



**Reiner Quick**

**Department of Accounting and Auditing  
Darmstadt University of Technology**

**Forensic Service Supply by Audit Firms:  
Classification, Market, Methods, and Prior Research**

**October 19, 2017  
Málaga**

# Agenda



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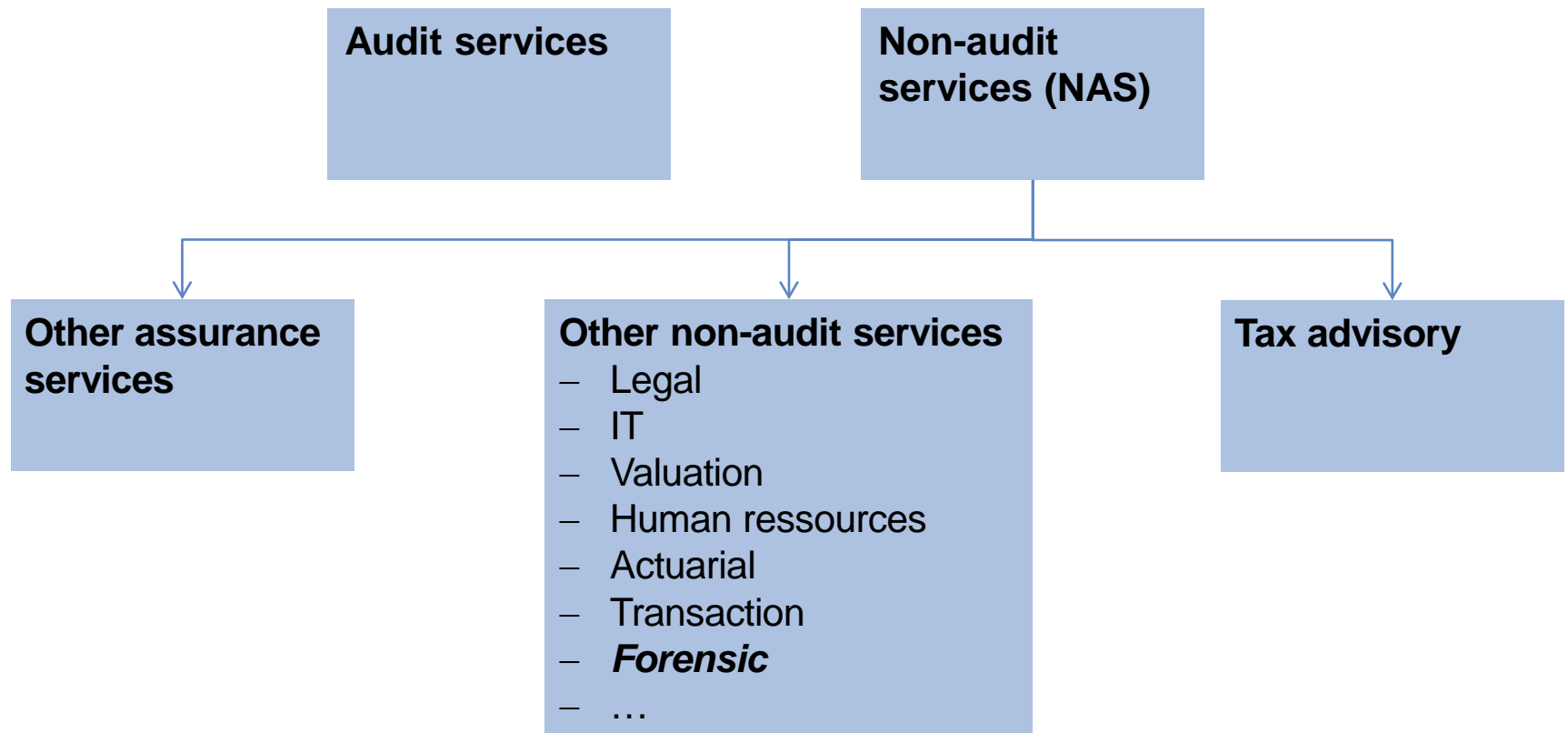
- New opportunities for audit firms
- Forensic Services portfolio
- From auditing to Forensic Services
- The market for Forensic Services
- Methods for Forensic Services
- Forensic Services research
- Summary

Motivation

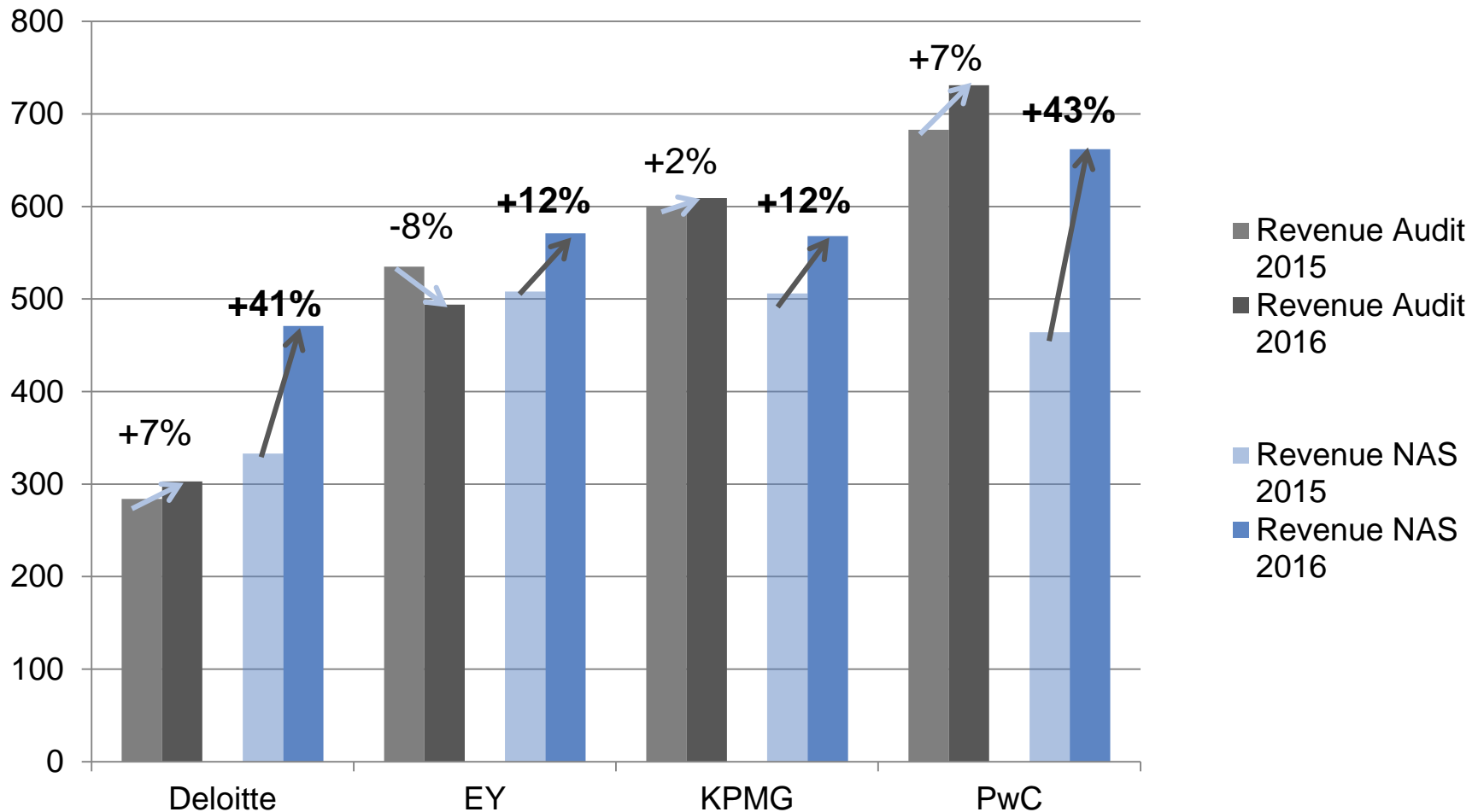
# NEW OPPORTUNITIES FOR AUDIT FIRMS

# New opportunities for audit firms

## Services offered by audit firms



# New opportunities for audit firms



# New opportunities for audit firms



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## 2014 EU-regulation adds further challenges

- Black-list of prohibited NAS
  - Provision of *non-prohibited NAS* is more attractive
    - Forensic Services are *non-prohibited NAS*
- NAS fee cap
  - Provision of NAS worth more than 70% of three-year-average audit fees is prohibited
    - Provision of NAS to *non-audit clients* is essential

# New opportunities for audit firms



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## Article 5.1 EU-regulation: Prohibited NAS

- Tax services
- Management services
- Bookkeeping and preparing financial statements
- Payroll services
- Designing and implementing internal control or risk management procedures
- Valuation services
- Legal services
- Internal audit services
- Financial services
- Promoting, dealing in, or underwriting shares in the audit entity
- Human resource services

# New opportunities for audit firms



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## Development of NAS-audit-fee-ratio for major German stock indices from 2009 to 2013

DAX30		MDAX		SDAX		TecDAX	
<i>Year</i>	<i>Ratio</i>	<i>Year</i>	<i>Ratio</i>	<i>Year</i>	<i>Ratio</i>	<i>Year</i>	<i>Ratio</i>
2009	76.1%	2009	60.5%	2009	70.6%	2009	58.2%
2010	67.8%	2010	54.8%	2010	78.9%	2010	56.7%
2011	70.1%	2011	58.0%	2011	68.1%	2011	52.7%
2012	82.5%	2012	58.2%	2012	59.0%	2012	63.4%
2013	77.3%	2013	53.8%	2013	64.2%	2013	50.6%
Average	74.5%	Average	57.0%	Average	67.8%	Average	56.2%

Source: Laudemann et al. (2016)



Practice I

# FORENSIC SERVICES PORTFOLIO

# Forensic Services portfolio



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## Key Forensic Services (1/5)

1

**Anti-Fraud and Compliance  
Management**

2

**Forensic Investigations**

3

**Dispute and Litigation Support**

4

**Forensic Technology**

## Key Forensic Services (2/5): Anti-Fraud and Compliance Management

- 1
- Prevention of / protection against white-collar crime
  - Assess, develop and implement processes, controls and infrastructure to mitigate risk and stay in compliance

2

Forensic Investigations

3

Dispute and Litigation Support

4

Forensic Technology

## Key Forensic Services (3/5): Forensic Investigations

1

**Anti-Fraud and Compliance  
Management**

Uncover the facts in actual cases

- Identification of offenders
- Quantification of damages
- Assessment of responsibility

From collecting information that will stand up in front of court to preparing full documentation

2

3

**Dispute and Litigation Support**

**Forensic Technology**

4

## Key Forensic Services (4/5): Dispute and Litigation Support

1

### Anti-Fraud and Compliance Management

- Legal counsel
- Risk and damage analysis
- Preparation of court proceeding
- Expert witness testimony
- Arbitration
- Out-of-court settlement, e.g. through mediation

3

2

### Forensic Investigations

### Forensic Technology

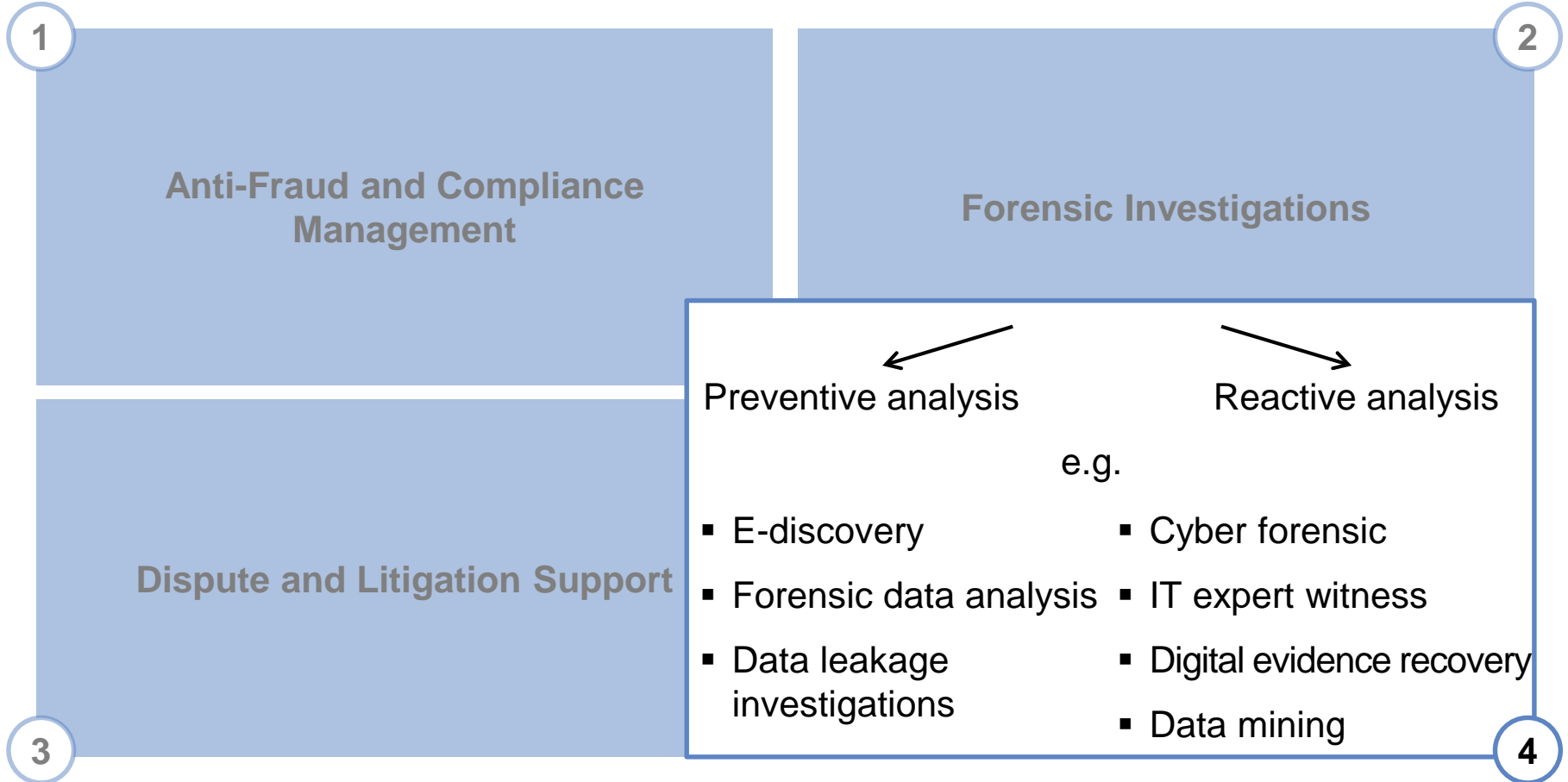
4

# Forensic Services portfolio



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## Key Forensic Services (5/5): Forensic Technology



# Forensic Services portfolio



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## Other services include (1/4)

**Corporate Intelligence**

**Forensic Due Diligence**

**Data Analytics**

**Data Security**

**Anti-bribery and  
corruption  
services**

**Anti-money  
laundering  
services**

**Cyber insurance  
services**

# Forensic Services portfolio



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## Other services include (2/4): Corporate Intelligence

- Background checks
- Business partner screenings
- Executive integrity assessment
- Compliance checks, e.g. of suppliers

Forensic Due Diligence

Data Analytics

Data Security

Anti-bribery and  
corruption  
services

Anti-money  
laundering  
services

Cyber insurance  
services

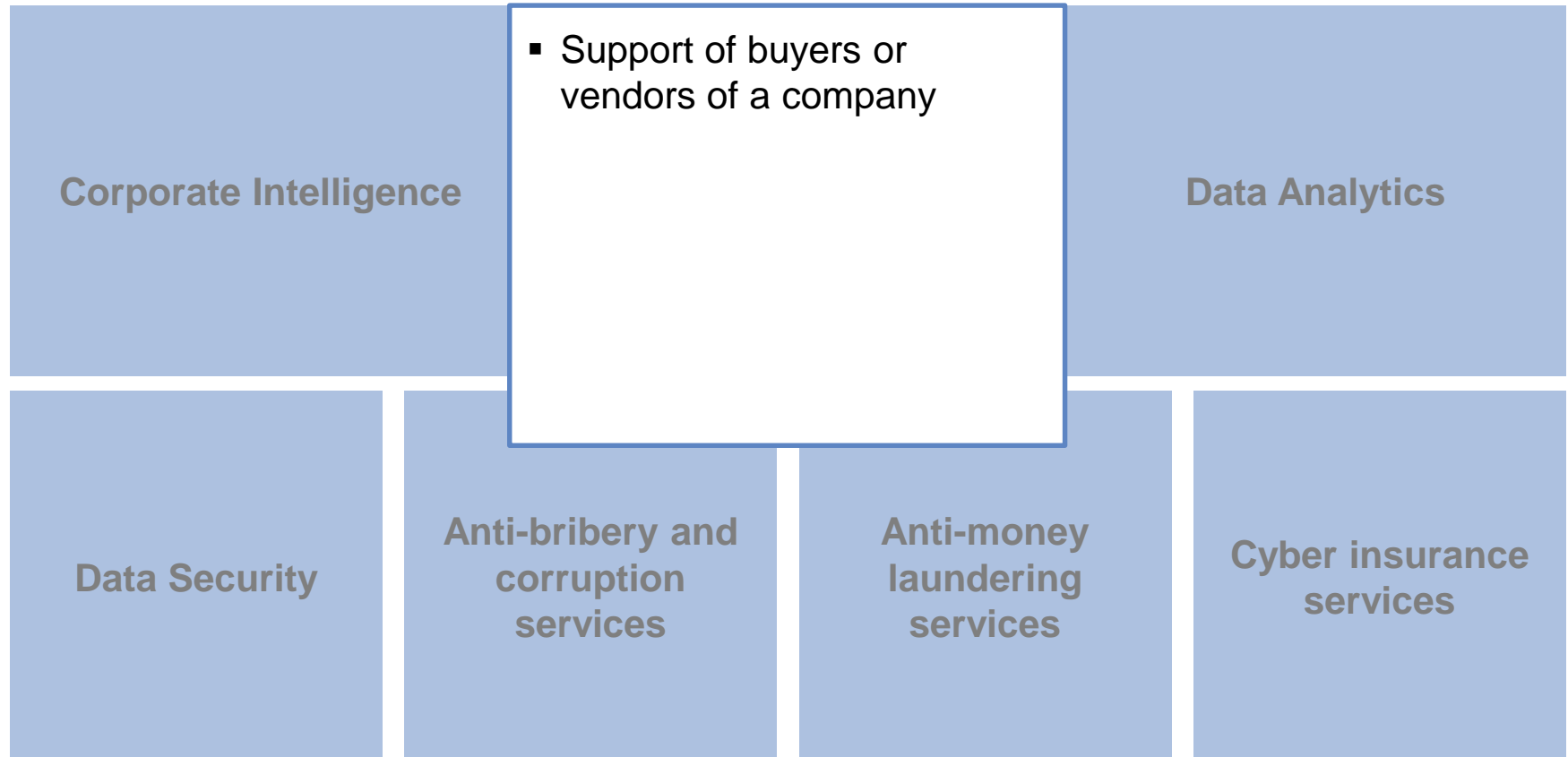


# Forensic Services portfolio



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## Other services include (3/4): Forensic Due Diligence



# Forensic Services portfolio



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## Other services include (4/4): Data Analytics

Corporate Intelligence

Forensic Due Diligence

- Rapidly identifying and extracting information associated with a business risk

Data Security

Anti-bribery and  
corruption  
services

Anti-money  
laundering  
services

Cyber insurance  
services

# Forensic Services portfolio covered Topics include:



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ESPIONAGE PRACTICE

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Published 9:01 PM ET Mon, 7 Aug 2017 | Updated 9:41 PM ET Mon, 7 Aug 2017



recode



Department of Justice  
Office of Public Affairs

## Net Sales Company Pre Embezzlement and Fraud

...ent was sentenced to nine months in prison for the Southern District of New York.

...d at trial, James Miller, a CEO of a sales company. As part of a plea agreement, he was sentenced to nine months in prison for the Southern District of New York.

## Economic Sanctions and the Nuclear Issue: Lessons From North Korean Trade

BY: RUEDEGER FRANK  
SEPTEMBER 18, 2017 | COMMENTARY

## Formula One: Force India owner Vijay Mallya faces new money laundering accusations



Vijay Mallya leaves Westminster Magistrates' Court in central London on Oct 3, 2017. PHOTO: AFP

...ndia wants to extradite from Britain on fraud charges. Faces further accusations of money laundering with some funds allegedly going to his Force India Formula One motor racing team, a London court heard on Tuesday.

The 61-year-old flamboyant Indian liquor and aviation tycoon was first arrested by British police on behalf of Indian authorities in April.

He was rearrested on Tuesday after India laid new charges against him.

## THE RELENTLESS GROWTH OF CYBERCRIME

27 September 2016  
Press Release



Europol's 2016 Internet Organised Crime Threat Assessment (IOCTA)

Europol's 2016 Internet Organised Crime Threat Assessment (IOCTA) identifies an expanding cybercriminal economy exploiting our increasingly internet-enabled lives and low levels of digital hygiene. Informed largely by Europol's law enforcement and cooperation partners, the report identifies eight main cybercrime trends and provides key recommendations to address the challenges.

The volume, scope and material cost of cybercrime all remain on an upward trend and have reached very high levels. Some EU Member States now report that the recording of cybercrime offences may have surpassed those associated with traditional crimes. An expansion both in the number of cybercriminal actors and opportunities to engage in highly profitable illegal activities has partly fuelled this trend, as has the development of new cybercrime tools in areas such as ATM fraud and mobile malware. However, a large part of the problem relates to the development of new cybercrime tools in areas such as ATM fraud and mobile malware. However, a large part of the problem relates to the development of new cybercrime tools in areas such as ATM fraud and mobile malware. However, a large part of the problem relates to the development of new cybercrime tools in areas such as ATM fraud and mobile malware.

Europol's Director Rob Wainwright said: "The collective security solutions for which we are working further..."



CORRUPTION NEWS  
LATEST CW REPORT SHOWS MORE RESISTANCE TO CORRUPTION

The 2017 Analysis of Corruption Trends (ACT) Report, released today by Corruption Watch, points to a positive trend of whistleblowing around the country and a greater willingness on the part of the public to join the fight against corruption. The number of corruption complaints received in the first six months of 2017, at 2,744, represents a significant 9.5% increase on the same period last year.

The ACT report indicates an escalating intolerance to corruption across all sectors as since Corruption Watch was launched in January 2012, over 20,000 reports have been received from the public. This growing outrage at the unacceptable levels of corrupt practices in South Africa also relates to its widening impact on the lives of ordinary people participating in the same period last year.

David Lewis, executive director of Corruption Watch, commented: "Corruption cannot be effectively tackled without an active citizenry willing to blow the whistle. Our reporting is evidence of a courageous, committed and outraged public. This is a good portent for the future."

## Toshiba confirms SEC investigation as accounting woes spread to US

Securities commission and justice department examining 'accounting problem' at US units, says Japanese corporation, amid profit-padding crisis



Toshiba has said its American books are being examined by the SEC and Justice Department. Photograph: Reuters

Toshiba has announced its US businesses are cooperating with authorities over alleged accounting irregularities and is to cut a further 3,000 jobs.

The company has been shaken by a profit-padding scandal in which senior management for years systematically pushed subordinates to cover up weak financial figures.

## ST VIDEOS



## Price-gouging during Hurricane Irma highlights a sad truth – consumer fleeing is the new normal

Ramsi Woodcock, The Conversation  
15.09.2017, 01:24

FACEBOOK LINKEDIN TWITTER EMAIL PRINT

Since Hurricane Irma put Florida in its sights, there have been thousands of reports of price gouging on everything from water to gasoline.

SPONSORE The most notable complaint was not, however, the one alleging a \$72 charge for a six-pack of water. Rather, it was the \$3,200 reportedly asked by Delta for a ticket out of Florida.



Traffic backs up in the north-bound lanes of Interstate 75 near the Georgia-Florida state line as people flee Hurricane Irma, Sept. 8, 2017, in Jennings, Florida. JOHN BARNWELL/AP

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Price gouging



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Price gouging

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News

Department of Justice  
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Monday, September 11, 2017

**THE RELENTLESS GROWTH OF CYBERCRIME**

27 September 2016  
Press Release

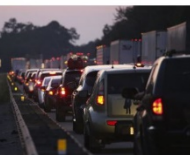
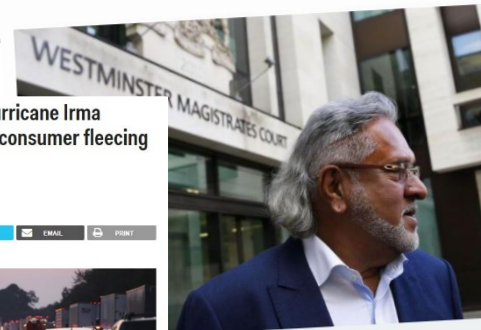
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RANK 2017 | COMMENTARY

Formula One: Force India owner Vijay Mallya faces new money laundering accusations



Traffic backs up in the north-bound lanes of Interstate 75 near the Georgia-Florida state line as people flee Hurricane Irma, Sept. 8, 2017, in Jennings, Florida. (AP Photo/Chris Wedel)

Toshiba confirms SEC investigation as accounting woes spread to US

Securities commission and justice department at US units, says Japanese corporation, analyst



Toshiba has announced its alleged accounting irregularities. The company has been shy about its financial figures.

Price-gouging during Hurricane Irma highlights a sad truth — consumer fleeing is the new normal

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ST VIDEOS

- 3 Singaporeans in Brussels have front row seats at Golden Jubilee celebrations
- Hundreds of sky lanterns light up Taipei
- North Korea art market heats up
- PepsiCo's beverage sales fall

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The 61-year-old Indian businessman, Vijay Mallya, was first arrested by British police on behalf of Indian authorities in April. He was rearrested on Tuesday after India laid new charges against him.

# Forensic Services portfolio covered Topics include:

## Formula One: Force India owner Vijay Mallya faces new money laundering accusations



Indian tycoon Vijay Mallya leaves Westminster Magistrates' Court in central London on Oct 3, 2017. PHOTO: AFP

PUBLISHED OCT 5, 2017, 5:54 PM SGT

LONDON (REUTERS) - Indian businessman Vijay Mallya, who India wants to extradite from Britain on fraud charges, faces further accusations of money laundering with some funds allegedly going to his Force India Formula One motor racing team, a London court heard on Tuesday.

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### ST VIDEOS



Recommended by Outbrain

### SPONSORED CONTENT

Price gouging

Money laundering and financing of terrorism



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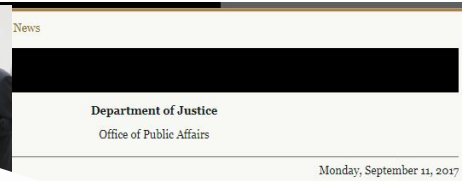


Google's new CEO, Sundar Pichai, is expected to be a more hands-on manager than his predecessor, Larry Page.



Economic Sanctions Nuclear Issue in North Korea

North Korea's (DPRK) nuclear issue is so serious that it has been seen as a threat to the region's stability.



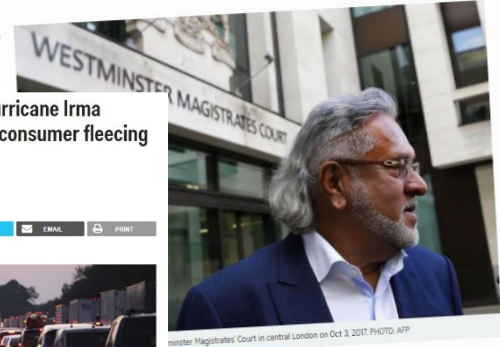
Many President Sentenced to Prison for Filing False Tax Returns

President Trump's Tax Division and the IRS are cracking down on tax evasion and filing false tax returns.

THE RELENTLESS GROWTH OF CYBERCRIME

Europe's 2016 Internet Organised Crime Threat Assessment (IOCTA) report highlights the growing threat of cybercrime.

Formula One: Force India owner Vijay Mallya faces new money laundering accusations



Westminster Magistrates' Court in central London on Oct 3, 2017. PHOTO: AFP

LONDON (REUTERS) - Indian businessman Vijay Mallya, owner of Force India Formula One team, was extradited from Britain on fraud charges, faces further accusations as he is allegedly going to his Force India Formula One motor race in India.

The 61-year-old Indian businessman and aviation tycoon was first arrested by British police on behalf of Indian authorities in April. He was re-arrested on Tuesday after India laid new charges against him.

Toshiba confirms SEC investigation as accounting woes spread to US

Securities commission and justice department at US units, says Japanese corporation, and Toshiba has announced its alleged accounting irregularities.



The company has been struggling with financial figures. Toshiba has announced its alleged accounting irregularities.

Price-gouging during Hurricane Irma highlights a sad truth — consumer fleeing is the new normal

Ramsi Woodcock, The Conversation  
15.09.2017, 01:24

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## JUSTICE NEWS

Department of Justice

Office of Public Affairs

FOR IMMEDIATE RELEASE

Monday, September 11, 2017

### California Internet Sales Company President Sentenced to Prison for Embezzlement and False Tax Returns

A Manhattan Beach, California resident was sentenced to nine months in prison for wire fraud and filing false tax returns, announced Acting Deputy Assistant Attorney General Stuart M. Goldberg of the Justice Department's Tax Division and Acting U.S. Attorney Alana W. Robinson for the Southern District of California.

According to the evidence presented at trial, James Miller, a California attorney, was the president and managing partner of MWRC Internet Sales LLC, an online sales company. As part of his duties, Miller had check signing authority for the company's business bank account. From January 2009 through October 2012, Miller wrote unauthorized checks to himself from MWRC's account, embezzling more than \$300,000. Miller used this money to pay for personal expenses and did not report it on his individual tax returns for 2009 through 2012, causing a tax loss of approximately \$58,000.

In addition to the term of prison imposed, U.S. District Judge George Wu ordered Miller to serve two years of supervised release and to pay \$64,329 in restitution to the Internal Revenue Service (IRS).

Acting Deputy Assistant Attorney General Goldberg and Acting U.S. Attorney Robinson commended special agents of FBI and IRS Criminal Investigation, who conducted the investigation, and Assistant U.S. Attorney Rebecca Kanter and Trial Attorney Benjamin Weir of the Tax Division, who prosecuted the case.

Additional information about the Tax Division's enforcement efforts can be found on the division's [website](#).

#### Topic(s):

Tax

#### Press Release Number:

17-989

#### Component(s):

Tax Division  
USAO - California, Southern

Updated September 11, 2017

Price gouging

ML and FOT

Tax Fraud



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THE RELENTLESS GROWTH OF CYBERCRIME  
27 September 2016  
Press Release  
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The IRS Tax Division and the Department of Justice have announced the sentencing of several individuals for tax fraud and filing false tax returns.

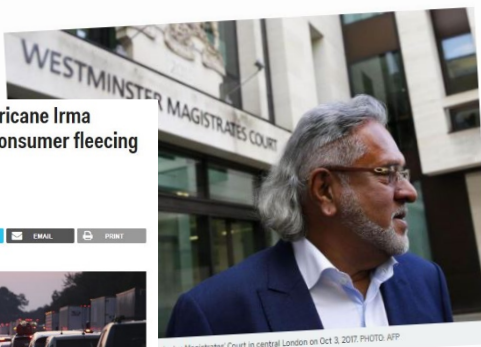
Economic Sanctions on North Korea  
Nuclear Issue in North Korea

RANK 2017 | COMMENTARY

North Korea's (IRFM), North Korea's so-called nuclear program has been seen as the most serious threat to global security.



Formula One: Force India owner Vijay Mallya faces new money laundering accusations



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By Corruption Watch 30 Aug 2017, 6:25

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## Economic Sanctions and the Nuclear Issue: Lessons From North Korean Trade

BY: RUEDIGER FRANK  
SEPTEMBER 18, 2017 | COMMENTARY

On September 14, North Korea conducted another test of its Hwasong-12 intermediate-range ballistic missiles (IRBM), flying over Japan for a second time within a month. This comes on the heels of the North's sixth nuclear test, the largest it has conducted to date and commonly believed to have been a thermonuclear device. In addition to the political and technical implications of these events, this steady stream of testing continues to destroy devices presumably worth millions of USD by a country that, by all accounts, is having major economic difficulties.

The latest tests have once again intensified the international debate on how to respond to such events. Knowing military actions could have devastating results, discussion of response

Price gouging

ML and FOT

Tax Fraud

Sanctions  
and  
Embargoes



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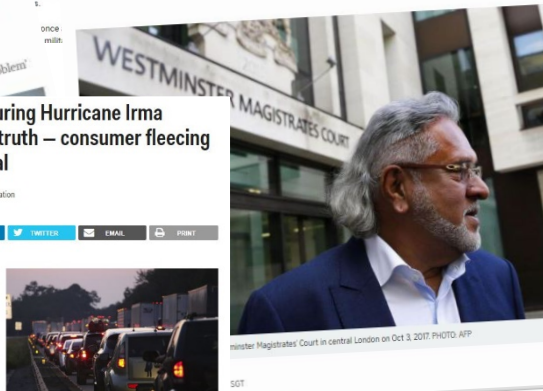
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Monday, September 11, 2017

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... fraud and filing false tax returns, ... Tax Division and

THE RELENTLESS GROWTH OF CYBERCRIME

27 September 2016  
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Europo's 2016 Internet Organised Crime Threat

exploiting our increas... enforcement...

- Price gouging
- ML and FOT
- Tax Fraud
- San. and Em.

ST VIDEOS

- 3 Singaporeans in Brussels have front row seats at Golden Jubilee celebrations
- Hundreds of sky lanterns light up Taipei
- North Korea art market heats up
- PepsiCo's beverage sales fall

Recommender: @tutbrain

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# Forensic Services portfolio covered Topics include:

## Google fires employee who penned controversial memo on women and tech

The author said, among other things, that females suffered from more "neuroticism"  
Kara Swisher | @karaswisher  
Published 9:01 PM ET Mon, 7 Aug 2017 | Updated 9:41 PM ET Mon, 7 Aug 2017

recode



Getty Images

In a memo to employees, CEO **Sundar Pichai** said the employee who penned a controversial memo about how women had biological issues that prevented them from being as successful as men in tech had **violated its Code of Conduct** and that the post had crossed "the line by advancing harmful gender stereotypes in our workplace."

He added: "To suggest a group of our colleagues have traits that make them less biologically suited to that work is offensive and not OK."

Price gouging

ML and FOT

Tax Fraud

San. and Em.

Violations of corporate code of conduct



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Department of Justice  
Office of Public Affairs  
Monday, September 11, 2017



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# Forensic Services portfolio covered Topics include:



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The 2017 Analysis of Corruption Trends (ACT) Report, released today by Corruption Watch, points to a positive trend of whistleblowing around the country and a greater willingness by the public to join the fight against corruption. The number of corruption complaints received in the first six months of 2017, at 2 744, represents a significant 9.5% increase over the same period last year.

The ACT report indicates an escalating intolerance to corruption across all sectors of society. Since Corruption Watch was launched in January 2012, over 20 000 reports have been received from the public. This growing outrage at the unacceptable levels of corruption in South Africa also relates to its widening impact on the lives of ordinary people, particularly those who rely on publicly provided goods and services.

David Lewis, executive director of Corruption Watch, commented: "Corruption cannot be effectively tackled without an active citizenry willing to blow the whistle. Our reporting data is evidence of a courageous, committed and outraged public. This is a good portent for the future."

Price gouging

ML and FOT

Tax Fraud

San. and Em.

Vio. of CCOC

**Bribery,  
corruption  
and kickback-  
payments**



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Emron Javers | @EmronJavers  
Published 10:59 AM ET Mon, 19 Dec 2016 | Updated 8:55 AM ET Tue, 20 Dec 2016



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Toshiba confirms SEC investigation as accounting woes spread to US



Toshiba has announced its alleged accounting irregularities. The company has been shepherded by management for years by financial figures.

Price-gouging during Hurricane Irma highlights a sad truth — consumer fleeing is the new normal

Ramsi Woodcock, The Conversation  
15.09.2017, 01:24



Since Hurricane Irma hit Florida in its sights, there have been thousands of reports of price gouging on everything from water to gasoline.

The most notable complaint was not, however, the one alleging a \$72 charge for a six-pack of water. Rather, it was the \$3,200 reportedly asked by Delta for a ticket out of Florida.



Economic Sanctions Nuclear Issue in North Korea

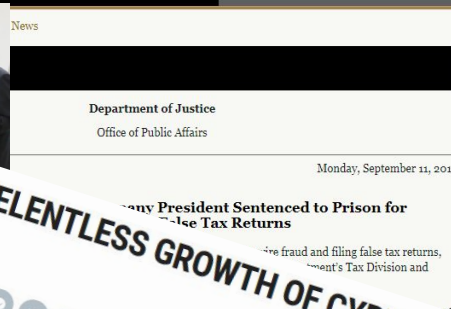
RANK 2017 | COMMENTARY

Formula One: Force India owner Vijay Mallya faces new money laundering accusations



Traffic backs up in the north-bound lanes of Interstate 75 near the Georgia-Florida state line as people flee Hurricane Irma, Sept. 8, 2017, in Jennings, Florida.

The 61-year-old Indian-born Indian Equor and aviation tycoon was first arrested by British police on behalf of Indian authorities in April. He was rearrested on Tuesday after India laid new charges against him.



THE RELENTLESS GROWTH OF CYBERCRIME

Formula One: Force India owner Vijay Mallya faces new money laundering accusations



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Price gouging

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Tax Fraud

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Corruption

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## THE RELENTLESS GROWTH OF CYBERCRIME

27 September 2016  
Press Release



### Europol's 2016 Internet Organised Crime Threat Assessment (IOCTA)

Europol's 2016 Internet Organised Crime Threat Assessment (IOCTA) identifies an expanding cybercriminal economy exploiting our increasingly Internet-enabled lives and low levels of digital hygiene. Informed largely by Europol's law enforcement and cooperation partners, the report identifies eight main cybercrime trends and provides key recommendations to address the challenges.

The volume, scope and material cost of cybercrime all remain on an upward trend and have reached very high levels. Some EU Member States now report that the recording of cybercrime offences may have surpassed those associated with traditional crimes. An expansion both in the number of cybercriminal actors and opportunities to engage in highly profitable illegal activities has partly fuelled this trend, as has the development of new cybercrime tools in areas such as ATM fraud and mobile malware. However, a large part of the problem relates to poor digital security standards and practice by businesses and individuals. A significant proportion of cybercrime activity still involves the continuous recycling of relatively old techniques, security solutions for which are available but not widely adopted.

Europol's Director **Rob Wainwright**: "The relentless growth of cybercrime remains a real and significant threat to our collective security in Europe. Europol is concerned about how an expanding cybercriminal community has been able to further exploit our increasing dependence on technology and the Internet. We have also seen a marked shift in cyber-facilitated activities relating to trafficking in human beings, terrorism and other threats. In response law enforcement

Price gouging

ML and FOT

Tax Fraud

San. and Em.

Vio. of CCOC

Corruption

Cybercrime



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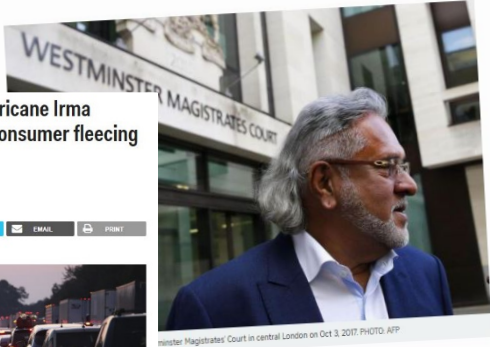


Economic Sanctions Nuclear Issue in North Korea

Rank 2017 | COMMENTARY  
North Korea (DPRK) is the only country in the world that has not been seen to have even a single nuclear warhead.

THE RELENTLESS GROWTH OF CYBERCRIME

Formula One: Force India owner Vijay Mallya faces new money laundering accusations



LONDON (REUTERS) - Indian businessman Vijay Mallya, who fled from Britain on fraud charges, faces further accusations as he is allegedly going to his Force India Formula One motor race track on Tuesday.

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Price gouging

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Corruption

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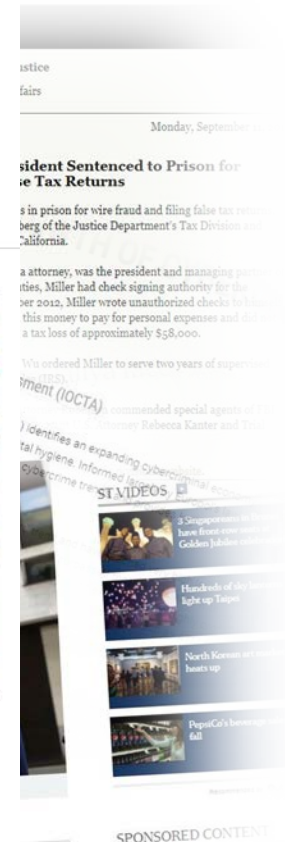
Eamon Javers | @EamonJavers

Published 10:59 AM ET Mon, 19 Dec 2016 | Updated 8:35 AM ET Tue, 20 Dec 2016



As 2016 comes to a close, the consulting firm Deloitte is busy hiring employees in the Washington area — listing a total of 392 jobs open in the region with "federal" in the job description.

According to its website, the firm is looking to hire a federal contracts manager, a federal cybersecurity consultant and is even advertising for military officers with top-secret government clearances.



Price gouging

ML and FOT

Tax Fraud

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Corruption

Cybercrime

Industrial espionage



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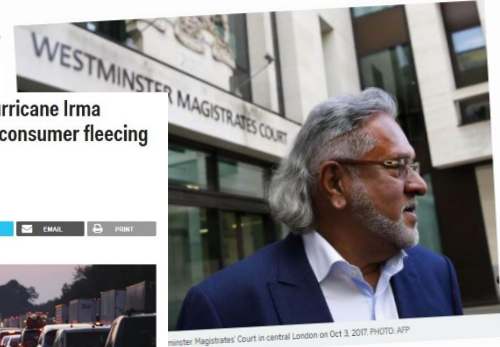
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Recommended by @tutorbrain

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**CORRUPTION NEWS**  
LATEST CW REPORT SHOWS MORE RESISTANCE TO CORRUPTION

The 2017 Analysis of Corruption Trends (ACT) Report, released by the Center for Global Enterprise, points to a positive trend of whistleblowing around the world. The number of public complaints received in the first six months of 2017, at 2,744, represents a 10% increase over the same period last year.

The ACT report indicates an escalating intolerance to corrupt practices since Corruption Watch was launched in January 2012, over 2 million complaints have been received from the public. This growing outrage at the unacceptability of corruption also relates to its widening impact on the lives of those who rely on publicly provided goods and services.

David Lewis, executive director of Corruption Watch, commented: "The report effectively tackled without an active citizenry writing to blow the whistle. It is evidence of a courageous, committed and outraged public for the future."

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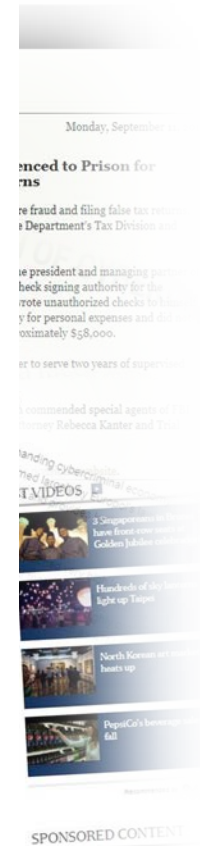
Securities commission and justice department examining 'accounting problem' at US units, says Japanese corporation, amid profit-padding crisis



Toshiba has said its American books are being examined by the SEC and Justice Department. Photograph: Issei Kato / Reuters/Reuters

Toshiba has announced its US businesses are cooperating with authorities over alleged accounting irregularities and is to cut a further 3,000 jobs.

The company has been shaken by a [profit-padding scandal](#) in which senior management for years systematically pushed subordinates to cover up weak financial figures.



Price gouging

ML and FOT

Tax Fraud

San. and Em.

Vio. of CCOC

Corruption

Cybercrime

Ind. espionage

Fraud and asset misappropriation



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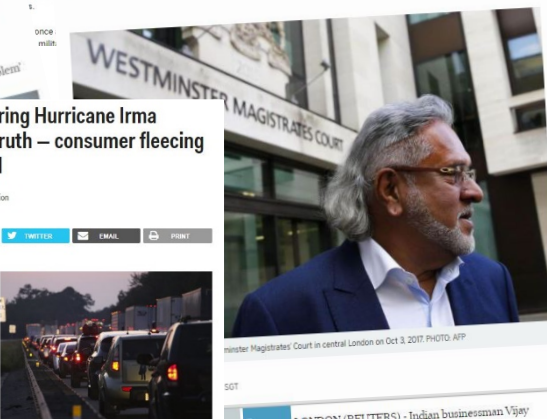
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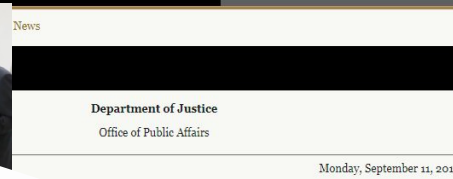
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THE RELENTLESS GROWTH OF CYBERCRIME



SPONSORED CONTENT

- Price gouging
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- Corruption
- Cybercrime
- Ind. espionage
- Fraud and asset misappropriation

Theory I

# FROM AUDITING TO FORENSIC SERVICES

# From auditing to Forensic Services



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- Historically, detection of fraud core task of statutory auditor

*„The detection of fraud is a  
most important portion of the Auditor’s duties“*

- L. R. Dicksee: „Auditing: a practical manual for auditors, 4th ed., London: Gee & Co., 1900, p. 8.

- Today: Detection of material misstatement (error or fraud)

## **The auditor's responsibilities relating to fraud in an audit of financial statements (ISA 240):**

- Primary responsibility for prevention and detection of fraud → those charged with governance and management
- Auditor is responsible to obtain a reasonable assurance that financial statements are free from material misstatements (error and fraud)
  - Professional skepticism
  - Discussion among the audit team
  - Risk assessment procedures
  - Identification and assessment of the risks of material misstatement due to fraud
  - Responses to these risks
  - Evaluation of audit evidence



# From auditing to Forensic Services

Forensic Services go beyond auditing:

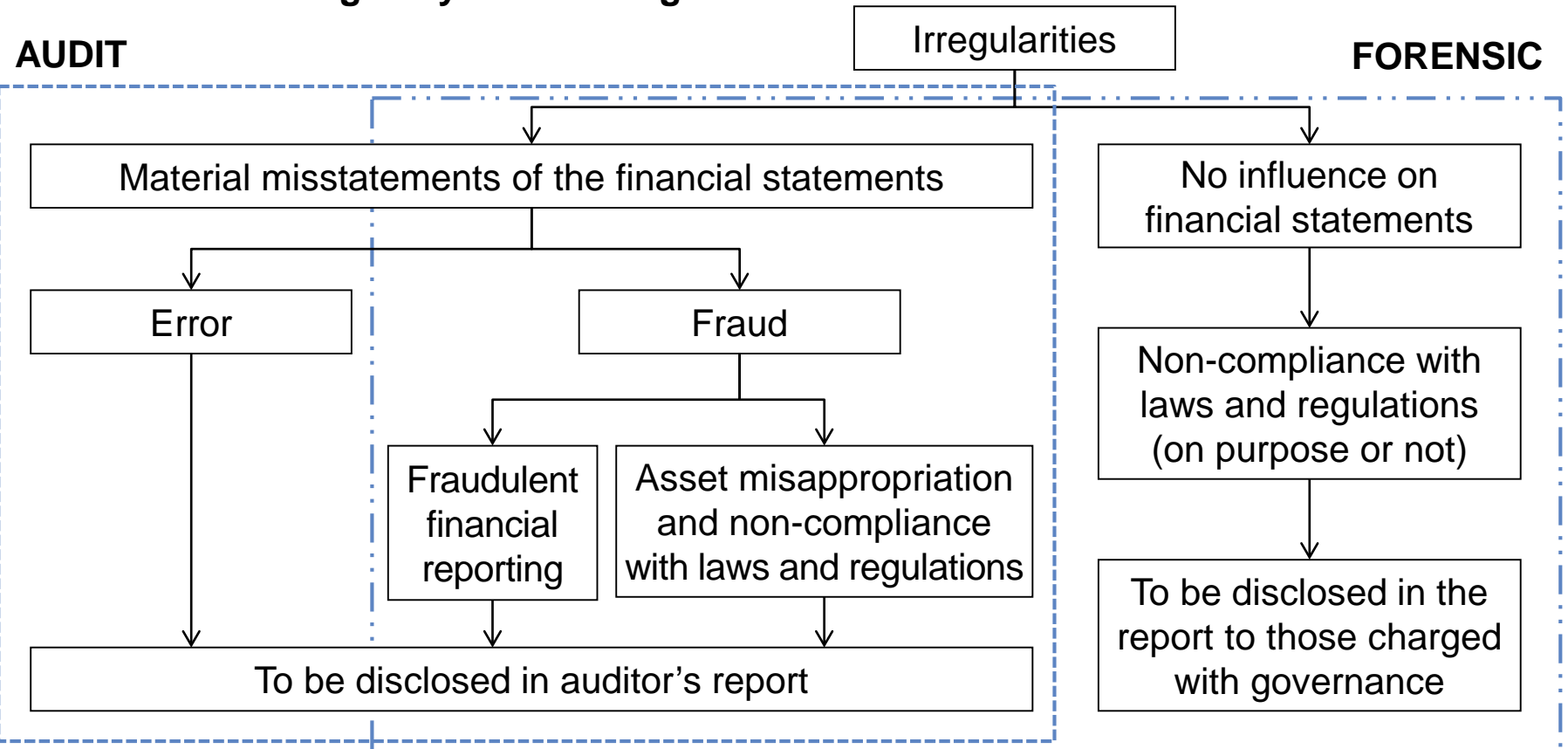


Figure following local auditing standard IDW PS 210

# From auditing to Forensic Services



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	<i>Financial Statement Audit</i>	<i>Forensic Services</i>
<b>Formal characteristics</b>		
<i>Scope with respect to fraud</i>	Irregularities that influence the financial statements	All irregularities
<i>Initiation</i>	Mandatory financial statement audit by law	Voluntary; often caused by fraud suspicion
<i>Periodicity</i>	yearly	single assignments (proactive, ongoing or reactive)
<i>Contracting client</i>	Supervisory board	Anybody (board/management/shareholders)
<i>Auditors</i>	CPAs and audit assistants	Multidisciplinary team (e.g. CPAs, CFEs, lawyers, IT specialists)
<b>Reporting</b>		
<i>Addressee</i>	General public and client's board	Defrauded or concerned party
<i>Reporting format</i>	Standardized auditors' reports	Individual investigative or expert reports

# From auditing to Forensic Services



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	<i>Financial Statement Audit</i>	<i>Forensic Services</i>
<b>Working conditions</b>		
<i>Function</i>	Opine on compliance of financial statements with laws and regulations	Prevention, investigation and remediation of fraud
<i>Professional stance</i>	Professional skepticism (but non-adversarial)	Adversarial and non-adversarial
<i>Level of assessment detail</i>	Risk oriented assessment of samples	Detailed assessment of all relevant data
<i>Materiality</i>	Concept that limits the scope of business events to be assessed	Does not limit the scope of forensic services
<i>Level of assurance</i>	With sufficient certainty (typically 5% risk)	Sufficient to serve as proof in a court of law

Practice II

# THE MARKET FOR FORENSIC SERVICES

# The market for Forensic Services



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- Separate service line of large audit firms since early 1990s

## US audit firms 1998 to 2004

- approx. 20% offer Forensic Services
- no subsample (e.g. large audit firms) above 50%
- no clear development

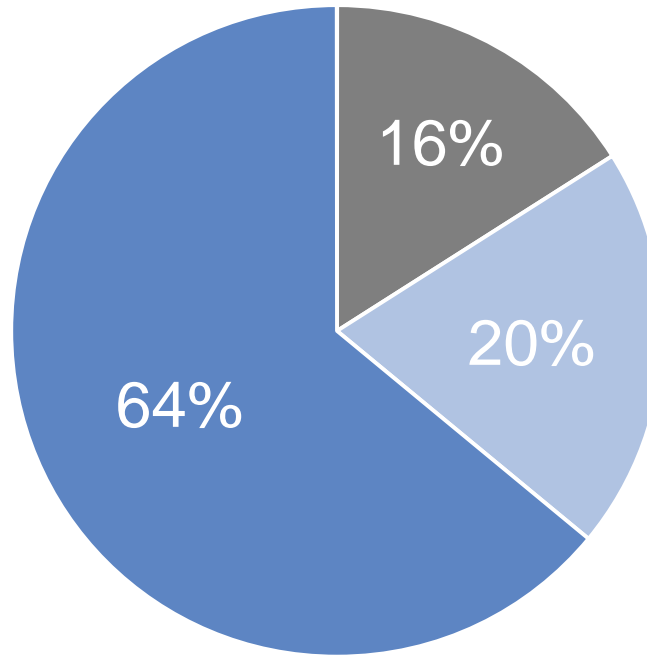
*Watters et al. 2007*

## German audit firms 2009 to 2011

- Webpage offerings of top 25 firms: increase from 11 (44%) to 18 (72%)
- questionnaire results (2012): < 42% overall offerings; 87% among top 25
- only three firms employ more than 5 people: 70, 80, and 100 employees

*Zwernemann 2015*

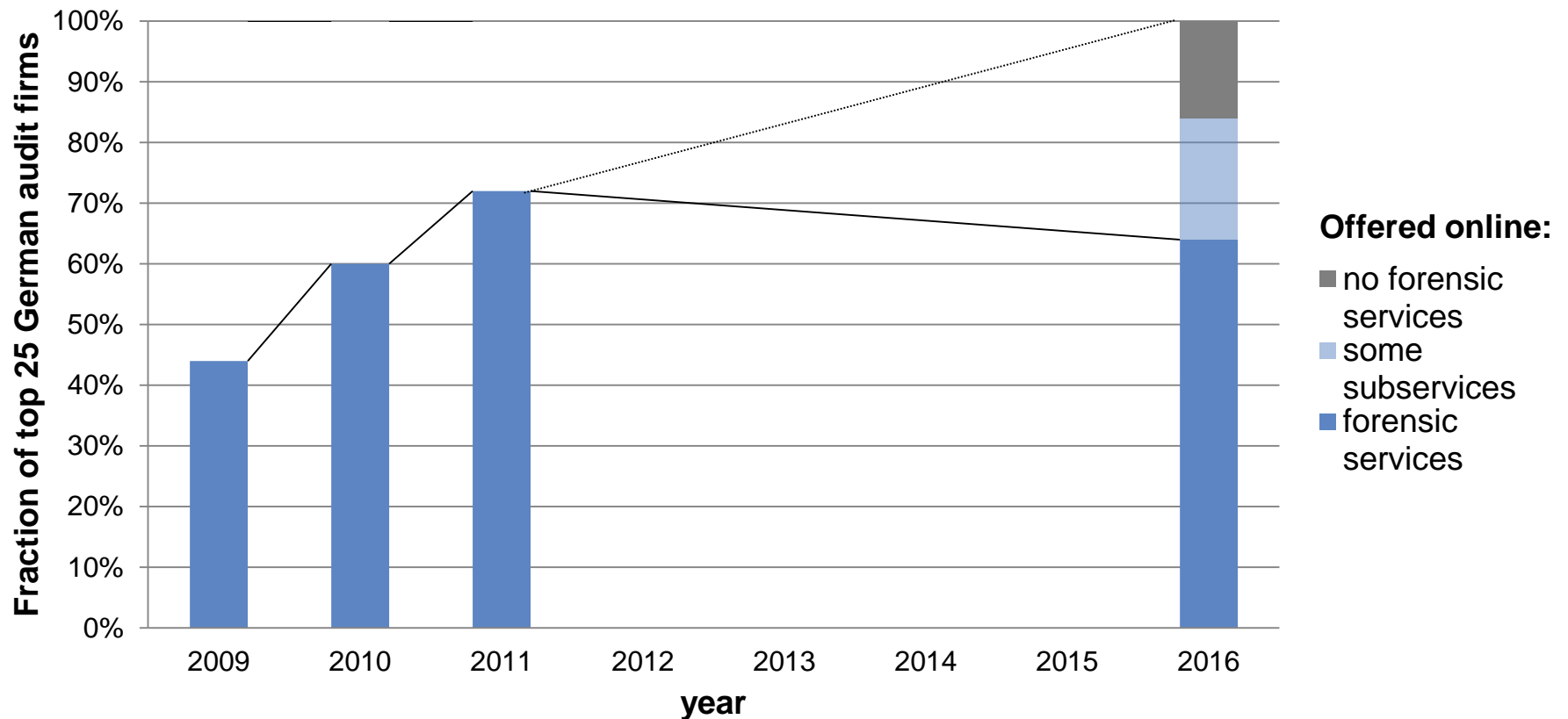
## Forensic Service supply



■ No Forensic Services   ■ Some Forensic Services   ■ Forensic Services

# The market for Forensic Services

## Forensic Service offerings are growing



# The market for Forensic Services



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DARMSTADT

## Comparing Forensic Services of the German Big 4

<i>Criterion</i>	<i>Deloitte</i>	<i>EY</i>	<i>KPMG</i>	<i>PwC</i>
<i>No. of offices</i>	6	8	5	2
<i>No. of employees</i>	120	200	80	90
<i>Employee ratio</i>	1.96%	2.12%	0.78%	0.87%

- Educational background:
  - Business/Economics
  - Computer Sciences
  - Legal Studies (lawyers) and Law Enforcement (e.g. public prosecutors, tax investigators)
  - Criminology (e.g. police, military, intelligence services)
  - Other (e.g. architecture, natural sciences, psychology, politology, sociology)
- Average yearly growth of employee number since 2010: **10.8%**



Theory II

# METHODS FOR FORENSIC SERVICES

- Manifold, multidisciplinary methods, from audit, criminology, statistics, etc.
- Comprehensive overview not feasible
- Proposed classification: data collection → data analysis → preventive measures

## Data collection (examples)

### *Data recovery*

- Technical recovery of deleted, destroyed or encrypted data
  - Under consideration of privacy regulations

### *Interviews*

- Collecting important unstructured data by interviewing involved parties

## Quantitative data analysis (examples)

### *Classification methods*

- Using large data-sets to classify / predict characteristics, e.g. using logistic regressions

### *Pattern-based analyses*

- Structured search for unexpected data patterns, e.g. using ***Benford's Law***

### *Cross-sectional analyses*

- Comparing data / characteristics to similar cases / firms, e.g. for valuation purposes

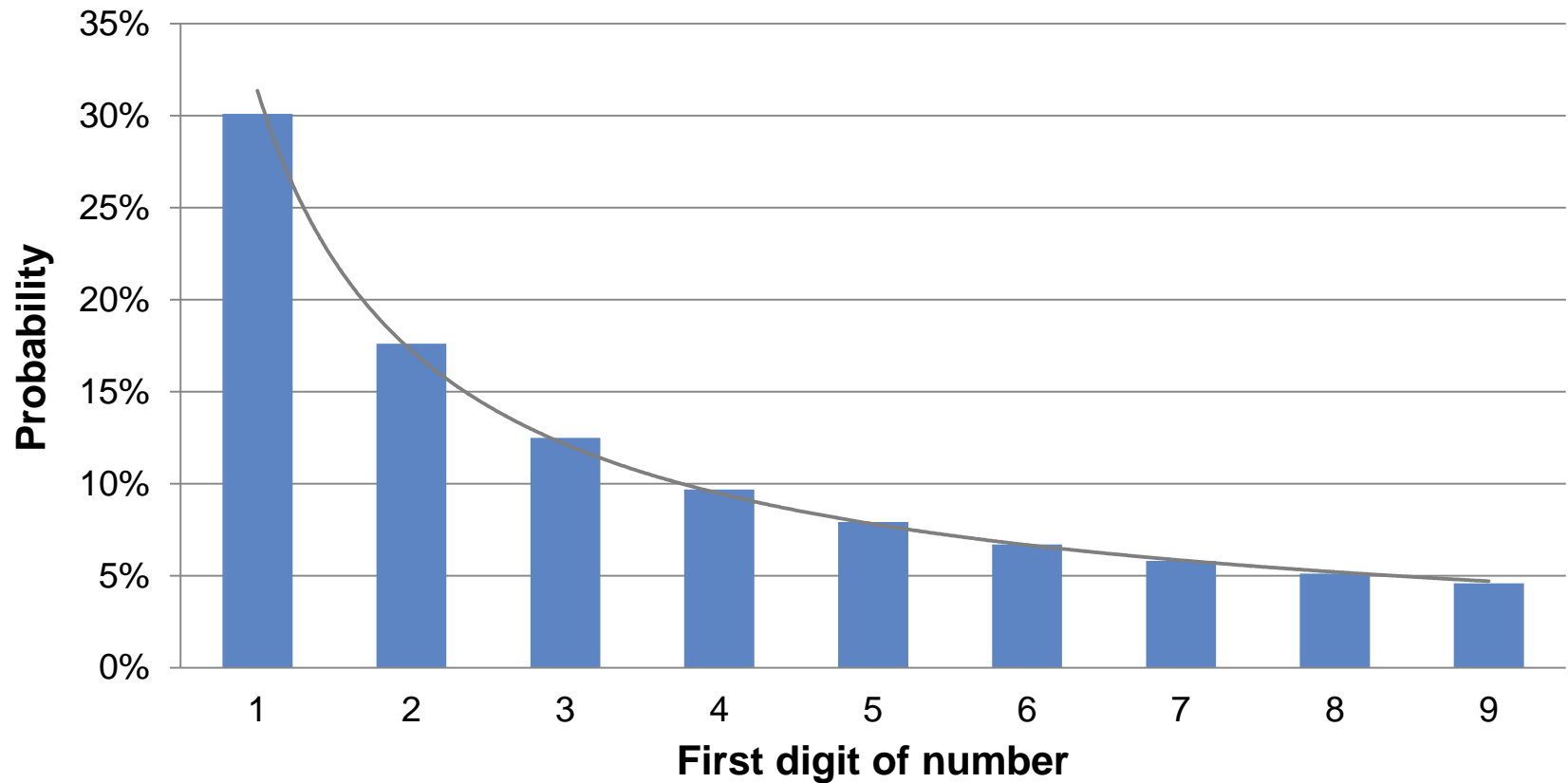
## Qualitative data analysis (example)

### *Examination of (digital) documents*

e.g.

- keyword search and review of e-mails

## Excursion: Benford's Law



## Preventive measures

### *Fraud trainings*

- Training material and processes to improve employee compliance behavior

### *Segregation of duties*

- To avoid that one person alone can perpetrate fraud

### *Mandatory vacations*

- To make sure that one employee's work gets monitored regularly

### *Background checks*

- Evaluate employees behavior, e.g. by reviewing criminal records



Research

# FORENSIC SERVICES RESEARCH

## AAA journals from 2000 to 2011

- 2.5% of the titles include “fraud”
- 0.4% include “forensic”

*Stone and Miller 2012*

## Forensic Accounting journals 2000 to 2014

- 45.1% of the papers deal with fraud
- 25.7% with forensic accounting (litigation support)

*DiGabriele and Huber 2015*

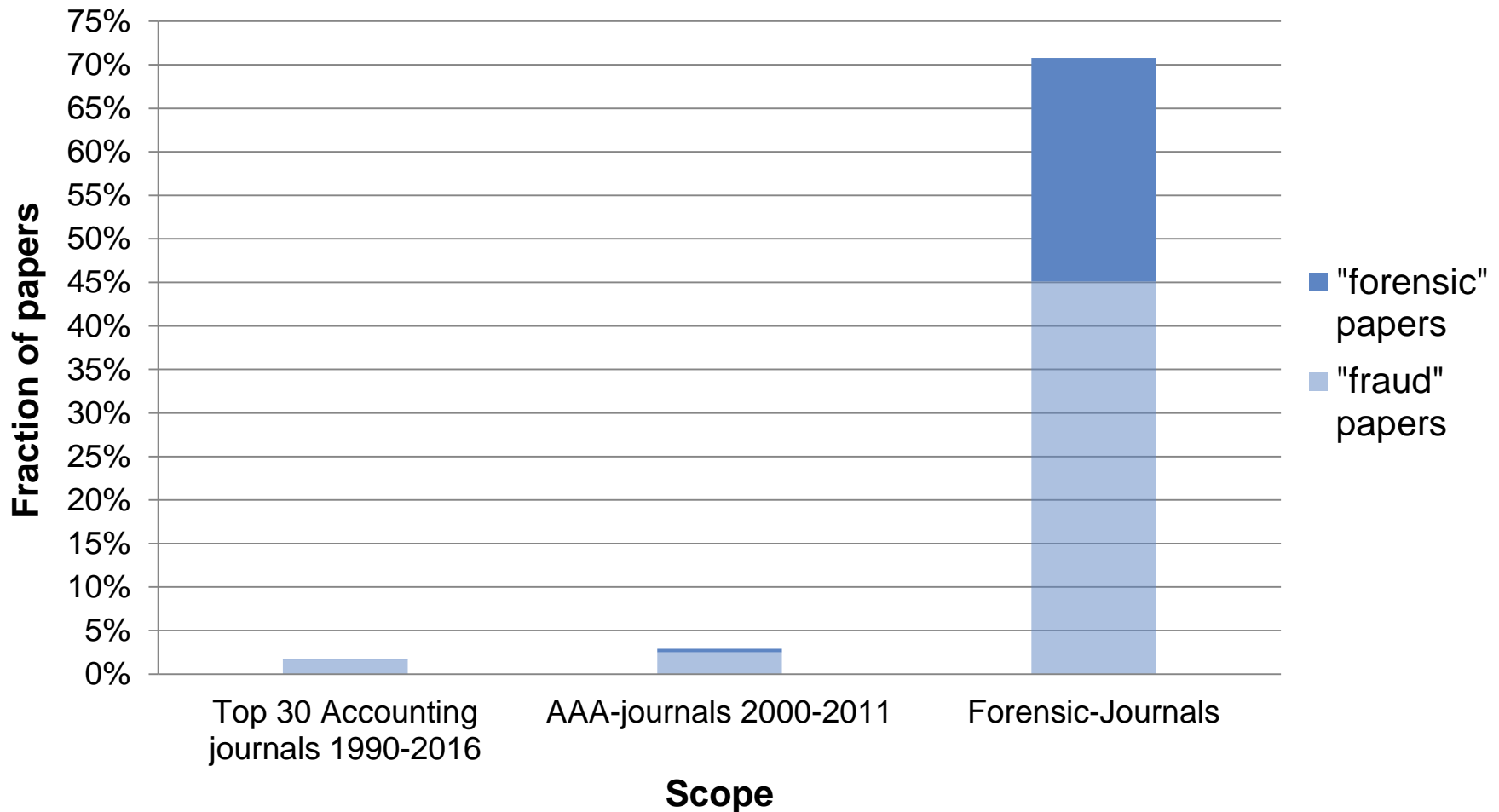
## Top 30 accounting journals (combined German, British ranking) 1990 to 2016

- Abstract of 372 (1.65%) papers contains “fraud”, 14 (0.06%) contain “forensic”

## Forensic Accounting journals:

- *Journal of Forensic Accounting* (2000-2008)
- *Journal of Forensic and Investigative Accounting* (since 2009)
- *Journal of Forensic Studies in Accounting and Business* (since 2009)
- *Journal of Forensic Accounting Research* (since 2016)

# Forensic Services research



- High quality forensic services research is missing
- Some fraud topics are researched somewhat extensively, e.g.

## Quantitative “red flags research”

### *Research approach*

- Primarily archival research with logistic regression analyses
- Based on different databases on restatements or fraud, above all on SEC’s AAERs

### *Notable Publications*

*Beasley (1996)*                      *Yijiang/Chen (2008)*  
*Summers/Sweeney*              *Brazel et al. (2009)*  
*(1998)*                                *Lennox et al. (2013)*  
*Lee et al. (1999)*                *Kohlbeck/Mayhew*  
*Farber (2005)*                      *(2017)*  
*Erickson et al. (2006)*

### *Key Results*

- Fraud rises with, e.g., insider trading, weaker corporate governance, less tax aggressiveness, related party transactions
- Non-financial information can serve as an indicator for fraud

# Forensic Services research



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## Fraud brainstorming research

### *Research approach*

- Primarily experimental research

### *Notable Publications*

*Carpenter et al. (2007)*    *Brazel et al. (2010)*  
*Hoffman/Zimbelman (2009)*    *Hammersley et al. (2010)*  
*Lynch et al. (2009)*    *Xiaoling Chen et al. (2015)*

### *Key Results*

- Brainstorming increases fraud risk assessment
- Various treatments can increase brainstorming quality

## Strategic behavior of fraudster/auditor

### *Research approach*

- Primarily game theory

### *Notable Publications*

*Matsumura/Tucker (1992)*    *Newman et al. (2001)*  
*Morton (1993)*    *Patterson/Smith (2007)*  
*Bloomfield (1997)*    *Laux/Stocken (2012)*  
*Smith et al. (2000)*    *Davis/Pesch (2013)*

### *Key Results*

- Broadly speaking, strong internal controls can deter fraud



# Forensic Services research



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## Fraud detection research

### *Research approach*

- Primarily archival
- Different statistical models to detect fraud
- Largely based on red flags research

### *Notable Publications*

*Beneish (1997)*                      *Price et al. (2011)*  
*Jones et al. (2008)*                *Larcker et al. (2012)*  
*Dechow et al. (2011)*          *Purda/Skillicorn (2015)*

### *Key Results/Note*

- Models have substantial classification errors
- Further contributions in information systems literature

## Fraud Triangle research

### *Research approach*

- E.g. interviews, experiments
- Some papers only considered with certain elements of the Fraud Triangle

### *Notable Publications*

*Cressey (1953)*                      *Trompeter et al.*  
*Murphy (2012)*                      *(2013)*  
*Morales et al. (2014)* *Free/Murphy (2015)*

### *Key Results*

- Broadly speaking, Fraud Triangle is a rough and incomplete framework with a lot of room for research

# SUMMARY

# Summary



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- Provision of non-audit services is of increasing economic importance for audit firms
  - Especially provision to non-audit clients
- Wide range of offered services
  - From detection to prevention, from bribery to fraud to violation of code of conduct
- Small, but growing market with Big 4 as clear leaders
  - Wide variety of backgrounds of forensic services professionals
  - Consequently, diverse portfolio of methods
- Most research focuses on fraud with some high-quality publications
  - Missing high-quality forensic services research

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