Population ageing is a process of change in the demographic structure that is caused by a rapid increase in the proportion of elderly people in the total population due to an increase in life expectancy and decrease in fertility rate. To be best prepared for the diverse range of social changes associated with such demographic changes would require a close re-examination of the principles and key elements of existing social security measures (Esping-Andersen, 1999: 3). Most OECD (Organisation for Economic Cooperation and Development) countries started to become ageing societies 20–40 years ago and have been working ever since to efficiently respond to their demographic changes. But responses have varied from country to country, a finding presumably attributable to each country’s distinct cultural and socioeconomic characteristics.

There are numerous ramifications that stem from population ageing, but the focus of this article is primarily on old-age income maintenance. An ageing society requires a new old-age income maintenance system, which should include income from benefits and earnings; such a system requires pension schemes to be revamped in a way that does not hinder people from working after retirement. Also, employment policies will have to be reshaped in a way that ensures older people the chance of re-employment as a reliable income source. In other words, the best strategy for an ageing society is to foster an environment where older people can work even after retirement. Regarding employment of the aged, the European Union established two major targets in 2001, namely the Stockholm Target and the Barcelona Target. The former aims to raise the hiring rate among the 55–64-year-old group to 50 per cent, and the latter aims to extend the retirement age by 5 years by 2010. Furthermore, the ‘International Plan of Action’, i.e. the report of the Second World Assembly of Ageing, UN of 12 April 2002, emphasised that older people should continue to work, if they can, in areas that can create an income. Therefore, we should provide opportunities and support to encourage older people to participate in the labour market and thereby minimise the shocks from the advent of an ageing society (OECD, 2004a).

The aim of this article is to typify 16 OECD countries in terms of income and employment security, and to investigate the associations between causal variables that determine each type. This study investigates the interaction of the pension system and employment policy, discussed independently in previous studies. This study is an important one for taxonomies of welfare regimes.
that take into consideration the current issue of ageing societies.

**Previous studies on the taxonomy of social welfare systems**

Previous studies that attempt to typify welfare states or systems can be broken down into two types. The first type examines the patterns and characteristics of welfare regimes on a large scale, while the second is concerned with pension and employment policies, focusing on the details of individual programmes and measures.

**Taxonomy of welfare regimes**

Most quantitative studies conducted in the past on the taxonomy of early welfare regimes examine the emergence of welfare states and their initial stages of development, placing emphasis on expenditures and chronological aspects. Among the distinctions made in these studies are: residual and institutional welfare models (Wilensky & Lebeaux, 1965); positive state, social security state and social welfare state (Furniss & Tilton, 1977); anti-collectivist, reluctant collectivist, Fabian socialist and Marxist (George & Wilding, 1985); pluralist (or differentiated) welfare state and corporatist (or integrated) welfare states (Mishra, 1984); and social market economy and socialist market economy (Rimlinger, 1971).

Critics have pointed out, however, that the quantitative approach is limited by its inability to identify the varying characteristics of different countries. This criticism is supported by increasing numbers of studies devoted to typifying welfare states from a qualitative perspective. For example, in Esping-Andersen’s landmark book, *The Three Worlds of Welfare Capitalism* (1990), the author distinguishes the three types of welfare state (liberal, corporatist and social democratic) by the degree of decommodification and stratification. Also, feminist criticism against Esping-Andersen’s discussion and the taxonomy of welfare states has prompted new attempts to understand welfare states from a more gender-sensitive perspective. Examples of the feminist approach include Lewis (1992), Orloff (1993), Bussemaker and Kersbergen (1994), Sainsbury (1999) and Siaroff (1994).

**Taxonomy of programmes**

In an effort to overcome the limitations of the classification of welfare regimes, Rainwater, Rein and Schwartz (1986) pursued a taxonomy based on an analysis of individual policies and their performance, sifting through the details of the social welfare programmes in Sweden, the UK and the USA in terms of recipient percentage, mean amount received and relative importance of government sources in total family income. Subsequently, Esping-Andersen (1990) classified welfare states in terms of the degree of decommodification and stratification, which, on a closer look, is based on the analyses of individual programmes and measures. In his categorisation of welfare states, Esping-Andersen examined pensions, sickness benefits and unemployment insurances. Also, to measure the degree of decommodification in pension plans, he constructed an index by making use of the following indicators: minimum pension benefits for a standard production worker earning an average wage; the standard pension replacement rate (net) for a single person; number of years of contributions required to qualify; the share of total pension finance paid by individuals; and the percentage of persons above pension age actually benefiting from pension payments (the take-up rate). As a result, Sweden showed the highest decommodification rate followed, in order, by Denmark, Belgium, Norway and Finland. The second-tier group consisted of Austria, The Netherlands, Japan, Italy, New Zealand and Switzerland, while Australia, Ireland, the USA, Canada, the UK and Germany were found to have the lowest decommodification indices among the OECD group. Esping-Andersen did more, however, than simply rank a host of countries in terms of decommodification indices. He was also able to assess the value of pension benefits relative to contributions in each country by categorising the unique characteristics of different pension plans. To do so, he looked into the percentage that occupational pensions hold in respect to the total expenditure on pensions, and he assessed the proportion of social security, civil servants’ pension, private occupational pension and individual insurance in respect to gross domestic product (GDP). Esping-Andersen lastly calculated how this latter figure stood in proportion to the total pension expenditure of the country. After going through this process, Esping-Andersen categorised the pension system into three types: the corporatist state-dominated system (Austria, Belgium, France, Germany, Italy and Japan); the residualist system (Australia, Canada, Switzerland and the USA); and the universalistic state-dominated system (New Zealand, Norway, Denmark and The Netherlands).

Myles’ (1984) categorisation of pension plans was based on two criteria: the structure and level of benefits and stability and accessibility. According to Myles’ ranking of pension schemes, Sweden, Finland and Norway belonged to the first-tier group, while The Netherlands, Austria, Denmark, New Zealand, Canada and France comprised the second-tier group. Pension schemes in Australia, Germany, the UK, Switzerland, the USA and Belgium were ranked below their counterparts in other countries.

Palme (1990a,b) viewed the quality of pensions as an entitlement in terms of qualifying conditions, coverage and benefit adequacy. ‘Qualifying conditions’
were categorised into citizenship, work-merit and need; ‘coverage’ into participation rate and the percentage of those receiving benefits; and ‘benefit adequacy’ into, following Myles (1984), basic security and income security. Palme went on to categorise public pension schemes of many countries into the residual model (France, Ireland, Switzerland, the UK and the USA), the work-merit model (Austria, Belgium, Germany, Italy and Japan), the citizenship model (Australia, Canada, Denmark and New Zealand) and the institutional model (Finland, The Netherlands, Norway and Sweden). Additional studies that have attempted to classify public pension reforms include those by Devereux (1998), Disney (1999) and Holzmann (2000).

Although there have been a great number of studies conducted in connection with taxonomies of pension schemes, only a few attempts have been made to typify employment policies. There are, however, some cases of taxonomies made with respect to welfare-to-work policies, notably those by Esping-Andersen (1990) and Therborn (1987). Therborn’s taxonomy is built around the factors of social policy, such as social entitlement, the labour market and full employment policies. Therborn attempted to classify countries into four different categories: the strong interventionist welfare states, such as Sweden, Norway and Australia, which strongly pursue social welfare and full employment; the soft compensatory welfare states with strong social welfare policies but weak employment and market policies (Belgium, Denmark, The Netherlands, and perhaps France, Germany and Italy in a broader scope); the full-employment-oriented small welfare states, which tend to shun strong social welfare policies while bent on pushing for full employment (Switzerland and Japan); and the market-oriented welfare states, which are weak in both social welfare and labour market policies (the USA, the UK, Canada, Australia and New Zealand).

**Previous studies on determinants**

Previous studies have adopted a diverse range of hypotheses and theories to explain the expansion, or contraction, of welfare states, of which some have even evolved into full-fledged theories (Esping-Andersen, 1990; Flora & Heidenheimer, 1981; Jones, 1985; Kaim-Caudle, 1973; Pfaller, Gough & Therborn, 1991; Wilensky, 1975, 1982). Major theories are ‘Logic of industrialism’, ‘Political conflict theory’ and the ‘State-centred approach’. This article looks into the causal relationship between welfare state development and various independent variables that have had their validity checked in previous studies.

First, we take into account per capita GDP and aged dependency ratio, which is widely used – along with the ageing index – in demographic studies. Here, the aged dependency ratio is related with the concept of pension sustainability and is thus used to represent the economic sense of the term, not simply the demographic proportion of aged people (Bongaarts, 2004: 4; Kukminyeonkeumyongucenter, 2000: 114). The third variable is the constitutional structure index.

Based on the state-centred approach, this variable is arrived at by adding a number of factors associated with the degree of federalism, such as the existence of presidential elections, electoral type, bicameralism and referendum. Generally, the weaker a state’s ability and structural strength, the higher is its constitutional structure index (Lijphart, 1984). The fourth variable is union density, which has often been used in previous studies to test the theory of social democracy. In addition, the welfare state regime, an important variable in the discussion of welfare states and policies, is also selected as a determinant. The last variable concerns the time of the first enactment of public pension legislation, which is based on the institutional approach, where the characteristics and structure of institutions matter most.

**Sample countries and period**

This study examines a group of selected OECD countries that are considered to have moved in different directions in respect of the effect of their differing pension and employment policies. There are 16 countries in all: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, The Netherlands, New Zealand, Norway, Sweden, Switzerland, the UK and the USA. The data for this study are from the year 2001, or the year closest to 2001 where data for that year were unavailable.

**Operational definitions of core variables**

The study seeks to illuminate how integrated the strategies of welfare and labour policy are in response to the coming ageing society through setting the degree of pension generosity and active state intervention in employment guarantees as the two standards of typology.

**The degree of pension generosity**

Measuring pension generosity is a very difficult process involving the conversion of qualitative characteristics into a quantitative index. Kaim-Caudle (1973) concluded that it is impossible to objectively measure the qualitative difference between the pension systems of different states; thus he analysed the characteristics and quality of the different pensions systems by utilising a methodology that subjectively ranks the pension systems of different countries. What also matters in this process is what to use as the base for comparative observation. In his comparative study on
public pension schemes, Myles (1984) pointed out that, in the order of importance, after choosing what to compare comes the matter of which data to use. In his view, the most commonly used data in studies of cross-national comparisons of welfare state development are expenditures and social policies. But due to difficulties associated with standardising the subjects and data of comparison, an increasing number of studies on pension policies have used basic materials pertaining to such policy measures as income replacement, index adjustment system and eligibility criteria (Day, 1978; Esping-Andersen, 1981; Maguire, 1981; Myles, 1984). To estimate pension generosity, this study focuses on the degree of benefit adequacy and the extent of coverage. It is assumed that the more generous a pension scheme is, the higher its benefit adequacy and wider its coverage would be.

Many policy analyses have used replacement rate as a means of estimating whether certain pension benefits are adequate to protect people’s post-retirement income (Myles, 1984: 54). In this case, benefit adequacy increases as the income replacement rate rises, and benefit adequacy falls as the income replacement rate decreases. Also closely related to pension generosity is universality, or coverage rate. For example, the longer the required contribution period, or the higher the pensionable age, the lower the pension generosity, in which case the coverage rate will also be low. Furthermore, if a pension scheme is selective in coverage, it is unlikely to be regarded as generous. This study uses the replacement rates measured for 1995 by Blöndal and Scarpetta (1998) and the coverage index developed by Kim (1998).

Active state intervention in employment security

Employment security means that workers are protected from arbitrary and short-notice dismissals and have long-term employment contracts instead of temporary short-term employment (Dasgupta, 2001: 2); alternatively, it means that employers are constrained from arbitrarily dismissing their employees, and in cases where such regulations are breached, by which employers (or the state) subsequently generate additional marginal workers, the former are held responsible for the required benefits for those marginalised (Standing, 1999: 167). This study examines how actively the state intervenes in ensuring the employment security of older people, whose status is much more unstable than other age groups in the job market. To measure each country’s degree of intervention in this respect, this article uses expenditure on active labour market policy (ALMP) as a percentage of GDP. Labour market participation rates vary from one country to another because of each country’s different policy measures (Burniaux, Duval & Jaumotte, 2003: 5). Differences in employment rates among aged people in Western industrialised countries cannot be explained simply by cross-national differences in living standards, healthcare, demand for a labour force or cultural preferences (Esping-Andersen, Gallie, Hemerijck & Myles, 2002). According to a number of previous studies, prominent among state policy interventions in the work or economic activities of the aged is ALMP (Esping-Andersen & Sonnberger, 1991; Kang & Kim, 2001; Pampel & Weiss, 1983), and it can be presumed that the larger the ALMP expenditure, the more active is the state intervention.

While ALMP is aimed at ensuring that labour market insiders and outsiders alike have employment security, employment protection legislation is focused more on the insiders than on the outsiders. Buechtemann (1993) claims that ensuring employment security and prohibiting age discrimination by means of laws and collective bargaining can effectively regulate the employment and dismissal of aged workers, bringing positive effects on the aged labour force as a whole. Ebbinghaus (2001) also stresses that the main variable that influencing the decision of an aged worker to retire is not so much the pension plan, which eliminates the continuance of prolonged employment, but the internal regulations of employers which enforce dismissal. According to the OECD definition, employment protection is a range of labour market regulations concerning employment and dismissal. Regulations in regard to employment concern support programmes, time-limited employment contract conditions and training programmes. Regulations on dismissal include those on statutory period of notice for employment termination, allowances and mass dismissals (OECD, 1999: 50). As such, employment protection is understood as a necessary condition for securing employment. This study uses spending on ALMP as a percentage of GDP based on OECD’s Social Expenditure Database for the year 2001 and per capita GDP based on the World Bank’s ‘World Development Indicator dataset’ for the year 2001. ALMP expenditure in OECD’s Social Expenditure Database consists of the following five items: ‘employment service and administration’, ‘labour market training’, ‘youth measure’, ‘subsided employment’ and ‘employment measures for disabled’. Strictly speaking, this ALMP expenditure can give us wrong information for the degree of state intervention in ageing employment, because active labour market policy is not only for the aged. Since, however, there is no single specific indicator for the identification of aged employment, this study uses a second option that deletes the ‘youth measure’ and ‘employment measure for the disabled’ items from the five items of ALMP. The employment protection legislation index used in this study is from the OECD’s Employment Outlook (OECD, 2004a).

As to the variables for the determinants, aged dependency ratio is based on the World Bank’s 2001
World Development Indicator Dataset, and the pension maturity rates of the countries under observation are from Social Security Programs throughout the World (Social Security Administration, 2003a, 2003b). Union density is measured as the ratio of total employees to union members, as appeared in OECD’s Labour Force Survey, and the constitutional structure index is measured based on the 2001 Comparative Welfare States Data Set (Huber, Ragin, Stephens, Brady & Beckfield, 2004). Lastly, the decommodification degrees are as measured in Esping-Andersen’s (1990) The Three Worlds of Welfare Capitalism.

Method of analysis

To classify policy measures in response to ageing populations, this study uses cluster analysis. Cluster analysis is a range of techniques aimed at measuring distances between objects and, in turn, grouping them according to the measures of similarity or dissimilarity. Among these techniques, the study uses K-means cluster analysis. In his study, Gough (2001: 169) argued for the usefulness of cluster analysis as a superior technique, claiming that it can be used to overcome the limitations that may occur with data eyeballing.

As an approach to analysing the determinants, this article uses qualitative comparative analysis, which is widely regarded as being a midway methodology between quantitative and qualitative techniques and is thus an appropriate method for overcoming the limitations of case-oriented and variable-oriented techniques (Kangas, 1994). One of the advantages of qualitative comparative analysis is that it can examine a set of different causal connections in a holistic fashion (Kim & Lim, 2005: 204). Qualitative comparative analysis is deemed apt for the current study, as not only is there no social phenomenon that can be explained by one cause, but also such causes do not come into play singularly.

It is a difficult task to use other existing quantitative methods because the study’s sample comprises only 16 countries. Therefore, qualitative comparative analysis, a case-oriented research method, is considered suitable for analysing such a small number of cases, although such analysis risks a possible loss of information by transforming all variables into dichotomous values.

The result of the cluster analysis

The standard used in this study for classifying the measures taken to respond to population ageing is a combination of pension and employment policies. This choice is based on the assumption that the old-age income protection system will increasingly take the form of a mixture of pension arrangements and earned income from workforce participation, and that the structure and extent of such a mixture varies from country to country. In addition, what underlies this assumption is the intent to typify old-age income protection schemes into welfare-to-work type (high welfare provision and active employment intervention), work-emphasis type (active employment intervention but low welfare provision), welfare-emphasis type (high welfare provision and inactive employment intervention) and market-emphasis type (low welfare provision and inactive employment intervention).

To measure pension generosity, a cluster analysis is conducted based on universality and income replacement rate. The units of universality and income replacement rate are starkly different from one another, which is why they have to undergo transformation into standardised values. Table 1 shows the result of the cluster analysis performed on universality and income replacement rate, where countries classified under ‘1’ are highly generous in pension, while those under ‘0’ are considered ungenerous.

To measure the degree of state intervention in employment security, this study conducts the same cluster analysis as the above on two factors – spending on ALMP as a percentage of GDP and the employment protection legislation index (see Table 1). The cluster analysis on the standardised values of these two factors also divides the countries into two groups. Those classified under ‘1’ are regarded as strong in intervention for employment security with relatively high spending on ALMP and rigid employment protection legislation.

Combining these results places the four clusters of welfare-to-work type, work-emphasis type, welfare-emphasis type and market-emphasis type into a configuration as shown in Figure 1. Belgium, Denmark, Finland, France, Norway and Sweden fall under the category of the welfare-to-work type, while Canada, Japan and New Zealand belong to the welfare-emphasis
type. Germany and The Netherlands are classified as work-emphasis type, and the final category of market-emphasis type countries comprises Australia, Ireland, Switzerland, the UK and the USA.

The results of the qualitative comparative analysis

Table 2 shows the statistics of the causal variables that were used for the qualitative comparative analysis. Independent variables need to be converted into dichotomous dummy variables that take either 0 or 1 as their values, because all causal variables used for a qualitative comparative analysis take on a dichotomous value. But the causal variables used in qualitative analyses are not treated as individual variables. Rather, they are the combination of all the variables that are considered as binding causes. Therefore, it is not appropriate to treat variables as individual indicators and simply classify them into two types depending on whether or not they exceed a certain value (Hong, 1999: 322). The truth values used in this study are based on the results of the cluster analysis conducted on all the cause variables that are taken into account in the qualitative comparative analysis.
Table 3. Cluster analysis on the combinations of causal variables.

<table>
<thead>
<tr>
<th>Cluster number</th>
<th>Combinations of cause variables</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GDP 0 OLD 0 PENS 0 UNION 0 CONTUT 0 DECOM 0</td>
<td>Ireland</td>
</tr>
<tr>
<td>3</td>
<td>GDP 0 OLD 0 PENS 0 UNION 1 CONTUT 0 DECOM 0</td>
<td>Canada, USA</td>
</tr>
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<td>9</td>
<td>GDP 0 OLD 1 PENS 0 UNION 0 CONTUT 0 DECOM 0</td>
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<tr>
<td>10</td>
<td>GDP 0 OLD 0 PENS 1 UNION 0 CONTUT 1 DECOM 0</td>
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<tr>
<td>11</td>
<td>GDP 0 OLD 1 PENS 0 UNION 0 CONTUT 1 DECOM 0</td>
<td>Australia</td>
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<tr>
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<td>Finland</td>
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<tr>
<td>25</td>
<td>GDP 0 OLD 1 PENS 0 UNION 0 CONTUT 0 DECOM 0</td>
<td>UK</td>
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<tr>
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<td>France</td>
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<tr>
<td>30</td>
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<td>50</td>
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<td>Japan</td>
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<td>52</td>
<td>GDP 1 OLD 1 PENS 0 UNION 1 CONTUT 1 DECOM 0</td>
<td>Switzerland</td>
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<tr>
<td>62</td>
<td>GDP 1 OLD 1 PENS 1 UNION 1 CONTUT 1 DECOM 0</td>
<td>Denmark, Sweden</td>
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</tbody>
</table>

Notes: GDP, per capita GDP; OLD, aged dependency ratio; PENS, pension maturity rate; UNION, union density; CONTUT, constitutional structure index; DECOM, degree of decommodification.

Table 4. Truth table for independent and dependent variables.

<table>
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<th>Country</th>
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<th>PENS</th>
<th>UNION</th>
<th>CONTUT</th>
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<th>Y2</th>
<th>Y3</th>
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Notes: GDP, per capita GDP; OLD, aged dependency ratio; PENS, pension maturity rate; UNION, union density; CONTUT, constitutional structure index; DECOM, degree of decommodification.

Contradictions occur in QCA when an identical configuration of independent variables accounts for different dependent variables. Such a contradiction indicates that some cases cannot be explained by the equation. In this analysis, Canada and USA show contradictions; they were therefore omitted from the equation.

Y1, welfare-to-work type; Y2, welfare-emphasis type; Y3, labour-emphasis type; Y4, market-emphasis type.

Table 3 shows the combinations of the causal variables as well as the positioned countries, and Table 4 illustrates a qualitative comparative analysis-package truth table, which includes the four coping measures derived earlier as effect variables.

The last stage in deducing the result of a qualitative comparative analysis programme is to produce an equation of each type based on the truth table. There are some rules for interpreting the equations. First, value 1 indicates that the condition or outcome is present, and value 0 indicates that it is absent. Abbreviations used are as follows: GDP, per capita GDP; OLD, aged dependency ratio; PENS, pension maturity rate; UNION, union density; CONTUT, constitutional structure index; and DECOM, degree of decommodification. Upper case letters are used to indicate ‘presence’ and lower case letters are used to indicate ‘absence’. Second, addition (+) is equivalent to the logical operator OR, while multiplication (×) is the expression known as ‘sum of products’. A product is a specific combination of causal conditions or multiple conjectural causations.

Welfare-to-work type countries: Belgium, Denmark, Finland, France, Norway, Sweden

As a result of qualitative comparative analysis, the welfare-to-work type countries can be represented in the following equation:
OLD × UNION × contut × DECOM
+ gdp × OLD × PENS × contut × DECOM

In analysing this equation, it is apparent that welfare-to-work type countries are formed through two integrating factors or causal combinations. The first combination emerges when the aged dependency ratio is high, union density is high, the structure and ability of states is strong, and the degree of decommodification is also high. Belgium, Denmark, Finland, Norway and Sweden all fall into this combination type. When we examine the causal variables that constitute the first combination, we find that the per capita GDP and the aged dependency ratio variables are omitted. In qualitative comparative analysis, when a variable is omitted from the results it means that that causal variable does not influence the resultant variable (i.e. type of response to ageing) in any way (Jang, 2001: 56). In other words, it is assumed that industrial factors such as per capita GDP and institutional factors such as pension maturity rate do not matter much in formulating a welfare-to-work type strategy.

The second combination, which is followed only by France, emerges when the per capita GDP is low, aged dependency ratio is high, pension maturity rate is high, the structure and ability of the state is strong, and the degree of decommodification is also high. Upon observing the causal conjunctures of this combination, it is apparent that the union density variable has been omitted from among the causal variables, which is a result of the very low union formation rate in France. The other five countries besides France all demonstrate high levels of union density, and it can be said that France presents a case that somewhat counters the logic of the power resources mobilisation theory, which states that, in general, high union density makes it possible for the development of the welfare state by maintaining the high levels of employment and of income guarantees necessary. This result attests to the fact that should per capita GDP be low, aged dependency ratio and pension maturity level be high, the constitutional structure of state be strong, and the degree of decommodification be high, the causal variable of union density will not be significant in forming welfare-to-work type strategies.

After factor analysing the above equations, we come up with the simpler equation:

\[ Y_1 = \text{OLD contut DECOM (UNION + gdp PENS)} \]

As is apparent in this equation, welfare-to-work type states are characterised by high aged dependency ratios, strong constitutional structures and high degrees of decommodification. But these necessary conditions must be combined with either high union density or low per capita GDP with high pension maturity level in order for the welfare-to-work type strategy to emerge.

Welfare-emphasis type countries: Canada, Japan, New Zealand

As a result of qualitative comparative analysis, the welfare-emphasis type countries can be represented in the following equation:

\[ \text{gdp × old × PENS × union × contut × decom} \]
\[ + \text{GDP × OLD × pens × union × contut × DECOM} \]

The welfare-emphasis type is also comprised of two combinations. The first is characterised by low per capita GDP and aged dependency ratio, long history of pension system (high pension maturity level), low union density, strong state constitutional structure and ability, and low degree of decommodification. New Zealand can be classified as being in this combination. The second combination is characterised by high per capita GDP and aged dependency ratio, short pension system history (pension maturity rate is low), strong constitutional structure and ability of states, and high degree of decommodification. Japan can be classified as being in this combination.

The result of factor analysis of the above equations is the following:

\[ Y_2 = \text{union contut (gdp old PENS decom} \]
\[ + \text{GDP OLD pens DECOM)} \]

Thus, welfare-emphasis type states are characterised by low union density and strong state constitutional structure and ability, the two characteristics being the necessary conditions of this type. Let us analyse nation-specific characteristics in detail. Because welfare-emphasis type states have low aged dependency ratios (with the exception of Japan) and low maturity of pension systems (with the exception of New Zealand), it is projected that the citizens of these states will have a lower desire for income guarantees through labour than would the members of welfare-to-work type states. These factors, in combination with low union density, which is a necessary condition for welfare-emphasising states, may have made it difficult for wanting parties to assert employment guarantees.

Labour-emphasis type countries: Germany, The Netherlands

Germany and The Netherlands are the countries that employ a labour-emphasis type strategy, which can be represented in the following equation:

\[ \text{gdp × old × PENS × union × contut × decom} \]
\[ + \text{GDP × OLD × pens × union × contut × DECOM} \]

This type also has two combinations of development – one for each country – which demonstrate some discrepancy between themselves. The first combination is that of The Netherlands, which shows low per capita
GDP and aged dependency ratio, long history of pension system (high pension maturity level), low union density, strong state constitutional structure and ability and high degree of decommodification. The second combination, for Germany, demonstrates high per capita GDP and aged dependency ratio, a long history of pension system (high pension maturity level), low union density, weak state constitutional structure and ability and high degree of decommodification. The following is a simpler version of the equation derived through factor analysis:

\[ Y_3 = \text{PENS union DECOM} \left( \text{gdp old contut} + \text{GDP OLD CONTUT} \right) \]

Labour-emphasis type states are characterised by having high pension system maturity and low union density level as necessary conditions. In comparing the necessary conditions of labour-emphasising type and welfare-emphasising type states, we see that the former demonstrate higher pension system maturity. Thus, as it is the case that the number of pension recipients increases as the maturity level of the pension system increases, it becomes harder to maintain the system as the total proportion of pension recipients increases relative to the total number of contributing members. We understand, therefore, that the countries falling under this category have employed a strategy that emphasises labour through actively guaranteeing employment.

**Market-emphasis type countries: Australia, Ireland, Switzerland, USA, UK**

As a result of qualitative comparative analysis, the market-emphasis type countries can be represented in the following equation:

\[ \text{gdp} \times \text{old} \times \text{pens} \times \text{union} \times \text{contut} \times \text{decom} + \text{gdp} \times \text{OLD} \times \text{PENS} \times \text{union} \times \text{contut} \times \text{decom} + \text{gdp} \times \text{old} \times \text{PENS} \times \text{union} \times \text{CONTUT} \times \text{decom} + \text{GDP} \times \text{OLD} \times \text{pens} \times \text{union} \times \text{CONTUT} \times \text{decom} \]

After analysis, however, this equation demonstrated limitations in typological organisation, and hence we conducted another qualitative comparative analysis after separating (‘don’t care’ principle) Switzerland from the equation, to give the following:

\[ \text{gdp} \times \text{old} \times \text{pens} \times \text{union} \times \text{contut} \times \text{decom} + \text{gdp} \times \text{OLD} \times \text{PENS} \times \text{union} \times \text{contut} \times \text{decom} + \text{gdp} \times \text{old} \times \text{PENS} \times \text{union} \times \text{CONTUT} \times \text{decom} + \text{GDP} \times \text{OLD} \times \text{pens} \times \text{union} \times \text{CONTUT} \times \text{decom} \]

From this equation we see that the market-emphasis type state has three combinations through which it can emerge. The first combination, as in the case of Ireland, requires that the per capita GDP and aged dependency ratio be low, that the short pension system history be short (low pension maturity level), that union density be low, that state constitutional structure and ability be strong, and that degree of decommodification be low.

The second combination, which is the case for the UK, has a low per capita GDP but a high aged dependency ratio, a long pension system history (high pension maturity level) while maintaining a high union density, a strong state constitutional structure and ability and a low degree of decommodification. The third combination, which is the case of Australia, has a low per capita GDP, an equally low aged dependency ratio, a long pension system history, a low level of union density, a weak state structure and ability, and a low degree of decommodification. These equations can be simplified via factor analysis into the following:

\[ Y_4 = \text{gdp union decom (old pens contut} + \text{OLD PENS contut} + \text{old PENS CONTUT}) \]

Thus, from this analysis we can see that the market-emphasising states have low per capita GDP and union density, as well as a low degree of decommodification as necessary conditions. It is interesting to note that only in the market-emphasising type does the per capita GDP function as a necessary condition. Thus, when we survey the causation variables that are in alternate relations with each other, we find that only the variable of per capita GDP shows no correlational direction one way or the other in relation to the other variables. This result comes from the fact that all 16 countries analysed in this study are members of the OECD, and thus have attained a high level of industrialisation. This nullifies the effects of industrialisation theory as a variable in explaining the difference in strategic typology between the states. Another interesting tendency is that, with the exception of Switzerland, all of the market-emphasising states commonly demonstrate a low degree of decommodification, which reflects the ideological tendency of these states, namely liberalism, which influences them to actualise welfare policies through market-oriented means.

**Conclusion**

This study has attempted to typify the strategies of the developed countries for coping with their ageing societies and analyse what implications the related causal variables have. These are some of the implications. First, the Scandinavian countries, which have been classified in the previous literature as being welfare states or developed welfare countries, for the most part have been classified as being welfare-to-work type states. Esping-Andersen (1990), who has typified the welfare state regimes, classified Denmark, Finland, Norway and Sweden as having a social democratic system. These countries, it turns out, have employed the welfare-to-work type strategy in response to their ageing societies. The USA, Australia, UK and Ireland,
all classified as being liberal states, are classified as being market-emphasising states. Based on previous literature and the results of the present study, it can be concluded that the advanced strategy in dealing effectively with ageing is to place equal emphasis on both income and employment guarantees. To accomplish this, not only public pensions but also all after-retirement income guarantee mechanisms (such as corporate pensions and dismissal compensations) need to be transitioned into regulations that are non-intrusive and do not hinder labour. In other words, a transition into a structural environment is needed in which a would-be retiree would consider prolonging his retirement and delaying the payment of his pensions as a work incentive. This needs to be accompanied by reforms in the labour market so that it will be possible to compensate for the reduced pension of the above prolonged retiree through labour compensation.

Second, we need to pay attention to the fact that public pension maturity level is among the necessary conditions that make labour-emphasising welfare strategies possible. Thus, for labour-emphasising welfare strategies, which focus relatively more on labour as the means for income guarantees, we can see that the pension system has been in place for a long time. This fact brings about a situation in which the maintenance of the public pension system is put in jeopardy as the system itself gains maturity, and this in turn explains why countries with high levels of pension maturity turn to labour as a means of income guarantee rather than look to the pension systems.

Third and lastly, the fact that a strong state ability and structure, a high degree of decommunification and a high union density are necessary conditions for the welfare-to-work states can be said to be yet another reinforcement regarding the validity of the theory of social democracy and the welfare state regime.

References


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