Figure 1: Tradeoff between capital stock (K) and spectrum bandwidth (B) in the use of spectrum with given technology
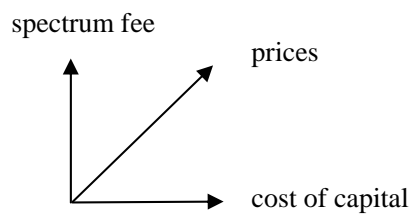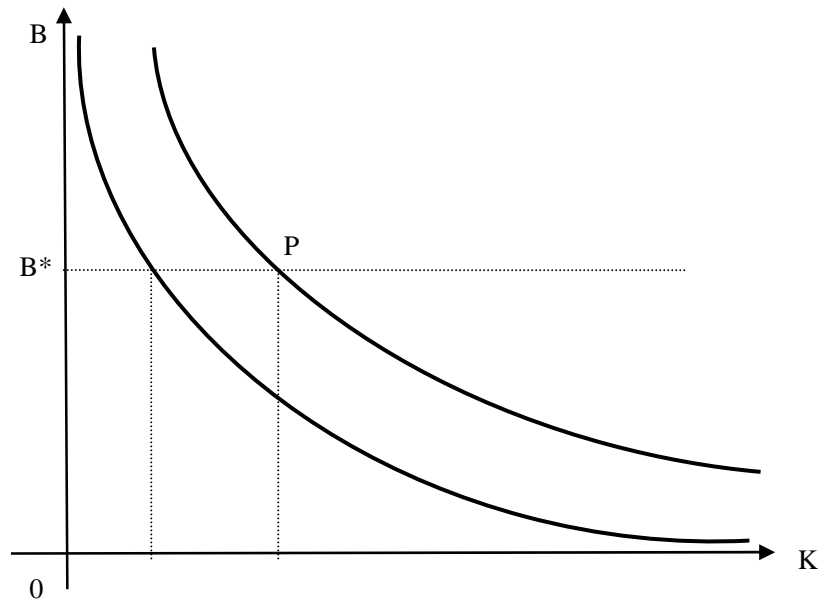
B
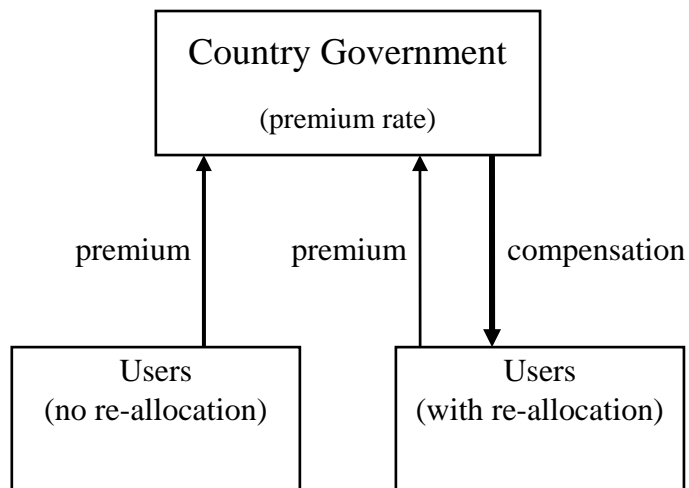
B*   P

0   K

spectrum fee

prices

cost of capital

Figure 2: Example of Spectrum Usage (Current System)

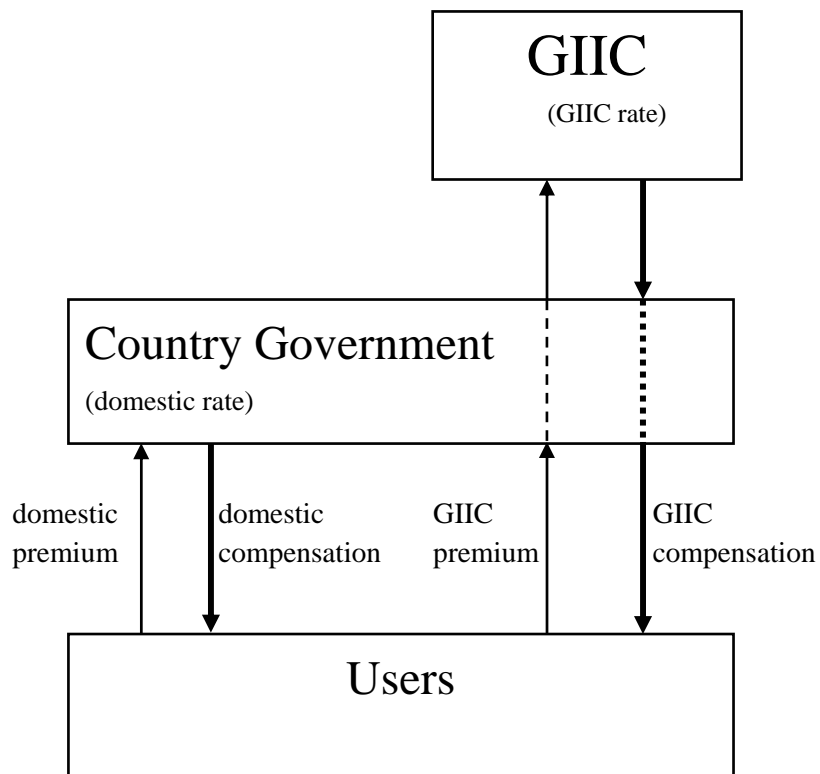|	Spectrum Band (Frequencies)	Band A		Band B			Band C	Band D	Band E
ALLOC	Objective	Broadcast		Commercial Mobile			Security	Internet Access	Unspecified (ISM)
	Priority	Primary		Primary			Primary	Primary	Primary
	Usage mode specified by government (Mode-G)	Exclusive		Exclusive			Exclusive	Commons ("unlicensed")	Commons ("unlicensed")
ASSGN	Spectrum Block (Area, Time)	A1	A2	B1	B2	B3	C	(D)	(E)
	Duration	10yrs		5yrs			5yrs	(indefinite)	(indefinite)
	Spectrum User (Licensee)	Broadcast Stations		Mobile-phone Providers			Police, Fire Stations	(NA)	(NA)
	Usage mode specified by user (Mode-L)	Club/ commons		Club			Exclusive	(NA)	(NA)
Final user		Consumers, etc., of Services using Spectrum							

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Figure 3:   Example of Spectrum Usage (MLA)   Note: Entries in *italics* are introduced anew in this example.

	Spectrum Band	Band A		Band B				Band C		Band D	Band E
ALLOC	Objective	Broadcast		Commercial Mobile			*Unspecified*	Security	*Internet Access*	Internet Access	Unspecified (ISM)
	Priority	Primary		Primary			*Secondary*	Primary	*Secondary*	Primary	Primary
	Mode-G	Exclusive		Exclusive			*Commons (UWB)*	Exclusive	*Exclusive (overlay)*	*Exclusive*	Commons
ASSGN	License (Spectrum Block)	A1	A2	B1	B2	B3	*BB*	C	*CC*	*D*	*E*
	Duration	10yrs		5yrs			*5yrs*	5yrs	*5yrs*	*5yrs*	*5yrs*
	Spectrum User (Licensee)	Broadcast Stations		Mobile-phone Providers			*Public Agent*	Police, Fire Stations	*Union of Internet Access Providers*	*Union of Internet Access Providers*	*Public Agent*
	Mode-L	Club/ commons		Club			*Commons*	*Club*	*Club*	*Commons*	*Commons*
	Lease price			(D e t e r m i n e d b y a u c t i o n)							
	Amount ROD-insured (Relocation cost)			(S p e c i f i e d b y s p e c t r u m u s e r)							
Final user		Consumers, etc., of Services using Spectrum									

Fig. 4:   Insurance-Compensation for Re-Allocation

```
              ┌─────────────────────────┐
              │   Country Government     │
              │                          │
              │     (premium rate)       │
              └─────────────────────────┘
                ↑         ↑          │
                │         │          ↓
            premium    premium   compensation
                │         │          │
              ┌─────────┐   ┌──────────────┐
              │  Users  │   │    Users     │
              │(no re-  │   │(with re-     │
              │alloca-  │   │allocation)   │
              │tion)    │   │              │
              └─────────┘   └──────────────┘
```

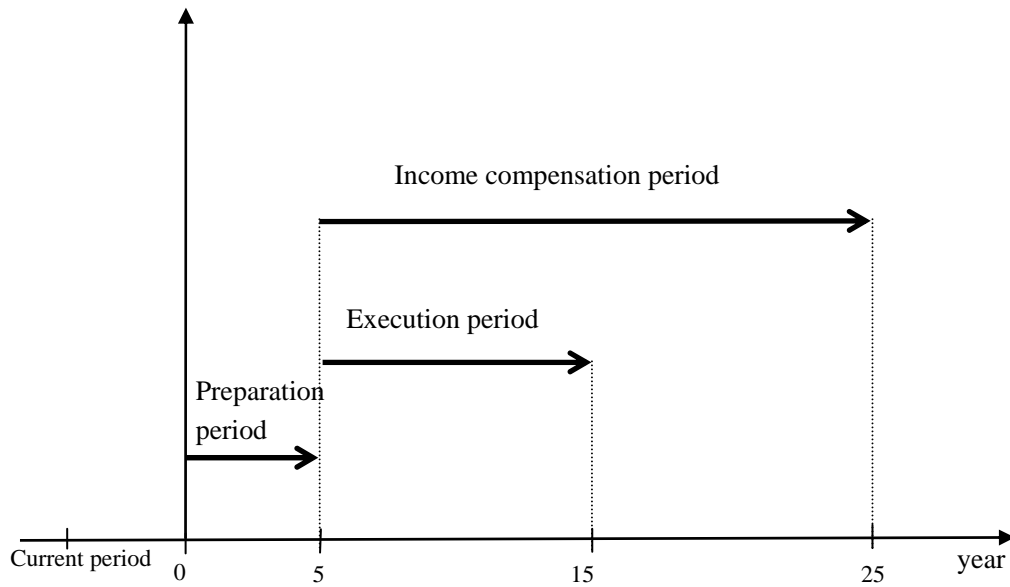## Fig. 5: International Insurance-Compensation for Re-Allocation

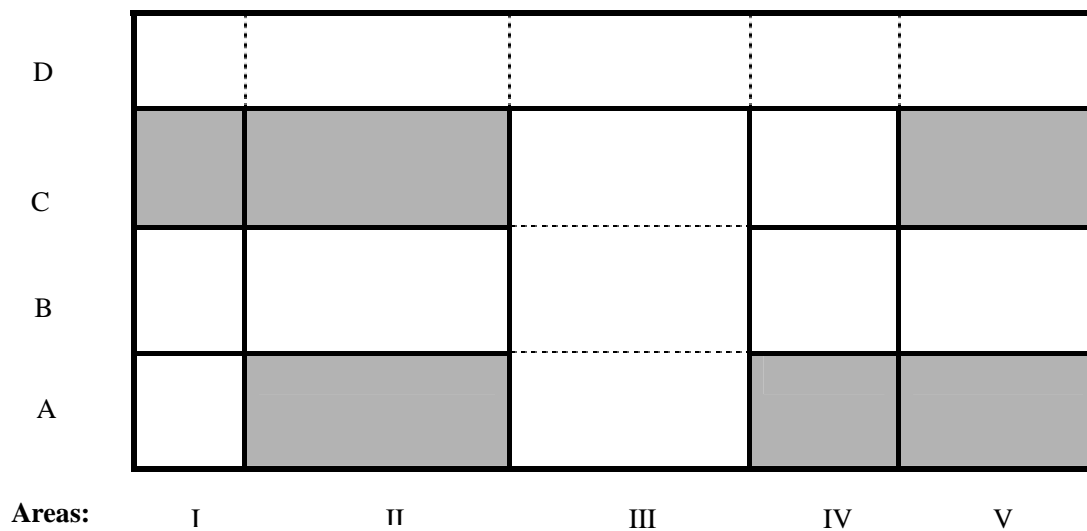**Figure 6: Tradeoff between Security (ROD) and Flexibility in Alternative system for Using Spectrum**

Figure 7: Example of transition (case of M=5, M=10, M=20)

Income compensation period

Execution period

Preparation period

Current period

0   5   15   25   year

Figure 8: Establishing "benchmark lease prices (BLP)"

Spectrum
Frequencies:

	I	II	III	IV	V
D					
C					
B					
A					

Areas: I   II   III   IV   V

▨ : BLP established by auction on newcomers

☐ : BLP calculated by interpolation

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Fig. 9: Various systems for using spectrum

System \ Usage Mode \ User		Exclusive	Club	Commons
A. Public Property (Current System)	private	**licensed out** (no rent)	**licensed without limit** (no rent)	**unlicensed**
	government	direct agreement between government users / controller		
B. Private or public property	private	**auctioned out initially free resale**	(offered by private exclusive users)	
			(offered by government users)	
	government	direct agreement between government users / controller		
C. Public property competitive lease* (MLA)	*private*	*auctioned out periodically*	*(offered by private exclusive users)*	
			(offered by public agents)	
	government	*auctioned out periodically to public agents or government users*		
D. Public property for direct open use	private	**unlicensed** (open use)		
	government	direct agreement between government users / controller		