



0
A
G

16.4
21.5

7

10

2012

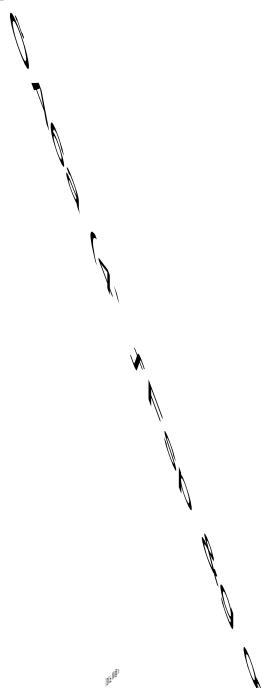
2012

52.5

60

2000

2000



Ray M Northam 1975

S
25%

3

60%- 70%
70%

[1]

[2]

[3]

[4]

[5]

[6]

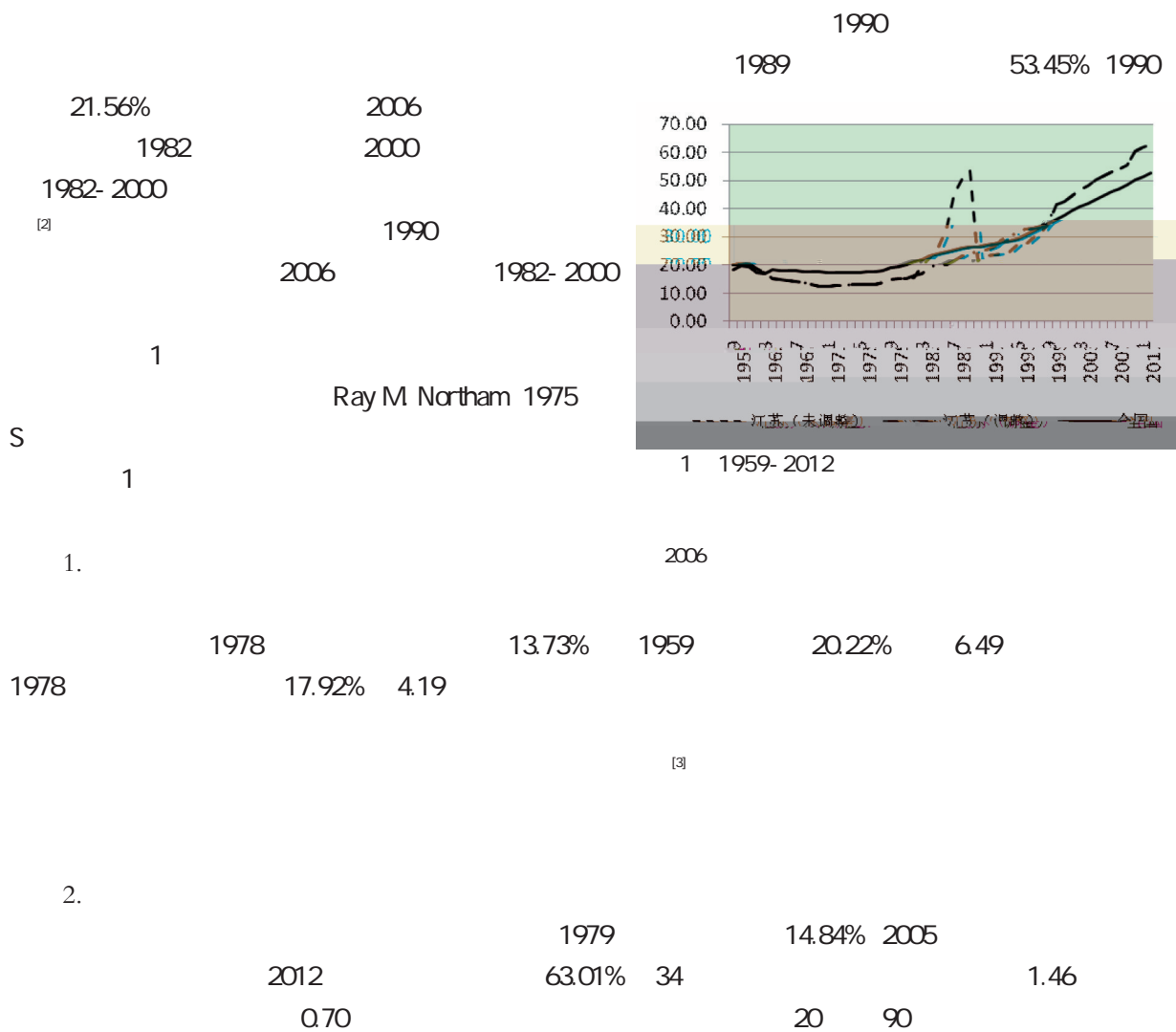
[7]

[8]

[9]

[10]

[1]



[1]

[2]

[3]

50

2013 8

2006 1

2000 3

20 80
1985-1989 11 378 77%^[1]
20 90
2000 13
2000 1191 275 2012 836 95
36.5% 2010
4.98 2012 63.01% 10.11 2012 3655
2000 2.65

1.

GDP

[4]

[1]

[2]

2011 3

[3]

2007 7

[4]

2005 4

2.

1

Spatial Error Model SEM

Spatial Lag Model SLM

$$y = Wy + X\beta + \epsilon$$

y $n \times 1$
 W
 Wy

$$y = X\beta + W\lambda + \epsilon$$

X $n \times k$
 y

$$y = X\beta + W\lambda + \epsilon$$

y X W

2

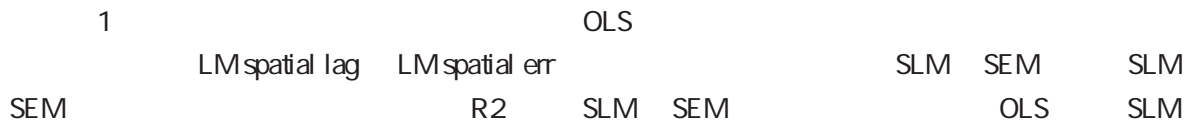


i j

Matlab7.1

3

1



SEM 0.526958 1

0.604975

SLM

SEM

Anselin &

Rey 1991

LM

LM-err

LM-lag

SEM

SEM

0.604975

1%

1%

0.6%

	OLS	SLM	SEM
lngdp	0.214044*** 10.646372	0.002036 0.167115	0.040597*** 2.956989
secindstr	-0.012255*** -8.066327	-0.005396*** -3.475042	-0.007447*** -4.357885
thiindstr	0.009533*** 4.866345	0.010293*** 4.337529	0.009097*** 3.782943
fisdec	-0.140226 -0.632420	0.909026*** 3.492887	0.730546*** 2.942656
openness	0.031693 1.211541	0.042766 1.347364	0.03193 1.116310
		0.526958*** 7.975212	
			0.604975*** 9.242635
LM-lag test	3.1263* p=0.0770	11.3719*** p=0.0007	
LM-err test	4.0893** p=0.0432		79.8691*** p=0.0000
R ²	0.8297	0.8358	0.8680

t *** ** * 1% 5% 10%

lngdp

thiindstr

secindstr

fisdec
openness

1.

1

1959-1978

15.05%

1979-1990

19.41%

0.91

1991-2000

32.08%

1.82

2001-2012

52.77%

1.86

2

2012

54058.22

1979-2012

12.5%

2

2009

30% 2012

37.5%

GDP

1995

30%

2012 43.5%
3

2012 1995
21 4.9
17.8 5.9
4371 2000 3

99.7% 17.8% 2012 1980 92.2%
99.4% 2.3 22.4
90.7% 19.3% 42.2% 1980 0.2% 2012
2.
1

1 1978 1.86 21 20 2012 243
3

4

-

Tiebout 1956

2002

2003



100%