The Determinants of Consumption and Saving

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This presentation summarizes the findings of the Macro Analysis Team of the PECC International Project on Social Resilience that is now in its second year.

This project was composed of four teams:

(1)The Pension System Team, headed by Professor Noriyuki Takayama of Hitotsubashi University

(2)The Medical Insurance System Team, headed by Professor Masako Ii of Hitotsubashi University

(3)The Unemployment Insurance System Team, headed by Professor Naoki Mitani of Kobe University

(4)The Macro Analysis Team, headed by Professor Charles Yuji Horioka of Osaka University

The Composition of the Macro Analysis Team

1. Charles Yuji Horioka (Institute of Social and Economic Research, Osaka University, and National Bureau of Economic Research)
2. Wataru Suzuki (Gakushuin University)
3. Yanfei Zhou (Japan Institute for Labor Policy and Training)

The Objective of the Macro Analysis Team (1)

Whereas the objective of the other three teams is to analyze the structure of social safety nets (in particular, medical insurance, pensions, and unemployment insurance), the objective of this team is to analyze the impact of social safety nets on the macroeconomy, especially on consumption and saving.

The Objective of the Macro Analysis Team (2)

(1) Horioka is using cross-country data on the G7 and Asian economies to analyze the determinants of trends over time in consumption and saving.

(2) Suzuki and Zhou are using long-term time series data on Japan to analyze the determinants of the recent explosion in the take-up rate of welfare.

The Determinants of Consumption and Saving

(1) Analysis of the determinants of consumption using data on the Group of Seven (G7) economies

(2) Analysis of the determinants of saving using data on the economies of emerging Asia

(1) The Determinants of Consumption in the G7 Economies

- I focus on the G7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) because of their importance in the world economy.
- I focus on the 2002-2007 period because it was a relatively prosperous period between the Asian financial crisis and the Lehman shock.

Growth Rate of GDP and Consumption

	2002-2007			2007-2009	
	GDP	Net Household Disposable Income	Consumption	GDP	Consumption
Canada	2.61	3.52	3.74	-0.98	1.67
France	2.00	1.94	2.09	-1.41	0.21
Germany	1.55	0.40	0.33	-1.91	0.27
Italy	1.14	0.51	1.05	-3.29	-1.30
Japan	2.10	1.00	1.30	-3.76	-1.33
U.K.	2.68	1.14	2.44	-2.50	-1.38
U.S.	2.75	2.61	2.98	-1.35	-0.73

Trends in Consumption

- Consumption increased the fastest in Canada during the 2002-07 period (3.7%), relatively fast in the United States (3.0%), the United Kingdom (2.4%), and France (2.1%), and relatively slowly in Japan (1.3%), Italy (1.1%), and Germany (0.3%).
- What are the reasons for the differences?

Determinants of Consumption Growth: GDP Growth

- GDP growth is an important determinant of consumption growth but not the only determinant because consumption growth and GDP growth are roughly equal in some economies (France, Italy, the United Kingdom, and the United States), but exceeds GDP in some economies (Canada), and falls short of GDP growth in some economies (Germany and Japan).

Determinants of Consumption Growth: Household Income

- The fact that consumption growth is higher than GDP growth in Canada can be explained by the fact that household income growth is higher than GDP growth in Canada (i.e., the labor share of income increased).
- The fact that consumption growth is lower than GDP growth in Germany and Japan can be explained by the fact that household income growth is lower than GDP growth in Germany and Japan (i.e., the labor share of income declined).

Determinants of Consumption Growth: Household Saving

- Consumption growth will exceed household income growth if the household saving rate declines and conversely.
- Consumption growth exceeded household income growth in Italy and the United Kingdom because their household saving rates declined sharply.
- This factor was not so important in Japan because the decline in her household saving rate was not so sharp.

Household Saving Rate

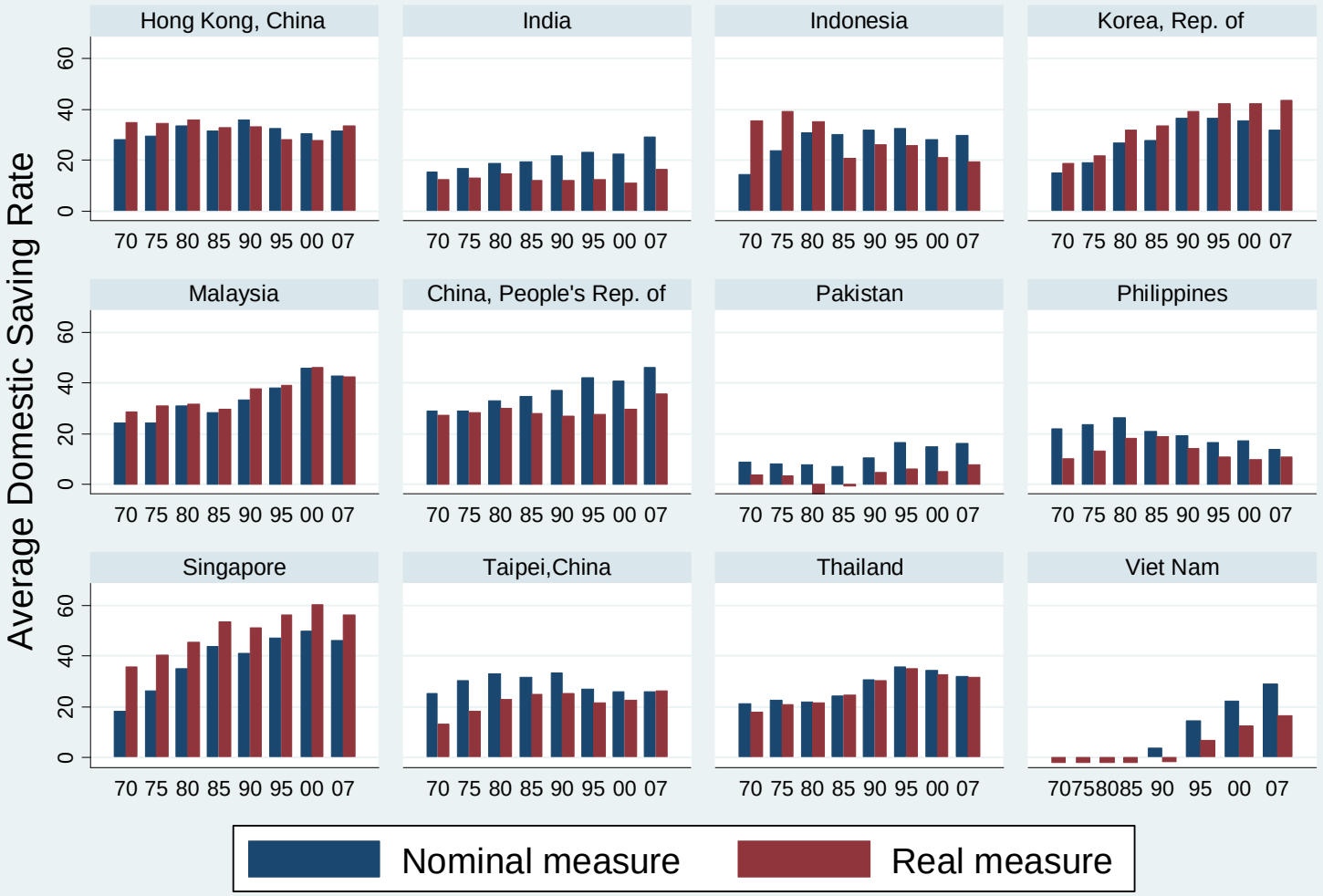
	2002	2003	2004	2005	2006	2007	Change
Canada	3.53	2.70	3.24	2.18	3.63	2.57	-0.96
France	13.66	12.46	12.36	11.37	11.44	11.87	-1.79
Germany	10.06	10.41	10.55	10.63	10.71	10.92	0.87
Italy	11.36	10.34	10.30	9.96	9.19	8.22	-3.14
Japan	5.09	3.88	3.63	3.85	3.65	3.78	-1.31
U.K.	-0.05	0.43	-1.70	-1.26	-2.95	-4.27	-4.21
U.S.	3.65	3.76	3.37	1.48	2.47	1.73	-1.93
Mean	6.76	6.28	5.96	5.46	5.45	4.97	-1.78

Determinants of Consumption Growth: Conclusion

- Consumption growth is determined by GDP growth, household income growth, and trends in household saving rates.
- The stagnation of consumption in Japan is due primarily to the stagnation of household income (or to put it another way, the decline in the labor share of income or the stagnation of wages).
- The stagnation of GDP and the decline in the household saving rate are not so important in Japan.

(2) The Determinants of Saving in the Economies of Emerging Asia

- My co-author Akiko Terada-Hagiwara (Asian Development Bank) and I use cross-country panel data on 12 economies in emerging Asia (which together account for 95% of the GDP of non-Japan Asia) to analyze the determinants of the domestic saving rate in these economies.
- Economies included: People's Republic of China; Hong Kong; India; Indonesia; Republic of Korea; Malaysia; Pakistan; Philippines; Singapore; Taipei, China; Thailand; and Viet Nam


Hong Kong, China
India
Indonesia
Korea, Rep. of
Malaysia
China, People's Rep. of
Pakistan
Philippines
Singapore
Taipei,China
Thailand
Viet Nam
Average Domestic Saving Rate
0
20
40
60
70 75 80 85 90 95 00 07
Nominal measure
Real measure
Graphs by ctry

The Level of Saving Rates

There have been enormous variations in **the level of saving rates,** even within developing Asia, during the past 50 years, with saving rates tending to be higher in East Asia and Southeast Asia (with the exception of Philippines and Vietnam) and lower in South Asia, regardless of whether we look at nominal or real saving rates. (Singapore is at the top and Pakistan and Vietnam are at the bottom of the pile.)

Trends in Saving Rates

There have been enormous variations in **trends over time in saving rates,** even within developing Asia, during the past 50 years, with saving rates showing upward trends in developing Asia as a whole and in most individual countries, downward trends in Indonesia (real only) and the Philippines, and no clear trend in Hong Kong, regardless of whether we look at nominal or real saving rates.

Determinants of Saving (1)

- We analyze the determinants of variations over time and among countries in developing Asia using both random effects and country fixed effects models.
- Following previous studies, the observations are five-year averages except for the most recent period (1966-70, 1971-75, 1976-80, 1981-85, 1986-90, 1991-95, 1996-2000, and 2001-07).

Determinants of Saving (2)

(Demographic variables)

- AGE = Aged dependency ratio (population aged 65 and older/population aged 15-64)
- DEP = Youth dependency ratio (population aged 0-14/population aged 15-64)

Determinants of Saving (3)

(GDP-related variables)

- LNGDP = The log of real per capita GDP
- LNGDPSQ = The square of LNGDP
- CHGDP = The growth rate of real per capita GDP

Determinants of Saving (4)

(Financial variables)

- CREDIT = The ratio of private credit by deposit money banks and other financial institutions to GDP
- CREDITSQ = The square of CREDIT
- INT = The nominal interest rate
- INFL = The inflation rate
- RINT = The real interest rate

Determinants of Saving (5)

(Other economic variables)

- FISC = The ratio of the fiscal balance of the government to GDP
- SSR = The social security ratio (the ratio of expenditures on social services and pensions to gross national disposable income)

Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
PWTSR	24.0	14.3	-8.4	61.9
AGE	7.8	2.2	3.8	16.7
DEP	60.5	19.4	17.7	91.3
CHGDP	4.4	4.2	-14.2	20.2
LNGDP	8.8	1.2	6.2	11.1
INFL	7.7	5.0	0.0	39.1
INT	7.8	5.2	0.0	39.1
CREDIT	0.6	0.5	0.1	2.4
FISC	-1.4	4.2	-16.7	16.1
SSR	4.8	3.4	0.7	16.9

Estimation Results

(1) The aged dependency ratio (the ratio of the aged population to the working-age population) has a negative impact on the household saving rate.

(2) Income levels have a positive but nonlinear (convex) impact on the household saving rate.

(3) Credit availability has a negative but nonlinear (concave) impact on the household saving rate.

(4) The social benefit has a negative impact on the household saving rate in some cases.

Random Effects Model

Model	Constant	AGE	DEP	LNGDP	LNGDPSQ	CREDIT	CREDITSQ	CHGDP	INT	INFL	FISC	SSR	RINT	R-squared	Obs
1	**203.20**	**-1.58**	**-0.08**	**-46.79**	**3.15**	**15.35**	**-6.71**							**0.75**	**78**
	49.34	0.47	0.08	10.74	0.63	5.95	2.19							0.68	
	4.12	-3.39	-0.95	-4.36	4.98	2.58	-3.06							0.74	
2	**156.49**	**-1.55**	**-0.03**	**-37.31**	**2.64**	**14.78**	**-6.12**	**0.24**	**-0.12**	**0.01**				**0.67**	**70**
	63.70	0.51	0.10	14.30	0.84	6.08	2.11	0.19	0.18	0.17				0.73	
	2.46	-3.07	-0.27	-2.61	3.14	2.43	-2.90	1.28	-0.68	0.05				0.77	
3	**96.11**	**-0.78**	**0.04**	**-23.12**	**1.70**	**12.40**	**-4.69**	**0.21**	**0.12**	**-0.30**	**0.30**			**0.78**	**56**
	67.86	0.45	0.09	14.69	0.83	5.77	1.91	0.20	0.18	0.16	0.17			0.70	
	1.42	-1.73	0.45	-1.57	2.04	2.15	-2.46	1.06	0.66	-1.92	1.77			0.70	
4	**31.08**	**-1.42**	**0.12**	**-2.93**	**0.34**	**31.88**	**-10.68**	**-0.03**	**-0.94**	**-0.22**	**1.02**	**-0.94**		**0.65**	**35**
	189.00	1.14	0.19	40.26	2.29	9.98	3.34	0.61	0.71	0.72	0.38	0.50		0.87	
	0.16	-1.25	0.60	-0.07	0.15	3.19	-3.20	-0.05	-1.34	-0.30	2.71	-1.87		0.82	
5	**171.93**	**-1.69**	**-0.06**	**-40.65**	**2.85**	**14.63**	**-6.15**	**0.31**					**-0.04**	**0.66**	**70**
	64.89	0.54	0.10	14.36	0.84	6.23	2.20	0.18					0.18	0.75	
	2.65	-3.15	-0.64	-2.83	3.39	2.35	-2.80	1.70					-0.22	0.78	
6	**104.21**	**-0.79**	**0.02**	**-25.93**	**1.91**	**12.63**	**-5.00**	**0.32**			**0.30**		**0.23**	**0.76**	**56**
	78.37	0.52	0.10	17.08	0.98	5.88	2.01	0.23			0.19		0.19	0.70	
	1.33	-1.52	0.20	-1.52	1.95	2.15	-2.49	1.38			1.54		1.19	0.70	
7	**-32.11**	**-0.91**	**0.23**	**4.96**	**0.03**	**34.87**	**-11.71**	**0.04**			**1.04**	**-0.99**	**-0.09**	**0.52**	**35**
	188.66	1.16	0.16	41.26	2.38	8.15	3.09	0.61			0.38	0.58	0.87	0.89	
	-0.17	-0.79	1.39	0.12	0.01	4.28	-3.79	0.07			2.74	-1.73	-0.10	0.79	

Future Projections

Sharp downward trend

Hong Kong, Korea, Singapore, and Taiwan

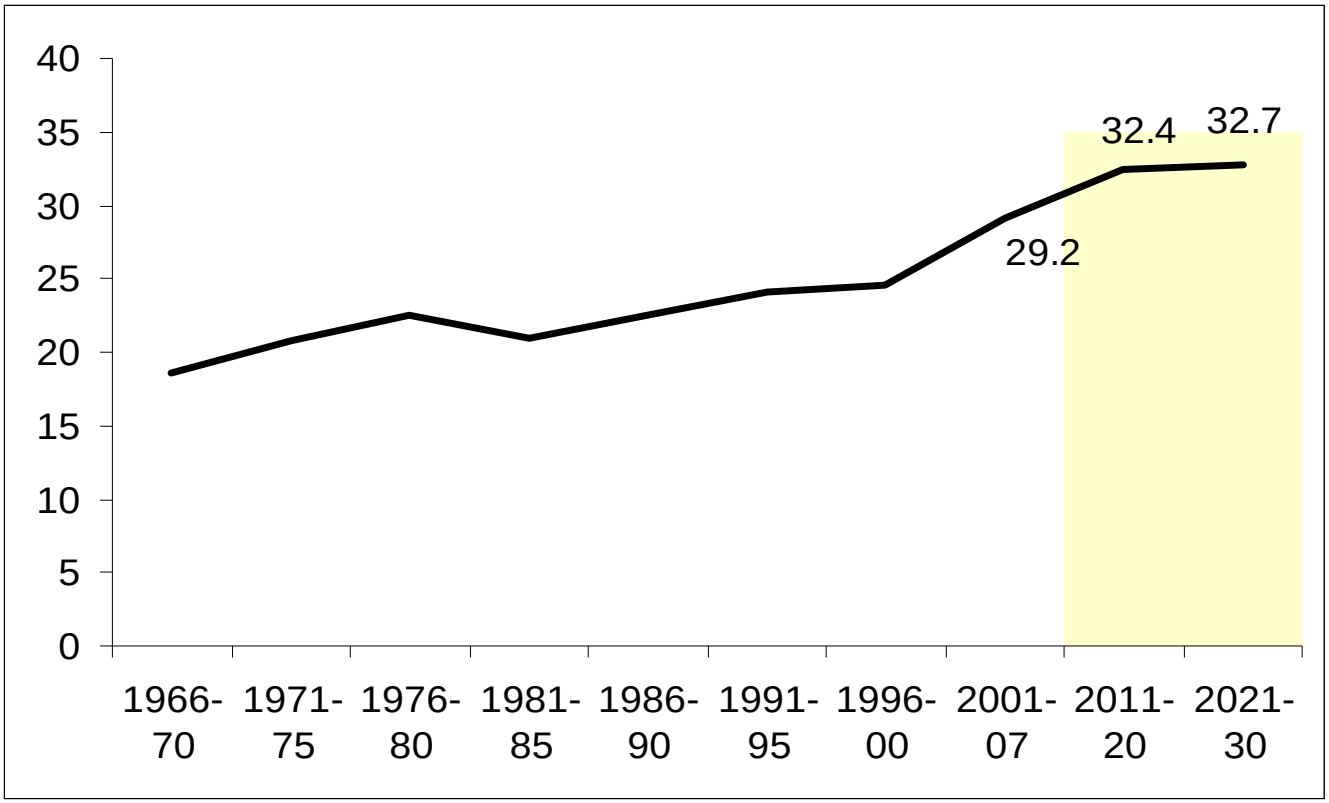
Moderate downward trend

Thailand and Vietnam

Flat or upward trend

China, India, Indonesia, Malaysia, Pakistan, Philippines

Past/Future Trends in Domestic Saving Rates in Developing Asia as a Whole



Extensions of This Research

We plan to extend this research in the following ways:

(1) Do further robustness checks (e.g., trying lags, trying different weights, etc.)

(2) Try including additional explanatory variables (e.g., exchange rate, unemployment rate, corporate saving rate, etc.)

(3) Try for other samples (economies in other regions, economies at other levels of economic development, etc.) or for larger samples

Policy Implications (1)

(1) Household income/wages have been stagnant in Japan, and thus increasing household income/ wages (in other words, increasing the labor share of income) is a highly effective and desirable way of stimulating consumption. Possible ways: Create jobs, increase the share of regular workers, improve the wages and other benefits of temporary workers, etc.

Policy Implications (2)

(1) Financial sector development (increasing credit availability) and improving social safety nets are substitutes for one another, with both having the effect of reducing saving, increasing consumption, and improving household welfare by shielding them from risk.

(2) The world economy is slowly recovering and thus now is a golden opportunity to implement financial sector development and improve social safety nets.

Thank you very much for your kind attention.

Please send any questions or comments to horioka@iser.osaka-u.ac.jp