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del Sacro Cuore

RETAIL SECURITY IN EUROPE

Going beyond shrinkage

With the support of

RETAIL SECURITY IN EUROPE

Going beyond shrinkage

Scientific coordination

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PREFACE

Crime&tech – Università Cattolica del Sacro Cuore

The aim of this study is to provide a picture of the **losses incurred by retail companies**, of the **threats on retail security** and of the countermeasures adopted by retailers in 11 European countries.

It is an ambitious project, carried out by **Crime&tech, spin-off company of the Università Cattolica del Sacro Cuore – Transcrime**, with the support of **Checkpoint Systems**. It is the result of the cooperation between academic researchers and retailers, who contributed to the project by providing key data, inputs and insights, and it builds on the successful experience of the study "Retail Security in Italy" conducted in 2017 by Crime&tech in collaboration with the Laboratorio per la Sicurezza and the support of Checkpoint Systems Italy.

The study adopts a **ground-breaking approach**, which relies on a belief: that for having a comprehensive vision of the level of security in the retail sector, it is necessary to *go beyond shrinkage*. It is not enough to collect and analyse shrinkage statistics provided by retailers, but it is crucial to understand where these figures come from and how they are accounted for by different firms. Further, it is crucial to enrich shrinkage data with information on the geographic and sectoral context in which retailers operate, the modus operandi of shoplifters, the evolution of retail crime schemes and the strategy adopted by retailers to address security threats and to reduce losses.

For achieving this purpose, this study carries out a survey on retailers in 9 countries equivalent

to about 23,000 stores and integrates it with the collection of **shrinkage data for each single point of sale (or store)** for about 3,500 stores (the largest sample of this kind ever analysed), the analysis of 1,600 **media news** on retail crime incidents and information collected through a **focus group and more than 40 bilateral interviews** with security managers. We are therefore indebted with retailers for contributing in such a crucial way to the study.

Despite the improvement in the perimeter of the information collected, this study is **only the first step** towards a more complete understanding of the losses and of the risks faced by the European retail industry. **Better data is needed**, more information about how firms account for losses is necessary, a higher level of detail and of breakdown of retailers' statistics would be beneficial. This would be possible through a better cooperation among universities, the private and the public sector. The retail security is an area of **huge potential for improvement in research and data analytics**. The benefits of sharing data, analyses and insights overcome the costs in terms of risks to business competition. Most retailers have started understanding it clearly. This study represents the **first step of this 'pact'** among researchers, retail businesses, providers of security solutions and public authorities.

Prof. Ernesto Ugo Savona
President of Crime&tech srl and Director of Transcrime

ABOUT CRIME&TECH

Crime&tech Srl (www.crimetech.it) is the spin-off company Università Cattolica del Sacro Cuore - Transcrime. Crime&tech translates Transcrime's research into technology and applications for private sector and public institutions, by offering advanced analyses to assess, monitor, map and prevent security and crime risks. Crime&tech developed a wide set of tools and applications, including risk indicators and models, in a variety of areas, ranging from retail security to compliance (e.g. AML, anti-fraud, anti-corruption, supplier risk assessment and KYC). Crime&tech is certified ISO/IEC 27001:2013.

Checkpoint Systems

Welcome to Retail Security in Europe: Going Beyond Shrinkage. 2019 not only marks the 50th anniversary of Checkpoint Systems, but the **return of our highly anticipated research** into the state of shrinkage in today's tough retail climate. For more than 15 years, we have demonstrated our commitment to provide insightful findings that helps retailers understand today's challenges and prepare for the trends of tomorrow.

Returning in a new guise, the **'Retail Security in Europe: Going Beyond Shrinkage'** report has been produced by **Crime&tech**, a spin off company of Università Cattolica del Sacro Cuore - Transcrime, with the support of Checkpoint Systems. Created in conjunction with leading researchers and academics, the report adopts a new methodology in a bid to highlight the reality behind the losses incurred by retailers. This approach makes it the first report of its kind to truly *'go beyond shrinkage'*.

We know from our experience in this sector that retailers today are facing some of the **toughest operating conditions**. Margins are squeezed, business rates and commodity prices are rising, and there is a clear shift in purchasing habits as consumers increasingly expect an omnichannel buying experience.

During more than five decades of change, two core values have remained at the heart of the Checkpoint business: to improve our customers' profitability by improving merchandise availability and by enhancing consumers' shopping experience. We know that retailers need to remain profitable to succeed, and to do that they need to **understand the landscape and in particular the challenges of inventory loss**, how it occurs and crucially, how it can be prevented, so more stock is in the right place and at the right time.

We believe that by providing insight into the state of the market, **we can help retail owners** understand the landscape in order to better operate within it.

As this research proves, we cannot rest on our laurels. Shrinkage is up on 2016 and estimated to cost European retailers 49 billion euro annually – or 2.1% of turnover. We also know that **shrinkage is a multi-dimensional threat** – from shoplifting and employee theft, to organised retail crime (ORC) and administrative or process-related errors, not forgetting the losses generated through waste or expired goods. With this in mind, we encourage retailers to take action, address these challenges and review today's innovative solutions to be truly effective in combatting this industry-wide issue.

As we celebrate five decades of innovative loss prevention solutions and look ahead to the next 50 years, we remain **committed to sharing insights and knowledge** that help bring clarity and efficiency to the retail environment, anytime, anywhere.

Mariano Tudela
Vice President Sales & Customer Operations EMEA
Checkpoint Systems

ABOUT CHECKPOINT SYSTEMS

A division of CCL Industries, Checkpoint Systems (www.checkpointsystems.com) is the only vertically integrated RF/RFID solution provider for retail. With consumer demands accelerating at an extraordinary rate driven by technology, Checkpoint delivers intelligent solutions – bringing clarity and efficiency into the retail environment anytime, anywhere. Through a unique offering of software, hardware, labels, tags and connected cloud-based solutions, Checkpoint optimizes retail operations and efficiencies with real-time intuitive data delivered throughout the supply chain and in-store resulting in improved profitability and an enriched consumer experience. Checkpoint's intelligent retail solutions are built upon 50 years of radio frequency technology expertise, innovative high-theft and loss prevention solutions, market-leading software, RFID hardware and comprehensive labeling capabilities to brand, secure and track merchandise from source to shelf.

About CCL Industries

CCL Industries Inc. (www.cclind.com), a world leader in specialty label and packaging solutions for global corporations, small businesses and consumers, employs approximately 19,000 people and operates 150 facilities in 25 countries on six continents with corporate offices in Toronto, Canada, and Framingham, Massachusetts.

EXECUTIVE SUMMARY

Aim and Methodology

► This study was carried out by **Crime&tech**, spin-off company of Università Cattolica del Sacro Cuore-Transcrime, with the support of **Checkpoint Systems**. It is the result of the collaboration between academic researchers and retailers.

► The study provides a picture of the **level of security in the retail sector**, and of the **losses incurred** by retail companies in **11 countries**: Belgium (BE), Germany (DE), Finland (FI), France (FR), Italy (IT), the Netherlands (NL), Poland (PL), Russia (RU), Spain (ES), Sweden (SE) and the United Kingdom (UK).

► For such purposes, it *goes beyond shrinkage*. Given the challenges and the different methods of accounting for inventory losses employed by the different retailers (thoroughly discussed), the study not only provides estimates of shrinkage rates, but also analyses the following:

- Type of criminal behaviour.

- *Modi operandi* of the criminals.

- Factors that have an impact on retail losses, both in terms of the socio-demographic, economic and criminal environment and of the location and characteristics of the stores.

- Countermeasures and solutions adopted by retailers to prevent losses, and how these are distributed and combined.

- Economic impact of retail losses on firms and citizens.

► The study adopts an innovative methodology based on four different data collection sources and methods:

- **Survey**: both quantitative and qualitative information collected through an online questionnaire (included: 110 independent brands equivalent to 22,557 stores);

- **Microdata**: data at individual store level on shrinkage rates, store characteristics and the countermeasures in place (coverage: 30 independent brands equivalent to 3,474 stores);

- **News**: information on crime incidents events (shoplifting, robberies, burglaries, internal and external fraud) in the retail sector reported through the media in 2016, 2017 and 2018 until October (coverage: 1,600 news items in the 11 countries);

- **Focus group and interviews**: for collecting case studies, further information and feedbacks on the preliminary results (coverage: a focus group with about 20 security managers and more than 40 bilateral interviews with retailers).

The Challenge of Measuring Shrinkage

► Retailers adopt very diverse accounting practices for measuring shrinkage, and include a **variety of both crime and non-crime** driven losses.

► For the 30% of respondents who are able to distinguish between *known* and *unknown* shrinkage, the unknown fraction – likely related to criminal behaviour – accounts for **half** of the total shrinkage rate.

Figure A – Items/causes taken into account by retailers when calculating shrinkage

|	
ADMINISTRATIVE/ACCOUNTING ERRORS	100.0%
EXTERNAL THEFTS	100.0%
INTERNAL THEFTS	71.8%
THEFTS COMMITTED BY SUPPLIERS	63.2%
NON-COMPLIANT USE	59.0%
WASTE/SCRAP	57.9%
EXPIRED/PERISHED GOODS	56.4%
BREAKAGES/DAMAGED GOODS	56.1%
DAMAGED COLD ITEMS	35.1%
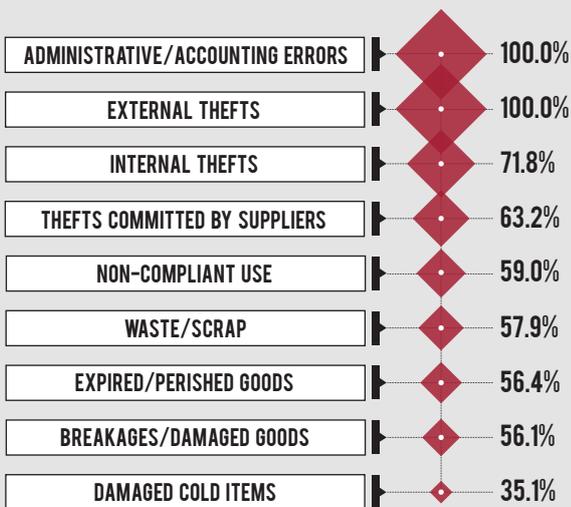
Source: Survey

► Inventory habits are not uniform across companies in terms of frequency, accounting policies and technologies employed:

- **Inventory frequency**: half-yearly (40.9%) and yearly (36.4%) are prevalent but some retailers carry out more frequent or risk-based inventories.

- **Inventory technology**: Bar-code inventories (71.7%) are prevalent, while RFID still accounts for about 6%. Handwritten inventories are still carried out by 7.5% of retailers (more than 11% in the Food retail).

- **Inventory accounting policies**: even in the same sector, retailers adopt a variety of accounting methods, the most frequent being WAC, FIFO, LIFO and the retail method.

► Accounting for shrinkage is also heavily influenced by the **financial strategy** of the firms (maximising profits and minimising losses or optimising taxes) and by the **fragmentation** of IT and ERP systems.

► Given all these challenges and diversities across firms, it is difficult to consider shrinkage only as a **measure of crime-driven** losses; **compare shrinkage rates** across business sectors and countries in particular.

Shrinkage: Trend and Patterns

► Keeping in mind all these caveats, the average shrinkage rate (including both known and unknown shrinkage) reported by all respondents is **1.5% of turnover in 2017**, with a mean of 1.4% in the 2015-2017 period. Rates vary widely across business sectors, with **Food retail** (2.0%) recording the highest shrinkage rate.

Figure B – Shrinkage by business sector. Average 2015-2016-2017
Respondents corresponding to 22,557 stores. Retail firms with less than 3 stores and outliers are excluded from the sample

ALL SECTORS	1.4%
SPORT GOODS	0.7%
PET GOODS*	1.4%
GAS/PETROL STATION RETAILERS	1.1%
FOOTWEAR AND ACCESSORIES	1.3%
ELECTRONICS	0.4%
DO-IT-YOURSELF	1.0%
FOOD RETAIL	2.0%
CASH & CARRY*	1.1%
BEAUTY & COSMETICS	0.5%
APPAREL	1.4%
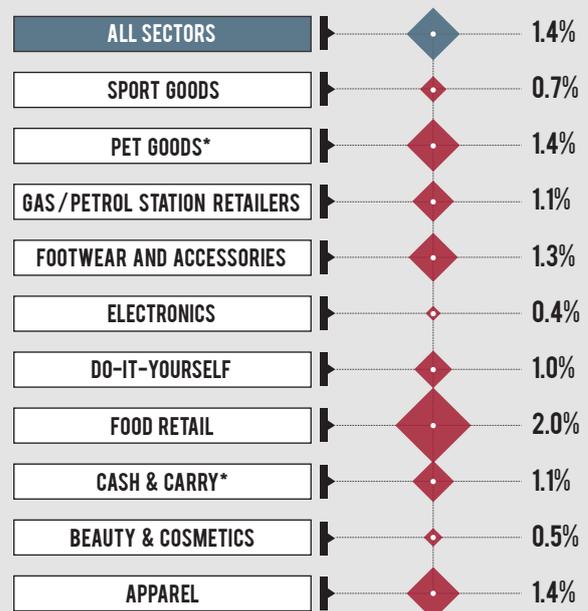
* Respondents in these sectors correspond to less than 200 stores.
Source: Survey

► **15%** of survey respondents reported **higher shrinkage levels** with respect to previous periods. However, the 2017 rate is in line with 2015 and records only a slight increase in 2016.

► The reported and perceived trend changes according to the business sector and to store type and size:

- Some sectors (e.g. **Apparel** and **Sport goods**) mainly reported a decrease in shrinkage.

- In others (e.g. **Food retail**, **Beauty & Cosmetics**, **Electronics**) the fraction of those reporting a decrease is more balanced with respect to to those reporting an increase.

- **Luxury** retailers mostly reported an increase, although the impact on turnover is lower than other sectors.

- The percentage of stores reporting decreased shrinkage is **higher among small stores** than very large ones.

▶ According to both survey responses and media news, **winter is the season** in which retailers record higher losses than average and are subject to more robberies and shoplifting. This is due to reduced daylight hours, the possibility of concealing stolen goods or weapons behind clothes, higher staff turnover and increased visitor density.

▶ According to retailers, the periods with higher shrinkage are those related to the **launch of new collections/new products**, **seasonal holidays** (especially Christmas) and **weekends**.

▶ Differences in accounting methods, sampling and coverage mean that comparing data on shrinkage across countries and economic sectors is not very meaningful. The comparison with previous versions of the Global Retail Theft Barometer is also difficult due to the different methodological approaches and samples used.

▶ Data available at store level allows analysis of shrinkage at sub-national level in Italy and in the United Kingdom, as detailed in the map below.

▶ In terms of the impact of **environmental factors** on shrinkage, the following results emerge:

- Shrinkage is higher in stores located in areas with a **higher population**, **greater population density** and a **lower income**.

- There is no significant relationship between the level of shrinkage and the **level of property crime reported** to the police.

▶ In terms of **store characteristics**:

- **Larger stores** (considering the surface area) record higher shrinkage on average and also report a more stable trend.

- A higher number of **opening hours** is associated with higher shrinkage.

- **Proximity to a rail or tube station** on average increases the shrinkage rate.

- Stores located on **streets** record higher shrinkage on average than those **located within shopping malls**.

- Stores with **self-checkout services** experience higher shrinkage. However, according to most retailers, losses in the short-term may be counterweighted by an increase in profit and cost savings in the long-run.

Figure C – Shrinkage in Italy and in the UK by NUTS 3. 2017

% Shrinkage (mean) 2017
- 0.0% - 0.3%
- 0.4% - 0.6%
- 0.7% - 1.0%
- 1.1% - 1.7%
- 1.8% - 3.0%
- No info

% Shrinkage (mean) 2017
- 0.0% - 0.3%
- 0.4% - 0.8%
- 0.9% - 1.2%
- 1.2% - 2.4%
- 2.5% - 6.2%
- No info

Source: Microdata
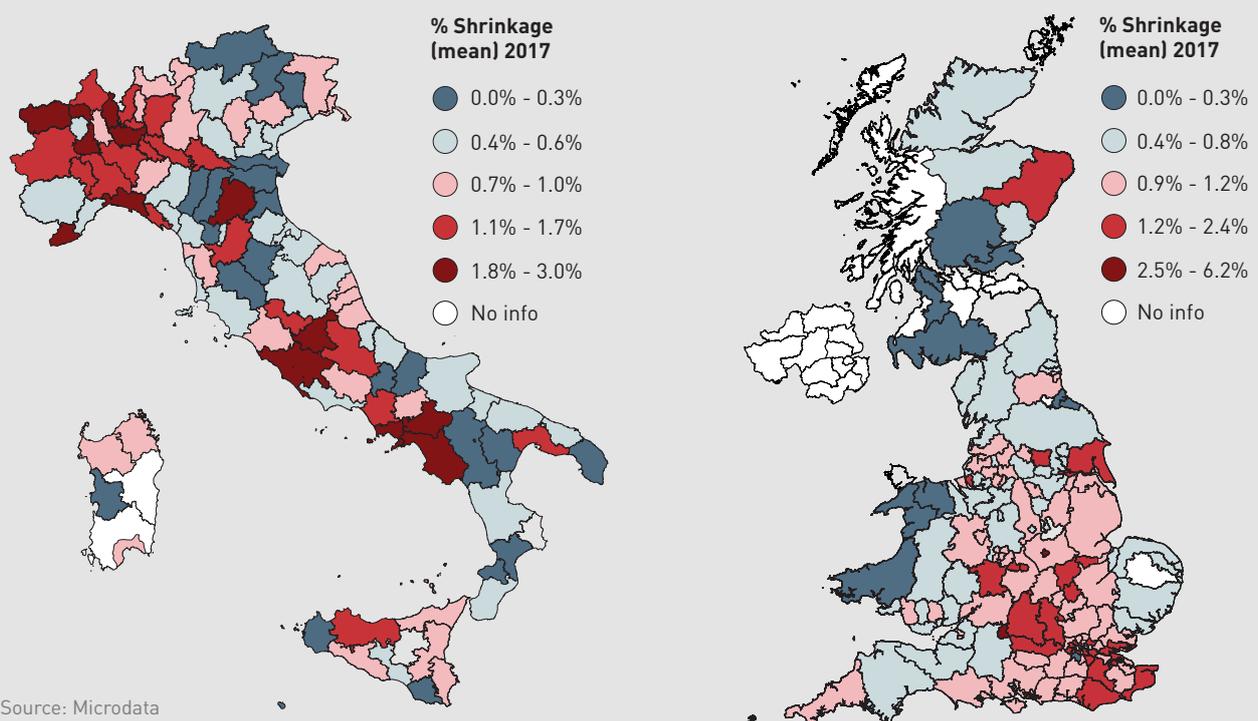
External Theft: Modi Operandi and Shoplifters

Shoplifting

▶ Shoplifting is reported by retailers as the **most frequent** type of external theft, and is a **growing** trend according to most respondents (as **confirmed by official statistics** in several European countries).

▶ The most common shoplifting methods are:

- *Grab and run*.
- **Removal of tags and labels**, often using low-cost tag detachers bought on the internet.
- **Booster bags**, i.e. bags and purses that prevent tagged products from being detected by traditional EAS.
- **Jammers**, i.e. technologies that, through radio signals, disturb the signal of EAS antennas and inhibit their functining.

▶ Two types of shoplifters exist:

- **Individual shoplifters**, often customers who become thieves through opportunity or frustration.
- **Micro-gangs comprising 2-3 people**, that are well equipped (with detachers, booster bags and jammers), well-organised and structured, with an established *modus operandi* and keen as relates to serial victimisation.

▶ These two categories of shoplifters demand different attitudes and countermeasures:

- Retailers may wish to retain **individual shoplifters**, who are "customers in 90% of cases" but want to discourage them from committing theft through more traditional methods (tags, labels, aisle surveillance) and improved customer care.
- Retailers wish to minimise **micro-gangs** by employing more advanced technologies (e.g. EAS barriers able to detect booster bags), physical security and improved coordination or intelligence sharing with other retailers and law enforcement.

Robberies and Burglaries

▶ While shoplifting is reported as the main cause of retail loss, retailers highlight that, depending on the circumstances, **shoplifters can turn into robbers**; and that micro-gangs involved in organised shoplifting can also be involved in burglaries. It is therefore necessary to look at these criminal phenomena also.

▶ Robbery is the second most frequent cause of external theft. Despite being a quite rare event, it has a significant impact in terms of **customer and staff security**, perception of security and attitude to buying.

Figure D – External theft: most frequent shoplifters

(% of respondents reporting this as the 'most frequent' type of shoplifter)

	Single-people	2-3 people	More than 3 people
BURGLARY	8.3%	44.4%	47.2%
SHOPLIFTING	28.2%	71.8%	
ROBBERY	59.5%	37.8%	2.7%

● Single-people   ● 2-3 people   ● More than 3 people
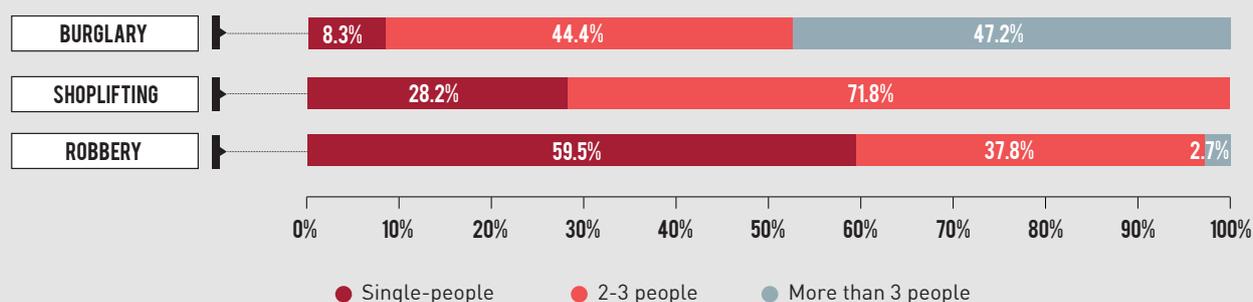
Source: survey

► According to the survey respondents, more than half of the robberies implied the **threat of force without the use of any weapons (52.8%)**. When arms are used, white weapons (e.g. knives or blades) are the most common (22.2%). The use of firearms and of actual physical violence is marginal (16.7% and 8.3% respectively).

► According to both survey respondents and media news, in most cases robberies are committed by **single individuals**.

► According to retailers, burglary is the third most frequent cause of external theft, but, in terms of the number of retail crime incidents reported in the news, is numerous in the **Luxury**, **Electronics**, **Do-it-yourself** and, to a lesser extent, in the **Beauty & Cosmetics** sectors.

► According to both respondents and news reports, the most common burglar category is **gangs with more than three members**. In the retail industry, burglaries – and to a lesser extent, robberies, – may also be linked to the phenomenon of mobile organised crime gangs (MOCGs) that are able to move quickly around, within and across multiple jurisdictions (Europol, 2019).

Internal Theft and Supplier Theft

Internal theft

► Employee theft and fraud are the second most frequent cause of losses according to retailers. They can take various forms, the most frequent being **theft/consumption of goods and misappropriation of cash from the cash register**.

► Other more sophisticated internal fraud schemes are reported by retailers as emerging:

- **Improper/fraudulent use of customer loyalty cards and gift cards**.

- **False refunds and returns**, e.g. the creation of a fictitious merchandise return so as to

pocket cash or price differences, sometimes committed with the collusion of (fake) customers.

- **Price override fraud**, e.g. illicit modification of the price of goods (in the corporate IT system or physically) so as to gain discounts or pocket cash.

- **KPIs manipulation**, e.g. the manipulation of sales data so that employees and store managers can reach sale targets and gain incentives/benefits.

► **According to retailers**, **sales personnel** and **cashiers** were the people most frequently involved in internal theft, with some slight differences across sectors. **Store managers** in the Apparel and Beauty & Cosmetics sectors were also identified as vulnerable.

Supplier theft

► **More than two thirds** of retailers experienced at least one case of supplier theft or fraud.

► In particular, more than **75% of the retailers** declared that they experienced theft committed by **logistic services**, **cleaning** and **security services providers**.

► According to the survey, supplier due diligence is almost exclusively performed during the **selection phase**. In most cases it involves financial solidity checks and, less frequently, the criminal records, certification and beneficial ownership checks.

Security Measures

► Retail companies in the countries analysed spend on average **0.61% of their annual turnover** on security measures, with Do-it-yourself (1%), Gas/petrol station retailers (1%), Apparel (0.7%) and Food retailers (0.6%) recording the highest expenditure.

► The two variables (shrinkage and expenditure) show a **high positive correlation (Pearson's R = 0.85)** across retailers.

**Figure E – Total expenditure on security and loss prevention, by business sector. Average 2015-2016-2017**

Sector	Value
SPORT GOODS	0.2%
GAS / PETROL STATION RETAILERS	1.0%
FOOTWEAR AND ACCESSORIES	0.2%
ELECTRONICS	0.8%
DO-IT-YOURSELF	1.0%
FOOD RETAIL	0.6%
BEAUTY & COSMETICS	0.5%
APPAREL	0.7%

ALL SECTORS — 0.61%

Source: Survey

► The most frequently adopted countermeasures are **CCTV** (adopted by almost 80% of all respondents), **EAS** and **third-party alarms** (both more than 70%). For the 76.9% of retailers who adopt it, EAS is implemented in all stores, irrespective of store size and shrink rate.

► **Doormen**, **unarmed guards** and **armed guards** are employed in a fewer stores, usually only in very large stores with higher shrinkage rates.

► Security measures are **adopted mostly in combination**: 65% of the stores, for which microdata was provided, adopt at least 2 countermeasures together. The most frequent combination is **EAS and CCTV**, used by more than 25% of stores (especially on street).

► Controlling for interactions and combinations among the different countermeasures, **adopting EAS** is associated with a lower likelihood of experiencing increase shrinkage in the subsequent period, and with an higher likelihood of experiencing reduced shrinkage. The adoption of other countermeasures seems uninfluential.

► However, analysis of the impact of countermeasures is challenging, and a number of sources highlight the **pros and cons of each type of security measure**.

Total Cost of Losses

► In the countries covered by the study, the total economic cost of retail losses (obtained as the sum of shrinkage cost and security expenditure) can be estimated at **2.1% of retail sector turnover**.

► This figure can be estimated at **49 billion euro per year** in the 11 countries covered. If this value were indicative of company revenues, it would be the 4th biggest retail group in Europe.

► In relation to citizens, this figure corresponds to **89 euro** per capita each year.

► Looking at shrinkage figures alone, the economic impact can be estimated at **35 billion euro** in the 11 countries (63 euro per capita), while expenditure in security measures can be valued at **14.5 billion euro** (26 euro per capita).

Figure F – Total shrinkage and security expenses, by country (value in million euro)

Country	Total Shrinkage value	Total Expenditure
SWEDEN	1,366	628
RUSSIA	3,202	1,468
POLAND	1,128	574
THE NETHERLANDS	1,778	624
UNITED KINGDOM	8,866	3,525
SPAIN	2,542	1,103
ITALY	3,340	1,526
GERMANY	3,761	1,603
FRANCE	7,270	2,793
FINLAND	561	240
BELGIUM	966	392

● Total Shrinkage value ● Total Expenditure
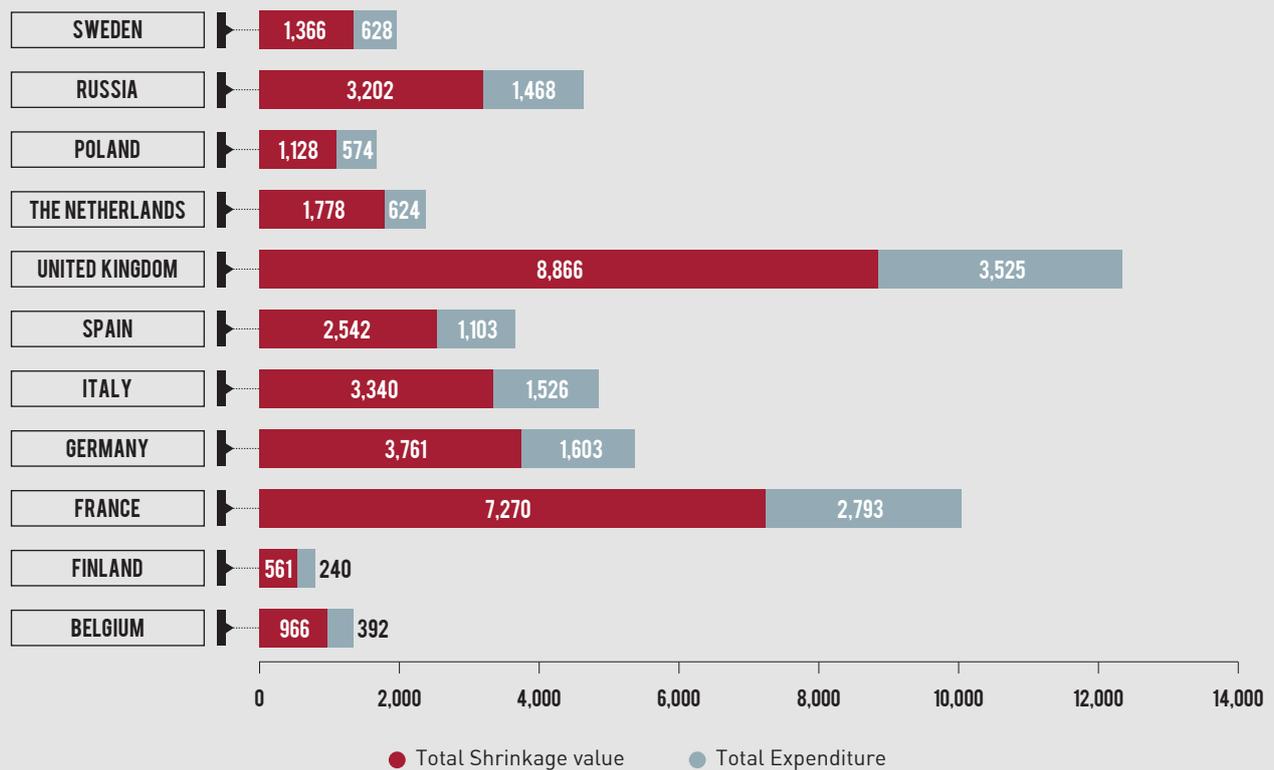
Source: Elaboration of survey and Bureau van Dijk's data

Research and Policy Implications

► In terms of research, this study highlights the need to improve the understanding of:

- How **losses are accounted for** by retailers.

- The **criminal share** of these losses.

- Emerging **criminal schemes** and behaviour, especially in relation to fraud.

- The impact of criminal behaviour not only on losses, but in terms of **customer security (and perception of security)**, and how this impacts on the customers' attitude to buying.

► In terms of retailer and the public sector policy, the study highlights the need to:

- Strengthen links among all company departments, especially between **security** and **audit and management control** departments.

- Improve **inventory evaluation** and the accounting of losses, for the purposes of improving management (and increasing profits) and reducing shrinkage. This may be achieved through:
  - technological developments (e.g. the adoption of RFID or other technologies);
  - organisational improvements;
  - better internal communication among departments and stores.

- **Combine different types of countermeasures** and improve the assessment of their efficacy and fit.

- Improve **staff awareness** – at all levels – of the type of threats and criminal schemes.

► **Better data is needed** in order to achieve these results. This study has seen an unprecedented number of retailers provide **microdata at store level**. Although this information allowed thorough analysis, more data is required.

► For such purposes, the **sharing of information and practices** among retailers, academics and providers of security technologies and services should be improved.

GLOSSARY AND ACRONYMS

Administrative/accounting errors = Errors in billing, pricing, inventory transactions, incoming goods, etc.

Apparel (business sector) = Retail store that sells ready-made clothing in different segments (e.g. Fast-fashion, Underwear, Luxury etc.).

Beauty & Cosmetics (business sector) = Retail store that sells products intended to be applied to the human body to enhance or alter the appearance or fragrance of the body, cleansing, beautifying or promoting attractiveness.

Beneficial owners = The natural persons who ultimately control the company through direct/indirect shareholding or by other means.

Booster bags = Bags, backpacks, clothes and even strollers modified to circumvent anti-shoplifting barriers.

Burglary = Gaining unauthorised access to part of a building/dwelling or other premises; including by use of force; with the intent to steal goods (breaking and entering).

Cash & Carry (business sector) = Retail shop where people can buy goods in larger quantities and at lower prices than in ordinary shops. Cash & Carry stores are mainly used by people in business to buy goods for their shops or companies.

CCTV (closed circuit television) = a system using video cameras to send television signals that are not publicly distributed but are monitored, primarily for surveillance and security purposes.

Department store (business sector) = Retail establishment with an extensive variety and range of goods, organised into separate departments. All departments are housed under the same roof to facilitate buying, customer service, merchandising, and control.

Do-it-yourself or DIY (business sector) = Retail store selling household hardware for home improvements including building materials, hand tools, power tools, keys, locks, plumbing supplies, electrical supplies, utensils, paint and garden products directly to consumers for use at home or for business.

Supplier due diligence = Due diligence is researching a business or person prior to signing a contract, or an act with a certain standard of care. It can be either a legal obligation or a voluntary investigation. Supplier due diligence means carrying researching a prospective supplier before agreeing to a transaction or a contract.

EAS (Electronic Article Surveillance) = Anti-shoplifting system consisting of antennas and related accessories (e.g. hard tags and labels) used to protect goods inside stores.

Electronics (business sector) = Retail store where devices used for entertainment (flat screen TVs, DVD players, video games, remote control cars, etc.), communication (telephones, mobile phones, e-mail-capable laptops, etc.), home-office activities (e.g. desktop computers, printers, paper shredders, etc.) are sold.

EU = European Union

External theft = Theft committed by one or more individuals not employed by the company. (e.g. shoplifting, burglary, robbery, etc.).

FIFO (First-in first-out) = Inventory accounting practice based on more recent, possibly higher priced items (therefore usually leading to higher closing inventory figures).

Food retail (business sector) = Self-service shops of different sizes and with different ranges of merchandise offering a wide variety of food and some household products, organised into aisles. Includes convenience stores, discount stores, supermarkets, superstores and hypermarkets.

Footwear & accessories (business sector) = Retail shop specialising in the sale of footwear and/or accessories such as bags, fashion jewellery, sunglasses, hats, gloves, etc.

Gas/petrol station retailer (business sector) = Convenience store found in filling stations that typically sells confectionary, soft drinks, snacks and, in some cases, a small selection of grocery items.

Internal theft = Theft committed by one or more company employees. Internal theft can for instance include the theft of goods, the misappropriation of money from cash registers, the full or partial voiding of receipts, fraudulently returned goods, etc.

Jammer = A device able to disrupt the frequency of radio signals emitted by EAS barriers, through the use of an over-powered signal in the same frequency range.

Known shrinkage = Explained loss of physical inventory due to waste, scrap, damaged or expired items.

LIFO (Last-in first-out) = Inventory accounting practice based on older, and likely lower priced items (therefore usually leading to lower closing inventory figures).

Luxury (business sector) = Retail shop that sells goods with a high level of price, quality, aesthetics, rarity, extraordinariness and a high degree of non-functional associations (e.g. clothing, jewellery, shoes, etc.).

MS = Member States of the European Union

NUTS = Nomenclature of Territorial Units for Statistics. A standard classification adopted by the European Union to identify and define regions within a country. NUTS could be provided at various levels, with NUTS 1 referring to wider areas (e.g. macro-regions) and NUTS 3 to smaller areas (e.g. provinces, departments, etc.).

Pharmacy/Drug store (business sector) = Retail store where medicines are compounded or dispensed, either with or without prescriptions.

RFID (Radio Frequency Identification) = Technology for the identification and/or automatic storage of object-related information, based on the ability to store data from electronic labels (tags) and their ability to respond to remote queries by dedicated readers.

Robbery = The unlawful taking or obtaining of property with the use of force or threat of force against a person with intent to permanently or temporarily withhold it from a person or organisation.

Seasonal contract = A fixed-term employment contract lasting no more than three months, which is activated in specific periods such as Christmas time, summer, etc., generally when there is a need for extra staff due to peaks in sales and customer numbers.

Security and loss prevention expenditure = Total company investment in security and loss prevention measures calculated as a percentage of turnover. For the purpose of this study, only operating costs relating to anti-shoplifting systems, anti-intrusion systems, video surveillance, physical surveillance, access control systems, facility maintenance, etc. or all costs generally aimed at protecting the company's assets, are included. The study has been asked not to include the depreciation of investments.

Shrinkage = "The difference between the stock a retailer thought they had and what they actually counted or valued in their physical locations" (Beck, 2016, page 14). However, the definition is not homogeneous and accounting for shrinkage may be a challenging exercise (see Section 2). As part of this study, retailers were asked to provide the shrinkage figures recorded in stores as a percentage of turnover, calculated at sale price without taking insurance payouts into account.

Shoplifting = The illegal act of taking goods from a shop without paying for them.

Source tagging = The process through which the anti-shoplifting labels are applied during production, packaging or at the distribution centre.

Sport goods (business sector) = Retail shop that sells any item or equipment used for sport or exercise.

Supplier theft (intercompany fraud) = Theft committed by contractors or people employed by a third-party supplier of goods, logistics and other services (e.g. cleaning, surveillance, maintenance, etc.).

Unknown Shrinkage = Unexplained loss of physical inventory which may be due to administrative and accounting errors or criminal causes (e.g. internal theft; external theft; supplier theft).

WAC (Weighted average cost) = Inventory accounting practise based on average cost against remaining stock volumes.

1. THE STUDY

1.1 OBJECTIVE

This study provides a picture of **security threats and countermeasures** in the retail sector, and of the total losses incurred by companies in a variety of retail sectors. The study focuses on 11 countries: Belgium (BE), Finland (FI), France (FR), Italy (IT), the Netherlands (NL), Poland (PL), Spain (ES), Sweden (SE), Russia (RU) and the United Kingdom (UK).[1] While Germany (DE) was not covered by the survey, it was analysed in relation to other data sources.[2]

The amount of data and information in the countries covered varies widely and the level of survey participation is not uniform across all these areas. The report provides a general overview of the problem in the 11 countries as a whole and then provides country specific profiles offering some insights on issues that are emerging or relevant at national level. These profiles are produced only for those countries where extensive data are available.

1.2 BACKGROUND AND RATIONALE

Most previous research in the field focused on *shrinkage* (or *shortage*) as a proxy measure of retail crime (for a definition, see below). According to these studies, measuring shrinkage across firms, sectors and countries provides a measure of the level of retail crime across the same firms, sectors and countries.

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1. Due to the available information, Russia is only considered in the analysis of news and in the estimate of the total losses. A country profile for Russia is not provided.

2. In particular as regards data on shrinkage in Germany this study relies on a previous report published by the EHI Retail Institute (2018) which was able to collect data on inventory losses from a wide basis of retailers. While results are not fully comparable with the shrinkage statistics collected by this study, due to the different methodology, they constitute a useful reference and benchmark.

The starting point of this report is **questioning this assumption**: firstly, measuring shrinkage is an **accounting challenge** – and comparing shrinkage figures may not be very meaningful. Secondly, we believe that **other variables should also be considered** when analysing retail security: qualitative information that helps explain crime-related shrinkage, such as the *modus operandi* adopted in criminal behaviour, the types of offenders, the set of contextual and environmental factors that make it easier or more difficult for stores to be victimised and incur losses. Lastly, the reasons for which retailers adopt security measures – and which security measures are adopted.

This study therefore **goes beyond shrinkage** and collects a set of other data and information that we believe is useful for a better understanding of the level of crime in this industry.

1.3 METHODOLOGICAL APPROACH

This study goes beyond the traditional survey-based approach, enriching it with three further diverse, yet complementary, sources of information and data collection methods. For the first time they are used extensively for the analysis of retail crime at cross-border level:

► **Microdata**: we collected quantitative data for each single point of sale (or store) directly from a sample of 30 retail companies, equivalent to 3,474 stores distributed in 10 countries. The data requested referred to shrinkage (% of the store's turnover), surface area, existing countermeasures (where available) and other information (e.g. address, type and location). This is one of the largest point of sale samples ever used at international level in the analysis of retail crime.

► **News**: we collected media news reports (both printed and non-printed media) in 11 countries[3] over three years (2016, 2017 and 2018 until October) on events relating to crime incidents: shoplifting, robberies, burglaries, internal theft, fraud and other security events. All in all, more than 1,600 news reports were collected. For each incident, information was collected on the type of event, the business sector, the retail store name/brand, the geographic location, the *modus operandi* (e.g. use of firearms), stolen goods (and monetary amounts, if reported), the person involved (including number, age, gender, type of offender).

► **Focus group and interviews**: the data collected and the results of the analysis were enriched and validated through more than 40 **bilateral interviews** with selected retailers, and by hosting a **focus group** at the Università Cattolica premises on 29th January 2019, which saw the participation of academics and security managers of about 20 retail companies in **different sectors** (Food retail, Apparel, Beauty & Cosmetics, Cash & Carry) and academics from a **number of countries** (Belgium and Benelux, Germany, Italy and the United Kingdom).

The four methodological approaches used (Survey, Microdata, News and Focus Group/Interviews) are summarised and reported in Figure 1.

CRAWLING MEDIA NEWS FOR STUDYING CRIME

In recent years, due to the lack of official statistics and data, some scholars have started using media news to analyse crime patterns and trends.

A sample of crime events based on news reports could be biased because of diverse cultural attitudes in different countries and settings (Curran, Salovaara-Moring, Coen & Iyengar, 2009). For example, media could be more interested in reporting news about violent robberies than on shoplifting. Therefore, these samples are not necessarily representative and should be taken cautiously.

However, they are a goldmine of qualitative information which helps provide an understanding of the emerging *modus operandi*, patterns and trends that would otherwise be impossible to monitor.

So as to improve the collection and analysis of media news, Crime&tech has developed an automated media-crawling system within its internal Crimedata Enterprise Content Management (ECM). The system allows daily collection of hundreds and thousands of news reports from a variety of sources around the globe based on a variety of keywords, translated into various languages, so as to cover different criminal phenomena. A scraping process and the application of semantic news content analysis techniques allow news reports to be analysed and specific trends, patterns and *modi operandi* highlighted.

crimedata

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3. BE, DE, ES, FI, FR, IT, NL, PL, RU, SE, UK.

Figure 1 – Methodological approaches of the study

	1. SURVEY	2. MICRODATA	3. NEWS	4. FOCUS GROUP/INTERVIEWS
DATA COLLECTION	Aggregated quantitative and qualitative information collected through questionnaire[4]	Quantitative information referred to single stores, directly provided by companies	Quantitative and qualitative information collected from media news on retail crime incidents	Qualitative information, case studies, and comments/suggestions on the preliminary results
LEVEL OF DETAIL	DATA AND INFO AT COMPANY LEVEL	DATA AND INFO AT STORE LEVEL	DATA AND INFO AT INCIDENT LEVEL	DATA AND INFO AT BOTH COMPANY AND SECTOR LEVEL
MAIN INFO COLLECTED	• Company's business sector and country • Known v. Unknown shrinkage • Most frequent causes and types • Modi operandi • Most frequent actors • Most stolen products • Expenditure in countermeasures • Type of countermeasure adopted/used • Emerging patterns and trend	• Location of the store (country, region, city, address) • Type (street v. shopping mall) • Surface • Number of employees/staff[5] • Shrinkage • Countermeasures in place • Apprehended persons[6] • Robberies[7]	• Day/time of the event • Location of the event (country, region, city, address) • Type of event • Company targeted • Business sector targeted • Modi operandi (e.g. use of violence, weapons, tools) • Involved actors (e.g. number, age, gender, type) • Stolen products • Monetary amounts involved	• Comments and suggestions • Case studies • Feedbacks of preliminary results
SAMPLE	110 COMPANIES WITH INDEPENDENT BRANDS 22,557 STORES (ESTIMATED)	30 COMPANIES 3,474 STORES	1,600 RETAIL CRIME INCIDENTS IN 2016, 2017 AND 2018 (UP TO OCTOBER)	20 SECURITY MANAGERS PARTICIPATING TO THE FOCUS GROUPS + MORE THAN 40 BILATERAL INTERVIEWS WITH RETAILERS AND ACADEMICS
COUNTRIES REPRESENTED	1. BE 2. ES 3. FI 4. FR 5. IT 6. NL 7. PL 8. SE 9. UK	1. BE 2. DE 3. ES 4. FR 5. IT 6. NL 7. UK	1. BE 2. DE 3. ES 4. FI 5. FR 6. IT 7. NL 8. PL 9. RU 10. SE 11. UK	1. BE 2. DE 3. ES 4. FI 5. FR 6. IT 7. NL 8. PL 9. SE 10. UK

4. The possibility of providing anonymised data (i.e. without disclosing the company name) was guaranteed.
5. Available for a minority of retailers only.
6. Available for a minority of retailers only.
7. Available for a minority of retailers only.

2. MEASURING SHRINKAGE: AN ACCOUNTING CHALLENGE

If the measurement of retail crime were limited to simply counting crime incidents or thieves apprehended, the resulting figure would always be underestimated. **Crime incidents are difficult to detect**, both at the time they are committed and also at a later stage (Hayes & Blackwood, 2006). Further, not all retail crimes detected are reported by retailers (e.g. in victimisation surveys) or reported to the police (Figure 2).

Figure 2 – Pyramid of retail crime detection

- Retail crimes committed
- Retail crimes detected
- Retail crimes reported by retailers
- Retail crimes reported to the police
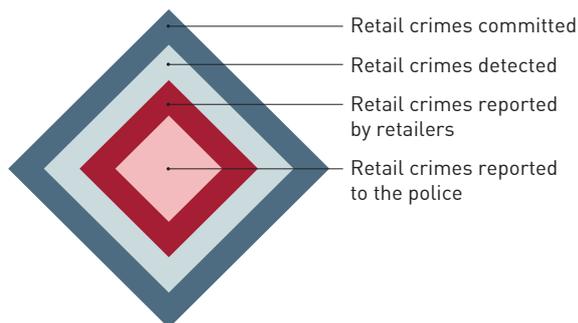
This gap leads to a need to include a proxy of loss calculated from company accounts.

Shrinkage can be defined as **"the difference between sales that should have been achieved given the amount of inventory purchased by the retail business and the actual sales revenues"** (Bamfield, 2012). Or in other words "the difference between the stock retailers thought they had and what they actually counted or valued in their physical locations" (Beck, 2016, p. 14). Shrinkage is often reported as a percentage of the (company or store's) turnover or net sales.

But the difference measured by shrinkage cannot be attributed exclusively to criminal causes, as it may also include **non-crime losses**, e.g.:

► Waste and deterioration of goods.

► Breakages/damaged goods (e.g. a damaged item of clothing).

► Expired/perished goods (e.g. frozen food products unwittingly thawed).

► Pricing errors.

► Administrative/accounting errors.

► Generally speaking, losses attributable to poor management practices.

Shrinkage items are sometimes classified as **known** shrinkage (attributable to known causes, mostly non-criminal ones) and **unknown** shrinkage (usually attributable to undetected crimes such as shoplifting or internal theft).

One critical issue is the **very diverse** way in which companies measure shrinkage and account for the above items. Figure 3 reports the percentage of survey respondents which include a specific item/cause in the calculation of the shrinkage rate.

While all respondents include external theft and administrative/accounting errors in the shrinkage rate, it is surprising that supplier theft (sometimes referred to as intercompany fraud) and internal theft are only considered by two-thirds of respondents (respectively 63.2% and 71.8%). This may also be related to how each company defines "internal theft" vs. "supplier theft". About half of the sample includes breakages, expired/perished goods, waste and non-compliant use.

Within this study we asked retailers to provide shrinkage figures (distinguishing if possibile between known and unknown) as a percentage of turnover, calculated on the sale price and without taking insurance pay-outs into account. We also asked retailers to indicate what loss items/causes they include when calculating shrinkage.

Figure 3 – Items/causes taken into account by retailers when calculating shrinkage

ADMINISTRATIVE/ACCOUNTING ERRORS	100.0%
EXTERNAL THEFTS	100.0%
INTERNAL THEFTS	71.8%
THEFTS COMMITTED BY SUPPLIER	63.2%
NON-COMPLIANT USE	59.0%
WASTE/SCRAP	57.9%
EXPIRED/PERISHED GOODS	56.4%
BREAKAGES/DAMAGED GOODS	56.1%
DAMAGED COLD ITEMS	35.1%
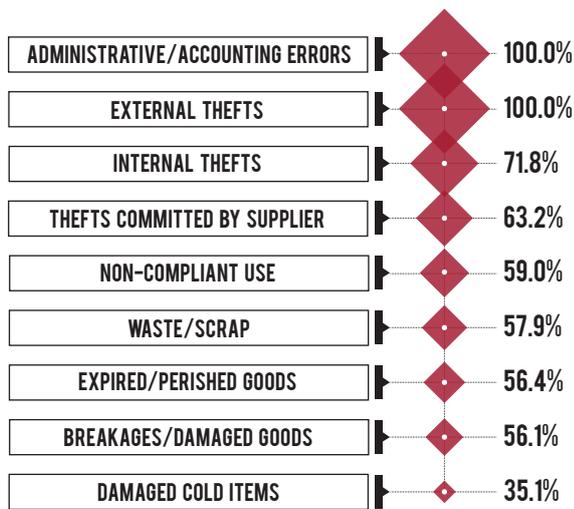
Source: Survey

Even the decision to label a loss as "known" or "unknown" is unbalanced. For example, out of the 57.9% of retailers that consider waste/scrap as shrinkage, 30% count it as "known shrinkage", 25% as "unknown shrinkage" and 3.5% do not distinguish between the two. All in all, **only 29.5% of retailers were able to provide shrinkage figures distinguishing between "known" and "unknown" shrinkage**.

2.1 INVENTORY HABITS AND ACCOUNTING PRACTICES

Different retailers count shrinkage in different ways due to various reasons, which can be attributed to diversity in:

► Type of **merchandise** (e.g. it does not make sense to talk about damaged cold goods in the Apparel industry).

► Supply-chain systems.

► **Accounting practices** and techniques, especially in regard to **inventory valuation**.

The survey asked about the inventory habits of retailers in Europe and about inventory frequency and method (Figure 4). While most respondents value stock **yearly** or **half-yearly**, a lesser percentage adopt other frequencies, with about 7% carrying out a risk-based inventory, i.e. more frequently in stores exposed to higher loss rates or for products with a higher inventory turnover.

In most cases, inventory is carried out by **company employees** (60% of respondents), while external service providers are employed by 32% of retailers. A small fraction employs both internal and external staff.

Figure 4 – Inventory in retail: how often and how

How often do you carry out inventory in your stores?

- 6,8%
- 6,8%
- 2,3%
- 6,8%
- 40,9%
- 36,4%

● Yearly ● Half-yearly ● Quarterly
● Monthly ● Weekly ● Other

Which technologies are used to carry out the inventory?

- 13,2%
- 1,9%
- 5,7%
- 7,5%
- 71,7%

● Bar code ● Handwritten ● RFID
● RFID + Bar code ● N/A
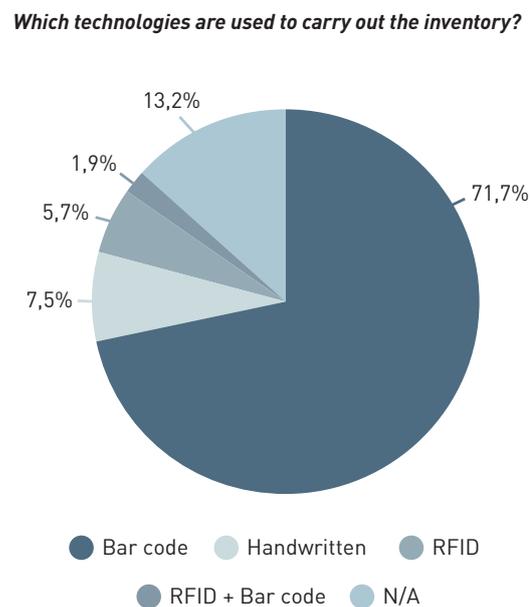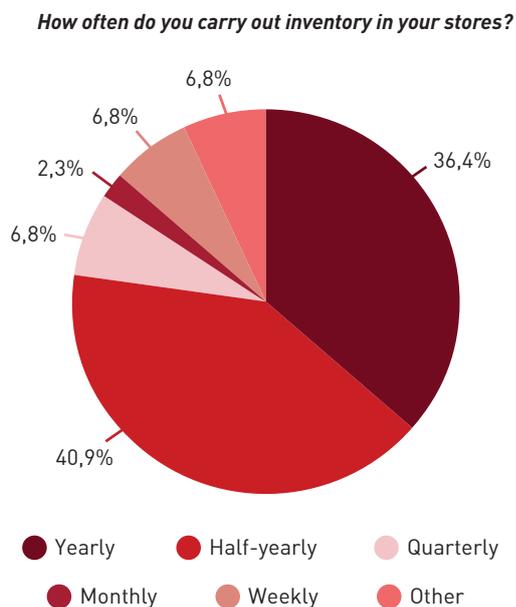
Source: Survey

In terms of inventory technologies, **barcode use** still gets the lion's share (71.7%), while RFID is used only by 6% of respondents. It is surprising to note the ongoing high use of the **handwritten inventory** (7.5%) method, which is even higher among Food retailers (or multiple retailers – i.e. supermarkets, discount stores and Cash & Carry stores), where it is used by more than 11% of respondents. Some retailers reported difficulties arising from the use of handheld readers and docking stations, which still rely on physical connections and servers and slow down the inventory process.

There are also differences in how inventory is valued. There are a number of different accounting practices for measuring inventory (Bowers, 2017), the most frequent being:

► **Weighted average cost (WAC)**: based on average cost against remaining stock volumes.

► **Average unit cost**: straight average cost of items in stock.

► **First-in first-out (FIFO)**: based on more recent, possibly higher priced items (therefore usually leading to higher closing inventory figures).

► **Last-in first-out (LIFO)**: based on older, and likely lower priced items (therefore usually leading to lower closing inventory figures).

► **Retail method**: based on division of the purchase and starting inventory cost by the cost-to-retail percentage.[8]

An analysis of five major European retailers – based on what was declared in the statement of accounting policies in their annual reports – reveals that retailers adopt different techniques. Such variance may lead to very different shrinkage figures as percentage of turnover.

Table 1 – Inventory accounting policy of a sample of major retailers

RETAILER	SECTOR	INVENTORY VALUATION POLICY
RETAILER 1	FOOD RETAIL / GENERAL MERCHANDISE	WEIGHTED AVERAGE COST (WAC)
RETAILER 2	FOOD RETAIL	FIFO
RETAILER 3	FOOD RETAIL	MIX OF WAC, FIFO AND RETAIL METHOD
RETAILER 4	APPAREL	AVERAGE UNIT COST
RETAILER 5	DEPARTMENT STORE	FIFO

Source: Compiled by the authors from Company Annual Reports 2018

Another issue when accounting for shrinkage is **who to attribute the loss to**, especially if relating to transit or returns. According to the survey, for most respondents (63.8%) losses in the logistics chain are counted at **company level**, and at individual **store level** in just 30.5% of cases. When accounting systems attribute losses to individual stores, store managers may decide to show losses from crime as slow-moving, damaged or obsolete stock or vice versa, depending on whether they are penalised for losses occurring in their stores.

Indeed, the presence of incentives – in terms of increasing profit or reducing taxes – plays a key role in terms of influencing shrinkage accounting policies.

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8. The cost-to-retail percentage is in turn calculated by dividing the cost of the product by the amount the product is sold for. Subtracting from this number the sales total multiplied by the percentage, and subtracting it from the cost of goods sold, produced the total ending inventory figure.

ACCOUNTING FOR SHRINKAGE, BETWEEN PROFIT AND TAX INCENTIVES

- Whilst the balance sheet is enhanced by having a higher inventory figure, taxable profit is reduced by having a lower inventory figure.

- Depending on the firm's financial management strategy (increasing profits or reducing taxes), there could therefore be an incentive to write-down or write-off inventory and manage accounting for shrinkage in a certain way.

- Incentives to increase/decrease the value of losses also apply to value added taxes (VAT). Although VAT does not appear on either the balance sheet or the income statement, it does affect cash-flow. VAT in Europe is charged on what the goods are sold for – and if they are lost, then there is no charge on the sale. This can reduce the VAT payable figure, which may be attractive in terms of maintaining cash-flow and reducing the debt liability.

- It would be interesting to compare the impact of reducing losses on the net margin against that of saving taxes. After all, if the items were sold instead of lost, then the net margin gain should be greater than that offered by tax gains.

The difficulty for retailers to provide harmonised shrinkage figures can also be explained by **the fragmentation of the IT systems used**. Accounting, IT and logistics platforms are often fragmented and not fully integrated. Even where large enterprise planning systems (ERP) are used to co-ordinate the organisation, the business intelligence systems on top of the ERP are not always able to provide management with information in a sophisticated way that allows for monitoring and evaluation and for providing sound loss figures for retail crime surveys or barometers.

Two implications can be drawn based on the above-described critical aspects:

▶ Shrinkage is **not (only) a measure of crime**. Following on from Beck (2016), we must admit that we can only talk of "total retail losses". Understanding the crime-driven fraction of these losses is extremely difficult and sometimes impossible for the retailers themselves.

▶ Due to the different accounting practices, methods and financial incentives, **comparing shrinkage rates across firms, business sectors and countries may not be very meaningful**. An appropriate and comparable analysis of retailer losses would require their accounting practices, particularly inventory accounting practices, to be disentangled or harmonised data collection at the very source.

All these caveats shall be kept in mind when interpreting the results presented in the following sections.

IMPROVING ACCOUNTING PRACTICES AND REDUCING LOSSES: BEST PRACTICES

A key message emerging from the study – and other initiatives such as the ECR Shrink group – is that improving the accounting of losses is key to both achieving better management and minimising shrinkage. The experience of numerous retailers confirms this.

A multinational retailer, headquartered in the United Kingdom and managing 3000 stores at national and international level, has implemented improvements in the way data is collected and presented (e.g. by region, store, line). This has, on the one hand, improved accountability and, on the other, helped discussion on innovative ideas for loss reduction.

Another major Food retail company has seen a 25% reduction in the shrinkage rate in the last three years, which according to managers, was achieved among other things by improving the reporting and accounting system and by producing more reliable figures and meaningful KPIs on which to base company security decisions.

As stressed several times by the ECR community, enhancing the accounting of items and losses can be achieved in various ways, including technological interventions (e.g. RFID), organisational and, logistical intervention and ultimately security measures.

3. SHRINKAGE: TRENDS AND PATTERNS

As mentioned, differences across firms in terms of how they account for losses may undermine any comparison of the shrinkage figure across sectors and countries and a meaningful interpretation. Nevertheless, **summary statistics** can be calculated which may provide an approximate picture of the extent of retail sector inventory losses.

Figure 5 shows the **mean shrinkage rates** as reported by all respondents in the 9 countries covered by the survey (BE, ES, FI, FR, IT, NL, PL, SE, UK) in 2015, 2016 and 2017. In 2017, shrinkage represented on average the 1.5% of the turnover of retail firms.[9]

Figure 5 – Average shrinkage rate in 9 European countries. Year 2015, 2016, 2017

Respondents corresponding to 22,557 stores. Retail firms with less than 3 stores and outliers are excluded from the sample

● All respondents

● Respondents with the three years
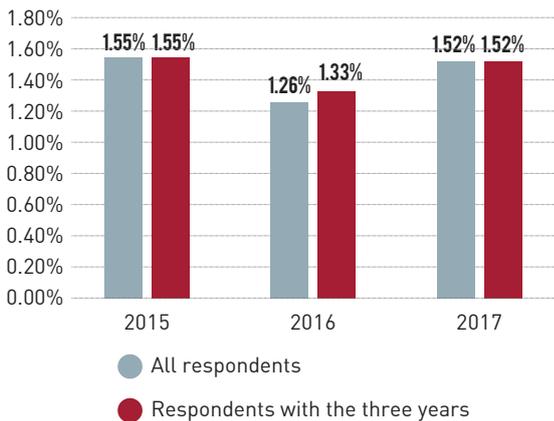
Source: Microdata

While the 2017 rate is substantially in line with the 2015 value, a **slight increase can be observed between 2016 and 2017**, however this is mostly attributable to certain business sectors and store types (see below). Also in Germany, which is not included in our survey, data from the EHI Retail Institute reveals stable inventory discrepancies rates between 2016 and 2017 (with a slight increase in absolute terms). Comparison with previous versions of the Global Retail Theft Barometer (GRTB) is not fully appropriate, as the two studies adopt a different methodology and cover different samples. However, previous GRTBs historically highlighted that shrinkage is reducing over time.

Beyond the general trend, it is interesting to note that the experience of retail loss is fragmented, with more than 15% of survey respondents **reporting an upward shrinkage trend** in the last three years while the majority of the other respondents reported a decrease (Figure 6).

Figure 6 – Shrinkage trend in the last three years, as reported by retail firms
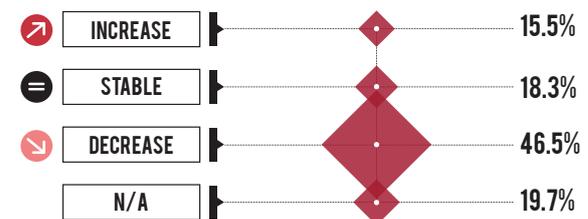
NA (Not available) in relation to respondents that were unable to provide figures for at least two years
Source: Survey

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9. As mentioned, respondents were asked to report shrinkage calculated at sale price without taking insurance payouts into account.

The same fragmented situation applies at store level: individual point of sale data provided by retailers shows that about 45% of the stores in the sample experienced an increase in shrinkage between 2016 and 2017 or between 2015 and 2016 (Figure 7).

Figure 7 – Shrinkage trend, 2015-2016 (N=1798) and 2016-2017 (N=1728), by store

*"Stable" refers to stores that have observed less than ±10% variation in the shrinkage rate*

TREND		
	2015–2016	2016–2017
↗ INCREASE	45.4%	44.4%
= STABLE	16.4%	16.1%
↘ DECREASE	38.2%	39.4%
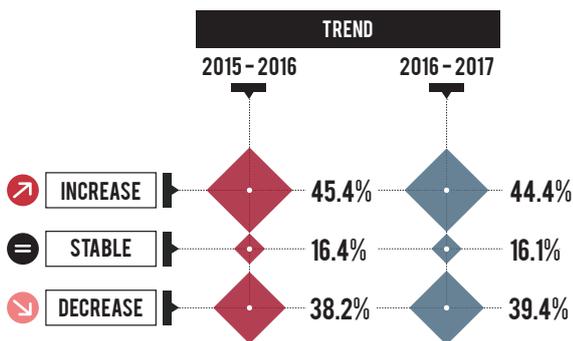
Source: Microdata

Results at store level seem to contradict the perceived trend emerging from the survey, in which most respondents report a downward or at least steady trend in shrinkage. The possible explanation is twofold:

► On the one hand, our data does not include information on the turnover of individual stores. Therefore, an increase in shrinkage in many small stores may be counterweighted – in terms of company average – by a downward trend in few larger stores. This is also partially confirmed by the results classified by store size: the percentage of larger stores experiencing an increase in shrinkage is lower than in smaller stores (Figure 8).

► On the other hand, it could also be hypothesised that the historical shrinkage trend, which has taken a downward turn in the last 10 years, has influenced retailers' perception, despite the fact that evidence at store level may describe a different scenario.

Figure 8 – Shrinkage trend, 2016-2017 (N=1728), by store size

STORE SIZE	TREND		
	DECREASE ↘	STABLE =	INCREASE ↗
VERY SMALL (< 160 M²)	59.0%	7.7%	33.3%
SMALL (160–384 M²)	53.2%	16.4%	30.4%
MEDIUM (384–1276 M²)	49.8%	17.9%	32.2%
LARGE (1276–2400 M²)	58.4%	17.3%	24.3%
VERY LARGE (> 2400 M²)	30.9%	49.5%	19.6%
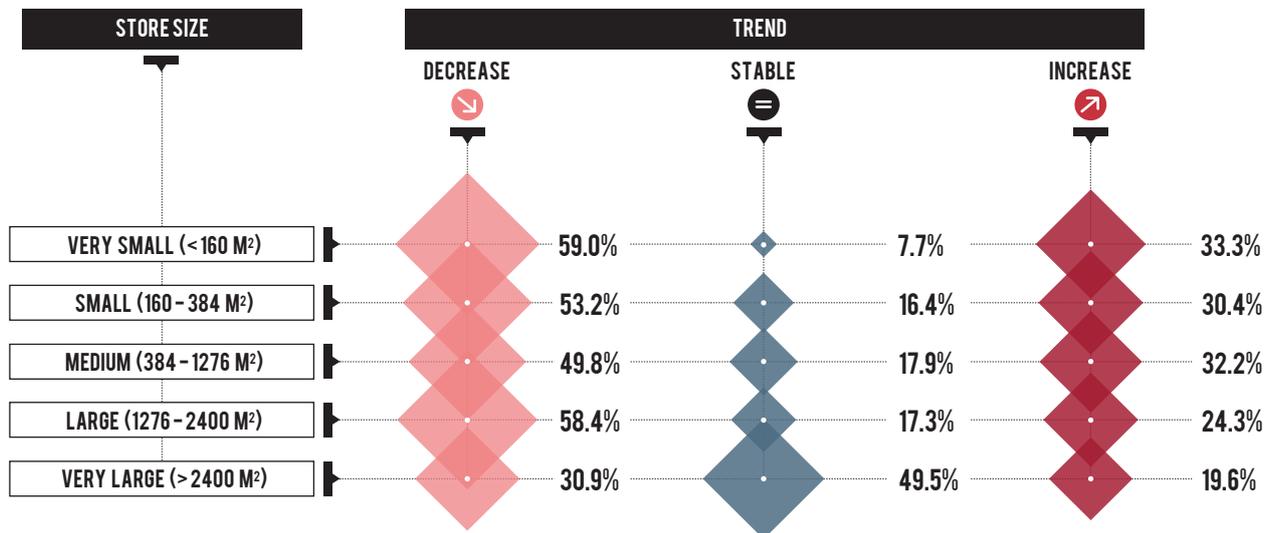
Source: Microdata

It is interesting to also focus on the *unknown shrinkage* trend – i.e. shrinkage from unknown causes, including criminal ones – for those retailers able to distinguish between the two types of inventory discrepancy. Figure 9 below reports the relative contribution of unknown shrinkage to total shrinkage.[10] Two interesting conclusions can be drawn:

► Unknown shrinkage on average **weighs as much as known shrinkage** on the overall inventory loss.

► The relative contribution of **unknown shrinkage is increasing** with respect to known shrinkage.

This latter result could be interpreted in two ways:

► In terms of an **increase in retail crimes** – which is more likely to cause unknown losses.

► In terms of **better inventory and supply-chain management** by retail firms, and therefore of a reduction in the *known* causes of inventory loss (e.g. waste/scrap, breakages, deteriorated or perished goods, etc.).

In a sense, while the general objective of firms is to reduce retail losses, a narrower objective is to **reduce known shrinkage**, i.e. to achieve better supply-chain and inventory management practices.

Figure 9 – % Unknown shrinkage over Total shrinkage
Respondents providing both known and unknown shrinkage figures, corresponding to 8,948 stores.
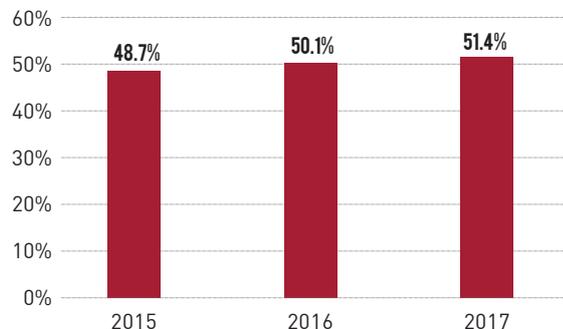

Source: Survey

10. For the purpose of this study, total shrinkage was calculated as the sum of known and unknown shrinkage, for those firms able to provide both figures. For the other companies unable to distinguish the two categories, the total shrinkage figure was considered.

3.1 SHRINKAGE BY BUSINESS SECTOR

As mentioned, inventory losses much depend on the business sector and on the type of store involved. Figure 10 shows the average 2015-2017 shrinkage rate by business sector as reported by all retailers responding to the survey in the countries covered. For some industries (e.g. Luxury or Department stores), retailers responded to qualitative sections of the survey but did not provide shrinkage figures. Results confirm previous research in this area, with Food retail (i.e. supermarkets, hypermarkets, convenience and discount stores) recording the highest rate in most countries (see previous GRTBs).

Figure 10 – Shrinkage by business sector. Average 2015-2016-2017
Respondents corresponding to 22,557 stores. Retail firms with less than 3 stores and outliers are excluded from the sample.

SPORT GOODS	0.7%
PET GOODS*	1.4%
GAS/PETROL STATION RETAILERS	1.1%
FOOTWEAR AND ACCESSORIES	1.3%
ELECTRONICS	0.4%
DO-IT-YOURSELF	1.0%
FOOD RETAIL	2.0%
CASH & CARRY*	1.1%
BEAUTY & COSMETICS	0.5%
APPAREL	1.4%
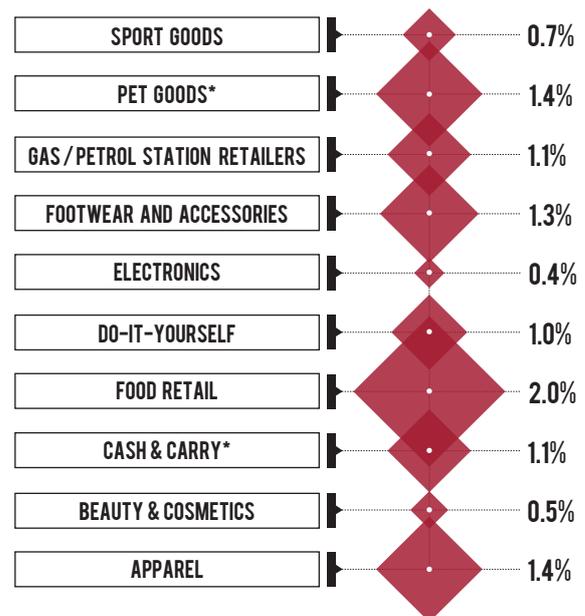
* Respondents in these sectors correspond to less than 200 stores.
Source: Survey

Differences across business sectors may be due to several reasons.

In terms of **known shrinkage**, those sectors with a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail, Cash & Carry or Pet goods) may face more difficulties in terms of inventory management and could therefore see higher inventory losses.

In terms of **unknown shrinkage** – and in particular shrinkage arising from **criminal causes** – several factors are suggested by the literature to explain the different shrinkage rates:

▶ **Type of customer**: the type of customer (in terms of prevalent age, gender, income range) changes according to the sector. As an example, several retailers and studies highlighted the vulnerability of those sectors and items which are preferred by teenagers – e.g. Apparel, Footwear and accessories, Food retail sector products (Forney, Crutsinger & Arnold, 1996; Nelson & Perrone, 2000).

▶ **Type of goods**: as made clear in the section below, products with a high value/volume ratio may be more vulnerable to external and internal theft. At the same time, some literature suggests that the theft of low-value items may be perceived as less serious and more justifiable, and could therefore be committed more easily (Smith, 2013; Mazar, On & Dan, 2008; Shalvi, Ori & Yoell, 2012).

▶ **Type of sale**: higher levels of customer assistance may imply more surveillance and therefore reduce the chances of customers committing opportunistic theft (Luke, 2015). Retailers have suggested that sectors with higher levels of customer care could see reduced levels of shoplifting (e.g. the Luxury sector).

▶ **Customer loyalty**: related to the previous point, sectors and stores with greater customer loyalty (e.g. Luxury, again) could be less vulnerable to external theft (Smith, Smith & Baker, 2011). Similarly, it can be hypothesised that stores with a lower conversion rate of visitors into customers (like larger shops, or stores located in shopping malls, as opposed to smaller ones) may be more vulnerable to losses. This result is further confirmed by microdata analysis (see below).

▶ **Type of store**: literature suggests that those sectors characterised by multi-level stores with a higher number of entrances and exit routes (e.g. in Food retail or Apparel), may be more vulnerable to shoplifting (Gibbens, 1962; Cardone, 2006; Cardone & Hayes, 2012). However, empirical evidence in support of this hypothesis is *weak*.

▶ **Loss prevention measures**: despite technological advancements, in some sectors traditional security measures (such as tagging devices) are still hard to apply to products (Hopkins & Gill, 2017). For example, in the Underwear or in the Food retail the difficulty in protecting goods (while preserving fit and accessibility) may increase shrinkage rates. This issue is further analysed below.

▶ **Staff management**: as highlighted by several retailers, the number, type, age and loyalty of staff may affect the likelihood of internal and external theft. In this respect, staff training also plays a crucial role (Lasky, Jacques & Fisher, 2015).

Different sectors also report different trends. Figure 11 shows the percentage of respondents observing (or, when not supported by data, declaring) higher, lower or stable shrinkage trends, by sector. It is interesting to note that, while in the Apparel and Sport sectors the wide majority of retailers declare a decrease in inventory losses, for Food retail (supermarkets, etc.) and DIY the fraction is lower. In Electronics and Beauty & Cosmetics the percentage declaring a decrease is the same as that reporting an increase; while in Luxury all respondents believe that the shrinkage rate is increasing (although there were no cases of respondents providing data to support this).[11]

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11. According to interviews with security managers in the Luxury sector, although increasing, inventory losses account for a very minor percentage of the turnover and are driven by completely different causes (and *modi operandi*) than other retail sectors, in particular employee and supplier theft and fraud.

Figure 11 – Shrinkage trend by business sector, as reported by respondents

Percentages calculated on the total number of responses excluding those which did not provide trend figures or declared trends

BUSINESS SECTOR	TREND		
	DECREASE	STABLE	INCREASE
SPORT GOODS	67%	33%	0%
LUXURY	0%	0%	100%
ELECTRONICS	50%	0%	50%
DO-IT-YOURSELF	60%	40%	0%
FOOD RETAIL	47%	20%	33%
BEAUTY & COSMETICS	33%	33%	33%
APPAREL	89%	6%	6%
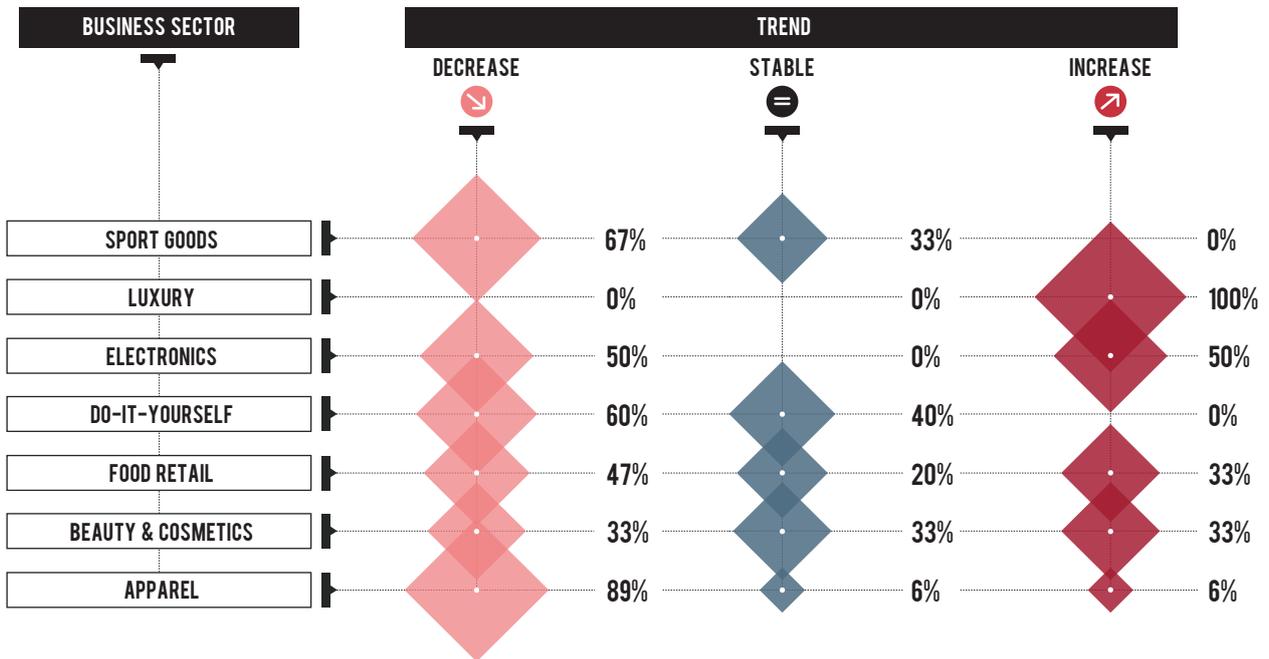
Source: Survey

These results are partially confirmed by data at store level, if classified by sector. Stores in the Food retail industry were more likely to experience an increase in shrinkage compared to point of sales in other economic sectors (Figure 12). This difference is not connected to the size of the stores, as very large stores[12] experienced more stable trends on average while smaller shops were more likely to record significant variations.

Figure 12 - Shrinkage trend by economic sector, 2015-2016 (N=1798) and 2016-2017 (N=1728). Mean % of turnover

FOOD RETAIL	TREND		OTHER SECTORS	TREND	
	2015-2016	2016-2017		2015-2016	2016-2017
INCREASE	49.5%	51.3%	INCREASE	39.6%	32.5%
STABLE	18.5%	18.5%	STABLE	13.4%	12.1%
DECREASE	31.9%	30.2%	DECREASE	47.0%	55.4%
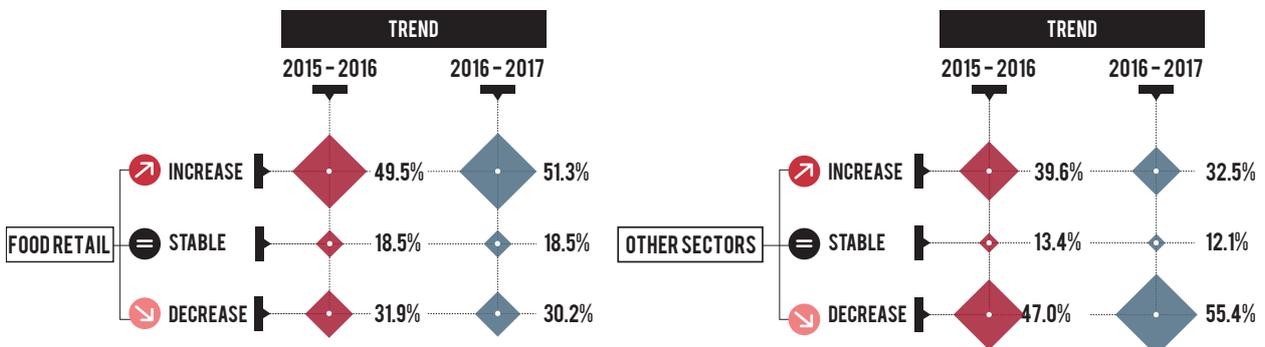
Source: Microdata

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12. More than 5,500 square meter.

According to the survey data, a specific sector, which we will not mention, has observed, on average, a slight increase in shrinkage over the last three years. However, the companies operating in this sector experienced very different scenarios.

This diversity applies even to the same country. For example, company A, operating in country X, observed a decrease in shrinkage over the last three years, while the other firms in the same retail segment and country that responded to the survey reported an increase in shrinkage. How to explain such diversity?

Company A says that the decrease had been driven by a number of factors, including an increase in awareness of the shrinkage issue at company level; an improvement of the reporting and accounting system, which brought more reliable figures and meaningful KPIs; the sharing of best practices within the company; and greater responsibility for store managers, who have been made more responsible of the outcomes in their stores.

It is important to underline the importance of firm-specific drivers, which go well beyond sectoral or geographic trends and how security managers could have different perceptions about the situation of retail security in their country.

Initiatives such as this study and the meetings of associations in this area (e.g. the ECR Shrink group) have the precise purpose of sharing and comparing such experiences and allowing security managers to learn from each other.

3.2 SEASONALITY

According to most respondents, **Winter** is the season in which it is most likely to suffer losses (62% of retailers), followed by Spring and Summer - with Summer higher, also taking into account the percentage of those reporting it as second most frequent season (Figure 13).

Results are also confirmed by the analysis of retail crime incidents as reported by the news. In all 11 countries, Winter continues to be the season with the highest number of recorded (and reported by the media) events, with the exception of Belgium, Spain and Germany, where it ranks second (Figure 14).

Figure 13 – Shrinkage by season
Percentages calculated on the total number of responses excluding N.A.

	SPRING	SUMMER	AUTUMN	WINTER
Most frequent	16.4%	14.5%	7.3%	61.8%
2nd most frequent	20.0%	38.2%	36.4%	5.5%
3rd most frequent	30.9%	23.7%	30.8%	14.5%
Least frequent	32.7%	23.6%	25.5%	18.2%
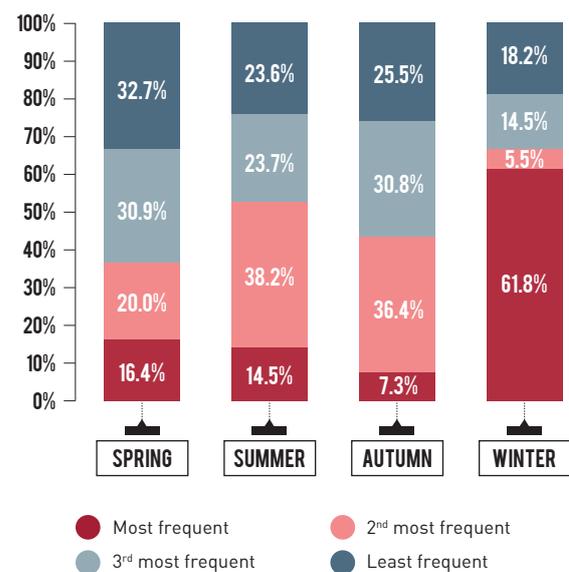
Source: Survey

Figure 14 – Retail crime incidents, by season and country

COUNTRY	SPRING	SUMMER	AUTUMN	WINTER
BELGIUM	33.0%	16.5%	24.8%	25.7%
FINLAND	18.8%	26.1%	21.7%	33.3%
FRANCE	23.7%	21.4%	23.7%	31.2%
GERMANY	27.3%	22.7%	25.0%	25.0%
ITALY	23.9%	21.2%	27.0%	27.9%
THE NETHERLANDS	25.4%	14.9%	20.1%	39.6%
POLAND	27.2%	21.9%	22.8%	28.1%
RUSSIA	20.0%	27.5%	21.3%	31.3%
SPAIN	29.6%	25.0%	17.8%	27.6%
SWEDEN	18.6%	29.5%	18.6%	33.3%
UNITED KINGDOM	22.1%	20.0%	26.9%	31.0%

Source: News

As highlighted by previous studies (Bamfield, 2012; ONS, 2011; Perry, 2009), the risk of retail crimes in Winter is higher for several reasons:

► Due to the **colder temperatures**, it is easier for criminals to disguise stolen goods or firearms under jackets and heavy clothes.

► The lower number of **daylight hours** helps criminals to hide and conceal themselves from CCTV and surveillance.

► During Christmas and seasonal holidays in particular, **stores are more crowded**, and this may complicate surveillance and ease shoplifting (apart from a customer peer to peer control).

► Stores usually have a **higher staff turnover**, with the likely involvement of seasonal workers, which may again reduce surveillance and increase the risk of internal theft.

► During Winter time **high-value products** are more likely to be displayed on shelves, both in the Apparel (e.g. jackets, furs and coats) and Food retail industries (e.g. seasonal products such as liqueurs, champagne, high-value fish, etc.). The possibility of grabbing higher value products may increase opportunistic shoplifting.

In the survey, retailers were also asked about occasions in which their companies recorded higher than average shrinkage. The results follow below (Figure 15).

Figure 15 – Periods with higher than average shrinkage, as reported by retailers

RELEASE OF NEW COLLECTIONS/NEW PRODUCTS	40.7%
CHRISTMAS TIME	24.1%
WEEKENDS	14.8%
SALES/REDUCED PRICE OFFERS	5.6%
NO ONE IN PARTICULAR	5.6%
OTHER	5.6%
INFRA-ANNUAL INVENTORY	1.9%
HIGH INFLOW DAYS	1.9%
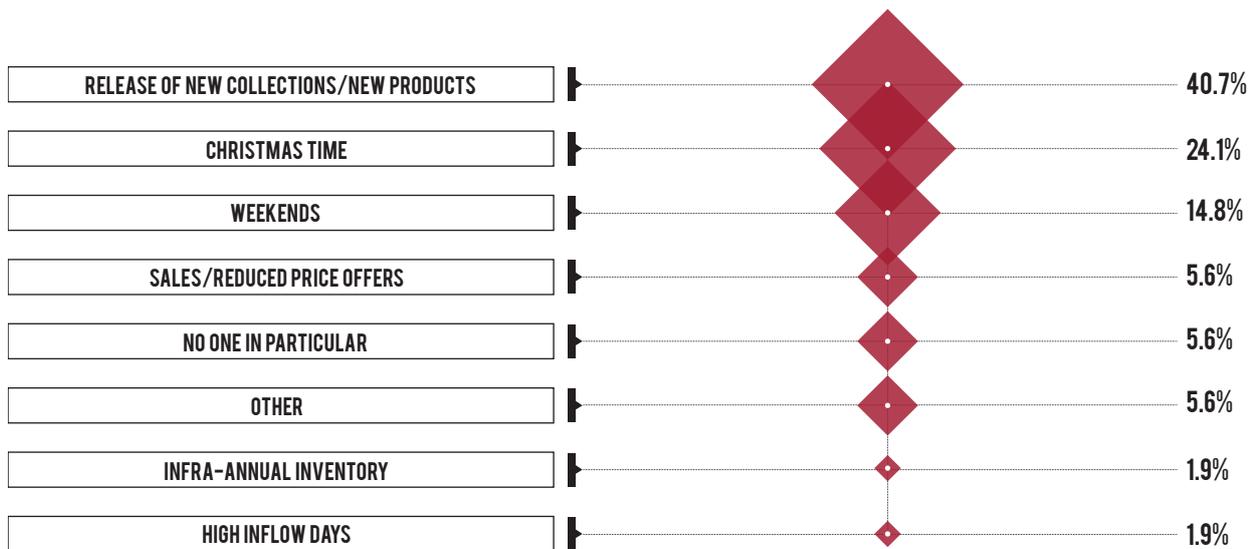
Source: Survey

For more than 40% of respondents, the **launch of new collections** and products is a period that is vulnerable to losses and shrinkage. This is especially the case for Apparel (where this is the most important cause for more than 80% respondents) and Luxury. For Beauty & Cosmetics, Electronics, Pet goods and, to a lesser extent, Food retail (supermarkets, convenience and discount stores), **seasonal holiday periods** (with Christmas first and foremost) have a significant impact on losses.

Some Food retailers also indicated weekends as recording more losses than the rest of the week. It is interesting to note that most respondents from Gas/petrol stations do not observe much difference across all these periods, and that, for most respondents, sales and special offer weeks do not increase the likelihood of shrinkage. Retailers suggest that other occasions, characterised by higher loss rates include bank holidays, family celebrations (e.g. Valentine's Day, Mother's and Father's Day) and calendar dates characterised by special celebrations (e.g. national holidays).

3.3 MOST STOLEN ITEMS

Table 2 and Table 3 show the most stolen items, by number and value, as reported by survey respondents.

According to the respondents to the survey, among alcoholic drinks the most targeted products are valuable items such as spirits and prestigious wines (e.g. Champagne). Canned products are particularly targeted, tuna in Food retail and animal food for the Pet goods sector. Regarding Apparel, relevant is the case of sportwear where football and running clothes are the most targeted products. Finally, regarding Electronics criminals focus on small items, such as headsets, hard drives, or trendy devices, such as fitness watches.

Table 2 – Most stolen items, by number

	ELECTRONICS	APPAREL	SPORT GOODS	BEAUTY & COSMETICS	FOOD RETAIL	DO-IT-YOURSELF	CASH&CARRY	PET GOODS	FOOTWEAR & ACCESSORIES	GAS / PETROL STATION RETAILER	LUXURY
1°	DEVICES (HEADSET; HARDRIVE ETC)	TROUSERS	SPORTSWEAR	COSMETICS	ALCOHOLIC DRINKS	ELECTRONIC TOOLS	ALCOHOLIC DRINKS	ACCESSORIES & GAMES	SNEAKERS	MOBILE ACCESSORIES & CAR ACCESSORIES	EYEGLASSES
2°	MOBILE PHONES & ACCESSORIES	PULLOVER	FOOTWEAR	PERFUMES	CHEESE & MEAT	MOBILE ACCESSORIES	TOBACCO & CIGARETTES	CANNED PRODUCTS	EYEGLASSES & SUNGLASSES	IMPULSE GOODS	CLOTHING
3°	SOFTWARE & VIDEOGAMES	BLOUSES	ELECTROINC DEVICES & ACCESSORIES		PERFUMES	HYDRAULIC TOOLS	MEAT		WOMEN'S SHOES	BEVERAGES	ACCESSORIES
4°	DIGITAL PHOTOGRAPHY	COSMETICS	FOOD		CHOCOLATE & SWEETS	GLUE&TAPE	FROZEN FOOD		MEN'S SHOES		
5°		UNDERWEAR	THERMAL UNDERWEAR		CLOTHING	SCREWDRIVERS	CLOTHING		CLOTHING		
OTHER		PERFUMES & LEATHER GOODS			CANNED PRODUCTS, BEVERAGES, COSMETICS, TOBACCO & CIGARETTES	BULBS, BOLTS &LURES	SWEETS & KNIVES				

Table 3 – Most stolen items, by value

	ELECTRONICS	APPAREL	SPORT GOODS	BEAUTY & COSMETICS	FOOD RETAIL	DO-IT-YOURSELF	CASH&CARRY	PET GOODS	FOOTWEAR & ACCESSORIES	GAS / PETROL STATION RETAILER	LUXURY
1°	MOBILE PHONES & MOBILE ACCESSORIES	ACCESSORIES	SPORTSWEAR	COSMETICS	ALCOHOLIC DRINKS	ELECTRONIC TOOLS	ALCOHOLIC DRINKS	ACCESSORIES & GAMES	SNEAKERS & KIDS' SHOES	MOBILE ACCESSORIES & CAR ACCESSORIES	OUTWEAR
2°	VIDEOGAMES & SOFTWARE	KNITWEAR	FOOTWEAR	PERFUMES	CHEESE & MEAT	SCREWDRIVERS & SCREWS	MEAT	CANNED PRODUCTS	EYEGLASSES & SUNGLASSES	IMPULSE GOODS	EYEGLASSES
3°	DEVICES (HEADSET....)	TROUSERS	ELECTRONIC DEVICES & ACCESSORIES (E.G. WATCHES WITH GPS)		CHOCOLATE & SWEETS	HOME ACCESSORIES	FROZEN FOOD		CLOTHING	BEVERAGES	ACCESSORIES
4°	LAPTOP	BLOUSES	FOOD		CANNED FISH	MOBILE ACCESSORIES	CANNED PRODUCTS				
5°	PHOTOGRAPHY EQUIPMENT	UNDERWEAR			PERFUMES	GLUE & TAPE	CLOTHING				
OTHER		LEATHER GOODS/ COSMETICS			TOBACCO/ COSMETICS	BULBS, TAPS & LURES	CIGARETTES, SWEETS & CHEWING GUM				

Source:: Survey

3.4 RISK FACTORS AND CAUSES OF SHRINKAGE

We asked retailers to rank the most important causes affecting the shrinkage rate (Figure 16). Most respondents attribute a crucial role (very high and high impact) to the location of stores, the security measures in place as well as the number and type of staff employed.

In particular, the employee numbers and seniority are two factors that, according to the majority of retailers, exert a very high impact on the loss rate. All these factors will be studied in detail below, starting with the analysis of the shrinkage by location.

Figure 16 – Impact on shrinkage by risk factor, as perceived by respondents

	VERY HIGH	HIGH	MEDIUM	LOW	NO EFFECT
STORE SIZE	5%	33%	48%	5%	10%
LOCATION	26%	64%	10%	0%	0%
EXTENT ASSORTMENT	5%	33%	59%	3%	0%
N. DEPARTMENTS	0%	15%	33%	44%	8%
N. STORE EMPLOYEES	41%	31%	23%	5%	0%
SENIORITY EMPLOYEES	41%	31%	23%	5%	0%
RATIO CONTRACTS	5%	49%	28%	10%	8%
FREQUENCY INVENTORY	8%	33%	46%	13%	0%
SECURITY MEASURES	18%	71%	11%	0%	0%
TRANSPORT CONTROLS	10%	62%	21%	8%	0%
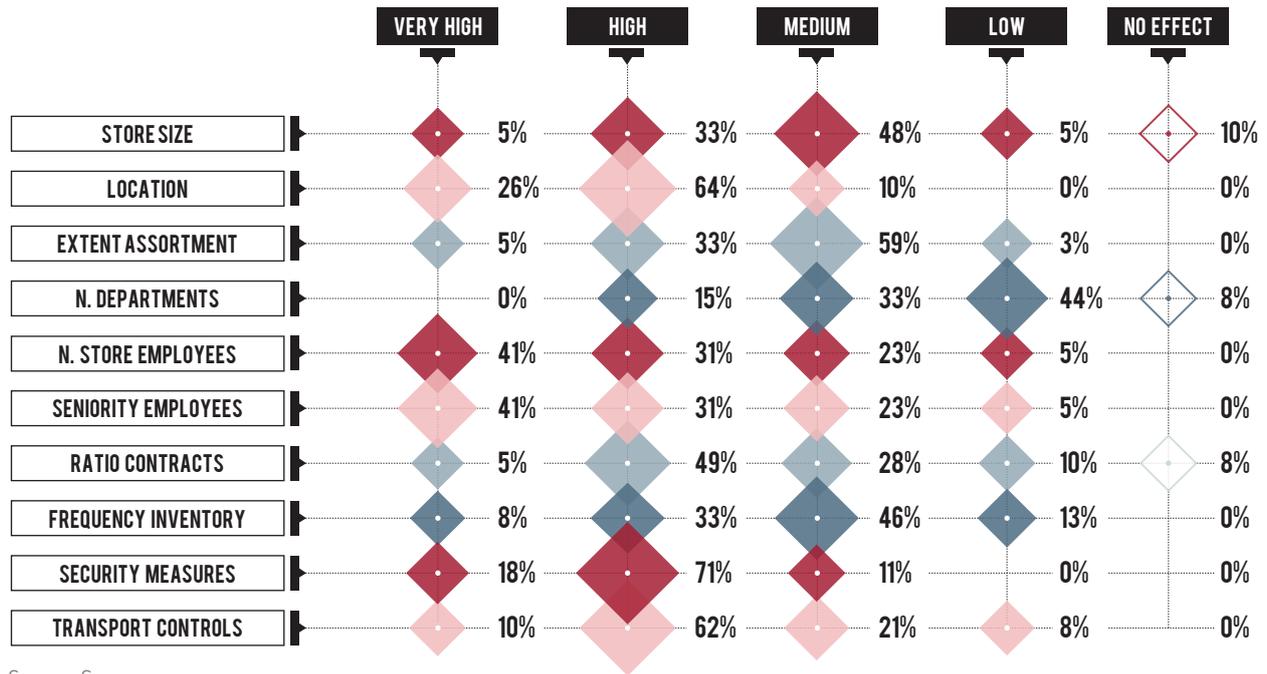
Source: Survey

3.5 SHRINKAGE BY LOCATION

As mentioned, different accounting practices across retailers make it very difficult to compare shrinkage rates across countries, especially due to the different coverage obtained by the survey in each of the countries analysed and the sectoral representation thereof. The results provided by Figure 17 should therefore be read with great caution.

Figure 17 – Shrinkage rate (including known and unknown shrinkage), by country. Average 2015-2016-2017
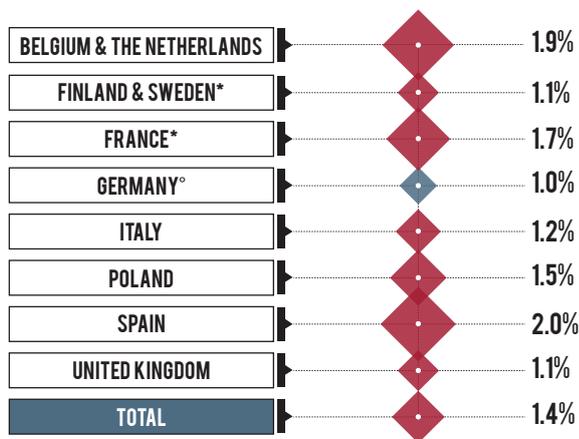
BELGIUM & THE NETHERLANDS	1.9%
FINLAND & SWEDEN*	1.1%
FRANCE*	1.7%
GERMANY°	1.0%
ITALY	1.2%
POLAND	1.5%
SPAIN	2.0%
UNITED KINGDOM	1.1%
TOTAL	1.4%

Respondents corresponding to 22,557 stores. Retail firms with less than 3 stores and outliers are excluded from the sample. * = in these countries, respondents represent less than 1000 stores. ° = Germany's value is taken from the EHI Retail Institute (2018). Finland, Russia and Sweden not included due to the low and unrepresentative number of respondents.
Source: Survey

Considering both known and unknown shrinkage, Spain, France and Belgium & the Netherlands are the countries which have observed the highest shrinkage rate among retailers – 2.0%, 1.7%, and 1.9% respectively. Such values may be due to the **higher fraction of Food retailers** in the sample of respondents in these two countries (see below). The value reported for Germany is the one shown in a study conducted by EHI Retail Institute in 2018 – and relies on a slightly different methodology (EHI Retail Institute, 2018).[13] Given the critical aspects of sampling and sectoral representation, we do not wish to provide an interpretation of these national patterns.

Figure 18 – Shrinkage rate (including known and unknown shrinkage) by sector and by country. Selected countries. 2015-2016-2017 average

	FOOD	OTHER SECTORS
BELGIUM & THE NETHERLANDS	2.4%	1.2%
ITALY	2.1%	0.9%
SPAIN	2.0%	1.3%
TOTAL	2.0%	1.2%
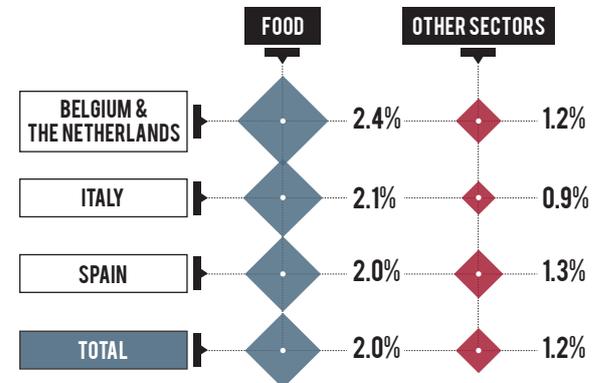
Source: Survey

In Belgium and the Netherlands, Spain and Italy, available data allow a calculation to distinguish the shrinkage rate between Food retail and other retail sectors[14] In all these countries, **losses in Food retail are significantly higher**, around 2% of the turnover, than the average of the other sectors – between 0.9% and 1.3% of turnover. This difference is likely to be due to the highest incidence of known shrinkage in the Food retail sector, as highlighted above (see page 31).

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13. The value reported in the chart corresponds to the percentage of inventory discrepancies on gross sales calculated at sale price. The value calculated by EHI valued at purchase price and recorded as a percentage of net sales was 0.6% (see Germany country profile).

14. Because of issues related to data sensitivity/privacy and statistical relevance, average shrinkage rates are reported only for sectors with more than two survey respondents. If this criterion is not met, only aggregate average is reported.

Shrinkage at sub-national level

It is instead more interesting to look at the distribution of **shrinkage values within the same countries**. The microdata, at point of sale level, collected from retail companies allows analysis of how inventory losses change depending on the region, the location of the store (e.g. street vs. mall, proximity to transport hubs, etc.) and contextual factors.

In Italy and the UK, the quantity of microdata collected allowed meaningful representation of geographical shrinkage patterns. Figure 19 and Figure 20 show the average 2017 shrinkage at NUTS 3 level.

In Italy, the highest values recorded in 2017 were in the provinces of **Genova**, **Milan**, **Imperia**, **Bologna** and **Naples**. Compared to 2016 values, the areas which saw the highest increase are **North-Western Italy** (Lombardy, Piedmont and Liguria), the area around **Rome** and the **Campania** region. As reported by some retailers, in the South of Italy the low shrinkage levels and limited increase in losses may also be partially explained by some stores closures decided by selected companies (Figure 19).

Figure 19 – Shrinkage in Italy by NUTS 3. 2017
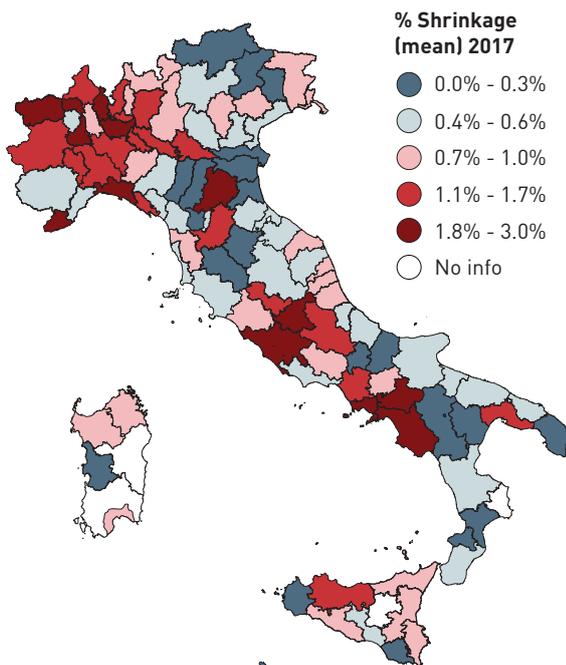
Source: Microdata

In the UK, the highest 2017 values were recorded in the **Bristol/Bath area**, **Leicestershire**, **Oxfordshire** and **Inner London (West)**. According to available microdata at store level, an increase in shrinkage was recorded in most UK areas. The highest variation was observed in Bristol/Bath, followed by Leicestershire and West Yorkshire.

Figure 20 – Shrinkage in the UK by NUTS 3. 2017
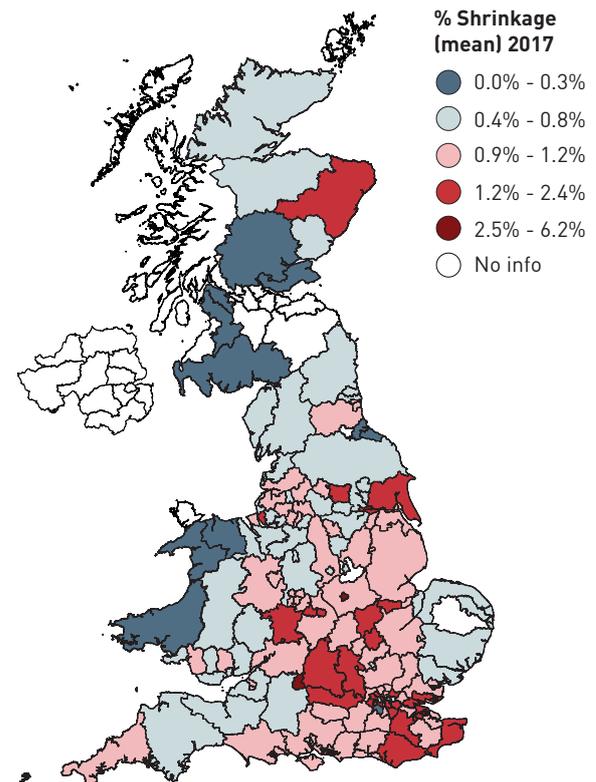
Source: Microdata

Shrinkage and contextual factors

Analysis of data at store level allows analysis of how shrinkage relates to some socio-demographic, economic and criminal contextual factors. Table 4 shows the correlation between shrinkage at store level and some contextual variables at municipality or regional level. "Positive" means the higher the variable, the higher the shrinkage rate; "Negative" means the higher the variable, the lower the shrinkage rate. "Not significant" means that the correlation between the two variables is not statistically significant.

Table 4 – Bivariate Pearson's correlation between the average shrinkage rate of stores and contextual factors. 2017

VARIABLE	CORRELATION WITH SHRINKAGE
SOCIO-DEMOGRAPHIC CHARACTERISTICS AT MUNICIPALITY LEVEL	
RESIDENT POPULATION	POSITIVE
POPULATION DENSITY	POSITIVE
UNEMPLOYMENT RATE	NOT SIGNIFICANT
GROSS DOMESTIC PRODUCT (REGIONAL)	NEGATIVE
REPORTED CRIME RATES AT MUNICIPALITY LEVEL	
SHOPLIFTING	NOT SIGNIFICANT
ROBBERIES OF COMMERCIAL BUSINESSES	NEGATIVE
BURGLARIES OF COMMERCIAL BUSINESSES	NOT SIGNIFICANT
STORE CHARACTERISTICS (AT STORE LEVEL)	
LOCATION IN A SHOPPING MALL	NEGATIVE
STORE SURFACE	POSITIVE
OPENING HOURS	POSITIVE
PROXIMITY TO A STATION	POSITIVE

Source: Microdata

Stores located in areas with **lower GDP** per capita and in larger and **more densely populated** municipalities recorded higher shrinkage.

Shrinkage values were **not significantly correlated with the rate of reported shopliftings and burglaries** of commercial premises, whereas the connection is significant but negative with robberies of commercial businesses reported to the police. Two factors can help interpret these results. On the one hand, shrinkage is only partially associated with external theft. On the other hand, official statistics on reported crime are largely dependent on victim reporting rates and may therefore fail to reflect the actual crime risk (Bamfield, 2018).

Commercial businesses are likely **not to report many of the crimes** for various reasons. This can be particularly true for stores experiencing a higher number of criminal events. For example, a study estimated that officially reported crimes against businesses in Germany in 2016 accounted for less than 15% of the incidents that occurred (Bamfield, 2018). The latest commercial victimisation survey in the UK reported that in 2017 only 36% of businesses reported shoplifting events to the police (Osborne, 2018). As a result, official crime rate statistics are hardly capable of depicting the true situation.

Larger stores and extended opening hours increase shrinkage rates. This is likely to be related to the increased difficulty in providing adequate surveillance and to increased opportunities for criminals. These results are also confirmed, at least in the UK, by the Home Office survey, which proves that larger businesses are more likely have a higher incidence of crime (Osborne, 2018).

Our data suggests that, being located within **500 metres of an underground or train station** also increase the level of shrinkage in shops (statistically significant 0.4% difference in shrinkage rate). Here the interpretation is twofold. On the one hand, stores close to transportation hubs are likely to be more crowded and have a higher rate of occasional customers. On the other hand, the proximity of stations may offer criminals an easy way out after the theft (Irvin-Erickson & La Vigne, 2015; Newton, 2018). Finally, stores located within shopping malls experienced on average lower shrinkage.

Given the breadth of the shrinkage concept, we could also interpret these results as driven by different management practices across different stores, and not necessarily by environmental factors. The amount of information available for each store did not allow testing of the hypotheses relating to this assumption. It would be good, for example, to control the number of staff allocated across stores and the seniority and expertise of store managers and employees.

Shrinkage on street vs. shrinkage in shopping malls

In 2017, shrinkage was significantly **higher in stores located on streets** (1.5%) than in those located within shopping malls (0.8%). During 2015 and 2016 this difference was negligible (about 0.1%). The overall increase in shrinkage in 2017 is therefore highly concentrated in stores outside shopping malls (Figure 21).

Figure 21 – Shrinkage recorded by stores located on streets and in shopping malls. Average % of turnover. 2015 (N= 1786), 2016 (N=2206) and 2017 (N=2680)

	STREET	SHOPPING MALL
2015	0.8%	0.7%
2016	0.9%	0.8%
2017	1.5%	0.8%
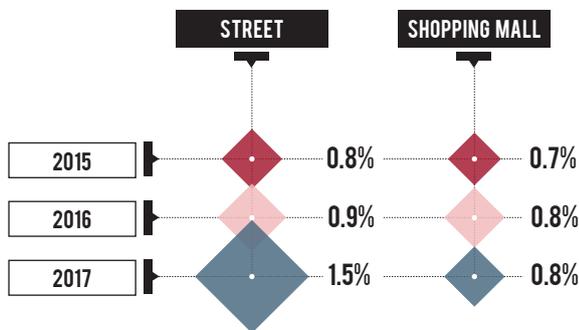
Source: Microdata

This trend is further confirmed by looking at the variations in recorded shrinkage and classifying the stores by size and location. Between 2016 and 2017, all stores located outside a shopping mall experienced on average an **increase in shrinkage**. The growth is particularly concentrated in larger stores.

On the contrary, within shopping malls only **very large stores** experienced an increase in shrinkage, although significantly lower than similar stores located outside shopping malls. Medium and large stores recorded on average a significant decrease, whereas small and very small stores experienced a steady trend (Figure 22).

The size of the city in which stores are located also had an impact on the increase in shrinkage recorded in 2017. **Stores located in large cities (above 250,000 inhabitants) experienced on average a higher level of shrinkage**, regardless of whether located inside or outside a shopping mall. This difference was negligible in 2015 and 2016 (Figure 23).

Figure 22 – Average shrinkage variation between 2016 and 2017 by store size and location

	STREET	SHOPPING MALL
VERY SMALL (<160 M²)	53%	0%
SMALL (160–384 M²)	125%	4%
MEDIUM (384–1,276 M²)	32%	−25%
LARGE (1,276–2,400 M²)	148%	−27%
VERY LARGE (>2,400 M²)	148%	68%
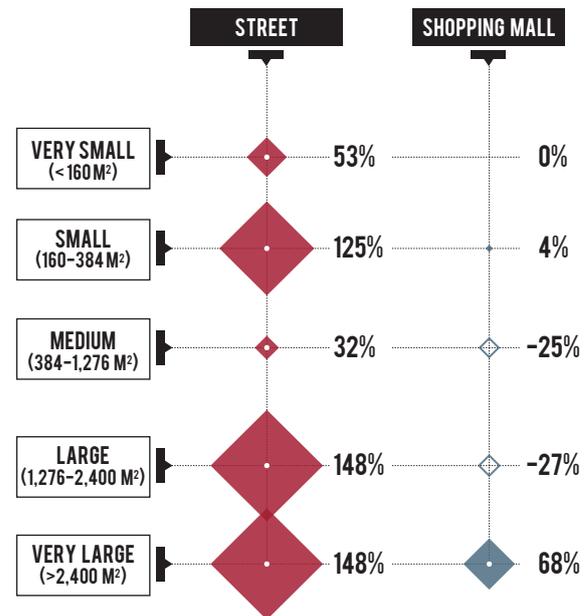
Source: Microdata

Figure 23 – Shrinkage recorded by stores located in streets and in shopping malls by size of the city. Average % of turnover. 2015 (N= 1786), 2016 (N=2206) and 2017 (N=2680). Large city = above 250,000 people

LARGE CITIES

	STREET	MALL
2015	0.9%	0.7%
2016	1.0%	0.8%
2017	1.9%	1.2%

OTHER CITIES

	STREET	MALL
2015	0.8%	0.7%
2016	0.8%	0.8%
2017	1.3%	0.6%
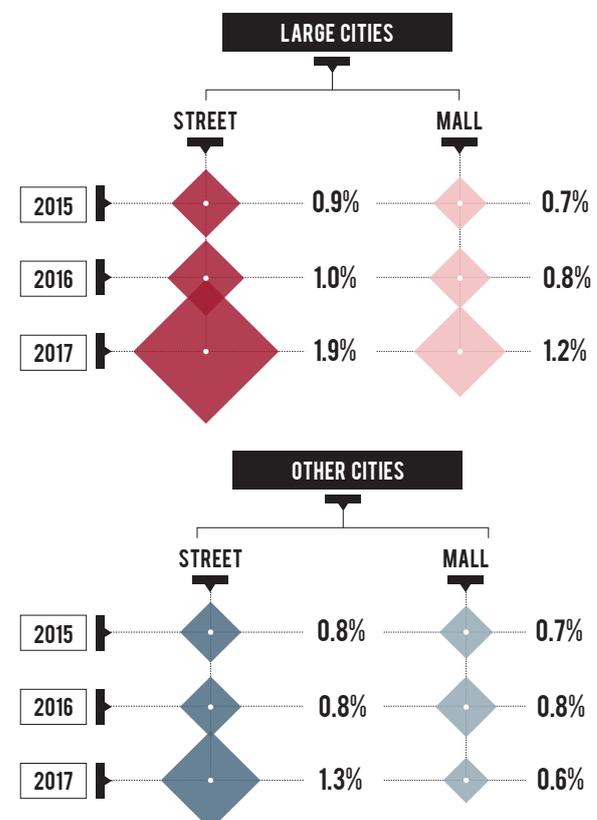
Source: Microdata

4. EXTERNAL THEFT: TRENDS, PATTERNS AND MODI OPERANDI

Retailers agree that the main cause of the crime-related fraction of shrinkage is **external theft**, followed by internal theft (or employee theft) in second place and supplier theft (sometimes referred to as intercompany fraud) in third place. All retailers agree that it is not possible to estimate the exact share of shrinkage attributable to each type of theft – in some cases it is not even possible to assess the *crime-related* share (see above Section 1).

Figure 24 – Criminal causes of shrinkage, ranked from most frequent

1	🏃	EXTERNAL THEFTS
2	💶	INTERNAL THEFTS
3	🚚	SUPPLIERS' THEFTS (INTERCOMPANY FRAUD)
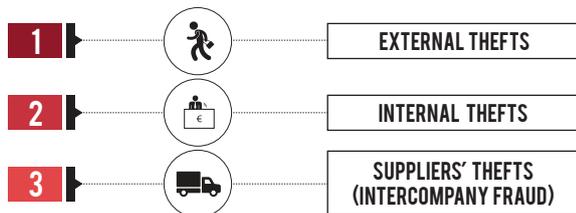
Source: Survey

Shoplifting is identified as the most frequent type of external theft, followed by **robbery** and then **burglary**. While all retailers, in all sectors, put shoplifting in the first place, in some sectors (Beauty & Cosmetics, Electronics, Footwear & Accessories and Sport goods) burglaries are reported to be more frequent than robberies.

Shoplifting is also the only type of external theft that is increasing, according to more than half of survey respondents, while most respondents report that burglaries and robberies are stable or decreasing.

Figure 25 – Type of external theft, trend as reported by retailers
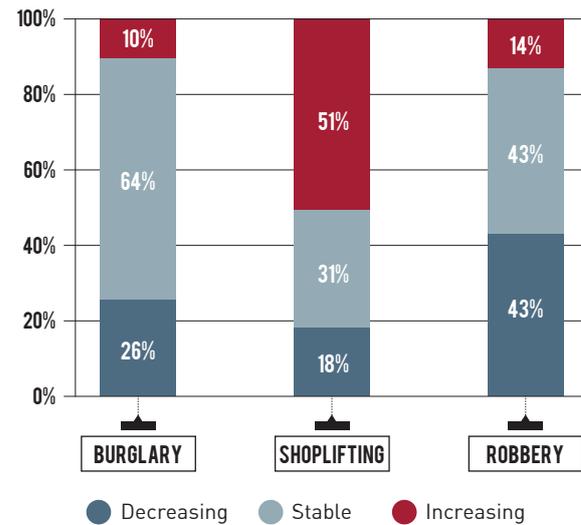
Respondents corresponding to 22,557 stores.
Source: Survey

The trend perceived by retailers is generally confirmed by the official statistics provided by the police in some European countries (Figure 26, Figure 27 and Figure 28). Although separate data on crimes against retailers is not available everywhere, those countries where figures are public registered a pretty **stable trend for shoplifting**, and even **increasing** in England and Wales and in Belgium. On the contrary, official data on robberies and burglaries into business premises recorded by the police shows a **significant decrease** in all the countries where data is available (on average –19% and –14% respectively).

Figure 26 – Shoplifting reported to the police per 100,000 inhabitants*

FRANCE
- 2015: 98.7
- 2016: 96.9
- 2017: 94.8

ITALY
- 2015: 167.8
- 2016: 157.9
- 2017: 148.3

BELGIUM
- 2015: 196.2
- 2016: 145.3
- 2017: 180.0

THE NETHERLANDS
- 2015: 237.9
- 2016: 230.2
- 2017: 220.0

GERMANY
- 2015: 455.1
- 2016: 432.8
- 2017: 402.3

ENGLAND/WALES
- 2015: 571.3
- 2016: 611.2
- 2017: 652.4

FINLAND
- 2015: 871.0
- 2016: 852.6
- 2017: 815.7

Legend: ● 2015 ● 2016 ● 2017
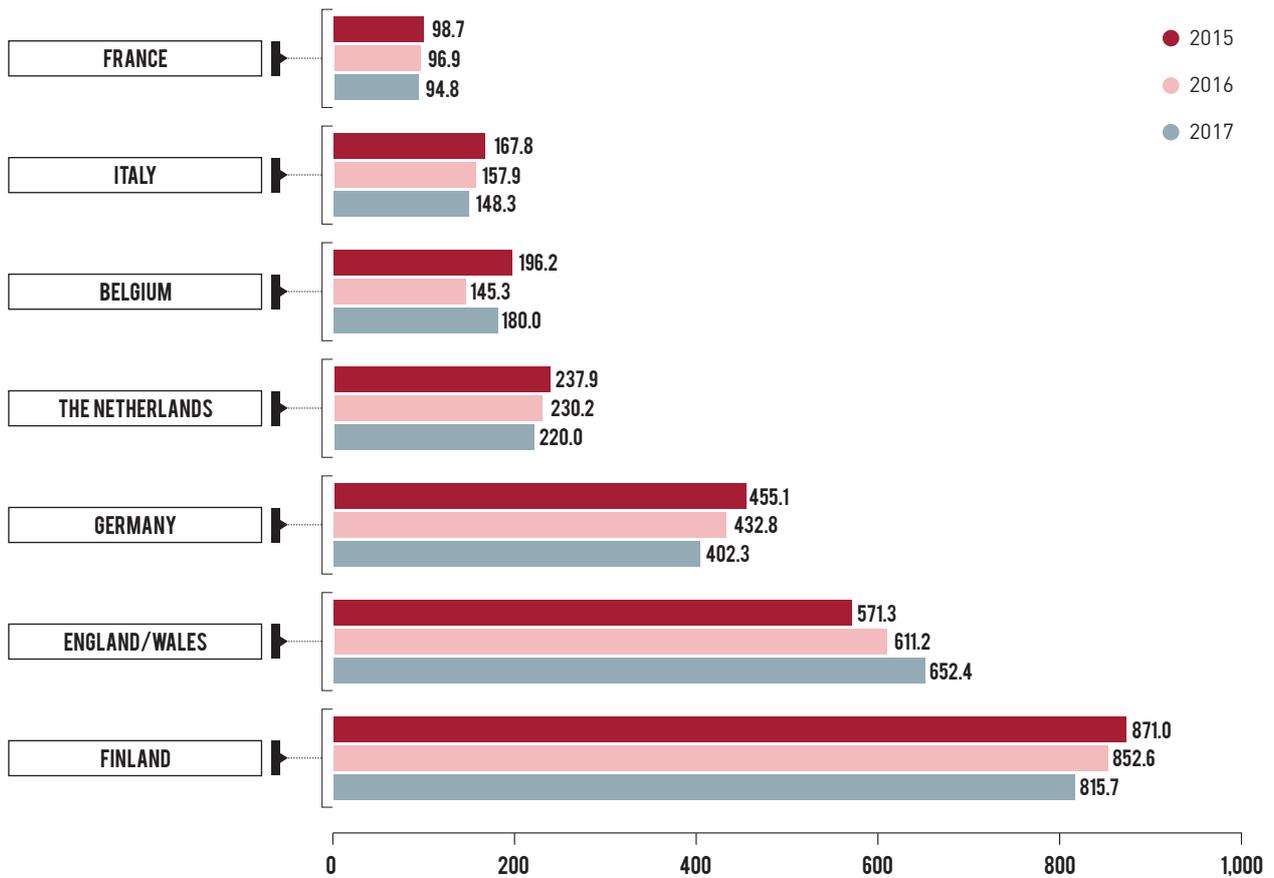
*Italian data also include burglaries into business premises
Source: National criminal justice statistics offices

Figure 27 – Robberies into business premises reported to the police per 100,000 inhabitants

GERMANY
- 2015: 4.2
- 2016: 3.7
- 2017: 3.6

FRANCE
- 2015: 5.7
- 2016: 4.6
- 2017: 4.2

ITALY
- 2015: 8.8
- 2016: 8.0
- 2017: 7.5

Legend: ● 2015 ● 2016 ● 2017
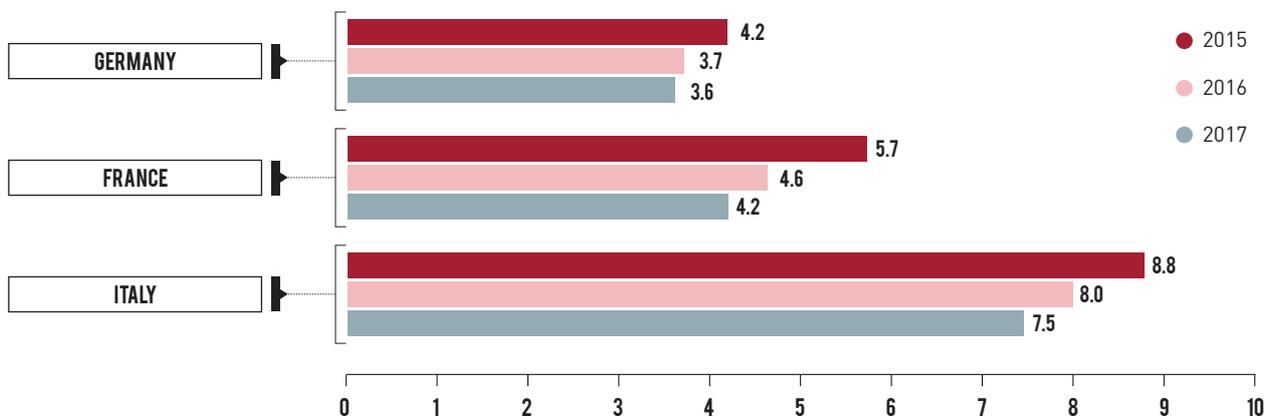
Source: National criminal justice statistics offices

Figure 28 – Burglaries into businesses premises reported to the police per 100,000 inhabitants
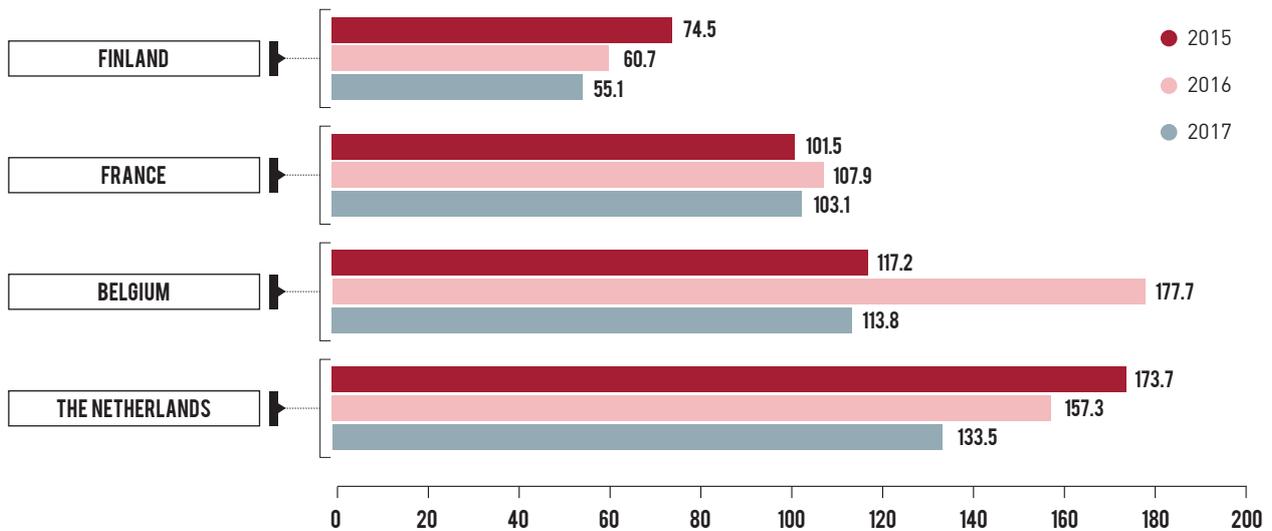
Source: National criminal justice statistics offices

LIMITATIONS OF THE OFFICIAL CRIME STATISTICS AND THE ROLE OF VICTIMISATION SURVEYS

Data on crimes reported to the police is often the only available source of information regarding crime against the retail sector. However, this source presents several limitations. Firstly, the methods used for collecting or classifying criminal events may not allow specific crimes or targets to be disentangled (Mugellini, 2013). For example, only 6 out of 11 countries considered in this study provide specific data on shoplifting. Secondly, even among these countries, differences in the definition of the crime or in the way statistics are generated may prevent comparative analysis (Aebi, Killias, & Tavares, 2002). For example, some countries included all reported offences in the statistics, while others may not count an offence until the police investigation is complete (Aebi, 2010). Thirdly, official statistics are highly affected by victim propensity to report crimes to the authorities.

Victimisation surveys can partially resolve this last issue by estimating the proportion of offences that remained un-reported, the so-called "dark number". Victimisation surveys are surveys that aim to collect information on the types and frequency of crimes against a sample of victims (e.g. individuals or companies), as well as other details such as the characteristics of the offenders and of the victims/targets or the *modus operandi* of the criminal. Furthermore, they usually highlight how many crimes have been reported to the police and the reasons for not reporting. For example, a European survey targeting crime against businesses estimated that firms reported just 15.3% of customer theft to the police. This value is even lower for employee theft (2.7%) (Dugato, Favarin, Gergely, & Agnes, 2013).

Although victimisation surveys are extremely useful and provide a wealth of information, their diffusion is not widespread, particularly as regards crime against businesses (for a review Mugellini, 2013). A positive exception is the Commercial Victimisation Survey (CVS) carried out annually by the Home Office in England and Wales and, the British Retail Crime survey (BRC), also in the UK (see Hopkins, 2016; Osborne, 2018 for a review).

4.1 SHOPLIFTING

Modus operandi

According to most retailers, shoplifting is the most frequent cause of external theft and, for half of them, it is on the increase. While **grab and run** continues to be the most frequent *modus operandi* of shoplifters, according to survey respondents (especially using emergency exits and non-guarded gates as an escape route), breaking anti-shoplifting tags is reported to be just as common. As suggested by some retailers, it is very easy for criminals to purchase **low-cost tools on the internet** which allow tags and labels to be removed. Alternatively, as was the case in some of the case studies reported by respondents, criminals have removed tags manually using force, by stealing tag detachers from employees or even… using their teeth.

Figure 29 – Shoplifting: most frequent *modus operandi*

- Booster bags
- Breakage of antishoplifting tag/label
- Grab and run
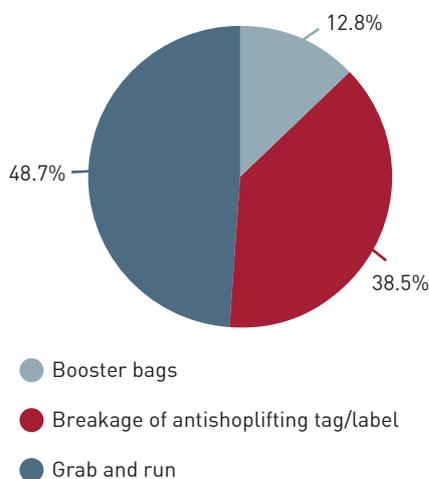
Source: Survey

A less frequent *modus operandi*, but emerging according to respondents, is the use of **booster bags**, i.e. bags which prevent tagged products from being detected by traditional EAS technologies. Several solutions are adopted by retailers in order to prevent the use of booster bags (see box below).

While not reported as the most frequent *modus operandi*, the use of **jammers**, i.e. technologies that, through radio signals, disturb the signal of EAS antennas and inhibit their functicing, is also reported as an emerging threat by several security managers, especially in relation to micro-gangs of shoplifters (see below).

Shoplifters

Shoplifters can usually be classified in two broad categories:

► **Individual shoplifters**, often customers who become criminals through opportunity (or frustration).
► **Micro-gangs** of 2-3 people who are well equipped (with tag detachers, jammers, booster bags – often all of them at the same time), are very well structured and organised, adopt well-trained behaviour within stores and are often involved in serial episodes.

Figure 30 – External theft: most frequent offenders, by type

% of respondents indicate it as the "most frequent" type of offender

- Single person
- 2-3 people
- More than 3 people
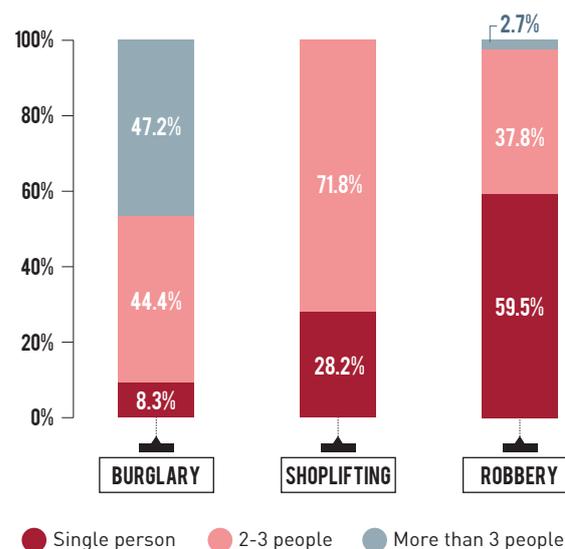
Source: Survey

According to the survey, retailers perceive that **micro-gangs are currently involved in most shoplifting episodes** (71.8% of retailers indicate micro-gangs as "most frequent" type of offender), while individual shoplifters represent less than one third of the cases.[15]

MICRO-GANGS` STRATEGIES IN THE RETAIL SECTOR

Seriality: as in other organised property crimes, micro-gangs are also keen to multi-victimise retail stores when they identify some vulnerabilities (NRF, 2018). In the Netherlands, a group of mobile criminals was able to target six supermarkets every day for six months and steal health & beauty products using grab and run methods, until they were detected by the police and eventually arrested.

Deception: as reported by a large Spanish retailer, these organised groups often act individually in the same store at the same time in order to make it more difficult for security guards to monitor their behaviour and increase the chances of stealing goods. Once apprehended, the criminals usually deny any link with the other gang members.

Organisation: micro-gangs are well trained and have achieved a high level of organisation. Building on the many news reports collected and on the case-studies submitted by retailers, a standardised *modus operandi* can be profiled:
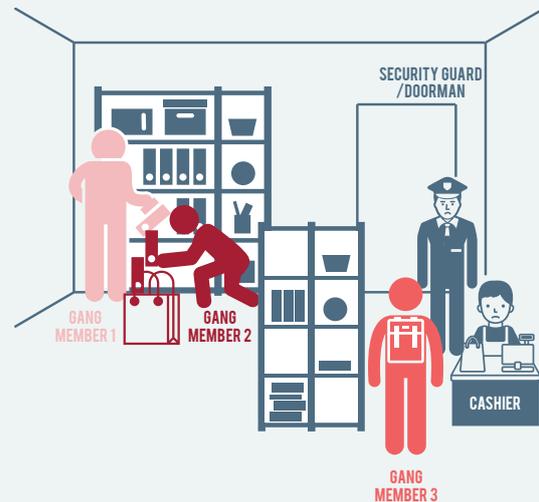
- three individuals form the gang, and often alternate their roles in the criminal scheme;
- the first selects the goods and removes the tags and labels, often using a low-cost detacher purchased on the internet;
- the second puts the goods into a booster-bag;
- the third monitors the area as well as guard and employee activity and alerts his partners in the event of a threat.

The phenomenon of micro-gangs in the retail sector may be strictly linked to the existence of **mobile organised crime groups (MOCGs)**, which was highlighted in latest Europol's SOCTA as an emerging threat for the security of Europe. These groups move quickly around, within and across multiple jurisdictions, and are involved in many areas of crime, including organised shoplifting (Europol, 2017; Eurojust, 2015).

Europol and European LEAs have in recent years set up operational networks and joint teams so as to improve cooperation in this area. Strengthened networking led to joint investigations such as **Operation *Blue Amber*** which brought hundreds of arrests, raids in several countries and the seizure of stolen goods and forged documents (Europol, 2019).

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15. It is important to highlight the subjective nature of this question, since retailers often see the result of shoplifting but not the people themselves. However, many times retailers were able to directly observe the commission of thefts by micro-gangs especially using CCTV recordings.

RETAIL AND FENCING: WHEN STOLEN GOODS ARE PUT BACK ON THE MARKET

While not exclusively related to organised retail crime, fencing, i.e. the **re-selling of stolen goods**, is highlighted by some retailers as an emerging problem in some sectors but also as a further opportunity to trace and prevent theft (Burges, 2013).

Some interviewees in the Food retail sector stressed the fact that wine, spirits, canned fish, and even meat, could be stolen not for self-consumption purposes, but for selling them on the black market. **Bars, restaurants, catering and food trade services** wittingly or unwittingly purchase these items and serve them to customers, which also poses health risks.

The same applies to Apparel and Luxury goods, which are often given a "second chance" by being sold on the internet – not necessarily the dark web – or are **"laundered" in collusion with companies** that forge the documents and produce false invoices so that the goods appear to have been legitimately purchased before selling them back to shops and websites.

The prevention and reduction of fencing and illegal trade may be improved in a number of ways. Firstly, improving the **due diligence carried out by e-commerce platforms** (such as Alibaba or e-Bay) may help to reduce the opportunities for re-sellers to find distribution channels.

Secondly, the use of **business intelligence, AI and semantic technologies** may help to identify legal or illegal internet platforms where stolen goods may be sold, e.g. by automatically detecting pictures of (or similar to) stolen goods and products and by investigating the people hiding behind social media profiles or websites.

Finally, some security technology providers are designing **tags and labels** which could allow the product to be damaged remotely once stolen – also learning from the successful implementation of dye pack devices which permanently mark or destroy stolen banknotes.

"HOARDERS": MONEY LAUNDERING AND THE BLACK ECONOMY

A recent police operation in Italy identified that after renting large vans, certain individuals, allegedly connected with Camorra organised crime, make their way to several hypermarkets and supermarkets in Central and Northern Italy. There, they purchase large quantities of discounted products, mainly durable products such as diapers. They usually overcome the limitations in the number of acquirable products by making multiple purchases or, in a few cases, by threatening staff. All payments are made in cash (La Repubblica, 2016).

Beyond producing large shortages in retailer stocks, the Italian authorities suspect that this *modus operandi* allows these groups to "launder" illicit proceeds through mass retail cash purchases and obtain further illicit funds through the illegal resale of products on the black market (La Nazione, 2016).

As stressed by some retailers, while security managers agree on the need to be rid of micro-gangs, some of them would like to convert the first category of shoplifters, i.e. individuals, back to customers: these people may be **"customers in 95% of the cases, and thieves in the residual 5%"**. In other words, these shoplifters may contribute to the profits of retail firms as well as to their losses. Countermeasures for preventing the two types of shoplifting must therefore be designed in a completely different manner:

► The reduction of **micro-gang theft** may involve the use of advanced technologies (e.g. to detect booster bags or to resist jammers), physical security and high-level preventive activity and police intelligence, in cooperation with law enforcement, as these episodes could be serial in nature.

► Reducing **shoplifting by individual "customers"** could entail the use of more traditional tags/labels, more intense staff surveillance and, in some cases, better customer care and sales-person assistance, especially in some sectors where theft may be opportunistic or committed due to frustration (e.g. in DIY) or where self-scanners are in place (see below).

SHRINKAGE AND SELF-CHECKOUTS

The issue of shoplifting committed by individual customers is particularly relevant when dealing with self-checkout systems. According to several of the retailers interviewed, especially in the Food retail, and some recent research, the presence of self-checkout machines significantly increases the likelihood of shrinkage. According to some retailers, this is partly because the current systems are not entirely effective at detecting anomalous or illicit customer behaviour.

According to recent research, customers are three times more likely to steal when using self-service checkouts than steal straight off the shelves (Beck & Hopkins, 2017). The same analysis found that the introduction of mobile scanning raised the rate of loss up to almost 4.0% of turnover (Beck & Hopkins, 2017).

However, as noted by most retailers, although in the short-term the use of self-checkouts may impact negatively in terms of losses, it is supposed to increase profit in the long-term thanks to increased customer loyalty, to the saving on personnel costs and to the possibility of moving employees from tills to aisle activity and surveillance and to customer care.

4.2 ROBBERIES AND BURGLARIES

Robberies have a high impact in terms of the economic value of the stolen goods, in terms of customers and staff security and **perception of security**, which greatly influences the **attitude to buying of the client**.

Although retailers identified robberies as the second most frequent type of external theft, these events are much fewer and generally **register a decreasing trend**. Similarly, most retailers responding to the survey declared that also burglaries have seen a **stable/decreasing trend**.

The risk of robberies is not the same across different economic sectors. The exposure to robbery is driven by certain characteristics that make certain industries more vulnerable to certain criminal phenomena. For example, supermarkets, discount stores, Gas/petrol stations, Tobacco shops and Pharmacy/Drug stores may be made attractive on account of the **high cash-ratio**, the usually higher number of **opening hours** and, for Gas/petrol stations in particular, by the proximity to **escape routes** (Irvin-Erickson & La Vigne, 2015).

In the Luxury, DIY and Electronics, but also Beauty & Cosmetics sectors, the **high-value products** stocked in warehouses or on shelves may attract criminal groups and gangs specialising in burglaries. In fact, the economic sectors more exposed to burglaries are **Luxury**, **DIY and Electronics sectors** and, to a lesser extent, **Beauty & Cosmetics**.

In burglaries, the most frequent *modus operandi* is **night-time break-in**, with the use of cars or trucks to enter shops. Whereas, according to the survey respondents, more than a half of the robberies implied only the **threat of force without the use of any weapons (52.8%)**. When arms are used, white weapons (e.g. knives or blades) are the most common ones (22.2%). The use of firearms and of actual physical violence is marginal (16.7% and 8.3% respectively). These patterns have also been confirmed by several security managers.

Robberies **are mainly carried out by individuals** for about 60% of respondents to the survey. Lone criminals are also the most frequent type of robbers according to news reports (Table 6). On the contrary, several cases reveal the high level of organisation reached by burglars (see box below). It is not by chance that, as opposed to

Figure 31 – Robbery: most frequent *modus operandi*

- Physical violence
- White weapon
- Threat of force
- Firearms

Source: Survey

shoplifting and robberies, more than 44% of survey respondents indicated **groups of 2-3 people** as most common, and more than 47% indicated **gangs of more than 3 people**. The same proportion is observed in burglaries reported by media news: when the number of people was available, it was more than 3 in **45% of the cases** (Table 5).

Table 5 – Number of people involved in retail crime incidents, as reported in the news

TYPE OF EVENT	NUMBER OF PEOPLE INVOLVED				
	1	2	3	3+	N/A
BURGLARY	9.4%	13.4%	12.6%	45.0%	19.6%
ROBBERY	47.2%	28.4%	11.9%	10.1%	1.1%
SHOPLIFTING	56.5%	25.1%	9.9%	8.1%	1.8%
TOTAL	40.3%	23.7%	11.5%	18.6%	5.9%
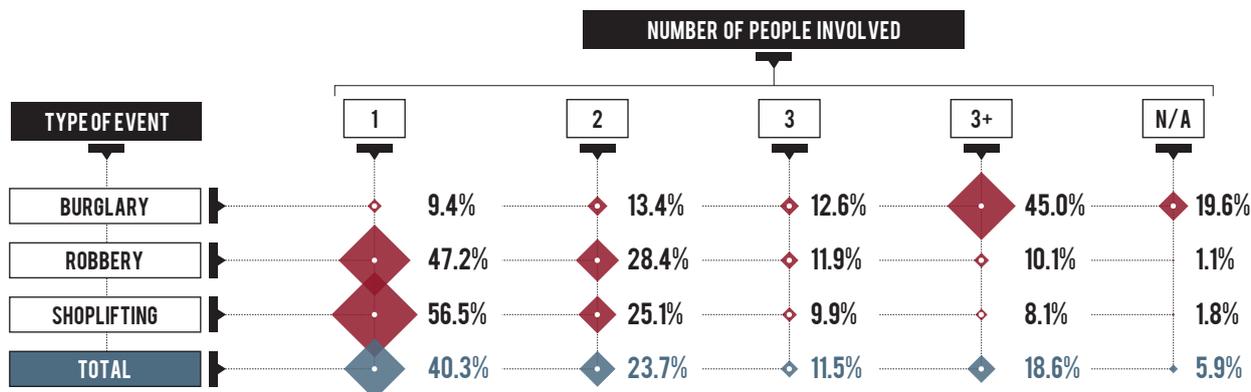
Source: News (N=1600)

RETAIL CRIME DRIVE-IN

In **11% of the news reports** collected in relation to burglaries, **cars and trucks are used to gain entry** into retail stores, almost exclusively at night. The *modus operandi* is often the same:

► in June 2018, in Belgium, six individuals smashed through the window of a DIY store with a car during the night and, once inside, stole hundreds of different tools in few minutes. They fled with a second car they had parked nearby in advance (L'avenir.net, 2018);

► in Belgium, once again, in April 2017, a man and two other accomplices smashed through the window of a Luxury shop with a car to gain entry. They stole 150 handbags that were found in the car soon after when the police arrested one of the burglars (7sur7, 2017);

► similarly, in Genova (Italy) a group of burglars smashed through the window of a Luxury shop with a car during the night. They stole dozens of handbags for a value of 80,000 euro (Fregatti, 2018).

5. INTERNAL THEFT AND INTER-COMPANY FRAUD

5.1 INTERNAL THEFT

According to survey respondents, employee theft and fraud is the **second most frequent – criminal – cause of losses** among retail firms. Internal theft may take a wide variety of forms. The most common are listed in Table 7, along with the reported trend.

Table 6 – Most frequent types of internal theft and trend, as reported by retailers

TYPE	RANK	TREND
THEFT OF GOODS	1°	↘
MISAPPROPRIATION OF MONEY FROM THE CASH REGISTER	2°	↘
FRAUDULENT RETURNED GOODS	3°	＝
TOTAL OR PARTIAL ANNULMENT OF RECEIPTS	4°	↗
CONSUMPTION OF PRODUCTS	5°	＝
FRAUDULENT USE OF FIDELITY CARDS	6°	↗

Source: Survey

Theft of goods is identified as the most frequent, followed by misappropriation of money from cash registers, fraudulent return of goods, full or partial voiding of receipts, consumption of products and fraudulent use of loyalty cards. The consumption of goods is more prevalent in **Food retail**, while in the Apparel sector the most frequent causes are theft of goods and cash misappropriation.

While most types are reported to have a decreasing or a stable trend, the **voiding of receipts** and **fraud with customer loyalty cards** are reported to be on the rise. Other studies confirmed the relative importance of fraudulent returns (Harris, 2010; Lopez-Rojas & Axelsson, 2015).

Generally speaking, fraud by employees is expanding and may be carried out with the complicity of (fake) customers, as in the case of **false returns fraud**. Some frequently reported fraud schemes are the following:

► **Improper/fraudulent use of loyalty cards**: employees (e.g. cashiers) may charge their personal loyalty cards with bonus points gained by the purchases of external customers who do not have loyalty cards, or may use discount cards to illicitly apply price discounts for themselves.

► **False refunds and returns**: the fraudster employee, with or without the cooperation of a (fake) customer, may create a fictitious merchandise return so as to pocket cash; or may overstate the value of the return and profit from the price difference. In some further cases, cash refunds are paid back to customers, but the goods are not returned to the store shelf by employees (and the loss is only detected at the time of the inventory).

► **Fraud through false discounts and price override**: employees may intentionally and illicitly manually change the automated price of merchandise in the company IT system in order to apply a discount for themselves or colluded customers.

► **KPIs manipulation /Commission fraud**: as reported by some retailers, sales persons, store managers and area managers may be incentivised to manipulate sales data and KPIs to reach sale targets and illicitly gain bonuses and benefits.

UN-LOYALTY CARDS

As also highlighted by some recent literature, fraudulent use of loyalty cards is on the rise (Youngblood, 2015; Leung, Zhuang & Fong, 2004; Park & Gomez, 2004). Several cases reported in the news confirm this trend, especially in relation to collusion between employees and customers.

A saleswoman employed in a supermarket in Rome (Italy) helped three relatives (two women in their 40s) obtain free food by using loyalty cards stolen from other customers. However, other customers alerted the store manager who called the police. Eventually, she confessed to obtaining stolen food products worth more than 800 euro (Tripaldi, 2016).

New fraudulent uses of loyalty cards are also emerging. Two individuals (a 38-year-old man and a woman) in an Electronics store Modena (Italy) tried to steal IT products worth 300 euro by using two "cloned loyalty cards". They obtained private information from customers, through a skimming technique, which were then used to create new loyalty cards that could have given them access to several discounts on IT products. However, security managers were able to detect them and report them to the police (Totaro, 2015).

DETECTING RETAIL INTERNAL FRAUD, BETWEEN ARTIFICIAL INTELLIGENCE AND WHISTLE-BLOWING

The increasing adoption of IT retail management systems and the interconnection of company ERP platforms allow for a more systematic detection of anomalies in the management of counters, cash drawers, price override mechanisms. IT systems for example allow easy detection of the anomalous charging of employee personal loyalty cards during working hours.

Retail companies – especially larger companies – are investing in artificial intelligence, machine learning and predictive analytics techniques to highlight these anomalies, inspired by the anti-fraud or anti-money laundering developments of financial institutions in the last twenty years.

Also tools such as whistle-blowing platforms – i.e. secured areas on the company intranet through which employees can anonymously report illicit colleague and supervisor behaviour, could be used for this purpose. The director of a retail store in Switzerland that is part of a well-known retail chain, stole expensive goods with the complicity of fellow employees. Another employee reported this on the company whistle-blowing system, originally designed to help detect senior manager fraud. The store manager and his accomplices were arrested, while the whistle-blower was able to prove that he was not involved in the criminal scheme.[16]

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16. Case reported during an interviewee with a representative of a software provider company.

Profiles of actors involved in internal theft

In the survey, retailers were asked to indicate the most frequent profile of the people involved in internal theft. **Sales personnel** (i.e. depending on the sector, staff involved in customer care/assistance and in shelve-stacking activities) have been identified as the most frequent, followed by **cashiers** (i.e. staff at cash-registers) and **store managers** (i.e. employees with store management responsibility (Figure 32). It must be noted that, in some stores/sectors, staff may cover different roles at the time.

Sales personnel are more frequently mentioned both in Food retail and other sectors, followed by cashiers. According to the survey, store manager involvement is higher in other sectors than in Food retail, and in the Apparel and Beauty & Cosmetics sectors in particular.

Figure 32 – Most frequent profiles of employees involved in internal theft/fraud

SECURITY OFFICER
ADMINISTRATIVE OFFICER
CLEANER
WAREHOUSE WORKER
STORE MANAGER
CASHIER
SALES PERSON

Least frequent

Most frequent

Source: Survey

Figure 33 – Most frequent profiles of employees involved in internal theft/fraud, by sector

	FOOD RETAIL	OTHER SECTORS
SECURITY OFFICER	4.2	3.4
ADMINISTRATIVE OFFICER	3.8	2.7
CLEANER	1.5	2.5
WAREHOUSE WORKER	2.3	1.5
STORE MANAGER	3.3	0.9
CASHIER	0.4	1.0
SALES PERSON	0.8	0.3

Source: Survey

Several reasons may affect the decision of retailers to report a crime to the police. According to the result of a business victimisation survey conducted in 20 EU MS, the main reasons for not reporting are the triviality of the damage, the absence of enough evidence to support the report or the belief that law enforcement agencies cannot effectively deal with the issue (Dugato et al., 2013).

Another relevant factor influencing the reporting rate is the type of offender. A fraud committed by an employee is more than five times less likely to be reported than a similar crime committed by a customer. The probability for a theft committed by an employee is more than 10 times lower than when the offence involves other offenders (i.e. customers, outsiders or unidentified people).

The most common reason for not reporting employee theft or fraud is that businesses decide to handle the case internally, so as to avoid reputational damage and likely loss of staff time at attending police stations or dealing with law enforcement investigations (Dugato et al., 2013).

5.2 SUPPLIER THEFT

According to survey results, **more than two thirds of respondents** experienced at least one case of supplier theft or fraud (Figure 34). The percentage is even higher if we consider suppliers of logistic services and other providers such as security or cleaning services (76.3% in both cases).

In this respect, many retailers reported some cases of **collusion between suppliers and internal operators** (e.g. employees or security guards) to steal cash and goods. The most frequent *modi operandi* involve the theft of products during the transportation phase; or deceiving the staff that receive the goods at the store by manipulating load content and weight. These schemes may be facilitated by the **lack of adequate protection/ control systems**.

So as to prevent and minimise intercompany fraud, retailers usually carry out supplier due diligence. But according to survey responses, in most cases it is limited to **initial selection/recruitment** and is not always subsequently updated or periodically carried out.

According to survey responses, due diligence often aims to check the **financial solidity** of supplier firms, while **criminal records**, ultimate

Figure 34 – Percentage of respondents reporting the occurrence of supplier theft, by type of supplier
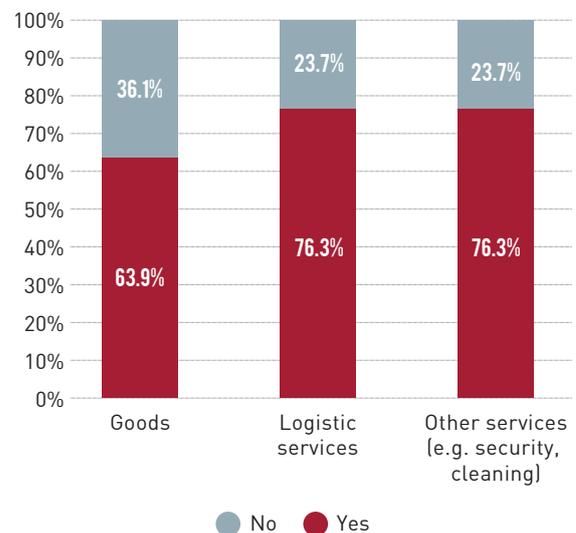
Source: Survey

beneficial ownership and **company certifications checks** are not very common. Also, in most cases, due diligence is carried out by **internal staff** who may have limited capacity in terms of expertise and access to external databases containing information on sanctions and previous enforcement references.

6. SECURITY MEASURES

The **average total expenditure in security** and loss prevention by the companies participating in the study is **0.62% of their turnover**. This value is more or less in line with previous years (Figure 35).

Total expenditure varies significantly **across sectors** (Figure 36). The differences are mainly due to the types of goods sold and to store characteristics. Differences can also be found within the same sector as a result of the different security policies adopted by each company.

Figure 35 – Total expenditure on security and loss prevention. 2015-2016-2017
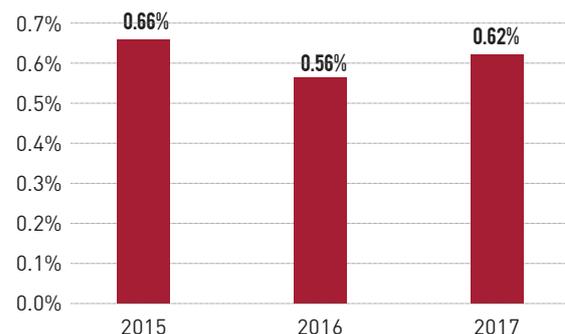
Source: Survey

Figure 36 – Total expenditure on security and loss prevention, by business sector. Average 2015-2016-2017

SPORT GOODS	0.2%
GAS/PETROL STATION RETAILER	1.0%
FOOTWEAR AND ACCESSORIES	0.2%
ELECTRONICS	0.8%
DO-IT-YOURSELF	1.0%
FOOD RETAIL	0.6%
BEAUTY & COSMETICS	0.5%
APPAREL	0.7%

TOTAL — 0.61%
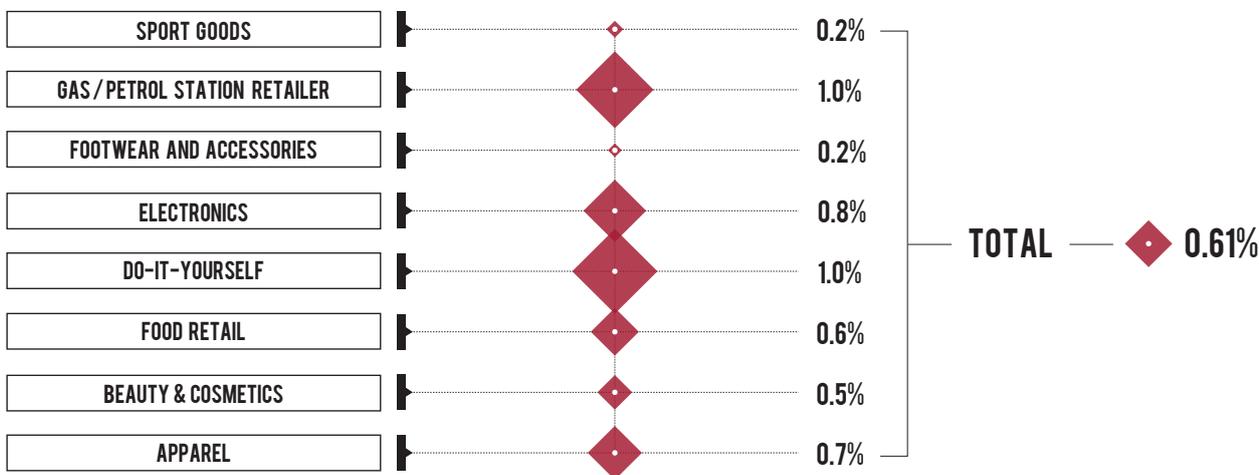
Source: Survey

Retail companies adopt a wide range of security measures to prevent crime and security issues. Figure 37 describes the use of the different types of measures declared by the retailers surveyed. The first column represents the percentage of respondents who declared that they adopt a specific security measure in at least one of their stores. The following coloumns show the number of stores in which the countermeasure is used (on average).

Figure 37 – Percentage of retailers adopting specific security measures and percentage usage

	RESPONDENTS ADOPTING THE MEASURE (%)	IN HOW MANY STORE IS IT IMPLEMENTED?		
		ALL STORES	>50% OF THE STORES	<50% OF THE STORES
CCTV	78.9%	46.4%	21.4%	32.1%
EAS	73.2%	76.9%	17.3%	5.8%
THIRD-PARTY ALARM	73.2%	69.2%	9.6%	21.2%
GUARD (UNARMED)	70.4%	16.0%	18.0%	66.0%
FOOT TRAFFIC COUNT	63.4%	60.0%	6.7%	33.3%
ADVANCED ACCESS	59.2%	47.6%	16.7%	35.7%
GUARD (ARMED)	53.5%	10.5%	2.6%	86.8%
RFID	52.1%	13.5%	5.4%	81.1%
LOCKED/SHOWCASE	49.3%	34.3%	28.6%	37.1%
DOOR SEALS	47.9%	67.6%	17.6%	14.7%
STAFF TRAINING	46.5%	90.9%	3.0%	6.1%
INTERNAL ALARM	45.1%	62.5%	18.8%	18.8%
LOCKED BOXES	43.7%	51.6%	22.6%	25.8%
DOORMEN	43.7%	9.7%	22.6%	67.7%
UNDERCOVER	42.3%	0.0%	13.3%	86.7%
SPIDER WRAPS	39.4%	35.7%	21.4%	42.9%
ALARMED CABLES	38.0%	33.3%	18.5%	48.1%

Source: Survey

EAS, **CCTV**, **alarms** and **unarmed guards** are the most popular security measures, with more than 70% of respondents confirming that they adopt these solutions. The least used measures are spider wraps and alarmed cables. This distribution can be partially explained by considering that some solutions are only effective in specific business sectors, while others are more flexible and can be used in different contexts. For example, CCTV can be used regardless of the type of goods sold, while spider wraps can be positioned on a limited range of products.

Not all the security measures are equally distributed within the stores of the same company. In most cases the selection of the measures to be used is based on two criteria: the risk level of the store and the cost of the solution. For example, security measures involving active personnel (e.g. guards, undercover staff and doormen) are usually adopted in a minority of stores considered to be at higher risk, while other less costly measures such as staff training or alarms are used in most shops. The decision as to whether or not to protect goods also depends on the value of the goods: in some cases (e.g. some Fast-fashion Apparel), the cost of protecting the goods may be higher than the value of the goods themselves. The **relative low use of RFID**, despite many retailers believing that it is one of the most promising solutions in terms of reducing shrinkage (whether or not resulting from crime), is interesting to note.

Data collected at store level confirms that **EAS** are the countermeasures most frequently employed, followed by **CCTV**. More than half of the stores analysed adopted EAS and about 44% had a CCTV system. The use of these countermeasures was slightly more frequent in sectors other than Food retail, which was instead more likely to hire guards. Likewise, the use of perimeter alarms is significantly less frequent in the Food retail than in other sectors such as Beauty & Cosmetics or Apparel (Figure 38).

One possible explanation of this difference is the greater complexity and larger variety of goods sold in the Food retail that may reduce the applicability of "one-fits-all" technological solutions to protect the products and ensure adequate in-store surveillance. Conversely, the higher percentage of alarms in the other sectors may be due to the higher risk of burglary, highlighted by the statistics presented above (at least in the Beauty & Cosmetics segment).

Figure 38 – Percentage of stores adopting specific security measures by sector (Food N= 1,632 – Others N=1798)

	FOOD RETAIL	OTHER SECTORS
GUARD (UNARMED)	19.9%	11.4%
GUARD (ARMED)	9.1%	3.2%
EAS	41.0%	58.3%
CCTV	39.3%	48.1%
ALARM	3.4%	17.1%
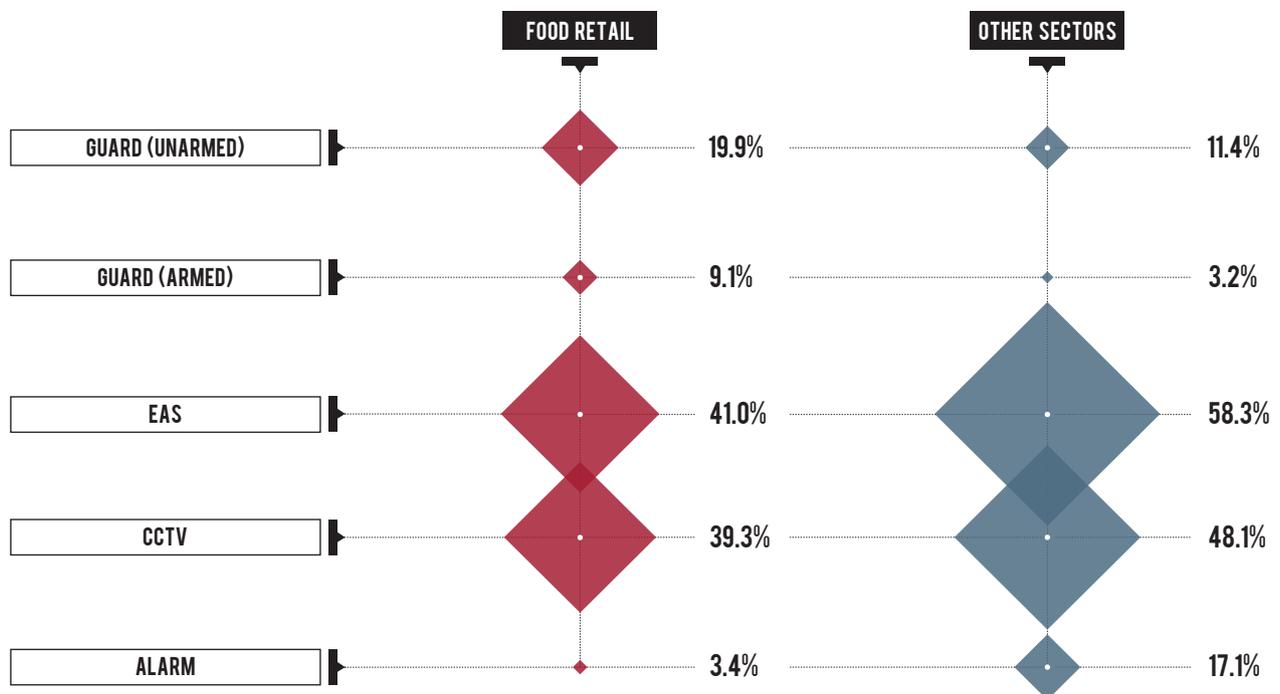
Source: Microdata

The use of specific security measures is also a function of the size of the store. **Guards**, both armed and unarmed, are disproportionally adopted in **large and very large stores**. The only exception is the significant use of unarmed guards in small stores. In this case it may be justified by the use of unarmed security personnel (e.g. doormen) in sectors usually characterised by smaller shops, such as Beauty & Cosmetics or some types of Apparel (e.g. Underwear).

Figure 39 – Use of security measures by store size (N= 1766)

Guard (unarmed)

Guard (armed)

EAS

CCTV

Alarm

Total
Very Large
Large
Medium
Small
Very Small

● Yes   ● No
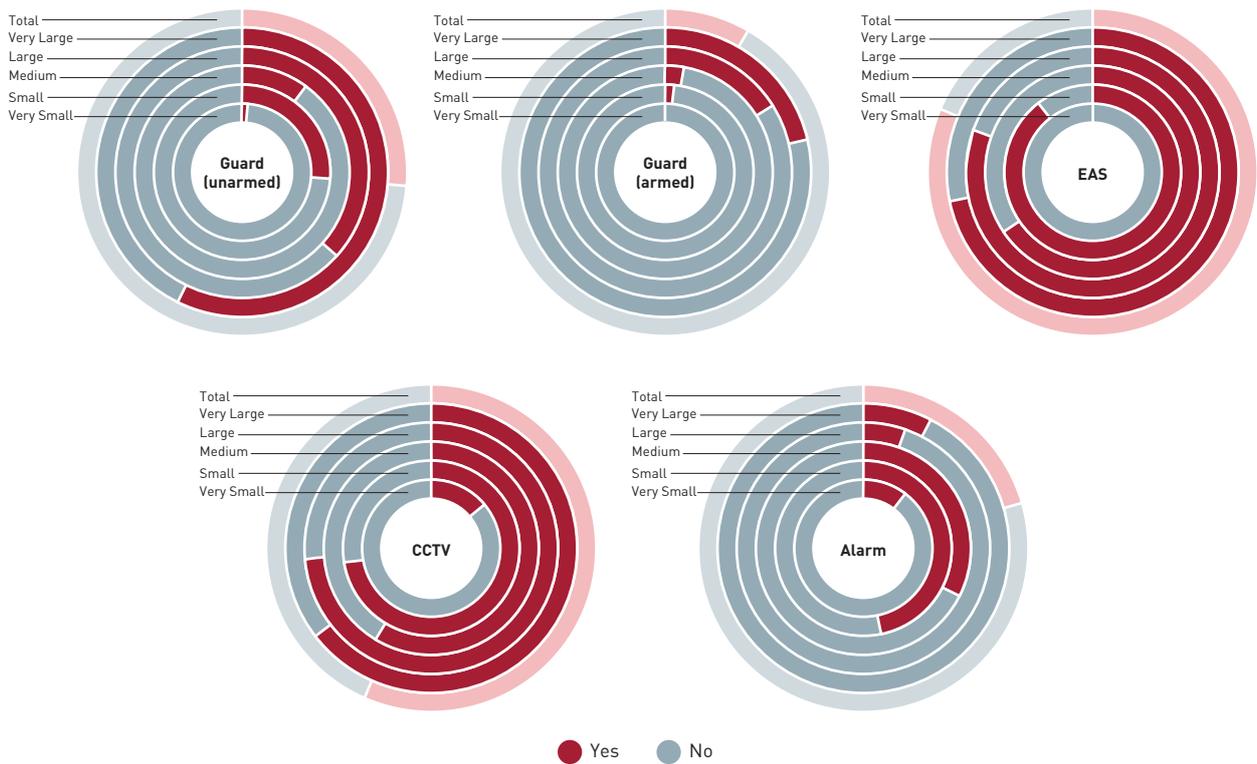
Source: Microdata

Security measures are often used in combination to ensure better protection against a variety of different security risks. Analysing the data at store level and considering five of the measures most used by retailers, 65% of stores have at least two security measures in place (Figure 40).

Figure 40 – Percentage of stores by number of security measures used at the same time (N=1974)

SECURITY MEASURES	
1	34.9%
2	27.2%
3	23.4%
4	13.2%
5	1.4%
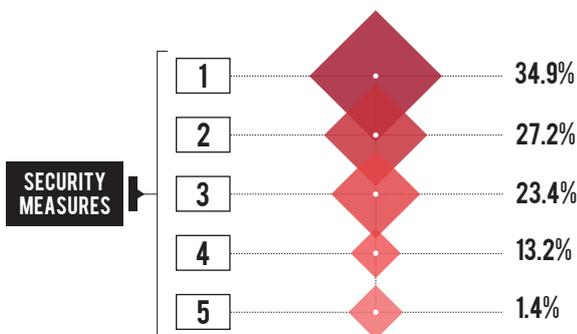
Source: Survey

Figure 41 shows the **percentages of stores adopting the most used combinations of security measures**, distinguishing by stores located inside or outside a shopping mall.

Not surprisingly, EAS and CCTV are the most used security measures both in combination (25.8%) or separately (22.5% and 12.4% respectively). This means that about six out of ten stores analysed used only these two security measures. The use of both EAS and CCTV is slightly higher outside shopping malls, while in shopping centres the **separate use of EAS is predominant**. This may be because stores can rely on external CCTV systems or on the CCTV of neighbouring stores.

Figure 41 – Most used combinations of countermeasures divided by location (N=1974)

Countermeasures	STREET	SHOPPING MALL
EAS + CCTV	16.5%	9.4%
EAS	8.5%	14.0%
CCTV	6.9%	5.5%
EAS + CCTV + Alarm	4.3%	7.9%
Unarmed guard + EAS + CCTV	8.1%	2.6%
Unarmed guard + Armed guard + EAS + CCTV	4.8%	3.5%
Unarmed guard + EAS + CCTV + Alarm	2.3%	2.3%
Unarmed guard + Armed guard + EAS + CCTV + Alarm	0%	1.4%

Legend: Unarmed guard — Armed guard — EAS — CCTV — Alarm
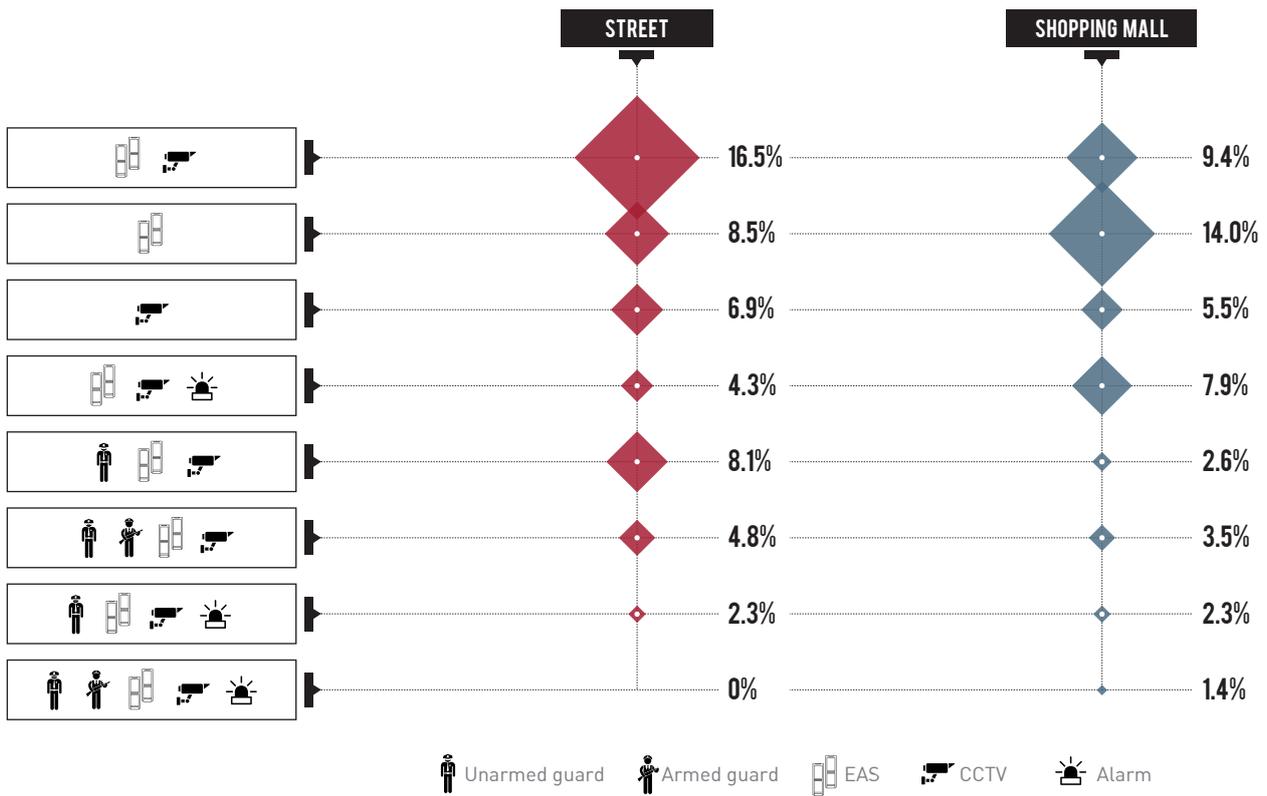
Source: Microdata

Guards are often used in combination with both EAS and CCTV (10.7% of stores) and are more frequent in stores located outside shopping malls, probably for the reasons mentioned above i.e. in shopping malls retailers can benefit from the countermeasures put in place by the centre. Finally, all five security measures considered are used together **in only 1.4%** of the stores, all of which are located within shopping malls.

Some relevant differences emerge when considering the combination of security measures in relation to the store's business sector. The **combined use of EAS and CCTV** is primarily used by supermarkets, discount stores and stores in the **Food retail sector**, while other retailers opted for more autonomous use of the two measures, with a significant preference for EAS systems. Armed guards are primarily used to secure Food retail stores, while perimeter alarms are mainly used in other sectors, as highlighted above and as possibly explained by the higher risk of burglaries (Figure 42).

Figure 42 – Most used combinations of countermeasures by sector (N=1974)

FOOD RETAIL | OTHER SECTORS

Combination	Food Retail	Other Sectors
EAS + CCTV	42.5%	17.0%
EAS	6.0%	31.2%
CCTV	0.6%	18.7%
EAS + CCTV + Alarm	2.8%	17.2%
Unarmed guard + EAS + CCTV	25.0%	3.1%
Unarmed guard + Armed guard + EAS + CCTV	15.6%	4.5%
Unarmed guard + EAS + CCTV + Alarm	0.7%	6.7%
Unarmed guard + Armed guard + EAS + CCTV + Alarm	4.1%	0.0%

Unarmed guard   Armed guard   EAS   CCTV   Alarm
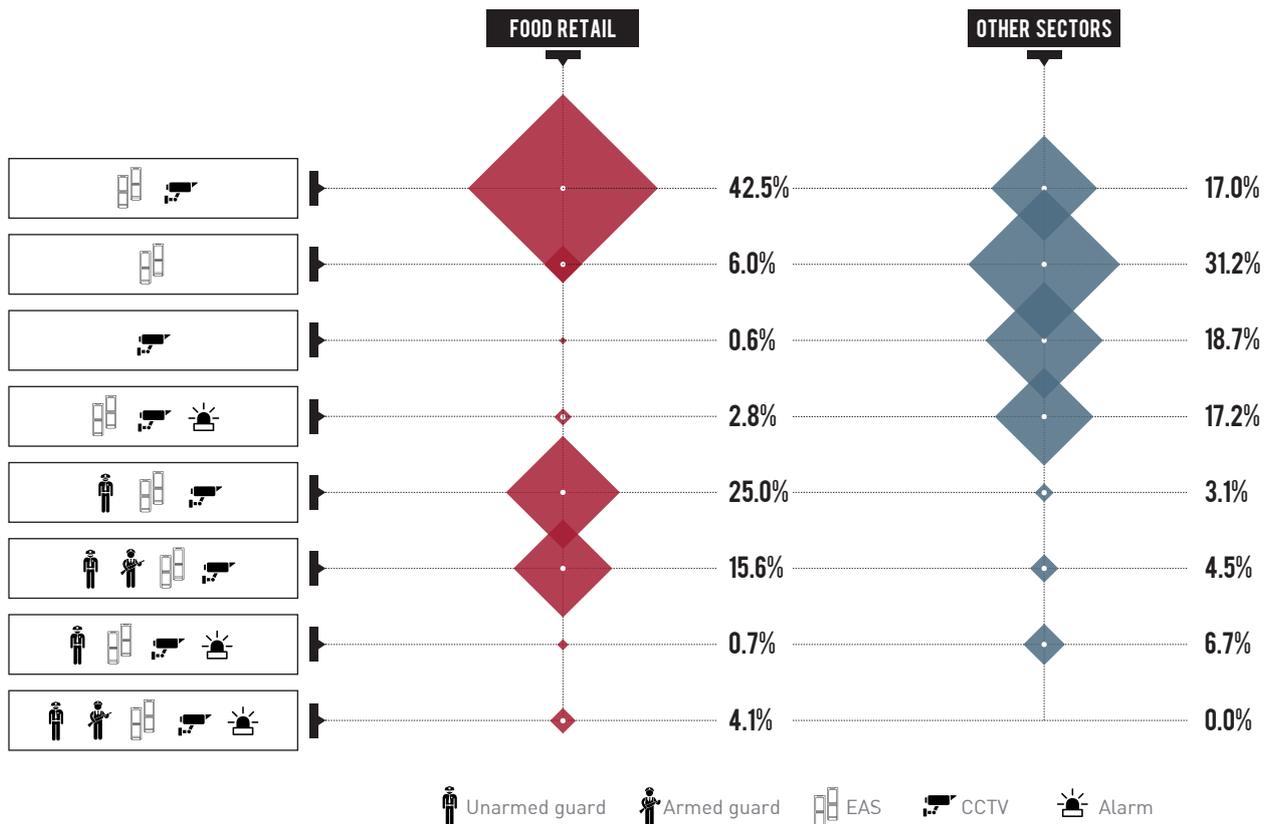
Source: Microdata

6.1 SECURITY MEASURES AND SHRINKAGE RATES

Analysing the data at store level allows us to compare the use of countermeasures in relation to the level of shrinkage experienced in each store in 2017. This analysis, rather than identifying the effectiveness of the security measures (which is difficult to assess as highlighted by a wide literature, see below), is helpful since it suggests that different security measures can be implemented based on store risk exposure. In any case, the lack of information on when the countermeasure was adopted makes it impossible to clarify the direction of causation with retail loss.

EAS and CCTV appear to be implemented regardless of the incidence of shrinkage of the store turnover. Most stores in each shrinkage category adopted these solutions, although in both cases stores recording lower levels of shrinkage also employ lower-level measures, suggesting that some type of risk assessment is carried out

by the companies. Unfortunately, the available data does not distinguish among different types of EAS or CCTV systems, therefore it cannot be proven if more advanced technologies (e.g. EAS for detecting booster bags) are employed in more problematic stores. However, both these technologies can be considered mature and effective solutions that are adopted almost "by default" by many retailers. (Figure 43).

The **use of guards**, both armed and unarmed, is limited to **stores** in which the **recorded shrinkage rate** is higher. This result is not surprising considering that these measures are the most expensive and that retailers may therefore only want to allocate them under specific circumstances. On the contrary, **perimeter alarms** are cheaper solutions (if compared to guards) that may be implemented in stores that do not require significant investment in security. Indeed, the combined use of guards and alarms is only recorded in the 13% of stores implementing at least one of these two security measures, which can be considered alternative measures.

Figure 43 – Use of security measures by shrinkage level in 2017 (N= 3430)

	GUARD (UNARMED)	GUARD (ARMED)	EAS	CCTV	ALARM
TOTAL	29.9%	11.6%	87.0%	76.6%	40.3%
HIGH	64.5%	33.1%	94.5%	96.7%	8.1%
MEDIUM HIGH	32.3%	15.1%	84.1%	83.9%	75.0%
MEDIUM LOW	24.1%	0.0%	93.7%	68.7%	62.1%
LOW	3.4%	1.7%	76.0%	63.6%	94.6%
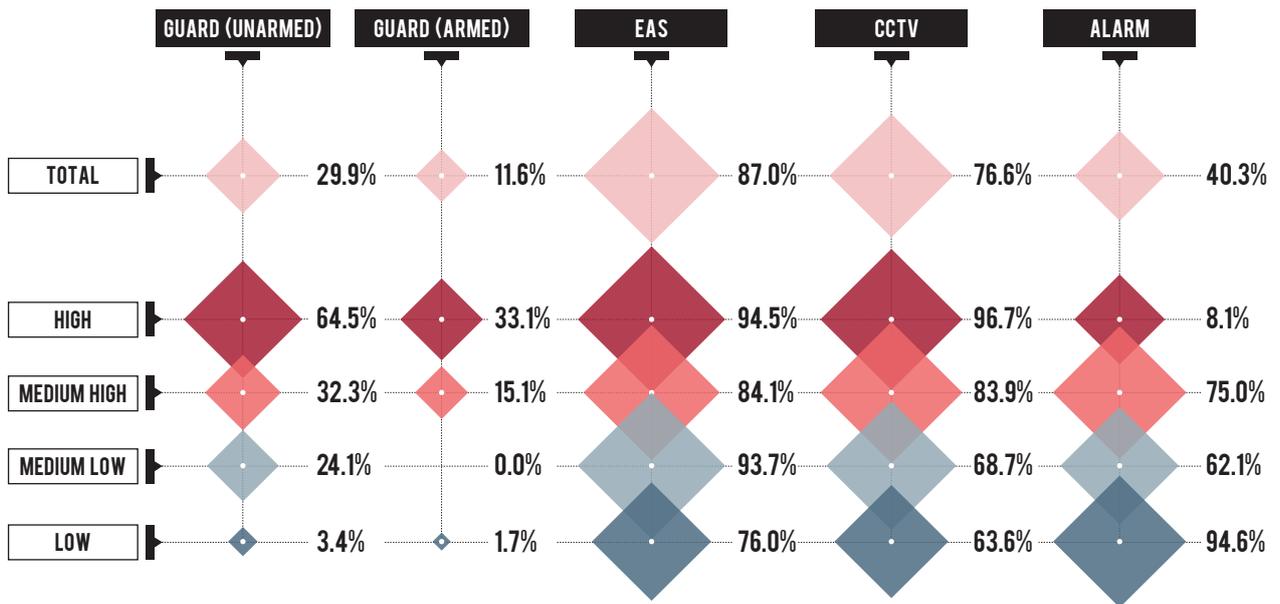
Source: Microdata

As previously mentioned, this analysis does not allow evaluation of the effectiveness of the various security measures implemented, as it does not capture the effect on shrinkage level variations. However, the next analysis assesses the impact of having one security measure on the likelihood of the stores experiencing an increase or decrease in the shrinkage level between 2016 and 2017. This analysis assumes that the security measures were already implemented in 2016 and estimates the impact by isolating the concurrent presence of other security measures (Table 7).

Keeping all the concurrent effects under control, the EAS system appears to be the one most likely associated with a reduction in shrinkage in the next period. **Stores using EAS were indeed less likely to experience an increase and more likely to record a decrease** in shrinkage level between 2016 and 2017.

Among other countermeasures, the only other significant effect identified is the use of **armed guards**. However, their use was apparently less likely to produce a decrease in shrinkage. This may suggest that the stores in which armed guards are implemented have greater problems or a higher level of risk and are therefore less likely to record an improvement in the short-term.

This analysis should be read cautiously as it requires larger samples and more detailed information on the date of implementation of the security measures, details on the type of measure adopted (e.g. traditional or advanced EAS? What type of CCTV?), a longer time series of shrinkage values and details on the monitored or secured goods.

Table 7 – Connections between countermeasures and the shrinkage trend between 2016 and 2017

	TREND 2016-2017	
COUNTERMEASURE	SHRINKAGE INCREASE	SHRINKAGE DECREASE
GUARD (UNARMED)	-	-
GUARD (ARMED)	-	LOWER PROBABILITY
EAS	LOWER PROBABILITY	HIGHER PROBABILITY
CCTV	-	-

Source: Microdata

Besides our analysis, some references on pros and cons of security measures in the retail sector which can be found in the academic literature are reported, in brief, in the following paragraphs.

Guards

Several studies highlight that the presence of **security guards significantly influences the assessment made by thieves** in planning their crimes and in selecting their targets (Beck & Palmer, 2011; Cardone & Hayes, 2012b; Hunter, Garius, Hamilton & Wahidin, 2018). Furthermore, guards can also provide a solution against security issues other than theft, such as vandalism, violent crimes or deviant behaviour (Beck, 2016). This last point also emerged in the focus groups held with retailers: according to some retailers, guards are a means of **increasing the perceived security** of customers and influencing their propensity to buy. Although this is questioned by other retailers who claim that security guards may have a negative impact on the store's image.

However, the effectiveness of guards is strongly correlated to their **characteristics and attitude**. On the one hand, low skilled or out-of-shape guards are unlikely to be a relevant obstacle for criminals (Clarke & Petrossian, 2012; Farrington et al., 1993). On the other hand, how the guards behave is more important than their simple presence (Hunter et al., 2018). Proactive guards who immediately respond to alarms or who focus on customer behaviour are more likely to influence thieves (Beck & Palmer, 2011).

As emerged from the focus group, the possibility of relying on valuable security staff is constrained by legislation in some countries that are against the professionalization of these figures and by budget limitations (i.e. low salaries for the guards). Guards may only earn a small percentage of the hourly cost imposed by security companies, and this may make them keener and more vulnerable **to be involved in theft** or to adopt a non-effective attitude towards deviant behaviour.

While proactive uniformed guards are generally seen as an effective countermeasure by retailers, evidence on the use of **undercover staff** is less consistent. The main limitations emerging from the literature are twofold. Firstly, undercover guards have no deterrent effect as they are not perceived by the criminals before entering the store (Zakirov, 2017). Secondly, interviews with former shoplifters confirm that security staff are less effective as they can be easily identified by thieves as their behaviour differs from that of regular customers (Hunter et al., 2018).

EAS systems

Despite the fact that EAS systems are the security measures most used in the retail sector, relatively few studies provide a systematic assessment of their utility. Of these, most confirm that **EAS systems are effective** in significantly reducing shoplifting events and the overall shrinkage rates (Bamfield, 1994; Cardone & Hayes, 2012b; DiLonardo, 1996; Eck, 2003; Farrington et al., 1993; Farrington & Welsh, 2007; Howell & Proudlove, 2007). However, other studies recorded negative or insignificant effects.

There are various reasons why EAS are ineffective in some cases. The main reason is "**staff apathy**" in responding to the alarm activation, sometimes referred to as "tag pollution" (Beck & Hopkins, 2017; Beck & Palmer, 2011). Analysing a sample of stores, a study found that staff only responded to 9% of all alarm activations, and checked receipts for valid purchases in just 5% of activations (Hayes & Blackwood, 2006). Interviews with shoplifters demonstrate that they observe how many EAS alarms result in actual security staff intervention. If the rate of intervention is low, they could decide to proceed with the crime and behave normally and pretend to be regular customers when alarms are activated (Armitage, Joyce, & Monchuk, 2018). As noted by scholars, EAS effectiveness could be improved from a technological point of view – i.e. by reducing the rate of false alarms – and from a managerial point of view – i.e. by increasing staff training and motivation (Kajalo & Lindblom, 2011).

DETECTING BOOSTER BAGS, BETWEEN NEW TECHNOLOGIES AND STAFF SURVEILLANCE

A growing number of retailers are adopting **EAS technologies** specifically designed to **detect booster bags** when they are brought into the store. The use of such antennas allows the detection of small metal masses such as aluminium-lined bags.

What happened in a sports goods store in Belgium in November 2017 is an example of the effectiveness of the use of such technology. A group of three people filled an aluminium-foiled bag with clothes, training shoes and socks but the alarm sounded anyway while they were leaving the store. As a consequence, one criminal was apprehended by a security guard, while the other two were arrested by the police soon after (TVLUX, 2017).

In other cases, people using booster bags have been spotted by store personnel. In a beauty shop in Rouen (France), two individuals had a bag with a double-foiled bottom which they filled with perfumes and cosmetics. But their unusual behaviour was detected by an employee who warned the store manager, who in turn called the police (Paris Normandie, 2016).

In another case, two individuals were spotted by a sales-woman while filling a Louis Vuitton bag with clothes in an Apparel store in Belgium. Their expensive bag was lined with aluminium (Gerouville, 2017).

Other factors that impact EAS results are human errors in placing tags (Armitage et al., 2018; Hunter et al., 2018); the fact that EAS only focus on external theft and not on other sources of loss (e.g. internal employee theft) (Beck & Peacock, 2009); and the improvement of shoplifter techniques - as described above in the shoplifting section – now involving the use of booster bags, jammers and tag detachers, which could be found at low-cost on the internet (Gill, 2017).

CCTV

Evidence on the **efficacy of CCTV in reducing crime in retail stores is mixed** (Taylor & Gill, 2014). Despite criminals evaluating the presence and characteristics of a CCTV system in their decision-making process (Cardone & Hayes, 2012b), most available studies confirm that CCTV has no effect on reducing shoplifting and shrinkage in general.

According to empirical evidence, there are various reasons for this lack of efficacy: the lower efficacy of CCTV in large and more crowded stores (Howell & Proudlove, 2007), thieves' ability to **identify "blind spots"** (Lasky et al., 2015), the low deterrent effect, as criminals know that "no-one is looking at the screen" (Armitage et al., 2018). In a case reported by literature, one shoplifter was caught sharing information on the camera locations with his associates (Hunter et al., 2018).

However, as also emerged from the focus group, the scope of CCTV systems is not limited to deterring theft, property crimes and reducing losses. On the contrary, it is largely seen as a means of **improving actual and perceived security by customers and internal staff** against any type of insecurity event. This is a key topic at the moment, since a recent study in the UK identified violence and abuse against staff as the highest priority currently faced by the retail industry (British Retail Consortium, 2017).

LESSONS LEARNED IN THE IMPLEMENTATION OF COUNTERMEASURES: WHAT WORKS AND WHAT IS PROMISING

No single measure is enough

Ensuring security within a store or a commercial facility requires a comprehensive approach (Gill, 2018). The security issues potentially affecting a retail environment are numerous and growing given the emergence of new challenges (i.e. organised groups, new technologies for thieves). Therefore, security measures also need to be more focused. This entails defining inclusive security strategies to be implemented while considering the interconnection and interaction of the various measures and the different people involved (e.g. security staff, sales staff, customers, etc.). Furthermore, these strategies need to be tailored to the specific need and characteristics of each point of sale.

Focus on deterrence and not on detection

The most effective countermeasures are those that reduce the likelihood of a crime occurring by dissuading potential offenders. This allows material and non-material costs incurred as a result of the commission of a crime to be decreased, regardless of whether the criminal is arrested. This can be done by amplifying the perceived risk of apprehension by the criminals (Beck, 2016). For some companies this may be problematic as they prefer to avoid the negative connotations of making potential security issues evident to customers (Hopkins & Gill, 2017).

Staff is the first countermeasure

Having well-trained and motivated security and other staff is the best countermeasure against retail crime. One the one hand, staff can have a direct role in identifying criminal behaviour and deterring thieves (Gill, 2018; Hayes & Blackwood, 2006; Tilley, 2010). On the other hand, technological tools – i.e. EAS or CCTV - are only effective if adequately managed and maintained (Armitage et al., 2018; Gill, 2017). Investing in personnel training and screening is therefore crucial to provide an ideal overlap between customer service and crime prevention. Conversely, care must be taken to ensure staff to not become less aware or proactive due to the presence of security measures (Beck & Willis, 1999).

Store design

The design and layout of the retail environment is crucial to maintaining its security. It can affect the efficiency of the security measures in place (e.g. by creating 'blind spots' for CCTV) or influence opportunities for criminals (Armitage et al., 2018; Cardone & Hayes, 2012b; Lasky et al., 2015). For example, products positioned in areas with obstructed lines of sight or close to the entrances are more vulnerable to theft (Gill, 2007). This point is particularly controversial as the most secure store layout is sometimes in contrast with marketing strategies, requiring that an adequate balance be found between sales and potential losses (Hopkins & Gill, 2017).

Use of data analytics, to evaluate and predict

New technologies allow an incredible amount of data and information to be collected, stored and processed. This possibility is already exploited by companies to target and profile customers (actual or potential) and to orient their business decision. Equally, these technologies should progressively become part of the security staff "tool box" to enable more effective strategic and tactical responses to the security issue. The objective of this improvement should be twofold: to, on the one hand, allow evaluation of the security measures implemented that is not only based experiences or anecdotal knowledge but on constant monitoring; and to, on the other hand, provide useful suggestions and evidence to orient investments and strategies.

7. TOTAL COST OF LOSSES

7.1 COST OF SHRINKAGE AND SECURITY EXPENSES

Building on the literature about the measurement of criminal costs (Brand & Price, 2000; Kleiman, Caulkins, & Gehred, 2014), it is possible to estimate the **total monetary value of the losses** suffered by retailers in the countries covered by the study.

The idea, as in Crime&tech (2017), is that the total economic cost is based on both *direct* **economic costs**, namely the impact of shrinkage in terms of turnover, and *indirect* **economic costs**, namely the expenses incurred by retailers in adopting security and loss prevention measures. In this respect, based on available data, it is possible to compute the total economic cost as follows:

> **Total economic cost of losses**
> =
> Shrinkage + Security and loss prevention expenses

As mentioned on more than one occasion, these total costs are not to be intended as the monetary value of the losses caused by crime alone, as – according to the data presented in earlier sections – the **non-criminal fraction of shrinkage** may constitute a significant portion of the losses. At the same time, the differences in accounting for shrinkage (and the relevant security expenses) across firms and sectors may make this exercise very difficult and not necessarily meaningful. However, calculating these costs provides a good proxy of the magnitude of the shrinkage phenomenon in Europe.

According to data provided by retailers, the total economic cost of shrinkage in the 11 countries covered by this study is, on average, equal to **2.1% of turnover**, calculated as the sum of the average shrinkage value (**1.44% of turnover**) and security expenses (**0.61%**).

It is interesting to note the differences existing between business sectors (Figure 44): the sectors that face the highest total economic cost are **Food retail** (2.6% of turnover), **Apparel** and **Gas/petrol station retailers**, each with a shrinkage cost equal to 2.1% of turnover.

For most business sectors, the direct shrinkage cost (i.e. the shrinkage rate) is much higher than security expenses. However, overall the **two variables show a high correlation** across retailers **(Pearson's R = 0.85)** meaning that the expenditure in loss prevention measures is in line with the suffered loss. In the absence of time-series data on expenditure, it is impossible to further explore the relationship between the two values in order to clarify the causality between shrinkage and security budget.

Figure 44 – Total economic cost of losses by sector and total. Average % of turnover

Sector	Shrinkage	Security cost	Total
APPAREL	1.4%	0.7%	2.1%
BEAUTY & COSMETICS	0.5%	0.4%	1.0%
CASH & CARRY	1.1%	0.3%	1.4%
DO-IT-YOURSELF	1.0%	1.0%	2.0%
ELECTRONICS	0.4%	0.8%	1.2%
FOOD RETAIL	2.0%	0.6%	2.6%
FOOTWEAR AND ACCESSORIES	1.3%	0.2%	1.5%
GAS/PETROL STATION RETAILERS	1.1%	1.0%	2.1%
PET GOODS	1.4%	0.6%	2.0%
SPORT GOODS	0.7%	0.2%	0.9%
TOTAL RETAIL SECTOR	1.4%	0.6%	2.1%

● Shrinkage (average 2015-2017) ● Security cost (average 2015-2017)
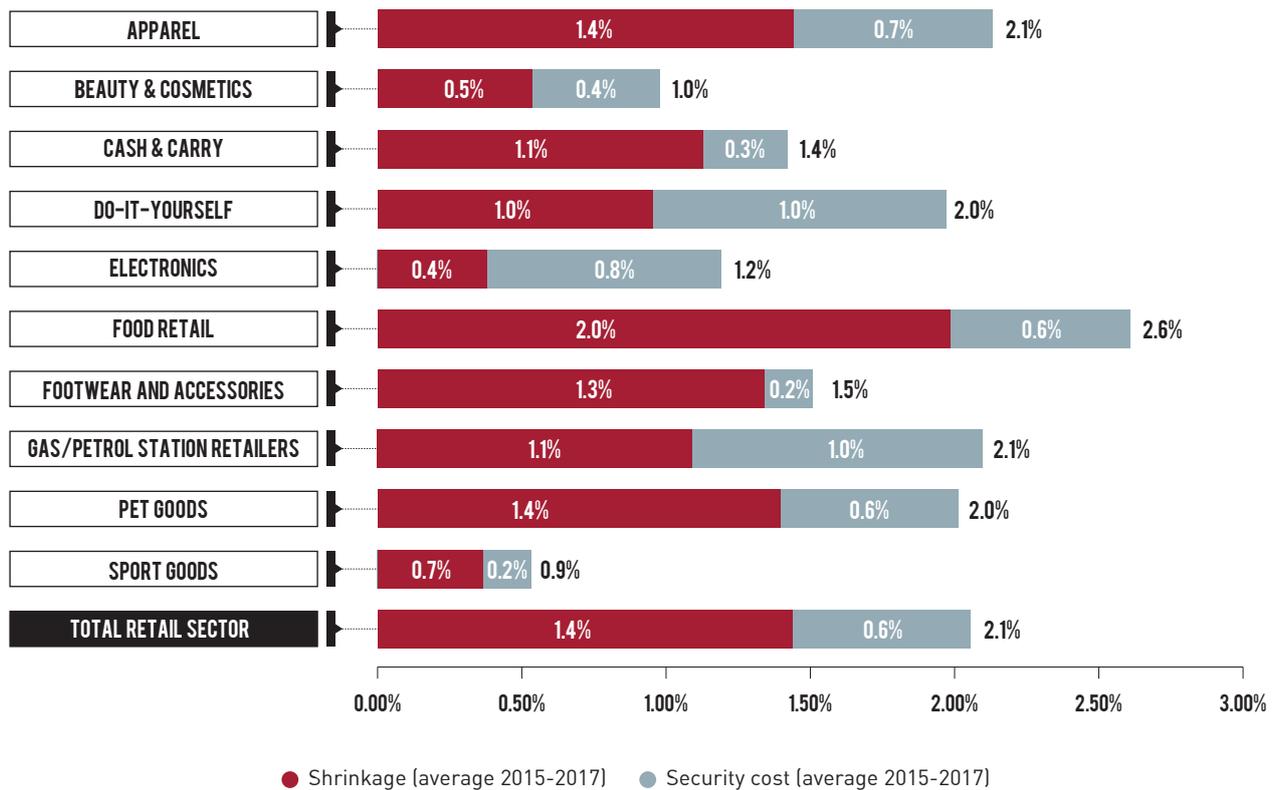
Source: Survey

7.2 MONETARY VALUES AND IMPACT ON CITIZENS

Using the **total annual turnover** of the retailers operating in the 11 countries analysed, estimated at about 2.5 trillion euro in the latest available year[17], the average total shrinkage cost for the retail sector (1.4% of turnover) in Belgium, Finland, France, Germany, Italy, Spain, the UK, the Netherlands, Poland, Russia and Sweden would amount to **35 billion euro**.[18] And therefore, the total cost, including security expenditure, could be estimated at **49 billion euro**.

If interpreting this as a company's turnover, it would represent the **fourth largest retailer in Europe**. This is a conservative estimate, which only takes into account the turnover of the main retailers (turnover above 300,000 euro) across the surveyed countries, rather than all the small merchants.

By dividing the total cost figure by the number of people residing in the 11 countries, we can estimate the per capita cost of retail losses. This amounts to **89 euro per capita per year** or 63 euro if considering the impact of shrinkage alone.

17. Estimate made considering all the retail companies operating in NACE division G.47 in the 11 countries in the study, i.e. BE, FI, FR, DE, IT, ES, UK, NL, PL, RU, SE with annual turnover of more than 300,000 euro (about 308,000 companies). The last available annual financial reports were considered, which for most companies was for 2017. Source of financial data: Bureau van Dijk ORBIS.
18. Estimate made by multiplying the total turnover of each business sector in each country by the average shrinkage rate (2015-2016-2017) for that business sector. Total value at country level calculated as the sum of each sector's value. It is not possible to distinguish between Food retail and Cash & Carry as they are classified in the same NACE business sector.

Figure 45 – Total shrinkage and expenditure value, by sector (in the 11 covered countries, thousand euro)

Sector	Value
PET GOODS	224,085
ELECTRONICS	232,251
SPORT GOODS	265,084
BEAUTY & COSMETICS	415,864
FOOTWEAR & ACCESSORIES	475,650
GAS/PETROL STATION RETAILERS	2,771,829
DO-IT-YOURSELF	2,990,816
APPAREL	3,555,357
DEPARTMENT STORES	6,778,401
OTHER RETAIL	10,822,188
FOOD RETAIL AND CASH & CARRY	20,725,095

thousand euro
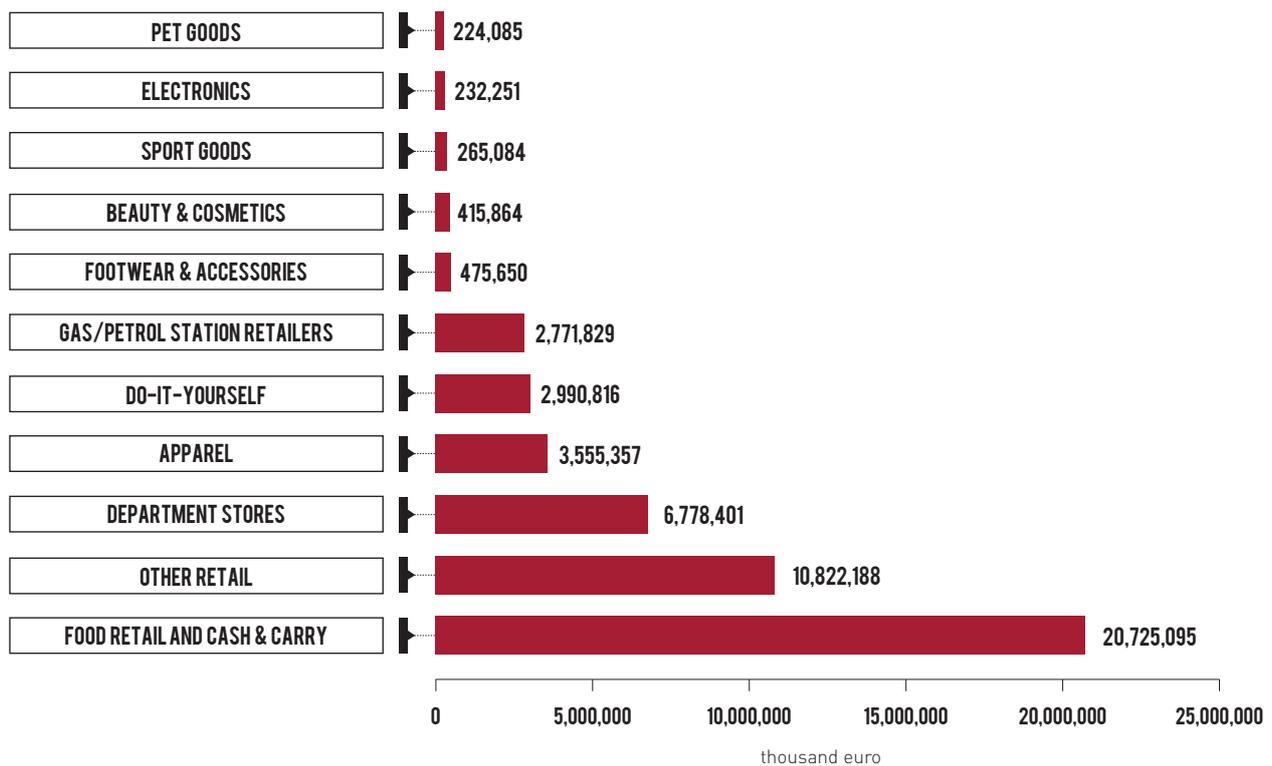
Source: Elaboration of survey and Bureau van Dijk's data

Figure 46 – Total shrinkage and expenditure value, by country (million euro)

Country	Total Shrinkage value	Total Expenditure
SWEDEN	1,366	628
RUSSIA	3,202	1,468
POLAND	1,128	574
THE NETHERLANDS	1,778	624
UNITED KINGDOM	8,866	3,525
SPAIN	2,542	1,103
ITALY	3,340	1,526
GERMANY	3,761	1,603
FRANCE	7,270	2,793
FINLAND	561	240
BELGIUM	966	392

million euro

● Total Shrinkage value　● Total Expenditure
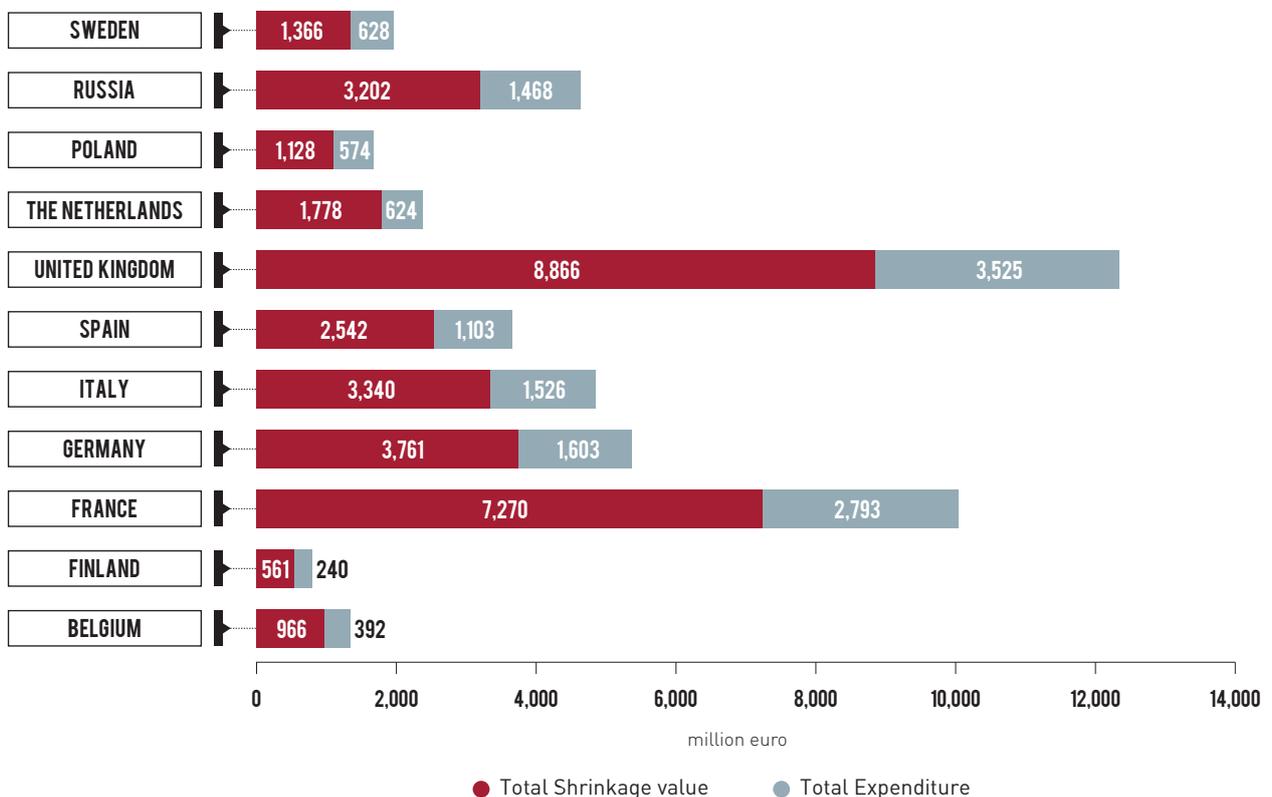
Source: Elaboration of survey and Bureau van Dijk's data

8. RESEARCH AND POLICY IMPLICATIONS

In terms of research, this study highlights the need to improve the understanding of:

► how **losses are accounted for** by retailers;

► the **criminal share** of these losses;

► emerging **criminal schemes** and behaviour, especially in relation to fraud;

► the impact of criminal behaviour not only on losses, but in terms of **customer security** (**and perception of security**), and how this impacts their attitude to buying.

In terms of retailer and public sector policy, the study highlights the need to:

► strengthen links among all company departments, especially between **security** and **audit and management** control departments;

► improve **inventory evaluation** and the accounting of losses, for the purposes of improving management (and increasing profits) and reducing shrinkage. This may be achieved through:
  • technological developments (e.g. the adoption of RFID or other technologies),
  • organisational improvements,
  • better internal communication among departments and stores;

► **combine different types of countermeasures** and improve the assessment of their efficacy and fit;

► improve **staff awareness** – at all levels – of the type of threats and criminal schemes.

Better data is needed in order to achieve these results. This study has seen an unprecedented number of retailers provide **microdata at store level**. Although this information allowed thorough analysis, more data is required.

For such purposes, the **sharing of information and practices** among retailers, academics and providers of security technologies and services should be improved.

REGIONAL PROFILES

This section provides short country profiles on Belgium and the Netherlands (as a whole), Finland and Sweden (as a whole), France, Italy, Poland, Spain and the United Kingdom. A country profile of Germany is also provided, relying, among other sources, on the data obtained from the EHI Retail Institute (2018).

Country profiles have a similar structure:

▶ Overview of the **total cost of retail losses**, by sector and per capita, separating between cost attributable to shrinkage and cost attributable to countermeasure expenditure.

▶ Overview of **shrinkage rates**, comparing, when possible, different business sectors.

▶ Analysis of **causes of shrinkage** and in particular of external theft.

▶ Trend of the **types of external theft**, enriched by **official retail crime statistics**, including analysis and mapping of data at sub-national level.

▶ Analysis of **seasonality, *modi operandi* and stolen goods**, also relying on news on retail crime incidents reported through the media.

▶ Overview of the most frequent **countermeasures adopted**, where data allows.

Analysis is provided only where data is available and meaningful. The country profile is not intended (only) as a breakdown of shrinkage estimates at national level, as obtained from the survey, but as a ***booklet*** providing an overview of relevant security threats and countermeasures in the retail sector for any stakeholder involved in this domain: **retailers, public agencies, security technology providers and researchers**.

KEY INTERPRETATION GUIDELINES

National estimates of total cost of retail losses are made on the basis of the turnover of the retail companies whose registered seat is located in the country. The figure may not take into account cost related to branches of foreign companies if no local subsidiaries are registered in the country.

Because of issues related to data sensitivity/privacy and statistical relevance, average shrinkage rates are reported only for sectors with more than 2 survey respondents. If this criterion is not met, only aggregate average is reported.

Comparing shrinkage figures across countries may be critical because of the differences in samples across countries and of the differences in definition across firms (see Part 1). Comparing the shrinkage figures against previous GRTB estimates is therefore inappropriate on account of the different methodology and samples.

Also comparing recorded crimes (or crimes reported to the police) across countries is very difficult and not always meaningful, because of the differences in terms of crime classification, counting methods and propensity to report to law enforcement.

BELGIUM & THE NETHERLANDS

Shrinkage rate and economic impact of retail losses

The monetary cost of losses for retail companies in Belgium and the Netherlands can be estimated at about **1.3 and 2.4 billion euro** respectively.[19] These values are equal to around 119 euro per capita per year in Belgium and 139 euro in the Netherlands (Figure 47).

Figure 47 – Estimated total economic cost in Belgium and the Netherlands by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)		EXPENDITURE VALUE (m euro, estimate)	
	Belgium	**The Netherlands**	**Belgium**	**The Netherlands**
Food retail and Cash & Carry	422	1,418	122.6	411.8
Department store	51	49	21.6	21.0
Gas/petrol station retailer	13	24	12.2	21.7
Electronics	3	1	6.0	3.1
Do-it-yourself	41	67	43.0	71.4
Sport goods	1	7	0.2	2.1
Apparel	50	54	24.3	26.1
Footwear and accessories	11	2	1.4	0.3
Beauty & Cosmetics	4	0	2.9	0.1
Pet goods	5	0	2.0	0.1
Other retail	366	155	156.0	66.1
Total Shrinkage Value	**966**	**1,778**	-	-
Total Expenditure	-	-	**392.2**	**623.8**
Total Cost Of Retail Losses	**1,358**	**2,402**	-	-

Source: Elaboration of survey and Bureau van Dijk's data

According to the data provided by survey respondents, the average shrinkage rate recorded by retail companies in Belgium and the Netherlands (2015-2016-2017 average) was **2.4%** of turnover in Food retail (including both known and unknown shrinkage) against the **1.2% in other sectors**.[20] In line with other countries, Food retail is the sector recording the highest rate of loss.

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19. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Belgium and the Netherlands. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Belgium and the Netherlands with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

20. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

Figure 48 – Shrinkage rate in Belgium and Netherlands. Food retail v. Other sectors. Average 2015-2016-2017

Source: Survey

Figure 49 – Most frequent causes of shrinkage in Belgium and the Netherlands
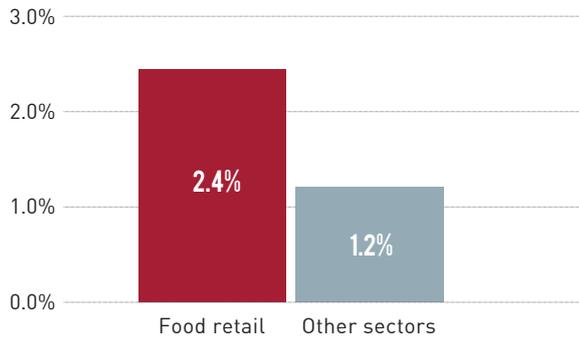
Source: Survey

Causes of shrinkage

According to most survey respondents in the two countries (83.3%), **shoplifting is the most frequent cause of shrinkage**, followed by burglary and robbery. It is also the only type of external theft which shows an upward trend: about a half of survey respondents believe **shoplifting is increasing**, while for all retailers burglary and robberies are decreasing or at most have a steady trend.

This trend is also confirmed by official police statistics. **Shoplifting**[21] **events** recorded by the police between 2015 and 2017 show a **steady trend** for Belgium and a slight decrease for the Netherlands (Figure 51), while data on burglaries of business premises[22] shows a significant decrease in both the countries (–17% and –11% respectively) (Figure 52). No official statistics on robberies against business premises is available.

According to a victimisation survey administered to a sample of European companies (in all economic sectors), Belgian companies were **less likely to report customer theft to the police** (10.5%) if compared to the continental average (15.3%). The difference is even higher when focusing on burglaries – just 24.7% of the Belgian firms reported a burglary compared with the European

Figure 50 – Trend of external theft in Belgium and the Netherlands, as reported by retailers
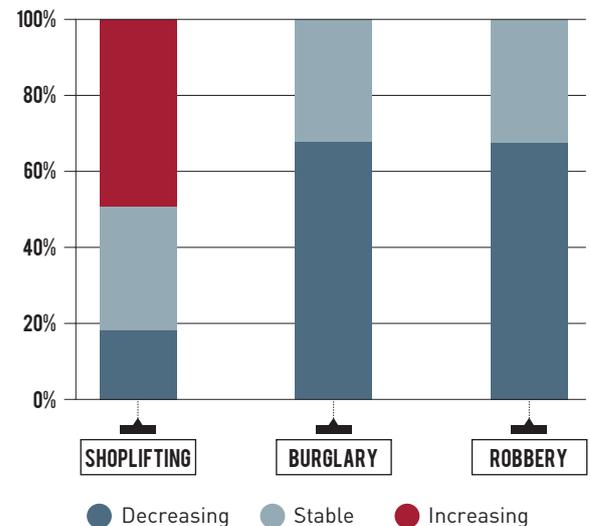
Source: Survey

average of 75.7% (Dugato et al., 2013). This means that the number of actual shoplifting and burglary events occurring in Belgium is likely to be higher than that reported in national statistics. No comparable data is available for the Netherlands.

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21. *"Winkeldiefstal"* in both countries.
22. *"Diefstal/inbraak bedrijven"* (in the Netherlands) and *"Inbraak in bedrijf of handelszaak"* (in Belgium).

Figure 51 – Shoplifting recorded by the police per 100,000 inhabitants in Belgium and the Netherlands

Source: Elaboration of Federal Police of Belgium and National Dutch Police data

Figure 52 – Burglaries into business premises recorded by the police per 100,000 inhabitants in Belgium and the Netherlands
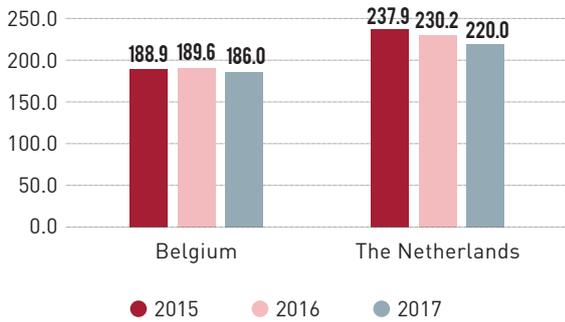
Source: Elaboration of Federal Police of Belgium and National Dutch Police data

The amount of data on shrinkage at store level does not allow to carry out sub-national analysis. This is possible instead for crimes recorded by police. Looking at the distribution of crimes within the two countries (as a ratio to the population), large regional differences emerged for Belgium. In terms of shoplifting, the province of **Antwerp** was the most exposed, followed by **Liège and Hainaut**. As for burglary, Liège is slightly above Antwerp,
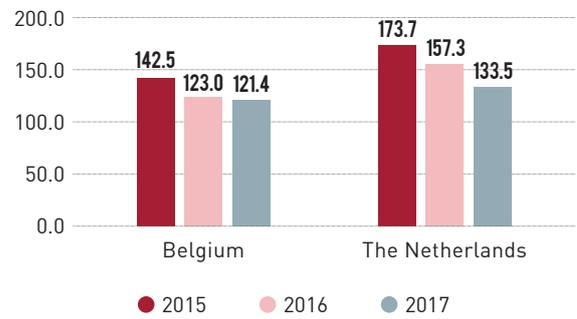
followed once again by Hainaut. The region, which includes Brussels, records the lowest value, with rates respectively much lower than those recorded in Antwerp (Figure 53).

In the Netherlands, the regions experiencing the highest level of shoplifting are **Flevoland** and **North Holland**, and those experiencing the highest level of burglaries are North Holland and Limburg (Figure 54).

Figure 53 –Shoplifting and Burglaries into businesses premises recorded by the police per 100,000 inhabitants in Belgium by NUTS 2 area. Average 2015-2016-2017
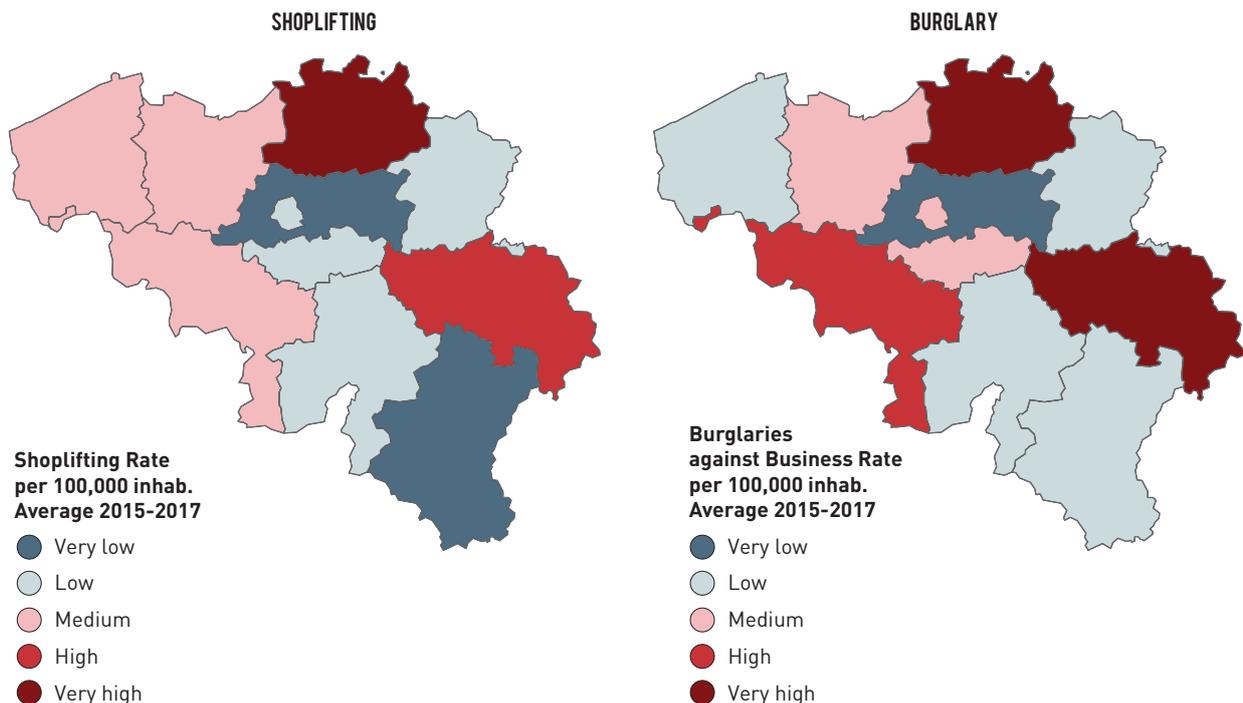
Source: Elaboration of Federal Police of Belgium

Figure 54 – Shoplifting and Burglaries of businesses premises recorded by the police per 100,000 inhabitants in the Netherlands by NUTS 2 area. Average 2015-2016-2017

SHOPLIFTING

Shoplifting Rate per 100,000 inhab. Average 2015-2017

- Very low
- Low
- Medium
- High
- Very high

BURGLARY

Burglaries against Business Rate per 100,000 inhab. Average 2015-2017

- Very low
- Low
- Medium
- High
- Very high
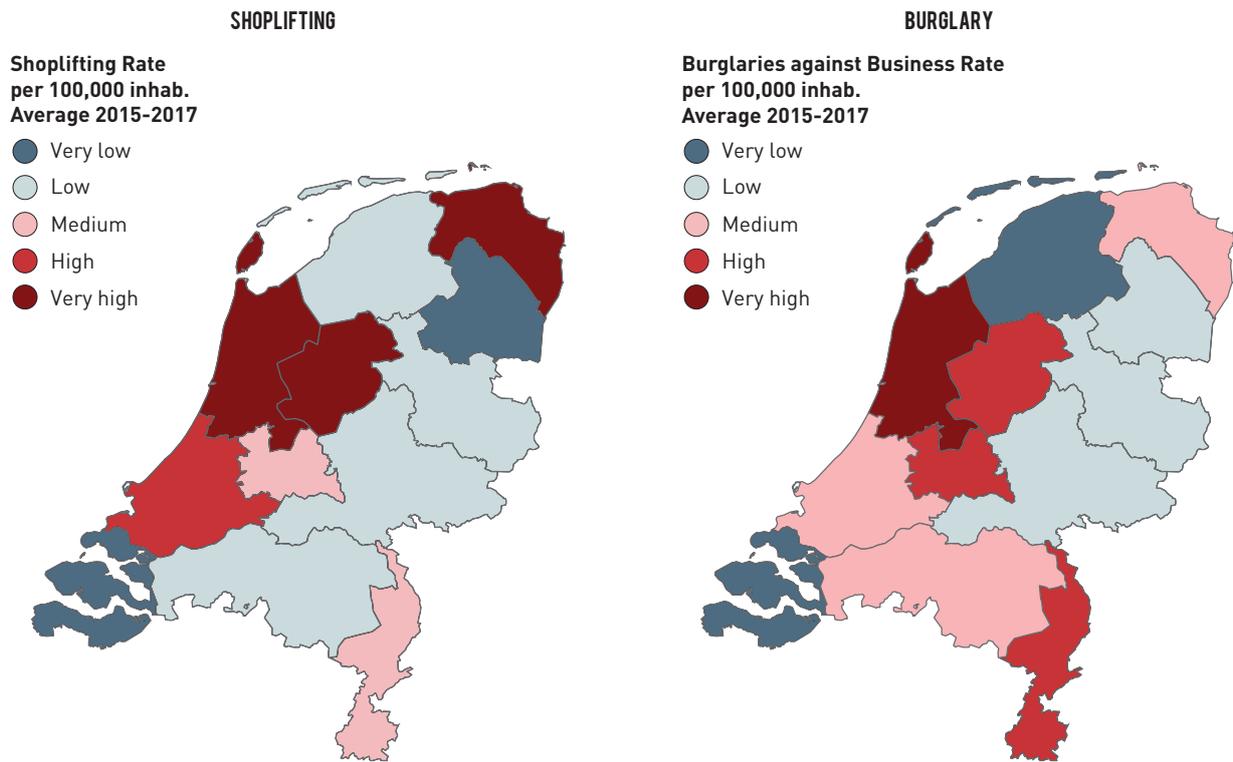
Source: Elaboration of National Dutch Police data

Seasonality, modi operandi and most stolen products

243 relevant events were identified in the news reports collected between 2016 and October 2018 in the region (134 cases in the Netherlands and 109 in Belgium). Albeit just a subset of the retail crime events that actually took place, they provide useful qualitative information about seasonality and the *modi operandi*.

In the Netherlands, most of the events occurred **in winter** (39.6%), while in Belgium one out of three events occurred **in spring**. The geographical distribution of the news reports confirms **Hainaut** as the most problematic province in Belgium. While in the Netherlands, the emerging regions are **North Holland**, **South Holland**, North Brabant.

According to collected news, the business sector most affected was **Food retail** in both countries (42.2% of the events recorded in Belgium and 28.4% in the Netherlands). In the Netherlands, there were also a significant number of events against **Apparel** (12.7%) and **Electronics stores** (8.2%).

Grab and run and the use of **booster bags** are stressed also by Belgian and Dutch retailers as the most frequent strategies employed by shoplifters.

While the presence of micro-gangs of 2-3 persons has been confirmed as the main perpetrator involved in shoplifting in the two countries, some retailers, especially in the Food retail sector, also highlighted the emerging role played by **individuals**, often customers who turn into shoplifters because of opportunity or frustration.

The issue of "customer-shoplifters" (see Part 1) has to be addressed through a combination of **technological countermeasures** – first of all traditional systems such as EAS and tags – and **organisational improvements** which could improve monitoring and customer care.

In regard to the most stolen products, focus was posed on Food retail. **Meat** was reported by several retailers in this sector as the most frequently stolen (in terms of value), followed by **alcohol** (wines, spirits, liquors) and chocolate. Tobacco products were also reported as frequently subtracted.

Most stolen products in terms of value – Food retail

1ST MOST FREQUENT	🥩	MEAT
2ND MOST FREQUENT	🍷	ALCOHOLIC DRINKS
3RD MOST FREQUENT	🍫	CHOCOLATE
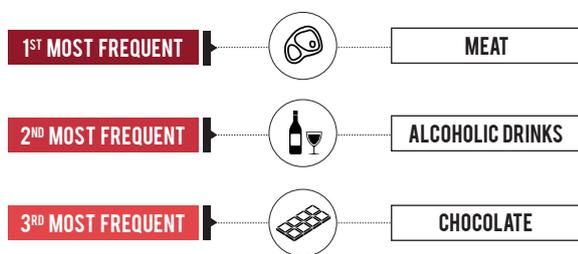
Source: Survey

Expenditure in security and adopted counter-measures

On average, Belgian and Dutch retailers spend about **0.6% of their turnover** (average 2015-2016-2017 value), with lower rates in Food retail (0.4%) if compared to other sectors (1.0% on average).

According to survey results, **tags (EAS), CCTV and alarms** are the countermeasures most frequently adopted by retailers in Belgium and the Netherlands. In particular, around two thirds of respondents adopt these solutions in their stores.

However, their distribution across stores is uneven (Figure 55): **alarms and EAS** are adopted mostly in all stores while spider-wraps and alarmed cables are employed only in a minority of locations. **CCTV** is adopted in all stores by half of survey respondents – a percentage which is slightly higher than the average across the 10 countries (46.4%, see Part 1). It should be noted that **RFID** is never adopted in all stores, while retailers use it only in a fraction of their points of sale.

Figure 55 – Percentage of security measures usage across stores

Measure	All stores	50-99% stores	0-49% stores
ARMED SG			100%
UNARMED SG		20%	80%
UNDERCOVER		67%	33%
CCTV	50%	17%	33%
THIRD-PARTY ALARM	100%		
DOORS SEALS	75%	25%	
FOOT TRAFFIC COUNT	40%		60%
LOCKED/SHOWCASES	25%	50%	25%
RFID			100%
TAGS (EAS)	83%		17%
ALARMED CABLES	25%	25%	50%
SPIDER WRAPS	25%	25%	50%
STAFF TRAINING	100%		

● All stores   ● 50-99% stores   ● 0-49% stores
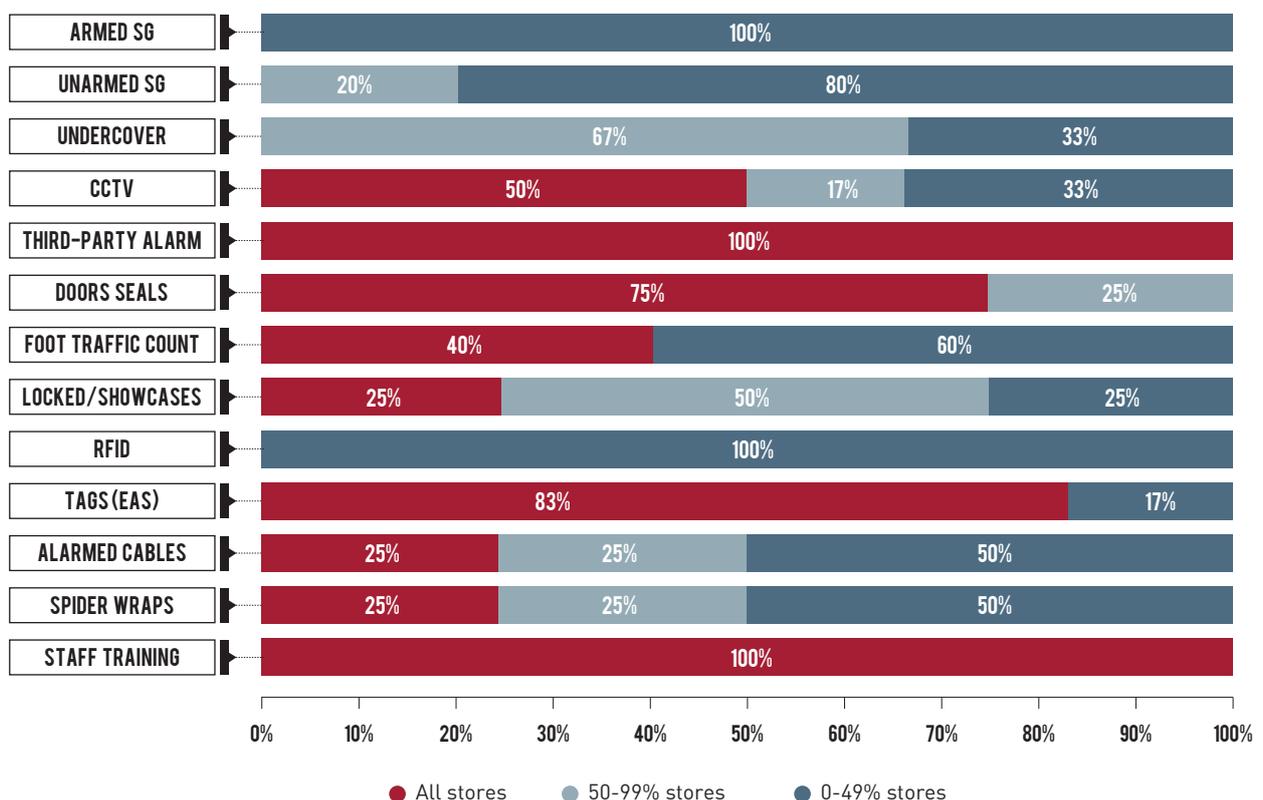
Source: Survey

ODD TARGETS AND ODD STRATEGIES IN SHOPLIFTING

Shoplifters can be very creative in their *modus operandi*. In 2017 two men were arrested in Virton, Belgium, while filling a large shoulder bag branded Louis Vuitton with several clothes in an Apparel store. The bag was lined with aluminium foils and transformed into a booster bag. Other similar bags were retrieved in the car of the two criminals together with a list of other stores, likely the next targets of the couple (Gerouville, 2017). In the same year but in Den Haag (the Netherlands) an individual stole a full basket of products, worth about 1,500 euro, placed in a number of backpacks before exiting through the entrance door. Also the three backpacks he used were stolen in the same store (Omroep West, 2017).

The selection of the targets can also be peculiar. In 2016, in Jodoigne, Belgium a woman tried to steal 56 packets of 500 grams chocolate by hiding all of them under her skirt (Newmedia, 2016). While in Wateringen, the Netherlands a man was caught by a security camera while stealing a security camera (Omroep West, 2016).

FINLAND & SWEDEN

Shrinkage rate and economic impact of retail losses

Considering the turnover of the Finnish and Swedish retail companies, the total monetary cost of losses – result of the sum of estimate shrinkage value and expenditure in security – can be estimated at about **800 million euro** and **1.9 billion euro**, respectively.[23] It means 145 euro per capita in Finland and 195 euro in Sweden.

Figure 56 shows the estimate for each business sector in the two countries. In both cases the **Food retail and Cash & Carry** records the highest values. In Finland it accounted for about 44% of the overall costs, while in Sweden it accounted for about 29% of the total. The impact on **Apparel in Sweden** (28% of the total costs) is also worthy of note.

Figure 56 – Estimated total economic cost in Finland and Sweden by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)		EXPENDITURE VALUE (m euro, estimate)	
	Finland	Sweden	Finland	Sweden
Food retail and Cash & Carry	278	456	80.8	132.6
Department store	60	40	25.4	17.0
Gas/petrol station retailer	14	59	12.9	53.7
Electronics	2	5	5.1	10.9
Do-it-yourself	44	81	46.1	86.3
Sport goods	7	17	2.2	5.5
Apparel	16	378	7.6	183.7
Footwear and accessories	2	11	0.2	1.3
Beauty & Cosmetics	1	3	0.6	2.3
Pet goods	5	12	2.4	5.5
Other retail	132	303	56.4	129.2
Total Shrinkage Value Total Expenditure Total Cost Of Retail Losses	561 - 800	1,366 - 1,994	- 239.7 -	- 628 -

Source: Elaboration of survey and Bureau van Dijk's data

23. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Finland and Sweden. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Finland and Sweden with turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

According to the data provided by survey respondents, the average shrinkage rate recorded by retail companies in Finland and Sweden (2015-2016-2017 average) was **1.1% of turnover** (including both known and unknown shrinkage).[24] Sector breakdown was not possible due to lack of available data.[25]

Causes of shrinkage

According to all survey respondents in the two countries, **shoplifting** is the **most frequent cause of shrinkage**, followed by robbery (second most frequent according to most retailers) and burglary. One third of retailers believe that **shoplifting is increasing**, and one third that it has a steady value. All retailers believe that burglaries are decreasing.

Figure 57 – Most frequent causes of shrinkage in Finland and Sweden
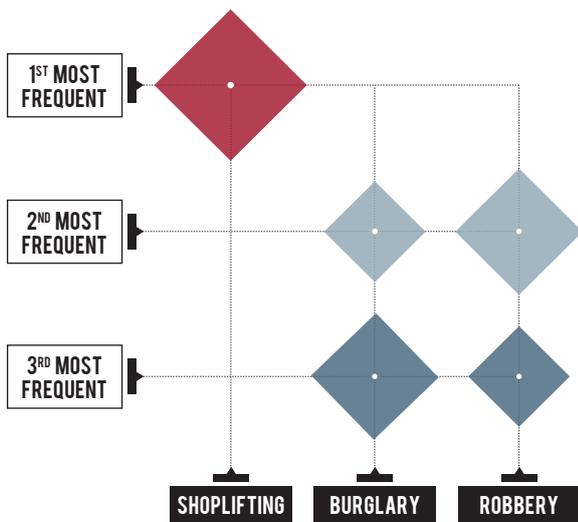
Source: Survey

The trend reported by retailers is confirmed by official statistics on reported crimes. Data on burglaries of businesses[26] between 2015 and 2017

confirms a significant downward trend in Finland (–26%) and a slightly downward trend in Sweden, while in **Finland the shoplifting trend is almost stable** (–6%), representing the **highest level** across the countries covered (Figure 59). No information on shoplifting is available for Sweden.

Figure 58 – Burglaries of business premises recorded by the police per 100,000 inhabitants in Finland and Sweden
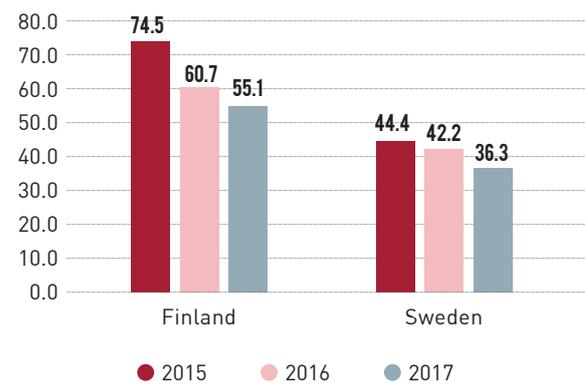
Source: Elaboration of Statistics Finland and Swedish National Council for Crime Prevention data

Figure 59 – Shoplifting recorded by the police per 100,000 inhabitants in Finland
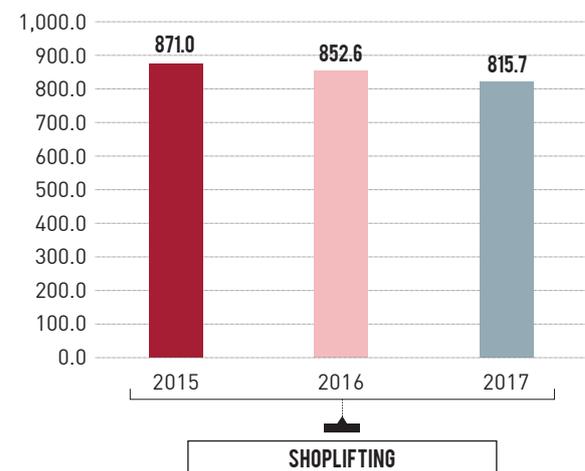
Source: Elaboration of Statistics Finland and Swedish National Council for Crime Prevention data

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24. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

25. Because of issues related to data sensitivity/privacy and statistical relevance, average shrinkage rates are reported only for sectors with more than 2 survey respondents. If this criterion is not met, only aggregate average is reported.

26. "inbrott i affärslokaler" in Sweden.

The high values recorded by Finland in shoplifting must be considered cautiously given the differences in crime definitions and in the reporting rate across countries. For example, a victimisation survey among European businesses highlighted that **all the Finnish companies interviewed reported the last burglary suffered and 40.7% reported the last customer theft**. Those values are significantly higher than the corresponding European averages (47.6% and 15.3%) and than those of Swedish companies (68.9% and 12.5%) (Dugato et al., 2013). The higher propensity to report crimes to the police, if compared to other countries, may explain the higher retail crime rates in Finland.

In any case, not all the areas within the country are equally affected by crimes against businesses. In Finland, the risk of shoplifting is higher **in large cities**, such as Helsinki, Tampere or Espoo - Länsi-Suomi and Helsinki-Uusimaa in terms of **NUTS 2 areas** (Figure 60). Overall, the correlation between shoplifting rate and the population of the municipalities is positive and significant (R = 0.55, p ≤ 0.001). The two regions indicated above are also those recording the highest burglary rates.

In Sweden, the distribution of burglaries of business premises is not correlated with the city size. The highest burglary rates are recorded in the region of **South Sweden** (Figure 61). The region of Stockholm records the lowest rate. As said, no specific statistics on shoplifting are available in Sweden.

Figure 60 – Shoplifting and Burglaries of businesses premises recorded by the police per 100,000 inhabitants in Finland by NUTS 2. Average 2015-2016-2017
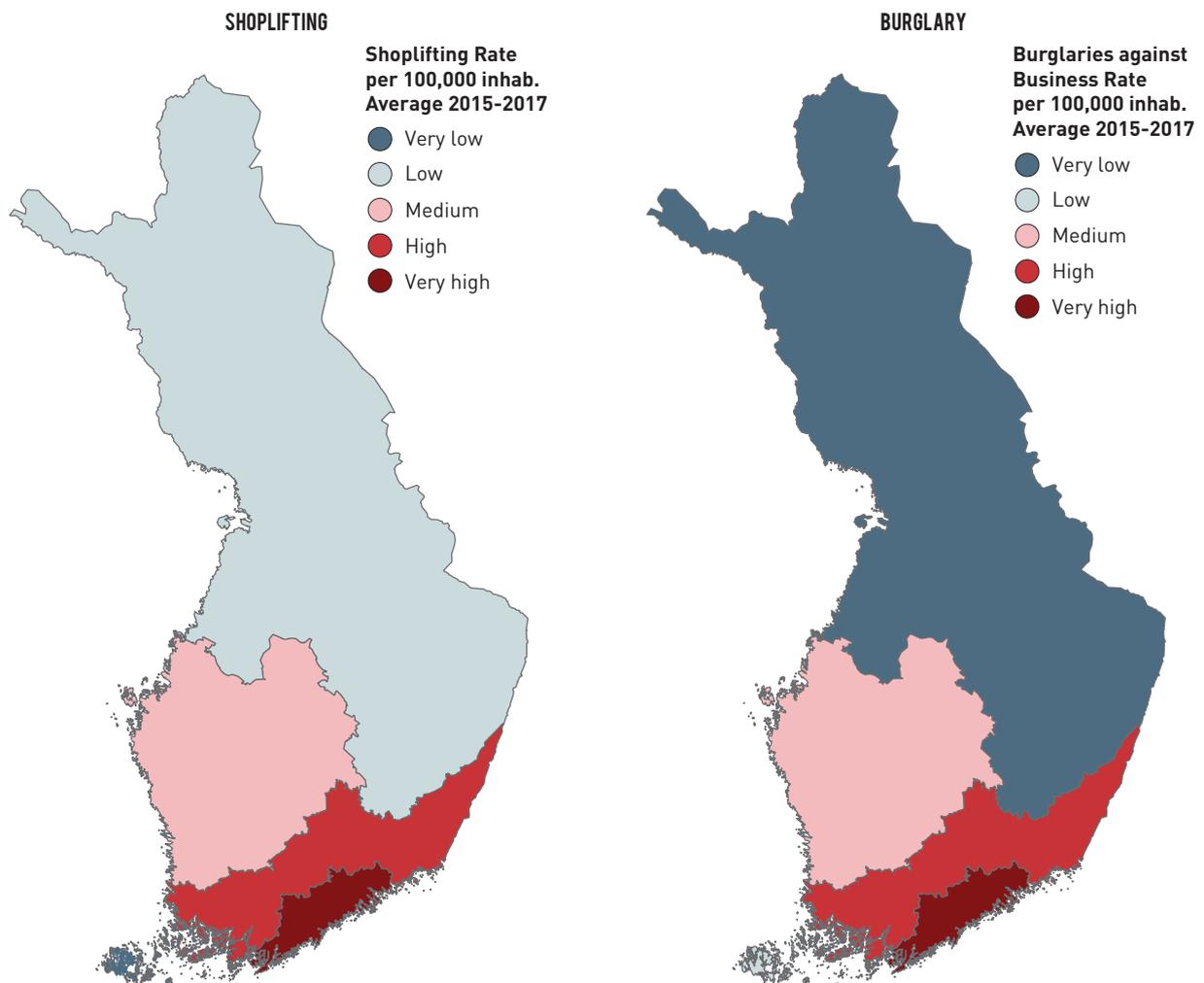
Source: Elaboration of Statistics Finland data

Figure 61 – Burglaries of businesses premises recorded by the police per 100,000 inhabitants in Sweden by NUTS 2 area. Average 2015-2016-2017

BURGLARY

Burglaries against
Business Rate
per 100,000 inhab.
Average 2015-2017

- Very low
- Low
- Medium
- High
- Very high
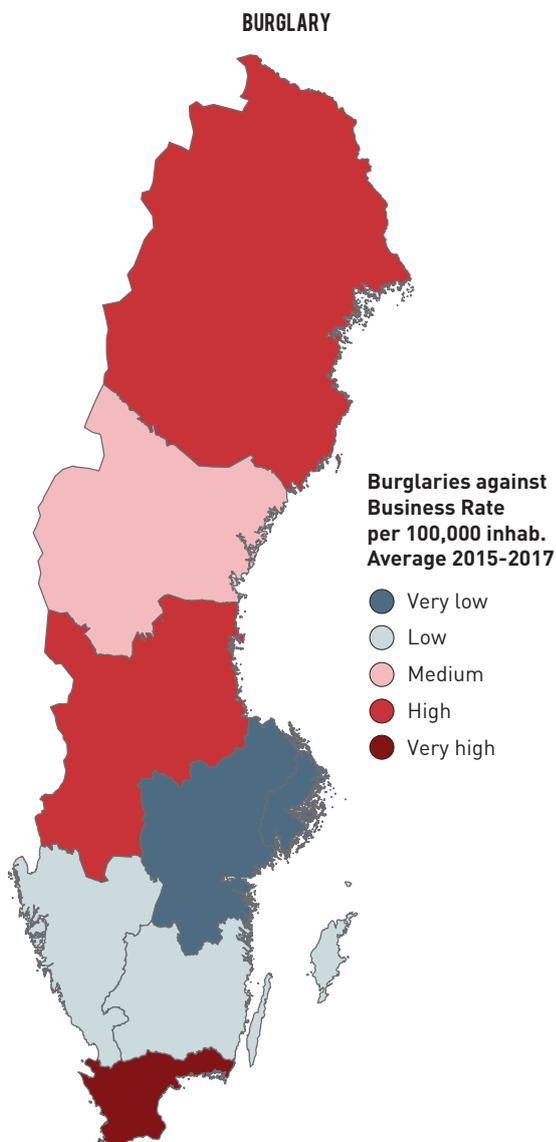
Source: Elaboration of Swedish National Council for Crime Prevention data

Seasonality and modi operandi

Media analysis identified **225 relevant news reports** between 2016 and October 2018 (69 in Finland and 156 in Sweden). In Sweden, news reports are largely concentrated in the Stockholm area (37% of the total), while in Finland reported events are more equally distributed. News reports on simple thefts and burglaries are more common in the southern areas of both countries. In both countries, **one out of three events occurred in the winter**.

The business sector most affected was **Food retail** in both countries (62.3% of the events recorded in Finland and 42.3% in Sweden). Worthy of note is the number of crimes committed against **Drugstores** (8.7%) and **Gas/petrol stations** (7.2%) in Finland – mostly robberies – and **Electronics** (12.8%) in Sweden. In Sweden, events were more likely to occur within a **shopping mall** (9.6%), than in Finland (1.4%).

RISK MAPPING IN SHOPPING MALLS IN SWEDEN

Shopping malls are complex environments comprising many people and activities. This complexity creates a wide range of criminal opportunities and poses challenges for the effective management of crime and security issues. A recent study aimed to profile the areas of a Swedish shopping centre at highest risk (Ceccato, Falk, Parsanezhad, & Tarandi, 2018). The study combined innovative technological solutions for data collection, analysis and visualisation with on-field assessments by experts and researchers. The study demonstrates that the most frequent problems relate to public disturbance and vandalism (about 68% of the events). Moreover, security problems are highly concentrated in few micro-places and time windows (Ceccato et al., 2018) . The identification of these high-risk areas and times is crucial for the purposes of defining effective crime prevention strategies as demonstrated by numerous "hot spot" policing experiences worldwide (Ceccato et al., 2018) .

Expenditure in security and adopted counter-measures

According to survey respondents, on average, Finnish and Swedish retailers spend about **1% of their turnover** on security measures (average 2015-2016-2017 value). Survey results reveal that **tags (EAS), CCTV and alarms** are the countermeasures most frequently adopted.

However, their distribution across stores is not equal: no countermeasure is adopted in all stores by all retailers (with the exception of training of staff members). The solutions most used include **alarms and EAS**, which are employed by two third of respondents in all their locations. **CCTV** is adopted in fewer stores. RFID records limited employment: all respondents either do not use it or employ it in less than half of their points of sale.

Figure 62 – Percentage of security measures usage across stores

Measure	All stores	50-99% stores	0-49% stores
ARMED SG	33%		67%
UNARMED SG		33%	67%
UNDERCOVER			100%
CCTV	33%	33%	33%
THIRD-PARTY ALARM	67%		33%
DOORS SEALS	50%		50%
FOOT TRAFFIC COUNT	33%	33%	33%
LOCKED/SHOWCASES	50%		50%
RFID			100%
TAGS (EAS)	67%	33%	
ALARMED CABLES	50%		50%
SPIDER WRAPS	50%		50%
STAFF TRAINING	100%		

● All stores   ● 50-99% stores   ● 0-49% stores
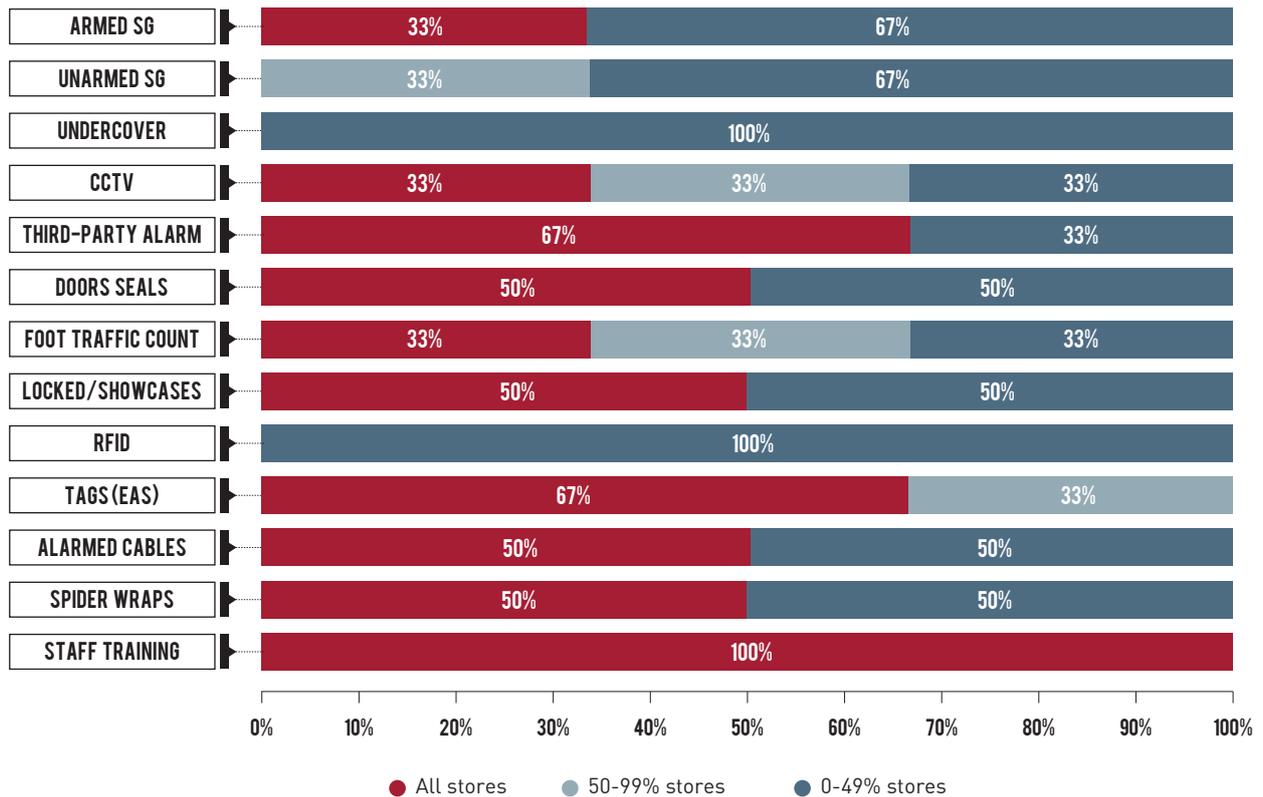
Source: Survey

FRANCE

Shrinkage rate and the economic impact of retail losses

The cost of shrinkage in France can be estimated at **7.3 billion euro** per year, with more than half of this value attributable to the Food retail and Cash & Carry sector.[27] On the other hand, expenditure in security measures can be estimated at **2.8 billion euro**. Combining the two figures, the total cost attributable to retail losses in France can be estimated at **10 billion euro** per year – the second highest value after the UK. As a ratio on the French population, it means around **149 euro per capita** per year.

Figure 63 – Estimated total economic cost by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)	EXPENDITURE VALUE (m euro, estimate)
Food retail and Cash & Carry	4,456	1,294.1
Department store	1,031	439.7
Gas/petrol station retailer	125	113.5
Electronics	18	38.9
Do-it-yourself	317	335.8
Sport goods	27	8.8
Apparel	300	145.8
Footwear and accessories	65	7.7
Beauty & Cosmetics	28	23.4
Pet goods	44	19.3
Other retail	858	365.9
Total Shrinkage Value Total Expenditure Total Cost Of Retail Losses	7,270 - 10,063	- 2,792.9 -

Source: Elaboration of survey and Bureau van Dijk's data

According to survey respondents, French retail companies recorded, on average, a **shrinkage rate of 1.7%** of the turnover including both known and unknown shrinkage (2015-2016-2017 average). The value is higher than previous GRTB studies in France, but it cannot be compared due to different methodologies and samples used. The level of coverage in France does not allow sectoral breakdown and further inference and analysis.[28]

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27. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in France. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in France with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

28. Because of issues related to data sensitivity/privacy and statistical relevance, shrinkage rates are reported only for sectors with more than 2 survey respondents. If this criteria is not met, only aggregate average is reported.

Causes of shrinkage

According to survey respondents, **shoplifting** is **the most frequent cause of shrinkage** in France, followed by robbery and burglary. All interviewed French retailers believe that **shoplifting is increasing**, while robberies and burglaries are perceived to be decreasing or to have a steady rate.

Figure 64 – Trend of external theft in France, as reported by retailers
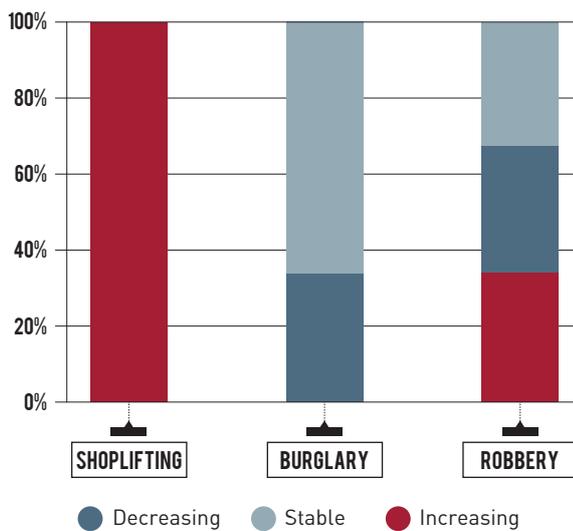
Source: Survey

The trend reported by retailers is partially confirmed by official statistics on recorded crimes by the French police. Both **shoplifting**[29] **and burglaries** into business premises[30] in France show a more steady trend, while in the last three years robberies into business premises[31] observed a **significant decrease** (–9.3%).

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29. Vols à l'étalage.
30. Cambriolages de locaux industriels, commerciaux ou financiers.
31. Vols à main armée contre des éts industriels ou commerciaux, Vols avec armes blanches contre des établissements financiers,commerciaux ou industriels and Vols violents sans arme contre des établissements financiers,commerciaux ou industriels

It is worth noting that France recorded the **lowest shoplifting rate** among the 10 countries covered by the study (94.8 every 100,000 – as opposed to 652.4 in England/Wales and 815.7 in Finland). However, as already highlighted, these figures should be considered cautiously given the differences in crime definitions, counting rules and in reporting propensity across countries. The European business victimisation survey highlighted that **just 1.3% of French companies** reported its last suffered theft by customer, a value that is much lower than the EU average - 15.3% (Dugato et al., 2013).

Figure 65 – Burglaries into business premises (left) and Shoplifting (right) recorded by the police per 100,000 inhabitants

Source: Ministère de l'Intérieur

Figure 66 – Robberies into business premises recorded by the police per 100,000 inhabitants
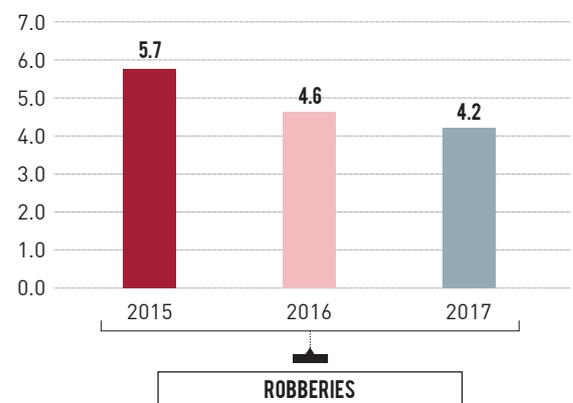
Source: Ministère de l'Intérieur

In terms of geographical distribution of shoplifting at regional level, **Île de France**, **Lorraine and Franche-Comté** recorded the highest rates (as 2015-2016-2017 average). Île de France also recorded the highest rates of robberies against businesses, followed by Provence-Alpes-Côte d'Azur (PACA) and Nord-Pas-de-Calais; the highest rates of burglaries into business premises were observed in Rhône-Alpes, Champagne-Ardenne and Poitou-Charentes. Overall, the correlation between shoplifting and the population of the departments is positive and significant (R = 0.53).

Figure 67 – Shoplifting (left) and Robberies into businesses premises (right) recorded by the police per 100,000 inhabitants in France by NUTS 2. Average 2015-2016-2017

SHOPLIFTING

ROBBERIES

Shoplifting Rate per 100,000 inhab. Average 2015-2017
- Very low
- Low
- Medium
- High
- Very high

Robbery against Business Rate per 100,000 inhab. Average 2015-2017
- Very low
- Low
- Medium
- High
- Very high
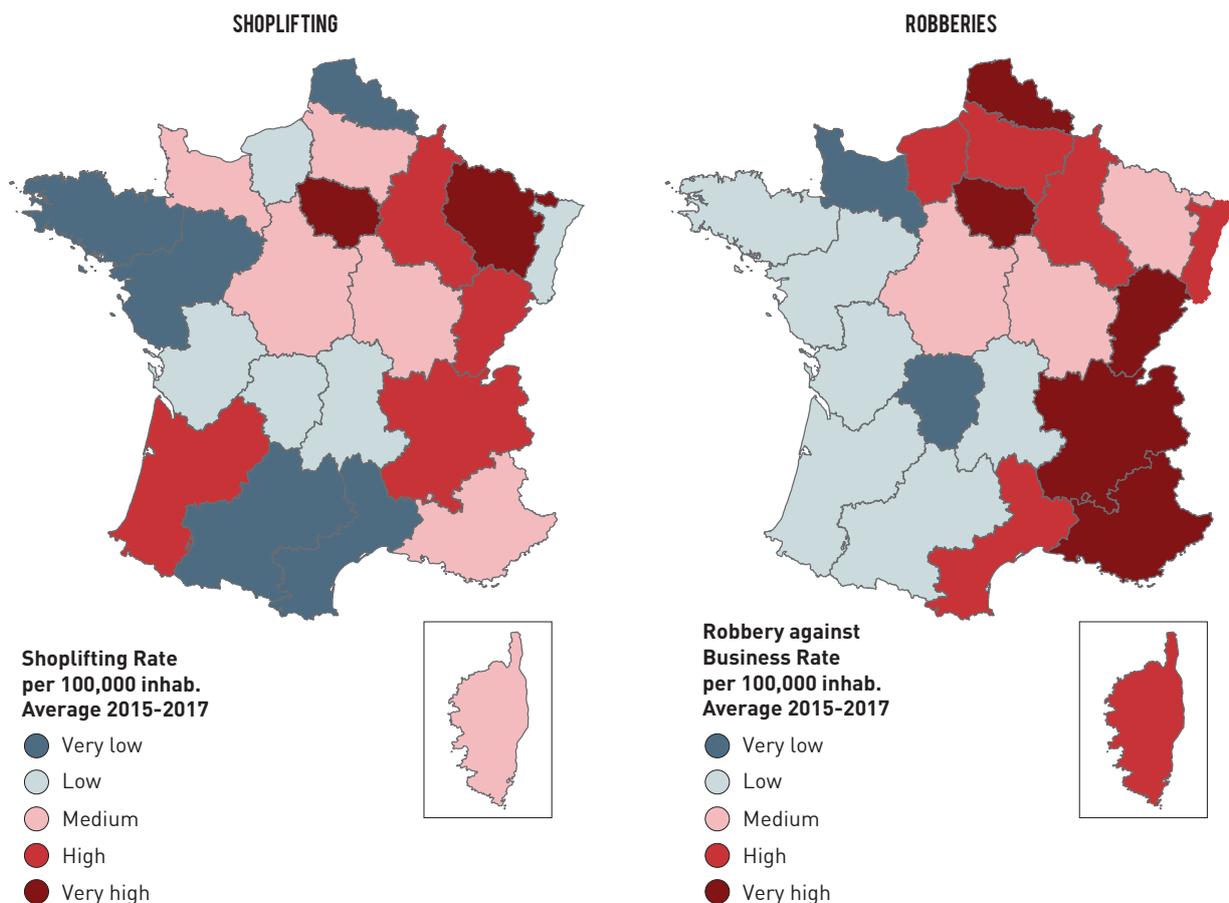
Source: Ministère de l'Intérieur

FAMILY GANG SPECIALISED IN SHOPLIFTING

Two individuals, family members, were sentenced in 2017 to respectively 10 and 4 months in prison for theft from a Apparel retailer. In two days the shoplifters stole clothes from a store worth, according to the retailer's claim, 20,000 euro. The *modus operandi* was quite simple: one individual was able to move the merchandise outside the shop without being caught by CCTV, and the other put it in big bags and then in their car. On the third day, they had been identified while committing further theft. In inspecting their car, investigators found 112 clothes for a value of 2,300 euro. The store manager claimed that the whole damage caused was valued at 20,000 euro (La Depeche, 2017).

Figure 68 – Burglaries into businesses premises recorded by the police per 100,000 inhabitants in France by NUTS 2. Average 2015-2016-2017

BURGLARY

Burglary against Business Rate per 100,000 inhab. Average 2015-2017

- ● Very low
- ● Low
- ● Medium
- ● High
- ● Very high

Source: Ministère de l'Intérieur

Seasonality, modi operandi and most stolen products

News reports on **173 retail crime incidents** were collected from French media from 2016 to October 2018. Albeit just a subset of the retail crime events that actually took place in the country, this collection provides useful insights on seasonality and *modus operandi* of criminals in retail environments.

Most incidents against retail stores **occurred in winter**. Seasonal holidays (especially Christmas time) and the **release of new collections** have been reported by survey respondents as the periods registering the highest losses.

Similar to most of the other countries, in France Food retail recorded the highest number of incidents reported through media. It should also be noted that France recorded the second highest number of events occurring within a shopping mall (13.9%), after Italy (26.1%). **Grab and run and breakage of tags/labels** were reported by interviewed retailers as most frequent *modi operandi* in shoplifting.

Expenditure in security and adopted counter-measures

According to survey respondents, on average, French retailers spend about **0.3% of their turnover** on security measures (average 2015-2016-2017 value). According to survey respondents, **tags (EAS) and CCTV** are the countermeasures most frequently adopted by retailers. However, their employment is not uniform across stores: while EAS and alarms are reported by all survey respondents to be used in all stores, CCTV and guards are employed only in a fraction of them. Available data does not allow to infer if these solutions are concentrated in shops registering higher shrinkage levels – as results in other countries suggest (see Part 1).

Figure 69 – Percentage of security measures usage across stores

Measure	Percentage
ARMED SG	100%
UNARMED SG	33% / 67%
UNDERCOVER	100%
CCTV	33% / 67%
THIRD-PARTY ALARM	100%
FOOT TRAFFIC COUNT	100%
LOCKED/SHOWCASES	50% / 50%
RFID	100%
TAGS(EAS)	100%
ALARMED CABLES	50% / 50%
SPIDER WRAPS	50% / 50%
STAFF TRAINING	67% / 33%

● All stores ● 50-99% stores ● 0-49% stores
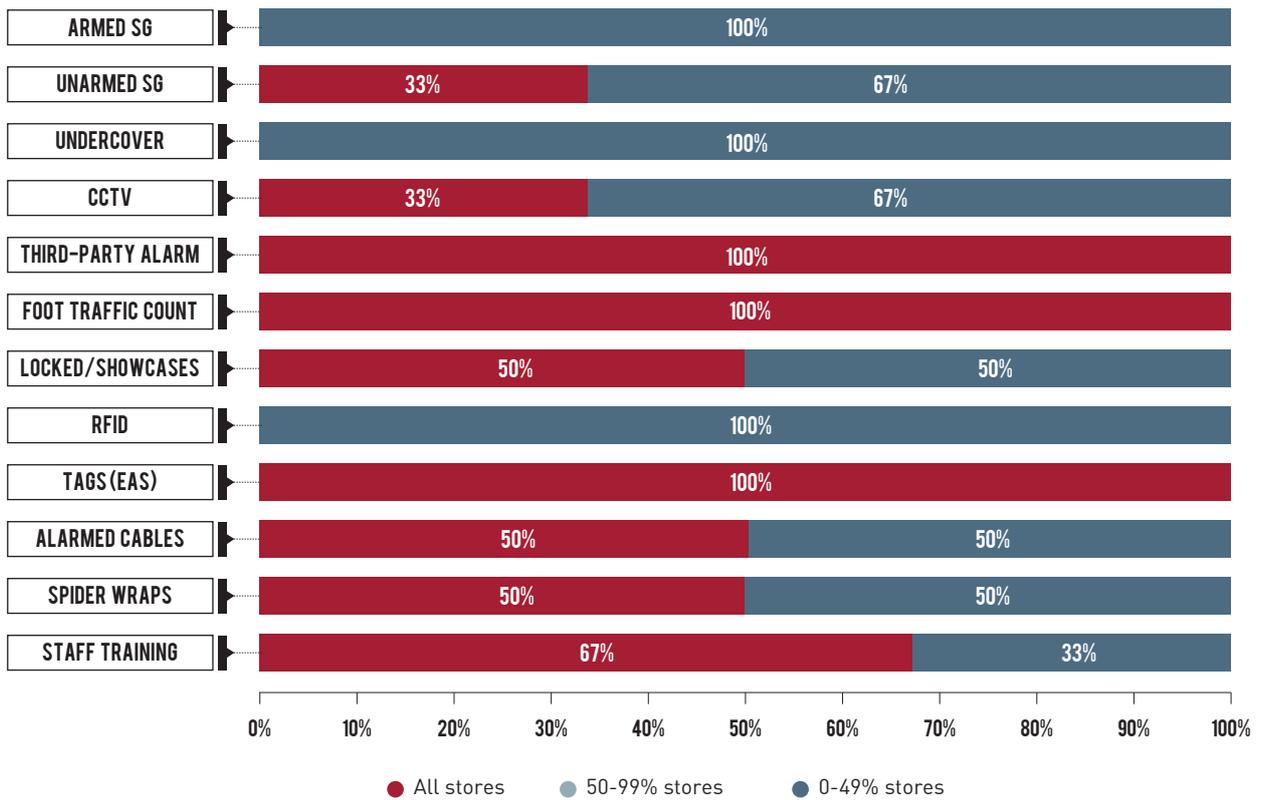
Source: Survey

THEFTS BY LOGISTIC PROVIDERS: CHAMPAGNE AND PERFUMES

Four individuals, two drivers and two truck drivers, of a logistics company near le Havre (France) were arrested after repeatedly stealing easy-to-resell merchandise in big quantities. According to the investigation, most thefts occurred under commission. The workers were able to steal whole pallets of products: e.g. two pallets of champagne, worth about 10,000 euro; a pallet of computers (7,500 euro); and loads for an overall value of 25,000 of luxury perfumes. The truck drivers were able to steal another set of products from a second logistic company for a total value of 120,300 euro. According to the Criminal Court, the total loss amounts to almost 160,000 euro (Paris Normandie, 2016).

GERMANY

Shrinkage rate and economic impact of retail losses

The survey carried out in this study did not cover Germany. This section therefore makes reference to the previous survey carried out by the **EHI Retail Institute** (2018) which covered 101 German firms in the retail sector and to official statistics on crimes recorded by the police.[32] The methodology used by EHI – especially in collecting data on shrinkage – is slightly different from the one adopted in this study, therefore values are not fully comparable.[33] According to EHI, German retail firms recorded on average a shrinkage rate equivalent to **0.6% of their net sales** in 2017 (equivalent to **0.98% of gross sales at sale price** in EHI projection). Similar rates were recorded across sectors (except Drugstores, which recorded a shrinkage of 0.8% of turnover). Also, sectoral classification is not fully comparable to the present study.

EHI also provided an estimate of the monetary value of inventory discrepancy of about **4.1 billion euro** in 2017. The EHI figure is not far from the estimate carried out by this study, which valued retail company shrinkage in Germany at **3.8 billion euro**, 38% of which could be attributed to the Food retail and Cash & Carry sector.[34] Combining the estimate of the expenditure in security measures (1.6 billion euro per year), the overall total cost attributable to retail losses in Germany gives an estimate of **5.4 billion euro** per year – the third highest value after the UK and France. This would mean around **65 euro per capita** per year.

Figure 70 – Inventory discrepancy (at purchase price) as % of net sales

SECTOR	2016	2017
FOOD RETAIL	0.61%	0.57%
DRUGSTORES	0.79%	0.82%
TEXTILE RETAILERS	0.53%	0.54%
HOME IMPROVEMENT CENTERS	0.76%	0.78%
OVERALL RESULTS	0.61%	0.61%
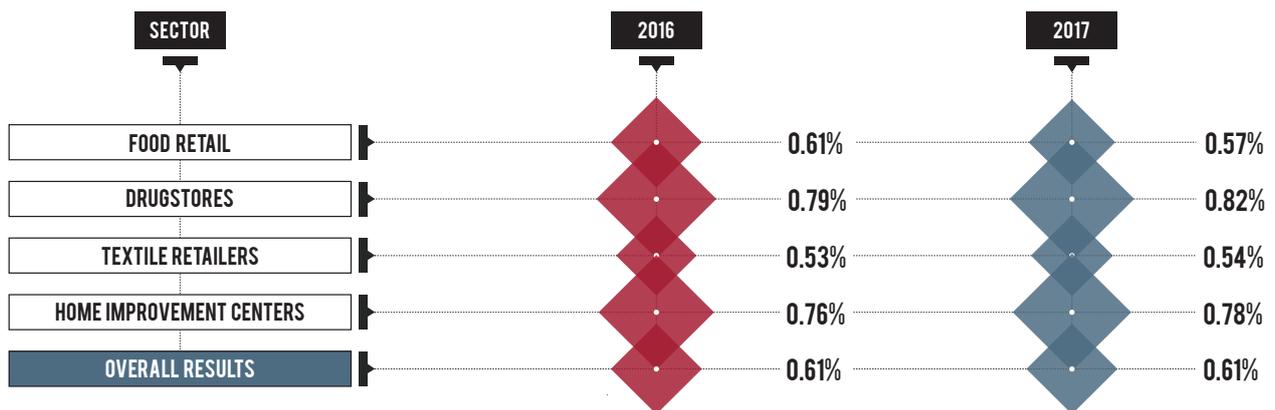
Source: EHI, 2018

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32. A new report by the EHI Retail Institute is foreseen in June 2019 including the most updates figures.

33. In the EHI study, the amount of the inventory discrepancies was valued at purchase prices and recorded as a percentage of net sales (gross sales without value-added tax). In this study (see Part 1), shrinkage values are reported at sale price. If the same methodology were applied to Germany, a higher shrinkage rate (as a percentage of net sales) could be expected. In EHI estimate, the average 0.6% of net sales calculated at purchase price would equal 0.98% of gross sales calculated at sale price.

34. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Germany. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Germany with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

Figure 71 – Estimated total economic cost by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)	EXPENDITURE VALUE (m euro, estimate)
Food retail and Cash & Carry	1,413	410.4
Department store	583	248.8
Gas/petrol station retailer	77	69.8
Electronics	15	30.5
Do-it-yourself	168	177.8
Sport goods	11	3.6
Apparel	264	128.1
Footwear and accessories	94	11.2
Beauty & Cosmetics	95	79.0
Pet goods	10	4.5
Other retail	1,031	439.7
Total Shrinkage Value **Total Expenditure** **Total Cost Of Retail Losses**	3,761 - 5,365	- 1,603.4 -

Source: Elaboration of survey and Bureau van Dijk's data

Causes of shrinkage

Official criminal statistics on reported crimes show that, in line with other countries, Germany experienced a **decrease in total shoplifting** between 2015 and 2017 (Figure 72).[35] However, according to information reported by the EHI Retail Institute in 2018, it is possible to distinguish between simple and **serious shoplifting** and while the former decreased in the last 10 years, the latter has experienced an **increase** of 2.5 times in the same time span (EHI Retail Institute, 2018).

Statistics on robberies against business premises[36] also experienced a **downward trend** between 2015 and 2017 (–15%), reaching a value equivalent to 3.6 criminal events per 100,000 inhabitants in 2017 (Figure 73). However, these statistics could be affected by the dark figure (i.e. the low propensity to report incidents to the police). No commercial victimisation surveys, which could help to measure the magnitude of businesses' non-reporting rates, are available in Germany. As revealed by some sources, official police evidence contrasts with the perception of most retailers which expect an increase of crime in all areas – both in terms of organised shoplifting and violent acts (EHI Retail Institute,

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35. "Einfacher Ladendiebstahl"
36. "Raub, räuberische Erpressung auf/gegen sonstige Zahlstellen und Geschäfte darunter"

Figure 72 – Shoplifting recorded by the police per 100,000 inhabitants

455.1 (2015)
432.8 (2016)
402.3 (2017)

SHOPLIFTING
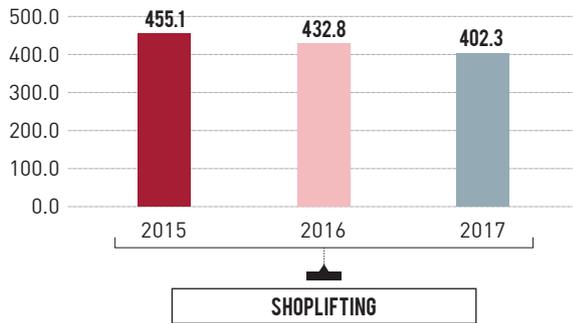
Source: Bundeskriminalamt

Figure 73 – Robberies of business premises recorded by the police per 100,000 inhabitants

4.2 (2015)
3.7 (2016)
3.6 (2017)

ROBBERIES INTO BUSINESS PREMISES
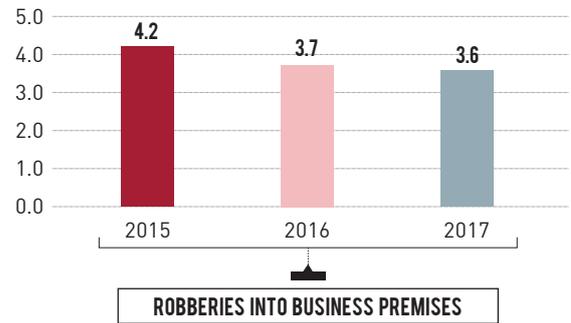
Source: Bundeskriminalamt

2018, p. 44) (see below).

Crimes against businesses are not evenly distributed throughout the country. The shoplifting rate (per 100,000 inhabitants) is higher in **highly populated and large areas**: Berlin, Bremen, Hamburg, Leipzig and Düsseldorf. The region of Munchen (Oberbayern), on the other hand, records lower values for both crime types.

Figure 74 – Shoplifting and Robberies into business premises recorded by the police per 100,000 inhabitants by NUTS2 area. Average 2015-2016-2017
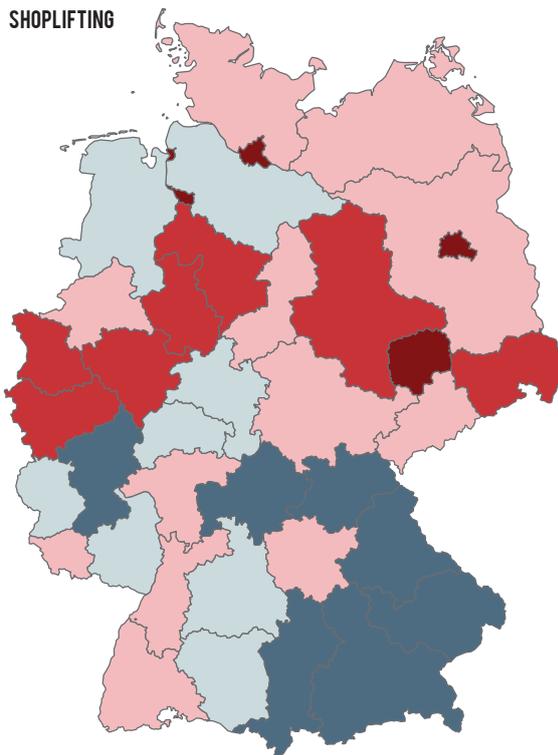
SHOPLIFTING

ROBBERIES

Shoplifting Rate per 100,000 inhab. Average 2015-2017
- Very low
- Low
- Medium
- High
- Very high
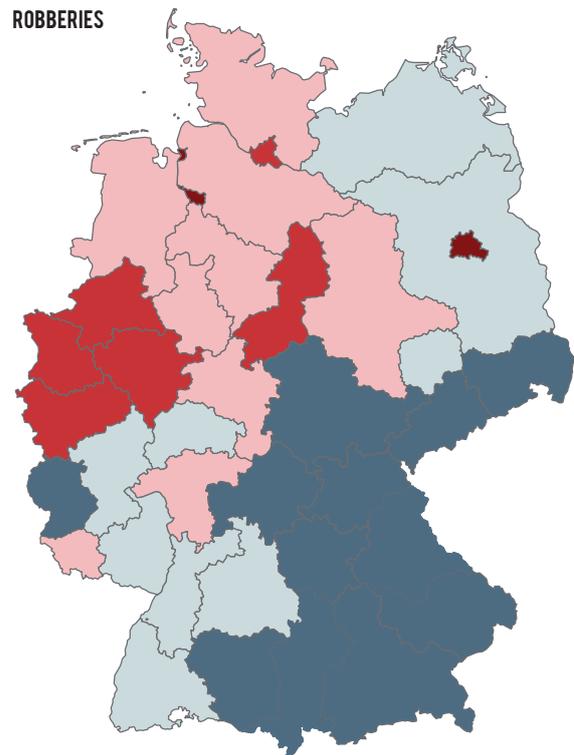
Robbery against Business Rate per 100,000 inhab. Average 2015-2017
- Very low
- Low
- Medium
- High
- Very high

Source: Bundeskriminalamt

Seasonality and modi operandi

Media analysis identified **132 news reports** on relevant criminal events against businesses in Germany between 2016 and October 2018. Despite representing only a small fraction of retail crime events that actually occurred, they provide useful insights into the *modi operandi* and seasonality[37]. In contrast with other countries, retail events reported through the news seem not to concentrate in winter, but are almost evenly distributed throughout the year (**spring** 27.3%, **winter** 25% and **autumn** 25%). Most news reports affected the **Food retail** sector (27.3% of all incidents), followed by **Apparel** (9.1%), a result in line with what has been reported in many other countries.

In terms of actors, also German retailers highlighted the role played by micro-gangs in shoplifting. According to EHI, **one fourth of all shoplifting events include gang theft and organised crime** (EHI Retail Institute, 2018, p. 11).

According to the same survey, as mentioned, German retailers expect an **increase of crime events** for all retail crime types – first of all organised shoplifting and potentially violent perpetrators. As in many other countries, news collected in Germany highlighted that the boundary between shoplifting and violent robbery is not always evident, as shoplifters may turn to violent perpetrators depending on the circumstances (see box below).

EVOLUTION OF SHOPLIFTING, BETWEEN SECURITY OF GOODS AND SAFETY OF PERSONNEL

Some of the cases collected through the news revealed that some shoplifters may turn to violence if obliged by the circumstances.

In February 2017, in Wolfsburg, two individuals pretended to be customers and went to the register holding two bottles of vodka. However, instead of paying, the thieves ran away in two different directions. When one of them was reached and stopped by the cashier, he reacted by assaulting the employee who suffered minor injuries that required hospital treatment (Thuringer Allgemeine, 2018).

Another relevant case occurred in Schmalkalden in September 2018: an individual was spotted while he was trying to steal a laptop worth 829 euro in an Electronics store. When caught, in order to run away, the boy pepper-sprayed the employees. Both employees and customers suffered respiratory tract irritation and the store had to be closed temporarily (Wolfsburger Allgemeine, 2017).

Expenditure in security and adopted counter-measures

The present study did not survey retailers in Germany and therefore no information on the investment and distribution of countermeasures – per type and location – could be provided. Again, information can be retrieved from the study of EHI Retail Institute, according to which German retailers spend around **0.3% of their sales** in countermeasures (EHI Retail Institute, 2018, p. 51). As in other countries, the expenditure of Food retail is lower than other sectors (Apparel, DIY, Department stores). No specific details on the distribution of countermeasures was provided by EHI (at least, with the same classification used by the present study).

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37. Most news in the sample regarded robberies (46.2%), followed by burglaries (27.3%) and shoplifting (26.5%). As stressed already in Part 1, news usually focus on most violent events and therefore the sample may underestimate simple shoplifting or internal fraud and overestimate burglary/robberies.

In monetary values, EHI estimated an expenditure in 2017 of 1.35 billion euro, which is close to the estimate carried out by the present study (with a different methodology) equalling 1.6 billion euro. Both this study and EHI estimate a total cost attributable to retail losses (shrinkage + expenditure) **higher than 5 billion euro annually**: 5.5 billion euro according to EHI (2018) and 5.4 billion euro according to the present study.

EAS AND JAMMERS IN GERMANY

In February 2018 in a Drugstore located in Bestwig a thief was caught thanks to the EAS security system. The man tried to steal cigarettes and a mobile phone but while he was walking out of the store, the alarm went off. An employee tried to stop him, but, unfortunately, the thief ran away (Westfalenpost, 2018).

Sometimes, shoplifters use specific devices that deactivate EAS security systems. This is what happened in Nörten-Hardenberg in August 2018. A couple stole products worth 920 euro from a Beauty & Cosmetics store. When they walked out the store, the alarm system did not go off. An employee alerted the police because he suspected that the two customers were in fact thieves. The police stopped the suspects and searched their bags. Besides the stolen products, the police found also a jammer used for deactivating the alarm (Kästle, 2018).

ITALY

Shrinkage rate and the economic impact of retail losses

The cost of shrinkage in Italy can be estimated at **3.3 billion euro** per year.[38] On the other hand, expenditure in security measures can be estimated at **1.5 billion euro**. Combining the two figures, the total cost attributable to retail losses in Italy can be estimated at **4.8 billion euro** per year. As a ratio on the Italian population, it means around **80 euro per capita** per year.

Figure 75 – Estimated total economic cost by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)	EXPENDITURE VALUE (m euro, estimate)
Food retail and Cash & Carry	1,378	400.2
Department store	197	84.1
Gas/petrol station retailer	315	286.4
Electronics	3	6.1
Do-it-yourself	198	209.2
Sport goods	23	7.4
Apparel	375	182.2
Footwear and accessories	89	10.5
Beauty & Cosmetics	36	30.1
Pet goods	11	4.8
Other retail	716	305.2
Total Shrinkage Value **Total Expenditure** **Total Cost Of Retail Losses**	3,340 - 4,866	- 1,526.2 -

Source: Elaboration of survey and Bureau van Dijk's data

According to survey respondents, Italian retail companies recorded, on average, a shrinkage rate of **1.2% of their turnover** including both known and unknown shrinkage[39] (2015-2016-2017 mean – with average of 1.2% in 2017) but the value varies depending on the sector. It is possible to breakdown in three sectors: **Food retail**, **Apparel** and **other retail**.[40] As in other countries, Food retail is observing the highest loss rate, increasing by 0.1% with respect to 2015. Apparel and other sectors record similar shrinkage values and register a steady trend over the three years.

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38. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Italy. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Italy with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

39. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

40. The latter includes Beauty & Cosmetics, Cash & Carry, DIY, Electronics, Footwear and accessories, Gas/petrol Stations, Luxury, Pet goods and Sport goods. Because of issues related to data sensitivity/privacy and statistical relevance, shrinkage rates are reported only for sectors with more than 2 survey respondents. If this criteria is not met, only aggregate average is reported.

Figure 76 – Shrinkage rate by sector in Italy. 2017 vs. Average 2015-2016-2017

Legend: ● Food retail   ● Apparel   ● Other sectors
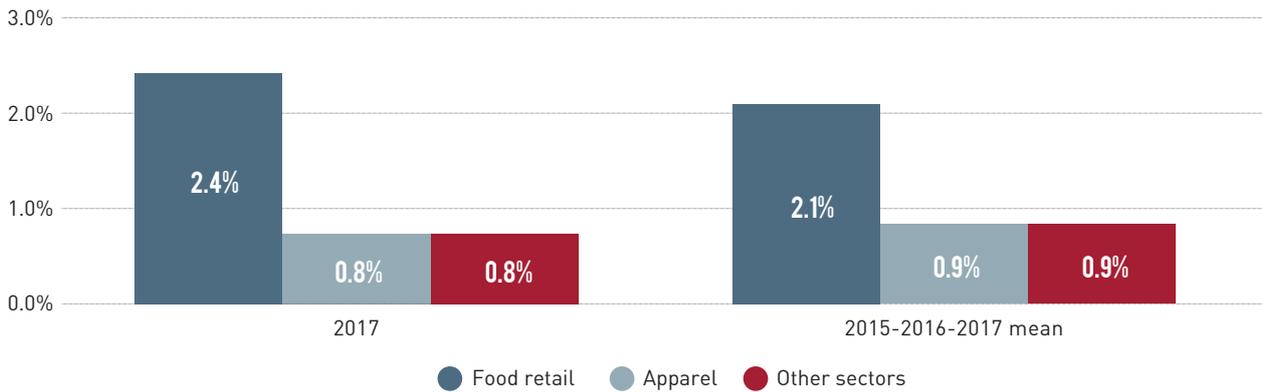
Shrinkage values are unevenly distributed in Italy. Figure 77 below reports the mean shrinkage value per **Italian province** (NUTS 3 area), obtained as the average for the stores in that area for which microdata is available. The highest values for 2017 are recorded by **Genova, Milan, Imperia, Bologna and Naples**. The 2017 map differs from the one reported in previous study on retail crime in Italy (Crime&tech, 2017): the areas recording the highest increase (map on the right) are **North-Western Italy** (Lombardy, most of Piedmont and Liguria) and the area around **Rome** and the **Campania** region. However, it must be noted that the samples are slightly different than that included in Crime&tech (2017). With the exception of Campania, most Southern regions have recorded a decrease. As noted by some retailers, this could also be due to the closure of several stores in the South.

Figure 77 – Shrinkage in Italy by NUTS 3. 2017 and 2016-2017 variation

% Shrinkage (mean) 2017
- 0.0% - 0.3%
- 0.4% - 0.6%
- 0.7% - 1.0%
- 1.1% - 1.7%
- 1.8% - 3.0%
- No info

Variation 2016-2017
- Decrease
- Stable
- Increase
- No info
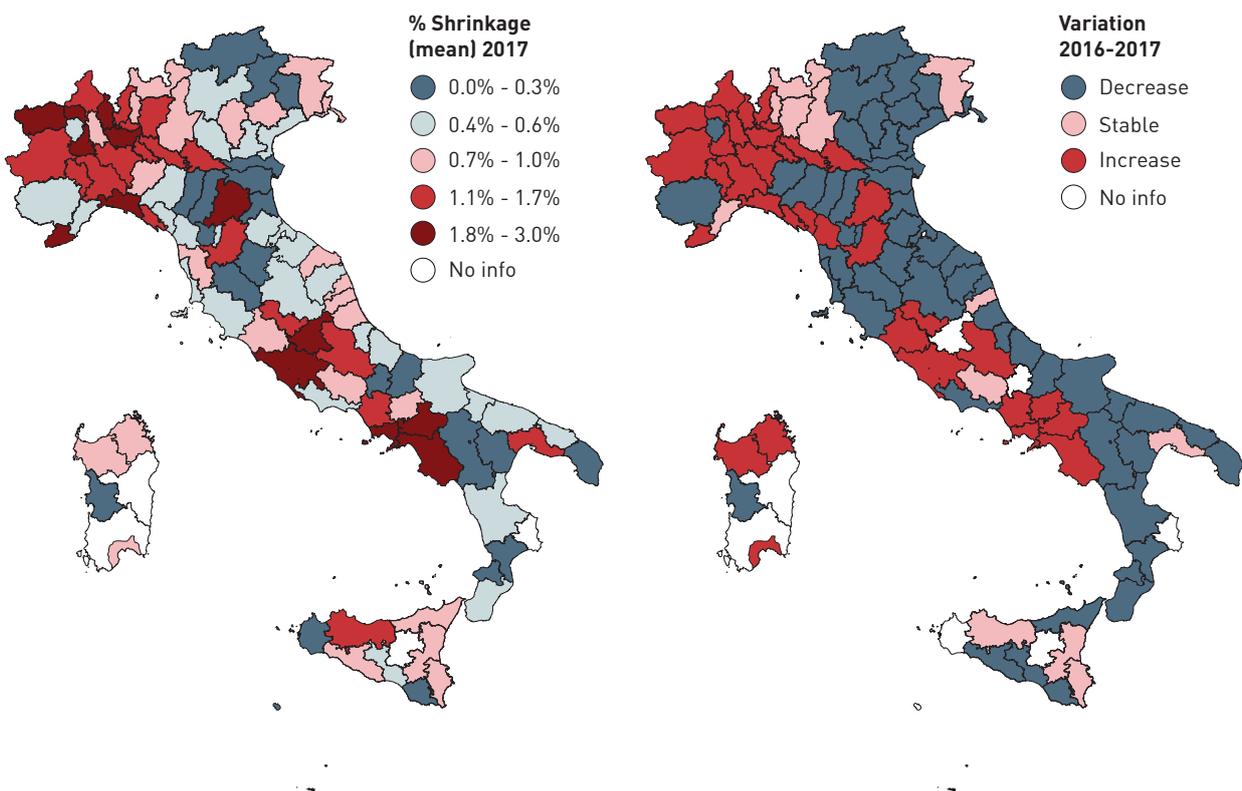
As also highlighted in the previous study (Crime&tech, 2017), shrinkage at province level is not correlated with crimes recorded by the police. However, the latter are correlated with the number of thieves apprehended (or prevented thefts) in retail stores. As suggested by previous literature, if detected theft is a measure of effort to combat crime, then a negative correlation with shrinkage could be hypothesised: the greater the effort, the lower the loss.

Causes of shrinkage

According to all survey respondents, **shoplifting** is **the most frequent cause of shrinkage** in Italy, followed by burglary and, in last instance, robbery. In contrast with the rest of Europe, in Italy all these three types of external theft are believed to be **increasing** by a fraction of retailers. While one out of two retailers perceives an upward trend of shoplifting, robberies and burglaries are reported to increase by one third of survey respondents.

Figure 78 – Most frequent causes of shrinkage in Italy
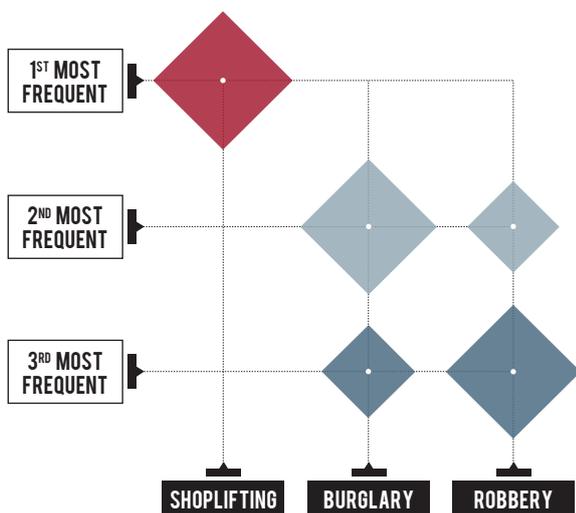
Source: Survey

Figure 79 – Trend of external theft in Italy, as reported by retailers
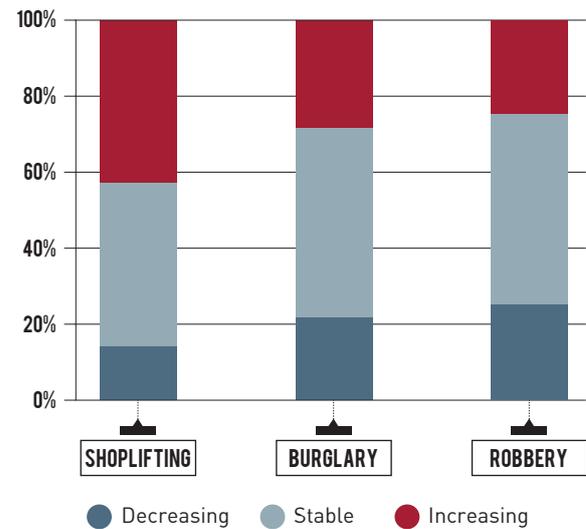
Source: Survey

Retailers' perception seems to contrast with official statistics on recorded crimes. In Italy, public data on crime against businesses, and in particular against the retail sector, is limited to criminal justice statistics on **robberies against business premises** and **theft in business premises**.[41] The latter includes both shoplifting and burglaries. Businesses ("*esercizi commerciali*") means all firms pertaining to both wholesale and retail trade, bars, restaurants, hotels, travel agencies, betting agencies and other types of business. While it is not possible to explicitly distinguish those targeting retail stores and shops, the variable is a good proxy of crimes in the retail sector. Both robberies and thefts **recorded a decrease** in the last three years, following the general trend of crimes against properties (Figure 80).

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41. Respectively "Rapine negli esercizi commerciali" and "Furti negli esercizi commerciali".

Figure 80 – Robberies (left) and thefts against business premises (right) recorded by the police per 100,000 inhabitants
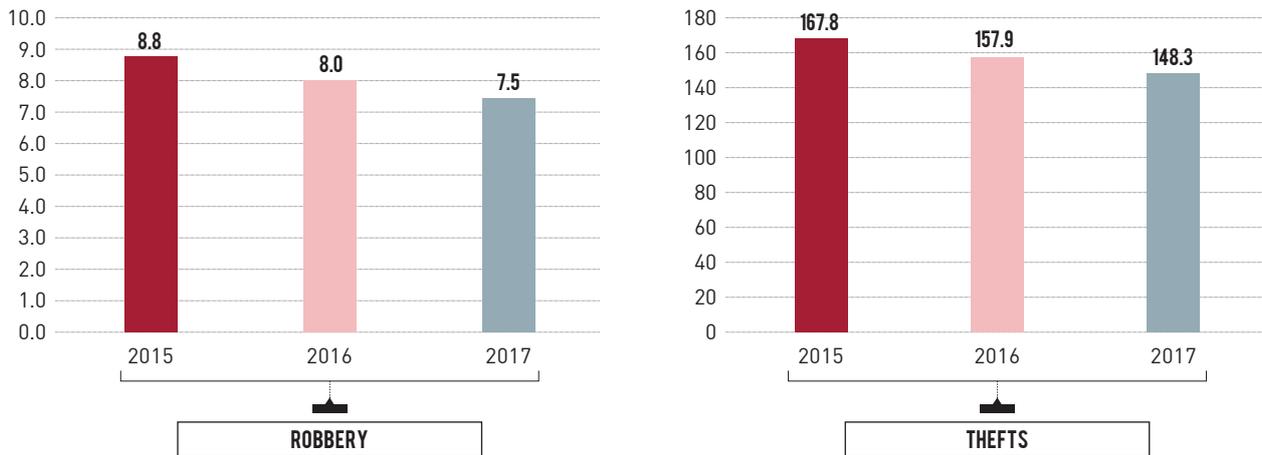
Source: Elaboration of ISTAT data

However, the rate of robberies against business premises in Italy is the highest among all countries covered (where comparable data is available), being two times the rate of Germany and almost four times the French one, with **7.5 robbery incidents** reported to the police per 100,000 inhabitants in 2017. Conversely, the shoplifting rate is among the lowest, with **148.3 events** per 100,000 inhabitants in 2017 (as opposed to 402 per 100,000 inhabitants in Germany and 652 in England/Wales).

The latter value could be influenced by the high dark figure, i.e. the non-reporting rate. The latest (but not very recent) **business crime victimisation survey** carried out in Italy shows that reporting rates are usually higher in Northern Italy: e.g. thefts are reported by about 18% of Northern Italian firms, but only by 12% of Southern firms

(Mugellini & Caneppele, 2012).[42] Instead, it is interesting to note that **4.9% of wholesale and retail trade companies reported falling victim to employee theft** (Mugellini & Caneppele, 2012, page 31).

The figure below shows the distribution of reported crimes at regional level (as a ratio to 100,000 inhabitants, average 2015-2017). The regions with the highest shoplifting rate are **Emilia-Romagna, Tuscany, Liguria and Lombardy** (the provinces being Milan, Florence, Bologna and Rimini). Those with the highest rates of robberies against business premises are Apulia (the area of Foggia, in particular), Latium, Sicily and Piedmont. The influence of the high non-reporting propensity in the South must be taken into account, especially as this relates to shoplifting.

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42. In this case, the data relates to theft suffered by businesses in all sectors. The study does not class the data by crime type and business sector.

Figure 81 – Robberies and thefts against business premises in Italy recorded by the police by Italian region (NUTS 2 area). Average 2015-2016-2017

THEFTS (SHOPLIFTING AND BURGLARY)

ROBBERIES

**Theft against Business Rate
per 100,000 inhab.
Average 2015-2017**

- Very low
- Low
- Medium
- High
- Very high

**Robbery against Business Rate
per 100,000 inhab.
Average 2015-2017**

- Very low
- Low
- Medium
- High
- Very high
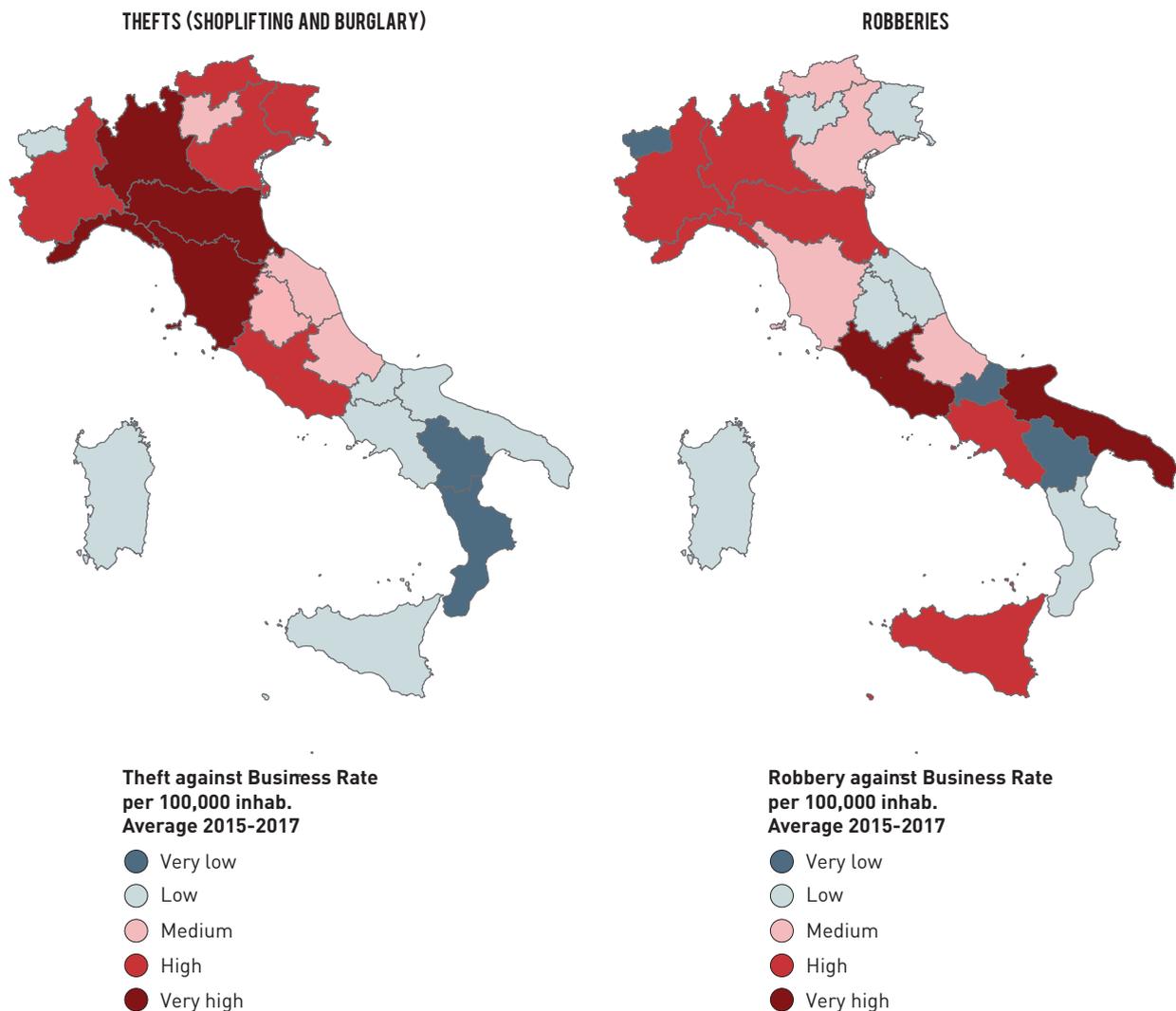
Source: Elaboration of ISTAT data

Seasonality, modi operandi and most stolen products

Both the survey and the analysis of reported news highlight that **winter is the season** where retail crime incidents are more frequent (28% of the 331 events reported through the media in the 2016-October 2018 period).

Along with grab and run, **breakage of tags/labels** and the use of **booster bags** are highlighted as the most frequent *modi operandi* in shoplifting. Most Italian respondents stress the role played by **micro-gangs**, composed by **3-4 persons**, often specialised, well equipped (with detachers, jammers, warehouses to store stolen merchandise) and dedicated to serialisation. The police investigation Napoleon is paradigmatic in this sense (see box).

DISMANTLING A MICRO-GANG SPECIALISED IN SERIAL SHOPLIFTING

In November 2017 the operation *Napoleon*, coordinated by the prosecutor's office of Verona, dismantled an organised criminal group of about 15 persons which for three years were involved in repeated retail crimes in supermarkets in North-Eastern Italy. According to the investigation, in three years the gang was able to steal goods worth more than 500,000 euro, with revenues up to 30,000 euro per month.

Their *modus operandi* was often the same: the group entered the store with gangs of 4-5 members, who, using detachers, removed tags from merchandise, which were then hidden under heavy jackets with large pockets. In this way, they could pass through EAS gates without alarming the staff. Alternatively, they used emergency doors. Outside the supermarket, they were joined by accomplices driving cars with foreign plates (usually German ones).

The group managed a large number of cars and of apartments where stolen products were hidden, before reselling them on the black market. The most stolen items included **expensive wines, liquors, saffron, razor blades and cosmetics**. According to the investigation, the gang chose the stores with a high number of visitors so as to better hide, and that offered underground parking (Gazzetta delle Valli, 2017; Veronasera, 2017).

In terms of most stolen products, Italian retailers highlighted the same categories stressed by foreign colleagues (see Part 1). In particular, in Food retail, **alcoholic drinks** (expensive wines and liquors, especially), canned food (in particular **tuna fish**) and **cosmetics & perfumes**. Some highlighted the theft of meat and cheese with the purpose of reselling on the black market to individuals and/or restaurants and catering firms.

Most stolen products in terms of value – Food retail

1ST MOST FREQUENT	ALCOHOLIC DRINKS
2ND MOST FREQUENT	CANNED FOOD/TUNA FISH
3RD MOST FREQUENT	COSMETICS & PERFUMES
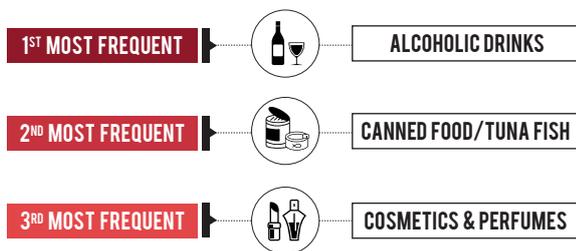
Source: Survey

TUNA FISH AND COFFEE OUT-OF-STOCK: PREVENTING SHOPLIFTING... BY CLEARING SHELVES

In April 2019, a manager of a supermarket in Ferrara, Emilia-Romagna, frustrated by the repeated victimisation suffered by its store, decided to clear the shelves with tuna-fish and coffee and stop selling these items. Instead of the products, he put a banner asking customers to help him to prevent thefts by reporting any suspicious behaviour to the staff: a sort of peer-to-peer monitoring.

The supermarket manager estimated a loss of 30,000 euro in 2018 attributable to the theft of canned fish and coffee, "an amount which we could spend to hire new personnel or improving customer care", he said (La Nuova Ferrara, 2019).

According to survey respondents, Italian retailers spend on average **0.5% of their turnover** in security measures (average 2015-2016-2017). This value remained fairly constant in the three years considered.

CCTV, followed by **EAS and alarms** are the countermeasures most frequently adopted. However, their employment is not uniform across stores: EAS are reported to be used in all stores by 70% of respondents, while, e.g., armed and unarmed guards are employed in a minor fraction of point of sales, the same for undercover and RFID.

Figure 82 – Percentage of retailers in Italy adopting specific security measures

Measure	Percentage
CCTV	91.2%
TAGS (EAS)	82.4%
THIRD-PARTY ALARM	82.4%
UNARMED SG	76.5%
FOOT TRAFFIC COUNT	70.6%
DOORS SEALS	70.6%
INTERNAL ALARM	64.7%
DOORMEN	64.7%
LOCKED/SHOWCASES	61.8%
UNDERCOVER	58.8%
ADVANCED ACCESS	55.9%
RFID	50.0%
ARMED SG	50.0%
LOCKED BOXES	47.1%
SPIDER WRAPS	38.2%
ALARMED CABLES	38.2%
STAFF TRAINING	29.4%
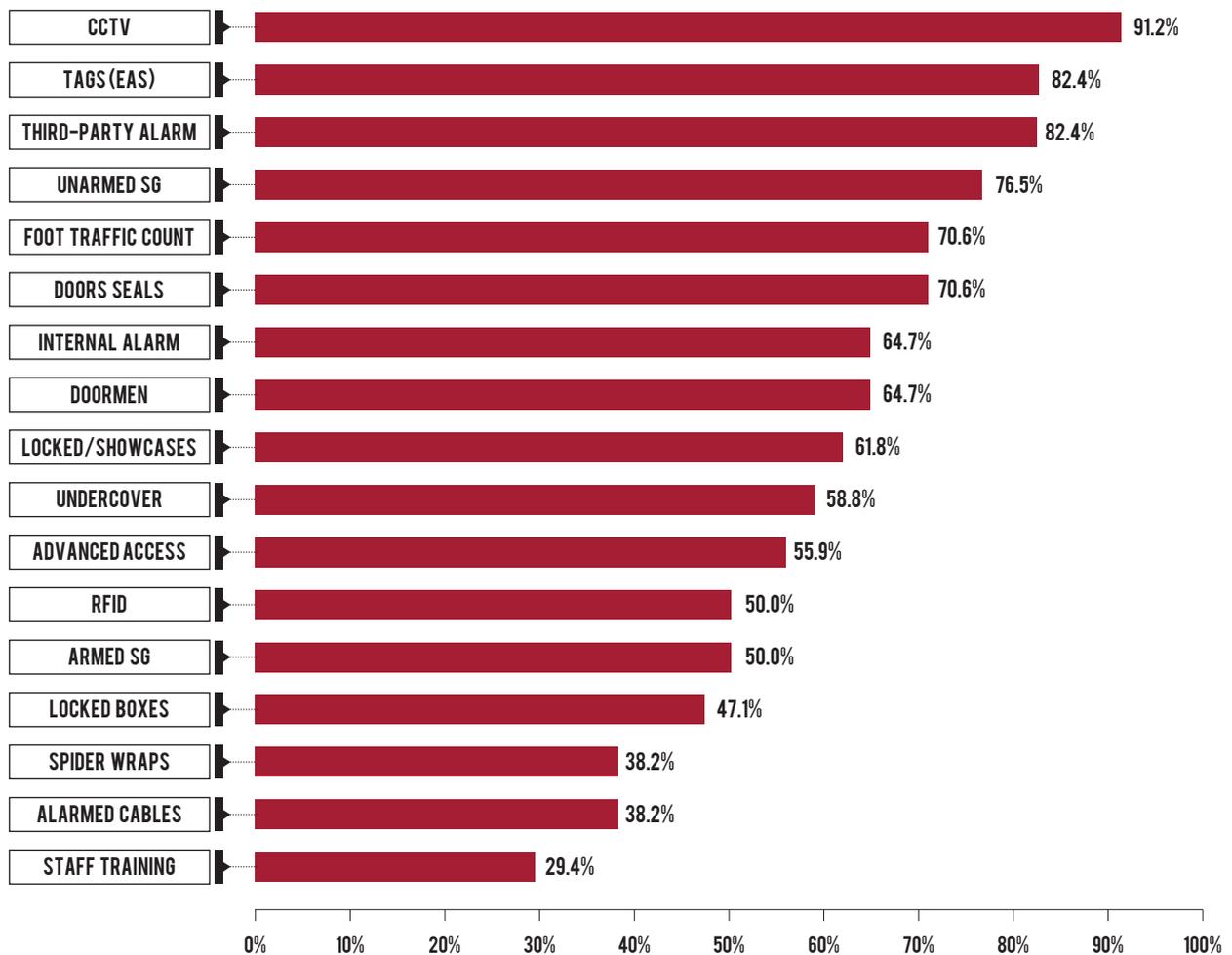
Source: Survey

Figure 83 – Percentage of security measures usage across stores

Security Measure	All stores	50-99% stores	0-49% stores
ARMED SG	18%	6%	76%
UNARMED SG	15%	19%	65%
UNDERCOVER		10%	90%
CCTV	52%	26%	23%
THIRD-PARTY ALARM	54%	14%	32%
DOORS SEALS	67%	21%	13%
FOOT TRAFFIC COUNT	67%		33%
LOCKED/SHOWCASES	38%	24%	38%
RFID	24%	12%	65%
TAGS (EAS)	71%	21%	7%
ALARMED CABLES	23%	23%	54%
SPIDER WRAPS	38%	24%	38%
STAFF TRAINING	90%		10%

● All stores   ● 50-99% stores   ● 0-49% stores
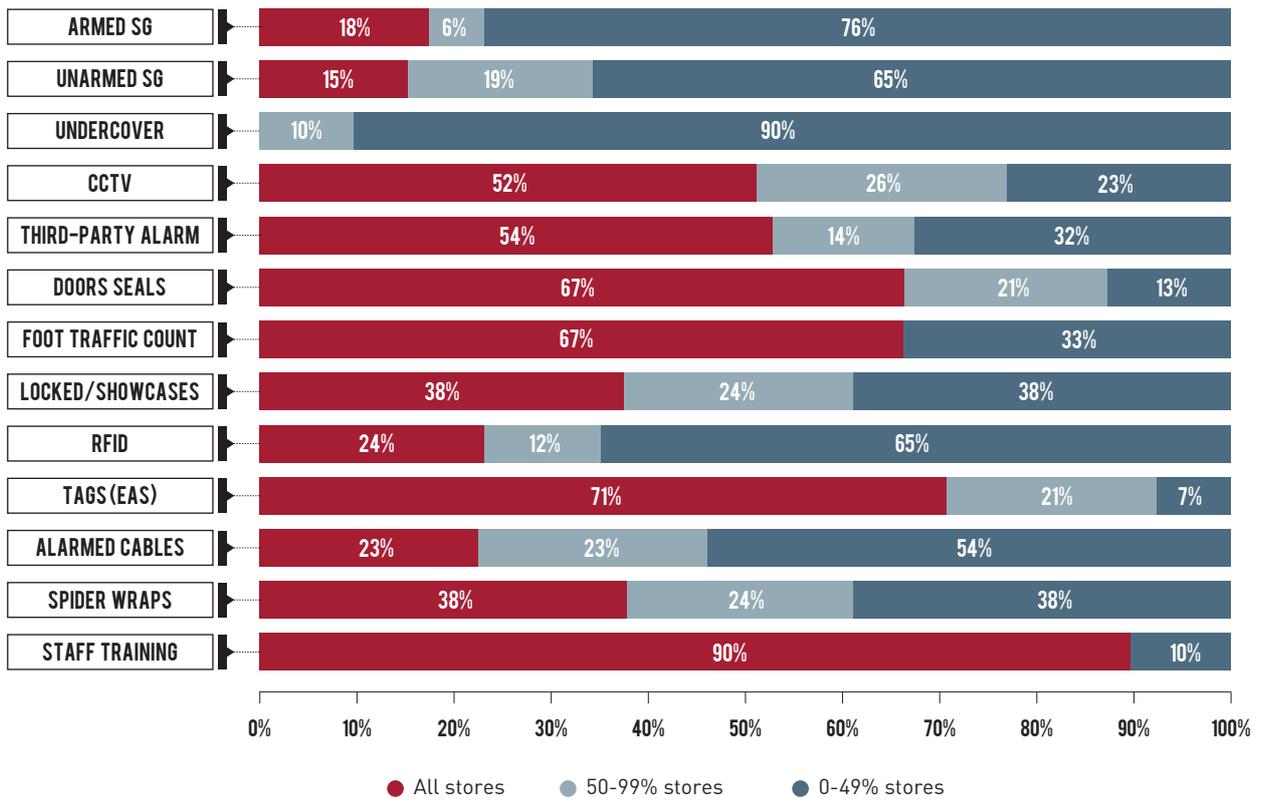
Source: Survey

POLAND

Shrinkage rate and economic impact of retail losses

According to the survey, the shrinkage rate (2015-2016-2017 average) experienced by Polish retail companies is **1.5% of their turnover** (including both known and unknown shrinkage).[43-44] Given the existing differences in sampling and coverage rate, this value has to be taken cautiously if compared to other countries.

Considering the turnover of Polish retail companies, the total monetary cost of retail losses can be estimated at about **1.7 billion euro**.[45] This is due to estimated shrinkage and expenditure in security (1.1 billion and 570 million euro respectively). Most of this value can be attributed to the **Food retail and Cash & Carry sector**, followed by **Department stores** (12.4% of the total costs) and **Gas/petrol station retailers** (9.3% of the total costs) (Figure 84).

Figure 84 – Estimated total economic cost in Poland by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE *(m euro, estimate)*	EXPENDITURE VALUE *(m euro, estimate)*
Food retail and Cash & Carry	271	78.8
Department store	211	89.9
Gas/petrol station retailer	159	144.3
Electronics	6	12.7
Do-it-yourself	62	66.0
Sport goods	5	1.7
Apparel	40	19.3
Footwear and accessories	11	1.3
Beauty & Cosmetics	13	10.9
Pet goods	5	2.1
Other retail	345	147.1
Total Shrinkage Value Total Expenditure Total Cost Of Retail Losses	1,128 - 1,702	- 574.1 -

Source: Elaboration of survey and Bureau van Dijk's data

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43. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

44. The available information does not allow a significant split of this value for different economic sectors

45. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Poland The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Poland with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

Causes of shrinkage

Three out of four Polish respondents reported **shoplifting** as **the most frequent cause of shrinkage**, followed by robbery and burglary. Half of the retailers involved also identifing shoplifting as the only type of external theft which show an **increasing trend**, while robbery was mainly perceived as stable and burglary as decreasing.

Specific data on crime against businesses is not available in Poland, therefore this study analyses the **total crimes against property** trend. Although this category groups together a variety of crime types, it can provide some insight into the country's crime environment. As is the case in many other countries, the data shows a decrease in the last four years with a significant fall in values between 2016 and 2018 **(–22,6%)** (Figure 87).

Figure 85 – Most frequent causes of shrinkage in Poland

Source: Survey

Figure 87 – Crimes against property recorded by the police in Poland, per 100,000 inhabitants

Source: Komendy Głównej Policji
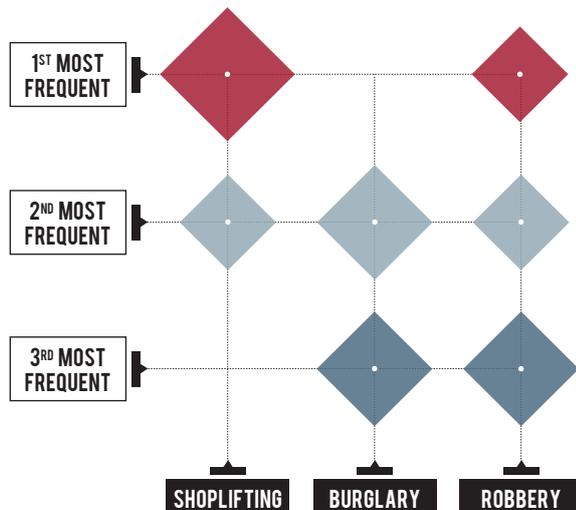
Figure 86 – Trend of external theft in Poland, as reported by retailers

Source: Survey

Seasonality, modi operandi and most stolen products

Media analysis identified **115 relevant news reports** in Poland between 2016 and October 2018. Almost **one out of three events occurred in winter (28.1%)**. Half of the retailers involved in the survey also identified springtime as a risky period.

The business sector most affected was the **Food retail** (50.4% of the events recorded in Poland). The number of crimes against the **Beauty & Cosmetics** (3.5%) and **Gas/petrol stations** (2.6%) sectors is also worthy of mention.

Criminals in many cases stole only cash and money (37.9%). Differences emerged in the modus operandi. In Poland, criminals mainly **operated alone** (53.9%) and crimes are much less likely to be committed by **gangs of 3 or more people** (5.2%) compared to almost all of the other countries (11% on average).

The most stolen items (in terms of value) as reported by retailers are **alcoholic drinks** (wines, spirits, liquors), **electronic devices**, **tobacco products**, and **meat**.

Expenditure in security and adopted counter-measures

Polish retailers spend in security measures on average about **1.1% of their turnover** (average 2015-2016-2017 value). This value is the highest recorded among the surveyed countries. According to survey results, various security countermeasures and solutions are widely adopted by the large majority of the respondents. The most frequently used are **CCTV, alarms, guards, EAS, RFID and staff training**.

However, these countermeasures are not equally implemented. Alarms are the only solutions used in all stores by the respondents. Half of the retailers use tags (EAS) in all their stores, a value that is significantly lower than the average across the countries considered in the study. The diffusion of **CCTV** is instead in line with the average recorded in other countries. **Security guards** and **RFID** are used in a minority of their points of sale.

Figure 88 – Percentage of security measures usage across stores
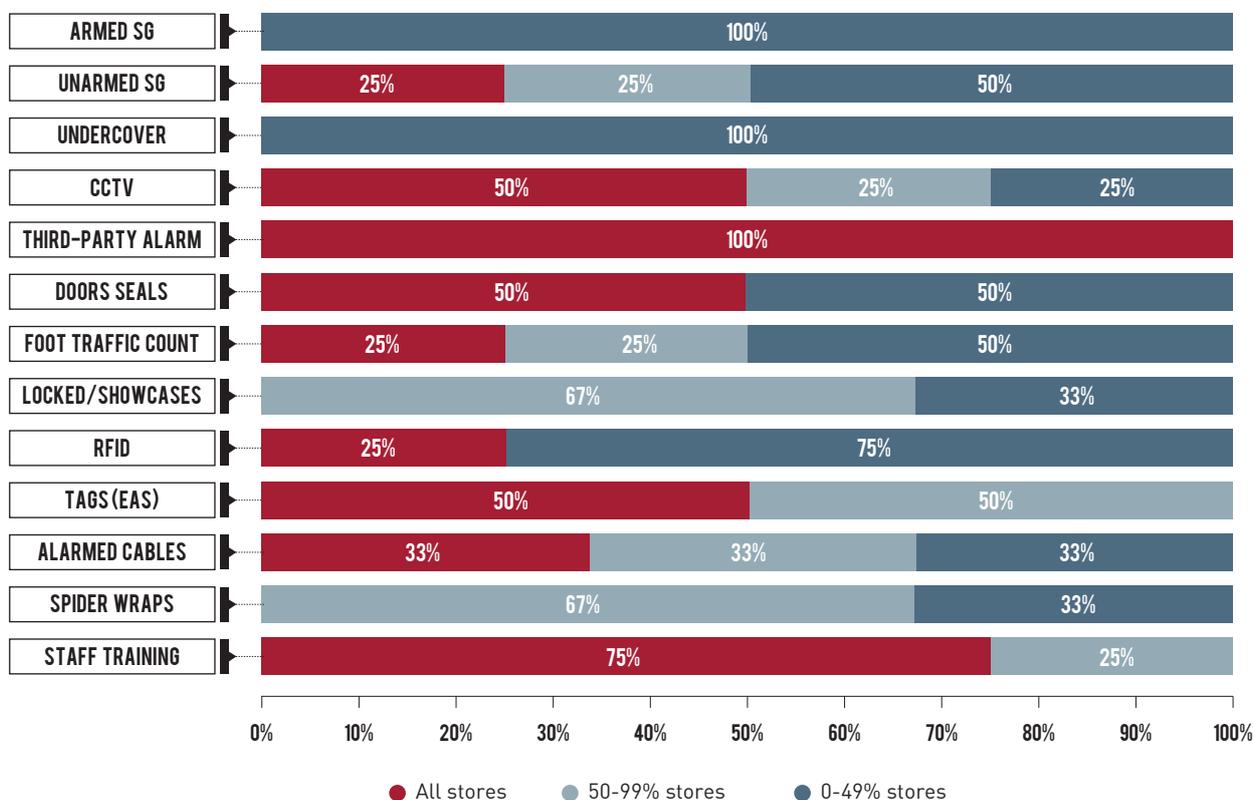
Source: Survey

USE OF TECHNOLOGICAL TOOLS BY SHOPLIFTERS

Some retailers highlighted the use of low-cost tag detachers by criminals often bought on the internet, while others reported the use of handmade jammers by thieves to shut down the anti-theft gates and remove obstacles to theft.

Besides de-tagging or neutralising existing security measures, tools can also be used to limit the intervention of security staff. For example, in June 2018 a group of three individuals entered a store and, while two of them were distracting the staff, the third one grabbed several phones before walking towards the exit. One woman identified the shoplifter and tried to chase him. However, the offender use gas to stop her and run away with the accomplices (TVPINFO, 2018).

SPAIN

Shrinkage rate and economic impact of retail losses

According to the survey, Spanish retail companies experienced, on average, a shrinkage rate equivalent to **2.0% of their turnover** in 2017 (including both known and unknown shrinkage).[46] Given the differences in terms of sampling and coverage rate, this data has to be taken cautiously if compared to other countries. This value is significantly higher than the one (0.8%) reported by a survey conducted by AECOC in 2017 among Spanish retailers (AECOC, 2018b). However, it must be highlighted that the two values are not fully comparable as the definitions and the methodologies used are different.[47]

Considering the turnover of Spanish retail companies, the monetary estimation of their total shrinkage value is equivalent to **2.5 billion euro** per year, with **Food retail and Cash & Carry** accounting for almost half of this value (Figure 89)[48] On the other hand, expenditure in security measures are estimated at around **1.1 billion euro**. Therefore, the total cost of retail losses can be estimated at 3.6 billion euro per year (around 78 euro per capita per year).

Figure 89 – Estimated total economic cost in Spain by business sector. 2017

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)	EXPENDITURE VALUE (m euro, estimate)
Food retail and Cash & Carry	1,132	328.7
Department store	341	145.5
Gas/petrol station retailer	189	171.6
Electronics	9	18.7
Do-it-yourself	91	96.4
Sport goods	22	7.1
Apparel	204	98.8
Footwear and accessories	23	2.7
Beauty & Cosmetics	15	12.7
Pet goods	21	9.1
Other retail	496	211.4
Total Shrinkage Value Total Expenditure Total Cost Of Retail Losses	2,542 - 3,645	- 1,102.7 -

Source: Elaboration of survey and Bureau van Dijk's data

46. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

47. As an example, the AECOC study calculates the shrinkage considering the company purchase price of goods, which is significantly lower than the selling price considered in our study.

48. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in Spain. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in Spain with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

In line with other countries, losses are significantly higher for the Food retail sector. The shrinkage rate (2015-2016-2017 average) **in Food retail was 2.6% of turnover** against the **1.3% in other sectors**. The value recorded in 2017 for Food retail is in line with the average of the three years, while data for other sectors is lower (0.9%) (Figure 90).

**Figure 90 – Shrinkage rate in Spain. Food retail vs. Other sectors. Average 2015-2016-2017**
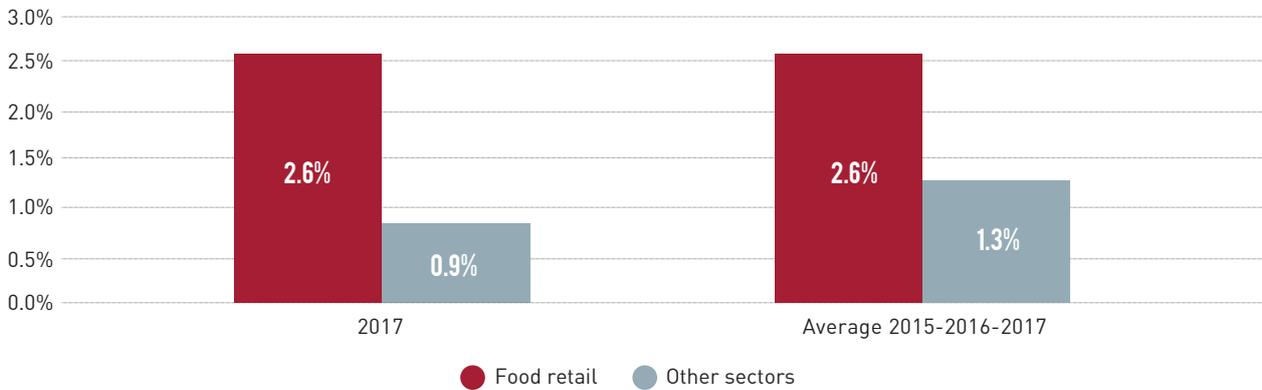

Source: Survey

Causes of shrinkage

According to the majority of the respondents in Spain, **shoplifting** is the **most frequent cause of shrinkage**, followed by robbery and burglary. Shoplifting is also the only type of external theft which shows an increasing trend according to the involved retailers. On the contrary, burglary and robberies are mainly perceived as decreasing, particularly robberies, or are experiencing a stable trend.

Figure 91 – Most frequent causes of shrinkage in Spain
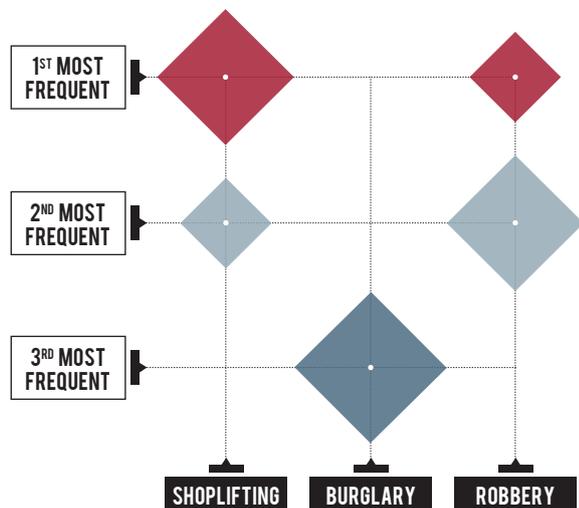
Source: Survey

Figure 92 – Trend of external theft in Spain, as reported by retailers
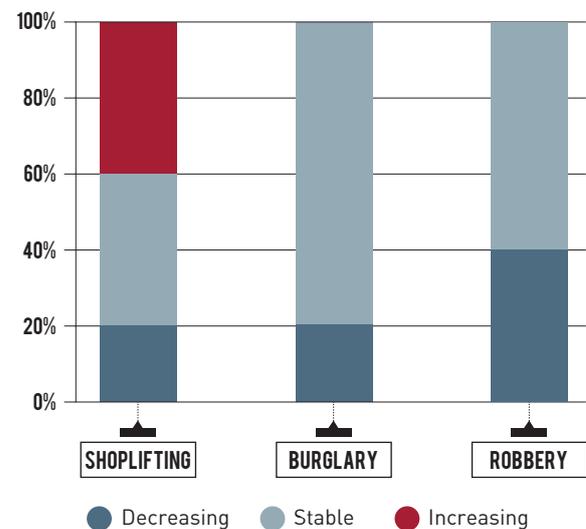
Source: Survey

This general trend is also confirmed by official police statistics, which show a decreasing trend for robberies of residential and business premises: −7% between 2016 and 2017. However, this data refers to a broad category that does not only include crimes against businesses. Therefore, the results should be considered cautiously so as to avoid any overstatement of retail crimes.

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Figure 93 – Robberies of business and residential premises recorded by the police in Spain per 100,000 inhabitants
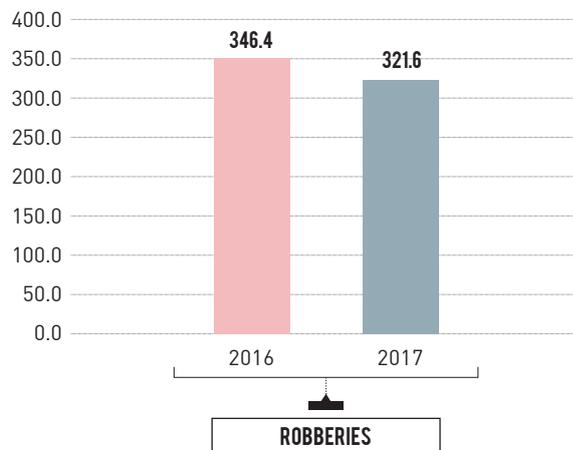
According to a victimisation survey administered to a sample of European companies (in all economic sectors), only 6.4% of theft by customers suffered by Spanish companies are reported to the police. This value is lower than the European average (15.3%) (Dugato et al., 2013). To improve the reporting rate, the Spanish Ministry of the Interior recently developed a project to facilitate the reporting procedures also allowing the reporting "*in situ*" (AECOC, 2018a).

Seasonality, modi operandi and most stolen products

Analysis of more than 1,600 news reports has allowed us to identify **153 relevant crime incidents** occurring in Spain between 2016 and October 2018 (48.4% burglaries, 34.6% robberies and 17.0% shoplifting). While constituting a subset of the retail crimes committed, they provide interesting input on *modus operandi* and offenders together with the inputs provide by retailers in the survey.

Retailers claimed that most of the crime events are concentrated during winter. However, unlike many other countries, in Spain the majority of news on crimes against retail sector are concentrated in **spring** (29.7%). Most crime incidents collected from news reports are concentrated in the autonomous municipalities of **Andalusía, Madrid, Galicia and Valencia**, while a lower number of incidents were recorded in the Balearic and Canary.

With respect to *modi operandi* **and targets**, most incidents are perpetrated **without using weapons** (69.9% of cases in the news). Regarding shoplifting, grab and rub and breakage of antishoplifting tags are the most common *modi operandi*.

The sector most affected is **Electronics** (30.1% of all mapped incidents), while for the rest of the countries it is Food retail (excluding Italy where it is Apparel). Focusing on the Food retail sector, **alcoholic drinks** (wines, spirits, liquors) were the most stolen items (in terms of value) as reported by retailers. **Cheese & meat** and **cosmetics & perfumes** follow as items largely targeted by criminals. These results are confirmed also by the AECOC survey that also mentions electronic accessories and household hardware as goods most frequently stolen (AECOC, 2018b).

Most stolen products in terms of value – Food retail

1ST MOST FREQUENT	ALCOHOLIC DRINKS
2ND MOST FREQUENT	CHEESE & MEAT
3RD MOST FREQUENT	COSMETICS & PERFUMES
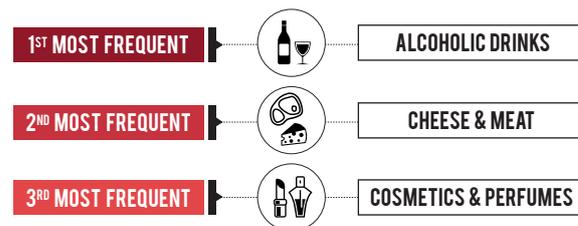
## *Expenditure in security and adopted counter-measures*

On average, Spanish retailers spend about **0.7% of their turnover** on security measures (average 2015-2016-2017 value), with a lower rate in Food retail (0.6%) when compared to other sectors (1.2% on average). This result is confirmed by the study by AECOC reporting an overall value of about 0.8% of the turnover, divided in 0.5% of expenses and 0.3% of investments in crime prevention (AECOC, 2018b).

According to survey results, **CCTV, alarms, unarmed guards and staff training activities** are the countermeasures most frequently adopted by retailers in Spain. In particular, about three out of four respondents adopt these solutions in their stores. These solutions are followed by **tags (EAS)** and other measures intended to secure directly the products, such as **spider wraps** (used by about 60% of the respondents).

Countermeasures are not evenly distributed across stores. Only **EAS, staff training, and door seals** are used in all stores by the respondent who adopt these solutions. The use of **CCTV** is higher than the average across the countries considered in the study: about 60% of the respondents adopt this solution in all their stores (46.4% is the average). **RFID** is used by less than one third of the respondents and only in a minority of their points of sale.

Figure 94 – Percentage of security measures usage across stores

Measure	All stores	50-99% stores	0-49% stores
ARMED SG			100%
UNARMED SG	40%	20%	40%
UNDERCOVER			100%
CCTV	60%	20%	20%
THIRD-PARTY ALARM	60%	20%	20%
DOORS SEALS	100%		
FOOT TRAFFIC COUNT	33%	33%	33%
LOCKED/SHOWCASES	33%	33%	33%
RFID			100%
TAGS (EAS)	100%		
ALARMED CABLES	66,7%		33,3%
SPIDER WRAPS	50%	50%	
STAFF TRAINING	100%		

● All stores ● 50-99% stores ● 0-49% stores

Source: Survey

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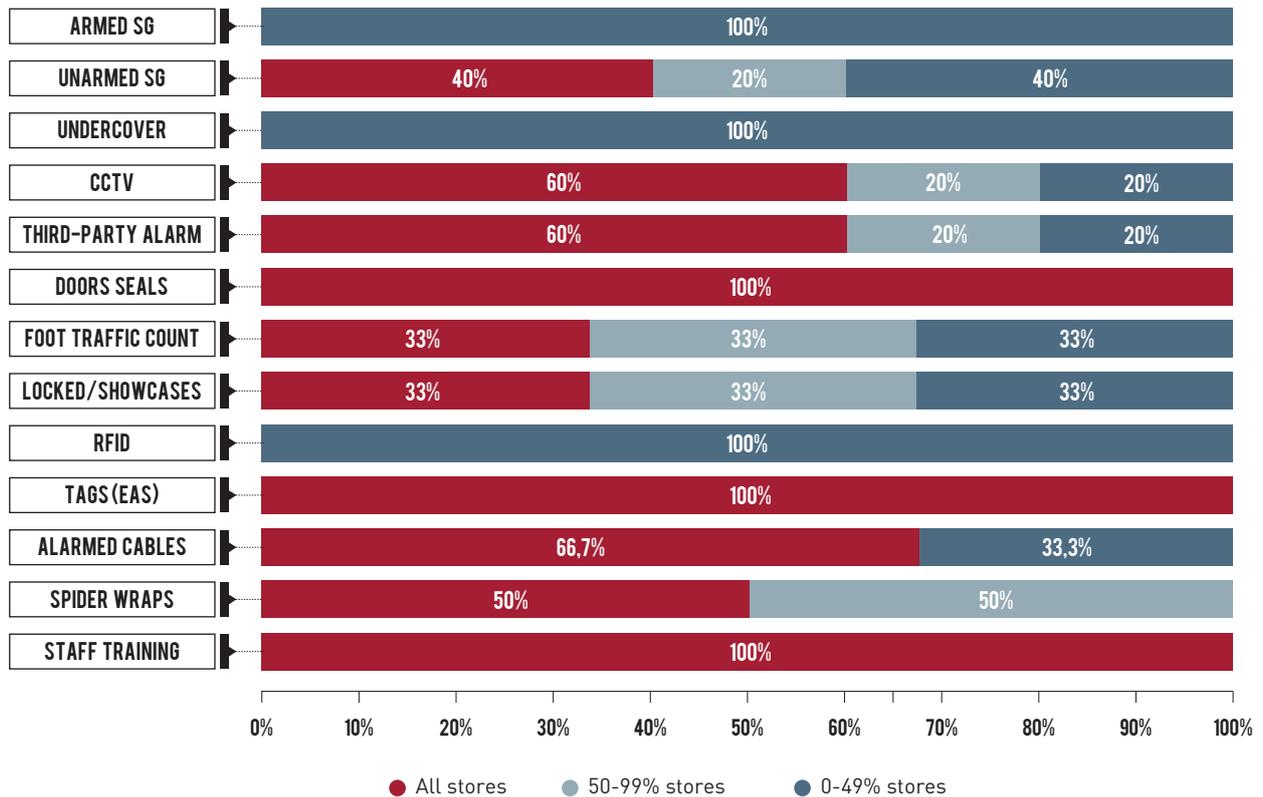
MICRO-GANGS AND SHOPLIFTING IN SPAIN

According to survey respondents, micro-gangs have emerged as one the biggest shoplifting threats, alongside individual shoplifters. They typically comprise two or three well-organised and well-equipped individuals (often with jammers, detachers and booster bags), who are in the habit of targeting specific retail stores and products (NRF, 2018).

The phenomenon is also evident in Spain. According to AECOC, shoplifting is now the main cause of retail sector losses in Spain and micro-gang and criminal group involvement in these crimes has increased in the last few years (AECOC, 2018b). In our survey, several Spanish retailers highlighted that these groups follow a *modus operandi* characterised by seriality and extreme organisation. Some of the 153 news reports collected in Spain confirm these patterns, particularly as this relates to groups targeting the Food retail, Apparel and Electronics sectors.

In October 2018 in Tarragona, three shoplifters pretended to be customers and purchased several items. After paying for the products, two of them went back to the shop aisles and filled bags with a number of items, while the third gang member distracted the employee. The three men were later arrested thanks to CCTV images (LaVanguardia, 2018).

In an Electronics store in Madrid in December 2017, two people stole 10 mobile phones worth 10,000 euro while the security guard was not looking. The shoplifters used their teeth to break security cables and spider-wraps (LaVanguardia, 2017). Still in Madrid, another micro-gang of three members was arrested for theft in March 2017. One of the three thieves entered an Apparel store and removed security tags from a pair of trousers with the aim to steal them. The other two accomplices were waiting for him in a car outside the store, but, "unfortunately", the security guard noticed the guy and stopped him. The guard held the thief until the police showed up (El Norte de Castilla, 2017).

News reports on shoplifting cases occurred in Spain reveal that sometimes internal actors, such as employees, are the perpetrators of such crimes. For example, in July 2018 an employee of a supermarket in Pamplona and his partner stole a safe with 7,000 euro in it. They got arrested thanks to CCTVs footage provided by the store and thanks to the help of the citizens who saw the man fleeing with the safe (Morales, 2018).

UNITED KINGDOM

The United Kingdom is, together with Italy, the only country in Europe which, thanks to a relative abundance of data (if compared to other countries) and the interest of public authorities, **research on retail crime** – and on crime against business in general – is consistent. This short country profile will not be able to cover all previous literature, while for a review it is suggested to look at, among others, Home Office (2013, 2014, 2015), Hopkins and Gill (2017), Beck (2016) and Bamfield (2018).

Shrinkage rate and economic impact of retail losses

According to the survey, UK companies operating in the retail sector recorded, on average recorded a shrinkage rate equivalent to **1.1% of their turnover** (including both known and unknown shrinkage (2015-2016-2017 average).[49] Available data does not allow sectoral breakdown.[50]

Shrinkage values are evenly distributed across the UK. Figure 95 below reports the mean shrinkage value per **UK region** in 2017, given by the average of the stores located in the area for which microdata is available. The highest values recorded are in the **Bristol/Bath, Leicestershire and Inner London (West) areas**. The highest variation between 2016 and 2017 was observed in Bristol/Bath, followed by Leicestershire and West Yorkshire.

Figure 95 – Shrinkage in the UK by NUTS 3 area, 2017
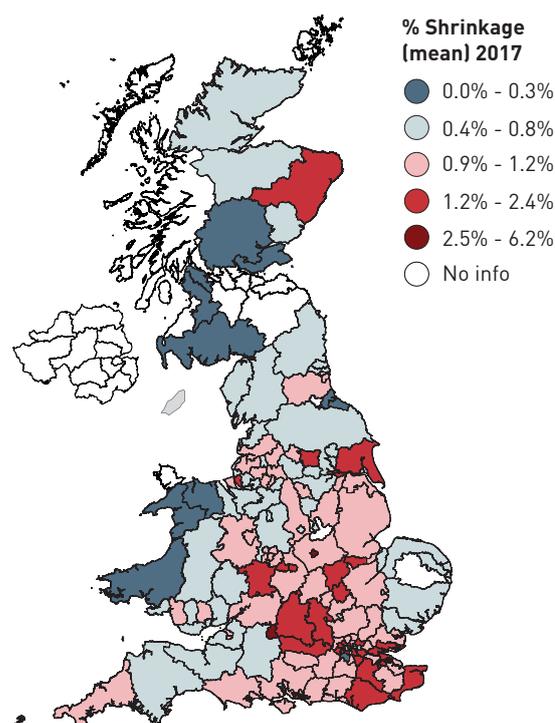
Source: Microdata

In terms of the monetary value of retail losses, shrinkage can be estimated at **8.9 billion euro** per year, with the highest values recorded in Food retail and Department stores.[51] Expenditure in security measures can, on the other hand, be estimated at **3.5 billion euro**. By summing the two figures, the total cost attributable to retail losses in the UK can be estimated at almost **12.4 billion euro** per year (around 190 euro per capita per year) – the highest monetary loss among the countries covered by the study.

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49. The overall shrinkage rate may be higher in those countries with more respondents belonging to those sectors affected by a higher level of known shrinkage due to a wider range of products sold, a more complex and fragmented supply-chain, and a higher fraction of perishable goods (e.g. Food retail).

50. Because of issues related to data sensitivity/privacy and statistical relevance, shrinkage rates are reported only for sectors with more than 2 survey respondents. If this criterion is not met, only aggregate average is reported.

51. Value estimated by multiplying the average sectoral shrinkage rate in the 11 countries covered by the study by the turnover of the same sector in the UK. The latter is calculated by summing the turnover of all the companies operating in the sector and registered in the UK with a turnover of more than 300,000 euro. For more details see Section 7 in the main body of the report.

**Figure 96 – Estimated total economic cost in United Kingdom by business sector. 2017**

BUSINESS SECTOR	SHRINKAGE VALUE (m euro, estimate)	EXPENDITURE VALUE (m euro, estimate)
Food retail and Cash & Carry	3,876	1125.7
Department store	1,662	708.8
Gas/petrol station retailer	176	160.1
Electronics	3	7.0
Do-it-yourself	272	287.6
Sport goods	79	25.7
Apparel	593	287.7
Footwear and accessories	88	10.4
Beauty & Cosmetics	21	17.7
Pet goods	33	14.4
Other retail	2,063	879.7
Total Shrinkage Value **Total Expenditure** **Total Cost Of Retail Losses**	8,866 - 12,391	- 3,524.8 -

Source: Elaboration of survey and Bureau van Dijk's data

Causes of shrinkage

According to all survey respondents in the UK, **shoplifting** is the most frequent cause of shrinkage, followed by robberies as second most frequent reason and finally burglaries. Shoplifting is also the only type of external theft which, according to half of respondents, is **increasing**, while for all interviewed retailers both robberies and burglaries are mostly decreasing.

Trend of retail crimes as emerging from the survey is confirmed by data on crimes recorded by police. In the last three years the UK observed an **increase of shoplifting** according to official statistics (available for England and Wales only[52]), reaching a value of 6.5 reported incidents per 1,000 inhabitants in 2017 (Figure 98). No statistics are available of burglaries against business premises and robberies against businesses only (data also includes residential robberies and robberies committed against individuals).

Figure 97 – Trend of external theft in the United Kingdom, as reported by retailers

Source: Survey

Figure 98 – Shoplifting reported to the police per 100,000 inhabitants in England and Wales
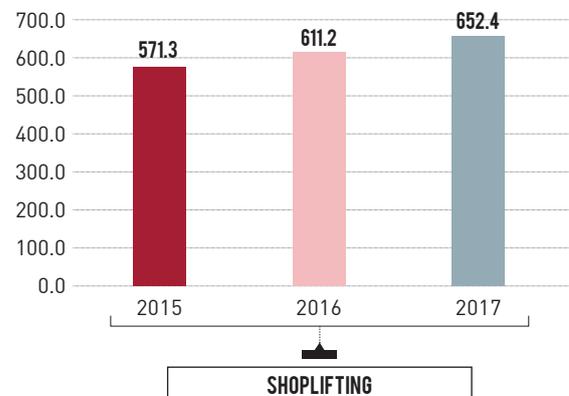
Source: Elaboration of Police-recorded crime statistics – Office for National Statistics (ONS)

52. In Scotland no crime statistics specifically targeting retail (or business premises) are publicly available.

However, this result has to be read in conjuction with business crime surveys. Although these exercises are very infrequently carried out in most parts of the world, in the UK **five Commercial Victimisation Surveys (CVS) sweeps** have been carried out to date by the Home Office – in 1993, 2002, 2012, 2013 and 2014. By taking all the methodological and sampling differences across CVS waves into account, Hopkins (2016) provides a longitudinal analysis of commercial victimisation trends. His findings suggest a decrease for most retail crimes. The percentage of wholesale/retail firms affected by customer theft fell from 47% in 1993 to 20% in 2014, while burglaries fell from 36% to 8%. There was no substantial change to the number of firms falling victim to robbery.[53]

The contrast between CVS and police-recorded crime statistics – and in particular the increase in recorded theft – may be due to an increase in the retailer reporting rate (or in the number of incidents detected by the police), or to changes in police recording practices (Home Office, 2015). In this regard, it should be noted that the figures from official statistics are lower than those from CVS.

Table 8 – Crime against wholesale/retail sector in UK CVS: change in prevalence rates

TYPE OF CRIME	% CHANGE IN PREVALENCE (1993−2014)
CUSTOMER THEFT	−57%
BURGLARY (INCLUDING ATTEMPTS)	−77%
ROBBERY	0%
ANY CRIME AGAINST WHOLESALE/RETAIL SECTOR	−48%
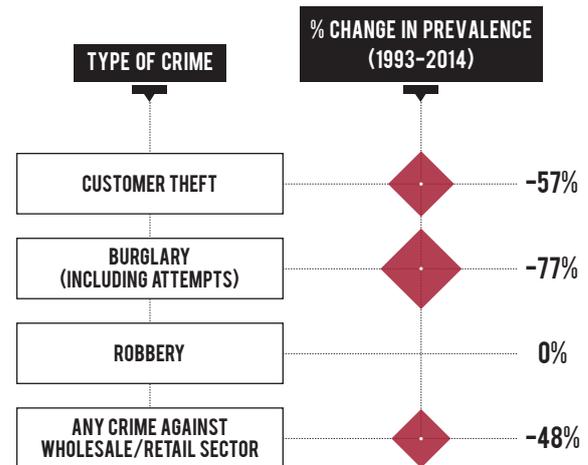
Source: Hopkins (2016)

When analysing the territorial distribution of shoplifting recorded by police, the NUTS 2 area that saw the highest average 2015-2016-2017 rate (per 100,000 inhabitants) is **Inner London (West)**, followed by **Tees Valley and Durham** and **East Yorkshire and Northern Lincolnshire**. In absolute terms, West Midlands, West Yorkshire and Greater Manchester recorded the highest values in 2017 (Figure 100).

Figure 99 – Crime against wholesale/retail sector in UK Commercial Victimisation Surveys (CVS): Prevalence rate trends

Source: Elaboration of Hopkins (2016)

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53. These results are comparable to the British Retail Consortium (BRC) 2014 crime survey, which also reported a slight decrease in customer theft (https://www.gov.uk/government/publications/crime-against-businesses-findings-from-the-2014-commercial-victimisation-survey/crimes-against-businesses-findings-2014#crime-against-wholesale-and-retail-premises).

Figure 100 – Shoplifting recorded by the police per 100,000 inhabitants in England and Wales by NUTS 2 area. Average 2015-2016-2017
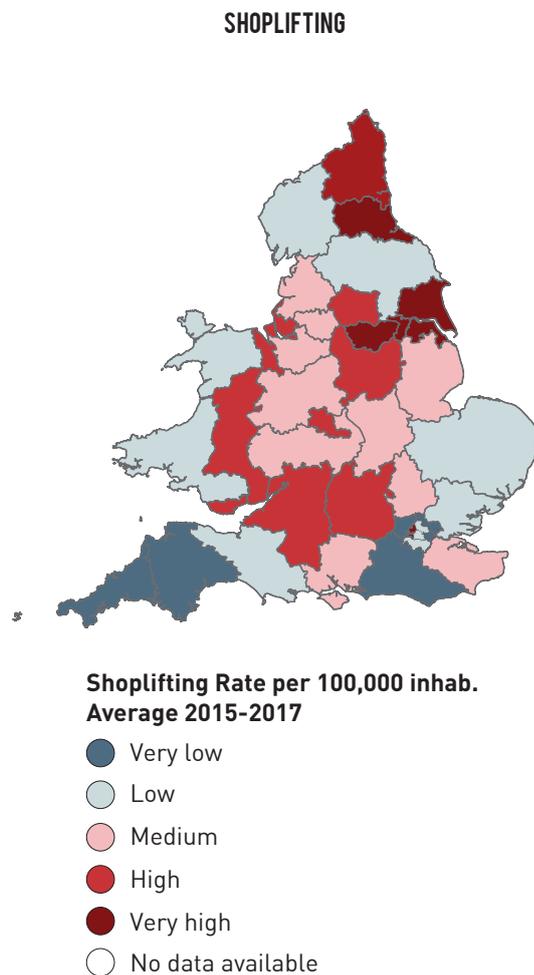
SHOPLIFTING

Shoplifting Rate per 100,000 inhab. Average 2015-2017

- Very low
- Low
- Medium
- High
- Very high
- No data available

Source: Elaboration of Police recorded crime statistics – Office for National Statistics (ONS)

Seasonality and modi operandi

News reports on **147 retail crime incidents** (59.2% robberies, 32% burglaries, 8.8% shoplifting) were collected from the media and analysed in the UK in the 2016-October 2018 period. These are a subset of the retail crimes reported to police, and a further fraction of those occurring, but provide useful insights on the patterns and *modus operandi* of criminals in retail environments. In terms of the distribution of the mapped incidents across areas, **Inner London (West)** saw the highest concentration.

As in many other countries, in the UK, Food retail recorded the highest number of retail crime news reports. Most incidents occur in **winter** (especially robberies). Grab and run, booster bags and removal of tags are the most frequent *modi operandi* of shoplifting as reported by interviewed retailers. Among profiles of shoplifters, together with **micro-gangs** of 2-3 persons (see Part 1), UK retailers also highlighted individuals – sometimes customers who become thieves by frustration or opportunity, especially in presence of self-scan and self-checkout systems (see box below).

SHRINKAGE AND SELF-CHECKOUTS

The issue of shoplifting committed by individual customers is particularly relevant when dealing with self-checkout systems. According to several of the retailers interviewed, especially in the Food retail, and some recent research, the presence of self-checkout machines significantly increases the likelihood of shrinkage.

According to recent UK research, customers are three times more likely to steal when using self-service checkouts than steal straight off the shelves (Beck & Hopkins, 2017). The same analysis found that the introduction of mobile scanning raised the rate of loss up to almost 4.0% of turnover (Beck & Hopkins, 2017).

However, as noted by most retailers, although in the short-term the use of self-checkouts may impact negatively in terms of losses, it is supposed to increase profit in the long-term thanks to increased customer loyalty, to the saving on personnel costs and to the possibility of moving employees from tills to aisle activity, surveillance and to customer care.

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