Actuarial Metrics for Monitoring the Sustainability of the US Social Security System

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The US Social Security System

The triple financial challenges

- Stability
- Solvency
- Sustainability

The fixed payroll tax rate

- Design leads to actuarial imbalance
- Sustainability compromised

The US Social Security System

- Cash transfer system
- Asset-income cash flow stream
- Liability-outgo cash flow stream
- Buffer fund
- Actuarial equilibrium
- Economic cost concept
- Payroll tax and stability

M1 AND M2:

Asset-Income and Liability-Outgo Rates (Percent of Covered Payroll)

PROJECTION PERIOD	PROJECTION BASIS 2002 LOW COST	2002 INTERMEDIATE	2002 HIGH COST	PROJECTION BASIS 2013 LOW COST	2013 INTERMEDIATE	2013 HIGH COST
	ASSET-INCOME PROCEEDS			ASSET-INCOME PROCEEDS		
	%	%	%	%	%	%
25YEARS	14.17	14.21	14.28	14.66	14.77	14.84
50 YEARS	13.74	13.82	13.92	13.94	14.08	14.21
75 YEARS	13.60	13.72	13.87	13.70	13.88	14.06
	LIABILITY-OUTGO CASH FLOW			LIABILITY-OUTGO CASH FLOW		
	%	%	%	%	%	%
25YEARS	11.39	12.42	13.71	13.83	15.40	17.27
50 YEARS	12.73	14.53	16.81	13.89	16.07	18.75
75 YEARS	13.05	15.45	18.68	13.76	16.45	19.82

The US Social Security System

- Solvency metrics
- Projection periods
- Alternative assumption sets
- Nine-point solvency ratio matrix
- Secular trend
- Secular decline
- Annual rate of decline

M3:

Social Security Solvency Ratios

PROJECTION PERIOD	PROJECTION BASIS 2002 LOW COST %	PROJECTION BASIS 2002 INTERMEDIATE %	PROJECTION BASIS 2002 HIGH COST %	PROJECTION BASIS 2013 LOW COST %	PROJECTION BASIS 2013 INTERMEDIATE %	PROJECTION BASIS 2013 HIGH COST %
25YEARS	124.41	114.41	104.16	106.00	95.91	85.93
50 YEARS	107.93	95.11	82.81	100.36	87.62	75.79
75 YEARS	104.21	88.80	74.25	99.56	84.38	70.94

M4:

Amount of Decline 2002-13

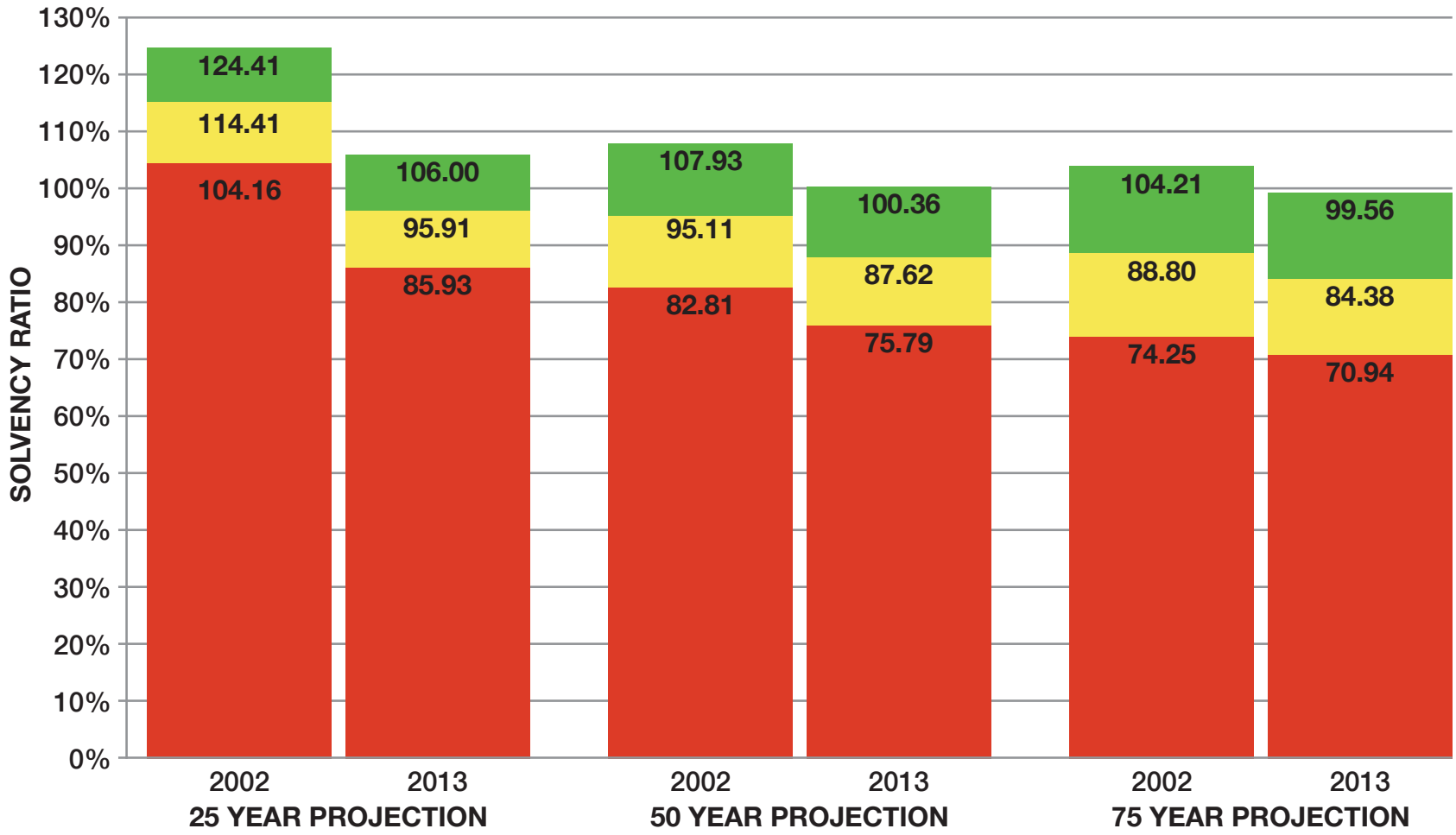
	LOW COST %	INTERMEDIATE %	HIGH COST %
25YEARS	18.41	18.50	18.23
50 YEARS	7.57	7.49	7.02
75 YEARS	4.65	4.42	3.31

M5:

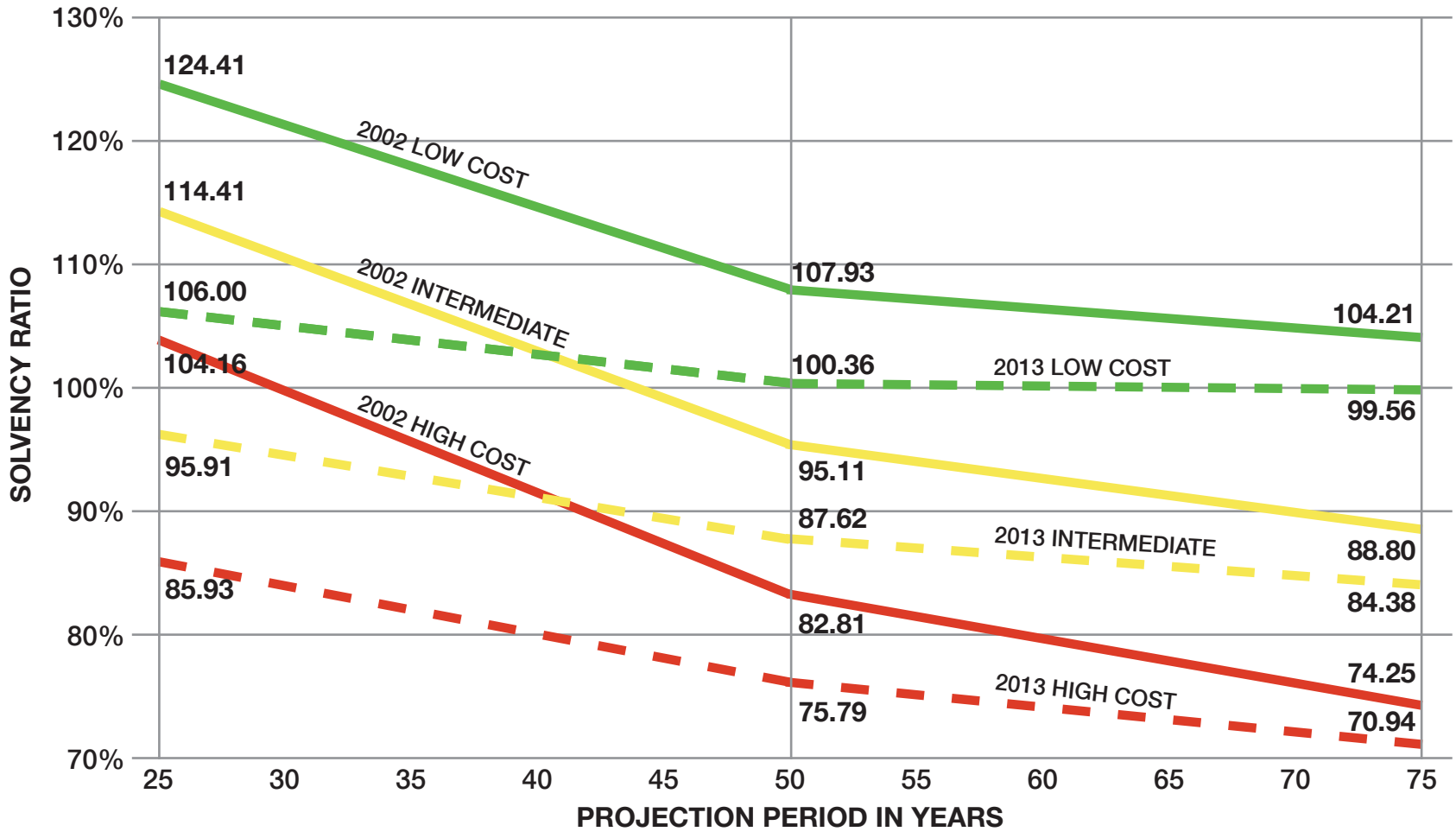
Annual Rate of Decline 2002-13

LOW COST %	INTERMEDIATE %	HIGH COST %
1.47	1.62	1.76
0.66	0.75	0.80
0.42	0.47	0.42

Secular Trend in Solvency Ratios 2002-2013



Secular Trend in Solvency Ratios 2002-2013



The US Social Security System

- Actuarial equilibrium objective
- Payroll tax rates to achieve equilibrium
- Nine-point equilibrium matrix
- Secular trend
- Secular increase
- Annual rate of increase
- Question of affordability

M6:

Social Security Solvency Equilibrium Payroll Tax Rates

PROJECTION PERIOD	PROJECTION BASIS 2002 LOW COST %	2002 INTERMEDIATE %	2002 HIGH COST %	PROJECTION BASIS 2013 LOW COST %	2013 INTERMEDIATE %	2013 HIGH COST %
25YEARS	4.81	5.31	5.91	5.79	6.51	7.42
50 YEARS	5.69	6.55	7.65	6.17	7.19	8.47
75 YEARS	5.93	7.07	8.61	6.23	7.49	9.08

M7:

Amount of Increase 2002-13

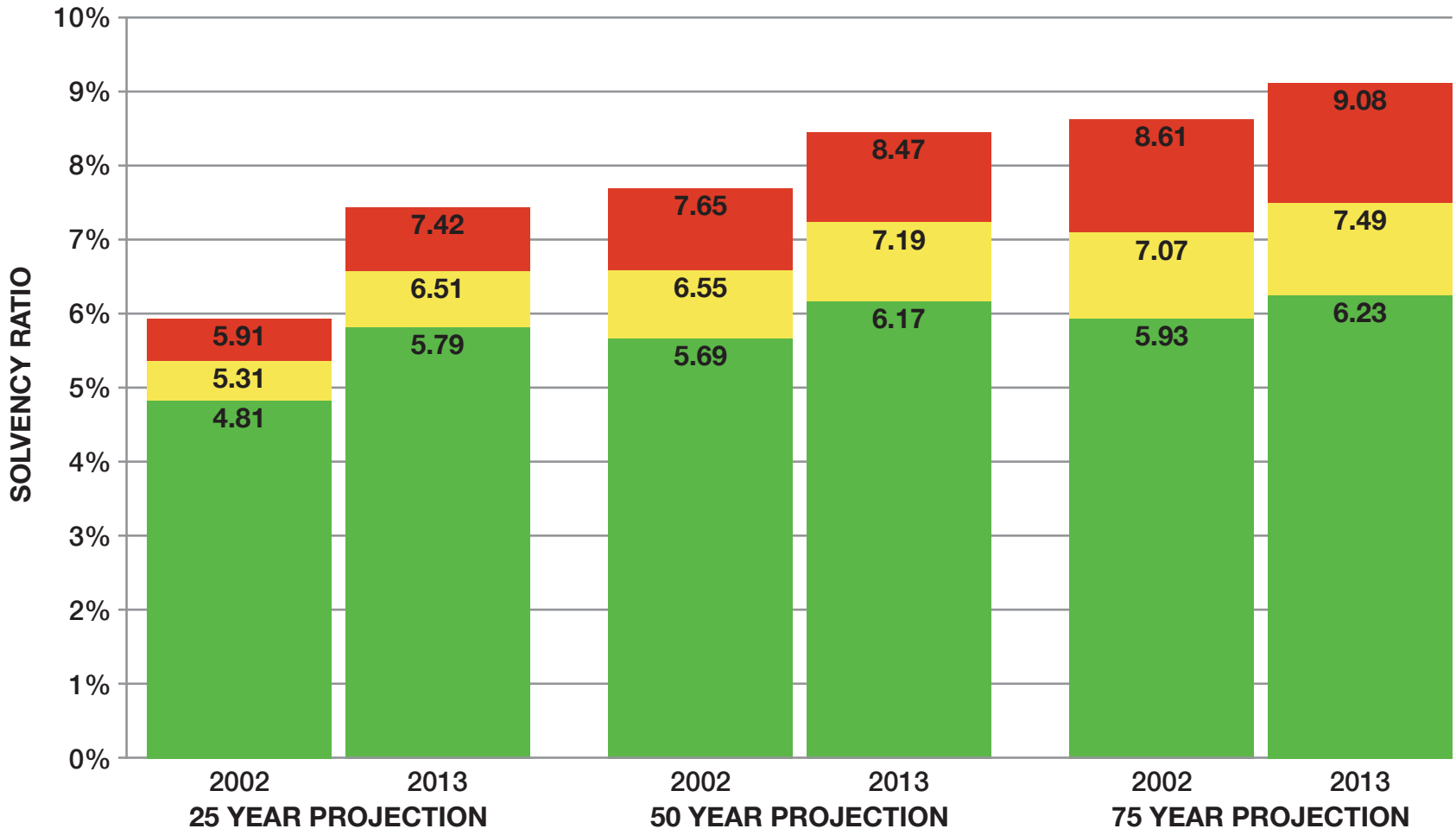
	LOW COST %	INTERMEDIATE %	HIGH COST %
25YEARS	0.98	1.20	1.51
50 YEARS	0.48	0.64	0.82
75 YEARS	0.30	0.42	0.47

M8:

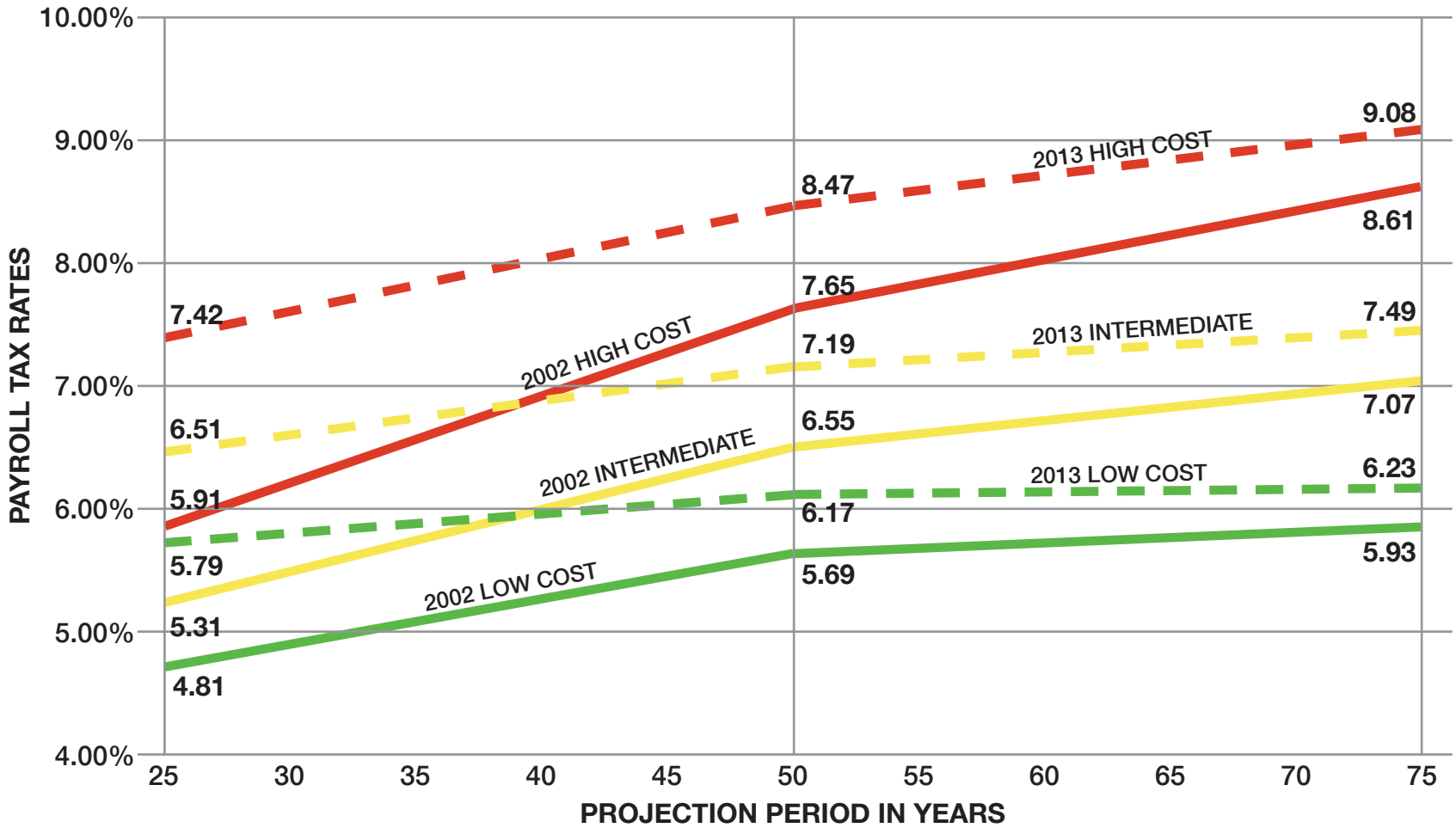
Annual Rate of Increase 2002-13

LOW COST %	INTERMEDIATE %	HIGH COST %
1.70	1.87	2.09
0.74	0.85	0.93
0.45	0.53	0.48

Equilibrium Payroll Tax Rates 2002-2013



Equilibrium Payroll Tax Rates 2002-2013



Conclusion & Recommendations

- Eight suitable actuarial metrics
- Three projection periods
- Three alternative assumption sets
- Dynamic and stochastic features
- Secular trend monitoring
- Potential role model for other countries
- Communicating to policymakers