than CHF 50 million	20.306	7218.871	.000	1	.998	-	.000	
Konstante	.897	.163	30.310	1	.000	2.453		

Note: Model Chi-square=72.267, p< .001. -2 Log-Likelihood= 973.279. Cox & Snell R-Square= 0.091, Nagelkerkes R-Square= 0.121.

The data in the Table above shows that only two among the selected independent variables contribute to the prediction of the presence of control systems within the commercial businesses. They are: "Size_Micro businesses" and "Turnover_More than CHF 50 million". It seems that the presence of strategies to control the employees' work does not depend on the victimization experiences.

The regression model presented above is statistically significant and the Nagelkerkes R-Square coefficient indicates that the percentage of variance accounted for the dependent variable based on the predictive power of the independent variables in the model is around 12.1%. This value is not very high and it indicates a limited predictive power of the regression model. Therefore, it is suggested to interpret with caution the values of the predictors' coefficients analyzed below because they could be influenced by other variables not included in the model (for further explanation see Annexes 2 and 3).

Considering the B coefficients of the two predictors included in the model, only the one related to the "Size_Micro businesses" has a low standard error and it is statistically significant (p< 0.01). Its Exp (B) indicates that **businesses with more than nine employees are 2.8 times more likely to adopt audit systems and other strategies for controlling their employees' work,** when the other variables are controlled.

The coefficients for the "Turnover" are not reliable and they will not be interpreted.

As already mentioned above, it is worth noting that, **when considering the presence of measures of prevention focused on the control of the employees' work, they are independent from the businesses' victimization experiences**. This means that, independently from the crime incidents

[312] Two cases (0.3% of the total) presenting standardized residuals for the binary logistic regression higher than -3.5 have been excluded from the analyses to obtain more significant results.

suffered, commercial firms (and especially those with more than nine employees) tend to adopt specific systems to control the employees' work. This result differs from the one on the predictors for security systems. In that case, the victimization experiences have a very strong impact on the presence of physical and computer anti-crime devices.

ORGANIZATIONAL PROCEDURES in the commercial sector

The model's coefficients are too weak to allow a reliable interpretation of the predictors' coefficients. This suggests that the selected independent variables are not adequate to predict the level of the organizational measures of prevention in the commercial sector.

4.5.3 Which measure of prevention for which business in the financial sector?

4.5.3.1 Bivariate analysis

The bivariate analyses included below are carried out on 1161 Swiss asset managers and fiduciaries. The focus is on the variables which could influence the presence of specific measures of prevention within the companies.

Area where the business is located and measures of prevention

The area of location of the financial companies does not present any significant association with the total measures of prevention as well as with the specific types of systems adopted by businesses to prevent employee's offences.

Size of the area of location and measures of prevention

*Table 134 - **Total measures of prevention** by N of inhabitants of the area of location of the businesses in the financial sector. % on the total number of respondents by N of inhabitants of the area of location*

	Number of inhabitants						Total
Measures of prevention	**Less than 1,000 inhabitants**	**1,000 - 10,000 inhabitants**	**10'000 - 20'000 inhabitants**	**20'000 - 50'000 inhabitants**	**50'000 - 100'000 inhabitants**	**More than 100'000 inhabitants**	
No	7	30	14	10	4	21	86
	25.0%	10.0%	6.9%	6.0%	4.4%	5.9%	7.5%
Yes	21	270	189	157	86	336	1059
	75.0%	90.0%	93.1%	94.0%	**95.6%**	**94.1%**	92.5%

Chi-square= 18.253 DF=5 P<0.05
Phi = 0.126 P<0.05
Cramer V = 0.126 P<0.05

Similar to the commercial sector, among asset managers and fiduciaries, the size of the area where the business is located positively influences the likelihood of adopting at least one measure of prevention. In particular, in the areas with more than 50,000 inhabitants and in those between 20,000 and 50,000,

the percentages of companies with measures of prevention are the highest ones, respectively equal to 95.6% and 94.1%.

The analyses carried out on the specific types of measures of prevention confirm this result, with the exclusion of the organizational procedures, which presents a non-significant association with the size of the area of location.

*Table 135 - **Security systems** by N of inhabitants in the area of location of the businesses in the financial sector. % on the total number of respondents by N of inhabitants of the area of location*

	Number of inhabitants						Total
Security systems	**Less than 1,000 inhabitants**	**1,000 - 10,000 inhabitants**	**10'000 - 20'000 inhabitants**	**20'000 - 50'000 inhabitants**	**50'000 - 100'000 inhabitants**	**More than 100'000 inhabitants**	
No	14	110	71	47	27	90	359
	50.0%	36.7%	35.0%	28.1%	30.0%	25.2%	31.4%
Yes	14	190	132	120	63	267	786
	50.0%	63.3%	65.0%	71.9%	70.0%	**74.8%**	68.6%

Chi-square= 18.831 DF=5 P<0.01
Phi = 0.121 P<0.01
Cramer V = 0.121 P<0.01

74.8% of the **financial businesses located in areas with more than 100,000 inhabitants have at least one security system, against 50% of them located in smaller-sized areas (less than 1,000 inhabitants**).
According to the Table below, the former are 1.5 times more likely to adopt these security systems than the latter.

*Table 136 - **Security systems** by areas of location with more than 50,000 inhabitants. % on the total number of respondents by areas of location with more than 50,000 inhabitants*

	More than 50,000 inhabitants		Total
Security systems	**No**	**Yes**	
No	242	117	359
	34.7%	26.2%	31.4%
Yes	456	330	786
	65.3%	**73.8%**	68.6%

Chi-square= 9.139 DF=1 P<0.01
Phi = 0.089 P<0.01
Cramer V = 0.089 P<0.01
Odds ratio = 1.497 95% CI [1.152, 1.946]

The association between the presence of control systems in the companies and the size of the area of location is also significant and positive.
In particular, **businesses located in large areas are 1.4 times more likely to adopt these controlling systems.** This is partly due to the fact that large companies are mainly located in areas with more

than 100,000 inhabitants and large companies, with more than nine employees are also those more in need of regular control system.

*Table 137 - **Control systems** by the size of the area of location of the businesses in the financial sector. % on the total number of respondents by N of inhabitants of the area of location*

	Number of inhabitants						Total
Security systems	**Less than 1,000 inhabitants**	**1,000 - 10,000 inhabitants**	**10'000 - 20'000 inhabitants**	**20'000 - 50'000 inhabitants**	**50'000 - 100'000 inhabitants**	**More than 100'000 inhabitants**	
No	19	157	106	70	47	143	542
	67.9%	52.3%	52.2%	41.9%	52.2%	40.1%	47.3%
Yes	9	143	97	97	43	214	603
	32.1%	47.7%	47.8%	58.1%	47.8%	**59.9%**	52.7%

Chi-square= 20.095 DF=5 P<0.01
Phi = 0.132 P<0.01
Cramer V = 0.132 P<0.01

*Table 138 - **Security systems** by areas of location with more than 50,000 inhabitants in the financial sector. % on the total number of respondents by areas of location with more than 50,000 inhabitants*

	More than 50,000 inhabitants		Total
Security systems	**No**	**Yes**	
No	352	190	542
	50.4%	42.5%	47.3%
Yes	346	257	603
	49.6%	**57.5%**	52.7%

Chi-square= 6.864 DF=1 P<0.01
Phi = 0.077 P<0.01
Cramer V = 0.077 P<0.01
Odds ratio = 1.376 95% CI [1.083, 1.748]

Size of the business and measures of prevention

The association between the size of the business and the presence of at least one measure of prevention is not significant.

However, when considering different specific types of crime prevention measures, the result changes.

*Table 139 - **Security systems** by micro businesses (1-9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Security systems	**No**	**Yes**	
No	18	295	313
	10.2%	32.2%	28.7%
Yes	158	620	778
	89.8%	**67.8%**	71.3%

Chi-square= 34.962 DF=1 P<0.001
Phi = -0.179 P<0.001
Cramer V = 0.179 P<0.001
Odds ratio = 0.239 95% CI [0.144; 0.397]

When focusing on the presence of security systems, it appears that **larger companies are four times more likely to adopt security systems to prevent employee offences, than smaller companies**.
Indeed, the higher number of employees increases the risk for employee offences. Moreover, in large companies there usually is a lack of informal control between employees, unlike in smaller firms.
The same reasoning applies when taking the control systems under consideration. **Companies with more than nine employees are almost two times more likely to have audit systems and other regular procedures to check the work of the employees**.

*Table 140 - **Control systems** by micro businesses (1-9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Control systems	**No**	**Yes**	
No	55	433	488
	31.3%	47.3%	44.7%
Yes	121	482	603
	68.8%	**52.7%**	55.3%

Chi-square= 15.424 DF=1 P<0.001
Phi = -0.119 P<0.001
Cramer V = 0.119 P<0.001
Odds ratio = 0.506 95% CI [0.359; 0.714]

The negative association between micro businesses and the presence of organizational procedures for crime prevention is less strong. Indeed, these measures are very spread within both large (97.2%) and micro companies (92.1%). However, **firms with more than nine employees are almost three times more likely to adopt one of these procedures.**

*Table 141 - **Organizational procedures** by micro businesses (1-9 employees) in the financial sector. % on the total number of respondents by micro businesses*

	Size – 1-9 employees		Total
Organizational procedures	**No**	**Yes**	
No	5	72	77
	2.8%	7.9%	7.1%
Yes	171	843	1014
	97.2%	**92.1%**	92.9%

Chi-square= 5.689 DF=1 P<0.05
Phi = -0.072 P<0.05
Cramer V = 0.072 P<0.05
Odds ratio = 0.342 95% CI [0.136; 0.860]

Annual turnover and measures of prevention

As already demonstrated for commercial companies, the level of turnover is one of the most significant predictors to explain the presence of specific measures for crime prevention within a business. The same applies when considering asset management firms and fiduciaries, as far as all the types of measures of prevention are significantly associated with the turnover.
The following analyses will consider the dummy-coded variable "Less than CHF 1 million", to avoid problems of too few cases.

*Table 142 - **Total measures of prevention** by businesses with a low turnover (less than CHF 1 million) in the financial sector. % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Measures of prevention	**No**	**Yes**	
No	6	71	77
	1.5%	10.3%	7.2%
Yes	383	616	999
	98.5%	**89.7%**	92.8%

Chi-square= 28.898 DF=1 P<0.001
Phi = -0.164 P<0.001
Cramer V = 0.164 P<0.001
Odds ratio = 0.136 95% CI [0.059; 0.316]

The analysis above shows that financial **companies with a turnover of more than CHF 1 million are seven times more likely to have at least one measure of prevention**.

*Table 143 - **Security systems** by businesses with a low turnover (less than CHF 1 million) in the financial sector. % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Security systems	**No**	**Yes**	
No	68	270	338
	17.5%	39.3%	31.4%
Yes	321	417	738
	82.5%	**60.7%**	68.6%

Chi-square= 54.888 DF=1 P<0.001
Phi = -0.226 P<0.001
Cramer V = 0.226 P<0.001
Odds ratio = 0.327 95% CI [0.242; 0.443]

Focusing only on the presence of security systems within the companies, the association with the turnover is evidently stronger than the one registered for the general measures of prevention (Cramer V equal to 0.226 instead of 0.164). Indeed, **60.7% of the companies with a turnover lower than CHF 1 million have adopted security systems, against 82.5% of firms with a turnover higher than CHF 1 million. The odds of having these systems are three time higher for the latter than for the former**.

*Table 144 - **Control systems** by businesses with a low turnover (less than CHF 1 million) in the financial sector. % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Control systems	**No**	**Yes**	
No	140	374	514
	36.0%	54.4%	47.8%
Yes	249	313	562
	64.0%	**45.6%**	52.2%

Chi-square= 33.885 DF=1 P<0.001
Phi = -0.177 P<0.001
Cramer V = 0.177 P<0.001
Odds ratio = 0.471 95% CI [0.364; 0.608]

Also in the case of control systems, the more important the turnover, the higher the presence of regular control systems.
In particular, 64% of companies with a turnover higher than CHF 1 million have these systems against only 45.6% of firms with a turnover lower than CHF 1 million.

*Table 145 - **Organizational measures** by businesses with a low turnover (less than CHF 1 million) in the financial sector. % on the total number of respondents by businesses with a low turnover*

	Turnover – Less than CHF 1 million		Total
Organizational procedures	**No**	**Yes**	
No	11	99	110
	2.8%	14.4%	10.2%
Yes	378	588	966
	97.2%	**85.6%**	89.8%

Chi-square= 36.305 DF=1 P<0.001
Phi = -0.184 P<0.001
Cramer V = 0.184 P<0.001
Odds ratio = 0.173 95% CI [0.091; 0.327]

The presence of **organizational procedures** to prevent employee offences is also significantly associated with the turnover. In this specific case, **the odds of having these kind of procedures is 5.7 times higher for companies with an important annual turnover than for those with a lower annual income**.

Corporate culture and measures of prevention

A significant association only emerges between corporate culture and general measures of prevention, as well as the control systems. No significant association is found for other types of measures (security systems, organizational measures).

*Table 146 - **Total measures of prevention** by corporate culture in the financial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Measure of prevention	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	2	12	4	42	60
	1.4%	8.2%	3.7%	6.1%	5.5%
Yes	141	134	105	646	1026
	98.6%	**91.8%**	96.3%	93.9%	94.5%

Chi-square= 7.858 DF=3 P<0.05
Phi = 0.085 P<0.05
Cramer V = 0.085 P<0.05

Financial business presenting a dynamic and entrepreneurial culture (with emphasis on innovation and development) **have the highest presence of measures of prevention**, while those focused on a competitive culture have the lowest, but in both cases higher than the 90%.
Also when focusing on **control systems**, **the highest percentage of companies having at least one of these measures of prevention are among those emphasizing a dynamic and entrepreneurial culture** (67.1%), **while the lowest one is among those adopting a family corporate culture** (53.1%).

*Table 147 - **Control systems** by corporate culture in the financial sector. % on the total number of respondents by corporate culture*

	Corporate culture				Total
Control systems	**Dynamic and entrepreneurial culture**	**Competitive culture**	**Rules and formal policies culture**	**Family culture**	
No	47	75	48	323	493
	32.9%	51.4%	44.0%	46.9%	45.4%
Yes	96	71	61	365	593
	67.1%	48.6%	56.0%	**53.1%**	54.6%

Chi-square= 11.907 DF=3 P<0.01
Phi = 0.105 P<0.01
Cramer V = 0.105 P<0.01

Considering the dummy-coded variables representing each category of the corporate culture variable, the only one presenting significant coefficients of association is the dynamic culture.
Indeed, the Table below shows that **businesses emphasizing a corporate culture based on development and innovation are almost two times more likely to adopt the control systems.**

*Table 148 - **Controls systems** by dynamic culture in the financial sector. % on the total number of respondents by competitive culture*

	Dynamic culture		Total
Control systems	**No**	**Yes**	
No	499	47	546
	49.0%	32.9%	47.0%
Yes	519	96	615
	51.0%	**67.1%**	53.0%

Chi-square= 13.129 DF=1 P<0.001
Phi = 0.106 P<0.001
Cramer V = 0.106 P<0.001
Odds ratio = 1.964; 95% CI [1.357, 2.843]

4.5.3.2 Multivariate analysis

The models' coefficients are too weak to allow a reliable interpretation of the predictors' coefficients. This suggests that other independent variables would be needed to more correctly predict the presence of the specific types of measures of prevention adopted by financial companies.

4.6 Key facts – Strategies of prevention

	FINANCIAL SECTOR	COMMERCIAL SECTOR
% of business with some measures of crime prevention at present	**95.6%**	**94.3%**
% of business with some measures of prevention before the crime	**86.4%**	**79.3%**
% of business with some measures of crime prevention after the crime	**40.5%**	**47.4%**
Most frequent measures of prevention AT PRESENT	1. Computer security devices or software (69%) 2. "Four-eyes" principle (64.1%)	1. Gratitude towards employees (49.7%) 2. Clear and easy system of communication (48%)
Most frequent measures of prevention AFTER THE CRIME	1. "Regular controls and audit systems" (30%) 2. "Well-defined staff policies and procedures" (24.2%)	1. Well-defined codes of conduct" (10.4%), 2. "Systematic checks of new employees at the time of hiring" (9.3%)
Predictors of the presence of security systems	N.A.	1. Victimization experience + 2. Size_Micro businesses – 3. Family culture –
Predictors of the presence of employees' control systems	N.A.	Size_Micro businesses –

DISCUSSION

On the offenders

Since the introduction of the notion of crime committed by the elites by Sutherland (1940) and in spite of numerous studies conducted ever since, the economic crime has continuously been considered as a type of crime perpetrated mainly by privileged persons with a high socio-economic status. In this vein, part of this survey was to study the profile of the offenders within firms, in relation with different types of employee offences and violations. It has been shown that economic crimes are not the criminality committed exclusively by managers in the firm; economic offences, as defined in this study, are also largely perpetrated by employees. Indeed, employees are more likely to commit an offence than managers, in particular in the commercial sector where the proportion employee-offender found is clearly higher. However, it is important to stress that some offences seem further specific to employees and some belong further to middle/upper-level managers. Between these two different types of economic offences, there seems to be a line drawn within the phenomenon: on one hand, complex crimes such as corruption, extortion, unfair competition and violation of the company's secrecy which are often committed by managers benefitting great trust and freedom from the management; on the other hand, offences such as cash theft, merchandise theft, also known as less complex are more likely to be committed by employees. This finding shows, in consistency with the reviewed literature according to which the hierarchical position of the employee within the firm might influence the opportunities for committing a crime. Indeed, opportunity leading to crime perpetration greatly depends on the hierarchical level of the potential offender in the firm.[313] As a matter of fact, middle/upper-level managers have greater access to propitious opportunities while employees are more likely to commit less sophisticated crimes due to a lack of favourable opportunities.[314]

At this point, the results of this study provide, probably for the first time, empirical support for views expressed in previous studies. Indeed, in the past, various authors[315] had discussed about the criminality of the middle-class or the blue-collar crime but without convincing evidence. This study confirms these statements, having observed the same phenomenon. It needs to be understood that offenders of economic crimes could be grouped in different categories and occupy different hierarchical positions in the firm, given that each type of crime could be committed by a different type of employee. Offenders of the commercial sector are not the same as the ones in the financial sector and follow a different pattern.

On the question of the gender of the offenders, the most known statement is that as the presence of women in high-level managerial position is scarce, the proportion of female offender is clearly less important among female managers. However, this does not necessarily mean that they commit less offences if their share in the manpower is considered. Indeed, having less access to managerial positions in the firm, they are less likely to commit complex crimes which require preparation, trust, freedom and a certain level of power and know-how. On the contrary they are more inclined to commit unsophisticated offences. In this study, women offenders in both commercial and financial

[313] Piquero N & Piquero A., Characteristics and Sources of White-Collar Crime, in Shover & J.P. Wright (eds.), *Crimes of Privilege: Readings in White-Collar Crime*, Oxford, UJ: Oxford University Press, 2001.

[314] Friedrichs D., Trusted Criminals, (2nd ed.), Belmont, CA: ITP/Wadsworth Publishing Company, 2004.

[315] Weisburd D &Waring E., White-Collar Crime and Criminal Careers, Cambridge University Press, 2001

Levi M. The Regulation of Fraud Revisited, in P. Davies, P. Francis and V. Jupp (eds.) Invisible Crimes: Their Victims and their Regulation, London: Macmillan, 1999

sectors commit mostly thefts. As in the study of Daly[316], this survey also notes an important proportion of women offenders in the sale department. This finding allows understanding even further the question of opportunity. Opportunities for committing a theft are greater for female employees working within the sale department. Furthermore, if we compare the profile of female offenders to the one of male offenders, we see that the majority of female offenders only have a professional or apprenticeship degree. This observation concurs with the findings in Daly's above-mentioned research which had shown that female offenders usually possess a lower level of education as well as a lower level of salary.

Regarding the motives for committing an offence, our finding is in line with other observations in previous studies. Most of the reasons for female offenders relate to a difficult financial situation, while with male offenders, the motives are more likely to be out of greed or revenge and frustration.

One of the most found affirmations is that offenders of economic crime are older than offenders of common crimes. In this study, the age of the offenders strongly depends on the type of offence. Offences such as unfair competition or violation of the company's secrecy are indeed committed by older employees (above 40 years old) and mostly in the financial sector. Theft is more of a domain of younger offenders from the commercial sector. Young offenders, due to their young age, usually do not occupy managerial positions in the firm and are more inclined to commit less complex crimes which do not need high degree of trust or particular professional qualifications. That is the main reason for the commission of a theft offence in the commercial sector.

Several studies assert that there exists a correlation between the level of education of the offenders of economic crime and the type of crime or violation committed. Indeed, some authors (Benson & Moore, 1992[317]; Wheeler & al., 1998[318]) assume that the typical offender of economic crime has a high level of education. In this study, it is not possible to join such affirmation as in both sector, the majority of the offenders have gotten a professional/apprenticeship degree. Only the offenders of the asset management firms seem more likely to have a University degree.

Regarding factors linked to the past history or the personality of the offender, the majority of them have been experienced no major stressful events. For those cases where the existence of a stressful event had played a role, the most frequent were family issues in both sectors. Concerning addiction problems of the offenders, the respondents (when they are aware about it) declare that the offenders did not have any addictions. But for those cases where the respondents were aware about the addiction problems, they stated that the problem is usually linked to alcohol. Illegal drugs as issues of addiction are also found in the commercial sector and gambling seem to be a more frequent issue in the financial sector.

In this study we have found that not all the reasons for committing an offence were financially motivated. Among fiduciary firms, the revenge is particularly high (12.2%) and in the asset management firms the most frequent reason of the perpetration of crime is "the instigation by someone else". Frustration at work was one of the most quoted reasons for committing an unfair competition. In the commercial sector, revenge presents the highest percentage of motivation for an unfair competition and violation of the company's secrecy. Besides the financial and personal motivations, it is important to consider the fact that the commission of offences depends also on the opportunity. In the financial sector unfair competition and fraud were frequently committed by employees of the accounting or the financial departments. These persons not only had access to

[316] Daly K., Gender and Varieties of White-Collar Crime, Criminology, 27, 1989

[317] Benson M. & Moore E., Are White-Collar and Common Offenders the Same? An Empirical and Theoretical Critique of a Recently Proposed General Theory of Crime, *Journal of Research in Crime and Delinquen*cy, 29, 1992

[318] Wheeler S., Weisburd D., Waring E. & Bode N., White Collar Crimes and Criminals, *American Criminal Law Review*, 25, 1998

necessary information but also opportunities to commit such offences. The same observation can be made in the commercial sector, in particular the sales department where the majority of theft is committed.

When analyzing the personal history of the offenders, it is more difficult to set a pattern on their profile. The findings did not allow detecting the importance of the features related to the personal history of the offenders. Addiction problems linked to alcohol are detected in almost half of the cases (46.7%) in the financial sector, whereas in the commercial sector, offenders seem more likely to have issues with illegal drugs (29.2%).

In the reviewed literature, it is often mentioned that the risk of victimization (in the case of fraud for instance) is a product of both "personality variables" and "situational variables" (Grabosky & Duffield, 2001[319]). From the findings in this study, it is not possible to draw a clear line between these variables. If in both sectors the percentage of offenders who are employees with no management responsibility is the highest, we can still notice that in the bank branches, almost half of the offenders (46.9%) were mid-level managers and in the bank headquarters 33.3%. In the asset management firms one third of the offenders were part of the Executive Board (30.7%), followed by 27.5% of them who were owners or partners. The perpetration of offences such as unfair competition or fraud was more of the domain of the owners or managers of a higher managerial position. Indeed, complex crimes seem more likely to be committed by people who benefit a privileged position in the hierarchy. Interestingly also, offenders in the financial sector have been working for the firm for a long time. For instance, 48.1% of the offenders in the asset management firms have worked for the firm more than ten years. The situational variables such as trust/confidence, access to information, know-how might contribute to facilitate the commission of the offence.

Establishing the portrait of an economic crime offender is complex as there is not only one profile or one group of risk. Other external variables to the offence and to the portrait of the offender should also be considered. More research on the combination of these variables would be necessary to better define the weight of the personality variables and the situational variables.

The motivations of the offenders are also to be considered. In this study if theft is more motivated by financial reasons or greed, unfair competition for instance is further guided by the emotional frustration and revenge. The variables on the motives of the offender would be a good indicator of the victimization of employee offence and its prevention, especially when the family-spirit corporate culture focused on loyalty, tradition and gratitude toward employees is demonstrated in this study to be by far one of the best protective factors against employee crime.

As discussed in the previous section, female and male offenders do not seem to commit the same type of crimes. For instance, the study of Buckle and Farrington (1984)[320] had found that the belief according to which shoplifting has been a typical female offence was not necessarily true. In order to better evaluate this observation, more research on the criminal patterns between genders in the field of economic crime is also needed. What would be the factors leading to this difference? Would it be found in behaviors linked to the gender itself, to other internal elements (age, motivations) or would it depend again on other external variables (the social reaction, the reaction of the police, the punitive system, etc.).

[319] Grabosky P. & Duffield G., *Red Flags of Fraud*, Trends And Issues in Crime and Criminal Justice, Australian Institute of Criminology, 2001

[320] Buckle A. & Farrington D.P., An Observation Study of Shoplifting, British Journal of Criminology, 24/1, 1984

On the victimization

Considering the victimization rate of the firms, we have looked at the role played by the characteristics of the firm, and, if so, the types of firms more likely to suffer a crime committed by employees. The findings reveal that in general the commercial sector is more affected by crimes and violations committed by employees than the financial sector. Within the commercial sector, department stores are the most targeted by employee offences (77.4%). This vulnerability could be explained by the fact that department stores display more openly accessible goods as compared to luxury stores (only 16.1% of victimization) where the products are more likely to be under security protection. Concerning the financial sector, banks are more exposed to employee offences than fiduciary and asset management firms. This observation finds its explanation in the fact that banks have more personnel than other financial firms and as already mentioned, the victimization is greater among firms with more than nine employees. Indeed, Sutherland (1947)[321] had already put forward that one of the explicative risk factors of the economic crime was the size of the business. The findings of this study confirm the association between the victimization rate and the size of the firm, as mentioned in several previous studies (Clinard & Yeager, 1980[322]; Dalton & Kesner, 1988[323]). It is also known that the size of the firm could be an important predictive factor of illegal activities as a large-sized business could more easily absorb loss generated by illegal acts. Furthermore, large-sized businesses are also those yielding higher turnover and revenues. In this sense, the findings in the study show that firms with an annual turnover higher than CHF 50 million are more likely to be victim of employee offences.

Another observation made is that the pattern of victimization largely depends on the sector of activity of the firm. In the commercial sector the most frequent type of employee offence is theft, whereas in the financial sector, more than half of the victimized businesses have experienced a fraud, following by an unfair competition offence. Among the Swiss commercial sector, 16.7% and 12.7% of the retail stores interviewed have respectively suffered at least a theft or a fraud by employees between 2008 and 2010. In the Italian Business Crime Survey[324], on a total of 509 businesses victims of theft, 7% declare that the last incident of theft was committed by an employee and 3.3% have suffered an incident of fraud perpetrated by an employee, while across Europe the victimization rates for these two crimes perpetrated by employees are definitely higher. According to the results of the European Business Crime Survey [325], 33% of the businesses in the wholesale and retail trade had experienced at least one theft by employees and 38% of them at least one fraud by employees.

Theft from the cash register is the most serious and most frequent incident of employee theft against Swiss companies, followed by office supply theft. In Italy, even if the victimization rate for theft of money is very close to the Swiss one (46% and 48%), this offence is only the third most frequent type of theft by employees. Among the Italian commercial sector, employees tend to steal more frequently goods or products from the business premises or storehouse. This could be a matter of crime opportunities. Indeed, even if in both countries more than 30% of businesses interviewed adopted a

[321] Sutherland E., *Criminology* (4th edition), Philadelphia: Lippincott, 1947

[322] Clinard M.B., & Yeager P., *Corporate Crime*, New York: The Free Press, 1980

[323] Dalton D. & Kesner I., On the Dynamics of Corporate Size and Illegal Activity: An Empirical Assessment, *Journal of Business Ethics*, 7, 1988

[324] Italian Business Crime Survey , Le imprese vittime di criminalità in Italia, Transcrime Report no. 16, 2012

[325] The European Business Crime Survey (EUBCS) is the first pilot survey on crime against business carried out in Europe. It was financed by the European Commission and piloted, in 2012, by Gallup Europe and Transcrime, on twenty EU member states (Austria, Belgium, Bulgaria, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom).

CCTV system as measure for crime prevention. In Switzerland, almost 40% of wholesale and retail companies declared to run also regular controls of stocks and merchandise. It could be hypothesized that among the Italian commercial sector, there are more frequent controls of the cash register rather than of products and goods.
According to the last KPMG survey[326] conducted on 30 Swiss top companies and 100 medium sized businesses, 14 out of 30 largest Swiss companies (47%) have been victims of some economic crime in the previous two years (2009-2010). The most frequent is data theft/misuse of data, followed by embezzlement. Half of the firm victims are from the commercial sector, only 20% operate in the financial and accounting sector. 57% of the perpetrators were working for the business, only 24% were external persons and in 19% of cases there were both internal and external perpetrators. Therefore, it can be calculated that the percentage of economic crimes committed by employees against the large companies interviewed is around 26.6% (8 out of 30), which is in line with the results of the SBCS (24.1%).

As related to the measures of prevention, the presence of these measures within the firms is very high. More than 80% of the businesses in both commercial and financial sectors have implemented at least one measure of crime prevention before an incident. While in the commercial sector measures used for prevention are more human-oriented (guarantee of a good system of salary, well-defined codes of conduct, clear and easy system of communication between management and staff), in the financial sector firms are more to adopt technical and security measures of prevention. In particular in banks the "four-eyes principle" is largely implemented.
Even though at first there is a positive association between the presence of the measures of prevention and the victimization rate in both sectors, this result should be understood with caution. In the financial sector, the odds of being victim of an employee offence are 2.5 times lower in firms having adopted the audit systems and regular controls of employees, when other variables (size of the business, size of the area of location, corporate culture) are controlled. In spite of the higher victimization rate in firms having at least one measure of prevention, this should not be interpreted as evidence of the inefficiency of the measures of prevention in general. This result could be explained by the fact that businesses could have implemented these measures after an incident of victimization to prevent potential new ones, and without these measures the victimization rate could be probably higher if we had a chance to measure it.
It is also worth noticing that the implementation of new measures of preventions, which are probably more tailored on the crime issues of a specific firm, seems to efficiently prevent repetitive victimizations or further incidents. Indeed, the financial firms which have implemented new measures of prevention did not suffer any other crimes between 2008 and 2010. Among those who have decided not to use any new measures of prevention after a crime incident, most stated that they prefer not to create a climate of distrust among employees and they believe that new measures of prevention would not necessarily protect the firm from crimes committed by employees.
Furthermore, the precautions taken before hiring a new employee such as calling the previous employer, running a credit check on the employee or asking for his criminal record, do not reveal as efficient as pointed out in previous studies (Schnatterly, 1999)[327]. If these measures doubtlessly provide the employers with important information on the new employee, yet they cannot entirely guarantee that the new employee would never commit a crime or violation. As mentioned above, the

[326] KPMG Survey, Wirtschafts Kriminalität Deutschland, Osterreich, Schweiz im Vergleich, 2012

[327] Schnatterly K., *Increasing Firm Value Through Detection and Prevention of White-Collar Crime*, University of Minnesota, 1999

perpetration of a crime is most of the times influenced by other factors than the mere personal history of the employee.

Regarding the detection of the offence, it is observed that the majority of offences were discovered thanks to internal controls in both commercial and financial sectors. This highlights the importance of the role of controlling measures in the detection of an employee offence within a firm. Once the offence was discovered, in the financial sector, the percentage of reporting to the police is very low (8.1%) and in the commercial sector, only 21.3% report the incident to the police. This leads us to think that employee offences could represent "the dark Figures" of the statistics of police as very few incidents are reported. This finding concurs with the ones of the ICBS 2000[328] according to which theft by employees is the least reported offence among other types of offence. The same is observed for fraud which is practically never reported. For the banks the low rate of reporting could be explained by the will of the banks to preserve their reputation and image. As shown also in other surveys for instance in the Commercial Victimization Survey, carried out on businesses in England and Wales in 2012, only 25% of thefts by employees and around 38% of frauds were reported to the police. According to the Home Office (2013) theft by employees is indeed the least reported offence after computer crimes. Our findings reveal that the higher the damages, the more likely the incident would be reported to the police probably in order to get the reimbursement from the insurance.

[328] International Crime Business Survey carried out in nine Eastern European countries in 2000

On the corporate culture

During the past few years, one of the most prominent features in theoretical and empirical work in economic crime has been the consideration of corporate and organizational culture as a key explanatory and causal variable. Corporate culture is seen by top managers as a major factor influencing economic and corporate crime.[329] Indeed, adopting a corporate culture based on ethical values, honesty and accountability is considered one of the best ways for preventing white-collar crime. This is considered even more efficient than regular and frequent internal controls of personnel and procedures. According to Gottschalk and Solli-Soether (2012)[330], among 94 large businesses in Norway, 52% consider the continuous work on culture, values and ethics and the focus on the attitude of honesty and accountability as the best way for preventing white collar-crime, while 48% believe regular control of employees and procedures to be more efficient.

The ethical climate of the firm and the corporate culture could, indeed, be a basic but fundamental means to prevent crime committed inside the firm. Developing codes of ethics, implementing a corporate culture compatible with the goals of the firm without neglecting the human and moral aspects could reduce significantly the perpetration of illegal acts.[331] According to Schnatterly (2003)[332], clear policies and procedures, comprehensive codes of conduct, management integrity are elements which help to reduce the opportunity for commission of offences. Corporation culture emphasizing the company loyalty and the fairness towards the employees is often associated with less white-collar crime. "Employees are more likely to steal if they feel a company was unfair to its employees" and especially if they feel personally mistreated.[333] Traub (1996)[334] also pointed out that corporate needs and interests might be better served by meeting the needs of employees in a fair, judicious, and equitable way. Corporate culture plays an important role in this sense. Indeed, if there is no doubt that crime control measures and strategies could be effective, an implemented corporate culture built on trust and loyalty rather than suspicion and competition or productivity could contribute to reduce employee crime and other forms of misconduct.
In the commercial sector, the presence of a competitive culture (emphasizing the productivity, tasks and objectives) is positively associated with the victimization level. It could be presumed that employees working under pressure in a competitive environment are more inclined to commit crime. For the specific kinds of crime such as theft, fraud and some complex crimes (unfair competition, embezzlements), the analyses emphasize that firms with a competitive culture are more likely to suffer employee offences. The same observation is also made for the financial sector. Indeed, financial businesses the most victimized of employee offences are those adopting a dynamic and entrepreneurial culture while those having a family corporate culture are less likely to be victim of such crimes (12.1% vs. 5%).

[329] Clinard Marshall, *Corporate Ethics and Crime*, Sage, Beverly Hills, CA, 1983

[330] Gottschalk Petter & Solli-Soether Hans, "Prevention of White-Collar Crime by Knowledge and Learning in Business Organizations: An Empirical Study of Chief Financial Officer Management", *International Journal of Management, Knowledge and Learning*, Vol. 1, Issue 1, 2012, pages 45-53.

[331] Victor Bart & Cullen John, A Theory and mesaure of ethical climate in Organizations, in Frederick, W.C. and Preston, L. (Eds), *Research in Corporate Social Perfomance and Policy*, Vol.9, JAI Press, Greenwhich, CT, 1987

[332] Schnatterly Karen, Increasing Firm Value through Detection and Prevention of White-Collar Crime, *Strategic Management Journal*, 24, 2003, page 605.

[333] Buss Dale, Ways to curtail employee theft, *Nation's Business* 81 (4), 1993, pages 36-37.

[334] Traub Stuart, Battling Employee Crime: A Review of Corporate Strategies and Programs, *Crime & Delinquency*, Vol. 42 No. 2, 1996, page 254.

When considering the presence of the measures of prevention implemented in the firms and different types of corporate culture, it comes into view that commercial stores with a competitive corporate culture are three times more likely to have used the security systems. The commercial businesses with a family corporate culture are the less numerous to have adopted measures of prevention either security systems or organizational measures such as very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts. This could be understood that the protective effects against employee misbehaviors reside within the family corporate culture granting both trust and loyalty. In the financial sector, the same consideration is observed. Financial companies with a dynamic and entrepreneurial corporate culture present the highest percentage of measures of prevention within the firms while those with a family culture are less likely to refer to control measures.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

To summarize, in this study the characteristics of a firm and of the environment where it operates, the most correlated with the victimization of an employee offence are the following:

- ✓ The nature of the type of activity (retail stores are more exposed to employee offences than financial firms; department stores are more likely to suffer an employee violation than other businesses; banks are more vulnerable than fiduciary and asset management firms).
- ✓ The size of the firm (the higher the number of employees, the higher the victimization rate; the higher the annual turnover, the higher the victimization rate);
- ✓ The number of inhabitants of the area where the business is located (companies located in areas with more than 50,000 inhabitants are more victimized);
- ✓ The presence of specific measures of prevention;
- ✓ The presence of a specific corporate culture (a corporate culture focused on loyalty and tradition seems to act as protective factors against employee offences).

In particular, the findings related to commercial businesses show that micro businesses are less likely to be victimized, while companies located in areas with more than 50,000 inhabitants are two times more likely to be victims of crime, when the other variables are controlled.

Moreover, firms having at least one physical security system and one organizational measure for crime prevention seem to be more victimized, but this is due to the fact that businesses victimized tend to adopt new preventive strategies after having experienced a crime.

The results concerning the financial firms are of particular interest. Indeed, besides the confirmation that the size of the company and the area where the business is located have a significant effect on the victimization level, the findings also show, in consistency with the reviewed literature on corporate culture, that the presence of a family culture based on loyalty, fairness and tradition, among Swiss financial businesses represents a protective factor, to the extent that it could reduce the likelihood of being victims of employee offences.

In addition, considering that the "frustration at work" and the "revenge" are among the most frequent reasons for employees to commit a crime, it is evident that a fundamental factor for preventing white-collar crime is the presence, within a business, of a corporate culture based on ethical values and loyalty. Indeed, if employees are fairly treated in an honest and transparent environment, they would be less likely to feel frustrated and to adopt a vindictive reaction towards the company. Our analysis points out that the protective factors against employee crimes do not necessarily reside in having a regular system of control of personnel or audit. Therefore, an effective prevention strategy should focus not only on employee's control and audit systems but also on the development of a strong corporate culture based on loyalty, fairness and tradition (family corporate culture). Indeed, when performing the multivariate analyses, both variables have a negative effect on the likelihood of being victimized, taking the others under control. This means that by far the role of measures of prevention should not be underestimated or neglected. As a matter of fact, the presence of at least one measure of control or audit would most likely strengthen the protection for the firm from employee offences and this, even more prominently, when the latter opts for a family corporate culture, emphasizing on loyalty, tradition and fairness.

The results of the current study clearly demonstrate that there is not only one factor or one possible variable which could explain and predict all by itself the victimization rate. The common and most believed factor of protection such as measures of prevention, considering alone, apparently would not be enough to prevent employee offences. A family spirit, a corporate culture based on tradition and loyalty most likely seems to exert an efficient way to prevent crime within firms. The strongest

factor of protection could be the implementation of a family culture together with measures of prevention.

Our study has shed light to better understand offences by employees within firms in all regions of Switzerland. First, it has provided detailed information on the victimization of firms. Secondly, the study has taken into consideration the characteristics of the firms and of the offenders, showing at the same time that it is necessary to carry out more empirical research on this field. Thirdly, the results have also provided some practical directions for the prevention of employee offences. However, we are fully aware that the study still suffers some limits. One of the weaknesses might reside in the fact that the data collected are from the victimized firms and not directly from the offenders. Evidently, it would be much more challenging to obtain information directly from the first source which is from the author of the act. Therefore the most ambitious step would be conducting a study on the offenders, their motives in order to determine which are the additional factors influencing the perpetration of an offence. Needless to say that in this vast field, many other factors such as the practices of each firm, the corporate culture, the perception of each employee in the work environment, might intervene in the decision of the perpetration. Therefore, in this field of research, the collaboration between different key protagonists (institutions, managers, employees) is of utmost importance to reach a valid measure and a complete understanding of the phenomenon of the economic crime.

Crimes against businesses committed by employees often go undetected and could strongly affect the firm's reputation. Therefore, studying the level and features of employee offences as suggested this survey has provided valuable information helping to allocate resources for prevention, to inform policymakers in this regard and thus, to contribute to a safe environment for business developments. Comparing to the official crime statistics which usually provide incomplete information on such offences, the study has been able to look into the phenomenon of employee offences not only from the national perspective but also in international comparison. As a matter of fact, the Swiss Business Crime Survey has been developed in close cooperation with the Italian one and both surveys were designed to be in line with the content and methodology of the first pilot European Business Crime Survey. Data collected has been a valuable source in terms of business crime investigation and prevention. Also the data obtained on the reporting to the police presumes a lack of cooperation between the police and the private sector – this aspect clearly should be considered in order to reach an efficient crime prevention system. Furthermore, the Swiss Business Crime Survey has proven itself to be a relevant and solid alternative source of information to the police statistics when it comes to identify the hidden Figures of crime victimization.

ANNEX 1 – Methodology for victimization and reporting rates

Prevalence rates (victimization rates)

Three years prevalence rate or **victimization rate:** it represents the percentage of businesses victims of at least one crime, at least once between 2008 and 2010 ($V_{08\text{-}10}$), out of the total number of businesses answering the survey (respondents, R).

Three years prevalence rate (victimization rate) = $\frac{V_{08\text{-}10}}{R} * 100$

Three years prevalence rate by economic sector *i*: it represents the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one crime, at least once between 2008 and 2010 ($V_{i08\text{-}10}$), out of the total number of businesses answering the survey in that sector (R_i).

Three years prevalence rate by economic sector = $\frac{V_{i08\text{-}10}}{R_i} * 100$

Three years prevalence rate by linguistic region *z* and economic sector *i*: it represents the percentage of businesses, belonging to a specific linguistic region *z* and to a specific economic sector *i*, victims of at least one crime, at least once between 2008 and 2010 ($V_{zi08\text{-}10}$), out of the total number of businesses answering the survey in that region and in that sector (R_{zi}).

Three years prevalence rate by linguistic region and economic sector= $\frac{V_{zi08\text{-}10}}{R_{zi}} * 100$

Three years prevalence rate by canton *j* and economic sector *i*: it represents the percentage of businesses, belonging to a specific canton *j* and to a specific economic sector *i*, victims of at least one crime, at least once between 2008 and 2010 ($V_{ji08\text{-}10}$), out of the total number of businesses answering the survey in that canton and in that sector (R_{ji}).

Three years prevalence rate by canton and economic sector = $\frac{V_{ji08\text{-}10}}{R_{ji}} * 100$

Three years prevalence rate by economic sector *i* and type of crime *k* : it represents the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one specific type of crime *k*, at least once between 2008 and 2010 ($V_{ik08\text{-}10}$), out of the total number of businesses answering the survey in that sector (R_i).

Three years prevalence rate by economic sector and type of crime = $\frac{V_{ik08\text{-}10}}{R_i} * 100$

Annual prevalence rate: it represents the percentage of businesses victims of at least one crime, at least once in a given year *t* (2008, 2009 or 2010) (V_t), out of the total number of businesses answering the survey (R).

Annual prevalence rate = $\frac{V_t}{R} * 100$

Annual prevalence rate by economic sector *i*: it represents the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one crime, at least once in a given year *t* (2008, 2009 or 2010) (V_{it}), out of the total number of businesses answering the survey in that sector (R_i).

Annual prevalence rate by economic sector = $\frac{V_{it}}{R_i} * 100$

Annual prevalence rate by linguistic region *z* and economic sector *i*: it represents the percentage of businesses, belonging to a specific linguistic region *z* and to a specific economic sector *i*, victims of at least one crime, at least once in a given year *t* (2008, 2009 or 2010) (V_{zit}), out of the total number of businesses answering the survey in that region and in that sector (R_{zi}).

Annual prevalence rate by linguistic region and economic sector= $\frac{V_{zit}}{R_{zi}} * 100$

Annual prevalence rate by economic sector *i* and type of crime *k*: it represents the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one specific type of crime *k*, at least once in a given year *t* (2008, 2009 or 2010) (V_{ikt}), out of the total number of businesses answering the survey in that sector (R_i).

Annual prevalence rate by economic sector and type of crime = $\frac{V_{ikt}}{R_i} * 100$

Incidence rates

The crime incidence rate usually represents the number of crime incidents occurred on average on the total number of respondents to the survey. However, with regard to the data of this survey, it was not possible to calculate the exact number of crimes per respondent, because the variable "Frequency of victimization" is not cardinal but categorical (it presents four categories: Once, 2-5 times, 6-20 times, more than 20 times).
Therefore, the **incidence rate by type of crime *k* and economic sector *i*** represents, in this report, the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one specific type of crime *k* "once" and "more than once", between 2008 and 2010 (frequency of crime by type of offence and economic sector - $FC_{ik08\text{-}10}$) out of the total number of businesses answering the survey in that sector (R_i).

Three years incidence rate by economic sector and type of crime = $\frac{FC_{ik08\text{-}10}}{R_i} * 100$

Concentration and multi-victimization rates

The crime concentration rate usually represents the number of crime incidents occurred on average on the total number of victims. However, with regard to the data of this survey, it was not possible to calculate the exact number of crimes per victim, because the variable "Frequency of victimization" is not cardinal but categorical (it presents four categories: Once, 2-5 times, 6-20 times, more than 20 times).
Therefore, the **concentration rate by type of crime *k* and economic sector *i*** represents, in this report, the percentage of businesses, belonging to a specific economic sector *i*, victims of at least one specific type of crime *k* "once" and "more than once", between 2008 and 2010 (frequency of crime by type of offence and economic sector - $FC_{ik08\text{-}10}$) out of the total number of victims of that specific type of crime in that sector (V_{ik}).

Three years concentration rate by economic sector and type of crime = $\frac{FC_{ik08\text{-}10}}{V_{ik}} * 100$

Actually, this concentration rates represents also the **multi-victimization** level, as far as it indicates the percentage of victims which experienced a specific type of crime more than once in a given period of time.

Reporting rates

Three years reporting rate by economic sector *i*: it represents the percentage of victimized businesses, belonging to a specific economic sector *i*, which reported the crime to the police, between 2008 and 2010 ($VR_{i08\text{-}10}$), out of the total number of victimized businesses in that sector (V_i).

$$\textbf{Three years reporting rate by economic sector} = \frac{VR_{i08\text{-}10}}{V_i} * 100$$

Three years reporting rate by economic sector *i* and type of crime *k*: it represents the percentage of businesses victims of a specific type of crime *k*, belonging to a specific economic sector *i*, which reported the crime to the police, between 2008 and 2010 ($VR_{ik08\text{-}10}$), out of the total number of victimized businesses for that specific type of crime in that specific sector (V_{ik}).

$$\textbf{Three years reporting rate by economic sector and type of crime} = \frac{VR_{ik08\text{-}10}}{V_{ik}} * 100$$

ANNEX 2 – Statistical coefficients

This annex lists in alphabetical order the statistical coefficients used in this report, divided according to the type of analysis, and briefly describes them.

Bivariate analysis (cross-tabulations)

Chi-square of Pearson and Sig. (as test of statistical association between two different variables in the cross-tabulations): Non-parametric statistical test for testing the statistical association between the categories of two or more categorical variables.
Cramer V and Sig.: A 'chi-square based' measure of association, scoring between 0 and +1, with 0 indicating no association between the rows and columns variables while values close to 1 indicating a high association between the two variables.
Odds ratio and C.I.: It allows identifying the level of association between the modalities of two categorical variables.
Phi coefficient and Sig.: A 'chi-square based' measure of association; scoring between -1 and +1, where -1 and +1 indicate, respectively, a positive or negative perfect association between the two variables, while 0 indicates statistical independence between the two variables.

Multivariate analysis (binary logistic regression)

B-coefficient and S.E.: the b-coefficient indicates the amount of increase (or decrease) in the predicted log odds of the dependent variable that would be predicted by a 1 unit increase (or decrease) in the independent variable, holding all other predictors constant. The standard error is a measure of how stable the estimated value of the b-coefficient is. It is used for testing whether the b-coefficient is significantly different from 0. A low standard error related to the b-coefficient indicates that the coefficient has been fairly precise estimated. Moreover, the standard error for the b-coefficient detects multicollinearity in the logistic regression. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity among the independent variables and zero cells for a dummy-coded independent variable because all of the subjects have the same value for the variable.
Chi-square of Pearson and Sig. (in the binary logistic regression): in the binary logistic regression the value of the Chi-square coefficient is the difference between the log-likelihood at block 0 (the null model including only the constant) and the log-likelihood at block 1 (full model). It is a measure of how well the independent variables affect the outcome or dependent variable. If the P-value for the overall model fit statistic is less than the conventional level of 0.05, then there is evidence that at least one of the independent variables contributes to the prediction of the outcome[335].
Cos & Snell's R^2_{CS} and Nagelkerke's R^2_N: they provide a gauge of the substantive significance of the model of binary logistic regression they are considered "pseudo-R" or "Multiple R-squared Analogs" statistics as they are designed to indicate something similar to what R-squared indicates in ordinary least-squares regression: the proportion of variance accounted for in the dependent variable based on the predictive power of the independent variables in the model. However, they should not be interpreted exactly as R-squared in OLS (ordinary least-squares) regression. The Nagelkerke R-square

[335] Meyer LS, Gamst G and Guarino A.J., 2006, *Applied multivariate research: design and interpretation*, Sage Publications; London.

is an adjustment of the Cox & Snell, for which the maximum value it can attain is equal to 1.0. The maximum value for the Cox & Snell is 0.75[336].

Exp b: it is and indicator of the change in odds of the dependent variable resulting from a unit change in the predictor. It gives the relative amount by which the odds of the outcome increase (O.R. greater than 1) or decrease (O.R. less than 1) when the value of the independent variable is increased by 1 units[337].

Log-Likelihood (in the binary logistic regression): It is based on summing the probabilities associated with the predicted and actual outcomes[338]. The value of the -2 Log-Likelihood represents the overall measure of how well the model fits. A model that fits the data well will have a small likelihood value. A perfect model would have a likelihood value of zero [339]. If the selected independent variables actually have predictive value, the -2 Log-Likelihood should then drop in comparison to the one related to the null model including only the constant. The null model -2 Log Likelihood is given by -2 * ln(L0) where L0 is the likelihood of obtaining the observations if the independent variables had no effect on the outcome. The full model -2 Log Likelihood is given by -2 * ln(L) where L is the likelihood of obtaining the observations with all independent variables incorporated in the model.

Wald statistics: The Wald statistic and associated probabilities provide an index of the significance of each predictor in the equation. It is a test of the null hypothesis that the B coefficient is equal to 0. If its significance values is less than .05 the null hypothesis can be rejected because the variable does make a significant contribution to the explanation of the dependent variable[340].

[336] Cohen, J., Cohen, P, West, S.G., Aiken, L.S., 2003, *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences (3rd edition),* L. Erlbaum Associates, pp. 502-504.

[337] Burns, R., Burns, R., 2008, *Business research methods and statistics using SPSS*, Sage Publiction Ltd, Chapter 24.

[338] Tabachnick, B.G. & Fidell, L.S., 2001, *Using multivariate statistics* (4th edition). Boston: Allyn & Bacon.

[339] Meyer LS, Gamst G and Guarino A.J., 2006, *Applied multivariate research: design and interpretation*, Sage Publications; London.

[340] Burns, R., Burns, R., 2008, *Business research methods and statistics using SPSS*, Sage Publiction Ltd, Chapter 24.

ANNEX 3 – Binary logistic regression

Different binary logistic regressions are performed in this report to analyze the relationship between specific dummy-coded dependent variables:

- ✓ **level of businesses' victimization** (overall and of theft, fraud and complex crimes),
- ✓ **presence of specific measures of crime prevention** within the businesses,
- ✓ **businesses' likelihood of reporting the crimes to the police**,

and specific dummy-coded independent variables related to the characteristics of the business or to the characteristics of the environment where the companies operate:

- ✓ **The area where the business is located.** This variable presents four categories:

1. City center
2. Residential area
3. Industrial area
4. Other

- ✓ **The number of inhabitants of the place where the company is located.** This variable has five categories:
  1. Less than 10'000 inhabitants
  2.10'000-20'000 inhabitants
  3. 20'000-50'000 inhabitants
  4. 50'000-100'000 inhabitants
  5. More than 100'000 inhabitants
- ✓ **Size of the business**. Indicates the number of full-time employees working within the business and presents four categories:
  1. 1-9 employees
  2. 10-49 employees
  3. 50-250 employees
  4. More than 250 employees
- ✓ **Annual turnover**. Indicates the average annual turnover of the companies and presents six categories:
  1. Less than CHF 500'000
  2. CHF 500'000-1 million
  3. CHF 1-5 million
  4. CHF 5-10 million
  5. CHF 10-50 million
  6. More than CHF 50 million[341]
- ✓ **Security systems**. Refers to the presence/absence of at least one measure of prevention among physical security systems (anti-theft devices, alarms, cameras, etc.) and computer security devices/systems (anti-virus, anti-spam filters, limited access, filters for Internet navigation, etc.) within the business at the time of the interview. It's a dummy-coded variable (1. Yes; 0. No).
- ✓ **Control systems**. Refers to the presence/absence of at least one measure of prevention, focused on the control of the employees and their work, among regular controls and audits, regular controls of stocks and merchandise (only for businesses in the commercial sector) and systematic check of new employees within the business at the time of the interview. It's a dummy-coded variable (1. Yes; 0. No).

[341] A statistical analysis of the distribution of this variable by economic sector of the business can be found in the section III - RESPONSE RATES, chapter 1.3.

- ✓ **Organizational measures**. Refers to the presence/absence of at least one measure of prevention, at the organizational and procedural level (very hierarchical system of internal functioning, well-defined codes of conduct, well-defined staff policies and procedures, clear and easy system of communication between management and employees, transparency of staff and business management, good system of salary, gratitude towards employees for their work and efforts). It's a dummy-coded variable (1. Yes; 0. No).
- ✓ **Corporate culture**. Indicates the types of corporate culture adopted by businesses. This variable presents four categories:
  1. Dynamic and entrepreneurial culture
  2. Competitive culture
  3. Rules and formal policies culture
  4. Family culture

The binary logistic regression method combines the independent variables to estimate the probability that a specific event will happens (in this case the victimization of businesses, the use of specific measures of crime prevention, and the likelihood of reporting the crime to the police).

The method used in this report for running the logistic regression is the stepwise method[342]. This method is here preferred to other methods given the exploratory value of this study and because it is useful when no, or few, previous research has been conducted on which predictors to base hypotheses for testing[343]. Following this method the independent variables are selected and included in the model according to the maximum contribution to the increase of the statistically significance of the regression model.

When necessary outliers, identified through the analysis of Cook's distance, standardized residuals and leverage value[344], have been taken out from the analysis or included in the regression model to take their effects under control and obtain more significant analysis.

More specific information on the coefficients analyzed for interpreting the results of the binary logistic regressions are reported in Annex 2 above and in the different sections of the report related to *Multivariate analysis*.

It has to be highlighted that, even if the majority of the regression models analyzed in this report presents a limited predictive power (measured through the Log-Likelihood statistics, the Cox & Snell R^2 and the Nagelkerke R^2). This problem is recurrent when analyzing sociological data, in general and data collected through questionnaires, in particular. It suggests that other independent variables would be needed to better predict and explain the phenomena under investigation. However, the results of the analyzed regression models always indicated statistical significant improvements in the prediction of the dependent variable (measured through the analysis of the model Chi-square statistics, the Log-Likelihood statistics and the cases' classification table) in comparison to the models including only the constant[345]. Given that, the contributions of the predictors to the explanation of the dependent variables have been analyzed and commented. This allows obtaining a rough idea about the influences of specific independent variables on the victimization levels, on the measures of prevention adopted by Swiss companies and on the likelihood of reporting the crime to the police. It is, however, suggested to interpret with caution the values of the predictors' coefficients because they could be influenced by latent variables not included in the models under consideration.

[342] Forward conditional in SPSS.

[343] Field, A., 2005, Discovering statistics using SPSS, SAGE Publications.

[344] *Ibidem*.

[345] Regression models presenting a very low predictive power (Nagelkerke R^2 lower than 0.100) were not included in the report.