

Interim Study Report 4

Monitoring electronic communications and information society services in
Enlargement Countries

December 2010



CULLEN

INTERNATIONAL

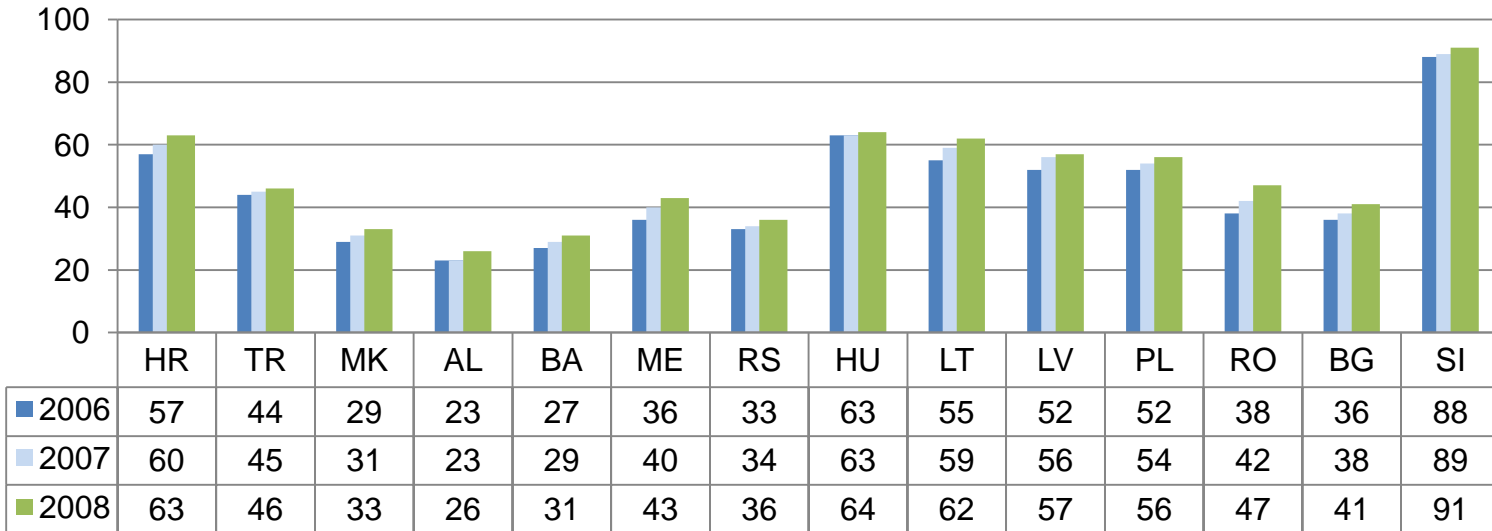
Key highlights

Overview

- Market overview
- Radio spectrum
- Legislative and regulatory developments
- NRA independence
- Market analyses
- Competitive safeguards
- Wholesale tariffs

General economic situation

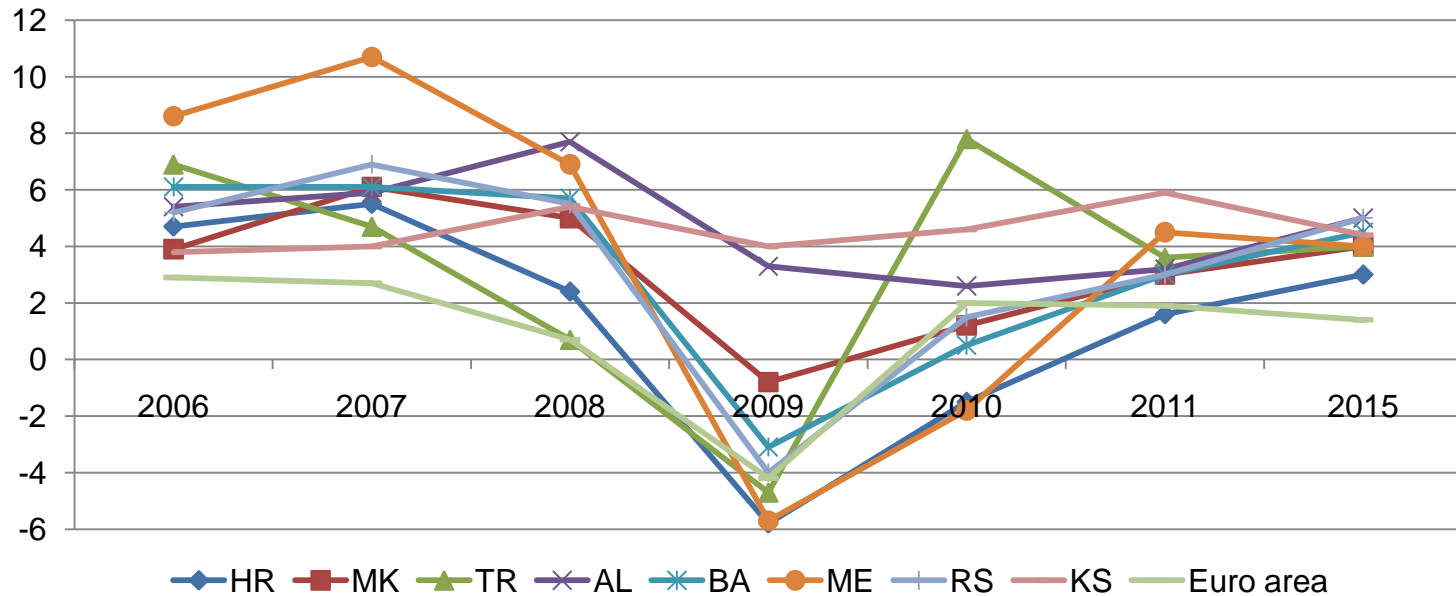
Volume index of GDP per capita in PPPs, EU-27=100



- Croatia had GDP per capita similar to Hungary or Lithuania, above Latvia, Poland, Romania and Bulgaria
- All three candidate countries are still below EU-27 average
- Most of the remaining countries are below any of the EU-27, except for Montenegro that comes just above Bulgaria

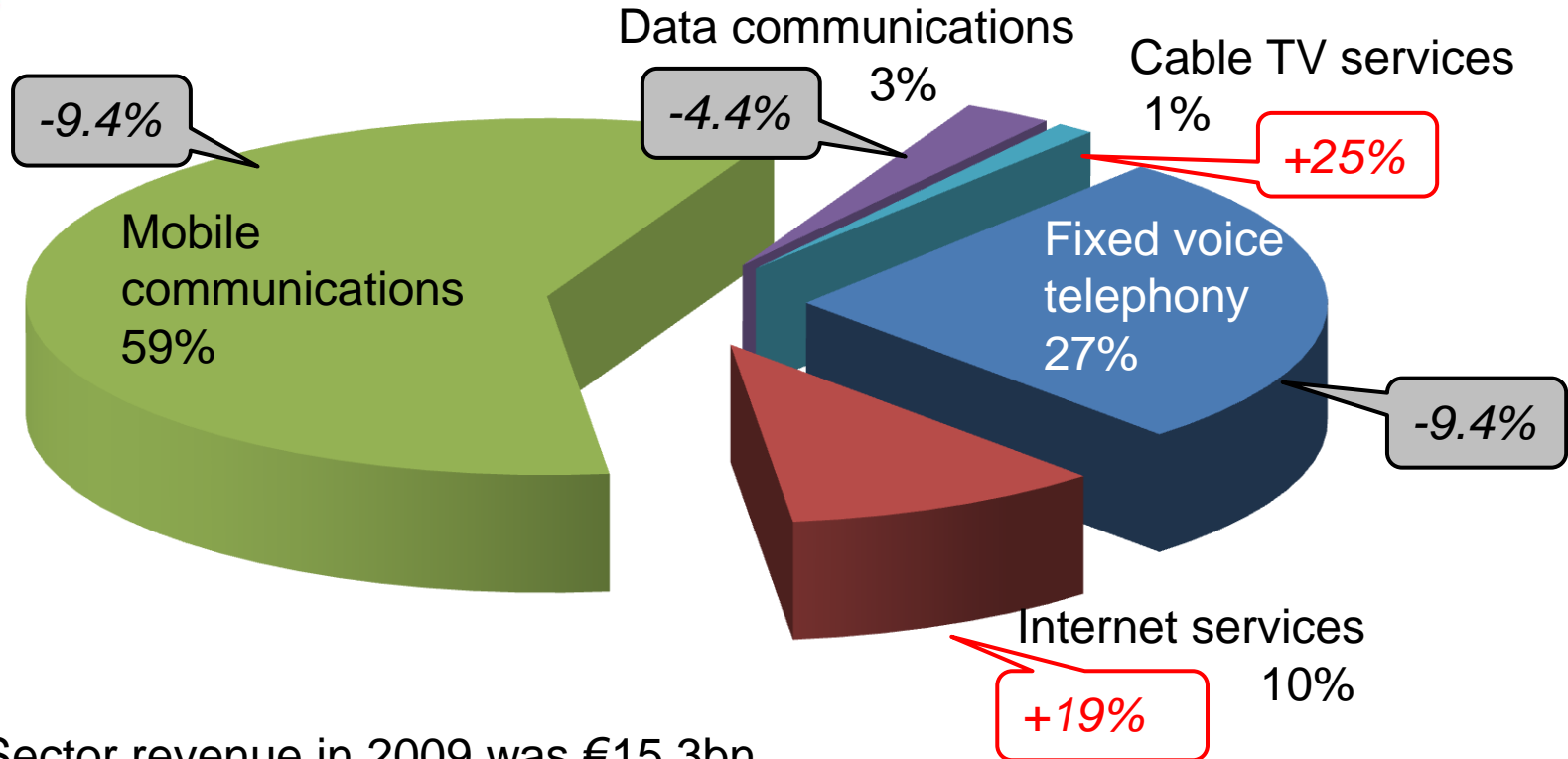
General economic situation

GDP growth and IMF forecasts, October 2010



- Most economies expected to perform better than Euro area, except Croatia, Montenegro and Turkey
- Albania and Kosovo are forecast to grow by respective 3.3% and 4.0%
- Croatia worst hit in 2009 with a 5.8% fall in GDP, followed by Montenegro and Turkey with respective 5.7% and 4.7% decline in GDP
- Turkey is also the fastest to recover – reaching 7.8% GDP growth in 2010

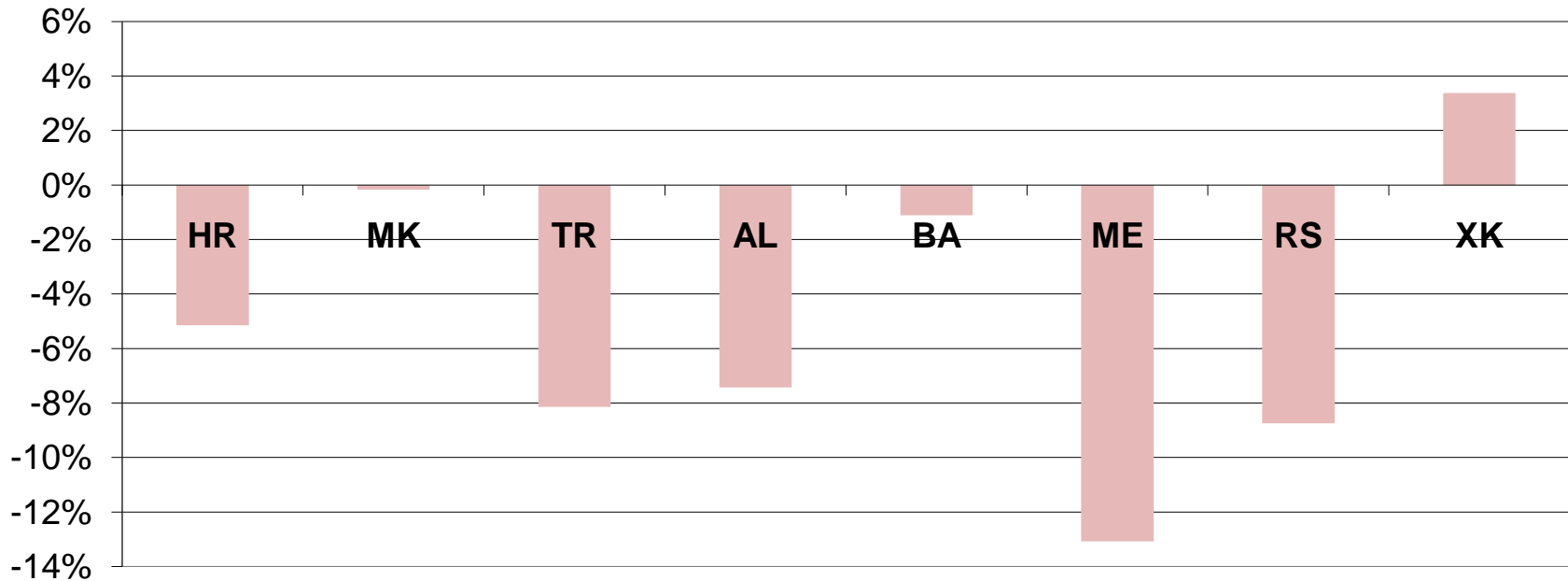
Electronic communications sector



- Sector revenue in 2009 was €15.3bn
- 6.75% decrease from €16.4bn in 2008
- Over 9% decline in fixed and mobile telephony
- Strongest growth in Internet and Cable TV services

Electronic communications sector

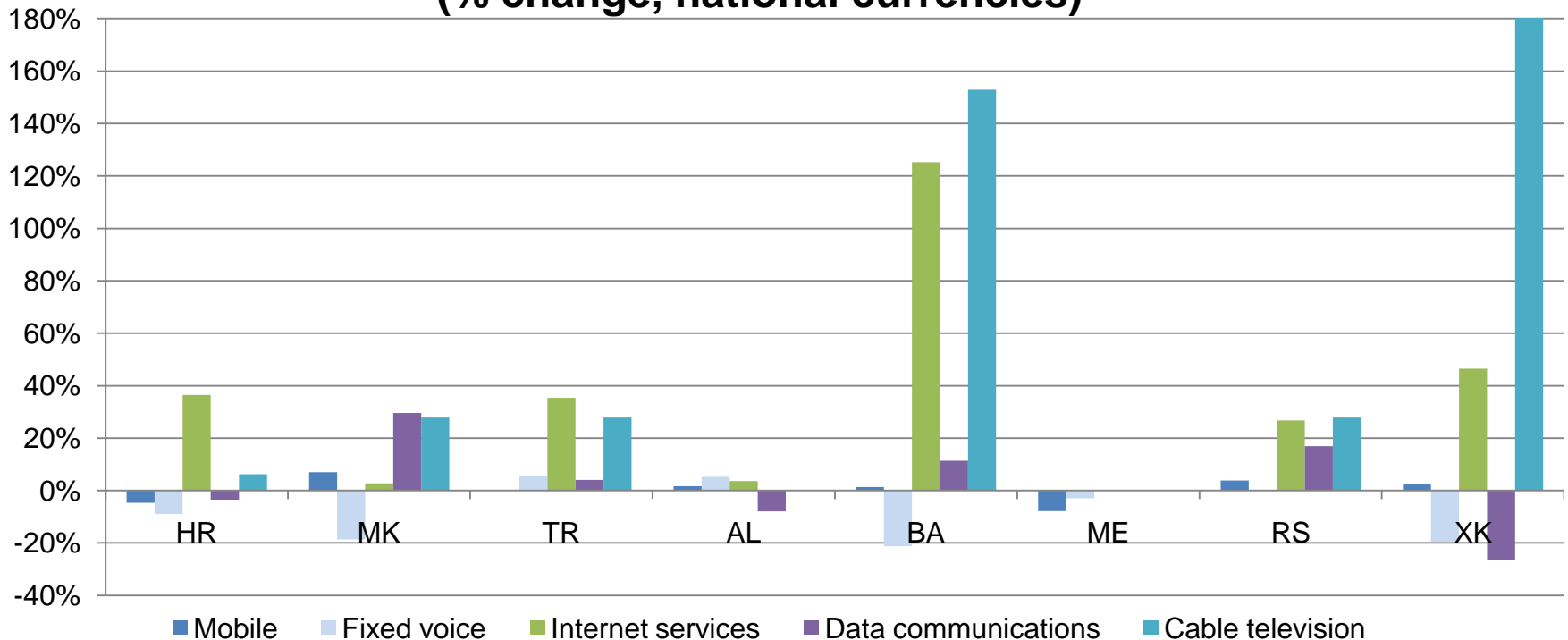
Sector revenue by country in 2009 (% change, €)



- Montenegro -13%, Serbia -8.7%, Turkey -8.1%, Albania -7.4%, Croatia -5.2%
- At the same time, depreciation of national currencies against € in 2009
RSD 15%, TRY 13%, ALL 7.5%

Electronic communications sector

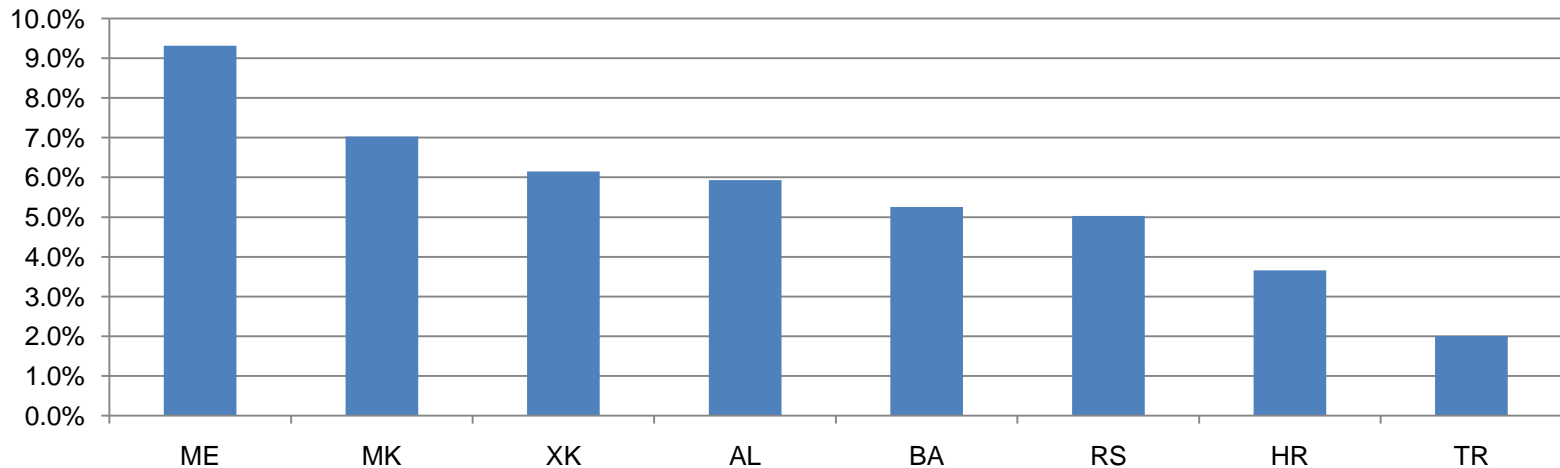
**Sector revenue by country and by segment in 2009
(% change, national currencies)**



- Internet services: BiH 125%, Kosovo 46%, Croatia 36%, Turkey 35%
- Cable TV: Kosovo (almost 17x), BiH 153%, FYR Macedonia, Turkey and Serbia 28%
- Fixed voice telephony: BiH, Macedonia and Kosovo around -20%

Electronic communications sector

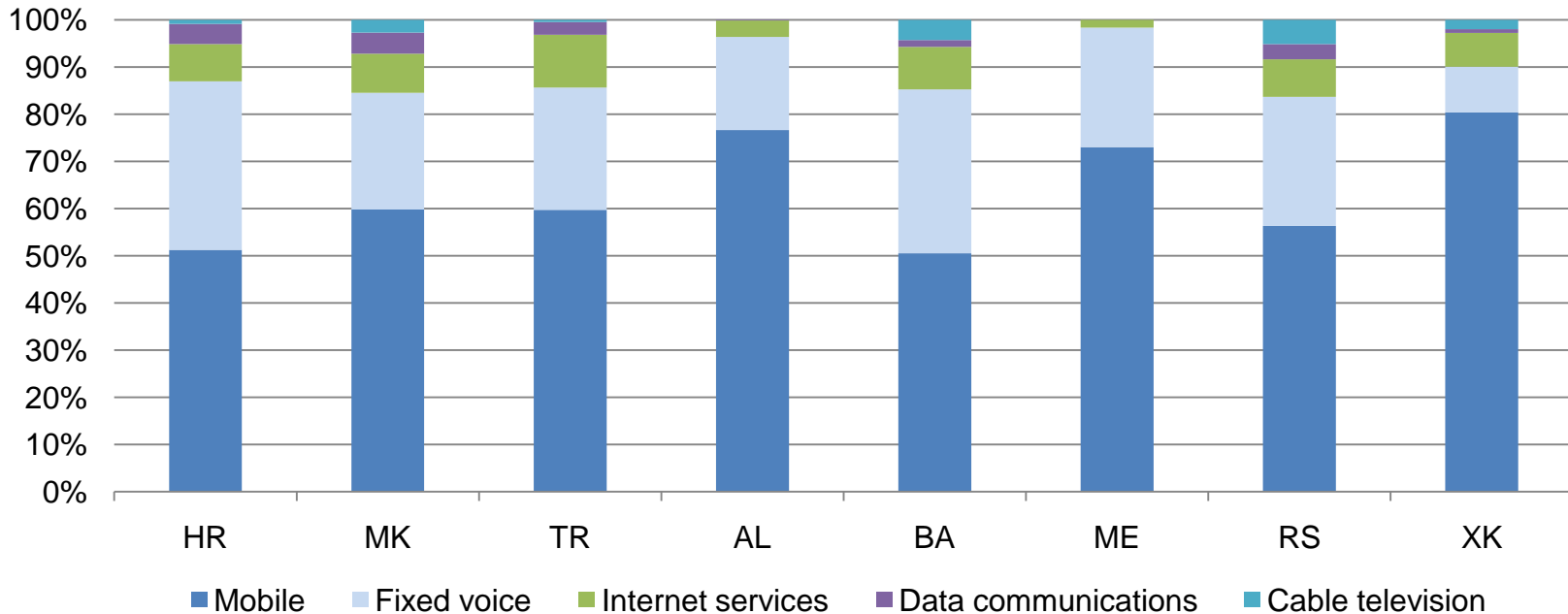
Electronic communications as percentage of GDP in 2009



- Croatia and Turkey are close to EU-27 average (2-3%)
- Montenegro – over 9% of GDP

Electronic communications sector

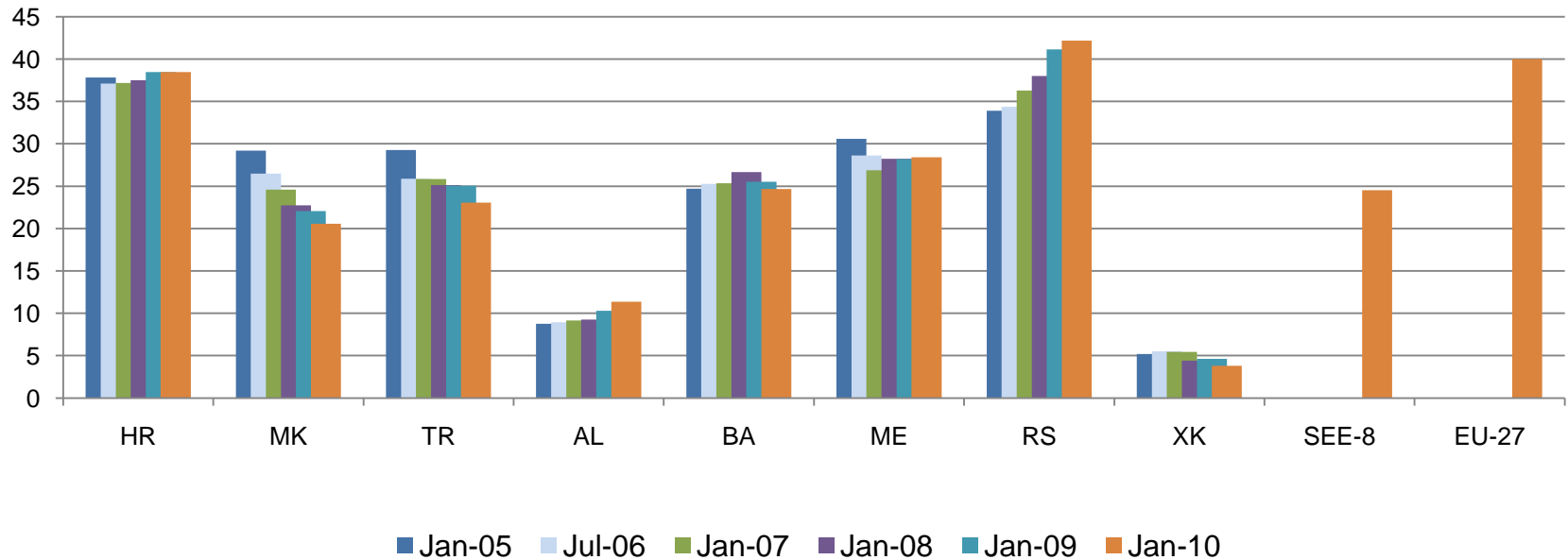
Composition of electronic communications markets in 2009



- Mobile telephony over 50% in most countries, 80% in Kosovo
- Fixed telephony around 20%, over 30% in Croatia and BiH

Fixed telephony

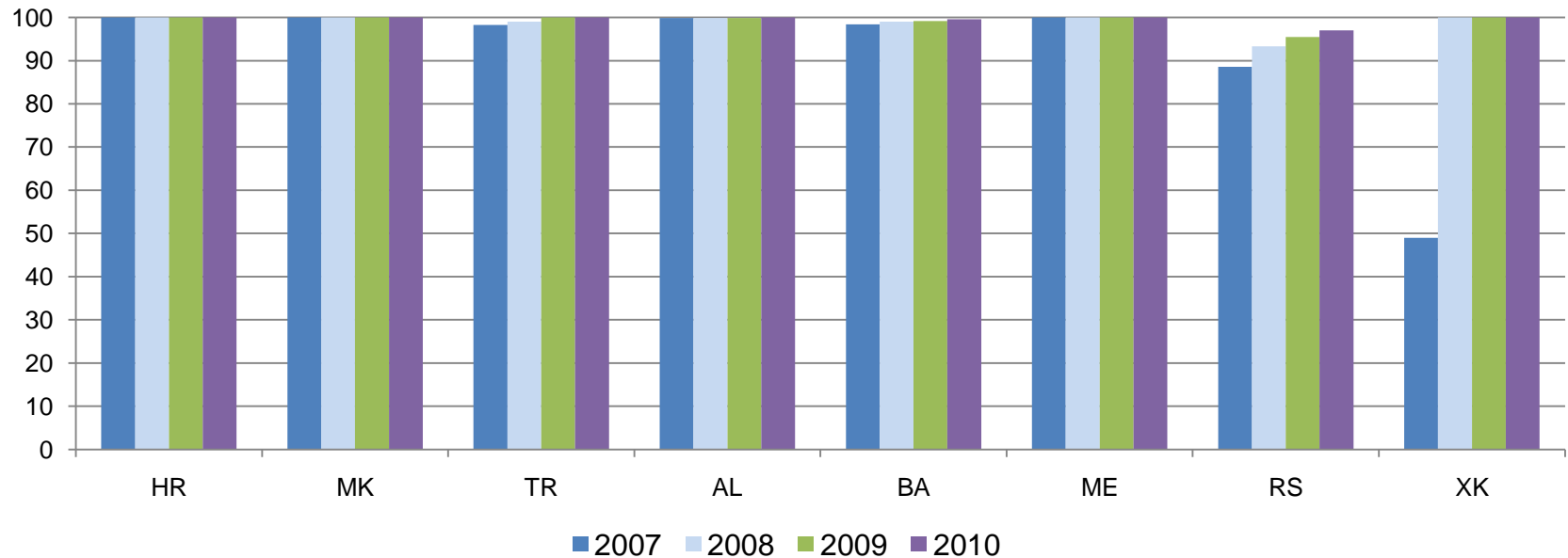
Fixed lines per 100 population



- Average 24.5 lines per 100 population in 2010
- Croatia and Serbia are closest to the EU-27 average of 40 lines
- Since 2005, continuous increase in Serbia and Albania
- Mobile to fixed substitution in FYR Macedonia and Turkey

Fixed telephony

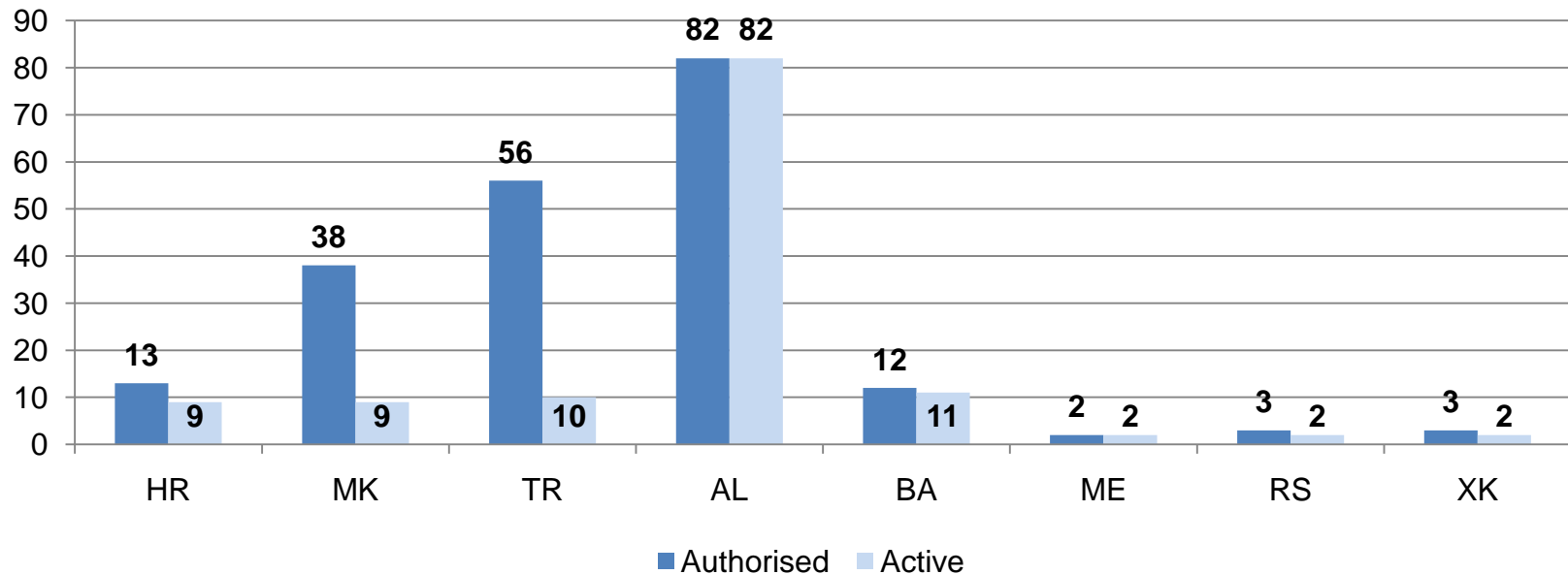
Fixed network digitalisation rate % - 2007-2010



- 100% digitalisation in most countries
- BiH and Serbia are close to 100% target

Fixed telephony

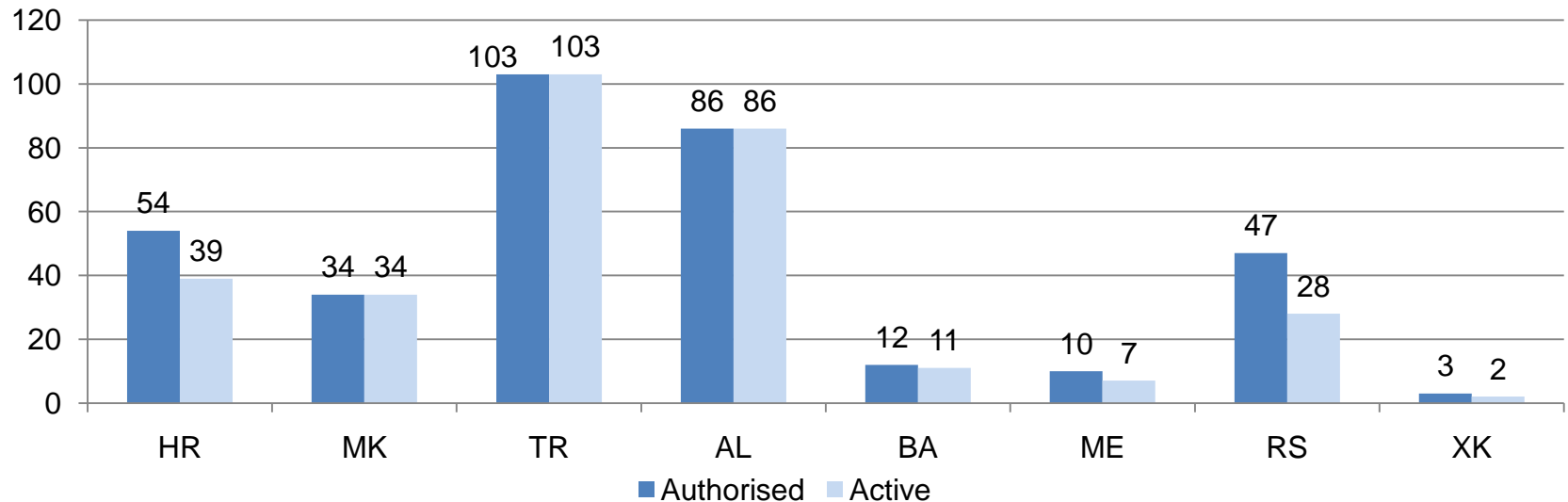
Public fixed telecommunications network operators



- Emerging network competition in Turkey and BiH
- Two alternative network providers licensed in Serbia

Fixed telephony

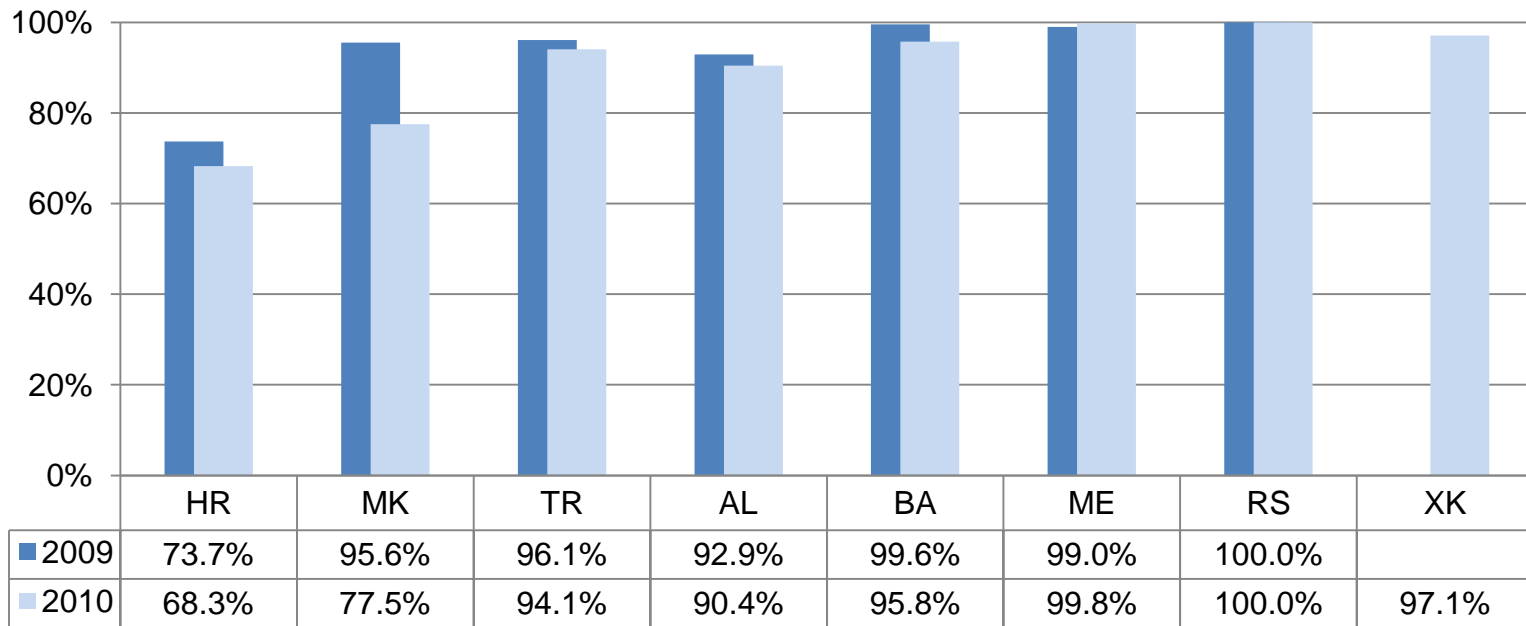
Public fixed voice telephony service providers



- General authorisation regime introduced in majority of countries
- Individual licensing regime in BiH, Serbia and Kosovo
- In Serbia, 47 service operators authorised (mainly, VoIP without access to subscriber numbers) and 28 active

Fixed telephony

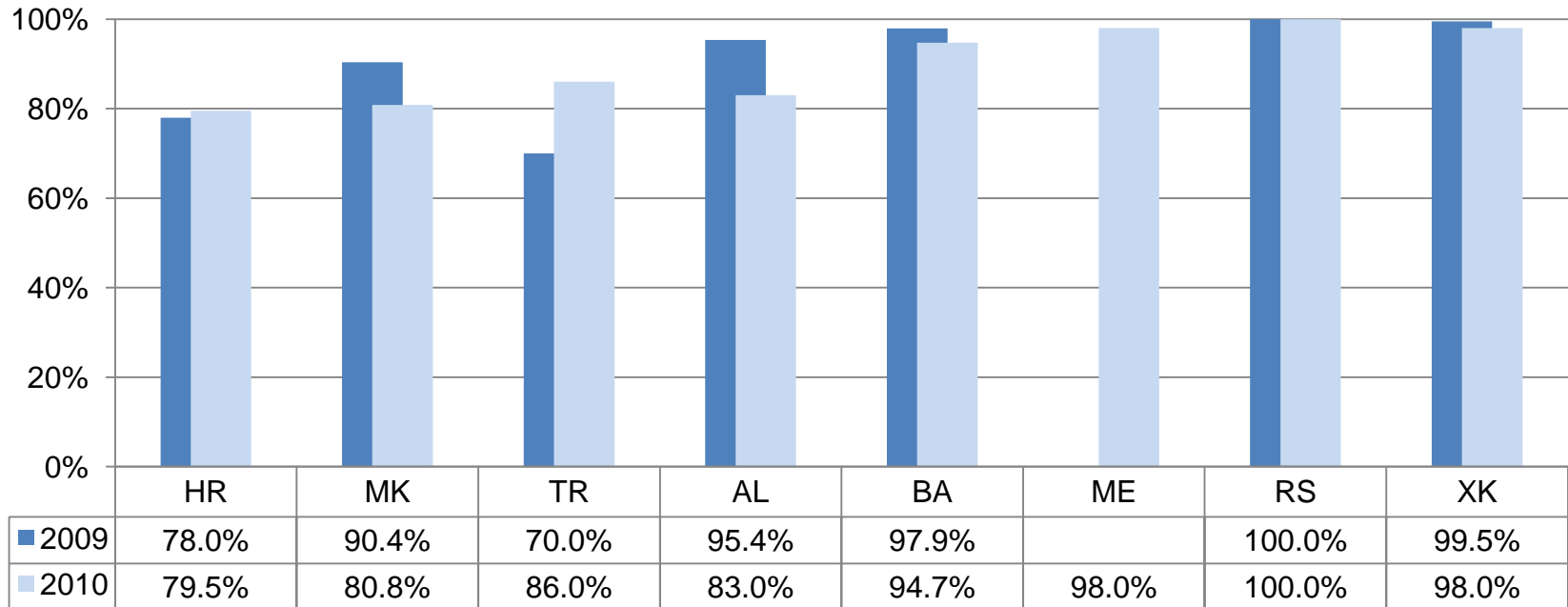
Incumbent operator's overall market share by traffic



- Croatia and Macedonia are the most competitive markets
- Most significant decrease in the incumbent's traffic-based market share: in Macedonia by 18% since 2009
- Some increase in Montenegro...

Fixed telephony

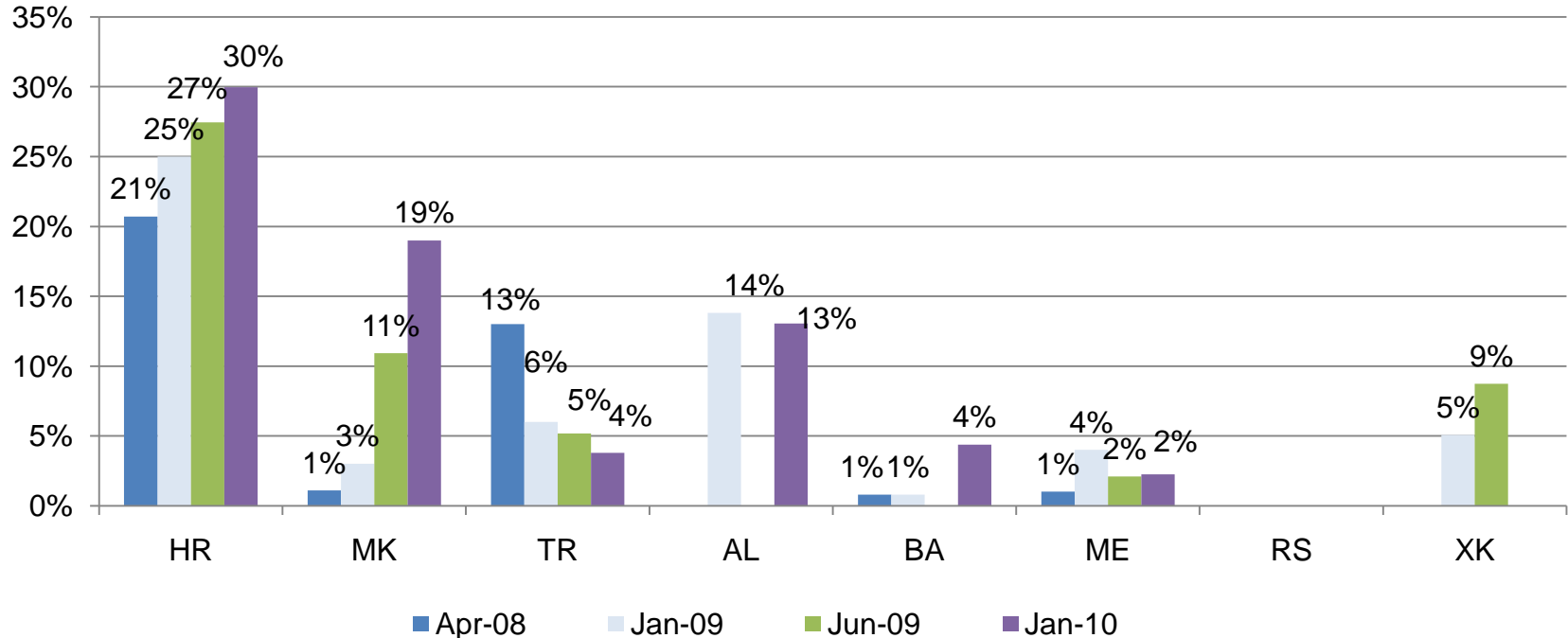
Incumbent operator's overall market share by retail revenue



- Croatia and Macedonia are closely followed by Albania and Turkey
- In Turkey and Albania alternative providers have significantly higher revenue based market share than traffic based
- Similar trend observed in BiH

Fixed telephony

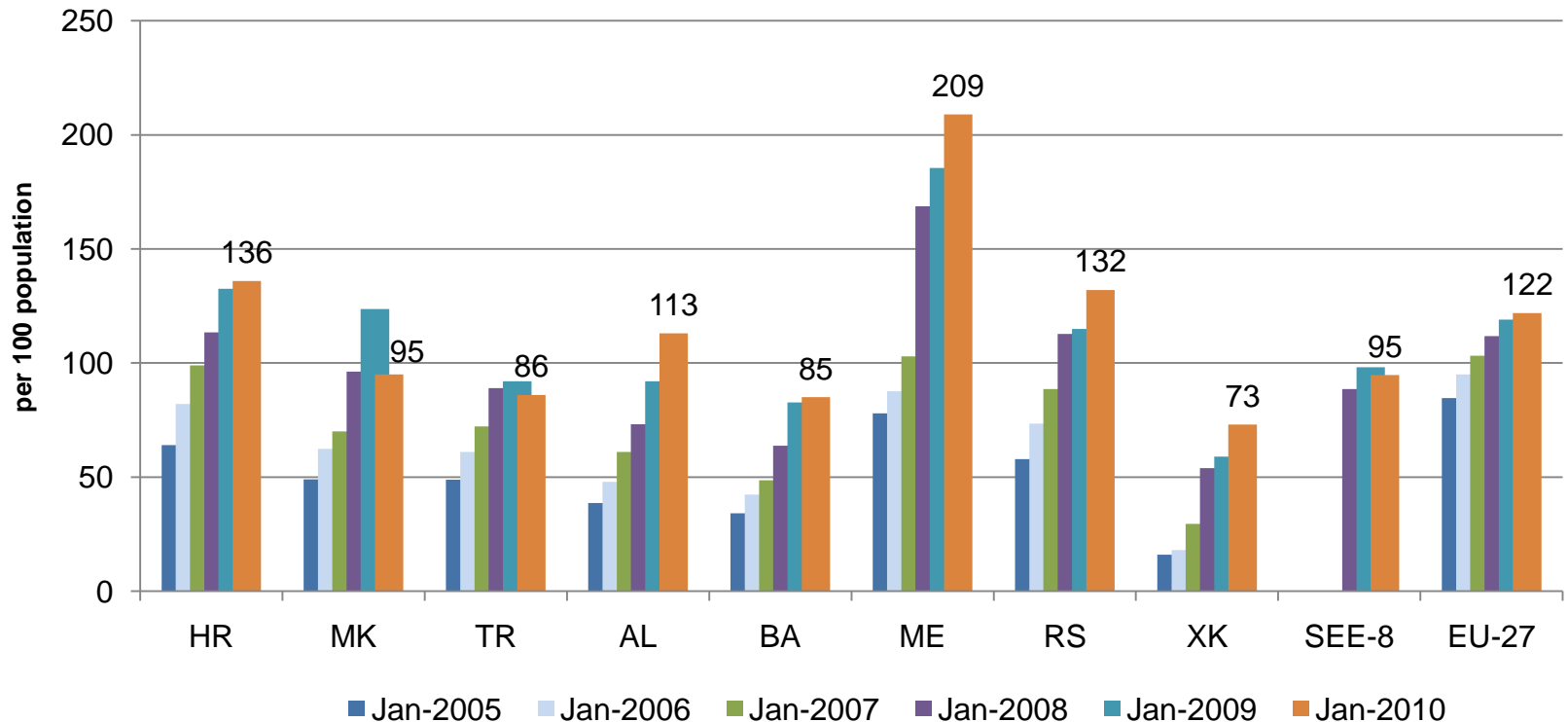
Subscribers using alternative providers as percentage of total fixed lines



- Significant growth in Macedonia: CS/CPS, WLR, direct access
- Remarkable drop in Turkey
- CS/CPS not available in Albania, Serbia and Kosovo

Mobile telephony

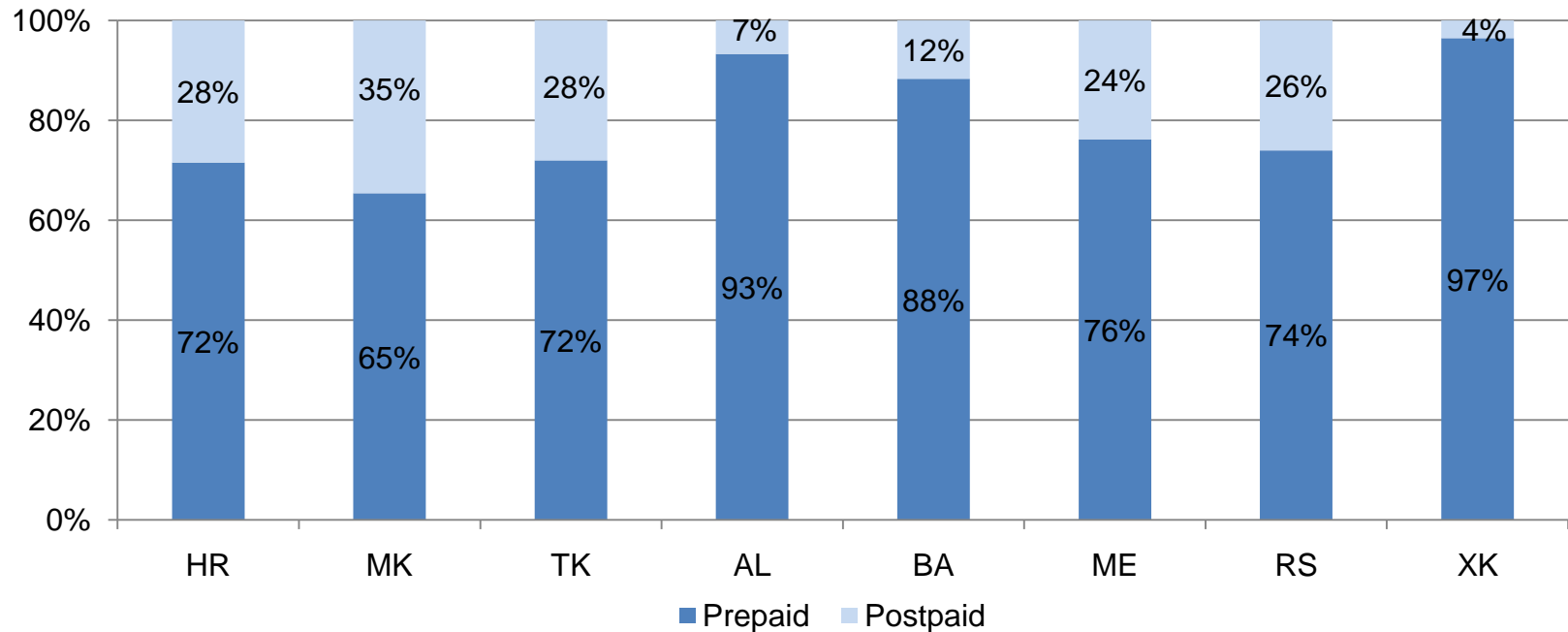
Growth in mobile penetration in 2005-2010



- Montenegro, Croatia and Serbia have surpassed the EU-27
- Redefinition and harmonisation of “active subscriber” definitions
- In all markets there are three licensed operators, except Kosovo with two and Albania with four

Mobile telephony

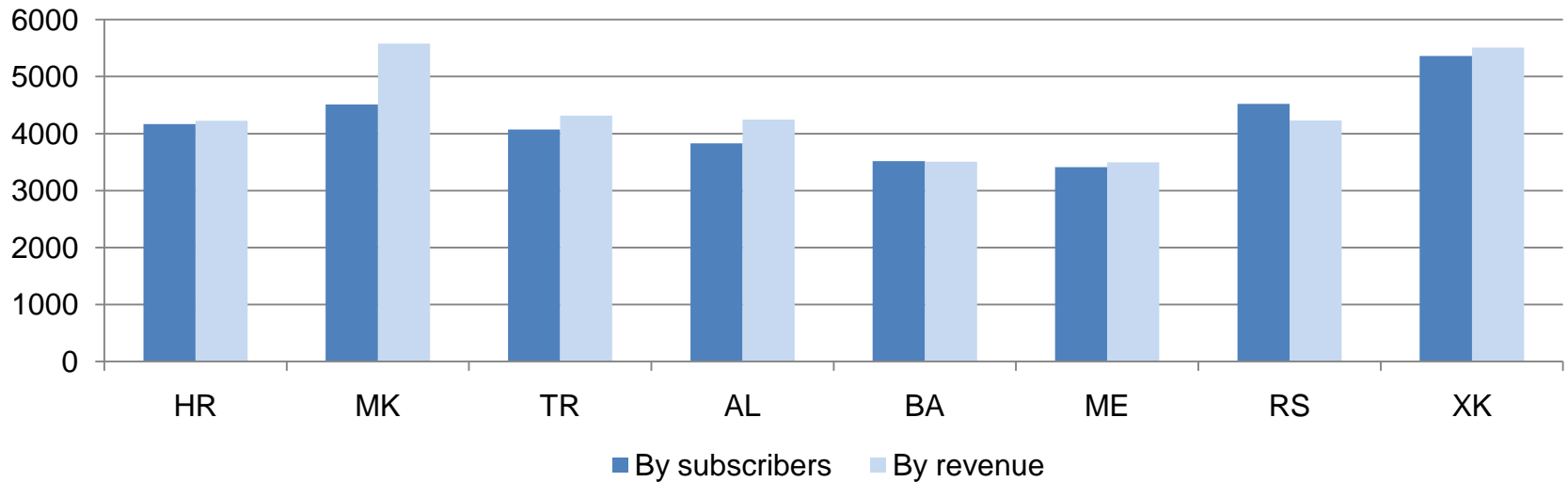
Postpaid and prepaid subscribers



- Increase in the number of postpaid subscribers in Croatia, Turkey and Serbia
- In Albania and Kosovo, nearly all subscribers are prepaid

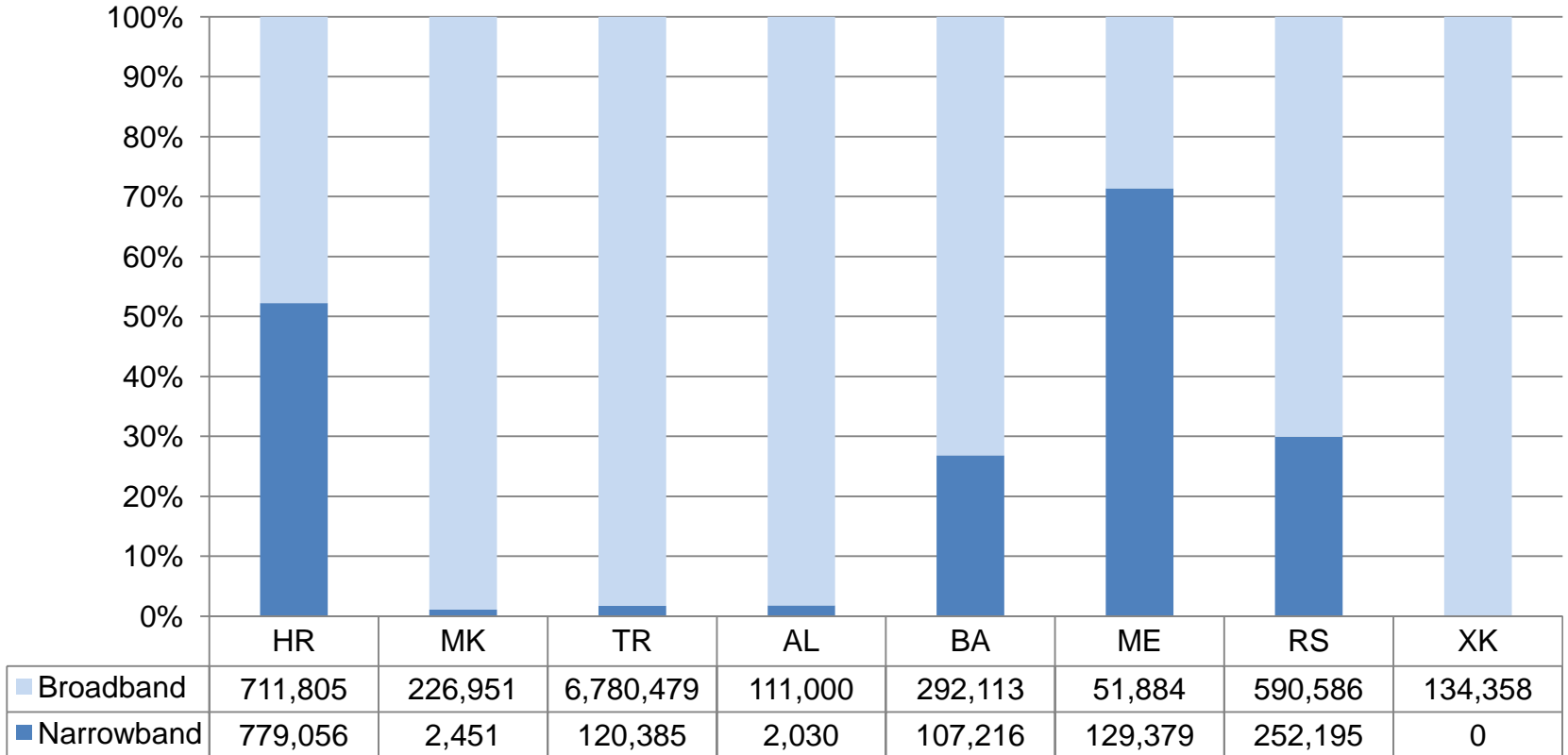
Mobile telephony

Mobile market concentration levels - HHI



- $HHI = x^2 + y^2 + z^2$, lowest possible value 3333 with three MNOs
- BiH and Montenegro are closest to even distribution of market shares
- Particularly strong concentration is observed in Macedonia (T-Mobile)
- Strong growth of late entrants in Albania, Macedonia and Montenegro
- Late entrants achieved growth in subscribers, but established operators retain higher spending users

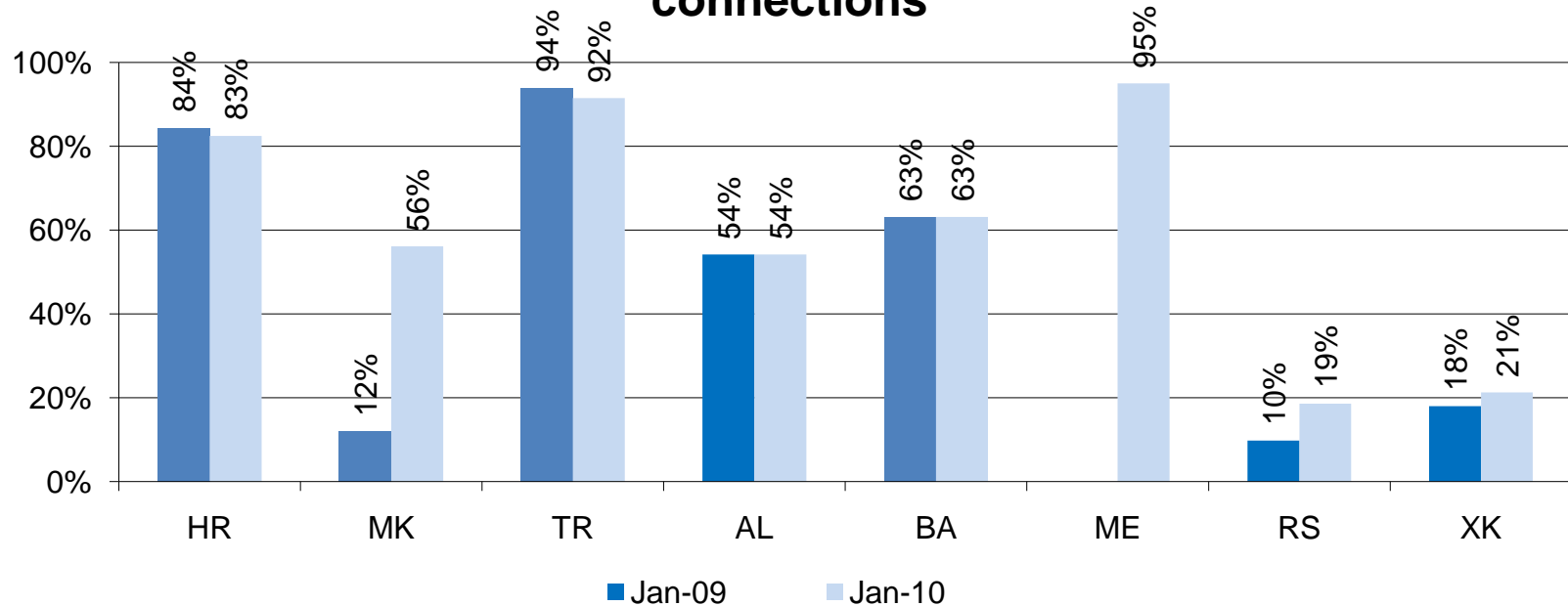
Fixed Internet and broadband



- Dial-up is still significant in Montenegro, Croatia, and Serbia
- Disappearing in Macedonia, very insignificant in Turkey, Albania and Kosovo
- Strong increase in broadband in BiH by 55%, Albania by 39%, Serbia by 26%, Montenegro by 24% and Croatia by 19%

Fixed Internet and broadband

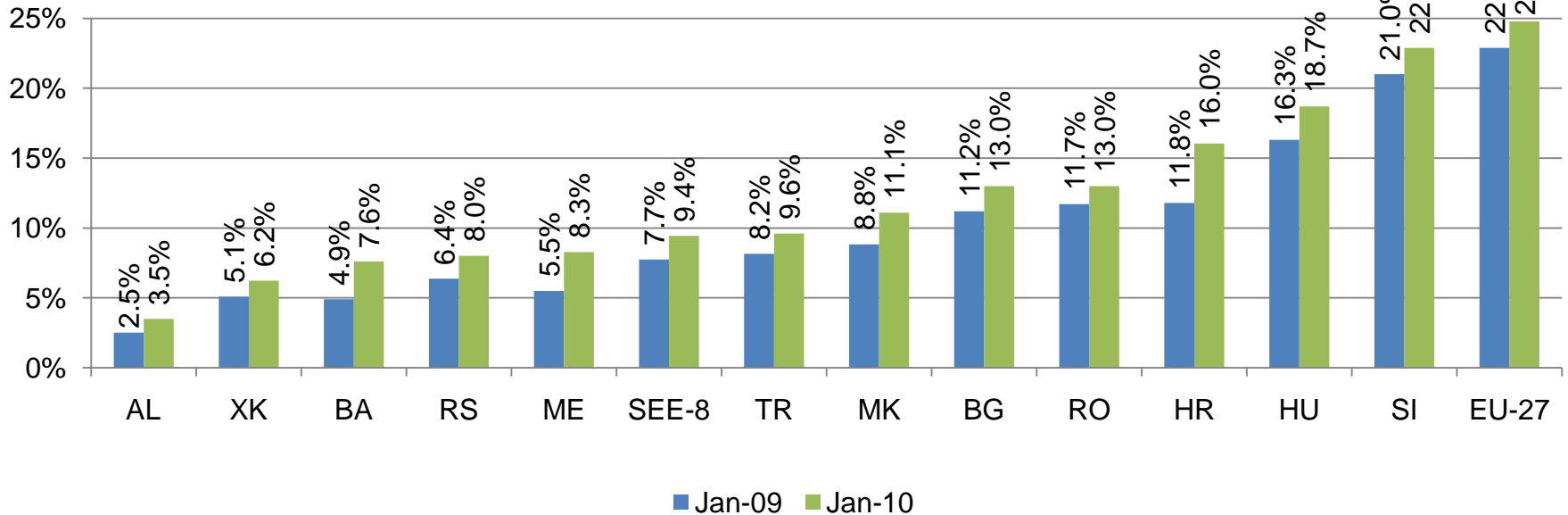
Incumbent ISP's retail market share by number of connections



- Retail markets are dominated by incumbents in most countries (over 50% market share), except for Serbia and Kosovo
- Market share increase in Macedonia and Serbia

Fixed Internet and broadband

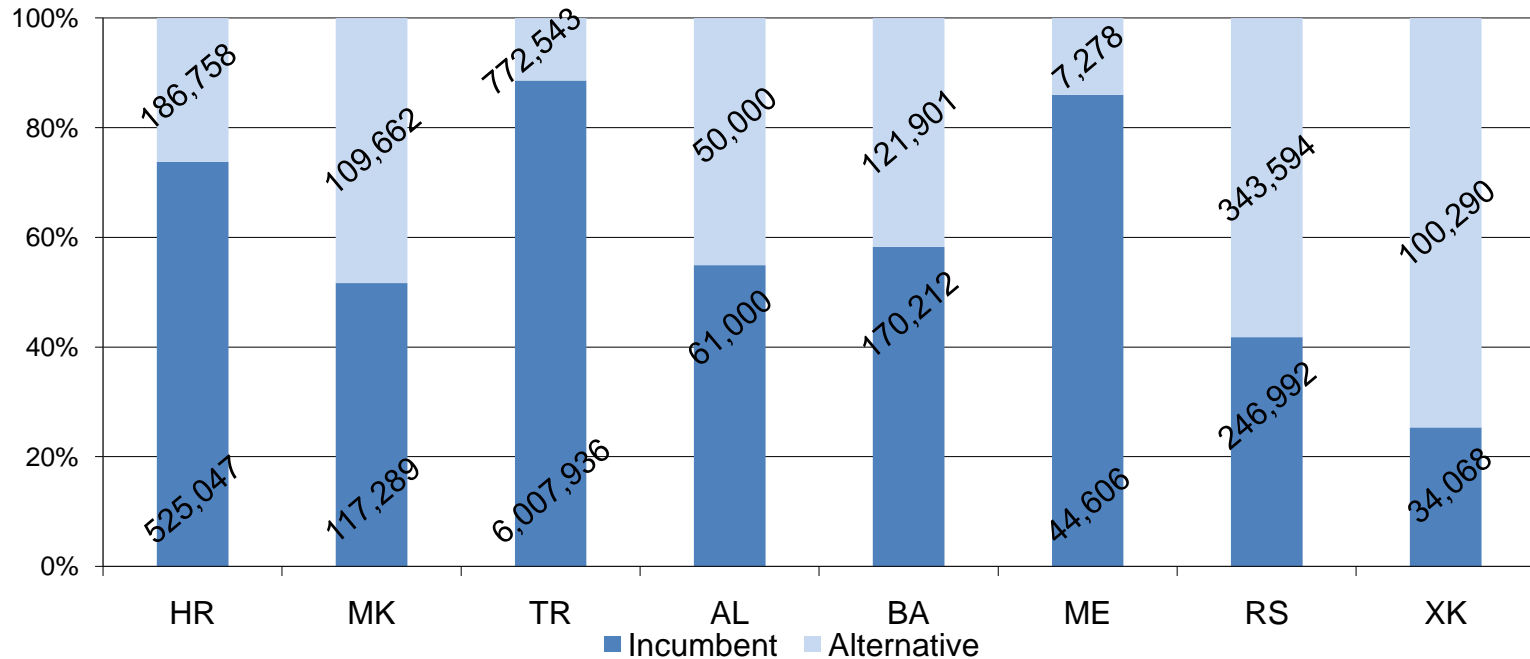
Fixed broadband penetration rate, 2009-2010



- Broadband penetration rate in most countries remains significantly below the EU-27 level
- Highest penetration rate in Croatia – above Bulgaria and Romania

Fixed Internet and broadband

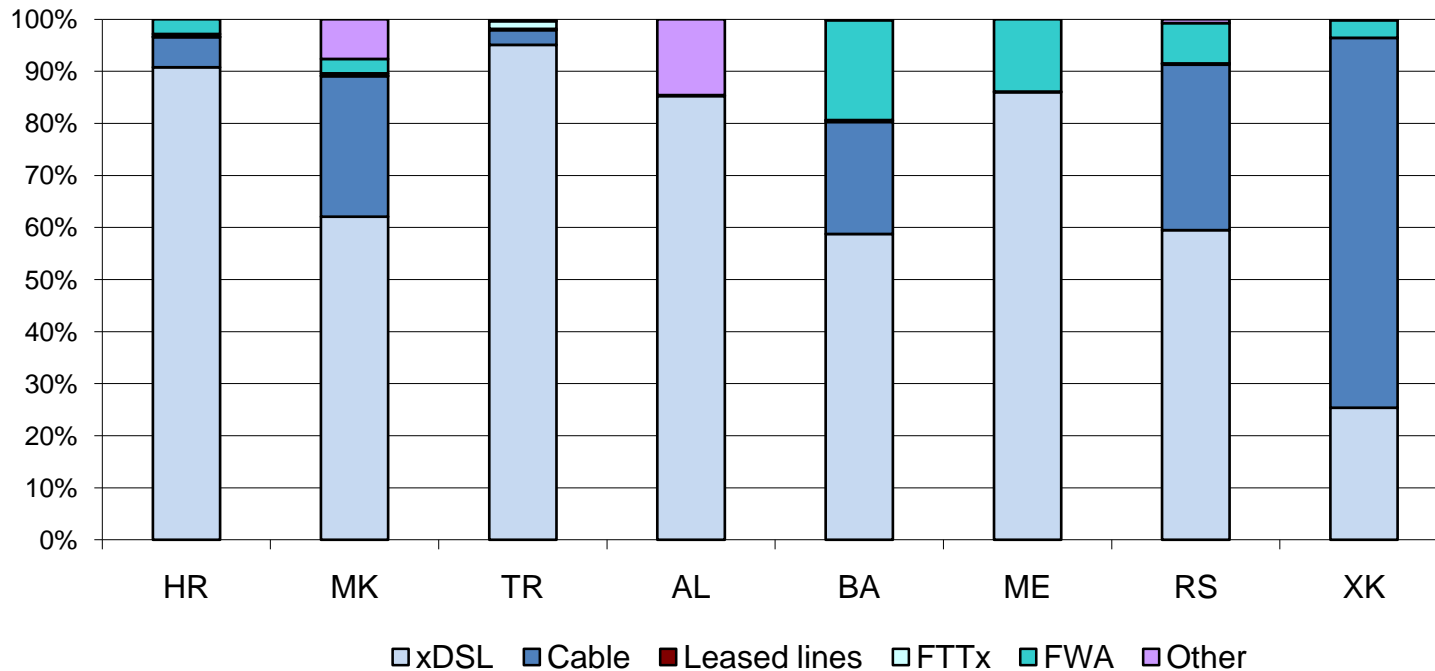
Fixed retail broadband connections by incumbent and alternative operators



- Incumbents dominate broadband markets in Croatia, Turkey and Montenegro – where xDSL is main access technology
- Different situation is observed in Macedonia, Albania, BiH, Serbia and Kosovo – where competitors use alternative infrastructures or rely on available wholesale offers

Fixed Internet and broadband

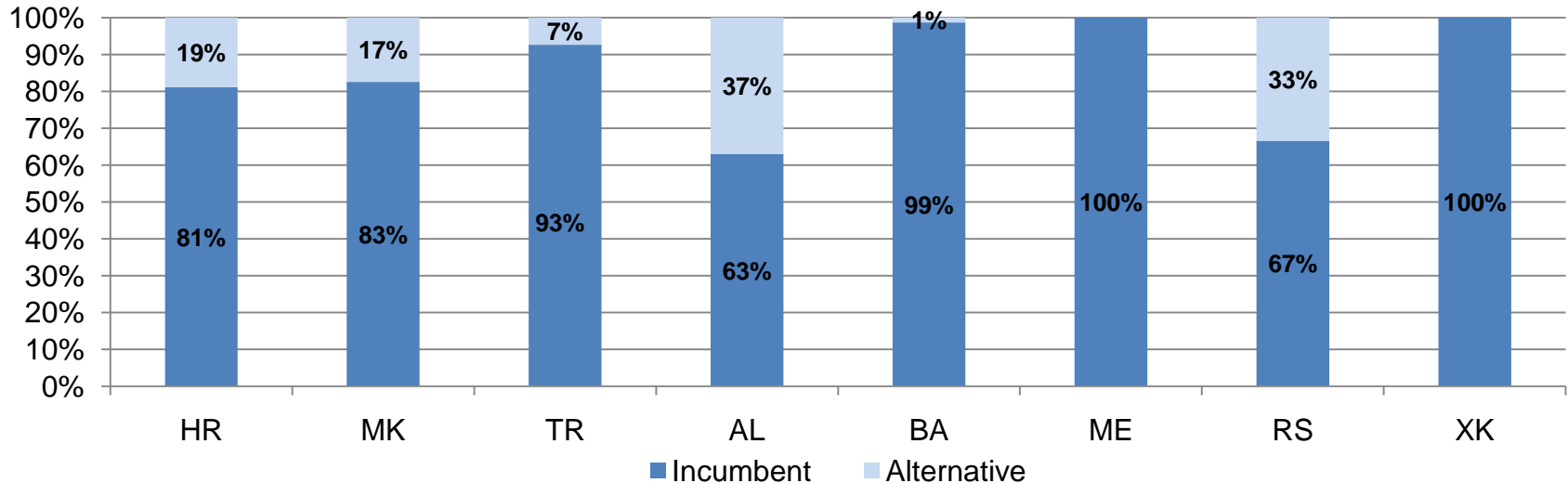
Fixed retail broadband connections by technology



- xDSL is the dominant technology in most countries
- Strong cable presence in Serbia, BiH, Kosovo, Macedonia
- FWA has grown in BiH by 52% and almost 4 times in Croatia but decreased nearly by half in Macedonia

Fixed Internet and broadband

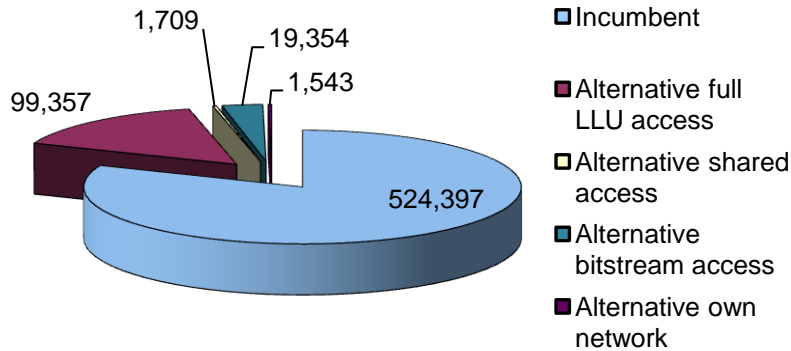
Competition in retail xDSL



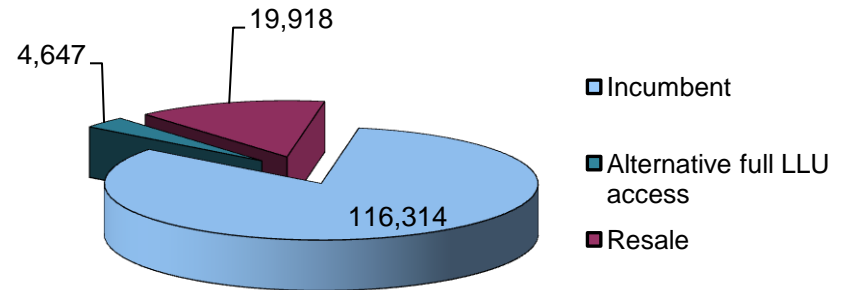
- In most countries, the position of the incumbent is extremely strong, with alternative operators' market share below 20%
- More equitable situation is in Serbia where the incumbent introduced wholesale offers at an early stage and in Albania where competitors use own infrastructure
- Since 2009, the incumbent's market share slightly decreased in Croatia and Macedonia, but grew in Albania and Serbia

Fixed Internet and broadband

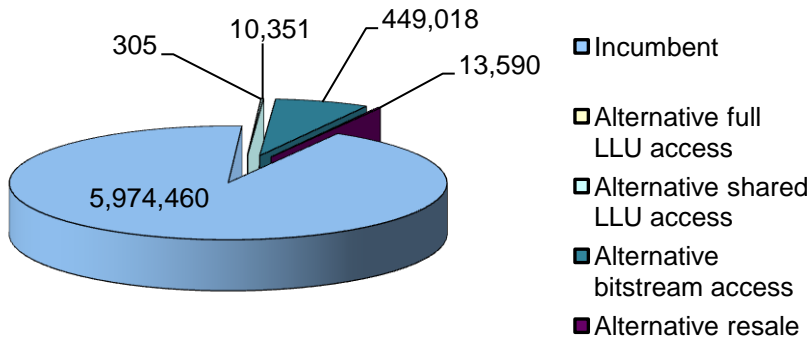
Retail xDSL lines – Croatia



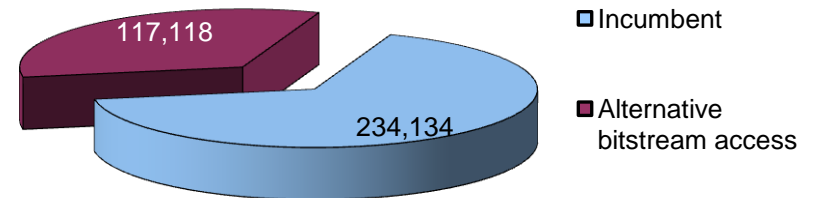
Retail xDSL lines – Macedonia



Retail xDSL lines - Turkey

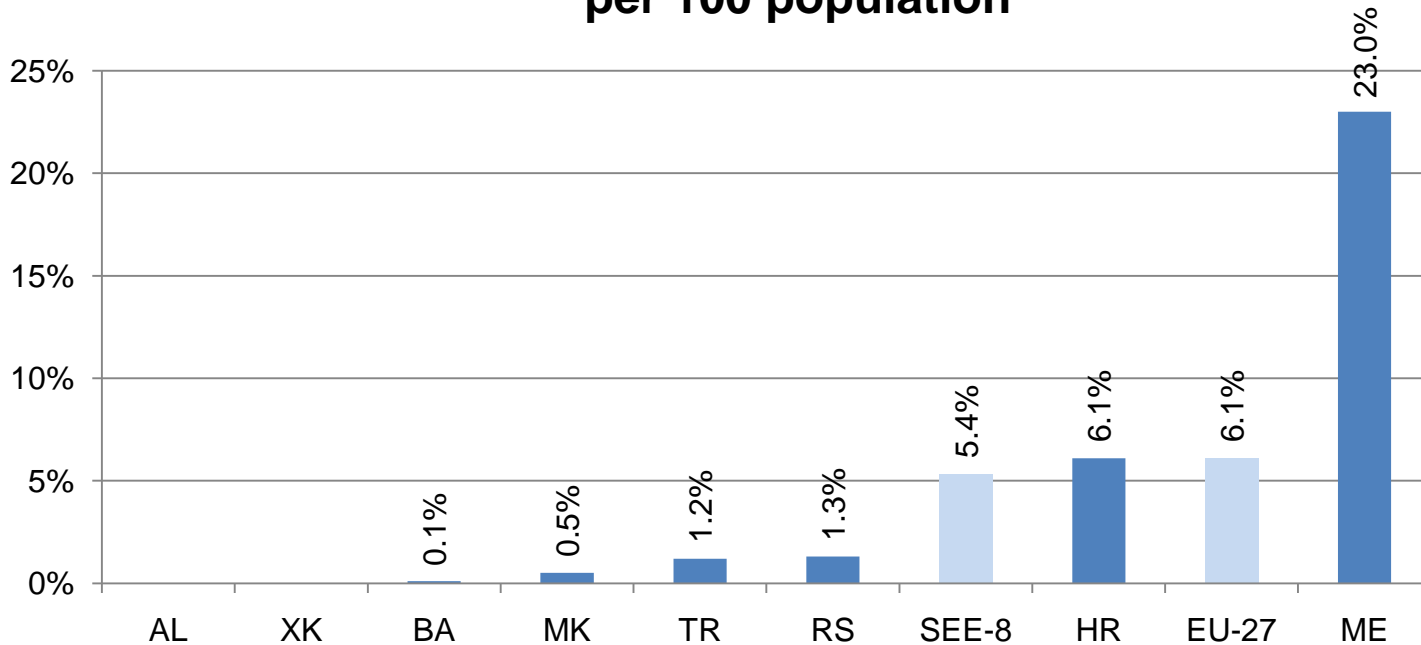


Retail xDSL lines – Serbia



Mobile broadband

Penetration of dedicated mobile data cards/wireless modems per 100 population



- Need to confirm consistency of the reported data
- Main issue: calculating mobile subscribers with 3G smart phones vs dedicated mobile broadband users

Overview of issued spectrum licences

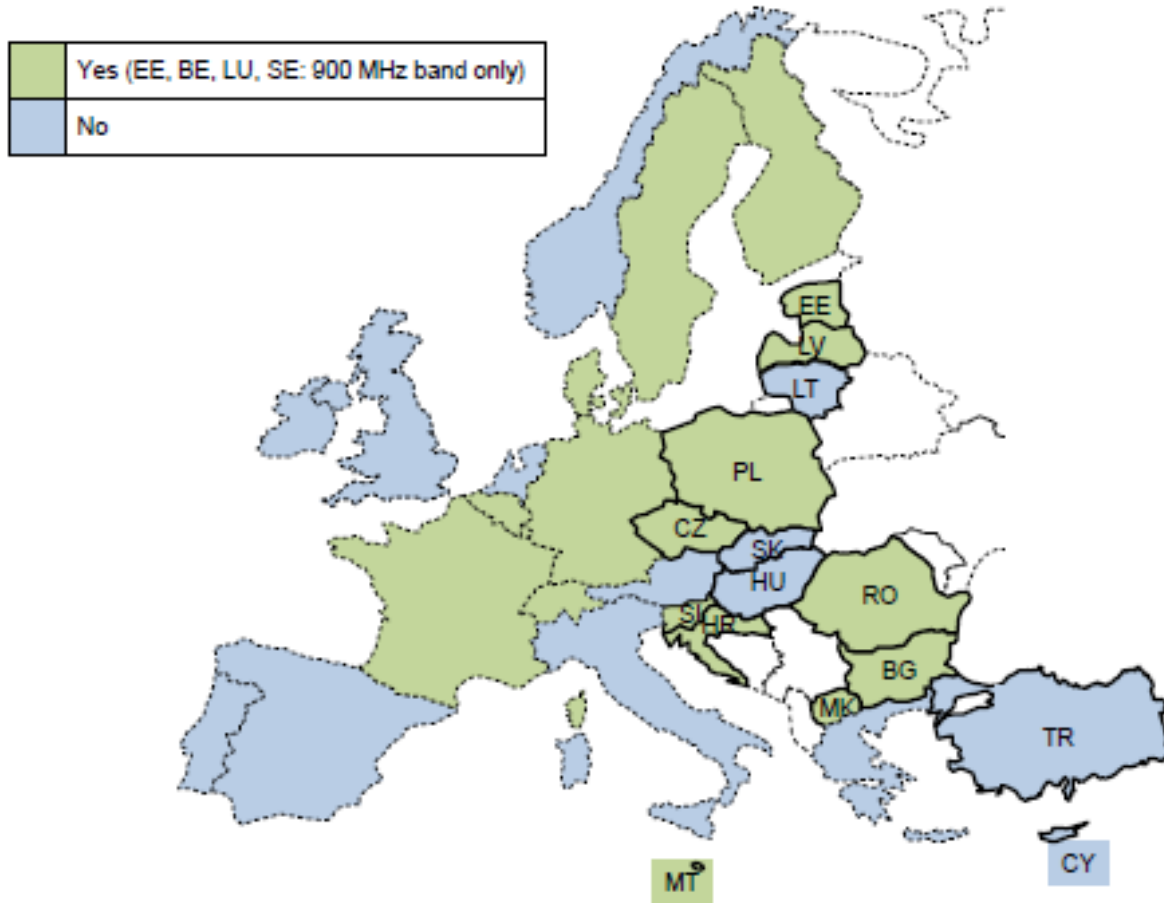
	HR	MK	TR	AL	BA	ME	RS	XK
450 MHz		-	-	-	-	-	2	-
900 MHz	3	3	3	4	3	3	3	2
1800 MHz	2	2	1	4	3	3	3	1
2100 MHz	3	2	3	1	3	3	3	-
2.6 GHz	-	-	-	-	-	-	-	-
3.5 GHz	42	6	-	-	-	5	local	-

Refarming of GSM spectrum for 3G/4G

	HR	MK	TR	AL	BA	ME	RS	XK
900 MHz	2009	2009	No	No	No	No	No	No
1800 MHz	2009	2009	No	No	No	No	No	No
Technology permitted	Neutral (UMTS/GSM)	UMTS/GSM	-	-	-	-	-	-
Redistribution	No	No	-	-	-	-	-	-
Fees	€6.85m for licence renewal	No	-	-	-	-	-	-

Refarming of GSM spectrum for 3G/4G

Countries that allow 3G/4G services in 2G spectrum



Source: CI research

Analogue switch-off and digital dividend

	HR	MK	TR	AL	BA	ME	RS	XK
Deadline	10/2010	?	2014	?	12/2011	12/2012	4/2012	2012
Platform	DVB-T	-	DVB-T	-	DVB-T/ MPEG 4	DVB-T	DVB-T2/ MPEG 4	
DD size	?	-	72 MHz	-	?	?	?	?
Band	-	-	790-862 MHz	-	-	-	-	-

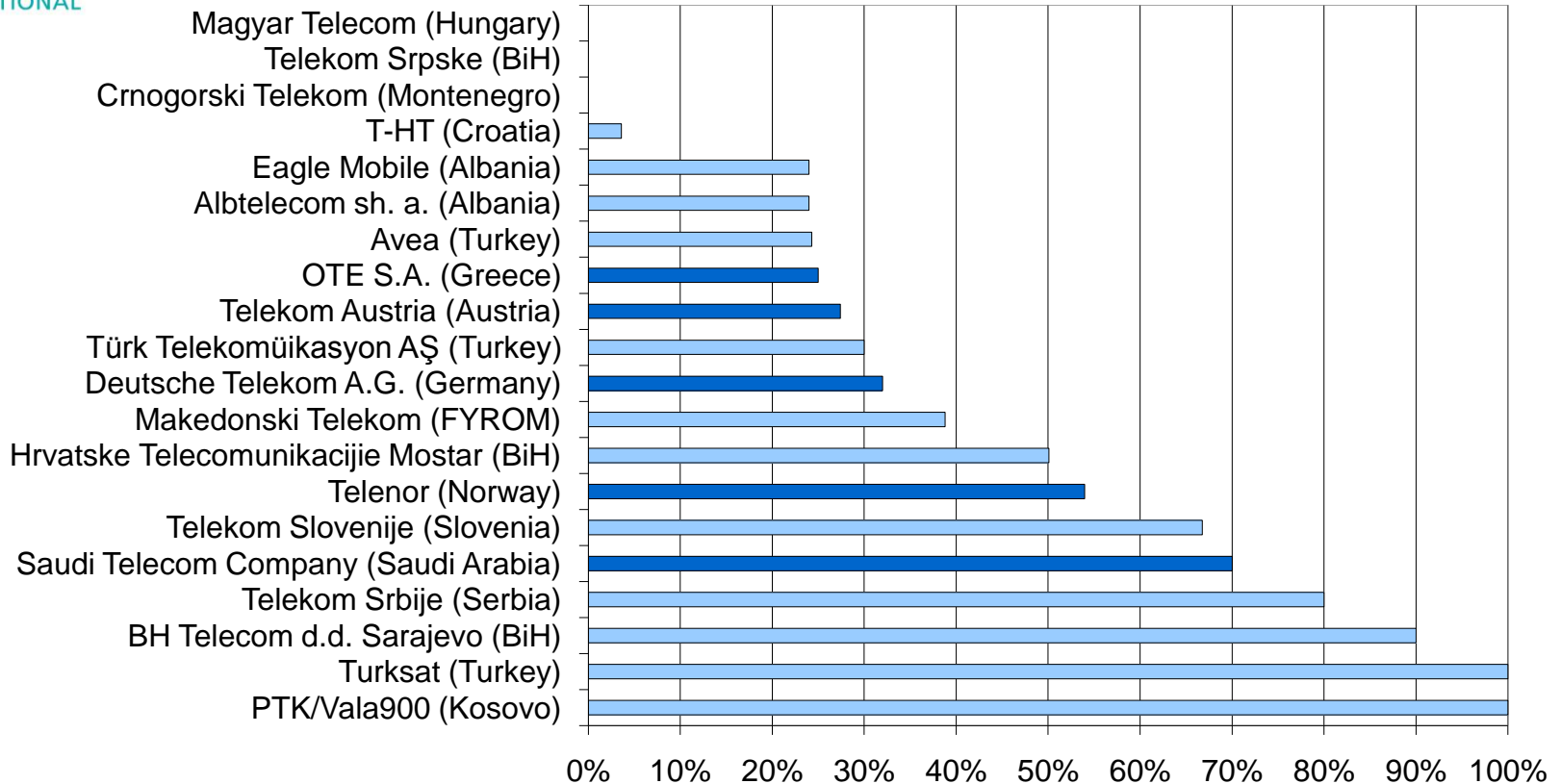
Legislative and regulatory developments

- Legislation based on EU 2003 framework now adopted in Croatia, Macedonia, Turkey, Albania, Montenegro and Serbia
- Serbia
 - New Electronic Communications Law adopted on June 29, 2010
 - Some 10 bylaws to be adopted by the Ministry and some 35 bylaws to be adopted by RATEL within 1 year
 - Licences remain valid until their expiry – 6 months for harmonisation
 - General authorisation for public fixed telephony services over fixed networks foreseen only from January 2012
 - Introduces changes to internal decision making process of the NRA
 - Strategy for Electronic Communications up to 2020 – September 2, 2010
 - Strategy for Information Society up to 2020 – July 8, 2010

Legislative and regulatory developments

- Macedonia – amendments to Electronic Communications Law of June 16, 2010
 - Division of tasks between the regulator and the ministry
 - Appointment and dismissal of the NRA management
 - Internal decision making process within the NRA
 - Transparency and accountability, parliamentary control
 - Universal service framework
 - Data protection, lawful interception, traffic data retention
- Croatia, Albania – planned amendments to harmonise national legislation with the EU 2009 framework
- Montenegro completed regulatory framework for universal service. Functional internet access within US scope is defined as broadband connections with minimum 144 kbps speed. Tender procedure for US provider(s) designation is underway

State ownership



- State ownership from 24% to 100%
- Golden shares: Macedonia, Turkey and Serbia
- Privatisation underway: Serbia, Kosovo

NRA independence: financial resources

	2008 (€'000)	2009 (€'000)	2010 (€'000)	Revenue based	One- off	Spectrum	Numbers	Other
HR	11,145	12,727	16,101	33% ↓	-	38% ↓	6%	23% ↑↑
MK	7,213	7,764	8,897	9.5% ↓		73.1% ↑	8.4% ↓	9% ↑
TR	41,194	117,522	27,843	8% ↑	-	86% ↓	-	6% ↑
AL	1,620	1,486	1,699	-	-	98% ↑	0.7%	1.3% ↓
BA	4,218	4,467	4,335	55% ↓	-	5%	40% ↑	-
ME	3,500	5,182	5,182	50.85% ↓	0.29%	36.36%	9.27% ↑	3.23%
RS	15,058	19,230	16,363	40% ↑	2% ↓	38% ↓	9% ↓	11% ↑↑
XK	2,242	1,471	1,546	66.36% ↑↑	24.76% ↓ ↓	8.18	-	0.7%

- Budgets: from €28m to €1.5m. High variations in Turkey
- Reliance on spectrum fees: Albania and Turkey
- Kosovo: in practice, no independent NRA budget

NRA independence: human resources

	Total staff	Regulatory experts	Spectrum experts	Salary restrictions	NRA budget (€'000)/staff
HR	169	54	18	Government approval	95.3
MK	113	28	20	No legal restrictions	78.7
TR	654	340	20	Yes	42.6
AL	60	32	8	Yes	28.3
BA	113	32	26	Civil servant	38.4
ME	61	20	15	Yes	84.9
RS	100	28	25	No legal restrictions	163.6
XK	33	12	2	Civil servant	46.8

- Croatia: Ministry recently requested 10% staff reduction

Market analyses – experience so far

	HR	MK	TR	AL	BA	ME	RS	XK
Market definition:								
• EC recommendation	2007	2003	2003	2003		2007	*	
• Other (or additional) markets	✓				✓		✓	✓
SMP assessment:								
• Competition law	✓	✓	✓	✓		✓	*	
• Threshold-based					25%		20-25%	25%
Remedies:								
• Law and licence					✓		✓	✓
• Discretionary	✓	✓	✓	✓		✓	*	
Binding timeframe	3 years	X	3 years	2 years	1 year	X 1 year for 1 st round	X*	X Upon request

**Serbia: 1st round within 1 year based on 2007 EC recommendation, once in 3 years thereafter based on EU framework*

Market analysis – recent developments

- Croatia
 - completed in July 2009 except retail access and leased lines
 - follow-up on remedies in wholesale broadband markets related to NGA
- Macedonia
 - Final decisions adopted:
 - leased lines (M7, 13-14/2003) – final decisions April 2010
 - wholesale mobile access and call origination (M15/2003) – July 2010
 - wholesale mobile call termination (M16/2003) – May 2010, glide paths July 2010 (up to 2013)
 - Final decisions still to be adopted:
 - retail access and call services (M1-6/2003) completed in March 2010
 - wholesale unbundled and broadband access (M11-12/2003) completed in June 2010
 - fixed interconnection (M8-10/2003) completed in October 2010
 - New decision on 13 markets to be analysed adopted in September

Market analysis – recent developments

- Turkey
 - second round completed in December 2009 – January 2010 except wholesale fixed transit services (M10/2003)
- Albania
 - Final decisions adopted:
 - wholesale mobile access and call origination (M15/2003) – March 2010, amended July 2010
 - wholesale mobile call termination (M16/2003) – March 2010, amended July 2010
 - retail fixed access and call services(M1-6/2003), fixed interconnection (M8-10/2003) – July 2010, amended in August 2010
 - Final decisions still to be adopted:
 - wholesale unbundled and broadband access (M11-12/2003) consultation in April 2010
 - leased lines (M7, 13-14/2003) – consultation in November 2009

Market analysis – recent developments

- Bosnia & Herzegovina
 - fixed telephony, mobile telephony and leased lines SMP decisions adopted in December 2009
 - wholesale mobile call termination (M7/2007) underway
- Montenegro
 - market analysis of all seven markets completed, no final decisions yet
 - consultations held in May – July 2010

Competitive safeguards

- CS/CPS
- Number portability
- RIO
- RUO
- Wholesale broadband access and wholesale line rental
- National roaming and MVNO access
- Price control and regulatory cost accounting

Carrier selection/carrier pre-selection

	HR	MK	TR	AL	BA	ME	RS	XK
Obligation:								
• CS	✓ 2005	✓ 2007 2008 local	✓ 2006 2009 local	?	✓ 2006	✓ 2007	X	X
• CPS	✓ 2005	✓ 2007 2008 local	✓ 2006 2009 local	?	✓ 2007	✓ 2007	X	X
Implementation:								
• CS	5 SPs	1 SP 4,337 ↓	8 SPs	X	6 SPs 34,608 ↑	6 SPs	X	X
• CPS	5 SPs 240K ↓	1 SP 209	10 SPs 515K	X	?	X	X	X

Number portability

	HR	MK	TR	AL	BA	ME	RS	XK
Availability:	✓ 2005	✓ 2008	✓ 2009	✗ 2011	✗ 2011	✗ 2011	✗	✗
• fixed NP								
• mobile NP	✓ 2006	✓ 2008	✓ 2008	✗ 2011	✗ 2011	✗ 2011	✗ 2011	✗
Implementation:	✓ 418K 22.5%	✓ 25K	✓ 509	✗	✗	✗	✗	✗
• fixed NP								
• mobile NP	✓ 124K 2%	✓ 10K 0.2%	✓ 17.9m 29%	✗	✗	✗	✗	✗
Timeframe:								✗
• fixed NP	5 days	7 days	7 days	?	10 days	5 days	?	
• mobile NP	5 days	7 days	6 days		10 days	5 days	4 days	✗

Interconnection

	HR	MK	TR	AL	BA	ME	RS	XK
Fixed RIO mandated	✓ T-HT	✓ Makedonski Telekom	✓ Turk Telekom	✓ Albtelecom	✓ BH HT TS	✓ Crnogorski Telekom	✓ Telekom Srbija	✓ PTK
Latest RIO update	✓ 10/2009	✓ 5/2010	✓ 12/2009	✓ 2/2009	✓ 4/2010 12/2009 11/2009	✓ 4/2008	✓ 8/2008	✓ 1/2007
Mobile RIO mandated	✓ T-Mobile VipNet	✓ T-Mobile Cosmofon VIP	✓ Turkcell Vodafone Avea	✓ Vodafone AMC Eagle (2010)	✓ BH HT TS	X	X	X
Mobile RIO published	✓ 10/2009	✓ 8/2010	✓ 12/2009	✓ 2/2009	X	X	X	X

Local loop unbundling

	HR	MK	TR	AL	BA	ME	RS	XK
RUO mandated	✓ T-HT	✓ Makedonski Telekom	✓ Turk Telekom	X	✓ HT TS BH	X	X*	X
Latest RUO update	✓ 7/2009	✓ 4/2010	✓ 7/2010	X	✓ 1/2010	X	X	X
LLU agreements	6	1	10	X	3	X	X	X
LLU lines	130K	4,369	10.7K	X	X	X	X	X

*Serbia: on June 4, 2010 the NRA ruled on interconnection, LLU and infrastructure access conditions between Telenor and Telekom Srbija



WBA and WLR

INTERN

	HR	MK	TR	AL	BA	ME	RS	XK
WBA mandated:	✓	✓	✓	X	X	X	X	X
WBA available	1,2,3 ✓	1,3,4 ✓	2,3,4 ✓	X	X	X	2,3,4 ✓	X
Implementation	19K (3)	19K (4)	471K (3) 13K (4)	X	X	X	117K	X
WLR mandated	X	✓	✓	X	X	X*	X	X
WLR available	X	✓ 2009	X	X	X	X	X	X
Implementation	X	✓ 12,000	X	X	X	X	X	X

* Proposed in market analysis of M1/2007

Mobile wholesale

	HR	MK	TR	AL	BA	ME	RS	XK
MVNO access	X	√	√ ?	√	X	X	X	X
• Mandated								
• Implementation	X	X	X	X	X	X	X	√ 2 licences
National roaming	X	√	√	√	X	X	X	X
• Mandated								
• Implementation	√	√	X	X	√	X	√	X
National roaming agreements	√	√	X	X	√	X	√	X

Cost orientation and price control

	HR	MK	TR	AL	BA	ME	RS	XK
Fixed interconnection	BM	LRIC	LRIC	BM/ LRIC	BM	BM	BM	BM
LLU	BM	LRIC	LRIC	-	BM	BM	BM	-
WLR	-	Retail minus 20-35%	?	-	-	?	-	-
WBA	Retail minus 40%	Retail minus 20-45%	Retail minus	-	-	Retail minus 42%	-	-
Mobile interconnection	BM	LRIC	LRIC	BM/ LRIC	?	BM	-	BM
Leased lines	-	BM	LRIC	-	-	BM	BM	-

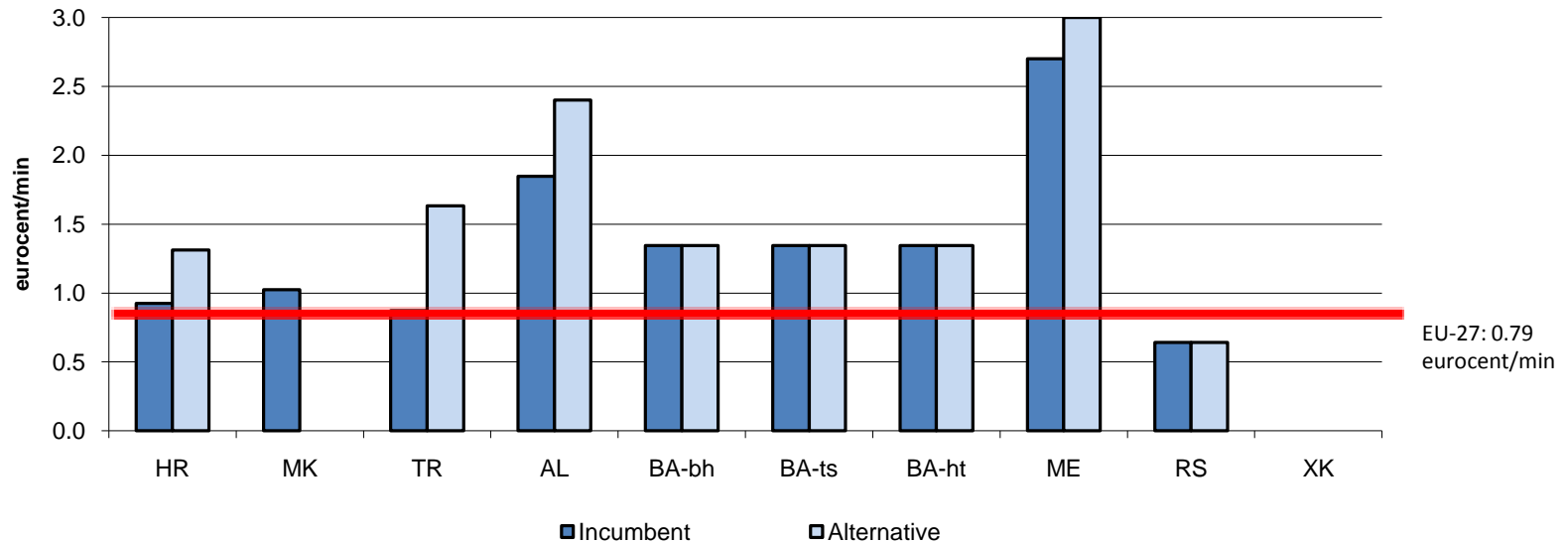
BM – benchmarking, FDC – fully distributed cost, LRIC – long run incremental cost



Wholesale tariffs

- Single transit fixed call termination
- Mobile call termination
- Local loop unbundling –monthly fees

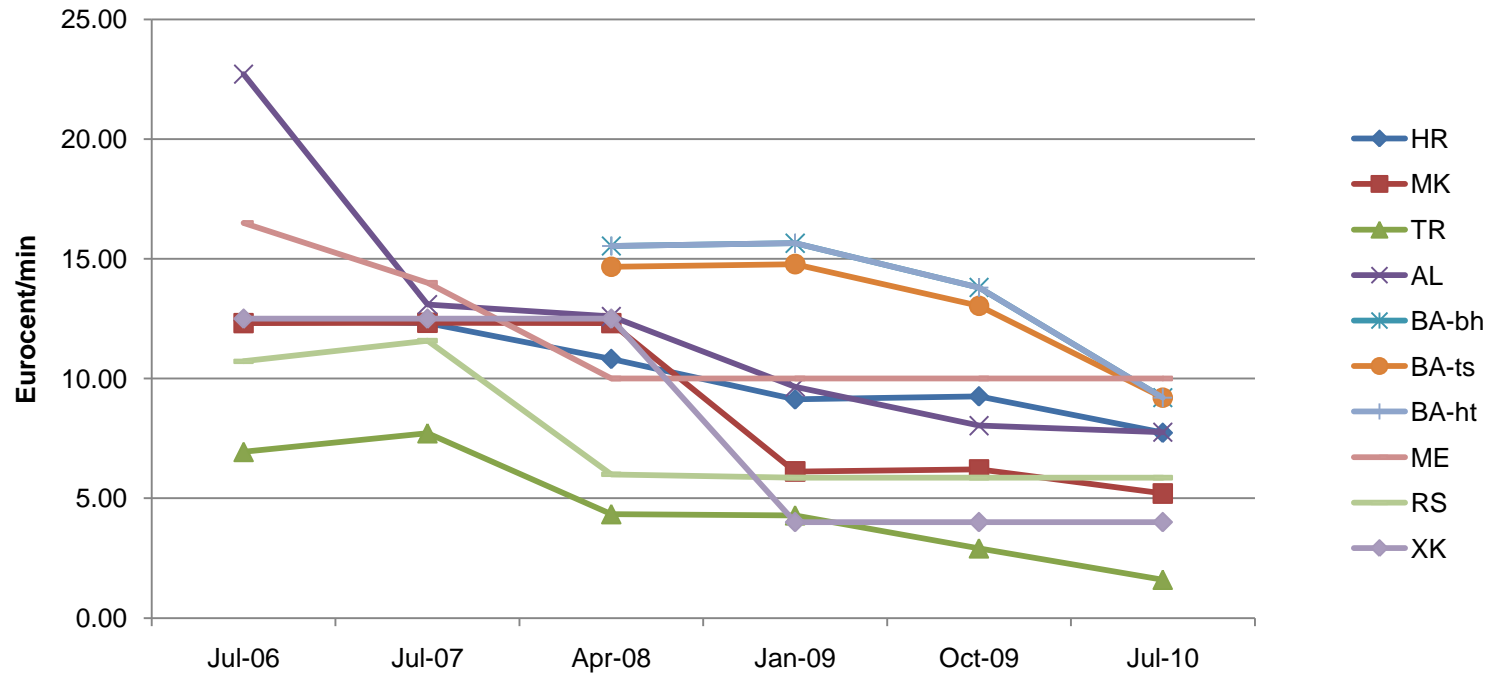
Single-transit fixed call termination



- Asymmetric rates in Albania, Croatia, Turkey and Montenegro
- Single-transit termination decreased from Oct. 2009 in Serbia (-62%) and Croatia (-11%)
- Rates in Montenegro and Bosnia and Herzegovina considerably above the EU-27 average
- In Macedonia, alternative operators' termination rates are confidential
- In this monitoring for the first time alternative operators in Turkey and Serbia
- Higher termination rates for calls originated on mobile network: Turkey, Serbia, Kosovo

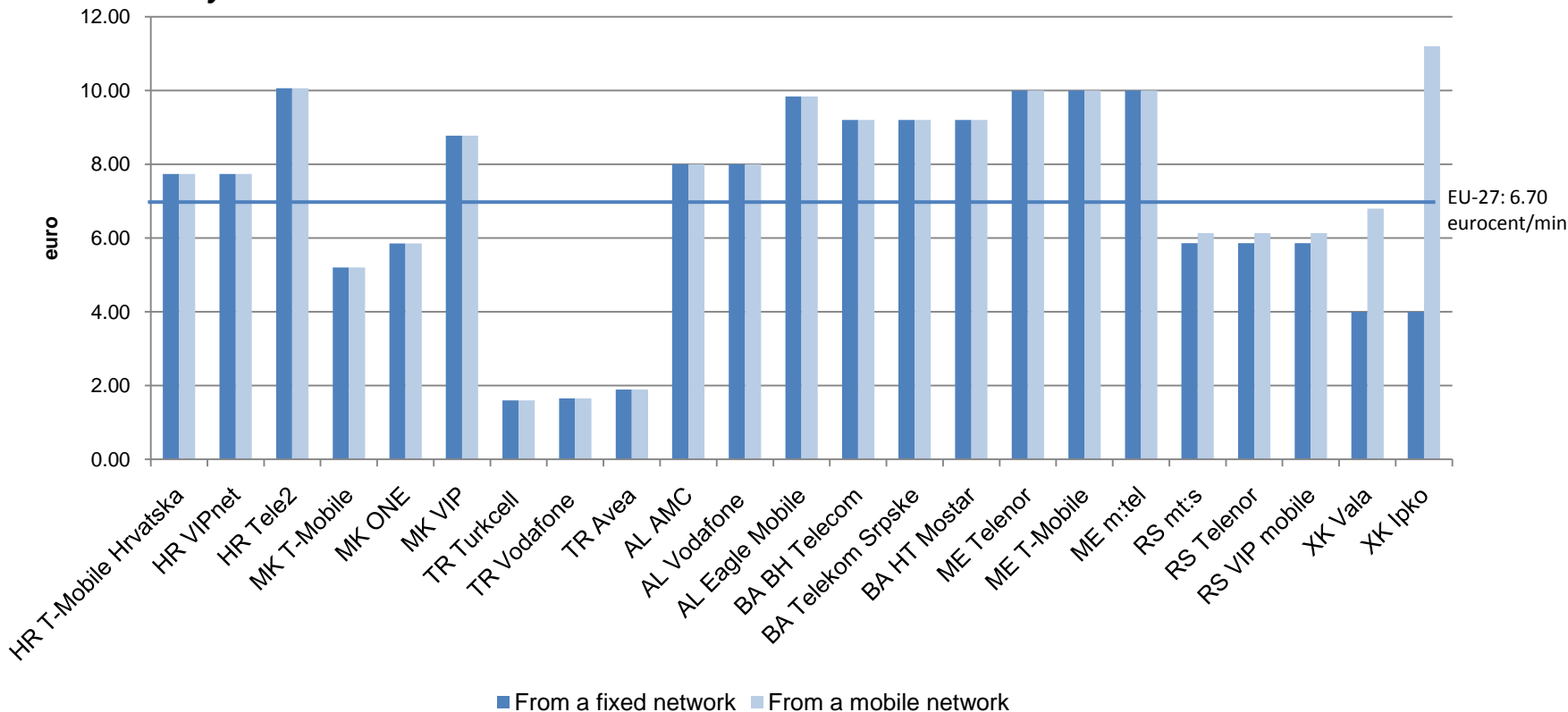
Mobile call termination

Fixed to mobile termination rates – largest mobile operator – peak time



Mobile call termination rates

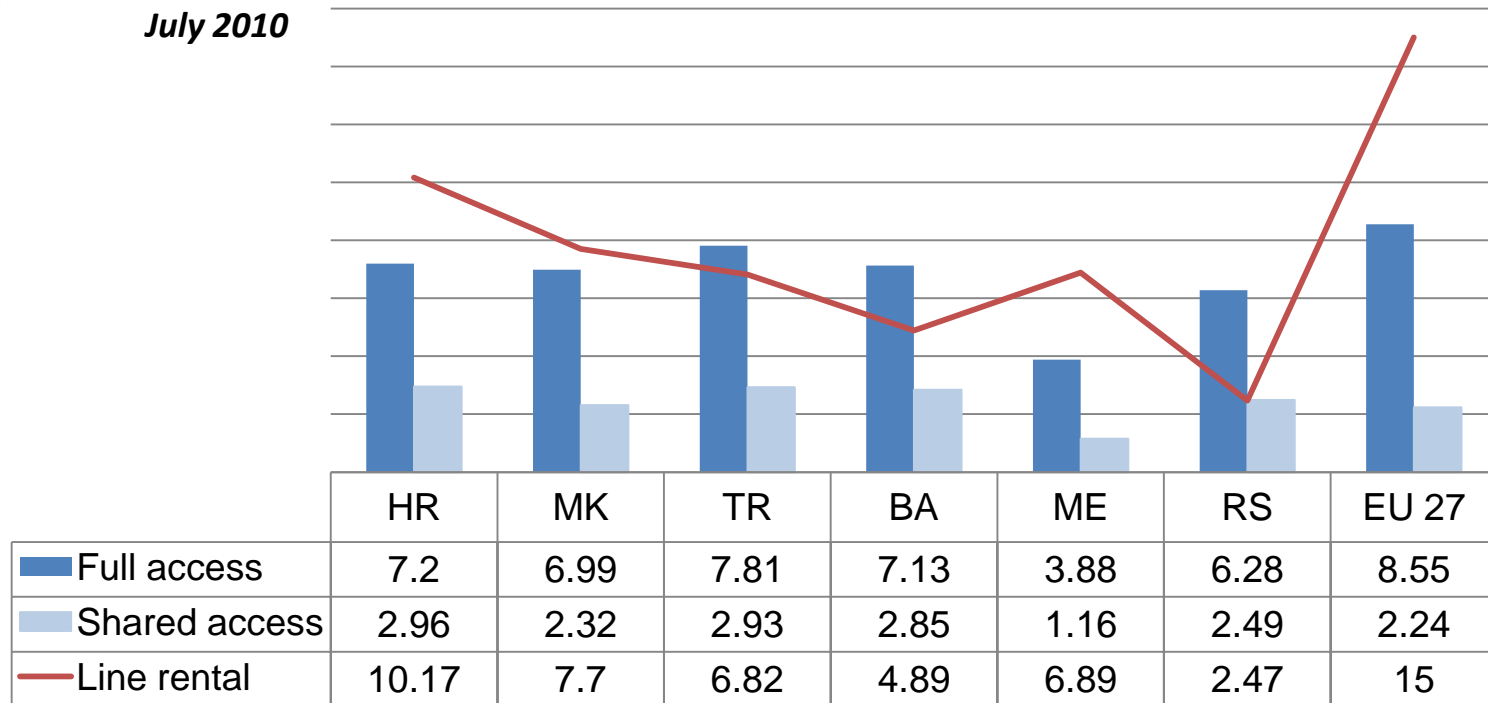
July 2010



- Higher rates for calls originated on mobile network in Kosovo and Serbia
- Rates are above the EU-27 average in Montenegro, Bosnia & Herzegovina, Albania and Croatia
- Lowest rates are in Turkey with 45% decrease from previous monitoring

Local loop unbundling – monthly fees

July 2010



- Montenegro: the charges are as set by EKIP in its November 2010 decision on analysis of M4/2007
- For full unbundling, prices are below the EU-27 average in all countries
- Fees for shared access are aligned with the EU-27 average
- Only in Croatia, FYROM and Montenegro full LLU prices are set below retail line rental

The way forward

- Rebalancing is ongoing. Monthly rental and local telephony prices still very low in certain countries, while LD tariffs are above the EU levels
- Albania continues progress. Rebalancing has just started in Serbia. Considerable changes in Montenegro and Bosnia and Herzegovina
- Mobile retail prices continue to decrease in most countries thanks to increased competition. Prices remain higher than EU levels in Turkey, Albania and Bosnia and Herzegovina
- Broadband prices also decreasing. Competition seems more dynamic for higher speed offers.
- Leased lines still expensive in some countries
- MTRs have been decreasing considerably in the region. Trend towards an alignment with the EU. FTRs increasingly asymmetric and much higher than EU-27 average
- LLU still unavailable in 3 countries but considerable progress over the last two monitoring periods. Efforts required to ensure consistency with retail prices



THANK YOU!

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