Fig 1

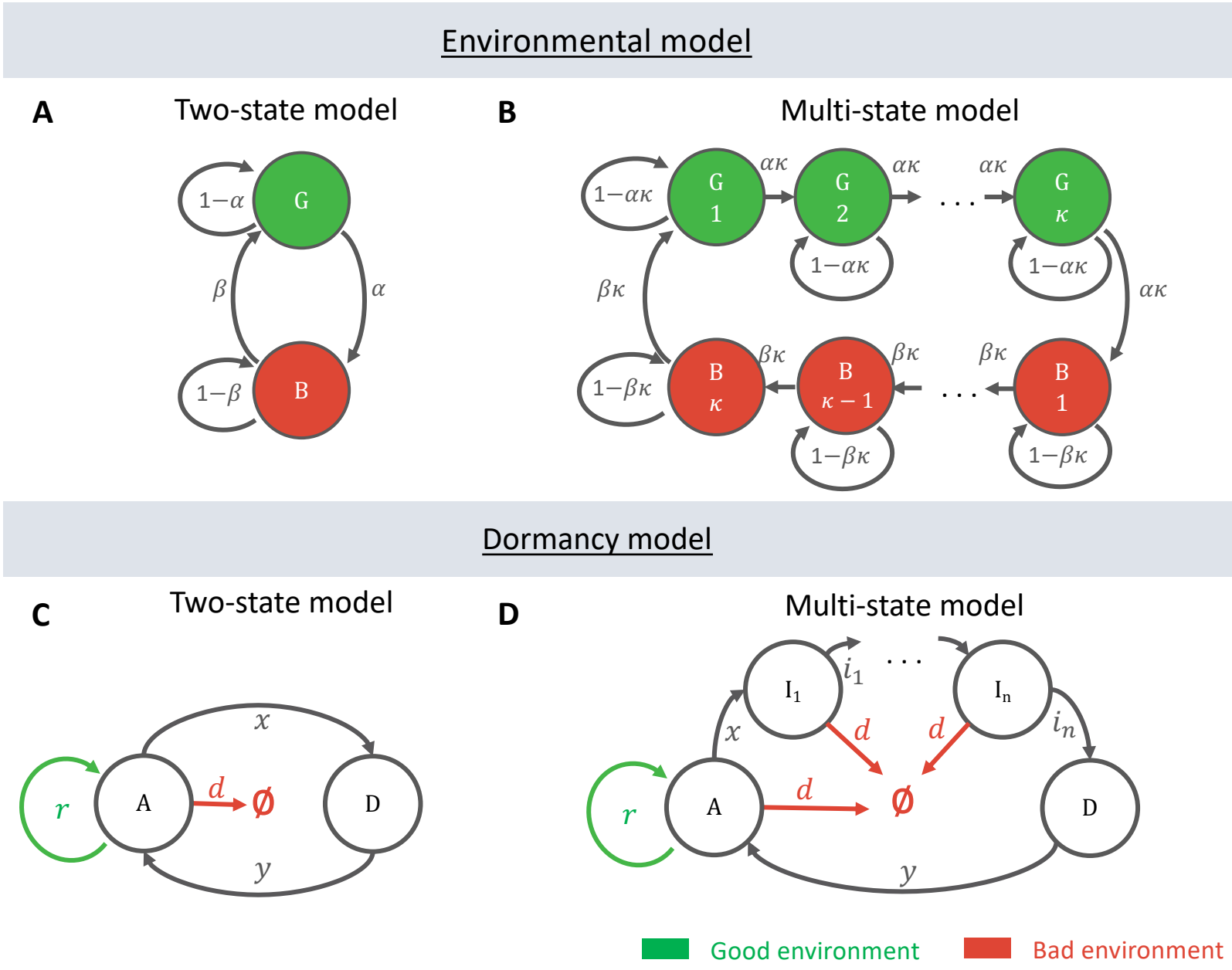

Environmental model
A
Two-state model
1−α
G
β
α
1−β
B
B
Multi-state model
1−ακ
ακ
G 1
G 2
G κ
1−βκ
βκ
B κ
B κ − 1
B 1
Dormancy model
C
Two-state model
x
r
A
d
Ø
D
y
D
Multi-state model
I1
i1
In
in
Good environment
Bad environment

Fig 2

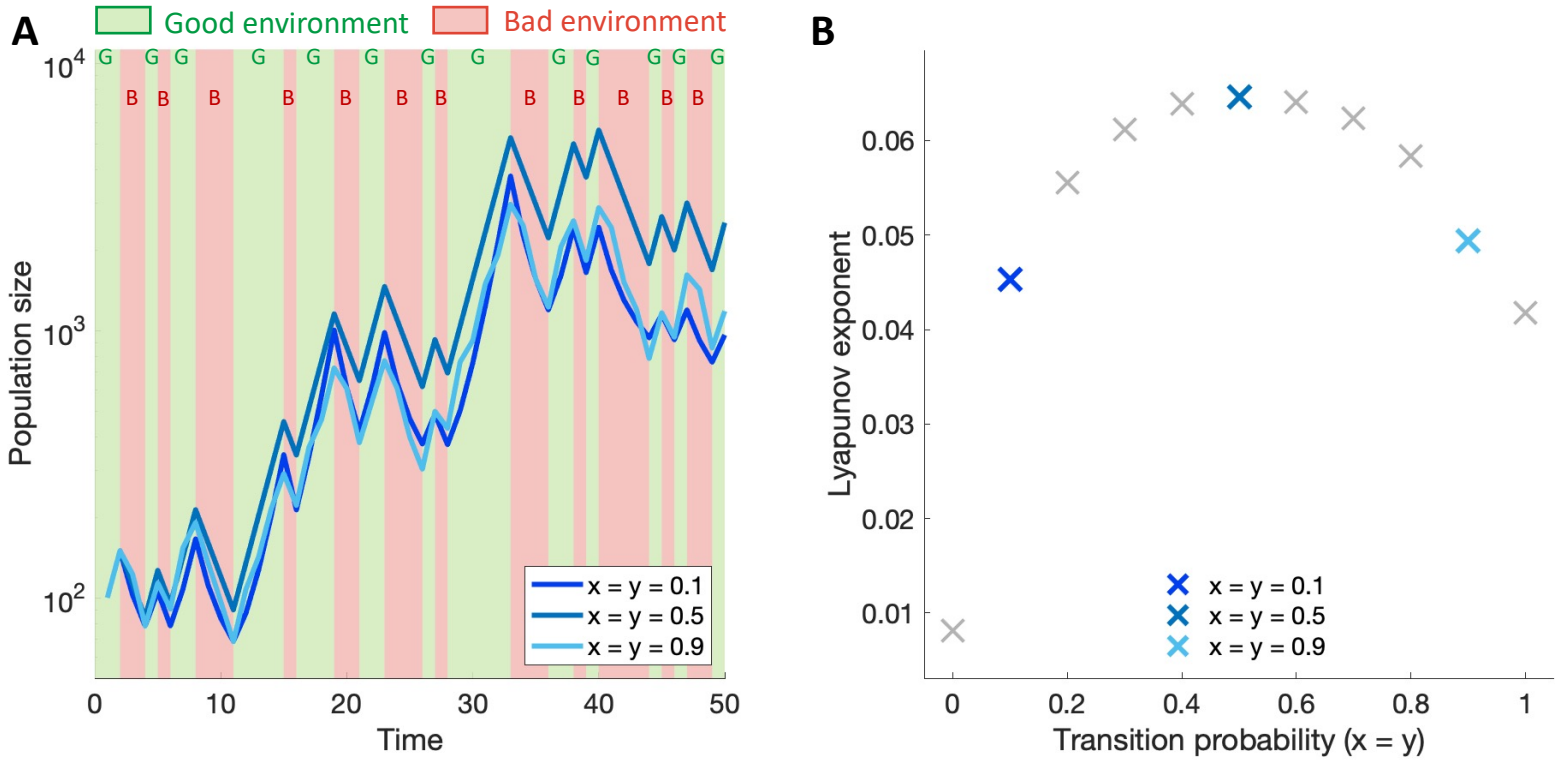

A
Good environment
Bad environment
Population size
Time
x = y = 0.1
x = y = 0.5
x = y = 0.9
B
Lyapunov exponent
Transition probability (x = y)
x = y = 0.1
x = y = 0.5
x = y = 0.9

Fig 3

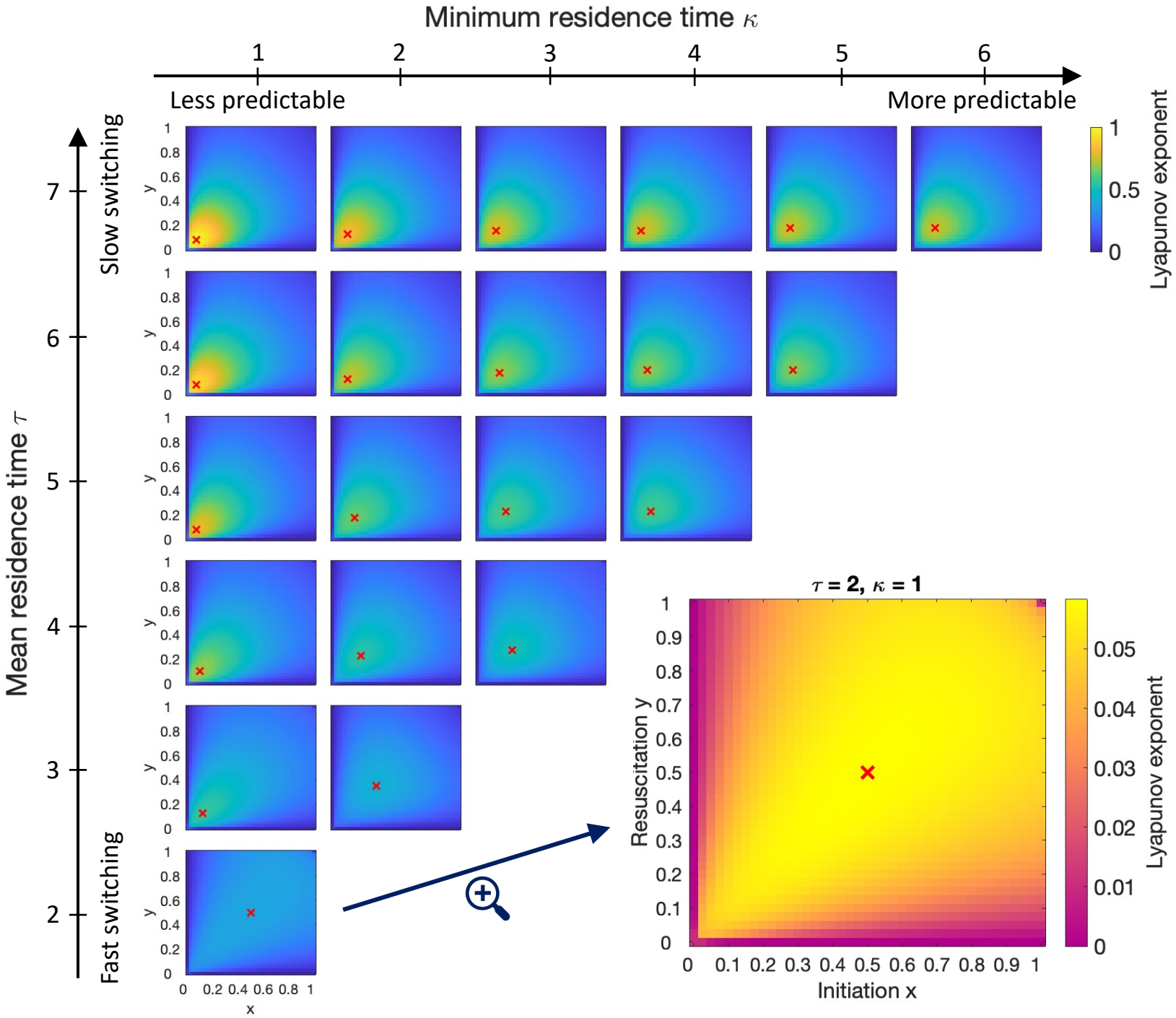

Minimum residence time κ
1
2
3
4
5
6
Less predictable
More predictable
Mean residence time τ
Slow switching
Fast switching
7
6
5
4
3
2
Lyapunov exponent
1
0.5
0
x
y
τ = 2, κ = 1
Resuscitation y
Initiation x
0.05
0.04
0.03
0.02
0.01
0

Fig 3

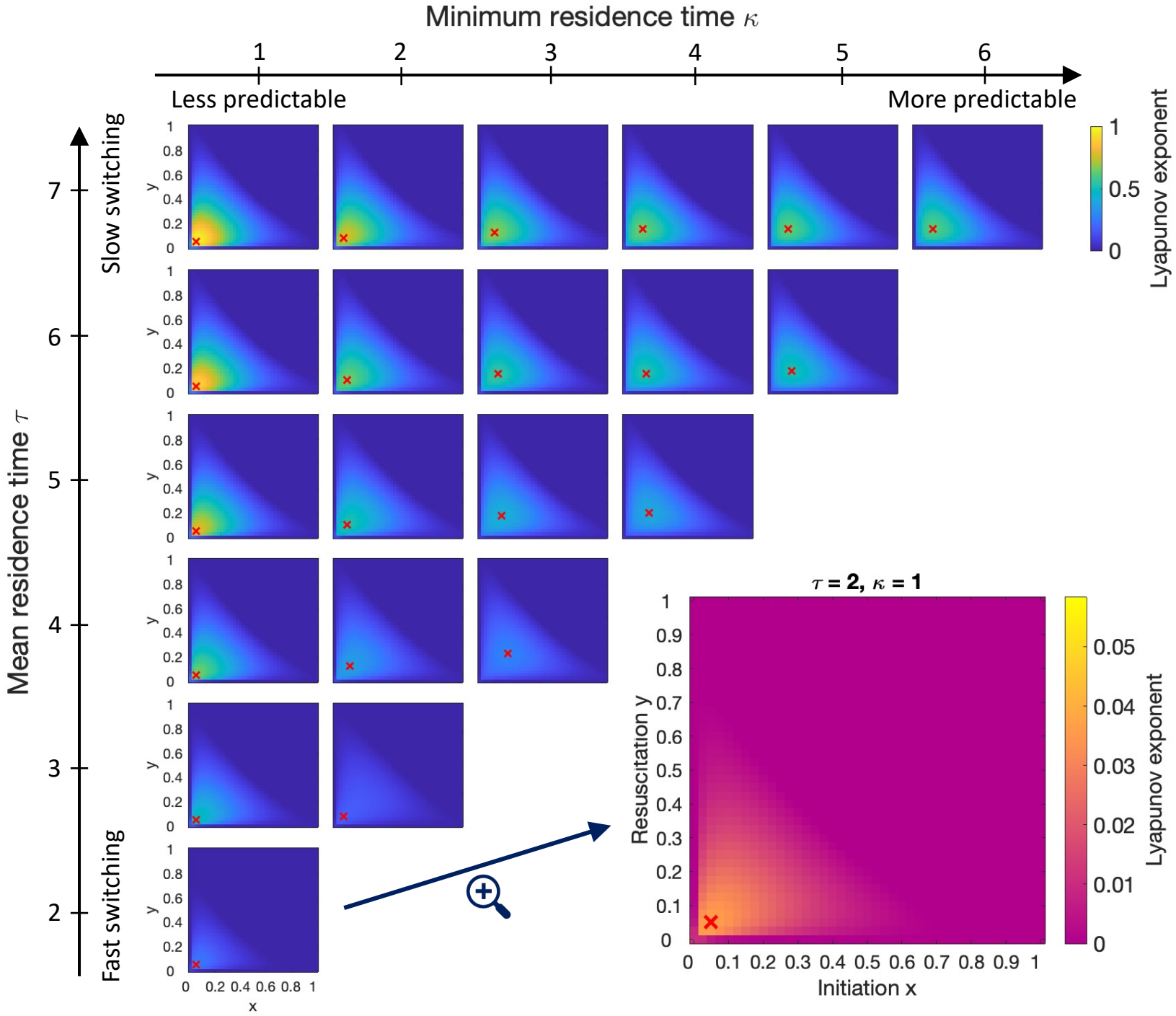

Minimum residence time κ
1
2
3
4
5
6
Less predictable
More predictable
Mean residence time τ
7
6
5
4
3
2
Slow switching
Fast switching
Lyapunov exponent
1
0.5
0
x
y
τ = 2, κ = 1
Resuscitation y
Initiation x
0.05
0.04
0.03
0.02
0.01
0

Fig 5

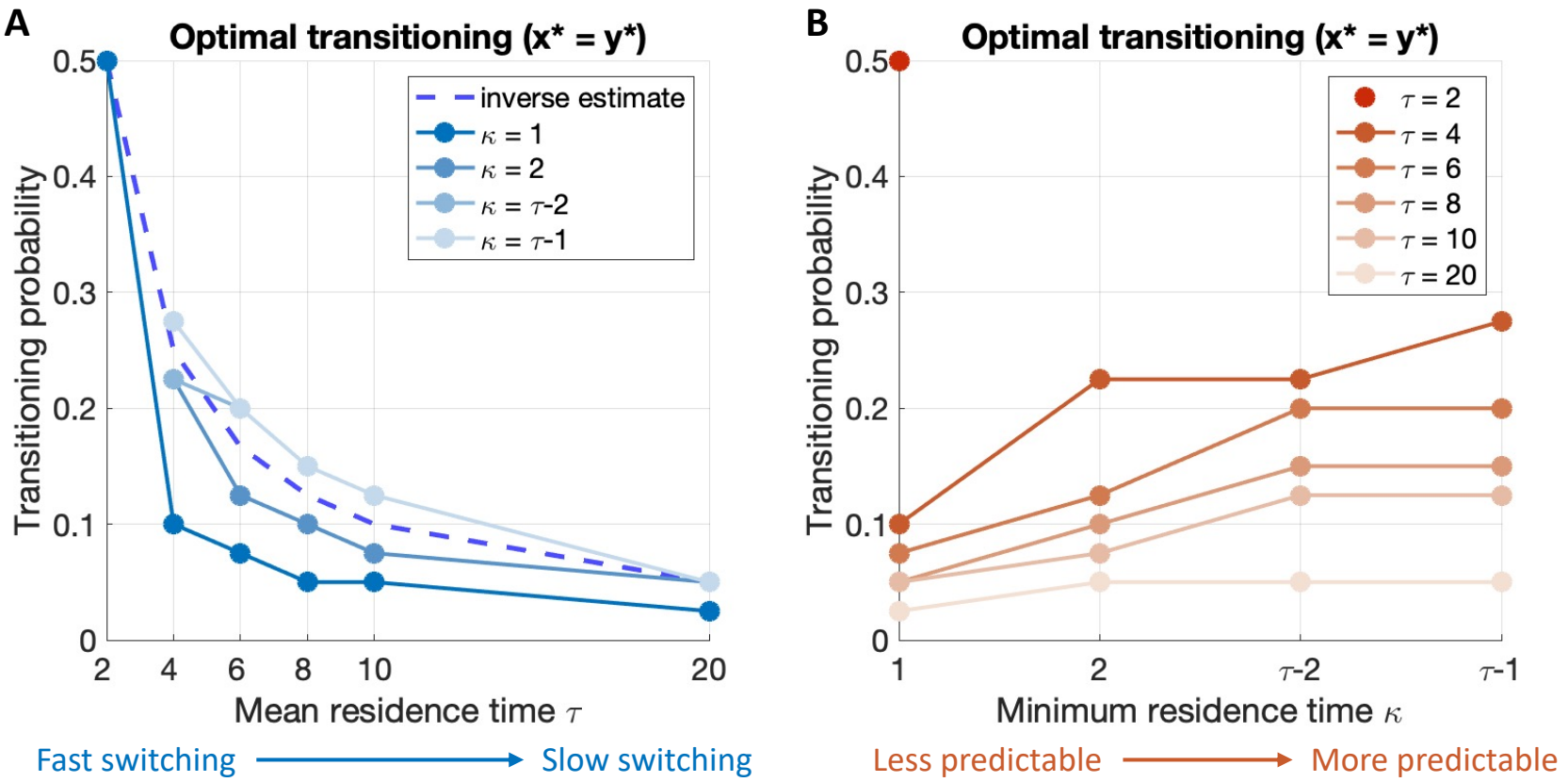

A
Optimal transitioning (x* = y*)
inverse estimate
κ = 1
κ = 2
κ = τ-2
κ = τ-1
Transitioning probability
0.5
0.4
0.3
0.2
0.1
0
2
4
6
8
10
20
Mean residence time τ
Fast switching
Slow switching
B
Optimal transitioning (x* = y*)
τ = 2
τ = 4
τ = 6
τ = 8
τ = 10
τ = 20
Transitioning probability
0.5
0.4
0.3
0.2
0.1
0
1
2
τ-2
τ-1
Minimum residence time κ
Less predictable
More predictable

Fig 6

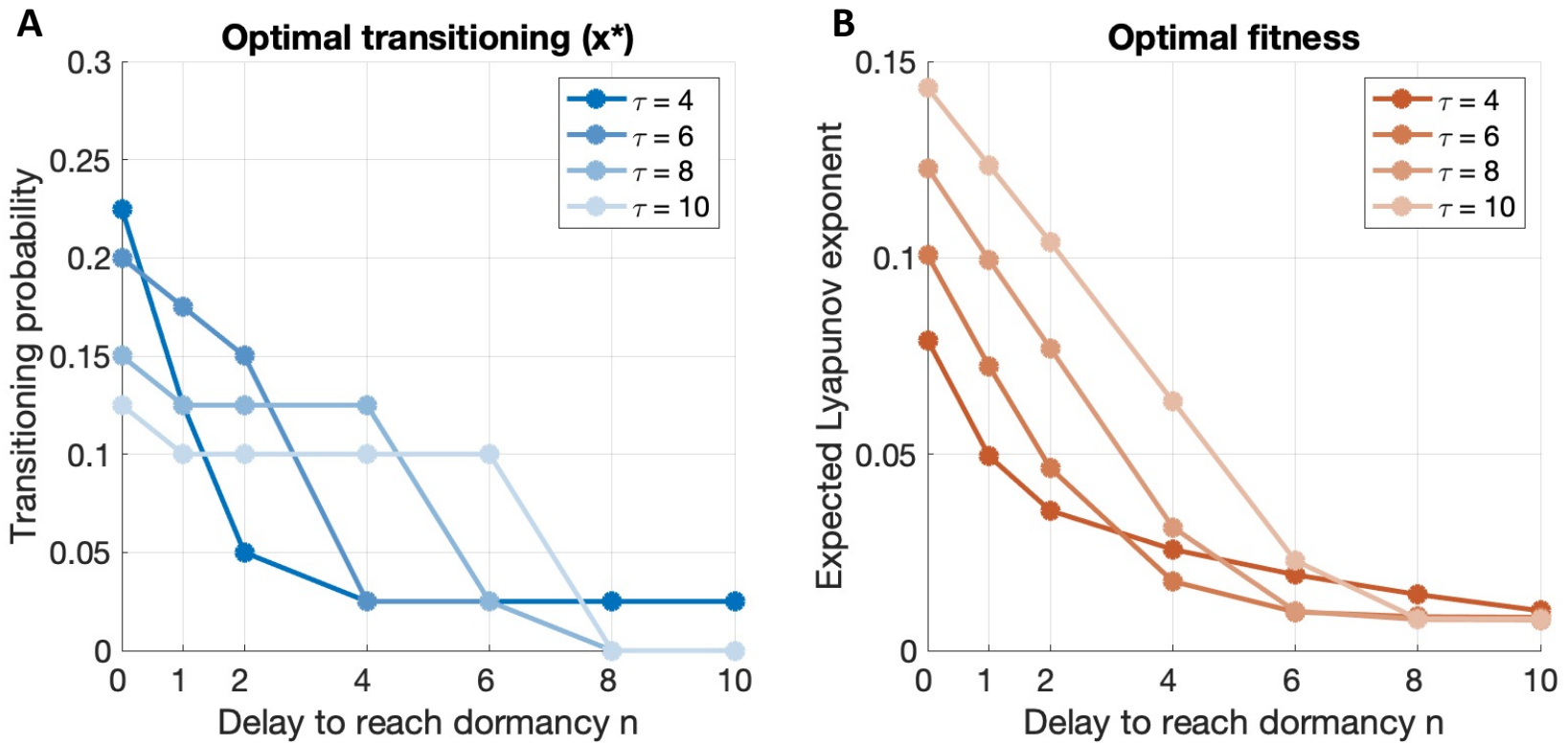
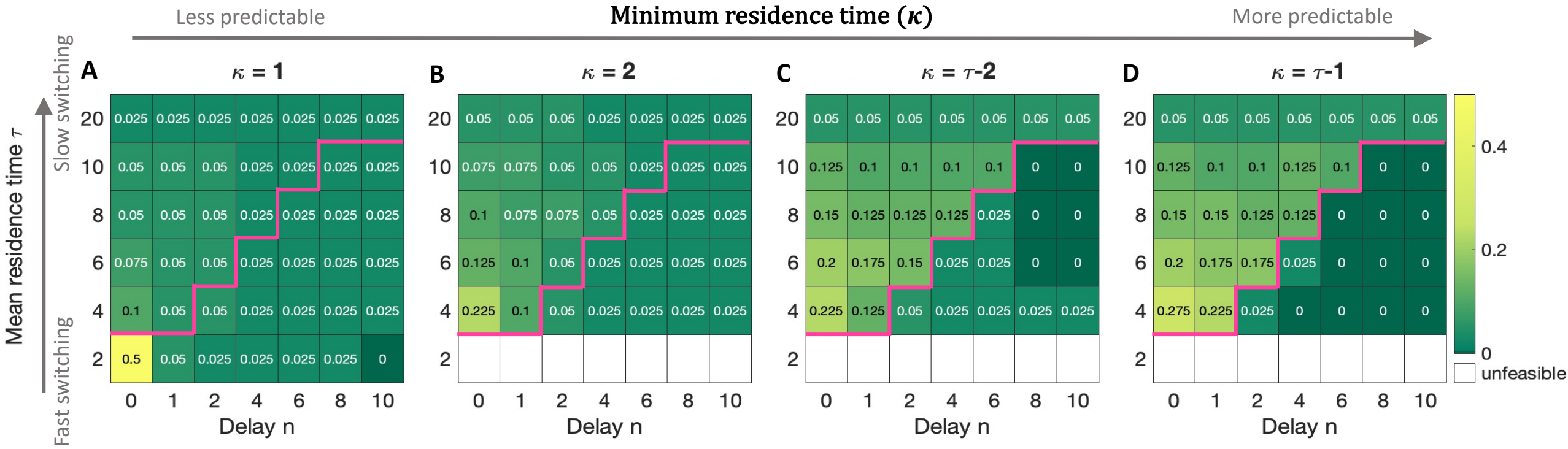
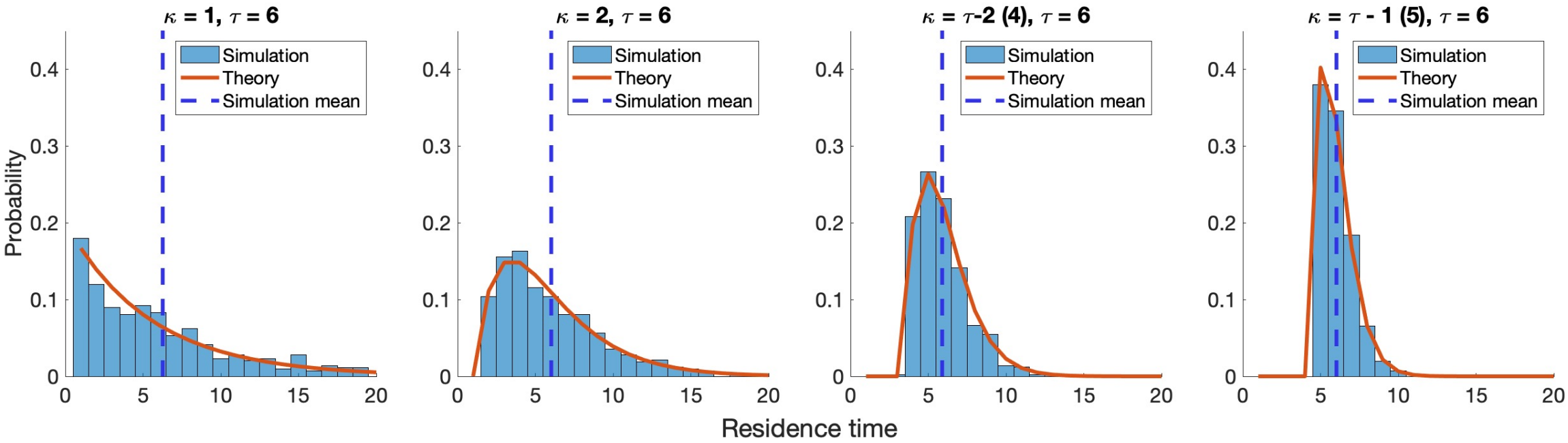

A
Optimal transitioning (x*)
Transitioning probability
Delay to reach dormancy n
τ = 4
τ = 6
τ = 8
τ = 10
0
0.05
0.1
0.15
0.2
0.25
0.3
0 1 2 4 6 8 10
B
Optimal fitness
Expected Lyapunov exponent
Delay to reach dormancy n
τ = 4
τ = 6
τ = 8
τ = 10
0
0.05
0.1
0.15
0 1 2 4 6 8 10

Fig 7


Less predictable
Minimum residence time (κ)
More predictable
Slow switching
Mean residence time τ
Fast switching
A
κ = 1
B
κ = 2
C
κ = τ-2
D
κ = τ-1
Delay n
0.4
0.2
0
unfeasible

Supp Fig 1


κ = 1, τ = 6
κ = 2, τ = 6
κ = τ-2 (4), τ = 6
κ = τ - 1 (5), τ = 6
Simulation
Theory
Simulation mean
Probability
Residence time
0
0.1
0.2
0.3
0.4
0
5
10
15
20