



# Is Cashless the answer to a less cash society ?

Dr. Alfred Kraxenberger  
Dr. Wolfram Seidemann

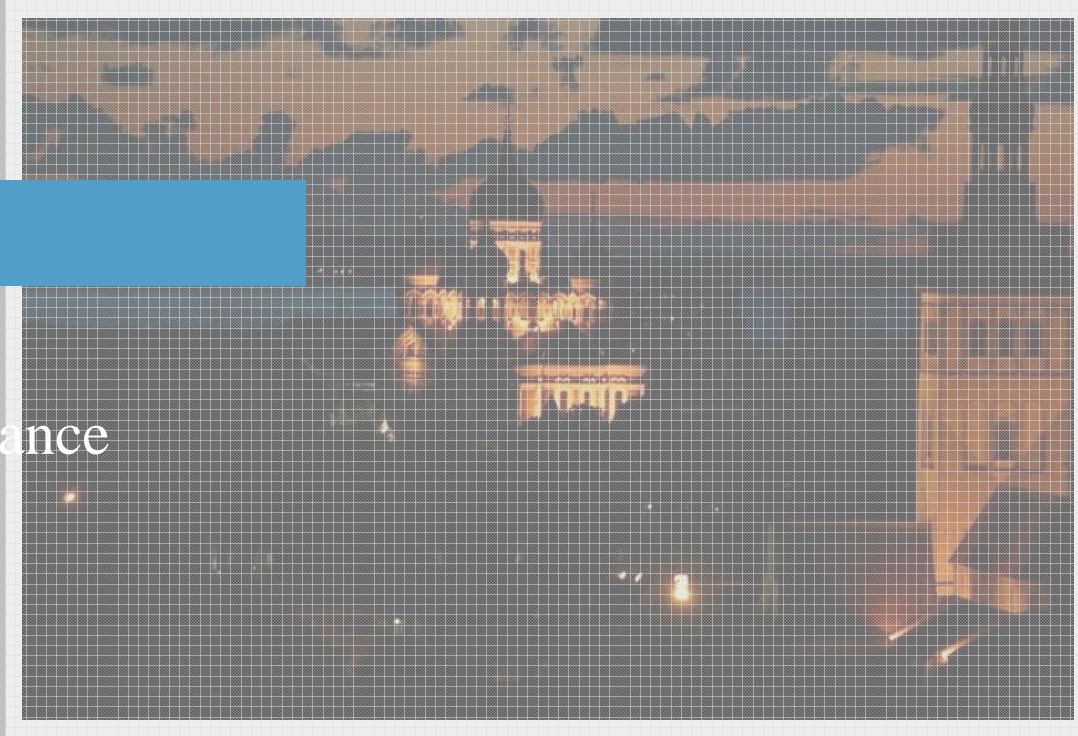
*Tallin, June 4<sup>th</sup>, 2007*



Giesecke & Devrient

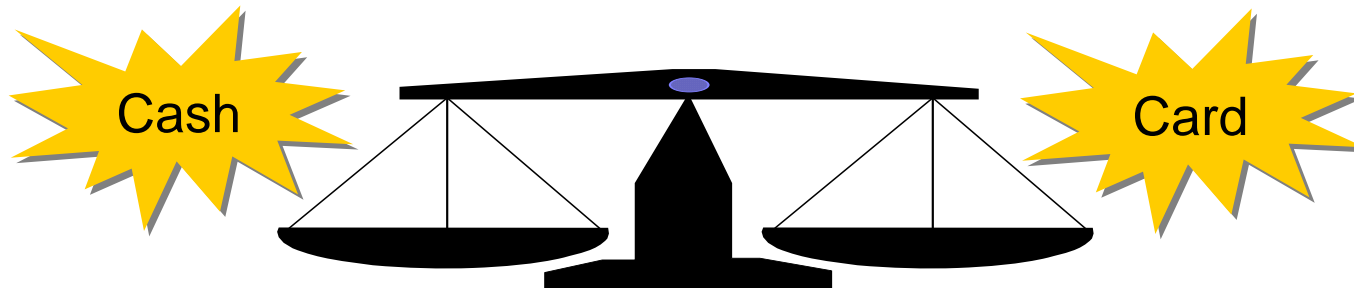
# Agenda

- 1 A Future without Cash ?
- 2 Central Bank Regulations
- 3 Drivers for Cash or Card Acceptance
- 4 Summary



# A Future without Cash?

Ongoing Debate



- Seignorage effect
- Value for individuals
- Contingency planning
- Low value transactions
- Transactions in rural areas

- Cost savings for banks
- Increasing convenience
- SEPA
- High value transactions
- ...

The future will NOT be without cash !

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann

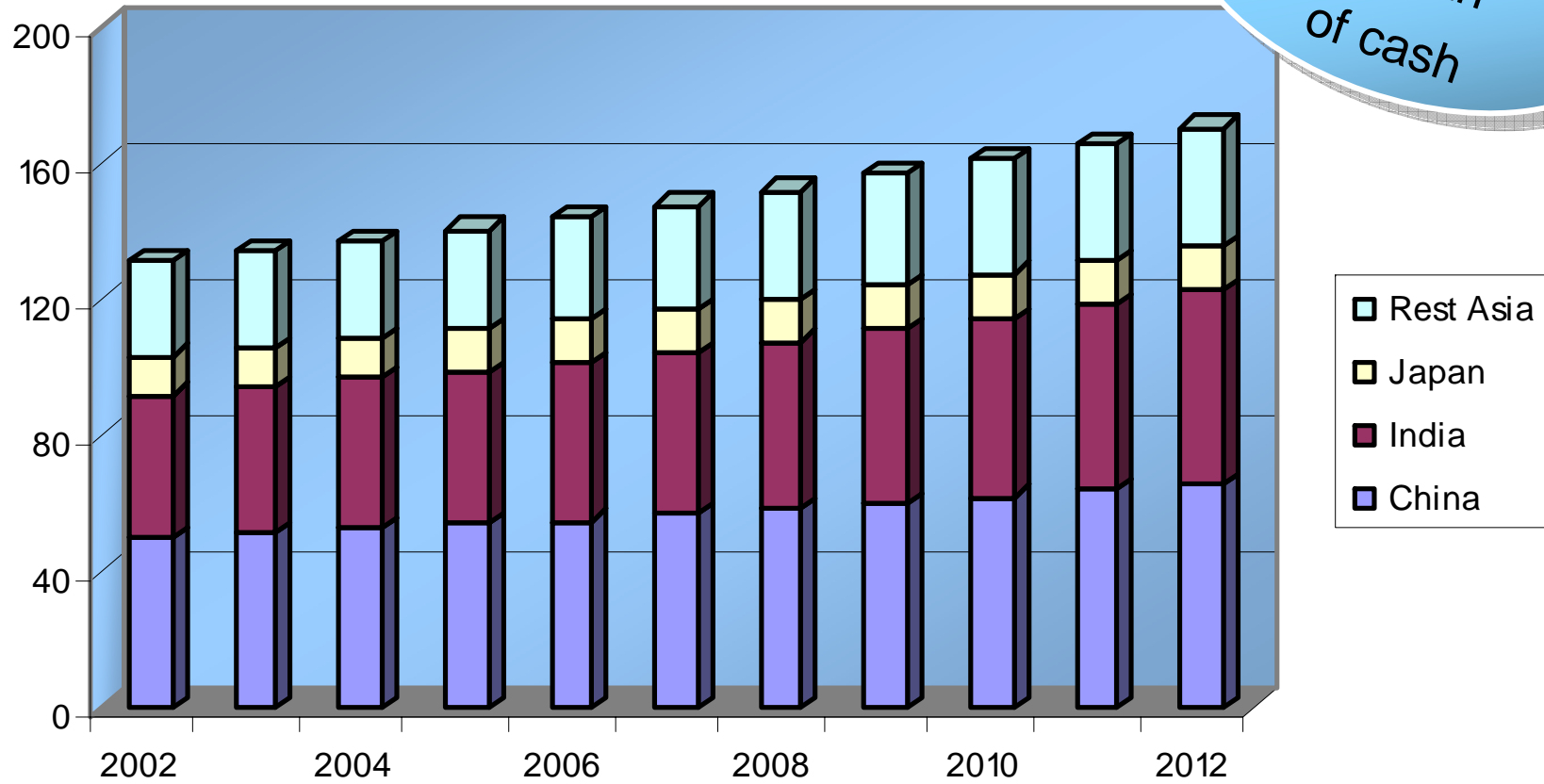


Giesecke & Devrient

# Banknotes in Circulation - Asia

## Banknotes in Circulation

Continuous  
Growth  
of cash



Sources:  
CPSS Red Book 2006;  
CB Reports,  
G&D Researches

### Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann

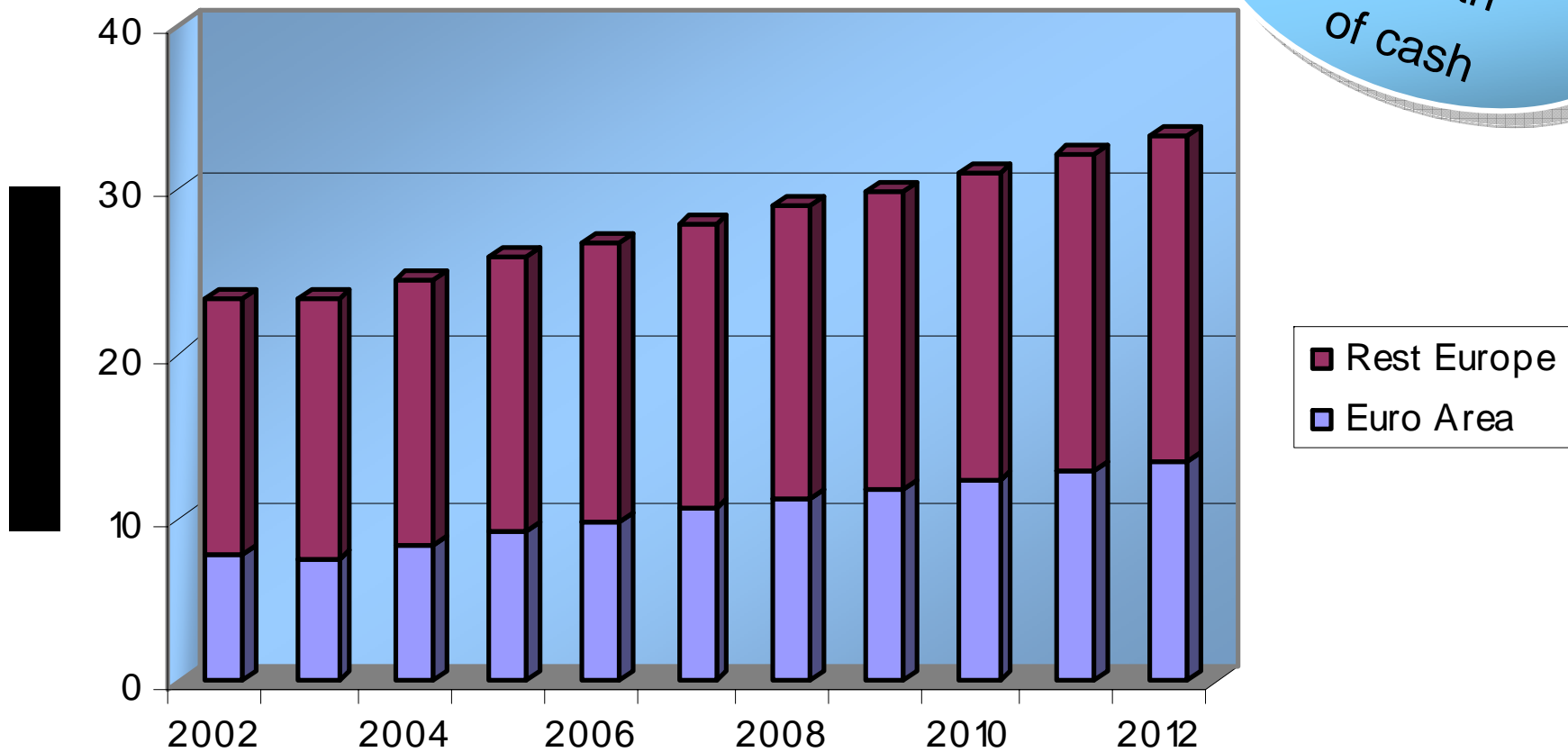


Giesecke & Devrient

# Banknotes in Circulation - Europe

Banknotes in Circulation

Continuous Growth of cash



Sources:  
CPSS Red Book 2006;  
ECB Reports,  
G&D Researches

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

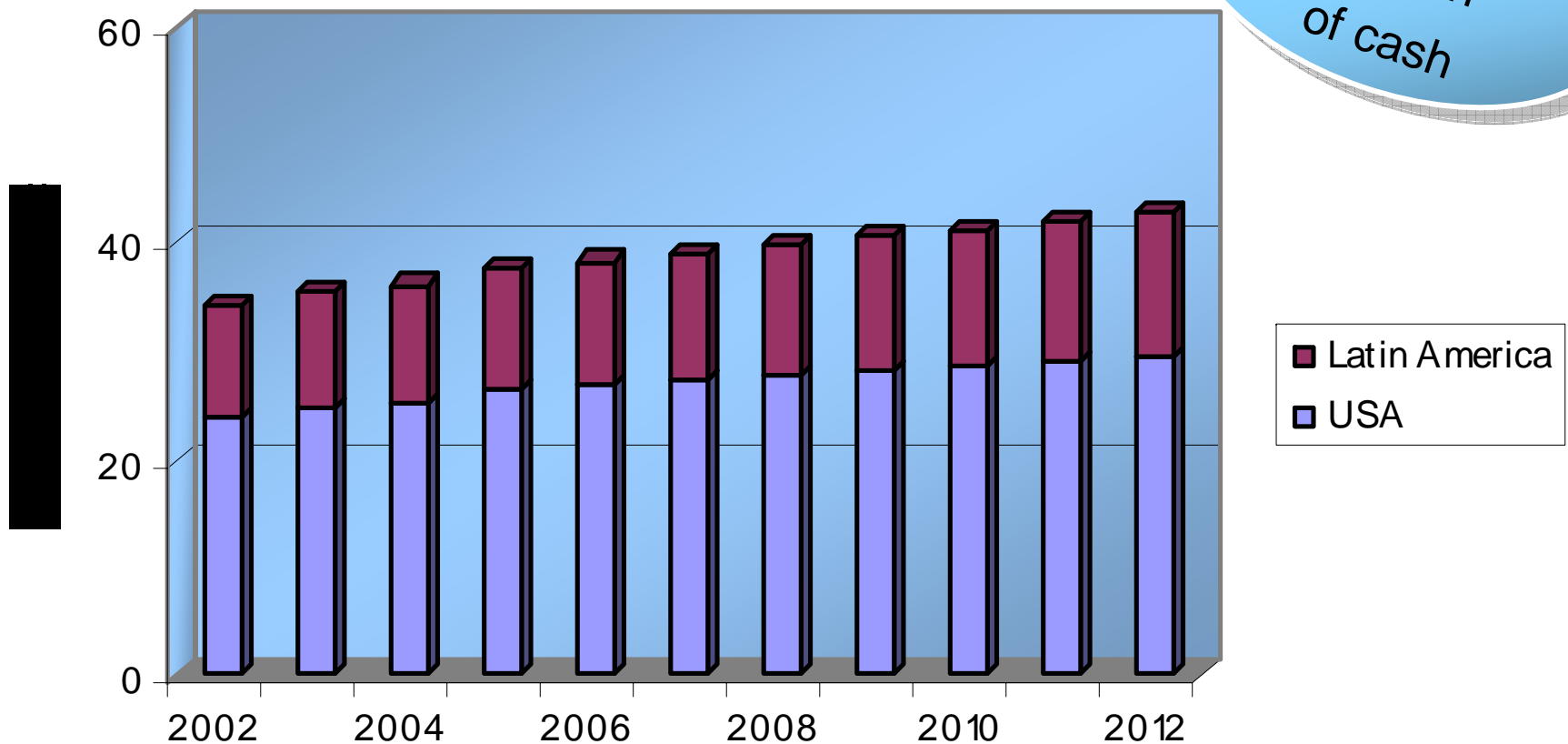
Dr. Wolfram Seidemann



Giesecke & Devrient

# Banknotes in Circulation - Americas

Banknotes in Circulation

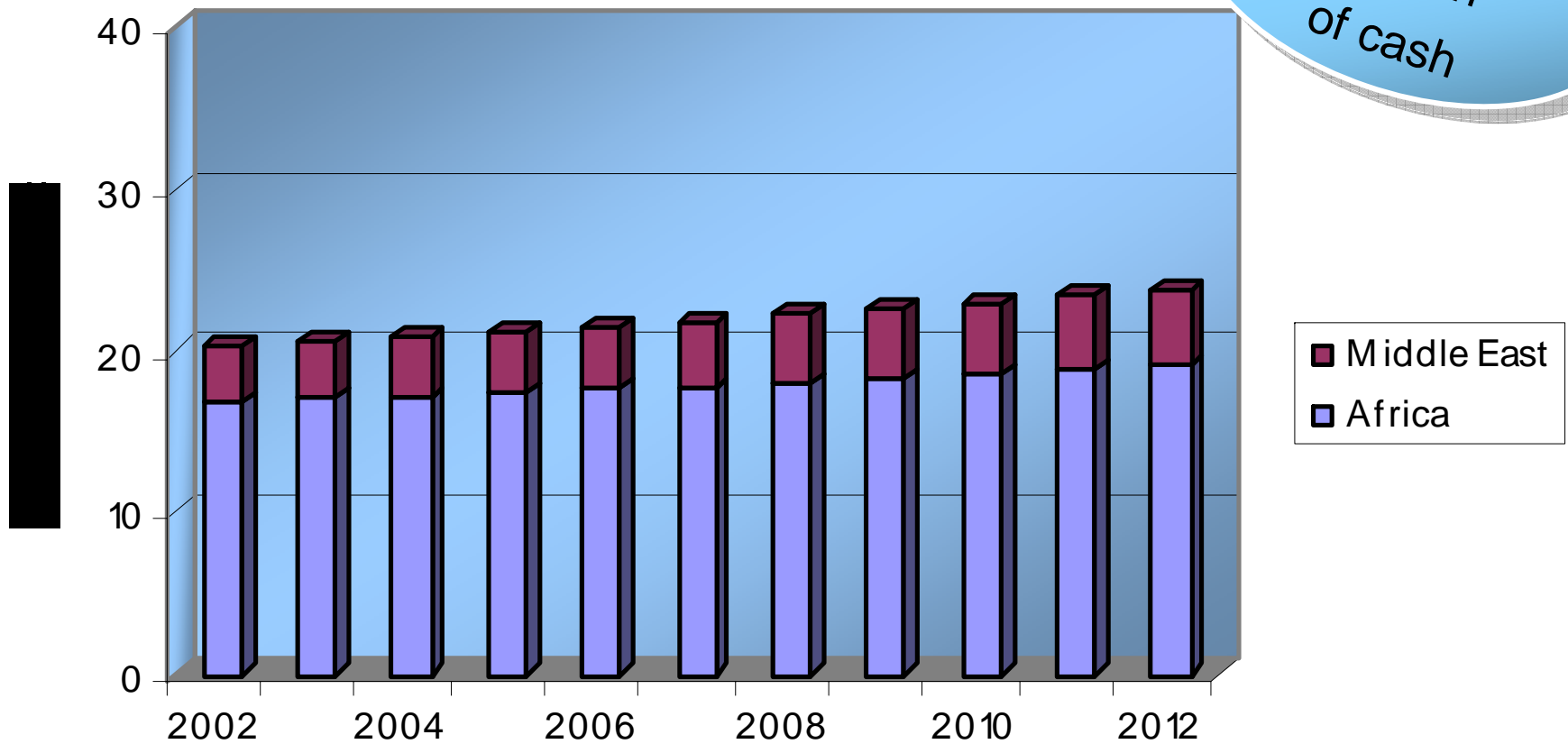


Sources:  
CPSS Red Book 2006;  
CB Reports,  
G&D Researches

# Banknotes in Circulation – Afrika / Middle East

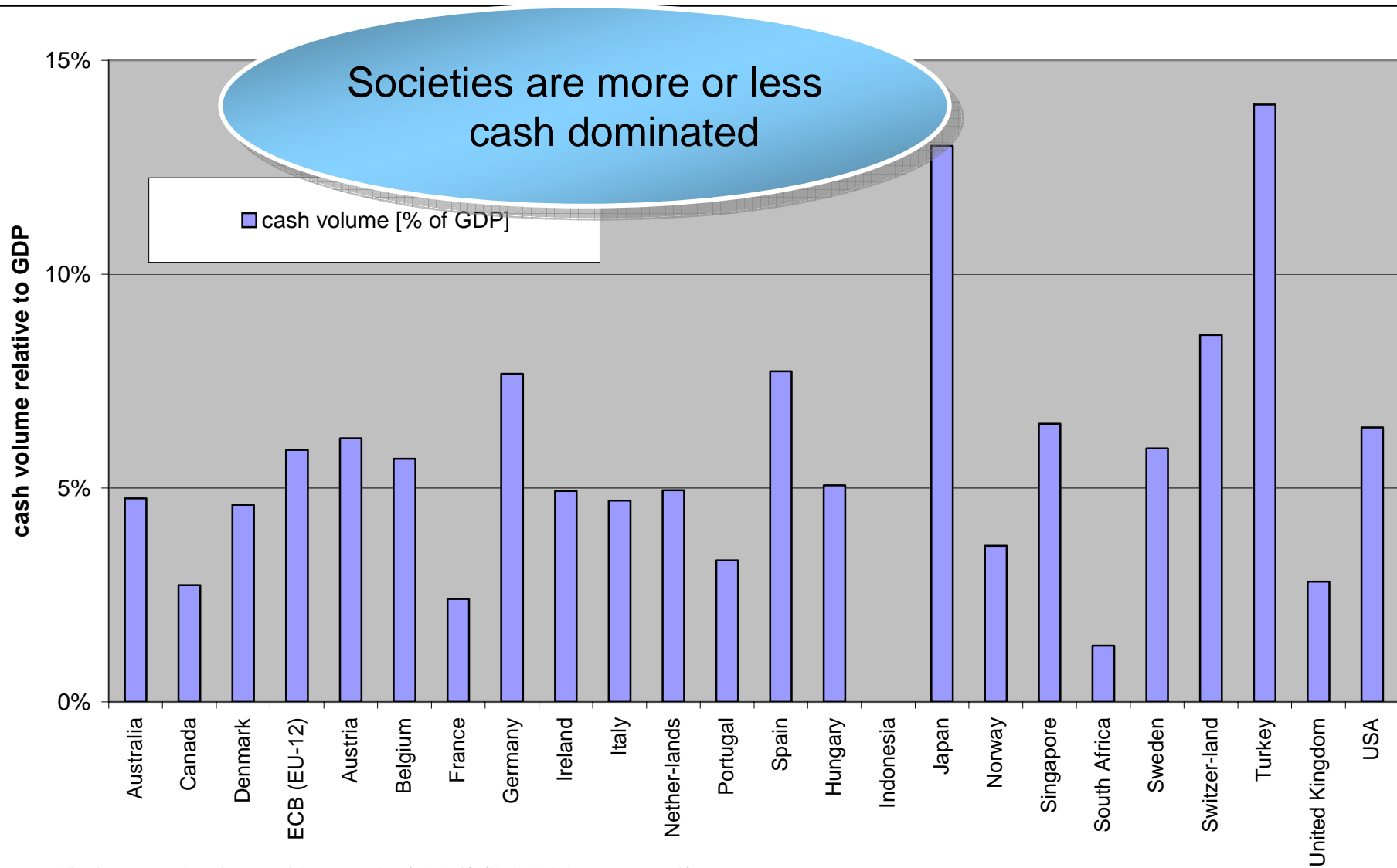
Banknotes in Circulation

Continuous Growth of cash



Sources:  
CPSS Red Book 2006;  
CB Reports,  
G&D Researches

# Cash Volume relative to Gross Domestic Product



[http://www.bot.or.th/bothomepage/BankAtWork/Payment/Article/pdf\\_file/2004-01-curw-rp.pdf](http://www.bot.or.th/bothomepage/BankAtWork/Payment/Article/pdf_file/2004-01-curw-rp.pdf)

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



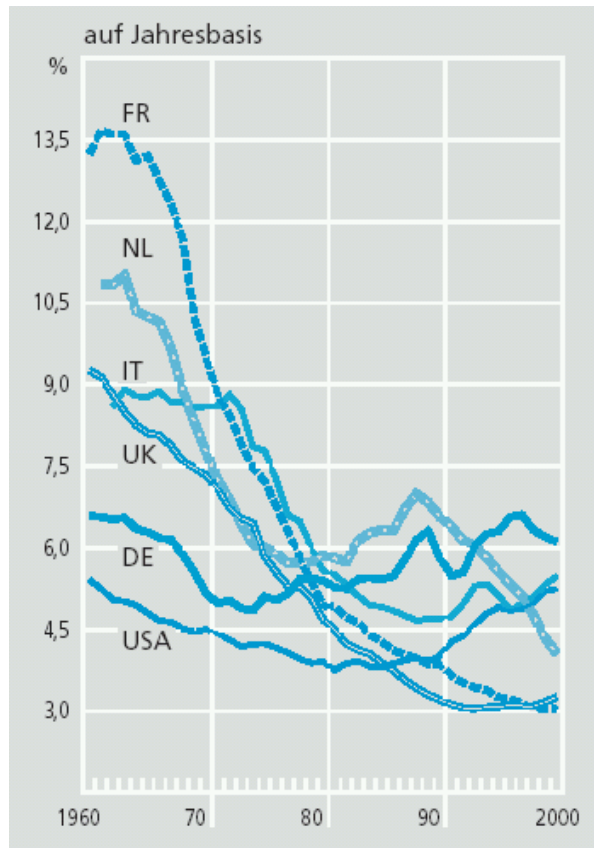
Giesecke & Devrient



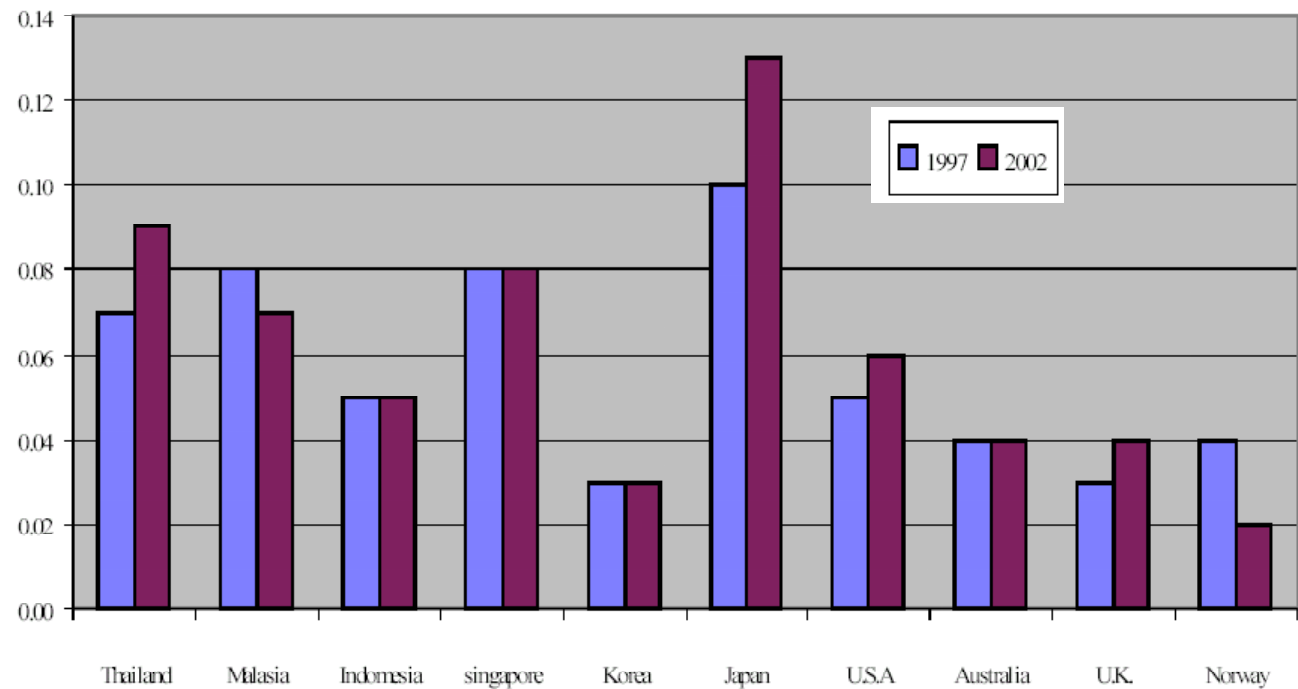
# Cash-to-GDP Ratio: Long-term Change

## Tendencies:

- cash volume has reached a minimum level in most countries around 1990
- cash circulation has reexpanded in many countries since 1995



Source: Monatsbericht Deutsche Bundesbank, March 2002



Source: Pariwat, Hataiseree: The use of Cash, Cheque and Electronic Payment Services in Thailand Working Paper Payment Systems Group, Febr 2004

[http://www.bot.or.th/bothomepage/BankAtWork/Payment/Article/pdf\\_file/2004-01-curw-rp.pdf](http://www.bot.or.th/bothomepage/BankAtWork/Payment/Article/pdf_file/2004-01-curw-rp.pdf)

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

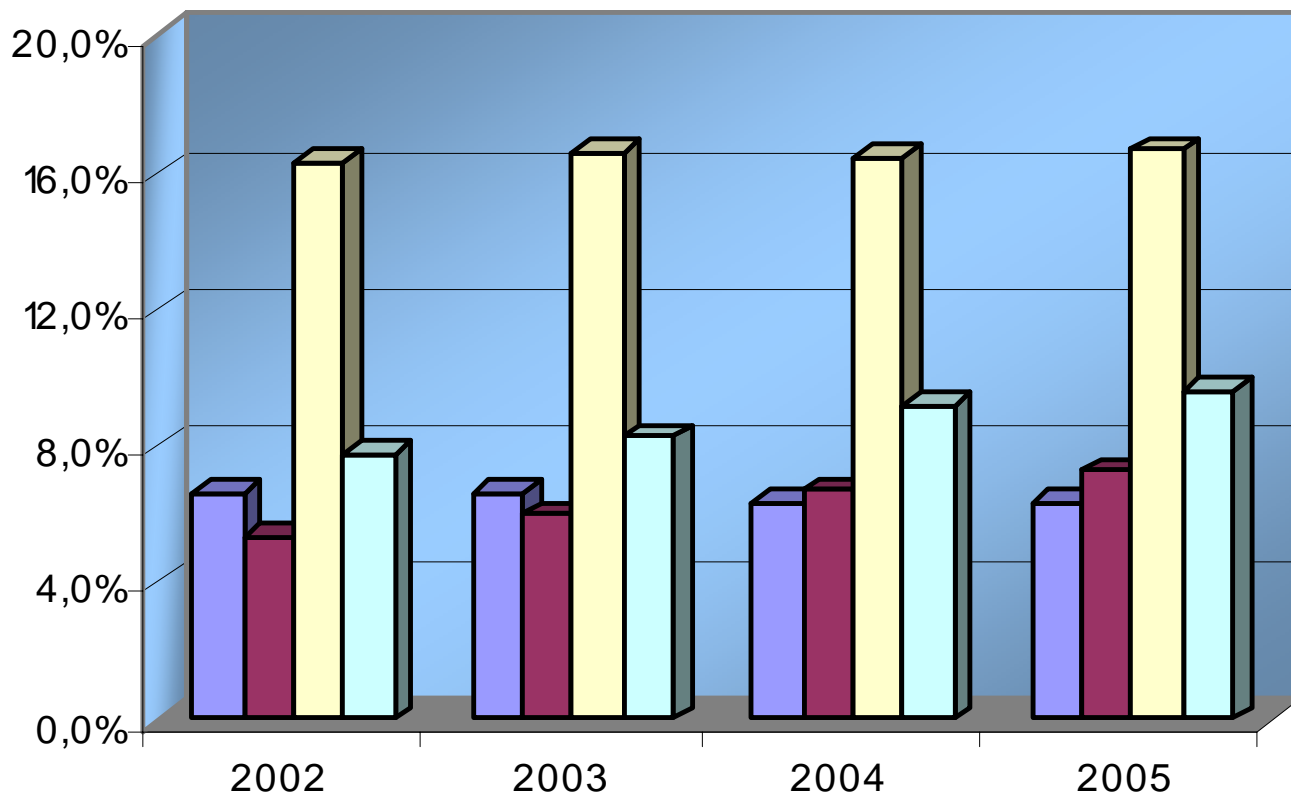
Dr. Wolfram Seidemann



Giesecke & Devrient

# Cash-to-GDP Ratio: Recent Development

Cash to GDP ratio



- No significant changes in mature markets
- Increase of cash-to-GDP ratio in growing Asian countries



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

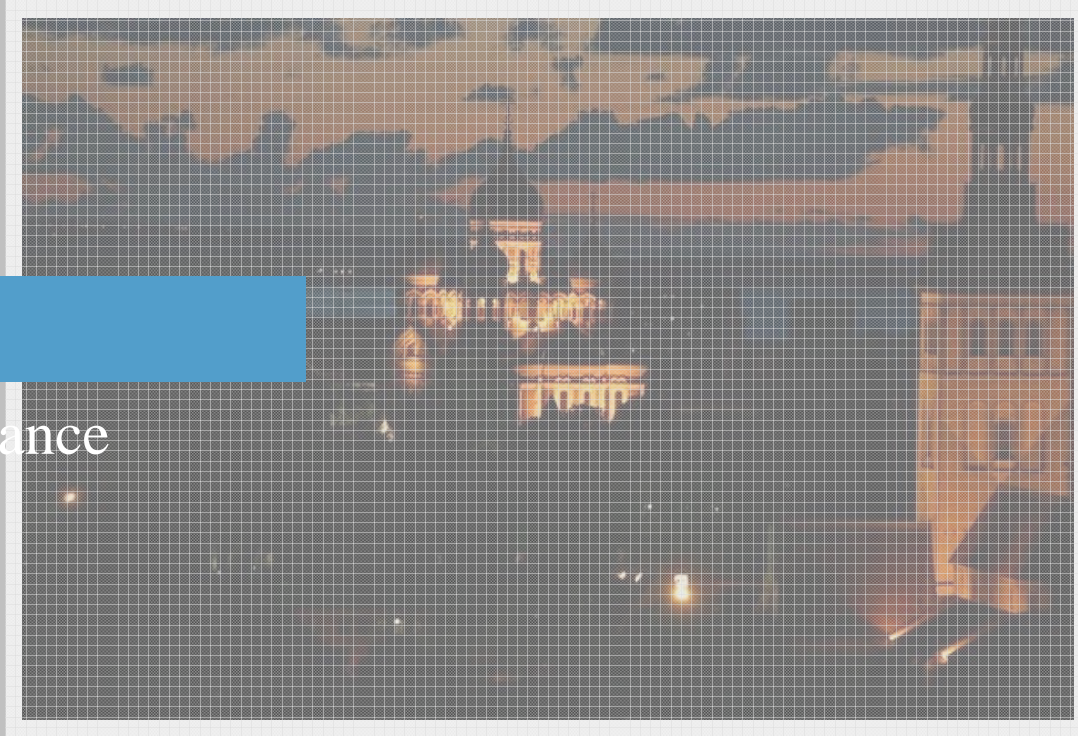
Dr. Wolfram Seidemann



Giesecke & Devrient

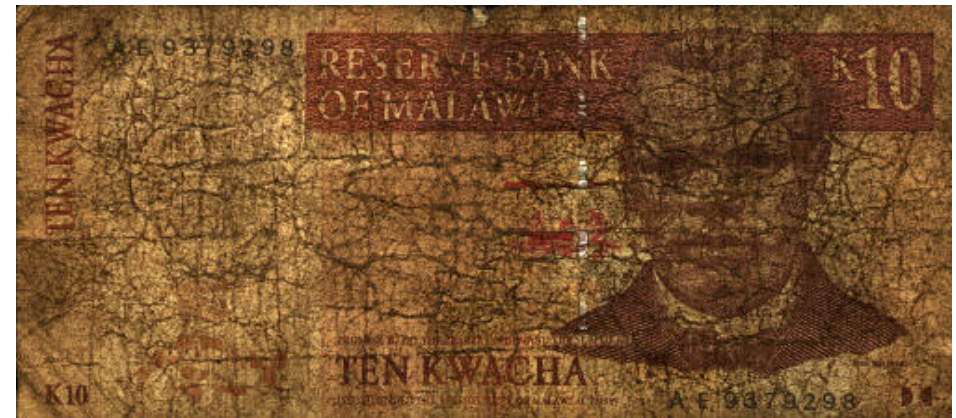
# Agenda

- 1 A Future without Cash ?
- 2 Central Bank Regulations
- 3 Drivers for Cash or Card Acceptance
- 4 Summary





# Banknotes in Circulation



Banknote quality and counterfeit rates have a strong influence on public acceptance of cash

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# The Magic Triangle of the Cash Value Chain



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

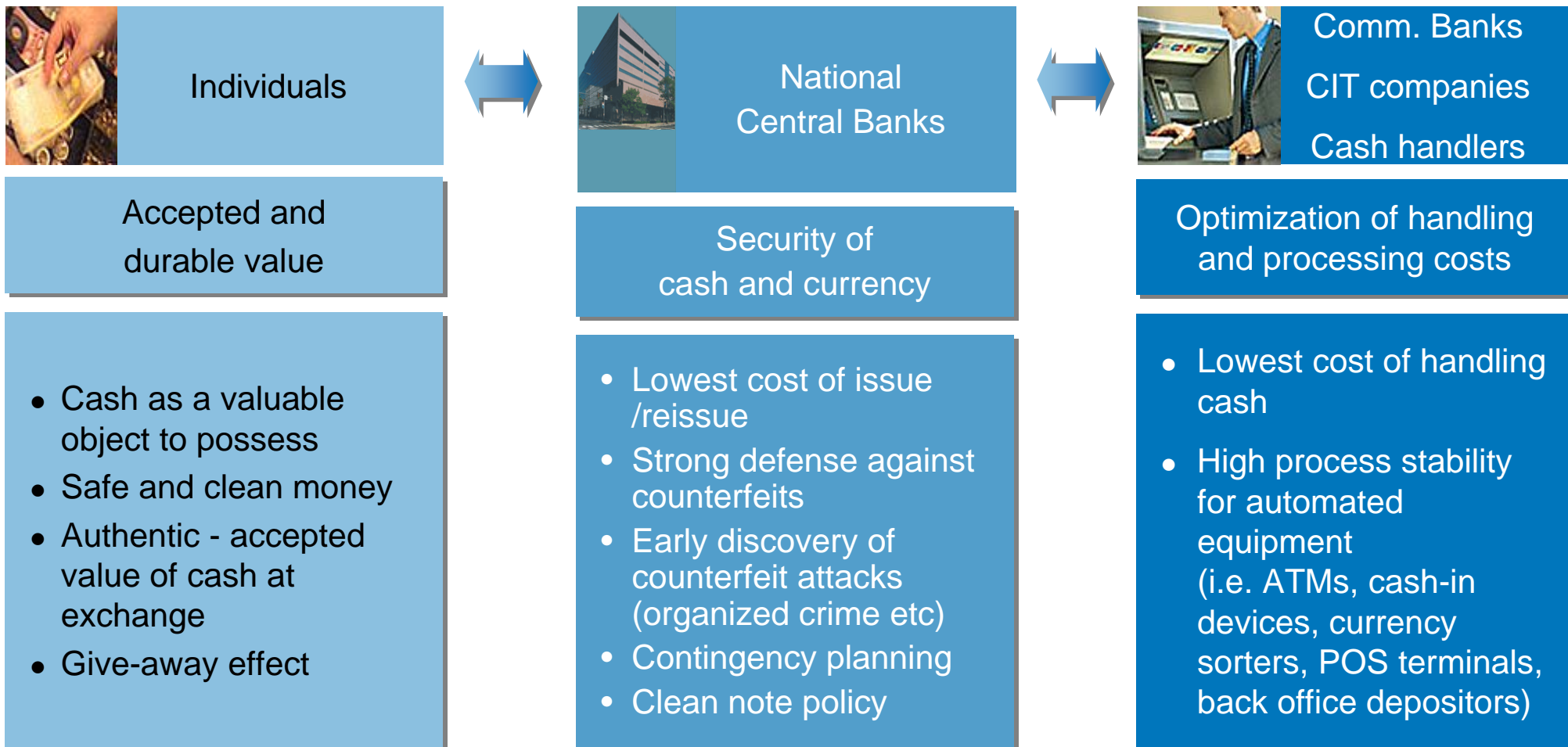
Dr. Wolfram Seidemann



Giesecke & Devrient



# Interests of Different Players



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

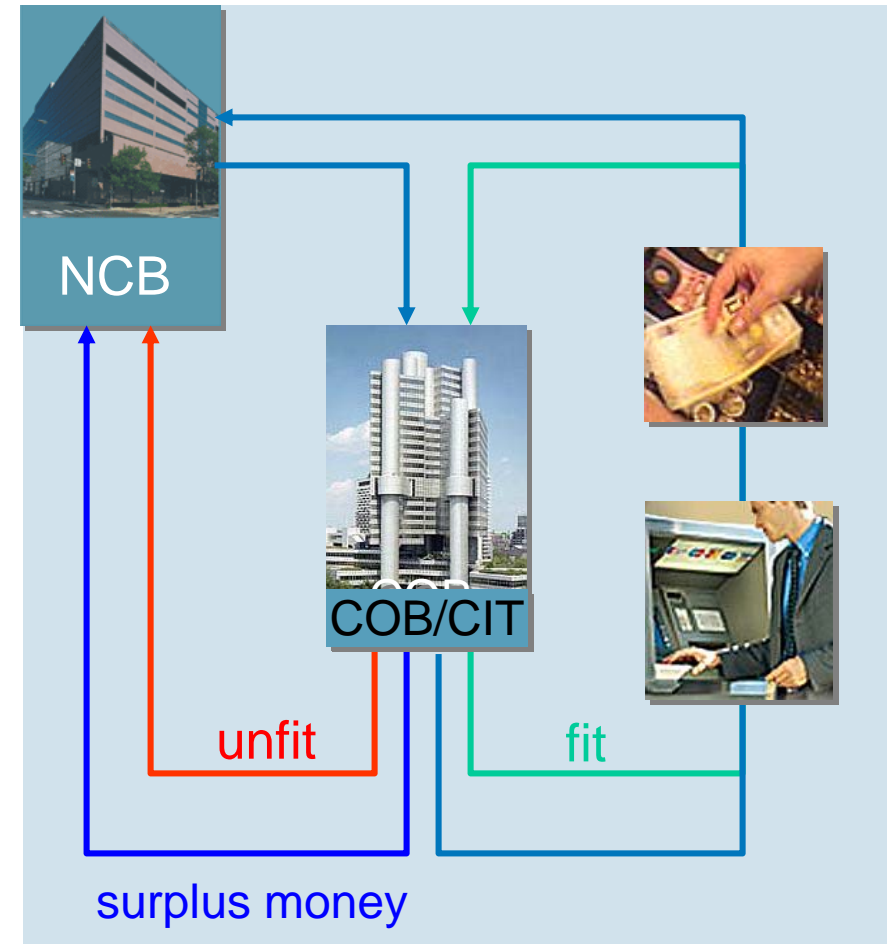
Dr. Wolfram Seidemann



Giesecke & Devrient

# New Policies of Central Banks

- Recent initiatives of Central Banks (ECB, BoE, FRB, RBA) focus on introduction of new banknote processing policies
- These policies provide the framework for cash handling and sorting
- Policies are enforced by penalties, fees or denial of service(s)



# From Policy to Successful Implementation



- Successful implementation of policy requires functional control and data management systems
- Controls need to span the entire cash cycle
- Following the emerging roles of central banks, various “control styles” have evolved over time

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient



# Role Characteristics of Central Banks (1)

2002

	Delegated	Involved	Controlled
	Cash is cost	Cash needs management	Cash needs control
<b>Countries</b>	<ul style="list-style-type: none"> <li>• United Kingdom</li> <li>• Australia</li> <li>• Mexico</li> </ul>	<ul style="list-style-type: none"> <li>• USA</li> <li>• Spain</li> <li>• Portugal</li> </ul>	<ul style="list-style-type: none"> <li>• Germany</li> <li>• France</li> <li>• Belgium</li> </ul>
<b>Concept</b>	<ul style="list-style-type: none"> <li>• Focus on money policy - stays out of the cash cycle except for note issuing &amp; shredding</li> <li>• Monitoring function</li> <li>• No or little subsidies</li> </ul>	<ul style="list-style-type: none"> <li>• Controls parts of the cash cycle</li> <li>• Manages costs</li> <li>• 20-40% of cash recounted</li> <li>• State subsidized, but less costs</li> </ul>	<ul style="list-style-type: none"> <li>• Controls the full cash cycle</li> <li>• Sets rules and processes</li> <li>• Almost 100% of cash recounted</li> <li>• State subsidized</li> </ul>

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

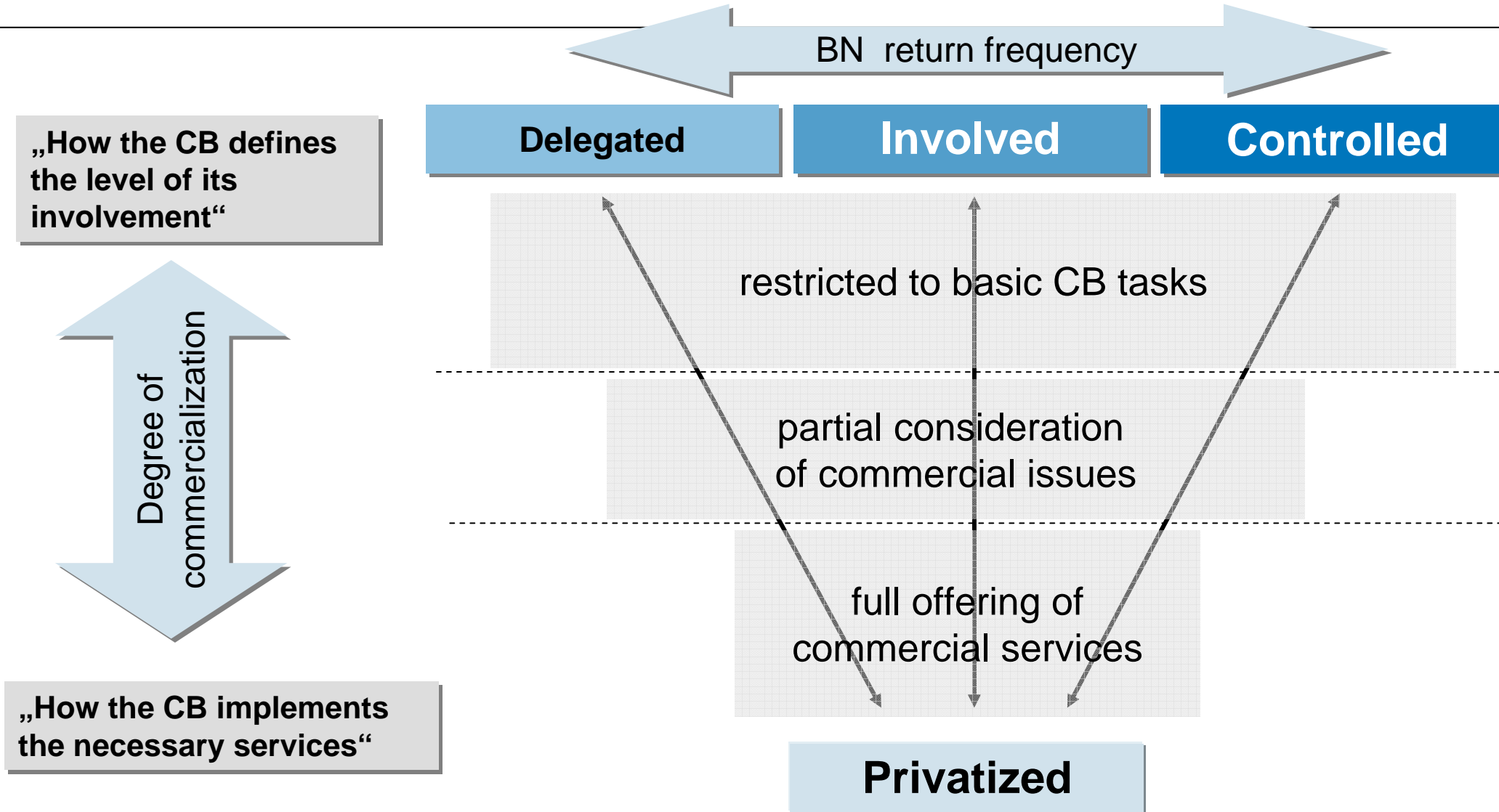
Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann

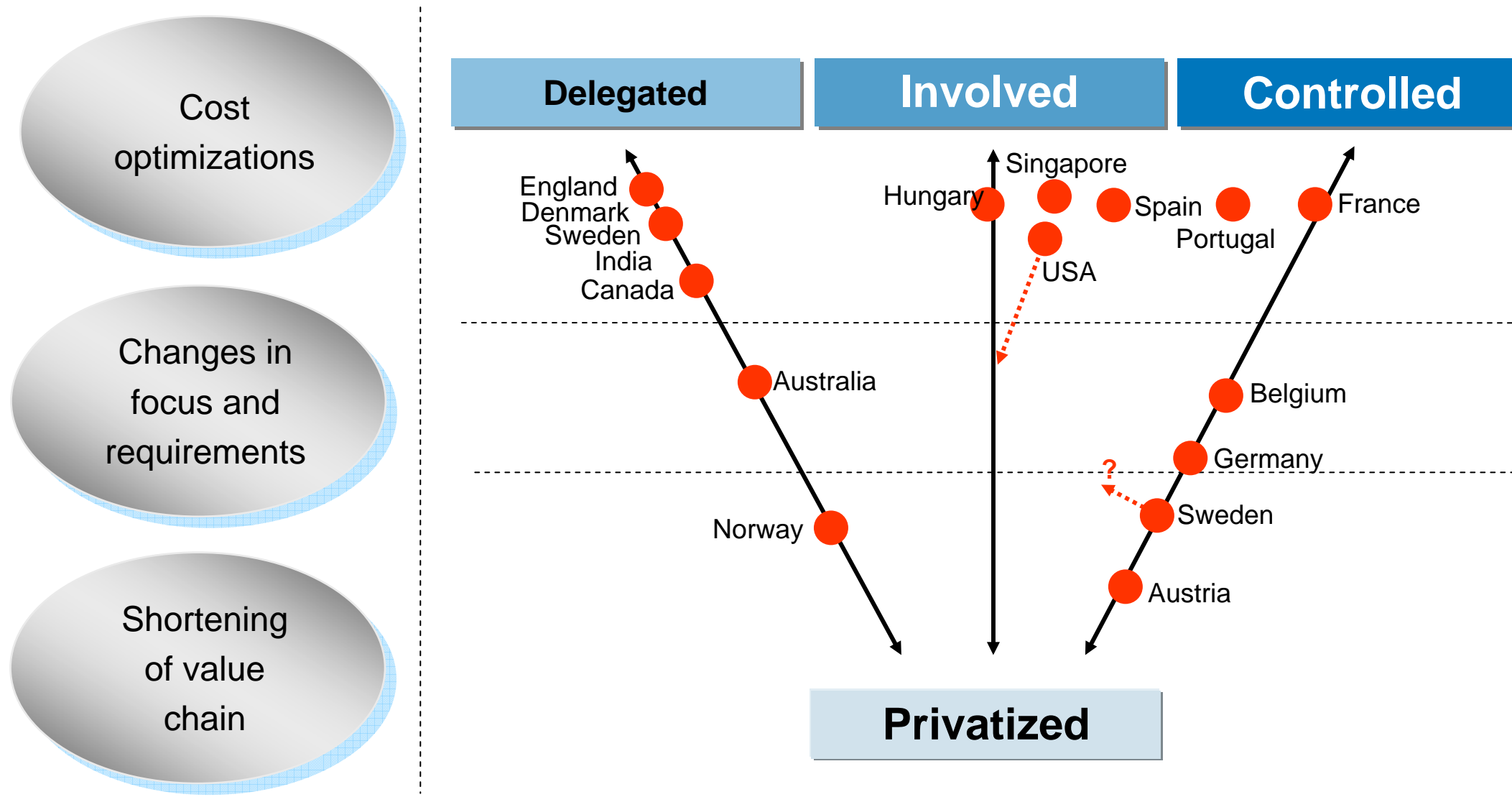


Giesecke & Devrient

# Role Characteristics of Central Banks (2)



# Role Characteristics of Central Banks (3)



Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

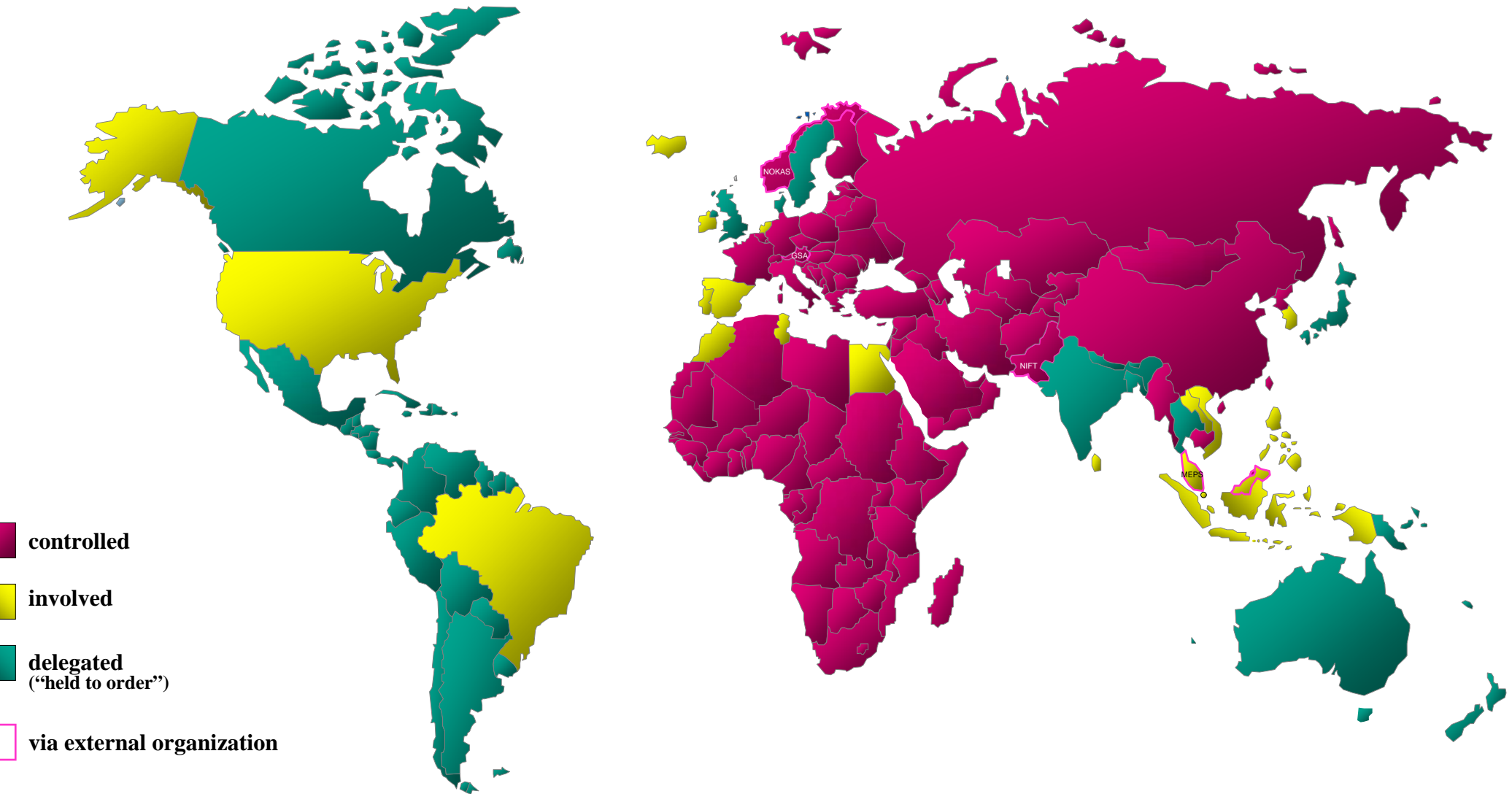
Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Role of Central Banks - 2006



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

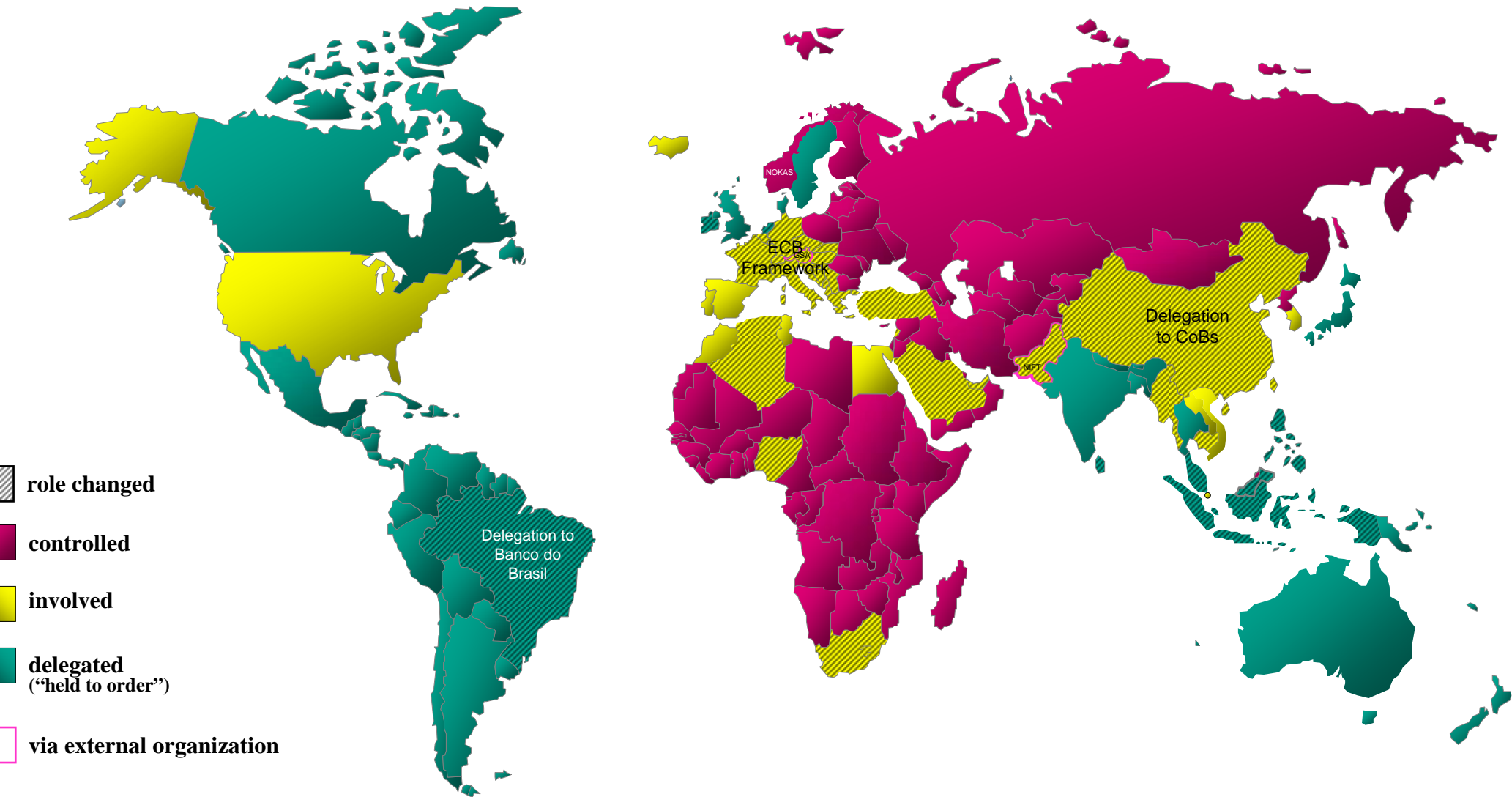
Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Role of Central Banks – Expected in 2012



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

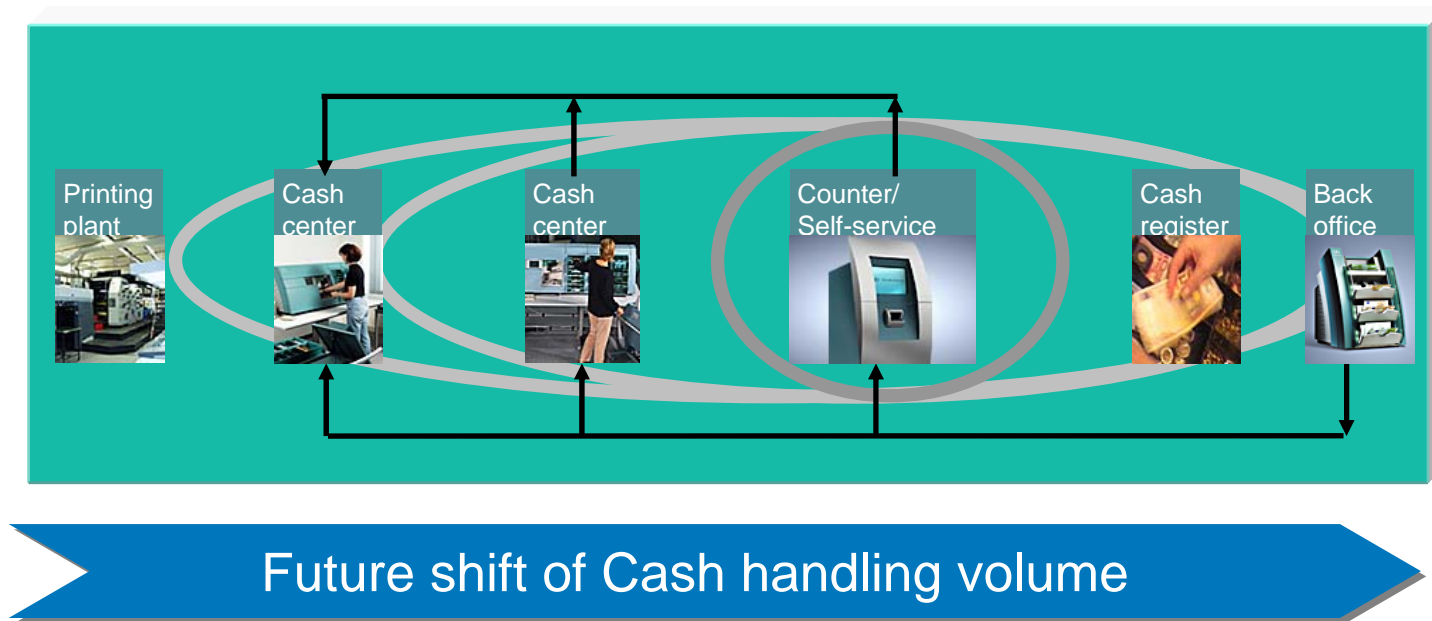
Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Changes in the Cash Value Chain



## Current changes

- New policies of central banks
- Framework for commercial cash handlers

## Requirements

### for Implementation

- Availability of technology
- Optimization of process structure and cost
- „Common language“

Optimum security and image

Streamlined cash value chain

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Circulation Volumes – Current Trends



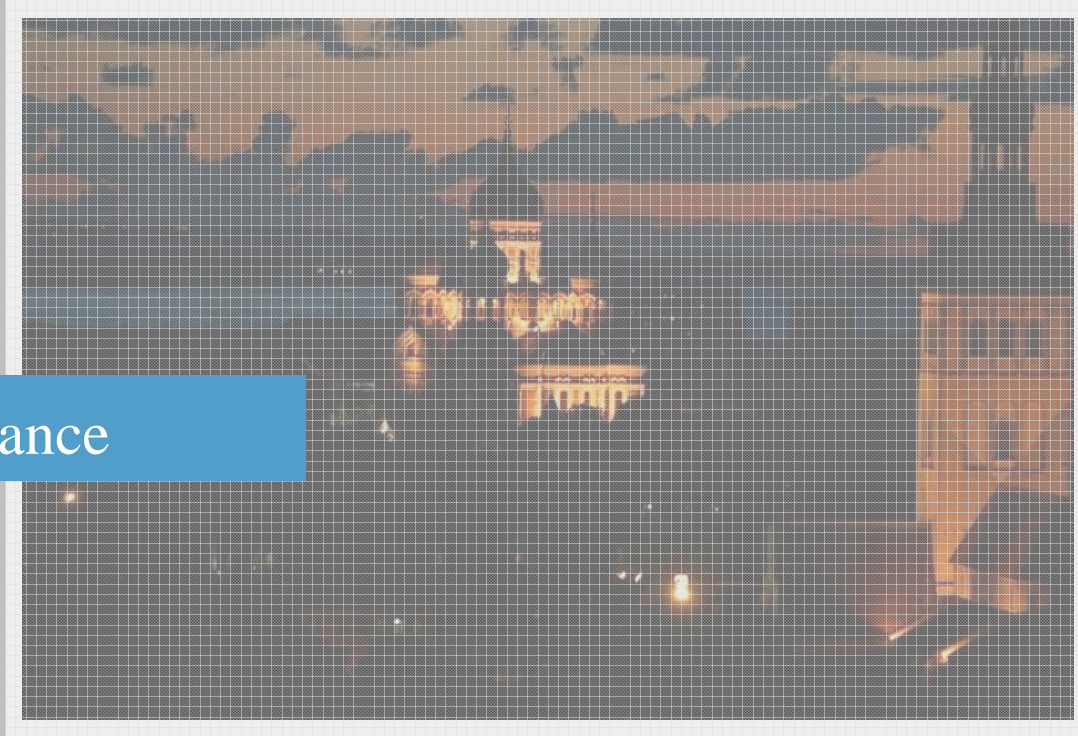
- Circulation volume increased by 4.6% p.a.\*)
- Processing volume increased by 2.9% p.a.\*)
- Return frequency fell from 1.82 to 1.74\*)
- Circulation value increased by 8% p.a.\*)

\*) based on period 2003 to 2006



# Agenda

- 1 A Future without Cash ?
- 2 Central Bank Regulations
- 3 Drivers for Cash or Card Acceptance
- 4 Summary





# About Banknote Quality .....



It may be like a bumpy road ....



.... or like an Autobahn

**Is Cash Stone Age?**

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Evolution of Banknote Quality



Germany: DEM 20 (1980)



Germany: DEM 20 (1992)



Germany: EUR 20 (2002)

1970

1980

1990

2000

2010



USA: USD 1 (NY 1977)



USA: USD 1 (1985)



USA: USD 1 (2005)

Technology helps to improve quality and efficiency of cash

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Counterfeit Detection and Trends

Country	Current CF rate*)	Tendency
Canada	Below 200	Decreasing due to new initiatives
ECB	About 100	Shift between denominations
Indonesia	Below 10	Dramatically increasing # of BN in circulation, Shift away from polymer substrate
UK	100 .. 200	Increasing, new emissions due soon
USA	Approx. 120	Slightly higher than Euro
South Afrika	70 - 80	More or less stable

\*) CF per million Banknotes,  
depending on actual seizures of large so-called „common groups“

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

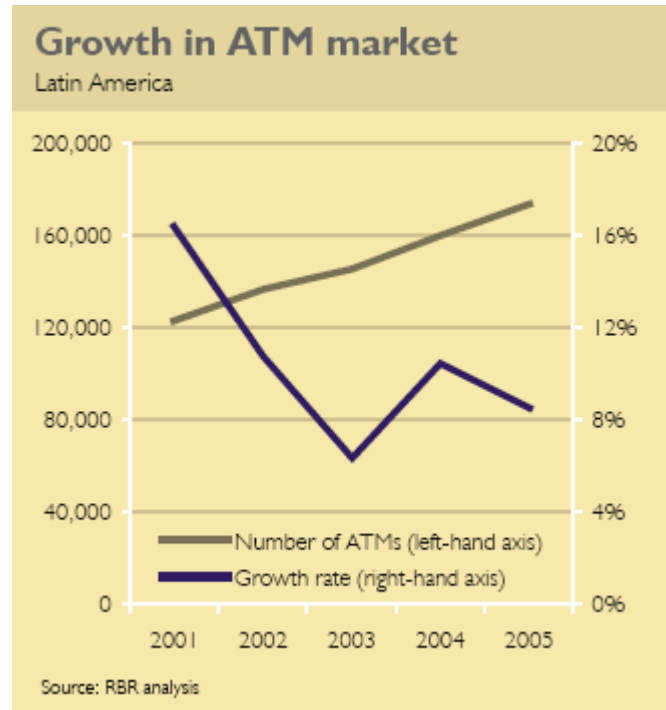
Dr. Wolfram Seidemann



Giesecke & Devrient



# Availability of Cash – Latin America

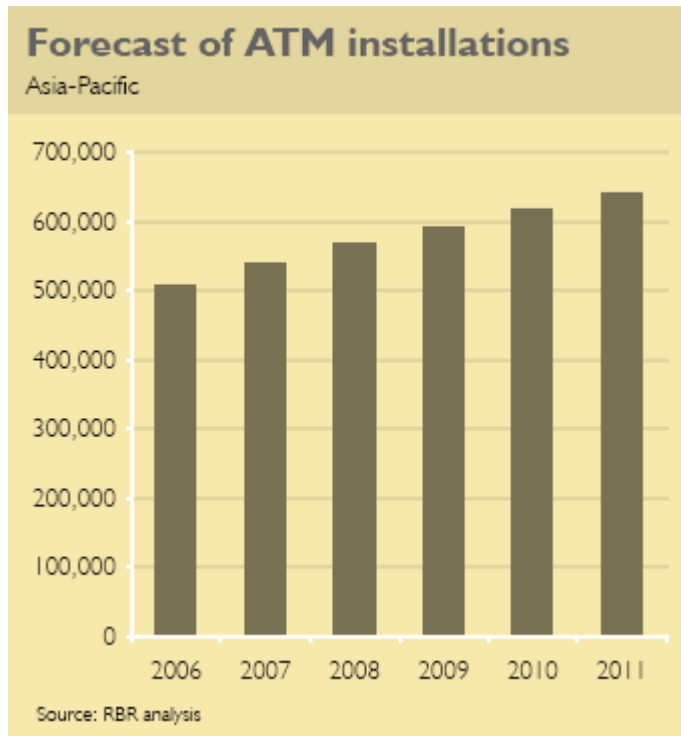


**Growth in ATMs**  
per country

Country	Number of ATMs	Growth Rate 2003-2005
Brazil	112,660	20.0%
Mexico	22,900	16.3%
Argentina	7,257	9.9%
Colombia	6,219	11.4%
Venezuela	5,387	21.5%
Chile	4,812	27.0%
Peru	2,148	35.9%
Bolivia	597	27.3%
Others	11,900	32.2%
<b>Total</b>	<b>173,880</b>	<b>19.9%</b>

Source: RBR analysis

# Availability of Cash – Asia



**Growth in ATMs by country**  
Asia-Pacific, 2005

Country	Number of ATMs	Growth 2003-2005
Japan	173,729	3.0%
China	95,000	33.8%
South Korea	84,125	5.0%
Australia	24,337	11.5%
Taiwan	23,456	22.8%
India	21,147	76.2%
Thailand	16,176	73.0%
Indonesia	14,791	36.1%
Philippines	6,434	30.6%
Malaysia	5,777	10.2%
Hong Kong	2,691	0.3%
New Zealand	2,263	19.8%
Singapore	1,698	9.3%
Others	4,382	76.8%
Total	476,006	15.6%

Source: RBR analysis

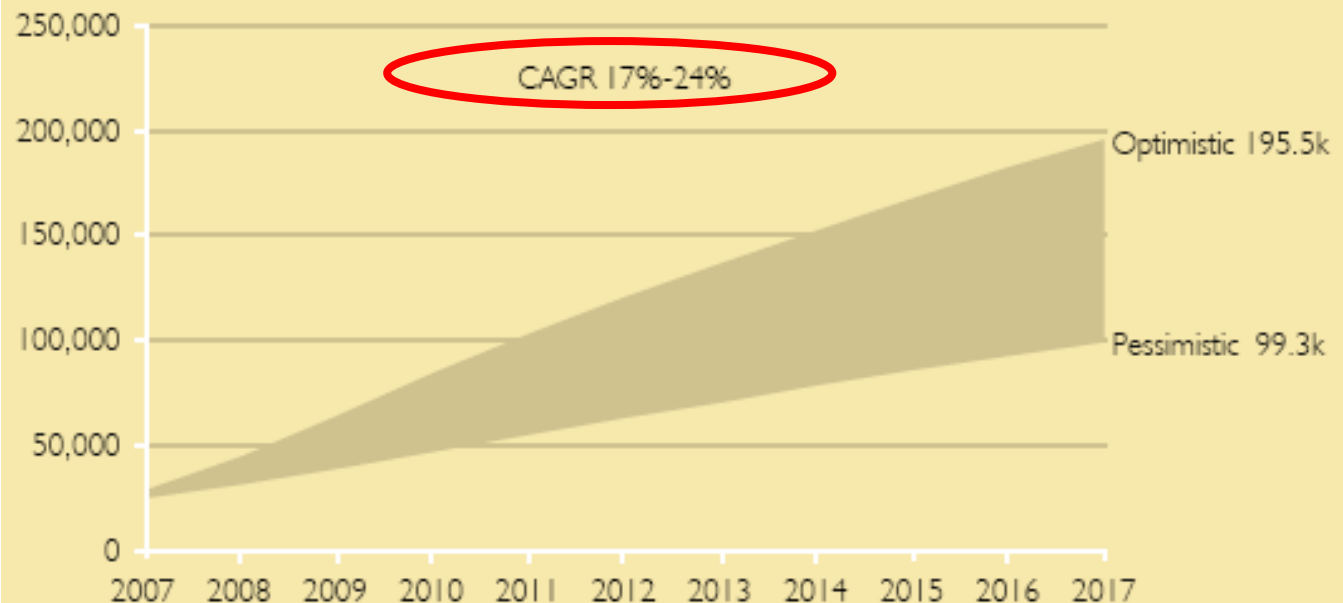
# Increased Efficiency of Cash Cycle

Ongoing  
Debate about  
cost of cash

Cost of cash-in  
=  
2 x cost of cash-out

## Forecast deployment of automated deposit terminals

North America and 'big five' European countries, 2006



Source: RBR analysis

Banking Automation Bulletin  
Issue 238 / Mar. 2007

### Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

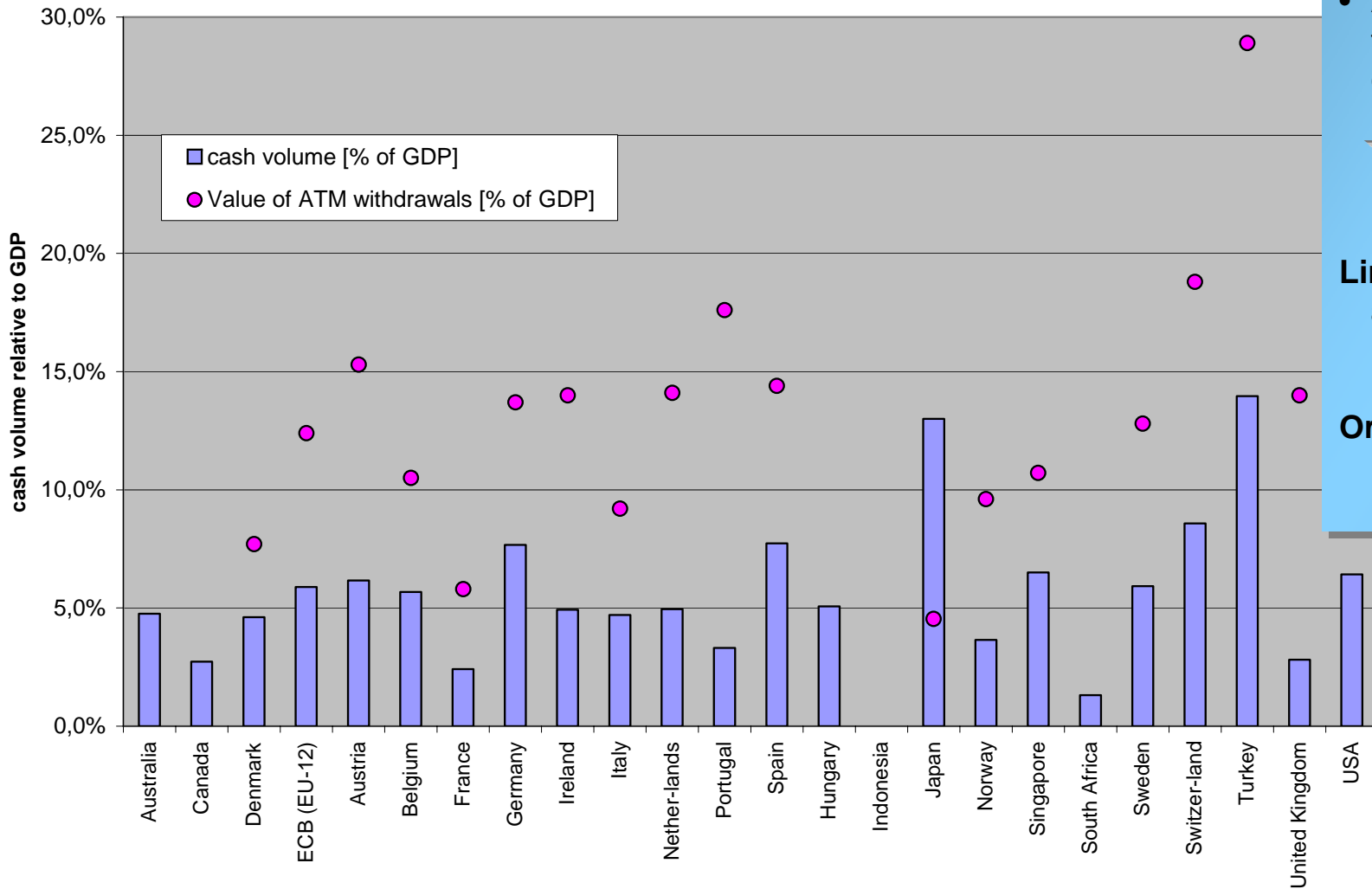
Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Cash-to-GDP and ATM-to-GDP



## Tendencies:

- Average ATM withdrawal value is 2 .. 3 times cash circulation (per year)
- ATM withdrawals are in the range of 10% to 15% of GDP

Linkage between cash availability and cash usage?

Or a chicken and egg problem???



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

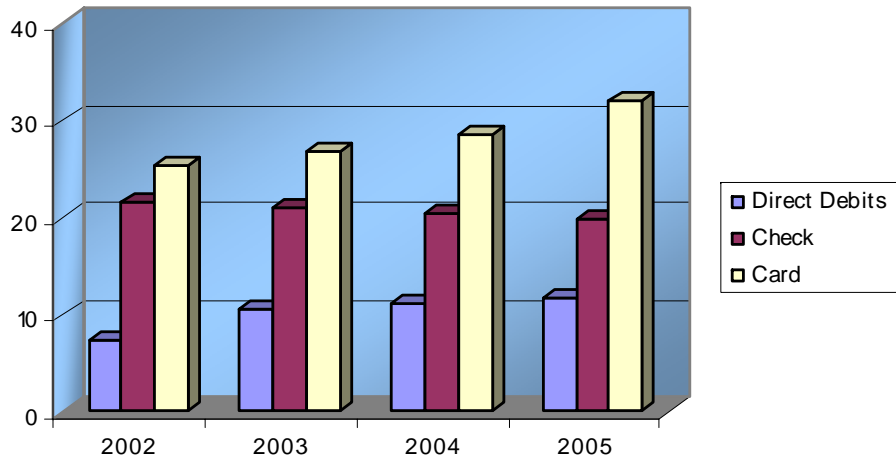
Dr. Wolfram Seidemann



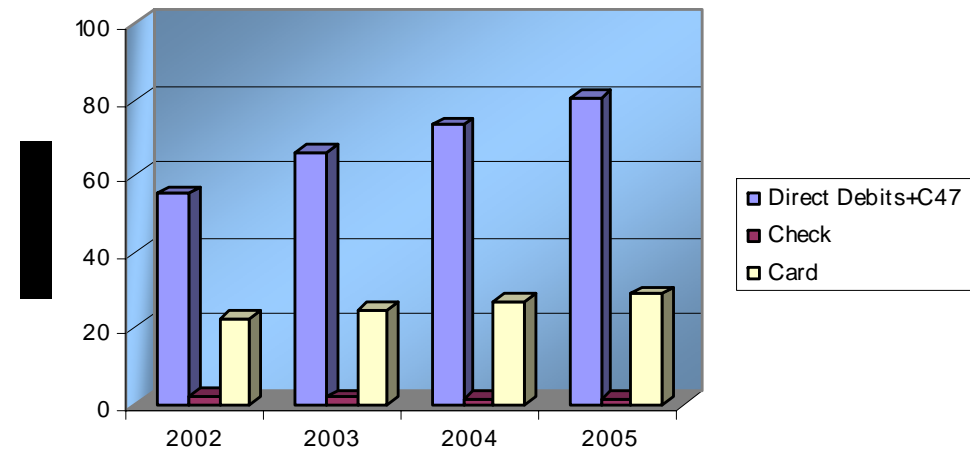
Giesecke & Devrient

# Trends in cashless payments

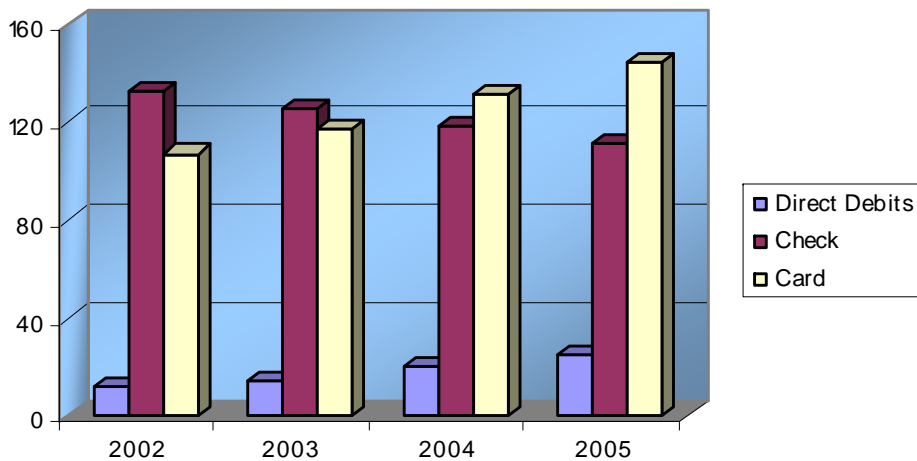
Singapore



Germany



USA



- Growth in cashless payments
- Tendency for mutual replacement of cashless payments in mature markets ?

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>-5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann

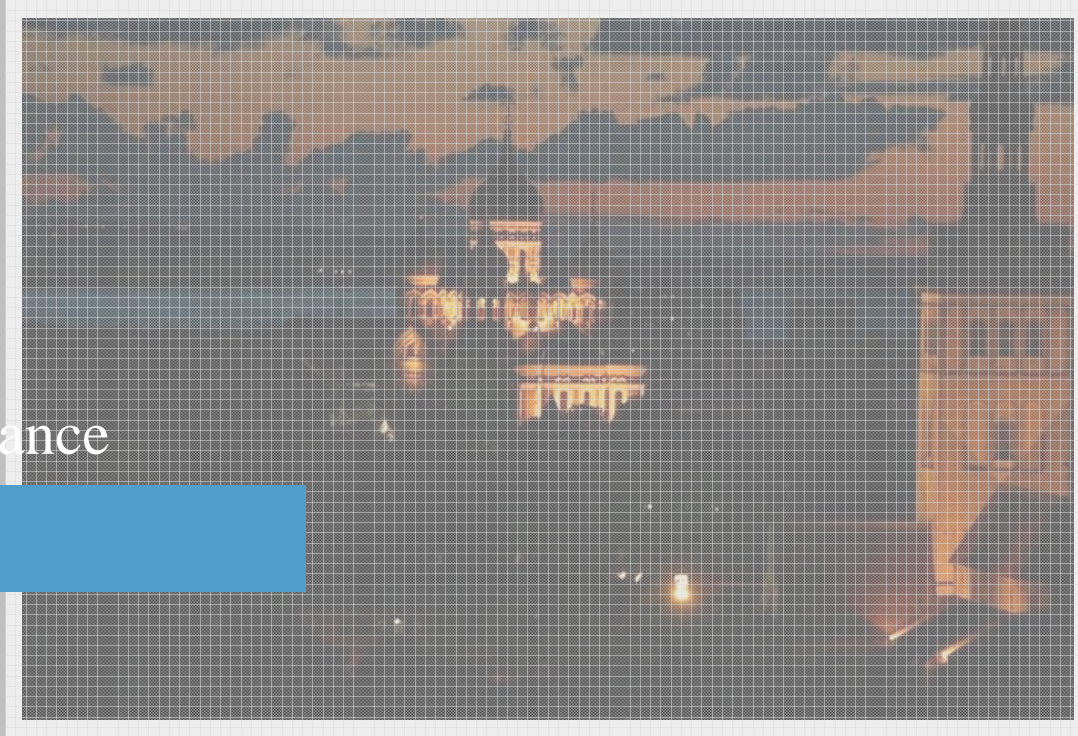


Giesecke & Devrient



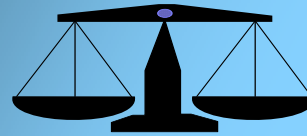
# Agenda

- 1 A Future without Cash ?
- 2 Central Bank Regulations
- 3 Drivers for Cash or Card Acceptance
- 4 Summary



# The Balance between Cash and Cashless Payments (1)

- Mutual replacement of cashless payment systems in mature markets (5-6 cards per person)
- Huge growth of cashless payments in developing markets  
Growth from zero, especially in Asia (Number of cards per person below 1 )
- New policies on charges (SEPA), „15 Euro boundary“? Where is the limit?



- Competitive situation for all means of payments
- Balance depending on availability of means of payments, convenience and freedom of choice

- Efficiency gains within cash cycle, supported by CB rules and regulations
- Efficiency gains within cash cycle through technology pushes
- Restrictions in infrastructure especially in developing markets (can infrastructure – cash and cashless – keep pace with economic development?)

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann

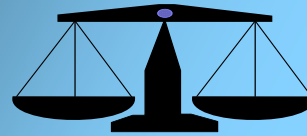


Giesecke & Devrient

# The Balance between Cash and Cashless Payments (2)

Strong marketing efforts driven by Business Case of card organization and Banks:

- Loyalty programs
- Increasing density of points of acceptance
- Standardization efforts
- Increasing security and efficiency in systems



- Economic growth is immediately accompanied by cash growth
- Growth of cashless payments follows in developed areas

Cash is convenient for end users and gets more and more convenient for professional cash handlers:

- Back office recycling
- Till recycling
- Faster and more efficient high speed processors

## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient

# Summary

- Value of cash increases in many regions more than GDP
- Central bank rules and regulations strive for optimization of the cash value chain
- Technology development enables cost reduction efforts within cash value chain
- New trends in cashless payments are partially competing with other means of cashless payments rather than with cash
- Cash remains competitive



## Is Cash Stone Age?

ESTA Conference in Tallin, June 3<sup>rd</sup>–5<sup>th</sup>, 2007

Dr. Alfred Kraxenberger

Dr. Wolfram Seidemann



Giesecke & Devrient



# Cashless is NOT the answer to a less Cash Society

*Dr. Alfred Kraxenberger*

*Group Vice President  
Head of Product Management and Support*

*Giesecke & Devrient GmbH  
D-81677 Munich  
Tel. +49 89 4119-8182  
Fax +49 89 4119-8118  
Mobile: +49 173 350 23 27  
<mailto:Alfred.Kraxenberger@gi-de.com>  
<http://www.gi-de.com>*

*Dr. Wolfram Seidemann*

*Group Vice President  
Head of Sales and Marketing*

*Giesecke & Devrient GmbH  
D-81677 Munich  
Tel. +49 89 4119-8212  
Fax +49 89 4119-8232  
Mobile: +49 172 869 11 48  
<mailto:Wolfram.Seidemann@gi-de.com>  
<http://www.gi-de.com>*



Giesecke & Devrient