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BENCHMARKING POLICY INPUTS AND SOCIAL OUTPUTS OF RETIREMENT PAYMENT SCHEMES: CHINA, HONG KONG, SINGAPORE AND TAIWAN COMPARED WITH THE THREE WORLDS

Hung-Yang Lin

Department of Social Work, National Pingtung University of Science and Technology, Taiwan

ABSTRACT

Issues to do with the availability and quality of statistics for carrying out comparative studies on China, Hong Kong, Singapore and Taiwan have been debated for decades. Applying some of the findings of individual studies may be a way to bypass the problems of statistics and develop a policy index system comprising of policy input and social output indicators, in order to thoroughly scrutinise and evaluate the performance of the retirement payment provisions of these four Asian states on the basis of the Surface Measure of Overall Performance (SMOP) approach, which has already produced fruitful results elsewhere. This paper attempts to apply such a policy index system to compare the retirement provisions in the East and West. Germany, Sweden, the UK and the USA are selected to examine the validity and reliability of the index on the one hand, and to establish the typology of pension provisions on the other. As the results illustrate, four to six types of retirement payment provisions can be discerned with regard to the different levels of performance achieved.

Keywords: Benchmarking, Comparative study, East Asia, Pension system, SMOP, Social security.

1. INTRODUCTION

The differences between comparative studies of social security systems in the East and West were made explicit when Esping-Andersen (1990) seminal work – The Three Worlds of Welfare Capitalism – was published in 1990. Since then, in the West an increasing number of scholars such as Bambra (2007), Bonoli (1997), Daly and Rake (2003), Ferrera (1996), Korpi (2000), Korpi and Palme (1998) and Leibfried (1993) have explored these differences. Esping-Andersen (1997) embarked upon categorising the welfare regimes according to all available indicators supported by abundant statistics and his achievements to date have been considerable. In the East, however, comparative studies on welfare regimes were confined to literary discussions e.g. (Jones, 1990; Jones, 1993; Kwon, 1998; Holliday, 2000) due to the lack of statistics, which meant that many of the indicators that could be employed to compare the social security systems among the Asian

states and even between the East and West were unavailable. Although Esping-Andersen (1997) tried to apply the Three Worlds system to Japan in order to explore the typology of welfare regimes in the East and West, it was clear that the welfare regimes in the East, most importantly, the welfare ideologies and the development of social security systems among Asian states, vary from one to another.

To tackle the problems with the availability and quality of statistics, Lin (2011), Lin (2012) has proposed a policy index system that examines performance with input and output indicators and collects data from both official statistics as well as individual academic works and surveys, using the Surface Measure of Overall Performance (SMOP) to compare retirement payment schemes. This paper applies the policy index system to the typical cases of corporatist, universalist and residualist suggested by the Three Worlds, i.e. Germany, Sweden and the USA respectively, firstly, to examine the validity and reliability of the approach and secondly, to initiate this series of comparative studies of retirement payment schemes in the East and West. In addition the British retirement payment system, which was characterised by its mixture of corporatist and residualist reported by the Three Worlds, will be included in this research.

The following sections will briefly introduce the coverage of retirement payment schemes and policy input and social output indicators employed in the research. This is then followed by the analysis composed of a methodology section, the findings of input and output indices and a brief discussion about the typologies of retirement payment system. The concluding section will summarise the findings of the paper.

2. RETIREMENT PAYMENT SCHEMES COVERED AND INDICATORS

2.1 Retirement Payment Schemes Covered

The retirement payment provisions considered in this research are listed in Table 1. Given that the research aims to review and examine the performance of old-age related social security provisions as a whole, public and private retirement schemes, social assistance and social allowance programmes are also included. However, the focus will be restricted to labourers' retirement payment programmes because the retirement provisions for governmental employees, e.g. civil servants, servicemen and faculty of public schools, in general, benefit a relatively smaller and wealthier proportion of the population, particularly in Hong Kong and Taiwan. In addition, to counteract the inconsistency and unavailability of official statistics, academic journal papers and books as well as academic works and surveys conducted by academic institutions in 2001 and 2007 will be taken into account here. Lastly, it has to be mentioned that China is divided into urban and rural systems due to the great difference between them.

On this last point, the accuracy of official statistics in urban and rural China has been widely debated by researchers. Professor Wang Shouyang, the Director of the Key Laboratory of Management, Decision and Information Systems at the Chinese Academy applied the term 'volume of water' to describe the situation in China . That is, every level of local government may add 'water' to the statistics reported to the upper levels of government in order to puff up its performance, which consequently leads to overestimates of efficiency. More emphasis will be placed on the findings and statistics published in journals or by academic institutes but using

official statistics in some of the policy dimensions taken into account here is unavoidable. The statistics of the other countries are more accessible and reliable than in China. However, the availability of the statistics of the CPF system of Singapore in particular is limited. This availability issue to some extent confines the selection of indicators in this research.

2.2 Input and Output Indicators

The input and output indicators employed and its criteria and limitations are listed in Table 2 and Table 3 below. The indicators are selected from the policy dimensions suggested in the reports proposed by ILO (Gillion *et al.*, 2000) and UN Madrid International Plan of Action on Ageing (MIPAA) (Marin and Zaidi, 2007). The codes of the input and output indicators here are in no particular order and used only to locate their positions on radar charts, which will be elaborated in the analysis section.

Table-1. The Retirement Provisions Covered and Data Sources of the Selected Countries

Country/Region	Retirement Payment Schemes Covered	Sources of Data
China (urban)	Old-age Pension System, urban Minimum Living Standard Scheme (MLSS), and private annuity insurance.	MHRSS (various years), National Bureau of Statistics of China (various years), China Insurance Regulatory Commission (www.circ.gov.cn), Gustafsson and Li (2000), Braunstein and Brenner (2007), Démurger *et al.* (2007), Du and Dong (2009)
China (rural)	Old-age pension system, rural Minimum Living Standard Scheme (MLSS), Five Protection scheme, and private annuity insurance.	
Germany	Old-age Social Insurance Scheme (Rentenversicherung), Social Assistance for ageing people (Sozialhilfe).	Statistisches Bundesamt (various years), Statistisches Bundesamt (www.destatis.de), Bundesagentur für Arbeit (statistik.arbeitsagentur.de), OECD StatExtracts,
Hong Kong	Comprehensive Social Security Assistance (CSSA), Social Security Allowance (SSA), Occupational Retirement Scheme Ordinance (ORSO), Mandatory Provident Fund (MPF), and private annuity insurance.	MPF Authority (various years), Census and Statistics Department (various years; various years), OCI (various years),
Singapore	Central Provident Fund (CPF), Public Assistance (PA), and private annuity insurance.	CPF Board (various years), MCYS (various years), Singapore Department of Statistics (2008), Monetary Authority of Singapore (various years), Reisman (2006), Pai (2006),

Sweden	Guarantee pension, inkomstpension (IP) and premiepension (PP).	National Social Insurance Board (2002), Swedish Social Insurance Agency (various years), Statistics Sweden (various years), OECD StatExtracts, Hallberg *et al.* (2011), Pensions Myndigheten (www.pensionmyndigheten.se), and OECD (2012).
Taiwan	Labour Insurance (LI) old-age pension scheme, Labour Standards (LS) retirement payment scheme, Old-age Allowance Schemes, Labour Retirement Payment (LR) scheme, and private annuity insurance.	Bureau of Labour Insurance (various years), Council of Labour Affairs (various years), DGBAS (various years), and Taiwan Insurance Institute (www.tii.org.tw).
UK	National Insurance (NI), Pension Credit (PC), State Earnings-related Pension Scheme (SERPS), contract-out occupational pension scheme, and private annuity insurance.	DWP (2008); DWP (2009), Davis *et al.* (2003), Chapman *et al.* (2009), National Audit Office (various years), and OECD Stat Extracts.
USA	Old-age Insurance (OAI) and Supplemental Security Income (SSI).	Social Security Administration (various years), Bureau of Labour Statistics (www.bls.gov), US Census Bureau (www.census.gov), OECD StatExtracts, US Bureau of Economic Analysis Interactive Database (www.bea.gov), and Mason *et al.* (2009).

The definition of input and output indicators in this research is based on the idea of 'the principles of subsidiary'. The 'principles of subsidiary' are basically determined by the rules of retirement provisions that are introduced for achieving the social goals agreed by respective societies, i.e. policy inputs. The social outputs are the indicators reflecting the 'principles of subsidiary' and selected by researchers for evaluating specific dimensions of policy, in this article, the performance of retirement provisions (Atkinson *et al.*, 2002).

2.2.1   Input Indicators

In this research, the arrangement of retirement provision scheme (In-1) and status of vested rights (In-2) illustrate the settings of the retirement provisions, and the coverage rate (In-3 and In-4), system dependency ratio (In-5), replacement rate (In-6) and administration costs (In-7 and In-8) are the statistics of these systems directly responding to their settings.

2.2.2   Output Indicators

As for the social outputs, because of the availability of the statistics in China, Hong Kong, Singapore and Taiwan the selection of indicators is basically statistics-driven and may be unable to

establish an index containing all the most important policy dimensions. For this reason, poverty reduction (Out-1), level of de-familisation (Out-2), gender inequality (Out-3), redistributiveness (Out-4) and evasion of contribution (Out-7) are included to evaluate whether and how the retirement provisions meet their social goals, and the scale of public and private retirement payouts (Out-5 and Out-6) show the sources of retirement incomes.

3. METHODOLOGY

The SMOP approach developed by Schütz *et al.* (1998) is applied in this research to build up a policy index system for evaluating the overall performance of policy inputs and social outputs. This approach has been employed to examine the performance of active labour market policies (Mosley and Mayer, 1999), the gender gap in the labour market (Mósesdóttir, 2001; Plantenga and Hansen, 2001), the achievements of family policies on the level of de-familisation and de-gendering (Finch, 2006) and the overall performance of retirement payment systems in four Asian countries (Lin, 2011); (Lin, 2012).

Table-2. Criteria of Input Indicators

Indicator		Criteria	Notes
In-1	Arrangement of retirement payment scheme	(i) The systems will be awarded scores of 1.0 and 0.5 if mandatory social insurance pension scheme and IA plans constitute the main part of pension benefits respectively. Countries that do not operate mandatory contributory pension programmes will be marked zero. (ii) The systems will be awarded scores of 1.0 and 0.5 if universal and means-tested social allowance provisions are available individually. Countries that do not have social assistance schemes will be scored zero. (iii) Social assistance programmes are deemed as supportive provisions in this research thus the weight of pension schemes is doubled. As a result, the full score becomes three points.	Regarding to the debates that improving the certainty and stability of a retirement payment scheme may be the main goal to be achieved (Orszag and Stiglitz, 1999; Barr, 2002; Kay, 2009).
In-2	Mechanism of indexation and the status of vested rights	(i) The systems will be scored 1.0 if benefit level is adjusted along with the price index and 0.5 if it is modified by the wage index or a combination of price and wage index. The countries will be marked as zero if benefit indexation is not available. (ii) The systems will get 1.0 and 0.5 points if benefit modification is operated on a regular and occasional basis respectively; while states that do not have an indexation mechanism will be scored zero on this dimension. (iii) The systems will be marked as 1.0 and 0.5 if the governments fully and partially (including guaranteeing return rates) take responsibility for pension payouts individually. The governments that do not guarantee the finance of pension provisions will get nought in this dimension. (iv)	Please refer to Iyer (1993) and Gillion *et al.* (2000).

		The abovementioned scores will be added up, the highest possible score being three. The higher the score the better the performance in terms of maintaining the level of pension benefits and preserving participants' pension rights.	
In-3	Ratio of pensioners to total old-age population	The ratio of the number of people receiving a pension to the number of people over 60 years of age.	Please refer to Gent (2001).
In-4	Ratio of contributors to total employed population	The ratio of the number of people contributing to pension schemes to the number of employed people.	
In-5	System dependency ratio	The ratio of contributors to pensioners.	Please refer to OECD (2009).
In-6	Replacement rate	The ratio of the amount of retirement payment to retirees' last drawn wage or average wage of a specific period of time before retirement.	Please refer to ILO (1984).
In-7	Ratio of administration costs to pension payments	The administration costs are divided by pension payouts.	Please refer to Gillion *et al.* (2000).
In-8	Ratio of administration costs to pension contributions	The administration costs are divided by contributions.	

Table-3. Criteria of Output Indicators

Indicator		Criteria	Note
Out-1	Poverty reduction	This indicator measures the reduction of poverty by comparing the difference between the poverty level and the average amount of pension benefits as there is not a suitable standard to fit all these four societies, particularly considering the gap between the three East Asian Tigers and China. Therefore, official poverty levels are applied and this indicator is computed by the proportion of the poverty level not being made up by retirement income ranging between -1 and 0.	
Out-2	De-familisation	This indicator is based solely on cash transfers and is defined as the 'constitution of adult	

		children's monetary transfers as a proportion of pensioners' retirement income'.	
Out-3	Gender equality	(i) Gender-specified labour participation rate: equals the number of employed women divided by the number of employed men. Because this analysis focuses on the inferior position of female employees, the maximum of this index will be one despite the number of employed women outnumbering that of men, to express the inequality between men and women. (ii) Gender-specified wage level: equals the average amount of female salary over the average amount of male salary. The maximum value is assumed as one although it may be prone to the same issue mentioned above when women's average salary level is higher than that of men's. (iii) The arrangement of non-contributory pension provision is defined at three levels: universal basic pension provisions (1.0); means-tested (0.5); and unavailable (0.0). (iv) The eligibility of non-contributory pension provision is defined at two levels: need-based (1.0) and application-based (0.5). The final score of programme settings is defined as the product of the scores of arrangement and eligibility. (v) The benefit level is defined as the competence at reducing old age poverty, thus the amount of non-contributory provision is divided by the poverty threshold.	Please refer to Ginn (2004) and Orloff (1993). This indicator mainly concentrates on the factors of labour market factors and retirement payment schemes for both working and non-working women in order to exactly respond to the issues about how retirement provisions bring and even amplify the inequality in career life forwards to retirement life.
Out-4	Redistributiveness	Redistributiveness = (total payouts of non-contributory social provisions) / (total amount of public pension payments + non-contributory social provisions)	Hong Kong's MPF scheme and Singapore's CPF scheme are excluded from this part of evaluation for the reason that both programmes are not redistributive systems.
Out-5	Ratio of public spending to the scale of GDP	Public sources of retirement income / GDP.	Please refer to Castles (1994) and Shaver (1998).
Out-6	Ratio of private spending to the scale of GDP	Private sources of retirement income / GDP.	
Out-7	Evasion of contribution	This research estimates the default rate of pension contributions by measuring the gap between theoretical and actual amounts of contribution. In this sense, lower percentages represent better performance.	Please refer to McGillivray (2004).

It takes just two steps to convert raw data into SMOP values. Firstly, the raw data is transformed into radar chart values ranging between zero and one according to one of the three benchmarking rules: theoretical benchmarks, best performer benchmarks and institutional benchmarks. The best performer method is applied here because not all the indicators have theoretical or institutional maximum values in the policy dimensions selected. Accordingly, obtaining full radar chart value in one policy dimension denotes the system is relatively the best of the selected systems on this aspect. In the second stage, the following formula is used to measure this geometrical area illustrated on a radar chart and the SMOP value is thus acquired:

$$SMOP = ((I1*I2)+(I2*I3)+(I3*I4)+\ldots\ldots+(In\text{-}1*In)+(In*I1))*\text{Sin }(360°/n)/2$$

However, it has to be pointed out that due to the assumption of a compensating effect in this approach's means, researchers may receive different SMOP values whenever the arrangement of indicators on the radar chart is changed. In this way, an indicator with a higher value may be offset by the neighbouring indicator with a lower value Schütz *et al.* (1998). Although researchers may be able to compute the average value of all available combinations, this is impractical and time-consuming. In order to cope with this problem, three arrangements of indicators for both input and output index have been fixed and the three SMOP values averaged. The formulas will be illustrated in Table 4 and 5.

4. FINDINGS AND DISCUSSIONS

The radar chart values of each indicator are illustrated in Table 4 and 5, and the SMOP values of input and output policy index of each retirement payment system in 2001 and 2007 are used to rank the selected retirement payment systems. Besides this, in order to examine the reliability of the SMOP approach, a sensitivity test based on the percentage of full radar chart value that each system acquires (shown in Table 4 and 5) is carried out here.

4.1 Policy Inputs

Table 4 illustrates the performance of policy inputs to these nine retirement provision systems. It is found that Sweden and the USA swapped the leading place between 2001 and 2007 and led the league table by 1.92 and 1.81 of average SMOP values in 2007. The UK (1.14) and Germany (1.09) can be categorised into a cluster due to the closeness of their average SMOP values. The performance of policy inputs in the East, among urban China, Hong Kong, Singapore and Taiwan ranged between 0.54 and 0.65 in terms of SMOP values in 2007 and can also be roughly categorised as a cluster. The SMOP values of rural Chinese retirement provisions in 2001 (0.17) and 2007 (0.23) fell significantly behind the other eight systems.

The results of the sensitivity test demonstrate that the rankings of the Swedish and American as well as the Hong Kong, Singapore and rural Chinese systems are consistent with the league table produced on the basis of SMOP values. However, based on the sensitivity test, the performance of the British system was slightly worse than the German system in 2001, but the rankings swapped in 2007 due to the radar chart value of the UK increasing a little bit faster than Germany during this

period of time. In terms of radar chart values, the Taiwanese system did not perform better than the urban Chinese scheme in 2007 as the SMOP values illustrated, but the performance of the urban Chinese scheme was just slightly better than the Taiwanese programme. Nevertheless it may be possible to ignore the abovementioned inconsistencies, especially as both SMOP and radar chart values suggest that the differences of the overall performance of the British and German systems as well as the urban Chinese and Taiwanese schemes were limited and therefore both rankings basically remained the same, particularly regarding the results for 2007.

The urban Chinese system was awarded high and medium level radar chart values on the arrangement of retirement payment schemes (In-1), indexation system and the level of vested rights (In-2) and replacement rate (In-6), but the coverage of its social security provisions (In-3 & In-4), system dependency ratio (In-5) and the efficiency of social security administration (In-7 & In-8) was weak. The retirement payment schemes in rural China acquired high scores on payment adjustment and pension right protection (In-2) and system dependency ratio (In-5) but the rest of its policy input dimensions were weak. It should be noted that the Minimum Living Standard Scheme (MLSS) in rural areas was launched in 2007 and may significantly influence the level of system dependency ratio giving a full score, i.e. 1.0, on this policy aspect. As a result, the level of system dependency ratio of the other systems fluctuated between 2001 and 2007.

Hong Kong's retirement payment system was characterised by its medium-high coverage of the employed (In-4) and administrative efficiency (In-8) and medium levels of provisions arrangement (In-1) and coverage of the ageing population (In-3). Beyond that, Hong Kong obtained low radar chart values in the rest of the dimensions. Singapore's retirement provisions acquired medium-high radar chart values in coverage rates (In-3 & In-4) and administrative efficiency (In-8), but performed poorly on the other input aspects. It is worth pointing out that although administrative efficiency (In-8) seemed to be high in Hong Kong and Singapore, the low amount of payouts suppressed the other aspect of efficiency (In-7). This was caused by the short history of the Hong Kongese system and considerable amount of premature withdraws in Singapore (Dixon 1993) respectively. The Taiwanese retirement payment system acquired, in general, medium radar chart scores in the input dimensions and low scores particularly on the system dependency ratio (In-5) and replacement rate (In-6).

The retirement payment provisions in Germany, Sweden, the UK and the USA obtained high scores on the arrangement of schemes (In-1), protection of benefit levels and pension rights (In-2) and coverage of the systems (In-3 & In-4), medium-high level of radar chart values on replacement rate (In-6), and a low radar chart score on system dependency ratio (In-5). Regarding the efficiency of retirement payment, the USA and Sweden acquired high radar chart values on both aspects (In-7 & In-8), while Germany and the UK obtained medium-low scores in 2001 and 2007.

4.2 Social Outputs

Sweden's overall performance in the dimension of social outputs gave it the best SMOP value among the nine selected retirement payment systems and the rural Chinese scheme was ranked last. As the 2007 results in Table 5 show, the four western systems were awarded higher SMOP values than those in the East, and can be roughly divided into 3 categories: Sweden (1.95); USA (1.61);

and Germany (1.42) and the UK (1.24). As for the Asian schemes, the social outputs of the urban Chinese system obtained the highest score, 0.97 of SMOP value, followed by Hong Kong (0.69), Taiwan (0.65), Singapore (0.61) and rural China (0.09). From this perspective the five Asian systems can be categorised into 3 groups: urban China; Hong Kong, Taiwan and Singapore; and rural China.

The sensitivity test of the social outputs of these 9 selected retirement payment systems shows the rankings are consistent with those produced by the SMOP values in, and proves the reliability of the SMOP approach. Nevertheless, it is worth noting that the gap between the radar chart and SMOP values of the overall social outputs of the US, Germany and the UK was reduced in the sensitivity test, therefore these three schemes may be able to be categorised in a group from the viewpoint of radar chart values.

Table-4. Radar Chart and SMOP Values of Input Indicators, 2001 and 2007

Code	Indicators	China (urban)		China (rural)		Hong Kong		Singapore		Taiwan		Germany		Sweden		UK		USA	
		2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
In-1	Arrangement of retirement payment schemes	0.87	0.87	0.17	0.17	0.61	0.61	0.35	0.35	0.52	0.52	0.87	0.87	1.00	1.00	0.87	0.87	0.70	0.70
In-2	Indexation system and vested rights	0.83	0.83	0.83	0.83	0.08	0.08	0.17	0.17	0.42	0.42	0.83	0.83	0.90	0.90	0.83	0.83	1.00	1.00
In-3	Pensioners to old-age population	0.53	0.46	0.01	0.03	0.56	0.50	0.88	0.78	0.64	0.70	1.00	0.85	0.96	1.00	0.86	0.86	0.79	0.80
In-4	Contributors to the Employed	0.38	0.44	0.10	0.09	0.79	0.82	0.68	0.74	0.70	0.73	0.67	0.66	0.85	0.92	0.75	0.82	1.00	1.00
In-5	System dependency ratio	0.06	0.23	1.00	1.00	0.11	0.46	0.07	0.21	0.11	0.45	0.03	0.13	0.05	0.22	0.05	0.19	0.10	0.39
In-6	Replacement rate	1.00	0.69	0.30	0.40	0.16	0.17	0.05	0.10	0.13	0.17	0.64	0.64	0.90	1.00	0.52	0.66	0.54	0.66
In-7	Admin. costs to payouts	0.12	0.16	0.08	0.12	0.12	0.22	0.18	0.21	0.43	0.47	0.47	0.58	0.50	0.85	0.50	0.42	1.00	1.00
In-8	Admin. costs to contributions	0.07	0.16	0.12	0.24	0.75	0.86	1.00	1.00	0.29	0.30	0.27	0.37	0.42	0.78	0.40	0.41	0.82	0.88
Sum of radar chart score		3.87	3.85	2.62	2.90	3.20	3.72	3.36	3.55	3.25	3.76	4.79	4.94	5.59	6.66	4.78	5.06	5.95	6.43
% of full radar chart score		0.48	0.48	0.33	0.36	0.40	0.46	0.42	0.44	0.41	0.47	0.60	0.62	0.70	0.83	0.60	0.63	0.74	0.80
SMOP$_1$		0.58	0.65	0.22	0.28	0.43	0.60	0.49	0.54	0.48	0.64	1.04	1.09	1.33	1.92	1.04	1.14	1.54	1.81
SMOP$_2$		0.51	0.57	0.12	0.18	0.43	0.54	0.33	0.41	0.43	0.61	0.96	1.04	1.35	1.93	0.99	1.13	1.51	1.81
SMOP$_3$		0.45	0.50	0.18	0.24	0.35	0.57	0.30	0.39	0.37	0.57	0.86	0.98	1.23	1.92	0.86	1.00	1.53	1.81
Avg. SMOP		0.52	0.57	0.17	0.23	0.40	0.57	0.37	0.44	0.43	0.61	0.95	1.04	1.30	1.92	0.96	1.09	1.53	1.81

Notes: % of full radar chart score = (Sum of radar chart score) / 8

$SMOP_1 = (In1*In2+In2*In3+In3*In4+In4*In5+In5*In6+In6*In7+In7*In8+In8*In1) * Sin (360°/8) / 2$

$SMOP_2 = (In1*In3+In3*In5+In5*In7+In7*In2+In2*In4+In4*In6+In6*In8+In8*In1) * Sin (360°/8) / 2$

$SMOP_3 = (In1*In8+In8*In2+In2*In7+In7*In3+In3*In6+In6*In4+In4*In5+In5*In1) * Sin (360°/8) / 2$

Sin (360°/8) equals to 0.7071, and the full SMOP score is 2.8284. All the numbers are rounded up.

Sources: Computed by this research.

The five Asian retirement payment programmes were in general characterised by their medium-low levels of de-familisation (Out-2) and the scale of their expenditure on public retirement payment schemes (Out-5). Their performance in the other areas varied. The urban Chinese scheme achieved medium-high levels of old-age poverty reduction (Out-1), gender equality (Out-3) and redistributiveness (Out-4) but the private payouts of retirement provisions (Out-6) and compliance level of social security responsibility (Out-7) were low. The rural Chinese system performed poorly on nearly all aspects of social output except redistributiveness (Out-4), primarily because the MLSS and some other social assistance programmes were the main sources

of old-age income security. The Hong Kongese system obtained medium-high level radar chart values on poverty reduction (Out-1), gender equality (Out-3), redistributiveness (Out-4) and efficiency of enforcement (Out-7) but overall social expenditure, both public (Out-5) and private (Out-6), was low.

That the social goals of retirement provisions in Singapore have not been accomplished is indicated by their low levels of poverty reduction (Out-1), gender equality (Out-3), redistributiveness (Out-4) and public social expenditure (Out-5). As a result, intra-household transfers (Out-2) and other private sources of income (Out-6) have become much more important in Singapore than in the other selected Asian societies. Nevertheless, Singapore maintains a high level of compliance towards the Central Provident Fund (CPF) system. The Taiwanese system, on average, received medium level scores on output indicators and performed worse in redistributiveness (Out-4) and the scale of public expenditure on retirement payouts (Out-5). As recent reforms of retirement payment schemes have tended to be earnings-related, the level of redistributiveness and public payouts may decrease in the future.

The four Western retirement payment systems selected for this research were characterised by their high levels of old-age poverty reduction (Out-1), de-familisation (Out-2) and compliance rates (Out-7) as well as medium levels of gender equality (Out-3). The German retirement payment system emphasised public schemes (Out-5), therefore the scale of private retirement payouts (Out-6) was significantly low in 2001 and 2007. Besides this, intra-household transfers (Out-2) and social assistance provisions (Out-4) which still constitute an important part of elderly people's retirement income, and gender equality (Out-3) also obtained high radar chart scores. The Swedish system acquired high or full radar chart values in five out of seven social output dimensions, lagging behind only on the scale of public (Out-5) and private (Out-6) retirement payouts. This to some extent indicates the efficiency of the Swedish system.

The British retirement payment system concentrated on earnings-related retirement payment programmes (Out-4) and tended to emphasise private sources of retirement income (Out-6) more than public ones (Out-5). In addition, cash transfers within households play a minor role in old-age income security (Out-2). The American system also stressed earnings-related retirement provisions (Out-4) and private sources of retirement income (Out-6).

5. TYPOLOGY ON THE BASIS OF RETIREMENT PAYMENT SYSTEMS?

As mentioned earlier in the analysis section, in terms of SMOP values of policy input and social output indices in 2007, these nine retirement payment systems can be roughly categorised into four to six types of retirement provisions. As the league table in shows, according to the SMOP values of output index in 2007, Sweden, the USA, Germany and the UK were ranked in sequence. This result exactly corresponds with Esping-Andersen (1990) three worlds of welfare capitalism based on the level of de-commodification, with Sweden, America and Germany belonging to the respective categories, and the British, described as a mixed regime of corporatist and residualist, classified independently here. This result may not be valid from the perspective of policy input in 2007 which suggests two main categories of these four systems i.e. Sweden and America as well as Germany and the UK. Nevertheless, seeing the league table in terms of social

outputs may be more meaningful for the reason that they describe the social goals that retirement payment programmes aim to fulfil.

Among the five selected Asian retirement payment systems, from the output point of view, the results imply a threefold classification: urban China; Hong Kong, Taiwan and Singapore; and rural China. Two implications are noteworthy here. Firstly, the retirement payment systems in urban and rural China were significantly different. The urban Chinese scheme emphasised compulsory social insurance, while the rural Chinese system tended to rely on voluntary occupational scheme and despite the fact that social assistance schemes, i.e. the MLSS, were applied as auxiliary sources of retirement financial support, the feeble finances of the governments in rural China led to increasingly greater arrears than in urban regions. Secondly, although the findings suggest that Hong Kong, Taiwan and Singapore belong to the same category, in effect, the ideologies of their retirement provisions differ considerably. The income security system for the elderly in Hong Kong relied heavily on means-tested (aged 65-69) and universal (over-70) social assistance benefits and reciprocity among household members. Even though the MPF scheme gradually phased in from 2000, it remained a less important source of retirement income for retirees as it is an individual savings scheme and many retirees-to-be may not be able to save enough to live on post-retirement. Taiwan operates occupational insurance and employer-sponsored occupational retirement programmes to render retirement benefits for the working population, supplemented with means-tested social allowance and assistance schemes. In Singapore, the CPF scheme dominates retirement provisions and is supported by the limited level and accessibility of social assistance benefits. The policyholders of the CPF programme are able to withdraw a specific proportion of savings to purchase annuity policies from approved private financial institutions.

6. CONCLUSION

This research attempts to deal with the availability of statistics issue, which hinders researchers from comparing the retirement provisions among the Asian states as well as between the East and West, by applying a two-policy-index system to the countries selected i.e. their policy inputs and social outputs. The findings illustrate that, from both input and output viewpoints, the retirement payment systems in the West have been performing significantly better than in the East. They also suggest that the nine retirement payment systems selected can be roughly categorised into four to six types, and the performance of the systems of the Three Worlds proposed by Esping-Anderson, i.e. Germany, Sweden and the US, have their own characteristics from the perspectives of input and output. Although the Asian retirement payment systems obtained similar SMOP values in this research, each had different economic, social, political and historical context. As a result, the proposals for further reforms vary accordingly. On the basis of this series of study, it aims at further developing a policy index system that could not only help researchers thoroughly evaluate the retirement payment systems in the world as a whole, but also exactly categorise and explain the differences of all the types of the systems.

As well as monitoring the reforms of retirement payment schemes around the world as a whole, this series of studies is also a robust way of examining the dynamics of the changes in countries that lack panel data like the five Asian systems in this research, thus enabling

comparative analysis of retirement provisions in the East and West. This in turn will bring about essential contributions to the field as the retirement provisions are modified frequently to adapt to the changing circumstances of different societies. Nevertheless, developing a cross-national database on social policy issues in the East would be the best way to build up this area of research in the future.

Table-5. Radar Chart and SMOP Values of Output Indicators, 2001 and 2007

Code	Indicators	China (urban)		China (rural)		Hong Kong		Singapore		Taiwan		Germany		Sweden		UK		USA	
		2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
Out-1	Poverty reduction	1.00	1.00	0.03	0.08	0.40	0.49	0.13	0.22	0.45	0.66	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Out-2	De-familisation	0.61	0.71	0.14	0.47	0.37	0.39	0.36	0.55	0.53	0.54	0.70	0.72	1.00	1.00	0.99	0.99	0.95	0.95
Out-3	Gender inequality	0.73	0.77	0.00	0.04	0.67	0.80	0.47	0.55	0.61	0.74	0.72	0.96	1.00	1.00	0.75	0.70	0.67	0.83
Out-4	Redistributiveness	0.84	0.97	0.00	0.97	1.00	0.90	0.00	0.00	0.10	0.22	0.61	0.67	0.93	1.00	0.10	0.14	0.33	0.35
Out-5	Public expenditure	0.24	0.22	0.00	0.01	0.10	0.12	0.10	0.09	0.15	0.13	1.00	1.00	0.64	0.67	0.47	0.50	0.53	0.56
Out-6	Private expenditure	0.06	0.09	0.00	0.00	0.45	0.28	1.00	1.00	0.61	0.38	0.03	0.02	0.31	0.27	0.89	0.59	0.86	0.69
Out-7	Compliance of social security responsibilities	0.46	0.53	0.00	0.00	0.60	0.69	0.92	0.79	0.79	0.79	0.83	0.82	1.00	1.00	0.82	0.82	0.97	0.98
Sum of radar chart score		3.94	4.28	0.17	1.57	3.58	3.66	2.98	3.21	3.23	3.46	4.89	5.20	5.88	5.95	5.01	4.73	5.30	5.37
% of full radar chart score		0.56	0.61	0.02	0.22	0.51	0.52	0.43	0.46	0.46	0.49	0.70	0.74	0.84	0.85	0.72	0.68	0.76	0.77
SMOP$_1$		0.93	1.10	0.00	0.04	0.67	0.74	0.53	0.58	0.61	0.71	1.23	1.41	1.97	2.01	1.49	1.35	1.66	1.68
SMOP$_2$		0.86	1.03	0.00	0.21	0.66	0.66	0.63	0.63	0.58	0.60	1.31	1.45	1.86	1.92	1.26	1.11	1.52	1.54
SMOP$_3$		0.65	0.79	0.00	0.01	0.66	0.68	0.44	0.60	0.61	0.64	1.28	1.39	1.87	1.92	1.45	1.25	1.57	1.60
Avg. SMOP		0.82	0.97	0.00	0.09	0.67	0.69	0.53	0.61	0.60	0.65	1.27	1.42	1.90	1.95	1.40	1.24	1.58	1.61

Notes: % of full radar chart score = (Sum of radar chart score) / 7

SMOP$_1$ = (Out1*Out2+Out2*Out3+Out3*Out4+Out4*Out5+Out5*Out6+Out6*Out7+Out7*Out1) * Sin (360°/7) / 2

SMOP$_2$ = (Out2*Out4+Out4*Out1+Out1*Out7+Out7*Out6+Out6*Out3+Out3*Out5+Out5*Out2) * Sin (360°/7) / 2

SMOP$_3$ = (Out4*Out7+Out7*Out2+Out2*Out3+Out3*Out6+Out6*Out1+Out1*Out5+Out5*Out4) * Sin (360°/7) / 2

Sin (360°/7) equals to 0.7849, and the full SMOP score is 2.7472. All the numbers are rounded up.

Sources: Computed by this research.

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