

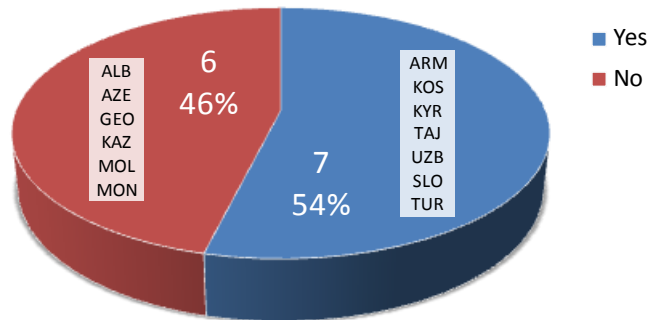
Electronic Payment Systems and Digital Signature

Survey Results

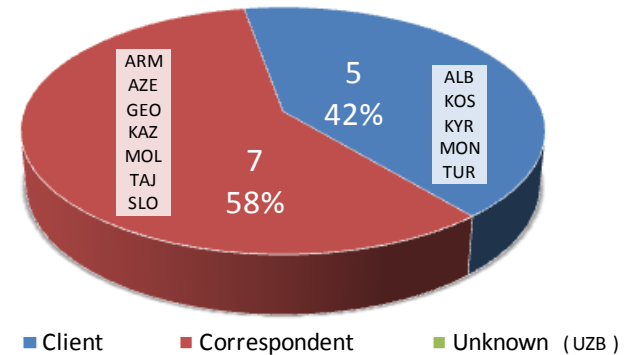
**PEM-PAL Treasury Community of Practice Workshop
Chisinau, Moldova
19 May 2010**

Part I - Budget and Treasury Operations

Legal basis: Is there a Treasury Law?



TSA Mode of Operation

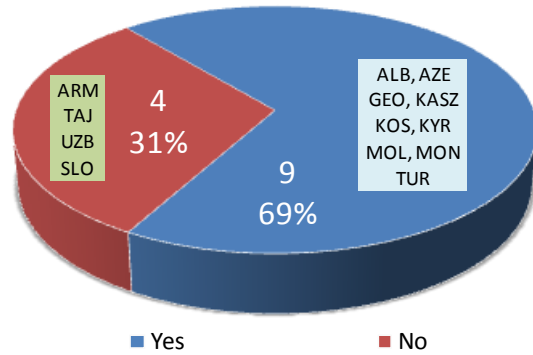


Country	T/BE estd in*	1970	1980	1990	2000	2010
ALB	1993			●	→	→
ARM	1996			●	→	→
AZE	1997			●	→	→
GEO	1995			●	→	→
KAZ	1994			●	→	→
KOS	1999				●	→
KYR	1994			●	→	→
MOL	1993			●	→	→
MON	2002				●	→
TAJ	1997			●	→	→
UZB	2007				●	→
SLO	2003				●	→
TUR	1972	●	→	→	→	→

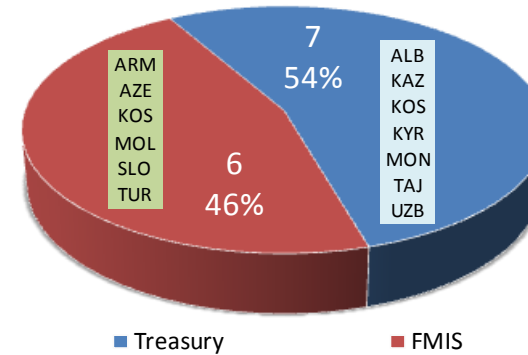
(*) T/BE estd in: Year in which the Treasury or Budget Execution function was established (usually under the MoF)

Part I - Budget and Treasury Operations

Direct TSA/EPS payments to beneficiaries?



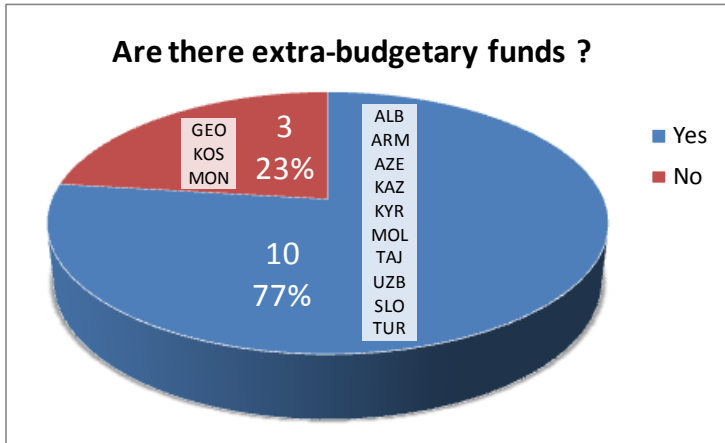
Fully operational Treasury/FMIS system?



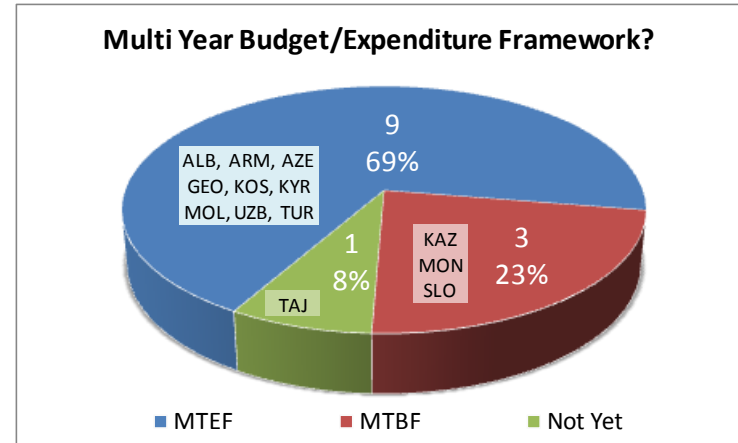
Treasury Locations and Staff	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR	RUS	UKR
# of offices I - Central	1	1	1	1	1	1	1	1	1	1	1	1	20	1	1
II - Regional				11	16		59			5	14			83	27
III - District	36	43	86		188			38		63	199		1065	2200	640
# of staff I - Central	25	95	70	119	152	63	52	41	35	55	140	105	736	400	300
II - Regional				81	2031		316			68	350			10000	5700
III - District	220	185	438		1776			257		327	1600		10685	20000	20000
Population (million)	3.1	3.1	8.7	4.3	15.7	1.8	5.3	3.6	0.6	6.8	27.3	5.4	73.9	142	46.3
GNI (2008) b\$	12.1	10.3	33.2	10.8	96.6	-	4.1	4.8	4.1	4.1	24.7	89.7	666.6	1371	148.6
GNI per capita (Atlas) \$	3840	3350	3830	2470	6140	-	740	1470	6660	600	910	14540	9340	9620	3210
External Debt (% GNI)	25	28	12	22	104	-	65	67	33	34	14	0	39	29	53
GDP (Current USD 2008) b\$	12.3	11.9	46.3	12.8	132.2	5.4	5.1	6.1	4.9	5.1	27.9	98.4	734.8	1680	180.4
Agricultural Sector % GDP	20.6	18.6	5.8	12.1	6.4	-	30.7	21.8	-	18.9	26.8	3.8	9.4	5.2	10.0
Industrial Sector % GDP	18.8	33.5	60.5	25.9	38.1	-	15.9	17.6	-	21.9	39.5	31.4	25.9	37.0	31.2
Service Sector % GDP	60.6	48.0	33.7	62.0	55.5	-	53.4	60.6	-	59.2	33.7	64.8	64.7	57.8	58.8
Gov Revenue (2007 %GDP)	23.6	21.0	27.3	24.0	15.9	-	21.0	34.3	-	13.5	-	29.1	25.5	31.6	34.7
Gov Expenditure (2007 %GDP)	21.9	16.6	15.5	22.9	14.1	-	18.4	32.5	-	13.7	-	30.6	24.2	23.2	35.0

Part I - Budget and Treasury Operations

Are there extra-budgetary funds ?



Multi Year Budget/Expenditure Framework?

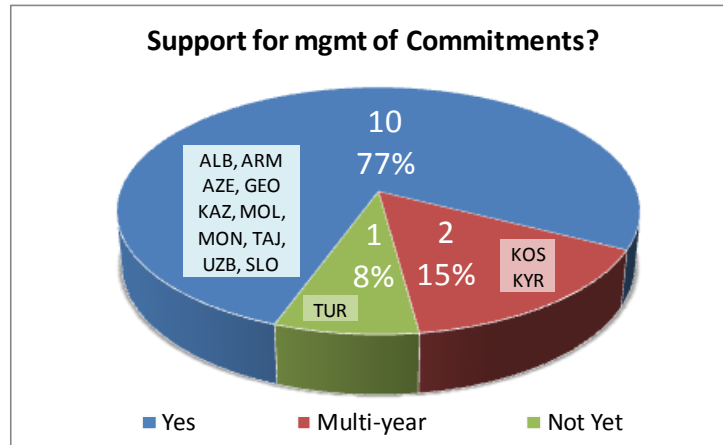


Is the Treasury responsible for:	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
(a) public expenditure mgmt?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(b) revenue collection?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓
(c) cash management?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓
(d) issuing securities/bonds?	✗	✓	✗	✓	✓	✓	✗	✗	✓	✓	✗	✓	✗
(e) debt/aid management?	✗	✓	✗	✓	✗	✓	✗	✗	✓	✗	✓	✓	✗
(f) accounting/financial stmt?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Accounting in Treasury	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Cash based			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Modified Cash	✓	✓									✓		
Modified Accrual													
Accrual based												✓	✓

Accounting in Budget Institution	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Cash based					✓	✓			✓		✓		✓
Modified Cash		✓					✓						
Modified Accrual	✓							✓					
Accrual based			✓	✓						✓		✓	✓

Part I - Budget and Treasury Operations



Coverage of Annual Budget	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Central	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Regional/Local	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✗	✗
Extra Budgetary Funds	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓

Annual Budget included in TSA	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Central	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Regional/Local	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✗
Extra Budgetary Funds	✓	✓	✓	✗	✓	✗	✗	✓	✗	✓	✓	✗	✗

Unified Chart of Accounts	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Is there a UCoA?	✓	✓	✓	✗	✓	✓	✓	✗	✓	✗	✓	✓	✓
UCoA aligned with Budget Class	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓

Part I - Budget and Treasury Operations

Observations

- ▶ Treasury (budget execution and reporting) legislative and institutional framework in place in all ECA countries
- ▶ Extra budgetary funds exist in many ECA countries (not covered in TSA operations)
- ▶ Many countries reported MTEF (Is it MTEF or MTBF?)
- ▶ Payments made directly to beneficiaries through centralized TSA in most countries
- ▶ Treasury accounting is mainly cash based and there is a unified chart of accounts in most ECA countries
- ▶ Type of information system in use (Treasury/FMIS) to be clarified.

Part II - Electronic Payment Systems

Electronic Payment System	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
MoU signed bw MoF and CB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dedicated EPS Unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Secure office space for EPS Unit	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
Secure VPN connection for EPS	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓
Dedicated servers w/ full backup	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓

EPS Operations	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR*
EPS Unit Staff													
Managers		45	2	2	1	2		2	1	1	2	2	1085
Specialists	2	165	12	4	3	4			3	5	3	15	2500
# of payments/day													
I - Central	1300	18500	7000	15000	4100	500	25	1290	1500	1000	3000	105000	40000
II - Regional		4850	13000		17600	500	16072	6170		3000	20000		
III - Other					300	10							
% budget coverage													
I - Central	100	90	100	99	100	100	100	95	100	100	100	100	100
II - Regional	100	83	5		100	100	100	94			25		
III - Other					100	100							

(*) Expected to be used in 2011

Part II - Electronic Payment Systems

EPS Platform	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
TARGET2 compatibility												✓	✓
EBA clearing sys compatibility												✓	✓
XML for Electronic File Transfer			✓			✓		✓	✓		✓	✓	✓
SWIFT platform for fin data exc	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
Using IBAN for transfers	✓		✓	✓	✓	✓	✓		✓			✓	✓

Electronic Payment System	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
# of Commercial Banks	15	22	6	19	51	7	22	15	11	8	10	25	47
Banks involved in TSA Banks	15	22	6	19		7	22	1	1	-	10	25	1
Branches	510	391	87	149				37			50		
Banks w/ Online (Internet) Serv		20	1	19	39	3	-	6	3	-	-	25	32
High-value payment sys (RTGS)?	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
Established in		1996		2001	2000		2008	2006	2005		2007	2009	1992
Transactions/yr (million)		2.6		5.5	10.0		0.1		5.1				129.5
TSA transactions/yr (m)	0.15			3.5	0.07				0.22			0.006	
Max TSA transactions/day	520	2000		45000	40000		1093		800			20	
Low-value payment sys (ACH)?	✓	✗	✓	✗	✓	✗	✓	✓	✓	✗	✓	✓	✗
Established in					1999		2006	2006	2005			2003	
Transactions/yr (million)					16		3.3		3.5				
TSA transactions/yr (m)	0.12				0.14								
Max TSA transactions/day	1500				64000		20					4000	

Part II - Electronic Payment Systems

Observations

- ▶ Electronic Payment System (EPS) regulatory and institutional framework in place in many ECA countries
- ▶ EPS is supporting mainly centralized TSA operations to cover most of budget expenditures
- ▶ Substantial progress observed in Moldova, Georgia and Kyrgyz Rep within the last 5 years to improve EPS/TSA operations
- ▶ EPS is mainly based on high-value payment systems (RTGS)
- ▶ Widely accepted standards in many countries (e.g. IBAN, SWIFT, XML)

Part III - Digital Signature

Digital Signature	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
Law on Digital Signature	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
DS Law Approved in	2008	2004	2004	2009	2003	-	2004	2004	2003	-	2003	2002	2004
Public Entity resp for DS impl	-	✓	✓	✓	✓	-	✓	✓	-	-	✓	✓	✓
DS mandatory in Treasury oper	-	-	-	-	✓	-	-	-	-	-	✓	-	-
Transactions signed by DS/yr	?	?	?	?	?	?	?	?	?	?	?	?	?

DS Operations	ALB	ARM	AZE	GEO	KAZ	KOS	KYR	MOL	MON	TAJ	UZB	SLO	TUR
PKI infrastructure to support DS		✓			✓		✓	✓			✓		✓
Wireless PKI support		-					✓	✓			✓		✓
Is there a Root CA?					✓		✓				✓		✓
Are there Licensed CAs?		1			?		?	1			4		5
# of certif by Root CA					137747		1						?
Public					137747		1						?
Private					34566		1						
# of cer by Licensed CA		200					250						?
Public		200					250						?
Private		903											
If not CA, "trust" in PKI through						WoT							
Hash function used for DS					SHA-1		?	SHA-1			?		
Symmetric Key Techniques													
Assymmetric Key Techniques													RSA
PKS Validity (yrs) - Root CA					10		30	3			1		10
- Licensed CA							5	2.5			1		3
- User					1		1	1			1		
PKS key length (bit) - Root CA					512		512	4096			1024		2048
- Licensed CA								4096			1024		2048
- User		2048			512			2048			1024		

Part III - Digital Signature

Observations

- ▶ Digital Signature (DS) legislation in place in many ECA countries
- ▶ DS infrastructure (PKI, CA) is not established in many countries yet
- ▶ DS is not widely used in Treasury operations
- ▶ DS is operational in 4-5 ECA countries (Moldova, Kazakhstan, Uzbekistan, Turkey)
- ▶ Russia is well advanced in using DS in daily operations and transactions (although not a part of this survey)