ABSTRACT OF DISSERTATION

Kevin Clay Lomax

The Graduate School
University of Kentucky
2002
COMPARATIVE PENSION POLICY OUTCOMES
IN SOCIAL DEMOCRATIC NATIONS:
THE CASE OF FINLAND

ABSTRACT OF DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
in the Graduate School at the University of Kentucky

By

Kevin Clay Lomax
Lexington, KY

Director: Dr. Graham D. Rowles, Professor of Geography, Behavioral Science and Nursing
Lexington, KY

2002

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ABSTRACT OF DISSERTATION

COMPARATIVE PENSION POLICY OUTCOMES
IN SOCIAL DEMOCRATIC NATIONS:
THE CASE OF FINLAND

Issues of pension viability are at the forefront of gerontological debate. The uncertainty of long-term effects of the societal aging process on public pensions and the constant public policy struggle to maintain income levels among pensioners are critical points of discussion. As existing pension policies are examined and amended, policymakers increasingly rely on experts of pension research and income inequality for policy frameworks. Gøsta Esping-Andersen’s (1990) *Three Worlds of Welfare Capitalism* has provided the seminal typology for nearly two decades. His typology consists of three regimes: liberal, conservative, and social-democratic.

The purpose of this research was to examine and compare the outcomes of historical pension policy in a social-democratic nation (Finland) with pension-receiving cohorts in a comparison nation of each regime: liberal (the United States), conservative (Germany), and social-democratic (Sweden). Specific aims were: to investigate the continuing viability of Esping-Andersen’s typology at a national (macro) level; to explore a new analytical approach by disaggregating the population and conducting micro analyses; and to examine the value of using more sensitive inequality indices (Atkinson and Theil) in lieu of the commonly used Gini Index. Finland provides a case study focus of the comparative analysis.

Analysis of Luxembourg Income Study (LIS) data confirms that Esping-Andersen’s typology remains viable at the macro level for the liberal United States. However, conservative Germany and social-democratic Sweden and Finland may be shifting from their respective classifications with possible convergence of the conservative and social-democratic regimes into a European regime.
A similar conservative-social democratic convergence is apparent for Finland at the micro level. The trend for males across age cohorts suggests that the regimes are converging. However, at all levels of micro analysis, the trend for females remains consistent with a social-democratic regime. This may indicate that the Finnish pension system allows females to remain independent of spousal employment in terms of pension benefits.

Finally, the research suggests basic interpretability of the Atkinson Index combined with the generation of 95% confidence intervals for the Theil index provides a more robust method of analysis not offered with the Gini Index.

KEYWORDS: Gerontology, Pensions, Finland, Three Worlds of Welfare Capitalism, Income Inequality,

Kevin Clay Lomax

June 7, 2002
COMPARATIVE PENSION POLICY OUTCOMES
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DISSERTATION

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This work is dedicated to the ancestors and future descendents of the House of Lomax of Lancaster, *fato prudentia major.*
ACKNOWLEDGMENTS

This dissertation, while an individual work, benefited from the insights and direction of several people. First, my Dissertation Chair, Graham D. Rowles, exemplifies the high quality scholarship to which I aspire. In addition, Brian K. Gran provided unparalleled insight, substantive comments and thorough evaluation at every stage of the dissertation process, allowing me to complete this project on schedule. The three fates were watching over me. Next, I wish to thank the remaining members of the Dissertation Committee: Mitzi M. Johnson, B. Jan McCulloch, William S. Rayens, F. Douglas Scutchfield, and Mark C. Berger (outside reader). Each individual provided unique insights that guided and challenged my thinking, stretched my abilities, and substantially improved the finished product.

In addition to the technical and instrumental assistance above, I received equally important assistance from family and friends. My mother, Renea O. Wright, instilled in me, from childhood, both the desire and skills to obtain the Ph.D. My mentor, Dr. William B. Shell, instilled in me a desire to pursue my goals and remain curious about all things in the universe great and small; the journey began in 1986 with Halley’s Comet. My elder mentor in the PhD in Gerontology program, Wilson Wong, provided friendship and camaraderie as we have both grown with the PhD program during the past five years.

I would like to take this opportunity to extend a few words of appreciation to Michael T. Nietzel who, as Graduate School Dean, provided financial assistance to enhance this dissertation through a Dissertation Enhancement Award and subsequent travel to Finland during the summer of 2001. In addition, sincere gratitude is extended to F. Douglas Scutchfield and the UK Center for Health Services Management & Research for providing financial support to attend the Luxembourg Income Study Workshop in July 1999. I wish to thank Kati Foley, Caroline de Tombeur, Timothy Smeeding, David Jesuit, and Paul Alkemade at the Luxembourg Income Study offices located in Syracuse, NY and Luxembourg City, Luxembourg for their dedication to the work of LIS researchers. Finally, to my Gerontology PhD Program cohort (Anne Harrison, Hege Ravdal, Aileen Wiglesworth, and Katie Victory), I proffer heartfelt thanks to the most supportive friends a person could have. I will never forget my tenure as a student at the University of Kentucky and our journey as gerontology “pioneers”.

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Chapter One

Introduction

“For each of them, as the saying runs, is no city, but cities upon cities; two at the least, each other’s enemies, the city of the poor and the city of the rich; and in either of these is a vast number of cities which you will be entirely wrong to treat as one.”

_The Republic_, Book IV (Plato, 320c B.C.), Trans. 1992

The Issue of Pension Viability

We are living in an epic era of aging. Consequently, aging issues are paramount for most national governments (Chand & Jeager, 1996). At the forefront of gerontological discussion are issues of pension viability, income stability and pension equity among both present and future older adults (Diamond, Lindeman, & Young, 1996; Kolb, 1993; Moffit et al., 2002; Walker, 1999). Public pension schemes are under intense scrutiny, with particular concern in many industrialized nations for limiting the burden of retirement pensions on public coffers while simultaneously keeping unemployment levels and the household tax burden low (Graetz, 1988). A recent joint International Monetary Fund (IMF) - Organization for Economic Cooperation and Development (OECD) working paper underscores this concern with the statement “The combination of lower social security contributions and/or tax revenues, together with higher social expenditures by governments has caused some [OECD] governments to reassess the longer term viability of their systems” (Kalisch & Aman, 1997, p.15). Other researchers concur that pension financial viability will remain one of the most critical policy issues for national pension schemes during the next several decades (Adamchak, 1993; Allen, Clark, & McDermid, 1995; Beattie, 1998; Brown, 1997; Du Boff, 1997; Hutton, 1996). Pensions, as a fiscal expenditure, have even been described as the largest single pressure point for public finance (Organization for Economic Cooperation and Development, 1997, p. 15). The overarching problem of pension viability is examined in this dissertation from a gerontological perspective with a
multidisciplinary approach using concepts from sociology, political economy, and economics.

The long-term effects of population aging on public pensions are uncertain and depend on a society’s economic and political adaptation of policy to potentially hedge these effects (Pedersen, 1999). However, one certainty appears to be continued pressure for an increase in public pension expenditure in the years ahead for the 30 member nations of the OECD (Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States). The OECD is an international organization headquartered in Geneva, Switzerland, comprised of countries sharing a mutual commitment to democratic government and the market economy. The organization has a global reach with its work covering economic and social issues such as macroeconomics, international commerce, education, infrastructure development, science, and innovation.

Government planning for pension resource allocation is affected by shifts in the age structure of a nation, both proportionately and in absolute numbers. Upward shifts in age structure will result in an accelerated population demand for increased pension benefits, and thus fiscal demand for increased pension contributions to meet those demands exclusive of other reform measures (Esping-Andersen, 1990; Kolb, 1993; Williamson & Pampel, 1993). As a result of increased life expectancy and decreased fertility rates in the developed world, elderly support ratios (persons 65 and older per 100 persons aged 20 to 64) are on the rise (U.S. Bureau of the Census, 1996). For example, across developed nations, elderly support ratios have increased 10% to 40% since 1990, and an additional 35% increase is projected in the developed world by the year 2025 (Kinsella & Gist, 1995). This increase will result from large cohorts of working-age people entering retirement. For example, the Baby Boom Generation in the United States (76 million Americans born between 1946 and 1964) will increase the ratio by 15.1% over the next 50 years (U.S. Bureau of the Census, 1996).

Public pension expenditures in the major industrialized countries have sharply increased since 1960 (Organization for Economic Cooperation and Development,
As seen in Table 1.1, the Netherlands, Sweden, Italy and France show large increases in public pension expenditure as a percentage of Gross Domestic Product (GDP) for the 20 years from 1960 to 80. Changes ranging from a moderate increase to a slight decrease in pension expenditure occurred during the 1980’s and the early 1990’s for all countries. For example, Finland increased public pension expenditures by 2.7% from 1960-80 and experienced a 4.0% increase between 1980 and 93. Moderation in pension expenditure is a reflection of several macro-level factors including increasing elderly support ratios, the increasing generosity of per capita pensions due to the maturation of public pension schemes, and increased unemployment rates during the 1980’s and 1990’s in some countries (Kosunen, 1997). Increasing elderly support ratios as a factor for moderating pension expenditures may seem counterintuitive; however, it should be noted that one policy response to an increasing number of pensioners would be to reduce overall pension benefits. This policy response can potentially reduce the amount of pension expenditure as was the case in Finland during the late 1990’s (Timonen, 2001).

### Table 1.1 Percentage Change in Public Pension Expenditures as a Percentage of GDP, 1960-2050, Selected Countries

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Projected</th>
<th>Projected</th>
<th>Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.6</td>
<td>-0.1</td>
<td>-0.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Austria</td>
<td>3.9</td>
<td>1.4</td>
<td>1.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Canada</td>
<td>4.6</td>
<td>1.6</td>
<td>0.1</td>
<td>3.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.5</td>
<td>0.8</td>
<td>0.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Finland</td>
<td>2.7</td>
<td>4.0</td>
<td>0.6</td>
<td>7.1</td>
</tr>
<tr>
<td>France</td>
<td>5.5</td>
<td>2.0</td>
<td>-0.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Germany</td>
<td>2.4</td>
<td>-0.3</td>
<td>0.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Ireland</td>
<td>2.0</td>
<td>-0.3</td>
<td>-1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Italy</td>
<td>6.5</td>
<td>3.6</td>
<td>-0.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Japan</td>
<td>3.1</td>
<td>1.4</td>
<td>3.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7.0</td>
<td>0.7</td>
<td>0.1</td>
<td>5.1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>3.3</td>
<td>0.2</td>
<td>-0.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Norway</td>
<td>4.8</td>
<td>1.5</td>
<td>0.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>6.5</td>
<td>2.1</td>
<td>0.6</td>
<td>2.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.3</td>
<td>0.8</td>
<td>0.7</td>
<td>0.3</td>
</tr>
<tr>
<td>United States</td>
<td>2.8</td>
<td>0.4</td>
<td>0.4</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Adapted from Kalisch and Aman (1997, p. 48).
Augmenting this increasing public finance burden is the constant public policy struggle to maintain income levels among pensioners (Hemming, 1998). This debate among policymakers occurs as a result of two political factors, one current and the other historical, that must be addressed in policy-making decisions relative to pensions. First, older adults worldwide currently are accruing power as a political group (American Association of Retired Persons, 2000). Second, the historically implicit pension promises made by national governments to older adults during their labor force participation years must be addressed (Kalisch & Aman, 1997; Kalisch, Aman, & Buchele, 1998).

Within the pension reform debates, OECD studies estimate an increasing amount of unfunded pension liability under present pension funding arrangements (Liebfritz, Roseveare, Fore, & Wurzel, 1995; Van den Noord & Herd, 1993). An unfunded pension liability is created when current pension payments are not matched by previous or current employment contributions. Unfunded pension liabilities can be catastrophic to a nation’s economic system especially in situations when national retirement systems have more current liabilities than can be leveraged against national assets.

As existing pension policies are examined and amended, policymakers will increasingly rely on experts in the field of pension research and income inequality for policy strategy and advice. Researchers have developed several categorizing frameworks, or typologies, to characterize the welfare state ethos of nations, and thus the characterization of a nation’s pension structure. Indeed, the extensive use of these typologies in policy development and strategy has become labeled as the “welfare modeling business” and is likely to continue to gain momentum in the coming decades (Abrahamson, 1999).

Definitions

Before proceeding to the theoretical context of the dissertation, several definitions are helpful in understanding the issues in this research. These include the definition of income inequality, the basic structure of pension schemes, and the overall concept of pension benefits.
**Income Inequality**

There are several definitions of income inequality found in the literature (Alderson & Nielson, 1999; Jenkins, 1991; Mitchell, 1991; Smeeding, 1991). Typically, the concept of income inequality is couched in terms of economic well-being and the specific income distribution analyzed. What this means is that inequality is a measurement of how much income is allocated to any one or group of individuals within a given distribution. For the purpose of this research, income inequality is defined as the “differences between individuals relative to their command of disposable income” (Osberg, 1991, p. xii). Income inequality is used in the context of this research as both an ordinal (ranking) and cardinal (relative comparison) measurement to examine the effects of historic and current pension policy in four LIS nations.

**Basic Pension System Structures**

Pension systems in the developed world are generally categorized as: (1) pay-as-you-go (PAYG), (2) fully funded, and (3) partially funded (Niemela & Salminen, 1995b). A PAYG system operates as the name implies. The current working population provides the financial resources for the pensions of the retired population. In other words, benefits accruing to current pension recipients are financed by current contributions of the labor force. In the case of a deficit, budget transfers from the government can be temporarily implemented in some cases (Chand & Jeager, 1996). An example of a PAYG system is the United States Social Security System which pays current benefits with current contributions. A *fully funded* system is different from the PAYG system because a contribution rate is chosen to accrue financial capital that would equal current required payments to retirees plus payments needed for future retirees, i.e. the current working population. An example of a fully funded system is the employment pension system in Denmark [The Danish Labour Market Supplementary Pension Scheme] (Kalisch & Aman, 1997). The final system is the *partially funded* system. This system integrates features from both the fully funded and the PAYG system. One important element of a partially funded system is that pension fund reserves (money used to pay benefits) do not have to meet the full fiscal obligations of beneficiary requirements, as the fully funded system must. An example of a partially funded system is the
funded system is the employment pension system in Sweden (Kalisch et al., 1998). Table 1.2 provides a list of selected countries and their respective pension funding type.

**Table 1.2 Funding Arrangements of Selected Public Pension Programs**

<table>
<thead>
<tr>
<th>Country</th>
<th>Funding Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>PAYG with “reserve” fund</td>
</tr>
<tr>
<td>Denmark</td>
<td>Fully-funded (defined contribution)</td>
</tr>
<tr>
<td>France</td>
<td>PAYG</td>
</tr>
<tr>
<td>Finland</td>
<td>Partially funded</td>
</tr>
<tr>
<td>Germany</td>
<td>PAYG</td>
</tr>
<tr>
<td>Japan</td>
<td>Partially funded</td>
</tr>
<tr>
<td>Sweden</td>
<td>Partially funded</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>PAYG</td>
</tr>
<tr>
<td>United States</td>
<td>PAYG with “reserve” fund</td>
</tr>
</tbody>
</table>

Adapted from Kalisch and Aman (1997, p. 42) and OECD (1997, p. 26).

Two other terms should be defined, as they are common to all pension systems: *contribution rate* and *replacement rate*. Contribution rate is defined as the percentage of income taxed from the working population used as funding for the pension system. Replacement rate is defined as the percentage of average annual lifetime income replaced by the pension during retirement (U.S. Department of Labor, 1992).

**Pension Benefits**

All three types of pension funding arrangements consist of two main components: a *defined-benefit* and/or a *defined-contribution*. Defined-benefit plans are usually implemented in either PAYG or partially funded systems. A defined-contribution plan is typically found in a fully funded system. In addition, defined-benefit plans can have benefit levels either related to earnings, or independent of earnings, i.e., a flat rate component (Chand & Jeager, 1996). Now that the basic terminology of pensions has been described, we move to the theoretical framework of the dissertation.

**Theoretical Framework**

Gøsta Esping-Andersen’s (1990) *Three Worlds of Welfare Capitalism* has provided the seminal typology with which nations have been categorized in terms of basic national political ideologies. Within the Three World’s typology, nations are
classified as either Conservative, Liberal, or Social-Democratic regimes. In the words of Walter Korpi and Joakim Palme, Esping-Andersen’s work is “the most influential attempt to create a welfare state typology” (Korpi & Palme, 1998, p. 665). As with his predecessors [T.H. Marshall, Asa Briggs, and Richard Titmuss] and the development of the concept of the “welfare state”, Esping-Andersen’s typology was the genesis for the “welfare modeling business” and has subsequently become the benchmark for international comparisons (Abrahamson, 1999; Room, 2000). Esping-Andersen utilized both macro- and micro-economic data combining them with political variables to generate a total of seven indicators for clustering his dataset of countries into the three worlds (Esping-Andersen, 1990).

Subsequent to the publication of Esping-Andersen’s *Three Worlds of Welfare Capitalism*, a foray of critical reviews surfaced in the academic arena (Baldwin, 1992; Blau, 1992; Clemens, 1993; Cnaan, 1992; Hicks, 1991; Holmwood, 1991; Kangas, 1991; Klein, 1991; O’Connell, 1991; Offe, 1991; Papadakis, 1991; Wacquant, 1992). Overall, the reviews praise Esping-Andersen for contributing a stimulating new conceptualization of the welfare state. However, they also describe empirical weaknesses in the design. Major criticisms include: 1) Esping-Andersen’s static treatment of the three developed typology regimes; 2) the use of cross-sectional welfare expenditures for the analysis; and 3) the linear treatment of the political process and subsequent policy development.

During the 1990s and into the 2000s, researchers both tested Esping-Andersen’s typology using a cross-comparative method (Headey, Goodin, Muffels, & Dirven, 2000; Headey, Goodin, Muffels, & Dirven, 1997; Wagner, 1995) and adapted the typology to select nations in Southern Europe (Mingione, 2000) and the Czech Republic (Musil, 1995). In addition, researchers have made critical assessments of Esping-Andersen’s typology regarding gender and ethnicity issues (Arts & Gelissen, 1999; Ginn, Street, & Arber, 2001; Orloff, 1993; Quadagno, 1994; Quadagno & Fobes, 1995; Sainsbury, 1999).

Despite a historical body of critical literature of Esping-Andersen’s work, researchers and policymakers still view this typology as the framework for welfare state decision-making and resulting policy development albeit recognizing its limitations
(Berge, Korpi, Palme, Stenberg, & Klas, 1999; Huf, 1998; Jensen, 1999; Korpi, 1999; Korpi, 2000; Korpi & Palme, 1998; Room, 2000). As well as stating that typologies “based on ideal types can never fit the real world” (p. 669), Korpi and Palme (1998) have more recently suggested four worlds instead of three: encompassing, corporatist, basic security, and targeted. Other researchers have even suggested five or six worlds, thus, adding subtle dimensions to the welfare state discussion (Arts & Gelissen, 1999).

Recently, Esping-Andersen attempted to address specific criticisms of his 1990 book with his 1999 World Summit for Social Development paper and subsequent book *Comparative Welfare Regimes Re-examined* (Esping-Andersen, 1999a; Esping-Andersen, 1999b). These responses attempt to reclassify the typology as three “routes” versus the previous three regimes. The social-democratic, liberal, and conservative regimes are renamed the Scandinavian, Neo-liberal, and “labour” reductionist routes in the most recent work. Esping-Andersen’s modified nomenclature may reflect a change in his fixed regime structure to a more trajectory-based typology. In addition, Esping-Andersen has offered his views on the sustainability of welfare states in the future (Esping-Andersen, 2000b) as well as responded to an even more recent critical review (Room, 2000) of his 1990 typology (Esping Andersen, 2000a). The fact that even the most recent critiques of Esping-Andersen’s work focus on his original typology supports the argument that his 1990 work is still predominant in welfare state research and debate and will continue to be used as a policy framework (Jensen, 1999).

**Research Questions & Specific Aims**

As stated previously, pension viability will be a critical policy issue for many western nations in the coming decades. Existing policies will be amended and new policies initiated as policymakers and legislators attempt to address the issue. As policymakers continue to examine reform solutions, the welfare state ethos used to describe each nation will continue to shape baseline opinions of each nation’s pension structure, as well as affect the future policy direction of that nation. Esping-Andersen’s typology, as the seminal work, is likely to continue to be at the forefront of policymakers’ initial decision-making framework. It is essential that the typology be inherently valid in contemporary times for continued use as a framework in policy development.
Within this context, the overall purpose of this dissertation is to examine and compare the effects of historical pension policy, as measured by income inequality, in a social-democratic nation (Finland) with pension-receiving cohorts in a liberal (United States), a conservative (Germany), and another social-democratic nation (Sweden) using two inequality indices, the Atkinson Index and Theil Index, as comparative measurements (Atkinson, 1970; Esping-Andersen, 1990; Theil, 1967). Using these analytic tools, this research explores whether Esping-Andersen’s Three Worlds of Capitalism typology remains valid for contemporary Finland at both the macro and micro level. Given that previous research on the merits of Esping-Andersen’s typology has suggested that the three regimes do not “fit” every nation, current economic and political movements occurring in the developed world may necessitate a modification of the typology. For example, it has already been suggested that the Netherlands does not adequately ascribe to the conservative regime (Kloosterman, 1994). Arts and Gelissen (1999) also criticized Esping-Andersen for misclassifying several Asian nations, such as Japan, and amalgamating the “Antipodean” nations into the liberal regime. These serve as just two examples of possible misclassifications within the typology.

One example of the economic and political movements that may be causing regime shifts within Esping-Andersen’s typology is the process of retrenchment (Myles & Quadagno, 1997; Pierson, 1994). Retrenchment is defined as the reduction or elimination of fiscal programs and/or benefits within a national scheme. Public pensions as an entire program will more than likely not be eliminated; instead, selected benefits might be reduced or eliminated. Additionally, specific subpopulations may be targeted for benefit modification with a supplement or reduction.

This research enriches the current pension research dialogue by critically examining Esping-Andersen’s typology in terms of defining Finland as a truly egalitarian nation and whether or not it exhibits characteristics, as measured by the level of income inequality and resulting time-series trends, of more liberal (such as the United States), conservative (such as Germany) or social-democratic (such as Sweden) nations as defined by Esping-Andersen’s (1990) typology. As stated in the definitions section, income inequality is defined as the differences between individuals relative to their command of disposable income (Osberg, 1991). The research contends that Finland is
misclassified in Esping-Andersen’s typology and is actually producing policy outcomes inconsistent with social-democratic nations (e.g., Sweden) relative to pensioners’ income inequality. The potential misclassification is supported by the fact that studies omit Finland from the analysis of Scandinavian countries (Aaberge et al., 1998).

Growing out of this question are three specific aims. The first is to investigate the continuing viability of Esping-Andersen’s welfare state typology at a national (macro) level. A second research aim is to explore a new analytical approach by disaggregating the population and conducting micro-level analysis. A third research aim is to examine the value of utilizing more sensitive inequality indices (Atkinson and Theil [pronounced Tile]) over the more commonly used Gini index. In order to conduct this research, a case study of Finland is used in a comparative analysis. Finland is compared with exemplars of Esping-Andersen’s welfare state typology: the United States (Liberal), Germany (Conservative), and Sweden (Social-Democratic).

This research addresses a two-fold gap in the current literature. First, two separate inequality coefficients are used to examine pensioners’ incomes. Previous research has typically used the Gini coefficient (Atkinson, 1996; Branco, 1985; Frick, Hauser, Muller, & Wagner, 1995; Fritzell, 2001; Gustafsson & Johansson, 1999; Hauser, Wagner, Frick, & Muller, 1994; Kawachi & Kennedy, 1997; Kennedy, Kawachi, Glass, & Prothrow Stith, 1998; Korpi & Palme, 1998; Lehtonen, 2000; Park, 1996). This research utilizes both the Atkinson and Theil indices and augments previous research by providing a more comprehensive picture of income inequality enhanced by the generation of confidence intervals supporting the validity of the indices and their interpretability. The use of this dual-index approach directly responds to Mitchell’s (1991) call for the use of multiple indices in analysis of income inequality. Second, this research will suggest modifications to Esping-Andersen’s typology that may more accurately reflect contemporary issues occurring in OECD nations and have important implications for future policy development related to maintaining pension viability.

Finland: A Case Study for Esping-Andersen’s Three Worlds of Welfare Capitalism

Finland provides an excellent example to test the viability of Esping-Andersen’s typology. Finland exhibits the prevailing theme underlying major changes in pension
programs among industrialized nations: pervasive governmental concern about the ability of national pension schemes to manage future financial burdens. Finland is considered one of the most “aged” countries in the world, a situation exacerbated by its low fertility rates relative to the longevity of its elderly population. Finland’s nine million citizens occupy 338,000 sq. kilometers with a majority of the population residing in the urban areas of Helsinki and Turku. The country is politically described as a parliamentary republic and has been an independent nation with its own constitution since the early twentieth century (Jakobson, 1996). This constitution grants the majority rule of legislative power to local municipalities, a power structure that can create regional conflict with regard to policies regarding nationally legislated pension schemes.

Changes in Finland’s compulsory supplementary pension schemes have occurred for two reasons. First, Finland has raised individuals’ pension contributions as a result of a reduction of premium income. Rapid increase in unemployment over the past decade resulted in contribution rates inadequate for sustaining the current pension system (Tanskanen, 1997). A second reason for changes in Finland’s pension schemes has been concern for the long-term stability of pensions in view of the progressive aging of the population.

Current demographic changes in Finland provide supporting evidence of the imminent problems facing Finnish older adults. Individuals age 60 and older made up 19% of Finland’s population in 1996. This percentage is projected to increase to approximately 31.4% by the year 2025 (Statistics Finland, 1999). Individuals 75 years of age and older made up 5.8% of the population in 1996, a percentage that is projected to increase to 11.6% by 2025 (Statistics Finland, 1999). These upward shifts will result in a median age increase of seven years (38 to 45) by the year 2025 (U.S. Department of Labor, 1992). The number of pensioners as well as the percentage of total social expenses devoted to old age pensions has increased in Finland since 1992. Currently, approximately 837,000 Finnish pensioners consume slightly over 29% of total social expenditures in the form of old-age pensions. On an aggregate level, Finnish pension payments amount to about 14% of Finland’s gross domestic product (GDP), a proportion projected to increase to approximately 17% by the year 2030 (Statistics Finland, 1999).
Finland’s membership in the European Union (EU) and European Monetary Union (EMU) also supports the use of Finland as a case study. Finland is more actively pursuing full European Union integration compared with its Scandinavian neighbors (Sihto, 1999; Vogel, 1999). Finland’s membership in the EMU will further integrate its future fiscal policy with continental Europe and link future pension valuation directly to the Euro (€), unlike Sweden and Norway, which are not in the EMU. Denmark is currently in the EMU; however, a referendum may be called by voters to revisit membership. This monetary policy link has been called a “convergence criterion” (Pierson, 1997). Membership in the EMU requires the Finnish Ministry of Finance to convert the banking system to Euros as the transaction currency under a specific timetable. This timetable affects the Finnish pension system in several ways. Section 4.5.3 of the European Monetary Union Project plan requires the Social Insurance Institution to continue paying beneficiaries in Finnish Markkas throughout the transitional period. Social security benefits paid to a customer’s Euro bank account will be converted into Euros by the bank. All Social security benefits have been paid in Euros since January 1, 2002 (KELA - The Social Insurance Institute of Finland, 2000).

Finland exhibits modest concern for its pension viability as well as concern for the high unemployment level for older people. However, unemployment among the elderly population is precipitated by the fact that pensioners cannot participate at any rate in the workforce and receive a pension. This practice is known as an agent-state relationship (Kenc & Perraudin, 1997). The most recent pension reforms in Finland occurred during the period from 1993 to 1996 (reduced benefit rates) with separate reform legislated in 1997 to gradually increase pension contribution rates until the 2030’s (Timonen, 2001). Private pension schemes will be steadily implemented over the next decades. There is no anticipated increase in Finland’s pensionable age requirement of 65. Finland’s pension replacement rates have increased since 1961 with the current rate at 60% of an individual’s lifetime income with current pensioners receiving 24.5% of the average annual wage in Finland.
Comparative Description of Pension Characteristics

In addition to analysis of the current pension reform situation for Finland, this dissertation includes a comparison with exemplars of each regime of Esping-Andersen’s (1990) typology: the United States (Liberal); Germany (Conservative); and Sweden (Social-Democratic). We turn next to a preliminary comparative description of the pension characteristics and reform status of the remaining three countries in comparison to Finland (See Table 1.3).

### Table 1.3 Pension Characteristics and Reform Status of Four OECD Nations

<table>
<thead>
<tr>
<th>Concern about Financial Viability</th>
<th>Finland</th>
<th>Sweden</th>
<th>Germany</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concern about Financial Viability</td>
<td>Modest</td>
<td>Serious</td>
<td>Serious</td>
<td>Serious</td>
</tr>
<tr>
<td>Other concerns</td>
<td>High unemployment rates of older people</td>
<td>Fiscal consolidation has had a harsh effect on older adults</td>
<td>Promotion of company pensions. Intergenerational equity</td>
<td>Encouragement of private pensions</td>
</tr>
<tr>
<td>Pensionable age increase</td>
<td>No</td>
<td>No</td>
<td>Equalizing women with the age for men (65)</td>
<td>Both men and women raised to 67</td>
</tr>
<tr>
<td>Changes in benefit rate</td>
<td>Reduced benefit rate 1993-6</td>
<td>Reduced benefit rate and indexing arrangements In 1993 Increased linkage of benefit rates to contributory years In 1999</td>
<td>Net-income indexing in 1992. Reduced targeted replacement rate (70%-64%) 1997</td>
<td>N/A</td>
</tr>
<tr>
<td>Increased contribution rate</td>
<td>Gradual rise until 2030s</td>
<td>Payroll tax for employers in 1990. 1% contribution for employee’s in 1995</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Promoting private schemes</td>
<td>Gradual implementation</td>
<td>N/A</td>
<td>Corporate schemes are promoted with legislation dating back to 1974. Wanting to further expand private schemes</td>
<td>Tax concessions</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------</td>
<td>-----</td>
<td>-----------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Pensionable age (1997)</td>
<td>65</td>
<td>65</td>
<td>65(M) 56(W)</td>
<td>65</td>
</tr>
<tr>
<td>Replacement rate:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1961</td>
<td>34.9</td>
<td>53.8</td>
<td>60.2</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>58.6</td>
<td>77.1</td>
<td>59.6</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>60.0</td>
<td>74.4</td>
<td>55.0</td>
</tr>
<tr>
<td>Increase in pension for 55 yr old in 1995 who works 10 more years</td>
<td>4%</td>
<td>0%</td>
<td>11%</td>
<td>0%</td>
</tr>
<tr>
<td>Benefit as a % of Annual Wage (1995)</td>
<td>24.5%</td>
<td>15.4%</td>
<td>53%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Elderly Dependency Ratio (1995)</td>
<td>21.5</td>
<td>26.9</td>
<td>23.8</td>
<td>19.0</td>
</tr>
<tr>
<td>Pension contribution rates (1995)</td>
<td>17.9%</td>
<td>19.8%</td>
<td>18.6%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Gross Pension Expenditure (as a percentage of GDP)(1997)</td>
<td>8.5%</td>
<td>8.4%</td>
<td>10.9%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Life Expectancy at 60</td>
<td>18.1 (male) – 22.9 (female)</td>
<td>19.8 (male) – 23.9 (female)</td>
<td>18.1 (male) – 22.5 (female)</td>
<td>18.9 (male) – 22.9 (female)</td>
</tr>
</tbody>
</table>

Adapted from the following sources: (Blöndal & Scarpetta, 1998; Kalisch & Aman, 1997; Kalisch et al., 1998; Organization for Economic Cooperation and Development, 1997; Organization for Economic Cooperation and Development, 2000)
Finland versus the United States

The United States considers the financial viability of its pension system to be a major concern while Finnish policymakers only report modest concern for its pension scheme (Kalisch & Aman, 1997). Finland is concerned with high unemployment for its aging population while the United States doesn't officially report that as a policy concern. Finland’s concern stems from its agent-state relationship that requires a pensioner to leave the workforce entirely prior to receiving a pension (Kenc & Perraudin, 1997)(p.259). Both nations are promoting private pension schemes albeit using different strategies. The United States promotes private pensions using tax concessions while Finland proposes a gradual implementation based on the outcome of the implementation of Sweden’s private pension system (Carroll, 2001).

Both the United States and Finland have experienced recent reforms. As shown in Table 3, the United States’s pensionable age will gradually increase from 65 to 67 over the period from 2000-2027. Finland gradually reduced its pension benefit rate in the period from 1993-1996 and will gradually increase the individuals’ contribution rate with a phased approach until the 2030’s.

Both nations have similar income replacement rates for pensioners. As of 1995, Finland’s target replacement rate was 60% of average annual lifetime income. The effective replacement is between 40-50%. The United States target replacement rate has also increased over the past four decades to 56% of average lifetime earnings. Pension benefit as a percentage of average national annual wage is also an indicator that is similar for both countries (Finland – 24.5% and United States – 21.9%). Finland and the United States also have similar elderly dependency ratios (Finland – 18.1 and United States – 18.9) and similar female life expectancies at age 60 (Finland – 22.9 years and United States – 22.9 years). However, the countries differ slightly regarding gross pension expenditure as a percentage of GDP (Finland – 8.5% and United States – 6.0%). These macro-level indicators reveal that the United States, while geographically different, has several similarities to Finland and therefore offers a robust comparison nation for Finland classified under the liberal regime within Esping-Andersen’s (1990) typology.
Finland versus Germany

Germany considers the financial viability of its pension system to be a serious concern while, as noted, Finland only reports modest concern for its pension scheme (Kalisch & Aman, 1997). Additionally, these two nations are different in their consideration of other pension concerns. Germany is concerned with promoting union-based employment pensions and intergenerational equity while Finland is concerned with high unemployment for its aging population. Both Germany and Finland have also experienced recent reforms. Germany has recently equalized the pensionable age with regard to gender. German females now must be 65 to receive retirement benefits, whereas they could previously retire at 56. Germany, unlike Finland, also has modified the indexing of pensions in 1992 and reduced the targeted replacement in 1997.

Both nations are promoting private pension schemes albeit using different strategies. Germany promotes private corporate pension schemes while Finland proposes a gradual implementation based on the outcome of the implementation of Sweden’s private pension system (Carroll, 2001). Both nations have similar income replacement rates for pensioners. As of 1995, Finland’s target replacement rate was 60% of average annual lifetime income. The effective replacement is between 40-50%. Germany’s target replacement rate is now 64% with the effective rate equal to 58%. Pension benefit as a percentage of average national annual wage is an indicator that differs between the two countries (Finland – 24.5% and Germany – 53%). Finland and Germany have different elderly dependency ratios (Finland – 19.7 and Germany – 23.8); but female life expectancies at age 60 (Finland – 22.9 years and Germany – 22.5 years); and pension contribution rates (Finland – 17.9% and Germany – 18.6) are similar. The nations differ regarding gross pension expenditure as a percentage of GDP (Finland – 8.5% and Germany – 10.9%). These macro-level indicators reveal that Germany, while geographically different, has several similarities to Finland and therefore offers a robust comparison nation for Finland that is classified under the conservative regime within Esping-Andersen’s (1990) typology.
Finland and Sweden

Sweden considers the financial viability of its pension system to be a serious concern while Finland only reports modest concern (Kalisch & Aman, 1997). Additionally, these two nations are different in their consideration of other pension concerns. Sweden is concerned about the impact of previous cutbacks on pensioners while Finland is concerned with high unemployment for its aging population. Both Sweden and Finland have had recent reforms with Swedish reforms actually beginning slightly earlier in 1990. Sweden has not increased the pensionable age from the current age of 65. Sweden, like Finland, reduced both pension benefits rate and modified the indexing of pensions in 1993. In 1999, Sweden associated benefit rates with contribution years during employment. Also, Sweden implemented a payroll tax for employers in 1990 and added a one percent employee contribution in 1995.

Both nations are promoting private pension schemes. Sweden recently (2000) implemented its private pension scheme giving employees a choice of seven schemes while Finland proposes a gradual implementation based on the outcome of the implementation of Sweden’s private pension system (Carroll, 2001). Both nations have relatively high income replacement rates for pensioners. As of 1995, Finland’s target replacement rate was 60% of average annual lifetime income. The effective replacement is between 40-50%. Sweden’s target replacement rate is 74.4% of average lifetime income. Pension benefit as a percentage of average national annual wage for Finland is 24.5% and for Sweden is 15.4%. Finland and Sweden have different elderly dependency ratios (Finland – 19.7 and Sweden – 26.9); different female life expectancies at age 60 (Finland – 21.9 years and Sweden – 23.9 years); and record similar gross pension expenditures as a percentage of GDP (Finland – 8.5% and Sweden – 8.4%). These macro-level indicators reveal that the Sweden, while geographically similar, has several differences to Finland and therefore offers a robust comparison group for Finland that is classified under the social-democratic regime within Esping-Andersen’s (1990) typology.
Policy Relevance

Given current pension reform debates, knowledge of micro-level income inequality outcomes can provide policymakers with information about the potential effectiveness of the legislative policy process regarding specific pension issues and pensioner subpopulations. This research will also fill a current gap in the pension policy literature. Although it is documented that income inequality exists in both the United States and Europe with disparities on the rise in many nations, the literature has not addressed the potential effect a regime shift would have on public pension policy at the macro (national) or micro (subpopulation) level (Auerbach & Belous, 1998). For example, if a social democratic nation such as Finland is actually producing micro-level inequality outcomes characteristic of a liberal nation such as the United States, this may indicate a future change in pension policy direction of social democratic nations (Yellen, 1998). It is critical that income inequality outcome comparisons be conducted to assess the validity of Esping-Andersen’s (1990) typology in categorizing nations for comparative analysis.

Because most public flat-rate pensions in both the OECD and European Union are currently paid on a PAYG basis, current policies may need to be changed to avert an inevitable increase in national spending to subsidize the projected increased number of pensioners. This increase in spending is compounded by Europe’s dependence on public flat-rate pensions for the significant portion of pension expenditures (88%) (Eurostat, 1997). It should be acknowledged that the need to maintain expected retirement income levels for future beneficiaries is resulting in the expansion of supplementary retirement income such as earnings-related pensions and private sector pension schemes.

The implementation of pension reform varies among the OECD member nations. For example, Belgium, Ireland, Luxembourg, the Netherlands, and the United States have not implemented significant changes in the past decade, while Denmark, Finland, France, and Germany initiated reforms during the 1990s. One possible strategic reform for many nations is transitioning the public flat-rate pension schemes from a PAYG to a funded system. However, implementing the transition in developed and mature public
pension systems, such as those prevailing in the European Union, can result in political suicide for legislators. The main difficulties are the lack of consensus on the solution for managing the future liabilities already 'committed' to the current workforce under the existing system and the simultaneous creation of a self-funded private system. Other methods of reform include “later retirement”, “cost-containment”, and “targeting”. Pension reform using later retirement as the key structural change would generally offset many impending demographic pressures. Cost containment reform’s main policy strength is in its ability to maintain fiscal equity by utilizing across-the-board budget cuts. However, this reform could shift large numbers of pensioners into poverty. Population targeting as a method of pension reform is practical in form because it singles out specific pensioners (by income level for example) to receive benefits and forces pensioners with higher incomes to rely on the market economy. Korpi and Palme’s (1998) research suggests that targeting specific populations, as a reform strategy, may not have the capability to reduce fiscal inequity in any population, including, but not limited to pensioners.

Having laid out the framework for the dissertation, we turn in Chapter 2 to the theory and context of welfare state typology development.
Chapter Two

Theory and Context

A substantial increase in the use of welfare state typologies in comparative studies has occurred to the point that many take for granted that the world consists of a limited number of well-defined welfare regimes. This chapter shows that the idea of classifying welfare states according to ideal-typical models dates back to the late 1950s and has been elaborated substantially over the past 50 years. The publication of Gøsta Esping-Andersen's (1990) *The Three Worlds of Welfare Capitalism* is identified as the seminal point for what has become a developing academic industry, here referred to as the "welfare modeling business." This chapter will chronicle the development of welfare state literature that led to the formulation of Esping-Andersen’s *Three World’s of Welfare Capitalism*. This chronology is designed to provide both a temporal and theoretical context for Esping-Andersen’s typology. Different typologies with varying degrees of differentiation are discussed in two broad categories: 1) social class issues and the development of the concept of welfare state; and 2) welfare state types and the emergence of the Three Worlds of Welfare Capitalism. This chapter concludes with a summary of the critical reviews of Esping-Andersen’s typology.

Social Class and Development of Definitions of the Welfare State

Considered one of the founders of modern welfare state literature, T. H. Marshall (1950) discussed the concept of citizenship rights in his posthumously published essays. Marshall argued that full citizenship within any nation proceeds in three stages of the development of civil, political, and social rights. Civil rights are those “necessary for individual freedom—liberty of the person, freedom of speech, thought and faith, the right to own property and to conclude valid contracts, and the right to justice” (p.10). An example of a civil right is the First Amendment to the United States Constitution. Political rights are those needed to “participate in the exercise of political power, as a member of a body invested with political authority or as an elector of the members of such a body” (p.11). An example of a political right is the right to vote. Social rights range from the "right to a modicum of economic welfare and security to the right to share the full social heritage and to live the life of a civilized being according to the
standards prevailing in the society” (p.11). An example of a social right is a national pension or national healthcare linked to citizenship. The concept of social rights would become the basis for the modern welfare state.

Although this is never explicitly stated, Marshall presents his three stages of personal rights development as a linear model for all nations. It should be noted that the linearity of his model has not been supported in the literature. In other words, social rights could be bestowed on a population prior to political rights. Marshall’s contention was, however, that social rights were required to develop civil and political rights. I must disagree with his position and propose that civil and political rights probably precede the development of social rights because issues surrounding property ownership would have taken priority in agrarian societies prior to industrialization.

Regardless of these limitations, Marshall’s postulates still have applications more than fifty years later. An example of their application is the response to his question concerning whether or not society has enough economic resources to eliminate the working class and create a single class of gentlemen. It could be argued that modern society is trying to accomplish Marshall’s challenge for select groups of individuals. For example, in Finland, a significant majority of workers are being trained in the area of high-tech industrial development, while at the same time workers who are in nonessential industries, i.e., agrarian, are being displaced. Considered an idealist, Marshall would have been a strong proponent of the “cottage industry”, a world full of craftsman and philosophers, which are all but extinct in modern society. The reality of the new global market discounts Marshall’s genteel society even though he was not advocating a welfare-free capitalist economy (Esping-Andersen, 1990).

Marshall’s contextual bias should also be addressed at this point. Marshall wrote during a time in England when Caucasian men had significantly more rights than any other group of individuals including women and minorities. His theory exhibits distinct bias toward upper class English society and against women regardless of social position. His emphasis on education as the main economic stimulus to produce his desired outcome, a society of gentlemen, reflects cultural attitudes that would have excluded women from most, if not all, economic opportunities. Evidence of his bias is found in such statements as “the uneducated cannot appreciate, and therefore, freely
choose, the good things which distinguish the life of a gentleman from that of the working classes” (p. 6). This concept is defined as “choice capacity creation” and is predicated on the assumption that education will stimulate not only the choice, but also the type of choice Marshall desires. Marshall’s association of basic human equality with the concept of full membership in a community clearly defines the membership boundaries for different citizens within a given society. His assumption that the modern market-oriented society, by its very nature, has a predisposition toward creating social equality was the latest phase [at that time] in the evolution of the discussion on citizenship rights (Marshall, 1950).

Writing a decade after the publication of Marshall’s essays, Asa Briggs (1961) provides a clearer definition of the term “welfare state” in his historical essay. Briggs’s definition of welfare state is predicated on the concept of “freedom from want” which he directly links to the power of educational attainment, as did his predecessor Marshall. Briggs’s theoretical predication of “freedom from want” reflects Marshall’s concept of social rights previously discussed. Theoretically, the mechanism of social rights would create “freedom from want” by developing social programs and services for citizens. The idea of “freedom from want” began to reshape the “English Poor Law” type of public support laws common during the eighteenth century. Evidence of this new idea was more pronounced in Britain where the post-World War II definition of “welfare state” included policies that had direct and immediate social consequences such as minimum income definitions, income supports, the attainment of full employment, and the financial support of elders, which, over time, became the modern-day British social welfare system.

Briggs’s (1961) definition of welfare state incorporated three nonlinear goals that should be achieved. First, a welfare state should guarantee a minimum income to all citizens regardless of financial connection to the labor market or real property. The national pension in Finland or supplemental support income (SSI) in the United States are examples of how the welfare state can achieve this goal. Marshall’s (1950) view of social rights would be met in the context of achieving this goal because “a modicum of economic welfare and security” would be attained by all citizens. Second, the welfare state should provide programs that protect citizens against “social contingencies” such
as illness or unemployment. An unemployment pension would be an example of achieving this goal. Again, programs designed to support the unemployed would expand the social rights of citizens by guaranteeing economic security in the face of social uncertainty. Third, the welfare state should develop programs and services using the best available standards. This welfare state goal is actually an expansion of Marshall’s idea of social rights. Marshall (1950) described social rights in the context of “prevailing community standards” (p. 11). The term “prevailing” suggests the potential for wide variation in program and service development because local municipalities could possibly determine their own prevailing standards. Briggs’s use of “best standards” argues for a national standard for all services developed for the population. In addition, Marshall’s concepts of civil and political rights are inherent to the attainment of Brigg’s three goals because without political participation empowering citizens to enhance their civil rights, social goals meet societal obstacles.

In concert with Marshall (1950), Briggs presents the idea that as welfare states develop in more economically advantaged societies (e.g., OECD nations), perceptual changes occur regarding the definition of citizenship. Briggs states there are five historical considerations underlying the development of welfare states: 1) market forces; 2) social contingencies; 3) organized power; 4) range of agreed social services; and 5) demand for minimum standards. Market forces can be described as the basic economic mechanism of supply and demand. Social contingencies are programs developed to combat downturns in the economic business cycle, such as unemployment benefits and national healthcare. Examples of organized power are labor unions or political parties. The range of agreed social services are the specific array of social service benefits provided to, and expected by, citizens at any given point in time. Demand for minimum standards is best explained by society’s expectation of the level of subsistence provided to all citizens by the government. Briggs’s assertion is that all five, indeed, even the first three, never simultaneously exist in the development of the welfare state nor do they follow a linear path.

Briggs’s argument, simply stated, is that as welfare states expand, the nation’s view of egalitarianism expands and political issues such as the availability of housing, healthcare, education, and social security become increasingly based on citizenship.
This view presents a circular argument of welfare state development. Does the egalitarian attitude precede the development of the welfare state or vice versa? This argument is not easily resolved (Briggs, 1961).

Finally, Briggs addressed the "myth of the welfare state", created in the late 1950s, in his conceptualization of the welfare state. This myth stated that “contemporary social problems have been solved since 1945” as a result of the postwar boon that generated employment and expanded the social programs of the New Deal (Amenta & Poulsen, 1996). Moreover, the knowledge that large sums of money, raised through a level of unprecedented taxation, were being used to wage war without difficulty led to the conclusion that smaller sums of money could produce a "welfare state" in times of peace. Even in the early 1960s, the concept of "paying for services" had replaced "fair shares for all". This was prior to Johnson’s Great Society programs and well before the 1980’s era of perceived and real retrenchment (Pierson, 1994). Recently, this policy attitude of “paying for services” has even found its way into more egalitarian societies such as Sweden (Olsen, 1999).

Welfare State Types and Development of the Three Worlds of Welfare Capitalism

In the mid-1970s, Richard Titmuss (1975) presented a more expansive work about welfare state types. This research was welcomed because of the disparate use of the terms “social services" and "social welfare" across Europe and North America. Cultural, as well as historical differences, contributed to variations in and overlapping use of these welfare state terms. Also, there was a need to move beyond education as the catalyst for developing a welfare state. Titmuss presents a two-pronged model of welfare state development (Titmuss, 1975). The first prong is the Residual Welfare Model, which claims that the state’s objective is to control social behavior and to maintain law and order through social policy. Social policy is defined as “choices between conflicting political objectives and goals and how they are formulated” (p. 49). The second prong is the Redistributive Social Policy Model, which views social policy as a tool for use in the provision of social welfare, as defined by any given nation. This two-pronged model expands Briggs’s five historical considerations into two separate models. Market forces and organized power are more influential within the Residual Model. Social contingencies, range of agreed social services, and demand for minimum
standards are more influential in the Redistributive Model of the welfare state. Titmuss’s model is the first attempt to bifurcate nations based on social policy responses to population needs. Linking back to Marshall (1950), these policy responses could come in the form of civil, political, or social rights expansion with the response classified as Residual or Redistributive. Titmuss’s model can be linked to Briggs’s (1961) work in terms of social policy response to attaining the three goals of the welfare state. How an individual nation addresses the issues of minimum income and social contingencies can be categorized within the two prongs.

One of the more interesting concepts in Titmuss’s work is his definition of a policy success. He frames the discussion in the context of a metaphor: “the success of a mental hospital”. The role of such institutions is either to properly medicate mentally ill patients and return them to society or to maintain them in the hospital setting. Titmuss’s discussion has strong implications for any policy evaluation because how policymakers define success can create expectations, which, in turn, lead to the formulation of new policies possibly not in the best social interest of some population groups. Titmuss illustrates this concept with policies surrounding education. He asks if it is possible to compare the outcomes for policies related to “the provision of two years of nursery education for a three-year old” and policies for “the provision of two years' post-graduate study for someone reading for a PhD” (Titmuss, 1975)(p. 52)? This question illustrates the point that policy context should be considered when measuring and evaluating specific outcomes.

With the recent work of Esping-Andersen (1990, 1999a), we are offered a more expansive welfare state typology that builds on Titmuss’s initial work (Esping-Andersen, 1990; Esping-Andersen, 1999a). Gøsta Esping-Andersen proposed three types [regimes] of welfare states: Liberal (Nations that exhibit market-driven policy such as the United States), Conservative (Nations that exhibit status-reinforcing policy such as Germany) and Social Democratic (Nations that exhibit progressive redistribution policy such as Sweden and Finland) (Esping-Andersen, 1999a). Similar to Titmuss’s model, Esping-Andersen’s regimes classify nations based on their response to areas of policy development, such as decommodification. The overarching concept used in the development of the three regimes is decommodification. Decommodification is defined
as the process of providing a program or service as a matter of [social] right while at the same time, allowing an individual to maintain a financial livelihood independent of labor market interaction (p.22). In other words, decommodification is said to occur when the specific universal social benefit provided secures the economic security for an individual independent of the volatility of the labor market. Each of the three regimes exhibits certain policy characteristics in relation to the interaction of the state[nation], market, and family.

A nation classified as a liberal regime in the typology heavily relies on means-tested assistance. Examples of this regime are the United States and Australia. Liberal regime policy limits universality and decommodification with the use of entitlement programs that have limited benefits and strict entitlement qualifications. In comparison to the other two regimes, liberal regimes provide the least amount of decommodification to individuals and constrain the development of social rights. Social assistance programs in these nations tend to affect low income individuals and maintain them at, or just above, the poverty line. Liberal regimes strongly encourage the use of the private market to provide economic security.

In contrast, conservative regimes, such as Germany, France and Italy, adhere to a strong class structure relative to social policy. Social policy is developed with the intent on preserving the “traditional family” whose male head is the primary breadwinner. Conservative regime’s policy responses to social needs typically maintain an individual’s employment status and thereby, maintain social class standing in society. These types of policies frequently disenfranchise females and link their economic security to their male spouse. For example, a male physician receives a retirement pension that maintains his previous economic and social status in the community. Upon his death, his wife would continue receiving his pension to maintain the social status of the physician’s household.

Finally, social-democratic regimes, such as Sweden and Norway, promote strong universalistic beliefs of citizen equality and develop social policies that highly decommodify individuals. Nations fitting this regime typically expand social rights through policy development and service provision. “Equality of the highest standards” (p. 27) is the term Esping-Andersen uses to typify the main characteristic of this regime.
Although Finland is considered a social-democratic regime in the literature, Esping-Andersen found Finland to be problematic regarding its regime classification. His treatment of Finland often resulted in its absence from discussions of the social-democratic regime. Esping-Andersen’s negation of Finland along with that of other researchers lends support for this research because it is possible that Finland was never clearly classified (Kangas & Palme, 1989).

Esping-Andersen’s typology builds on the previous work of Marshall, Briggs, and Titmuss in its conceptualization of the welfare state as labor market independent (economic security) via the intervention of social policy. He utilizes what he deems “a common textbook” definition of a welfare state. The basic premise of his definition is that there is a responsibility of the state[nation] to provide some predetermined minimum level of subsistence. This definition expands the view held by Briggs (1961) because Esping-Andersen’s definition gives the state[nation] more power resulting in a greater responsibility to all citizens. In the first chapter of his book, *The Three Worlds of Welfare Capitalism*, Esping-Andersen expands his study into the welfare state by submitting two questions for the welfare state policy debate: (1) Will the salience of class diminish with the extension of social citizenship? (2) What are the causal forces behind welfare-state development? He also expands on the work of Marshall (1950) in terms of nation-building, economic modernization, and the development of extensive welfare states, which he argues will ideally reduce inequality across populations by redistributing resources across the entire population.

Viewing state[nation] power in any form as time-based and linear limits the generalizability of any theory of welfare state development. As Esping-Andersen states “it is problematic to hold that a numerical increase in votes, unionization, or seats will translate into an expansive welfare state” (p.17). The welfare state is not just a mechanism that intervenes to correct inequality structures; it is a system stratification that can aid in ordering social relations (Briggs, 1961). *I suggest that the ordering of social relations can be significantly affected by correcting inequalities in the population income distribution.* In doing so, social policy development becomes a critical element in this process.
Esping-Andersen’s concept of decommodification relates to Marshall’s (1950) concept of social rights because a nation’s level of decommodification can be translated in terms of the extent to which social rights have been developed in that nation. The three regimes relate to Briggs’s three goals in terms of the level of decommodification and subsequent regime classifications reflect a nation’s response to each of the three goals described previously. Finally, as previously discussed, Esping-Andersen’s three regimes expand Titmuss’s two-pronged model into a three-regime model using the construct of decommodification instead of a nations’ social policy response. Whereas Titmuss classified nations based on their use of market forces or social redistribution, Esping-Andersen classifies nations based on the economic security outcome, decommodification, in a nation.

Critiques of Esping-Andersen’s Typology

As briefly discussed in chapter one, critiques of Esping-Andersen’s typology are extensive. They range from an initial foray of critical book reviews to more recent research discussing the typology in terms of gender/ethnic issues and criticizing the basic development of the typology. Noted problems and limitations include: 1) a singular concentration on social insurance provisions and the simultaneous neglect of personal social services as contributing to social welfare; 2) the attention on the state [nation] and capital market as the sole provider of social welfare to individuals, which neglects the role of civil societal institutions, e.g., families, in providing additional social welfare; 3) failure to incorporate the societal role of women in the development of the typology regimes; and 4) the potential for misclassification given shifts in current economic and social policy (Arts & Gelissen, 1999).

Jensen (1999) provides a discussion on the shortcomings of Esping-Andersen’s typology in terms of lacking the ability to target population sectors versus the total population (Jensen, 1999). He suggests that the weaknesses of Esping-Andersen’s typology result from the attempt to develop a general theory of the welfare state, and argues a “sectoral”, i.e., micro, perspective is more useful. A micro perspective is more useful because different social actors (gender, age cohorts) have varying sociopolitical interests and are affected by welfare state social provision in different ways. This
approach is particularly important in comparative analyses to provide a more comprehensive view of the location of specific inequalities (Jensen, 1999).

The advent of work by researchers including Paul Pierson, John Myles, and Jill Quadagno suggests that Esping-Andersen’s typology may not encompass the current fiscal and political situation in many OECD nations. For example, it may not encompass contemporary Finland. Myles and Quadagno (1997) modify Esping-Andersen’s typology by suggesting that the advent of retrenchment (Pierson, 1994) is causing a convergence within the typology regimes among different European nations. They cite a “downward drifting trend line in the quality, generosity, and coverage of public entitlements is common among all [OECD] countries, irrespective of partisan ideologies or the balance of political forces (p. 264)” as the reason for this possible convergence (Myles & Quadagno, 1997). Other research suggests that the social democratic and conservative regimes are more likely to converge due to the limited role of PAYG pension systems found in these regimes (Pierson, 1997). However, these discussions are in the context of policy changes and no empirical evidence is offered.

The limited role of women in the development of Esping-Andersen’s typology has also been extensively addressed in the literature. Ann Orloff, Julia O’Connor, Diane Sainsbury, Debra Street, Jay Ginn, and Sara Arber have been at the forefront of gender-based research regarding welfare state development. Their research has offered gender-sensitive alternatives to Esping-Andersen’s three regimes typology.

Ann Orloff suggests in a survey of the literature on gender relations and the welfare state that current typologies fail to capture the full complexity of policy variation in terms of uniformity of effect and a linear dimension of variation. She further suggests that comparative research suffers from an inadequate theorization of the political interests of gender (Orloff, 1993). This conclusion is supported by research that suggests more generous [welfare] state provisions are required to shift older adult women out of a future of increasing later-life poverty (Ginn & Arber, 1993).

Orloff (1996) also examines the mutual effects of state social provision and gender relations and develops a conceptual framework for analyzing the gender content of welfare provision. She suggests that the additional dimensions of “access to paid employment and capacity to form and maintain an autonomous household” should be
included in the development of any welfare state typology to account for gender relations within the provision of social welfare (Orloff, 1996).

O'Connor (1993) expands this discussion by integrating class, citizenship, & gender in a comparative approach to welfare state regimes. She suggests that incorporating gender into the development of welfare state typologies requires that the woman’s household role be integrated with the labor market and state[nation] (O'Connor, 1993). It is asserted that the role of women must be configured into the concept of citizenship in order to remedy historical inequalities. This reconfiguration places greater importance on female personal autonomy than previous analyses of the welfare state, e.g. Esping-Andersen (1990), because previous studies ignore the relationship between class, gender, and racial stratification as companions of the welfare state (O'Connor, 1996).

More recently, Diane Sainsbury has criticized Esping-Andersen’s typology for lacking a component for non-working women in the development of his typology regimes (Sainsbury, 1999). She argues that women were only included in the development of Esping-Andersen’s typology if they were in the paid labor market and suggests that “this is problematic because women’s participation in the labour market cannot be equated with access to work-related benefits” (p.77). Sainsbury argues that to overcome these shortcomings, policy needs to be gender-constructed and legislation developed on gender relations. She offers a modified typology of a male breadwinner, separate gender roles, and individual earner-caregiver as three gender-sensitive worlds.

Sainsbury’s 1999 book, Gender and Welfare State Regimes, also expands O’Connor’s (1996) discussion of autonomy. She suggests entitlement is a determining and crucial factor in the contribution of social benefits and services to female autonomy. Her empirical analysis reveals that female status in the labor market produces gender stratification regarding access to benefits. This is the result of the assumption that the “primary breadwinner” in the household is male. It is argued that a redistributive strategy that combines flat rate benefits with earnings-related benefits steers clear of a forced choice between providing adequate and equal benefits for men and women. Recent welfare reforms that attempt to be gender neutral are found to be largely unsuccessful in reducing gender stratification. While welfare retrenchment has occurred
since the 1980s, downsizing strategies that maintain the basic citizenship and residence bases of entitlements uphold women's social rights, at least more so than other strategies (Sainsbury, 1999).

In addition, Sainsbury argues that mainstream research has a preoccupation with paid work and income maintenance and that care and service provision is not entered into the welfare state equation. She argues that Esping-Andersen’s regimes vary in response to gender-based policy issues. Conservative welfare states (Germany in this research) have been extremely reluctant to equate care and domestic services with work or fixed social benefits. Liberal regimes have a doctrine of minimal government intervention in family life and structure and rely on means-tested programs. In contrast, heavy state intervention is occurring in social-democratic regimes. Ginn, Street, and Arber’s 2001 book *Women, Work and Pensions* has added empirical evidence to the gender-based critique of welfare state research and Esping-Andersen’s typology. The book presents a collection of work reflecting the status of women and pension reform in several nations. The overall perspective is that while attempts have been made to respond to gender inequality relative to pension benefits and economic well-being in retirement, recent policy responses to retrenchment may produce less successful outcomes in the future for females (Ginn et al., 2001).

It is concluded from the critiques of Esping-Andersen’s (1990) typology that there is a need for gender and age-based micro analysis. Having outlined the problem and provided a theoretical context, we turn next to a more detailed description of the development of the pension system in Finland.
Chapter Three
The Case of Finland

History of Finnish Pension Policy

The first pension scheme in Europe was developed in Germany in 1889. Many other European countries also created pension schemes in the late 19th century. Finland, however, has been considered a "social laggard" relative to pension system development (Alestalo, 1986). Indeed, Finland was the very last European country to develop a pension scheme (1937), a circumstance that may reflect its late 19th and early 20th century agrarian economy (Salminen, 1994).

Over the course of the 20th century, the Finnish government has legislated policy modifications in a series of phases (See Table 3.1). A brief chronology of this legislation includes: inception of a universal pension scheme in 1937, modification of this universal pension scheme in 1956, introduction of an earnings-related pension scheme in 1961, legislation of survivor pensions in 1969, introduction of partial pensions and early pensions in 1986, the amendment of survivor pensions to include widowers in 1990, and further amendments of universal and earnings-related pensions in 1994, 1996 and 1998. This chapter will provide a brief description of these legislative milestones.

Table 3.1 Timeline of Finnish Pension Legislation

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<td>Universal pension</td>
<td>Modification of universal pension</td>
<td>Earnings-related pension</td>
<td>Survivor pensions</td>
<td>Partial and early pensions</td>
<td>Amendment of survivor pension</td>
<td>Amendment of both universal and earnings-related pensions</td>
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**National Pension Act of 1937**

The National Pensions Act was based on the idea of individual savings accounts, which were justified by reference to the idea that saving would promote the financially and educationally solid principle of self-help. The emphasis laid on self-help reflected the ideas of classical liberalism, then prevalent in Finland, which stressed responsibility, willingness to save, and individual initiative (Salminen, 1994).

The National Pensions Act transpired from the recommendation of the Committee on Old Age and Invalid Insurance commissioned in 1908 (Niemela &
Salminen, 1995a). The passage of the final legislation was delayed until 1937 because of the political climate in Finland between the two major political parties and the instability of European governments as a result of World War I. The Committee on Old Age and Invalid Insurance proposed a statutory pension insurance to cover all employees in Finland except civil servants. This exclusion was suggested because civil servants were covered under a separate social insurance plan. Pensions in Finland were conceived as social instruments to provide minimum subsistence in the event of work incapacity and old age. The Committee on Old Age and Invalid Insurance also recommended that administration of the system be given a strong democratic basis as this would ensure popular support. Consequently, the committee proposed that the administration of the pension system be placed under parliamentary supervision. Thus, the committee emphasized the idea of national unity and believed that a system based on providing minimal levels of subsistence for all workers would promote social cohesion among the working population and future retirees (Salminen, 1994; Timonen, 2001). The national pension system was shaped as far as possible on the basis of the private insurance model. This insurance model included the principle of individual savings linking benefits and invested contributions. National individual retirement accounts were further envisaged as a means of promoting a savings ethic among the working population (Niemela & Salminen, 1995a).

Despite the committee's report and proposals by various political parties, social provision in Finland in the 1920s and early 1930s was still mainly organized on the basis of municipal poor relief. This municipality empowering ideology created a 29-year impasse before political and economic events would occur to allow passage of the national statute. The end of the "Great Depression", a more tranquil political environment and, beginning in the mid-1930s, brisk economic growth made it possible to implement a statutory pension system by means of the National Pensions Act of 1937 (Brody, 1995). The Act emerged from a coalition government formed by the politically liberal Social Democrats and the conservative Agrarian Party, who were able to find a compromise on the content of a National Pensions Act covering the whole population.
National Pension Act of 1957

Post-war inflation has been cited as the main reason for the failure of the individual savings model as the foundation of the 1937 National Pension System Act (Niemela & Salminen, 1995a). As a result, the nature of the system changed from insurance to the care principle. A reform of the national pension systems was undertaken in 1956 and passed in 1957. This reform was proposed during a post-war change of both economic and domestic policies within Finland. There are several examples of these changing policies. First, rationing, which had continued for nearly 10 years after World War II, finally ended in 1955. Second, the Finnish working population instituted a general strike in March 1956 in protest for increased wages (Brody, 1995). Third, a national presidential election was held in January 1956 carrying the possibility of a shift in political parties. All these factors influenced the 1956 national pension reform political discussion. The end result was a failed compromise between the main government parties, the Social Democrats and the Agrarians (wage earners and farmers). As a result, the 1957 national pension reform proposal was introduced to the parliament in a still unrefined form at the beginning of 1956 as the government was unable to mediate among the various interest groups. This resulted in parliament stripping national pensions of the link to previous earnings, thus making them income-tested and flat-rate benefits, although the original government proposal had been crafted as a compromise between the farmers and wage-earners. PAYG (paying each year’s pensions with current contributions) replaced full funding as the mechanism for financing national pensions. The adoption of flat-rate pensions can be seen as an indication of the strong conservative political position of the farmers, which was further reinforced by the general workers’ strike.

The modified National Pensions Act was put into effect in 1957. Thirty years later, in the late 1980s, this law, somewhat reformed, was still the basis of Finland's National Pension Plan, a plan that was open to all residents over the age of sixteen, even those who had never paid into it. Even foreigners not from the Nordic countries were entitled to this pension if they had resided in Finland for at least five years. Those who left for residence in a country outside Nordic Europe, even those who were Finnish citizens, could receive the pension for only one year. The flat-rate national pension
could be paid as either an old-age pension (once a person reached the age of sixty-five); a full or partial invalid pension (to those between the ages of sixteen and sixty-four who were no longer able to work); or as a long-term unemployment pension (to unemployed persons in their late fifties or early sixties) (Salminen, 1994). In addition to these classes of beneficiaries, survivors of those eligible for national pensions who were not themselves independently eligible for the pensions could receive pensions under the terms of the Survivor's Pension Plan. Also tied to the National Pension Plan were payments for handicapped children living at home and for some combat veterans of World War II.

National pensions were indexed, and they increased in value each year. Since reforms of the early 1980s, national pensions were not taxable if they were the sole source of income. Pensions were no longer affected by a spouse's earnings or pension income, and the national pension could only be reduced by income from other pensions. The National Pension Plan was funded by the beneficiary's own contributions, about 2 percent of his or her locally taxable income, and by employer contributions of 4 to 5 percent of the insured person's wages.

**Employee Pension Plan Act of 1961**

The Employees' Pensions Act was passed in 1961 to supplement the National Pension Plan. While this National Pension Plan was adequate for rural Finnish people (a majority of the population until the 1960s), it provided inadequate benefits to sustain urban Finns given higher costs of living (Niemela & Salminen, 1995a). During the 1970’s, other compulsory wage-related pension plans were enacted into law for temporary employees, for national and local government employees, for those working for a state church, and for the self-employed. At the end of the decade, a supplementary plan was created for farmers as well. Seamen had received an income-based plan since 1956, and, as of 1986, those active in freelance professions such as acting and writing also obtained coverage. These employment pension plans were completely funded by the employers, private or public, who paid contributions, equal on the average to about 10% of a worker's earnings, into funds managed by seven large insurance companies or who set up funds on their own. Self-employed persons had to
choose a fund. The Central Pension Security Institute was responsible for keeping records about employment and benefits.

The normal age of pensionable retirement was sixty-five, and the pension paid was based on the average earnings one had received in the most recent four years of work ending two years before retirement (Tracy, 1979). One could receive up to 60% of private-sector earnings and up to 66% of public-sector earnings. Older employees, at work before these pension plans became effective, were guaranteed a minimum pension of at least 29% of previous income if they retired before 1975, and 37% of previous income if they retired after this date. Like the national pension, wage-related pensions were indexed, and they increased each year. In addition, there were provisions relating to disability, early or late retirement, and survivors' benefits similar to those in effect for the National Pension Plan.

**Survivor Pension Act of 1969**

In 1969, the Finnish government enacted legislation for the provision of survivor pensions. In effect, this legislation linked an individual's pension to the marital unit rather than just the individual. For example, when a pensioner dies, the surviving spouse has the choice of receiving the deceased pensioner's remaining pension or his/her own. This legislation represented an expansion of the welfare state in Finland.

**Partial Pension and Early Pension Act of 1986**

During the economic recession in Finland in the mid-1980's, legislation was enacted to provide mechanisms to receive partial and early pensions. This legislation was an attempt to reduce the pension burden on the Finnish welfare state by reducing the number of people receiving a full pension during retirement (Salminen, 1994). These changes in social policy were examples of legislation designed to slow down or reduce the expansion of social-welfare expenditure (Alber, 1988; Alber, 1994).

**Retrenchment: Amendments to the Universal and Earnings-Related Pensions in 1994 and 1996**

Pension benefits were reduced during the early 1990's. These reductions were aimed mainly at decreasing the actual number of people receiving a pension. The 1994
legislation to change the method of pension indexation was an attempt to slightly reduce the number of pensioners. In addition, the limit for early retirement was raised and the age limit for part-time pensions was lowered during 1994. This legislation reduced the number of people eligible to receive a pension with the establishment of a minimum-working period and “future period” condition for the unemployment pension (Niemela & Salminen, 1995a).

The national (universal) pension was legislated in 1957 to ensure minimum economic security for pensioners who did not receive other pensions or whose other pension security was below a minimal subsistence level. In 1996, legislation was enacted which no longer entitled every citizen to a national (universal) pension. Since 1996, a person is only eligible to receive the national pension if the earnings-related pension income exceeds a specific limit. However, separate pensions supplements can be paid to recipients of the national pension whose income (including the national pension) falls below a minimal subsistence level (European Commission. Directorate General for Employment and Social Affairs. Unit E.2, 2000).

The outcome of these political processes and trends is the present Finnish pension system. This system still consists of a universal component, an earning-related component, and a survivor’s component. Detailed information on the structure, eligibility, and benefits within the Finnish Pension System is provided in Appendix A.

Current Pension Reform Status

I conclude this chapter with a summary of the current status of pension reform in Finland and its relationship to Esping-Andersen’s typology. Several features of the pension system discourage employment of the working-age population and, if left unchanged, will seriously aggravate the aging impact on the Finnish population. While the existing schemes for early retirement may have lessened the social impact of the recession in the 1980’s, if early retirement remains the norm rather than the exception it used to be, both current and future generations will have to pay the price. The government and the related pension agencies (Central Pension Security Institute and the Social Insurance Institute) have acknowledged this in past reform efforts and ongoing discussions to further improve the pension system. Nevertheless, the system
contains a number of characteristics, introduced with good intentions, which effectively defeat their purpose. For example, part-time pensions were introduced to keep people in the work force who otherwise would have taken early retirement. However, by enabling these "pensioners" to work part-time without losing much of their earnings and none of their pension rights, part-time pensions provide strong incentives to lower, rather than increase, working hours. The so-called unemployment pipeline to retirement, by providing benefits at little loss to income and a ready path to the unemployment pension at age 60, too often serves as a blanket discouragement to job search, irrespective of a person's skills and chances of becoming reemployed. It also provides a ready excuse for employers to lay off older workers. Indeed, under the current system of financing unemployment pensions, larger firms face rising contributions as the age of their employees increases, and also bear part of the direct cost of unemployment and disability. This provides a strong disincentive for keeping or hiring older workers. The same holds for disability pensions, traditionally the primary channel into early retirement. The sheer number of disability pensioners suggests that eligibility requirements may have been interpreted too generously relatively to the fiscal cost to Finnish society.

Three other features of the pension system dramatically weaken incentives to join the labor force early or participate in it until the statutory retirement age of 65 -- further diminishing the attractiveness of a longer working life. These features also imply that the benefits to those with shorter working lives are comparatively high at the expense of those who work longer. First, pension rights accumulate only from the age of 23, irrespective of when a person starts working, making early participation in the labor force financially less attractive. Second, pension benefits are linked to earnings over the last ten years of employment, implying an unduly large penalty for taking on a lower paid job at later stages of the working life, while favoring people, often those with better jobs and education, who have a steeper pay scale due to promotions later in their career. Third, the cap on pension benefits at 60% of the so-called pensionable wage can further diminish the attractiveness of a longer working life because there is no benefit accrued from working longer at a similar salary.
Particularly when the population is aging so rapidly, these incentive problems are acute, prompting the Social Insurance Institute (KELA) to recommend urgent reforms. These reforms, many of which are currently under active discussion between the government and related pension agencies, focus on strengthening the link between pension benefits and lifetime contributions and on removing the various elements of the system that push older people out of gainful employment. To this end, a number of measures, taken in combination, would seem to be most effective: (i) allowing the accumulation of pension rights from the beginning of each person's working life; (ii) abolishing the cap of 60% on pension rights along with the higher old-age accumulation rate; (iii) introducing a more flexible retirement age within a reasonable range, taking into account changes in life expectancy when determining pension benefits; (iv) discontinuing the various subsidized schemes, such as part-time and unemployment pensions, together with the "unemployment pipeline"; (v) enforcing strictly the eligibility requirements for disability pensions; and (vi) reforming the financing system for unemployment and disability pensions to eliminate the bias against hiring and keeping older workers. The International Monetary Fund has strongly encouraged the swift adoption of these reforms in time to influence the decisions of the aging "baby boomers" in Finland.

It is critical to discuss at this point the manner in which trends in the Finnish pension system relate to the welfare state status of Finland vis-à-vis Esping-Andersen's typology. Finland's recent pension policy modifications may indicate an increasing policy orientation away from full employment policies characteristic of a social-democratic regime. The question then becomes "In which direction is Finland moving?" This pattern of policy change and subsequent fiscal outcomes in the Finnish Pension system may parallel Finland's inequality outcomes movement from a social-democratic to a liberal or conservative regime within the framework of Esping-Andersen's typology. This research will use the Atkinson and Theil indices in concert to examine both cross-sectional snapshots and longitudinal trends in inequality. As shown in Figure 3.1, Finland may be shifting away from the social-democratic regime with respect to the overall population or selected subpopulations. Finland may exhibit a new combination of regime characteristic indicating a need for modification to the typology.
With a deeper understanding of the current situation in Finland, we turn next to the research design and methods employed for an empirical analysis, which sought to investigate the manner in which Finland is changing with regard to its classification within Esping-Andersen’s typology.

Figure 3.1 The Changing Welfare State Regime of Finland?

Adapted from Esping-Andersen’s (1990) Three Worlds of Welfare Capitalism
Chapter Four  
Research Design and Methods

This chapter outlines the research design and methods employed for the analysis. First, the research design is discussed in terms of a comparative analysis and related 2001 field research on policy development conducted in Finland. Next, information on data and policy sources is provided in detail followed by presentation of technical considerations related to the statistical coding. Finally, four inequality measurements, Lorenz curve, Gini, Atkinson, and Theil indices, are reviewed with a subsequent discussion of the dual-index (Atkinson and Theil) analysis design used in this research.

Research Design

This study utilizes the constant comparative method in cross-sectional and time-series analyses to address the stated specific aims: to investigate the continuing viability of Esping-Andersen’s welfare state typology at a national (macro) level with respect to the case of Finland; to explore a new analytical approach by disaggregating the population and conducting micro analyses incorporating considerations of gender and age cohorts; and to examine the value of utilizing more sensitive inequality indices (Atkinson and Theil) over the more commonly used Gini index.

Ragin (1994) defines the constant comparative method in his book *Constructing Social Research*. The constant comparative method, originally developed by Glaser and Strauss (1967), is defined as “a general technique used by qualitative researchers to aid the formulation and clarification of concepts in the process of collecting data” (Ragin, 1994, p. 185). This research adapts the constant comparative method to the examination of Esping-Andersen’s typology by comparing exemplars of each regime type with Finland across the variable income inequality. It has been argued that the comparative method, when used with certain quantitative strategies, can approach the “scientific rigor” of statistical or variable-based inquiry (Ragin, 1987). This method is described extensively in analytic comparisons of inequality (Alber, 1994; Gornick, Meyers, & Ross, 1998; Gran, 1997; Kalleberg, 1988; Kangas & Palme, 1989; Treas &
Widmer, 2000); however, it is rarely named as a specific research method when used by economists (Arkes, 1998; Bager-Sjogren & Klevmarken, 1998; Hoffmann, 1998; Partridge, Rickman, & Levernier, 1996; Smeeding & Gottschalk, 1999; Wolff, 1996). Additional quantitative analysis, the generation of confidence intervals, is used to validate the specific income inequality indices used in the comparative discussion (Ragin, 1994).

This research examines Finland in comparison with three other nations using the ‘most different’ strategy within a comparative context. The definition of this strategy is counterintuitive from its name. The “most different” strategy is defined as the process of detecting and comprehending patterns of similarity and difference among, in this case, nations distinguished by different regime types (Castles, 1985, p. 5). Thus, if a similarity across a specific inequality index is noted between Finland and Germany, then a regime shift may be occurring. To conduct this research design, micro-level outcomes data for Finnish pensioners are compared to micro-level outcomes data of a social democratic nation (Sweden), a liberal nation (the United States), and a conservative nation (Germany) as defined by Esping-Andersen’s typology. This research design places Finland at the center of the comparison while benchmarking Finland against nations categorized within the Esping-Andersen’s typology in order to examine potential regime shifts as described in Chapter 3 (See Figure 3.1).

Income Inequality Data Source

The availability of the Luxembourg Income Study (LIS) comparative database provides a wonderful opportunity to analyze the research questions proposed in this dissertation. This database consists of harmonized cross-national microdata on income for 25 countries. Three or four waves of data are available for most of these countries. As a result, this source is widely acknowledged to be the best international comparative source for cross-sectional and longitudinal trend analyses of income distribution. LIS data are the source of the majority of empirical evidence on comparative income, poverty, inequality estimates, and other economic indices of well-being among OECD nations in recent decades. For a detailed presentation of the data and the national data
sources used see (Atkinson, Rainwater, & Smeeding, 1995) or the LIS homepage at http://www.lisproject.org/dataaccess.htm.

LIS data are used to conduct a comparative analysis between Finland (a social democratic nation) and Sweden (another nation defined as social democratic by Esping-Andersen), between Finland and Germany (a conservative nation), and between Finland and the United States (a liberal nation). The data cover the period from the early 1980s to the mid-1990s. Because LIS data do not include annual observations, there is a slight cross-national variation in the years in which observations are recorded and incorporated in the definition of waves by LIS for each country. The selection of countries for inclusion in the comparative analysis was based on two criteria. The first criterion was the practical concern of data availability. Second, and more important, an array of countries was selected to represent the three welfare state regimes classified in Esping-Andersen’s typology (Esping-Andersen, 1990).

The following analysis compares Finland data from Wave II (1987), Wave III (1991), and Wave IV (1995) with all waves of data for the United States, Sweden, and Germany (See Table 4.1). Finland utilizes only three datawaves because data for Wave I were unavailable. However, the use of only three datawaves for Finland still meets the current research standard for analyzing time-series trends. “Trends of income distribution are analyzed by comparing static distributions at generally three points in time” (Forster, 2000)(p.72). Wave I was used for the United States, Sweden, and Germany to provide an earlier baseline and more comprehensive within-country trend analysis for these nations.

United States data observation years are consistent with Finland for Wave III (1991), but are one year earlier for Wave II (1986) and Wave IV (1994). The Swedish data observation years are consistent with Finland for Wave II (1987) and Wave IV (1995), but are one year later for Wave III (1992). The German data observation years also exhibit cross-national variation in observation year. Wave II (1984) for Germany is three years earlier than Wave II (1987) for Finland. Wave III (1989) for Germany is two years earlier than Wave III (1991) for Finland. Wave IV (1994) for Germany is one year earlier than Wave IV (1995) for Finland.
Table 4.1 LIS Dataset Information for Comparison Nations

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<tbody>
<tr>
<td>Finland</td>
<td>FI</td>
<td>Unavailable</td>
<td>1987</td>
<td>1991</td>
</tr>
</tbody>
</table>

Adapted from Luxembourg Income Study website data information. [http://www.lisproject.org](http://www.lisproject.org)

The official data survey sources differ for each nation and some datawaves. Data for Finland for all three waves (1987, 1991, and 1995) were collected from the Finnish Income Distribution Survey (Luxembourg Income Study (LIS), 1997). This survey is a registry-based population survey administered by Statistics Finland in Helsinki. The survey samples generated by Statistics Finland were subsequently harmonized and weighted for household size to match the overall population by LIS for inclusion in the LIS database. Data for Germany in 1981 were collected from the German Transfer Survey, while German data for the remaining waves (1984, 1989, and 1994) were collected from the German Socio Economic Panel Study (Luxembourg Income Study (LIS), 1997). Both surveys are administered by Statistics Germany in Berlin and collected by LIS via The German Institute for Economic Research. The survey samples were subsequently harmonized and weighted for household size to match the overall population by LIS for inclusion in the LIS database. All datawaves for Sweden (1981, 1987, 1992, and 1995) were collected from the Swedish Income Distribution Survey (Luxembourg Income Study (LIS), 1997). This survey is administered by the Swedish Central Bureau of Statistics in Stockholm. The survey samples were subsequently harmonized and weighted for household size to match the overall population by LIS for inclusion in the LIS database. Finally, all datawaves for the United States were collected from the March Current Population Survey (Luxembourg Income Study (LIS), 1997). This survey is administered by the United States Census.
Bureau in Washington, DC. The survey samples were subsequently harmonized and weighted for household size to match the overall population by LIS for inclusion in the LIS database.

In July 1999, I attended the Annual Luxembourg Income Study Workshop. The pre-doctoral workshop was seven days long and provided comprehensive training on the use of the LIS database in comparative income distribution research. The workshop provided a forum for young scholars to discuss research ideas with key LIS personnel and provided a social venue to build collegial relationships for future collaborative research. This workshop was a critical component in the development of this research. It facilitated locating expertise on the LIS data.

Sources of Information on Pension Policy

National policy on pension programs and regulations for Finland and selected comparison nations was provided from governmental websites of the respective nations, various OECD reports, various book chapters, and journal articles on public policy (See Table 4.2).

Additional information and translations of non-English material for Finland were provided by expert colleagues in the Department of Social Policy at the University of Turku, Finland, namely Dr. Ollie Kangas, Dr. Veli-Matti Ritakallio, Ms. Susan Kuivalainen, and Ms. Tiina Makinen. These colleagues are all familiar with the LIS data and many have attended or given lectures at selected LIS research workshops offered each summer by the CEPS/INSTEAD Institute in Luxembourg. I also was fortunate to meet with Dr. Heikki Niemela, of the Finnish Social Insurance Institute and Dr. Kari Juhani Salminen, of the Finnish Central Pension Institute. Dr. Neimela is the Finnish Pension Minister and Dr. Salminen is the Finnish Pension Historian. Both individuals were instrumental in my ability to locate documents on the development of the Finnish pension system.

During late May through early June 2001, I conducted a fact-finding trip to Finland. Arrangements were made with the University of Turku, Department of Social Policy in Turku, Finland to be received as a visiting scholar from the University of Kentucky. The purpose of the trip was to discuss my research and issues surrounding
Finnish pension policy with leading pension experts and researchers in the country. The visit consisted of several interviews with policymakers, and national pension officials both in Turku and Helsinki. In conjunction with this visit, arrangements were made to interview a Swedish colleague, Eero Carroll, at the University of Stockholm. This interview consisted of questions and discussions surrounding differences between Finland and Sweden’s recent pension policy reforms and implementation. Policy information for the United States was obtained through both print and web media.

**Table 4.2 Sources of Information on Pension Policy**

<table>
<thead>
<tr>
<th>Source</th>
<th>Finland</th>
<th>Sweden</th>
<th>Germany</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD pension reform reports (Forster, 2000; Kalisch &amp; Aman, 1997; Kalisch et al., 1998)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Niemela and Salminen reports on Pension Schemes (Niemela &amp; Salminen, 1995a; Niemela &amp; Salminen, 1995b)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Comparative Scandinavian Pensions (Salminen, 1994)</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>National Government Websites (<a href="http://thomas.loc.gov">http://thomas.loc.gov</a>)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>(<a href="http://government.fi">http://government.fi</a>)</td>
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<tr>
<td>(<a href="http://www.sweden.gov.se/">http://www.sweden.gov.se/</a>)</td>
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<tr>
<td>(<a href="http://eng.bundesregierung.de">http://eng.bundesregierung.de</a>)</td>
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<tr>
<td>World Bank and International Monetary Fund reports</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>European pension reports (European Commission, 1999; European Commission on Financial Services, 1999)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Social Security Administration (<a href="http://www.ssa.gov">http://www.ssa.gov</a>)</td>
<td></td>
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<tr>
<td>20th Century Foundation (<a href="http://www.tcf.org">http://www.tcf.org</a>)</td>
<td></td>
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</table>
Examples of these sources include the Social Security Administration, the 20\textsuperscript{th} Century Foundation, and the OECD. Policy information for Germany was also obtained through print and web media, including material from the OECD and Taylor-Gooby’s (2001) book \textit{Welfare States under Pressure} (Taylor-Gooby, 2001).

Technical Considerations

This section presents methodological issues and resulting decisions with respect to analysis of the data. These methodological issues include: the definition of income and income inequality; population coverage; equivalence scale usage; data weighting; top and bottom coding; missing value and zero value management; unit of analysis, and specific statistical code usage. Disposable Personal Income (LIS aggregate income variable DPI) was used as the analytic measure of income and the basis of data on income inequality for this research. Population coverage of the selected LIS data consisted of all surveyed households and their family members. An equivalence scale was used to calculate comparable income measures for all datasets. I used the OECD equivalence scale \([\text{square root of the number of persons in the household}]\), which is standard procedure in LIS analyses (Smeeding & Gottschalk, 1999).

Since the analysis was focused on the incomes of older adults, the data were weighted by applying the household weight (LIS variable HWEIGHT) multiplied by the number of people over 65 in the sample (LIS variables NUM6574 and NUMGE75). Weighting for the number of older adults allows for the calculation of the inequality indices to reflect all older adults in the samples regardless of their household location. In other words, the data are weighted to account for all older adults in the samples whether they live in a single-family household as head of household; with a spouse; with a roommate; or live with their children. In addition, weighting procedures allow for the samples to take on the analytic characteristics of the entire population. Missing values, negative and zero incomes were excluded from the analysis as is standard procedure for LIS analyses (Atkinson et al., 1995; Smeeding & Gottschalk, 1999; Smeeding, O'Higgins, & Rainwater, 1990). Although the LIS technical bulletin provides comparability warnings for some of its datasets, the datasets chosen for this analysis had no warnings issued and are comparable within the context of the inequality indices.
interpretations. The final technical consideration is the unit of analysis. This research uses the LIS household surveys for each nation's datawave adjusted for older adults. The unit of analysis is the individual older adult within the household.

Program Descriptions

Two Stata 6.0 statistical programs were employed to analyze the LIS data at the aggregate and disaggregated (gender, age, age by gender) level. The programs are briefly described below. A full example of the statistical code for data replication is provided in Appendix B.

Ineqdeco

The ineqdeco Stata 6.0 program estimates a range of inequality and related indices commonly used by researchers. In addition, inequality decompositions of a subset of these indices by population subgroup are calculated. Inequality decompositions by subgroup are useful for providing inequality "profiles" at a point in time, and for analyzing secular trends. Micro level data, such as the LIS data, are required to use this program (Jenkins, 1999).

Ineqerr

The ineqerr Stata 6.0 program computes the Theil entropy index and bootstraps estimate of their sampling variances, i.e., confidence intervals. The program offers three variations of the bootstrap variance: Normal, Bias-corrected, and Percentile. I selected the normal variation because the LIS data are harmonized. The default value of 100 was used to generate the number of bootstrap repetitions. Bootstrap replications for this program are generated using a simple-stage, simple random draw on the respective samples (Jolliffe and Krushelnytskyy, 1999).

Inequality Measures

The measurement of inequality is not an exact science by any assessment (Cowell, 2000; Mitchell, 1991). Researchers have numerous indices from the field of econometrics at their disposal. Unfortunately, there is no template of suitability relative to either the type of analysis or data format. All inequality measures are generated from
similar income data and are justifiable in a comparative analysis. The overall opinion of researchers is that the ultimate decision is left to each individual researcher based on his/her specified needs (Mitchell, 1991; Smeeding et al., 1990).

Independent of the plethora of inequality measures available to the researcher, the issue of inequality as an issue of concern relative to pension viability and Esping-Andersen’s typology should be addressed. In other words, why do we care about income inequality? There are several reasons. First, in the context of the development of social rights and the welfare state in general, it can be argued that income inequality would be lower or eliminated altogether in nations with highly developed social rights and high levels of decommodification. Second, relative to pension viability, income inequality can affect the pension policy debate. Pension policy modifications may be unduly influenced by individuals or groups with higher incomes because of their access to legislators, thus disenfranchising certain income groups from the political process and decreasing their economic security and economic well-being.

The measurement of welfare state outcomes has developed as extensively as the income inequality literature itself. Over the years, economists have used a variety of measures to determine the amount of inequality in an income distribution. Some of these are commonly used, although rudimentary, statistical measures of dispersion. However, researchers have developed others for the specific purpose of estimating the degree of inequality. The most commonly used income inequality measures include: The Lorenz curve, the Gini coefficient, the Theil index, and the Atkinson index (Atkinson et al., 1995; Cowell, 2000; Jenkins, 1991; Mitchell, 1991; Smeeding, 1991; Smeeding et al., 1990). In this section, the analytic property of each measure will be addressed and where appropriate, research advantages and/or limitations of each will be presented as basic guidelines for analysis.

**Lorenz Curve**

The Lorenz curve is the most basic measure of income distribution and related inequality (Cowell, 2000). It is graphically represented as a diagram showing the cumulative percentage of national income received (or percentage of national expenditures paid) by a certain percentage of individuals or households. Thus, if all
individuals or households have equal shares of income (20% of households have 20% of the national income), the “curve” is actually represented as a 45° line. However, this ideal situation is never achieved in society, so the Lorenz curve actually deviates from the perfect equality 45° line. The closer the Lorenz curve is to the perfect equality line, the lower the level of inequality in that population. The purpose of the Lorenz curve is to depict the difference of actual income or expenditures from perfect equality among individuals or households (Cowell, 2000; Mitchell, 1991). Figure 4.1 and Figure 4.2 show an unequal and equal depiction of the Lorenz curve, respectively.

**Figure 4.1 Unequal Lorenz Curve**
Gini Index

The Gini coefficient compensates for non-dominant Lorenz curve comparisons by creating a ranking statistic (Milanovic, 1997). Non-dominance occurs when comparisons are made between different income distributions and the Lorenz curves intersect meaning that the Lorenz curves do not show any dominant ordering (See Mitchell 1991, p.107). For this reason, the Gini Index is closely related to the Lorenz curve (Mitchell, 1991). This measure estimates the area between the Lorenz curve of perfect equality (the 45° diagonal line) and another Lorenz curve reflecting a certain amount of inequality (the bowed line). In simplest terms, it is calculated by dividing the area within the Lorenz curve and the diagonal line (A) by the total area under the diagonal line (A+B). Thus, the formula is A/(A+B) (Cowell, 2000). Figure 4.3 shows the calculation of the Gini Index in graphic form. The Gini Index is a measure of dispersion (also referred to as concentration) within a group of values, calculated as the average difference between every pair of values divided by two times the average of the sample. Thus, the larger the Gini coefficient, the higher the degree of dispersion and greater inequality within the measured population.
Changes in the Gini index are most sensitive to income transfers occurring in the middle of the income distribution because it is based on the Lorenz curve, which also reflects the cumulative percentage of incomes received by households. This concept is defined as income transfer sensitivity (Jenkins, 1991). Calculations of the Gini Index for distributions where income transfers have occurred at either of the extremes of the distribution are misleading because the coefficient will not accurately reflect the correct income concentration (Atkinson, 1970).

Figure 4.3 Gini Calculation shown with the Lorenz Curve

Several researchers have attempted to modify the Gini coefficient for use in other analyses. Riese (1997) interpreted the Gini-index as a measure of the goodness of prediction even though it was not established as a general member of the family of these measures. However, he demonstrated that it could be used in certain applications of survival analysis (Riese, 1997). The Gini index also has been modified to measure the significance of any observed change in inequality. Blackburn (1989) accomplished this by modifying the Gini coefficient calculation. He redistributed a constant income amount from every household below the median income level to every household above the median income level (Blackburn, 1989). Theoretically, this modification provides a temporal equalizer for multiple income distributions and allows for better comparative research analysis. The Gini coefficient also has been used in
income convergence research (Iacoviello, 1996), and has been decomposed in a manner similar to the Theil index (Yao, 1999).

**Atkinson Index**

The Atkinson index was created to correct a problem caused by both non-dominant Lorenz curves and transfer sensitivity inherent in the Gini coefficient (Atkinson, 1970). The equations is:

\[ I_{\varepsilon}^A(F) := 1 - \frac{1}{\mu(F)} \left[ \int x^{1-\varepsilon} dF(x) \right]^{\frac{1}{1-\varepsilon}} \]  

(Cowell, 2000, p. 115), where x is the individual income of an observation, F is the income distribution of the entire measures population, and \( \varepsilon \) is the inequality aversion parameter. This problem is rectified because of a characteristic unique to the Atkinson Index. Using the Atkinson Index, the researcher can actually control for income inequality sensitivity, i.e., where the most transfer-sensitive area in the income distribution can be pre-determined for the analysis. This selection control statistic is represented by the Greek letter epsilon (\( \varepsilon \)). As epsilon rises, the index becomes more sensitive to changes occurring in the lower end of the income distribution. Overall, the Atkinson measure provides the potential for better interpretation of the actual location of income transfers within the distribution (Ryscavage, 1999). Jenkins (1991) has provided an additional interpretation of epsilon. He discusses the Atkinson Index in terms of the “equally distributed equivalent income” meaning the total national income which, if equally distributed, would be “just as good” as the actual income distribution measured (p.28). The argument inherent in this description is that caring about inequality at all requires some tradeoff in national income to reduce the income inequality. The value selected for epsilon in the analyses determines the level of “inequality aversion” acceptable to the population.

It has been suggested that the application of Atkinson’s social welfare approach to the analysis of intercountry inequality is a natural extension of recent research (Firebaugh & Gibbs, 1985; Fritzell, 2001). By setting epsilon (\( \varepsilon \)) at different values, we can compare trends in intercountry inequality based on different assumptions about the relative welfare impact of income transfers. The larger the \( \varepsilon \), the more heavily the index is weighted by the lower end of the income distribution (Jenkins, 1991). Thus, by
comparing trends in intercountry inequality for different values of $\varepsilon$, we can determine the extent to which conclusions about trends in intercountry inequality depend on the relative weight given to the lower and upper ends of the income distribution (Firebaugh, 1999). For this research, epsilon has been set to $\varepsilon=.5$, which is a moderate level of inequality aversion to allow for comparison to other LIS analyses. Epsilon ranges from 0 to 2.0 in most research. However, epsilon could have been set at different levels for each of the four nations by making certain assumptions about each nation’s welfare state policy. For example, the Swedish analysis could have been conducted with $\varepsilon=2$ because the Swedish welfare state exhibits high income redistribution through taxation.

**Theil Index**

The Theil index is used to construct inequality measures for temporally inconsistent income distributions (Theil, 1967). The Theil equation is:

$$I_{\text{Theil}}(F) := -\int \frac{X}{\mu(F)} \log \left( \frac{X}{\mu(F)} \right) dF(x)$$

(Cowell, 2000, p. 109), where $x$ is the individual income of an observation, and $F$ is the income distribution of the entire measures population. If the distribution units (individuals, households, etc.) are grouped in mutually exclusive groups, overall inequality can be separated into both a between and within-group component for analysis. Neither the Gini Index nor the Atkinson Index allow for income inequality decomposition. The Theil index measures greatest sensitivity with income transfers within lower income households, which is similar to the situation when the variance of the natural logarithm is used. As discussed in the previous section, the selection of $\varepsilon=.5$ for the Atkinson Index also increases the Atkinson Index’s sensitivity to lower income households, thus creating a similarity to the Theil Index. In addition, the more critical feature of the Theil Index in this research is the ability to generate confidence intervals for the coefficient. Confidence intervals can be generated for the Theil index, thus increasing the validity of the coefficients at cross-sectional time periods. In contrast to the Atkinson Index, there is no intuitive interpretation for the specific Theil coefficient or its resulting longitudinal change (Wolff, 1997). Interpretation of changes over time must be kept in a broad context.
As shown by the range of research measures described in this section, there is no consensus on a single preferred measure of inequality (Mitchell, 1991; Ryscavage, 1999). One possible explanation for this incongruity is the complex nature of income inequality as an analytic topic. The examination of several measures offers researchers a simple solution to this dilemma, thus providing a more representative interpretation. This solution also is a critical point for policy analysts and government officials because the location of the inequality may drive policy. Misinterpretation of the inequality can have detrimental effects on certain income groups because of erroneous policy decisions. Concurrently, Mitchell (1991) suggests that the sheer scope of analytic tools creates inherent inequality measurement challenges for the researcher. However, she emphasizes that each measure is "equally applicable in a comparative context" (p.105). This implies that significant caution be taken in measurement tool selection because the “nature of inequality trends often depends on the measure being used" (Morris, Bernhardt, & Handcock, 1994). Researchers must develop individual modeling techniques based on the specific type of inequality being analyzed. This research will compare outcomes from two indices (Atkinson and Theil) across the selected nations and data subpopulations.

Analyses

In the following chapters, analyses for this research are undertaken in two phases. Phase I (Macro) encompasses several steps. First, sample sizes were reviewed to determine subgroup classifications (age groups, gender, education, etc.) for calculating the Atkinson and Theil indices. Second, LIS data for the selected countries were examined for missing data and income variables were chosen to enter into the calculation of the respected indices. Currently, the statistical syntax code used to calculate both the Atkinson and Theil indices utilizes a specific aggregated income variable (disposable personal income) within the LIS data.

Phase II of the analysis (Disaggregation) consisted of submitting batch Stata code to the LIS server to calculate the Atkinson and Theil Waves I-IV of the selected nations’ data. The analysis matrix is presented in Table 4.3. The dual-index approach provides a more robust measure of income inequality because the interpretability of the
Atkinson Index is combined with the bootstrap confidence interval estimates generated for the Theil Index.

Separate analyses using different coefficients allows for a more complete comparison of Finland with the United States, Germany and Sweden because the analysis generates multiple measures with different empirical qualities. Each measure is compared across each nation selected. Strengths and weaknesses of each

Table 4.3 Research Analysis Matrix

<table>
<thead>
<tr>
<th>Nation</th>
<th>Macro Overall</th>
<th>Micro Age &amp; Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Atkinson</td>
<td>Theil</td>
</tr>
<tr>
<td>Finland</td>
<td>I</td>
<td>CI</td>
</tr>
<tr>
<td>United States</td>
<td>I</td>
<td>CI</td>
</tr>
<tr>
<td>Germany</td>
<td>I</td>
<td>CI</td>
</tr>
<tr>
<td>Sweden</td>
<td>I</td>
<td>CI</td>
</tr>
<tr>
<td>I = Interpretable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI = Confidence Interval</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

measure are discussed relative to classifying nations using Esping-Andersen’s typology as well as offering possible modification to Esping-Andersen’s existing typology from the research findings that will incorporate current economic and political movements such as retrenchment.

We turn next to the presentation of results. Results will be presented over the course of three chapters: Chapter Five will present results from the macro analysis; Chapter Six will present results from the micro analysis; and Chapter Seven will present results from the generation of confidence intervals for the Theil Index.
Chapter Five

Macro Analysis Results

This chapter describes the macro analyses of data for each country (United States, Germany, Sweden and Finland) using older adult poverty levels as well as the aggregate Atkinson and Theil indices of income inequality. Descriptions are given for within-country trends and the relative change over time in comparison to Finland. The overall sample size (number of individuals) for each national datawave is presented in Table 5.1. One caveat is that the German samples are smaller than the other three nations. Also, the United States sample increased three-fold for Wave IV because the U.S. Census Bureau collected more data in the Current Population Survey.

Table 5.1 Sample Size for Each Datawave (Individuals within Households)

<table>
<thead>
<tr>
<th></th>
<th>Wave I</th>
<th>Wave II</th>
<th>Wave III</th>
<th>Wave IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>NA</td>
<td>1721</td>
<td>1611</td>
<td>1312</td>
</tr>
<tr>
<td>Sweden</td>
<td>1008</td>
<td>1137</td>
<td>1755</td>
<td>4488</td>
</tr>
<tr>
<td>Germany</td>
<td>600</td>
<td>844</td>
<td>691</td>
<td>1095</td>
</tr>
<tr>
<td>United States</td>
<td>2894</td>
<td>2471</td>
<td>3179</td>
<td>12523</td>
</tr>
</tbody>
</table>

The level of inequality change over time (cardinal measure) is categorized using a scale developed by OECD economists and presented in Table 5.2 (Forster, 2000).

Table 5.2 OECD Trend Level Scale

<table>
<thead>
<tr>
<th>Level of change in inequality trend</th>
<th>Percentage point range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant rise</td>
<td>More than +12 points</td>
</tr>
<tr>
<td>Rise</td>
<td>+7 to +12 points</td>
</tr>
<tr>
<td>Modest Rise</td>
<td>+2 to +7 points</td>
</tr>
<tr>
<td>No Change</td>
<td>-2 to +2 points</td>
</tr>
<tr>
<td>Modest decrease</td>
<td>-2 to -7 points</td>
</tr>
<tr>
<td>Decrease</td>
<td>-7 to -12 points</td>
</tr>
<tr>
<td>Significant decrease</td>
<td>More than -12 points</td>
</tr>
</tbody>
</table>

Adapted from Forster (2000, p. 74)

In addition, the Pearson correlations between the Atkinson and Theil coefficients for the overall population and subpopulations for all nations are presented in Table 5.3 Correlations between Atkinson and Theil Indices below. As shown, the indices are highly correlated, which supports the use of the dual-indices analytic approach to this
research (Mitchell, 1991). The confidence intervals generated for the Theil indices will lend validity to the interpretation of the corresponding correlated Atkinson indices.

Table 5.3 Correlations between Atkinson and Theil Indices

<table>
<thead>
<tr>
<th>Data Category</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>0.989</td>
</tr>
<tr>
<td>Male Cohort</td>
<td>0.994</td>
</tr>
<tr>
<td>Female Cohort</td>
<td>0.994</td>
</tr>
<tr>
<td>65-74 Age Cohort</td>
<td>0.992</td>
</tr>
<tr>
<td>75+ Age Cohort</td>
<td>0.982</td>
</tr>
<tr>
<td>Male 65-74 Cohort</td>
<td>0.996</td>
</tr>
<tr>
<td>Female 65-74 Cohort</td>
<td>0.987</td>
</tr>
<tr>
<td>Male 75+ Cohort</td>
<td>0.982</td>
</tr>
<tr>
<td>Female 75+ Cohort</td>
<td>0.988</td>
</tr>
</tbody>
</table>

Within Nation Analysis

**United States**

Over the four waves of the United States data (1979-1994) in the Luxembourg Income Study, the proportion of United States older adults who were living in poverty as measured by reporting disposable personal income below 50% of median income (Sainsbury, 1999) actually decreased from 27.30% in Wave I (1979) to 20.60% in Wave IV (1994) (See Figure 5.1).

The majority of the decrease (27.30% to 20.80%) occurred between Wave I (1979) and Wave III (1991) with only a slight decrease between Wave III (1991) and Wave IV (1994) from 20.80% to 20.60%. Overall, the United States appears to be reducing the proportion of poor elders in society. However, the inequality coefficients show a contradictory inequality trend. While the aggregate numbers of older adults in poverty (measured by less than 50% of median income) is declining, their share of national income is also decreasing.
For the United States data, the Atkinson coefficient increases (See Figure 5.2). Between 1979 and 1991, there is a slight, but steady, absolute increase from .190 to .204. This translates to no change in inequality using the OECD trend level scale. Between Wave III (1991) and Wave IV (1994), there is a stabilization of the coefficient. Overall, this translates to a 7.73% increase in the e-weighted (See Chapter Four discussion) Atkinson Index from Wave I to Wave IV.

The interpretation of the Atkinson index for wave-specific coefficients indicates that for Wave I (1979) if incomes were completely equal, only 81.02% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed). However, for Wave IV (1994) if incomes were completely equal, 79.56% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed) indicating an increase in income inequality. It is important here to expand the explanation of the Atkinson Index. For example, for the wave-specific interpretation
of Wave I for the United States, if we were to place a perfectly equal income distribution (Atkinson Index = 0.00) on top of the actual income distribution for this wave, then only 81.02% of national income is being used to generate this “perfect equality”. Therefore, the remaining 19.88% of national income is being unequally distributed somewhere in the population and that percentage of national income would have to be relinquished to create perfect income equality in this population. In other words, the nation is only willing to spend 81.02% of national income to achieve income equality.

Although we are unable to calculate the exact location of the inequality, i.e., where the inequality exists in this analysis, it is unlikely that the remaining 19.88% of nation income is improving the income status of either the poor or middle class older adults. Finally, when we compare the change over time between Waves I (1979) and IV (1994) for the Atkinson Index, we find that United States society needs to give up an additional 1.47% (81.02% - 79.56%) of national income to achieve complete equality. Thus, there is an increase of 1.47% in national income being distribution unequally in the population over this time period, so the nation is willing to give up slightly less national income in the reduction of inequality.
The Theil coefficient exhibits a less stable trend over the same time period (See Figure 5.3). Between Waves I and IV (1979-1994) there is a modest increase in the overall e-weighted Theil Index of 12.98% (.199 to .225). However, there is a decline of 8.54% between Waves II (1986) and III (1991), which translates as effectively no change in inequality under the OECD scale. Though the proportion of older adults in poverty decreased over the data time periods, the overall trend in inequality as with the Atkinson Index is one of greater inequality for older adults in the United States. There is no intuitive interpretation of the Theil index other than the direction of the change. One possible explanation for the decline in the Theil coefficient for Wave III is that the income variable which contributes to the inequality for the remaining waves is not represented in the Wave III cases. This is a situation where the Atkinson and Theil indices do not replicate wave-specific outcomes at the macro level for the United States. Thus, any interpretation of the dual-index approach at this specific cross-sectional level
should be done with caution because the validity of the Theil index may not lend itself to an interpretation of the Atkinson as the indices exhibited opposite trends. However, overall trends are replicated in LIS data with both indices.

**Figure 5.3 Overall Theil Index by Country (e-weighted)**

![Graph showing the overall Theil Index by country with Germany, Finland, Sweden, and the United States depicted over time.]  

**Germany**

Over the time period of the data (1981-1994), the proportion of German older adults who were living in poverty (less than 50% of median income) decreased from 14.36% in 1981 to 6.97% in 1994 (See Figure 5.1). Germany also recorded a decreasing Atkinson coefficient (See Figure 5.3). Between Waves I and IV (1981-1994) there is a modest decrease of 18.65% (.123 to .100).

The interpretation of the Atkinson index for wave-specific coefficients indicates that for Wave I (1981) if incomes were completely equal, only 87.69% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed). However, for Wave IV (1994) if
incomes were completely equal, 89.99% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed) indicating a decrease in income inequality. This means that between Waves I (1981) and IV (1994), German society was willing to give up 2.30% more national income to reduce inequality.

Between Waves I and IV (1981-1994) there is a hyperbolic decrease in the overall e-weighted Theil Index of 20.75% (.130 to .103). Again, as for the United States Wave III data, the income variable which contributes to the inequality for the remaining waves may not be represented in the Wave II cases. This is a situation where the Atkinson and Theil indices do not replicate trend outcomes at the macro level for Germany.

**Sweden**

Over the time period of the data (1981-1995), older adults in Sweden living in poverty exhibit a hyperbolic trend (See Figure 5.1). This percentage increased from 2.89% in 1981 to 7.22% in 1987 and then decreased to 2.71% between 1987 and 1995. The Atkinson coefficient trend is similarly hyperbolic, although less pronounced, to the pattern of older adults living in poverty. Sweden has a trend toward inequality with modest transition between Wave I (1981) and Wave II (1987) because the e-weighted overall Atkinson Index increases 78.25% (.036 to .065). The intracountry inequality change possibly could be explained by the recession in Sweden during the mid-1980s. It should be noted that Sweden’s coefficients are much less than those in the other measured countries; therefore, Sweden still exhibits the lowest inequality in comparison with these countries while the intracountry inequality exhibits a more volatile trend. Because the coefficients are small in comparison to the other nations, a negligible absolute increase can translate as a large relative percentage change.

The interpretation of the Atkinson index for wave-specific coefficients indicates that for Wave I (1981) if incomes were completely equal, only 96.37% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed). However, for Wave IV (1995) if incomes were completely equal, 93.84% of current national income would be required
to achieve the same level of social welfare (as the current national income is currently distributed) indicating an increase in income inequality. This means that between Waves I (1981) and IV (1995), Swedish society was willing to give up 2.53% less national income to reduce inequality.

Between Waves I and IV (1981-1995) there is a hyperbolic increase in the overall e-weighted Theil Index of 81.99% (.038 to .697). The Atkinson and Theil indices replicate outcomes at the macro level for Sweden with the Theil coefficients being slightly larger.

Finland

Over the time period of the data (1987-1995), older adults in Finland living in poverty exhibit a sharp hyperbolic trend with an overall decrease (See Figure 5.1). The percentage of older adults living in poverty increased from 11.9% in 1987 to 13.9% in 1991 and then decreased substantially to 5.2% between 1991 and 1995. The Atkinson coefficient trend is similarly hyperbolic, but less pronounced, to the pattern of older adults living in poverty. Finland has an overall trend toward equality with negligible increase between Wave II (1987) and Wave III (1991) with respect to the measured coefficients. The e-weighted overall Atkinson Index increased 8.62% between Waves II and III (.076 to .086). However, it should be noted that Finland’s coefficients, like Sweden’s, are much less than those in the other measured countries; therefore, Finland still exhibits low intercountry inequality in comparison while the intracountry inequality exhibits a more volatile trend. The intracountry inequality change possibly could be explained by macro economic events in Finland during the late 1980’s as there were no significant pension policy changes implemented during that period.

Interpretation of the Atkinson index for wave-specific coefficients indicates that for Wave II (1987) if incomes were completely equal, only 92.42% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed). However, for Wave IV (1995) if incomes were completely equal, 92.17% of current national income would be required to achieve the same level of social welfare (as the current national income is currently distributed) indicating a negligible increase in income inequality. This means that between Waves II
(1987) and IV (1995), Finnish society was willing to give up 0.25% less national income to reduce inequality.

Between Waves II and IV (1987-1995) there is a hyperbolic decrease in the overall e-weighted Theil Index of 4.09% (.086 to .083), which is different than the Atkinson index outcome for Finland at the macro level. However, this difference may be the result of the algorithmic differences inherent to the indices.

**Relative Change between Finland and Comparative Nations**

As discussed in Chapter four, the Theil Index provides a more robust measure of inequality because of the validity obtained with the generation of confidence intervals. However, the index is more difficult to interpret. Therefore, the Atkinson Index is used for discussions of within-nation trends. The Theil Index and related discussion will be presented for the relative change between nations for both the overall population and subsequent disaggregated subpopulations (gender, age cohort, and age cohort by gender).

**Finland vis-à-vis United States.** Relative to the overall e-weighted Theil index, the United States and Finland are diverging over the timeframe of these datasets (See Figure 5.4). What this means is that Finland’s outcomes at the macro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism is valid at this level of analysis because the liberal and social-democratic regimes remain distinct relative to their inequality outcomes.

**Finland vis-à-vis Germany:** Relative to the overall e-weighted Theil index, Germany and Finland reveal a convergence over the time period of these datasets (See Figure 5.4). Finland’s outcomes at the macro level are possibly replicating those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism may need modification at this level of analysis. An alternative explanation is that Germany is actually approaching the Social-Democratic regimes because Germany’s income inequality level is higher than Finland’s across the time periods. Therefore, the reduction in Germany’s macro level inequality may indicate that the conservative and social-democratic regimes are converging into what I will term a Continental or “Euro” regime instead of a movement to or from the social-democratic
A “Euro” regime would imply that EU member nations are beginning to have convergent inequality outcomes.

**Finland vis-à-vis Sweden**: Relative to the overall e-weighted Theil index, Sweden and Finland are converging over the timeframe of these datasets (See Figure 5.4). What this means is that Finland’s outcomes at the macro level are still replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism remains valid at this level of analysis because comparative nations within the social-democratic regime replicate inequality outcomes. This evidence also lends support to the argument that at the macro level of analysis, the conservative regime may either be shifting into or converging with the social-democratic regime.

**Figure 5.4 Overall Theil Index by Wave (e-weighted)**
Chapter Six
Micro Analysis Results

Within Nation Analysis

As we turn to micro level analyses, this chapter considers inequality variations within each country by (a) gender; (b) age cohort; and (c) age cohort by gender, utilizing the Atkinson index for intracountry comparisons and the Theil index for both intra and intercountry comparisons. Discussions are presented for within-country results at the micro level relative to the gender and age cohort-specific Atkinson and Theil indices as well as the relative change over time in comparison to Finland for each subpopulation. The sample size for each is presented in Table 6.1. The unit of analysis is the individual within household. For example, Finland Wave II has 1721 individuals in the data, and these 1721 individuals are comprised of 1099 males and 619 females. The remaining subpopulations for Finland Wave II are disaggregated from the total 1721 individuals by age cohort and gender by age cohort. Again, these samples are weighted by LIS to reflect the composition of the total population of the respective nation.

Table 6.1 Sample Size for Dataset Subpopulations (Individuals within Households)*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>F</th>
<th>65-74</th>
<th>75+</th>
<th>M</th>
<th>65-74</th>
<th>75+</th>
<th>M</th>
<th>65-74</th>
<th>75+</th>
<th>F</th>
<th>65-74</th>
<th>75+</th>
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</thead>
<tbody>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II (N=1721)</td>
<td>1099</td>
<td>619</td>
<td>1123</td>
<td>598</td>
<td>775</td>
<td>324</td>
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<td>271</td>
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<td>III (N=1611)</td>
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<td>1051</td>
<td>560</td>
<td>754</td>
<td>297</td>
<td>276</td>
<td>284</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>IV (N=1312)</td>
<td>850</td>
<td>462</td>
<td>862</td>
<td>450</td>
<td>596</td>
<td>254</td>
<td>266</td>
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<tr>
<td>Sweden</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I (N=1008)</td>
<td>791</td>
<td>217</td>
<td>709</td>
<td>299</td>
<td>607</td>
<td>184</td>
<td>102</td>
<td>115</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II (N=1137)</td>
<td>911</td>
<td>226</td>
<td>784</td>
<td>352</td>
<td>677</td>
<td>234</td>
<td>107</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>III (N=1755)</td>
<td>1385</td>
<td>370</td>
<td>1334</td>
<td>421</td>
<td>1106</td>
<td>279</td>
<td>228</td>
<td>142</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>IV (N=4488)</td>
<td>2788</td>
<td>1700</td>
<td>1793</td>
<td>2695</td>
<td>1401</td>
<td>1387</td>
<td>392</td>
<td>1308</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
Table 6.1 Sample Size for Dataset Subpopulations (Individuals within Households)* (cont.)

<table>
<thead>
<tr>
<th>Germany</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=600)</td>
<td>339</td>
<td>261</td>
<td>362</td>
<td>238</td>
<td>211</td>
<td>128</td>
<td>151</td>
<td>110</td>
</tr>
<tr>
<td>II (N=844)</td>
<td>461</td>
<td>383</td>
<td>491</td>
<td>353</td>
<td>303</td>
<td>158</td>
<td>188</td>
<td>195</td>
</tr>
<tr>
<td>III (N=691)</td>
<td>380</td>
<td>311</td>
<td>375</td>
<td>316</td>
<td>235</td>
<td>145</td>
<td>140</td>
<td>171</td>
</tr>
<tr>
<td>IV (N=1095)</td>
<td>589</td>
<td>506</td>
<td>696</td>
<td>399</td>
<td>432</td>
<td>157</td>
<td>264</td>
<td>242</td>
</tr>
<tr>
<td>United States</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I (N=2894)</td>
<td>1597</td>
<td>1297</td>
<td>1765</td>
<td>1129</td>
<td>1076</td>
<td>521</td>
<td>689</td>
<td>608</td>
</tr>
<tr>
<td>II (N=2471)</td>
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<td>1460</td>
<td>1011</td>
<td>920</td>
<td>441</td>
<td>540</td>
<td>570</td>
</tr>
<tr>
<td>III (N=3179)</td>
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<td>1343</td>
<td>1850</td>
<td>1329</td>
<td>1212</td>
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<td>638</td>
<td>705</td>
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<td>IV (N=12523)</td>
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<td>6870</td>
<td>5653</td>
<td>4446</td>
<td>2689</td>
<td>2424</td>
<td>2964</td>
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</tbody>
</table>

*Individual cells may not add to the total N due to missing data

United States - Gender

Comparison of the overall Atkinson Index with the indices calculated for gender is shown in Figure 6.1. For all waves of the United States data except Wave III (1991), the Atkinson index for females is greater, thereby demonstrating more inequality than for males. Over the course of the data, the trend for males exhibits a negligible (See Table 5.2) increase in inequality (overall 6.54% or a .012 point increase). The trend for females is more volatile across all data waves with a negligible overall increase in inequality of 3.12% (.006 point increase). From Wave II (1986) to Wave III (1991), there is a modest 11.61% (.022 point) decrease in inequality for females. Using the OECD Trend Level Scale (Table 5.2), this decrease is defined as "modest" because the absolute difference in the time periods is between two and seven points. Throughout this analysis, percentage changes may be substantial even though the scale classifies such changes as modest or even, in some cases, negligible. However, this decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 12.73% (.022 point) increase in female inequality. These results indicate that the share of national income for United States older females has exhibited an modest overall decrease, with a brief
period of improvement in the late 1980’s, while there has been a progressive, but less pronounced, decline in income shares for older United States’ males.

Interpretation of the Atkinson index for wave-specific coefficients indicates that females in the United States have consistently higher levels of inequality relative to males and that it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 81.28% of current national income would be required to achieve the same level of social welfare for males (as the current national income is currently distributed) compared to 80.20% of current national income being required to achieve the level of social welfare for females, meaning an additional 1.08% of national income is required for older United States women to achieve the level of social welfare of males.

**Figure 6.1 Atkinson Index (e-weighted) by Gender**

The gender-based Theil index for the United States data mostly replicates the Atkinson results (See Figure 6.2). For all waves of the United States data, the Theil index for females is greater, consistently demonstrating more inequality, than for males. Over the
four waves of data (1979-1994), the trend for males is one of slightly increasing inequality (overall 10.73%). The trend for females is more volatile across all data waves with an overall increase in inequality of 3.54%. From Wave II (1986) to Wave III (1991), there is a 13.52% decrease in inequality for females. However, consistent with the results from the Atkinson Index, this decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 12.86% increase in female inequality. It should be noted that the Theil coefficients replicate those of the Atkinson Index except in Wave III. For Wave III (1991), the Theil index for males is lower than for females while results for the Atkinson Index show the opposite relationship. However, the overall pattern of income deterioration for females is consistent with the results from the Atkinson Index.

Figure 6.2 Theil Index (e-weighted) by Gender
Germany - Gender

For all waves of the German data, the Atkinson index for females is greater than for males, thereby demonstrating a higher level of inequality (See Figure 6.1). This means that females as a subpopulation within Germany have a smaller share of income than their male counterparts. Over the four waves of the data (1981-1994), the trend for males is one of modest, but steadily decreasing, inequality (overall 32.54% or -.039 point decrease). The trend for female inequality is decreasing as well with a negligible overall decrease in inequality of 3.07% (-.004 points). From Wave II (1984) to Wave III (1989), there is a 5.53% (-.006 point) decrease in inequality for females. However, this negligible decrease reverses from Wave III (1989) to Wave IV (1994) exhibiting a 7.43% (.008 point) increase in female inequality. Within Germany, results from the Atkinson Index show a progressive improvement in share of national income for males, while the overall improvement in income share for German females may be eroding.

Interpretation of the Atkinson index for wave-specific coefficients indicates that females in Germany have consistently higher levels of inequality relative to males and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 91.97% of current national income would be required to achieve the same level of social welfare for males (as the current national income is currently distributed) compared to only 88.33% of current national income being required to achieve the level of social welfare for females, meaning an additional 3.64% of national income is required for older German females to achieve the level of social welfare of males.

The gender-based Theil index for the German data offers slightly different results than the results of the Atkinson Index analysis (See Figure 6.2). For the first two data waves of the German data, the Theil index for females is less than that for males, indicating less inequality among females for this time period. However, for Waves III (1989) and IV (1994), female inequality is greater, demonstrating higher inequality, than for males. Over the course of the data, the trend for males is one of significantly decreasing inequality (overall 33.51%). The trend for females is more volatile across all data waves with an overall decrease in inequality of 1.90%. However, from Wave I (1981) to Wave II (1984), there is an 11.70% increase in inequality for females. This
increase reverses from Wave II (1984) to Wave III (1989) and Wave III (1989) to Wave IV (1994) respectively exhibiting a 7.71% and 4.84% decrease in female inequality over these time periods. It should be noted that the wave-specific Theil coefficients replicate those of the Atkinson Index except in Wave I. For Wave I (1981), the Theil index for males is lower than for females while results from the Atkinson Index show the opposite relationship. Results from the Theil Index, consistent with the Atkinson Index, indicate that the income situation for older German males has progressively improved. However, the Theil index also indicates a slight improvement for older German females, which is inconsistent with results from the Atkinson. This variation may be explained by algorithmic difference in the calculation of the indices.

**Sweden – Gender**

For all waves of the Sweden data except Wave II (1987), the Atkinson index for females is less than that for males, demonstrating lower inequality (See Figure 6.1). Over the four waves of data (1981-1995), the trend for males is one of modestly increasing inequality (overall 65.54% or .025 point increase) with a negligible reduction of 3.12% (-.002 points) from Wave III (1992) to Wave IV (1995). The trend for females is more volatile across all data waves with a modest overall increase in inequality of 82.44% (.021 points). From Wave II (1987) to Wave III (1992), there is a 22.87% (-.013 point) decrease in inequality for females. However, this negligible decrease reverses from Wave III (1992) to Wave IV (1995) exhibiting an equally negligible 4.90% (.002 point) increase in female inequality. Within Sweden, results from the Atkinson Index show a progressive deterioration in share of national income for both males and females, with the income situation for females eroding at a slower pace.

Interpretation of the Atkinson index for wave-specific coefficients indicates that females in Sweden have consistently lower levels of inequality relative to males and it would take a larger redistribution of income to remove the inequality. For example, in Wave IV (1995), if incomes were completely equal, 93.80% of current national income would be required to achieve the same level of social welfare for males (as the current national income is currently distributed) compared to 95.46% of current national income being required to achieve the level of social welfare for females, meaning an additional
1.66% of national income is required for older Swedish males to achieve the level of social welfare of females.

The gender-based Theil index for the Sweden data mostly replicates the Atkinson results for males, but exhibits a less volatile trend in inequality for females (See Figure 6.2). For all waves of the Sweden data, the Theil index for females is less than that for males, consistently demonstrating lower inequality for females. The trend for males is one of slightly increasing inequality (overall 77.37%) with a moderating reduction of 6.71% from Wave III (1991) to Wave IV (1994). The trend for females is a steady increase in inequality (overall 101.65%). The majority of this increase (59.94%) occurs from Wave I (1981) to Wave II (1987). The increase moderates over the remaining time periods. There is a 6.32% increase in inequality for females from Wave II (1987) to Wave III (1992) and an 18.58% increase from Wave III (1992) to Wave IV (1995). Consistent with results from the Atkinson Index, the Theil Index indicates that the income situation is worsening for both older males and females in Sweden with older females fairing better than males over the time period.

Finland - Gender

For all waves of the Finland data, the Atkinson index for females is less than that of males, demonstrating less inequality for females (See Figure 5.5). Over the three waves of data, there is a hyperbolic inequality trend for males with a negligible overall increase in inequality of 3.72% (.003 points). The trend for females is opposite to that of the males across all data waves with a negligible overall decrease in inequality of 5.19% (-.003 points). From Wave II (1987) to Wave III (1991), there is a 25.85% (.015 point) increase in inequality for females. However, this negligible increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 24.66% (-.018 point) decrease in female inequality. Within Finland, results from the Atkinson Index show a slight improvement in share of national income for older females, with the income situation for older males slightly eroding.

Interpretation of the Atkinson index for wave-specific coefficients indicates that females in Finland have consistently lower levels of inequality relative to males and it would take a larger redistribution of income to equalize the inequality. For example, in
Wave IV (1995), if incomes were completely equal, 92.95% of current national income would be required to achieve the same level of social welfare for males (as national income is currently distributed) compared to 94.55% of current national income being required to achieve the level of social welfare for females, meaning an additional 1.60% of national income is required for older Finnish males to achieve the level of social welfare of females.

The gender-based Theil index trend for the Finland data replicates the Atkinson results (See Figure 6.2). For all three waves of the Finland data, the Theil index for females is lower, consistently demonstrating less inequality, than for males. Over the three waves of data, there is a hyperbolic inequality trend for males with an overall decrease in inequality of 4.90%. The trend for females is similar to that of the males across all data waves with an overall decrease in inequality (overall 15.58%). From Wave II (1987) to Wave III (1991), there is a 25.87% increase in inequality for females. However, this increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 32.93% decrease in female inequality. Results from the Theil Index indicate that the income situation is improving for both older males and females in Finland with older females fairing better than older males over the time period. These results for older Finnish males are inconsistent with results from the Atkinson Index. However, the slight difference in the Wave IV (1995) coefficient for males may be explained by algorithmic distinctions between the indices.

**United States – Age Cohort**

The comparison of the overall Atkinson Index with the indices calculated for age cohort is shown in Figure 6.3. For Waves III (1991) and IV (1994) of the United States data, the Atkinson index for age cohort 65-74 is less than for age cohort 75+, thereby demonstrating lower inequality. Over the four waves of data, the trend for age cohort 75+ is one of modestly increasing inequality (overall 18.67% or .003 point increase). The trend for age cohort 65-74 is more volatile across all data waves with a negligible overall increase in inequality of 3.62% (.007 points). From Wave II (1986) to Wave III (1991), there is a 7.74% (-.016 point) decrease in inequality for age cohort 65-74. However, this negligible decrease reverses from Wave III (1991) to Wave IV (1994)
exhibiting a 6.55% (.012 point) increase in age cohort 65-74. Within the United States, results from the Atkinson Index show a decrease in share of national income for both age cohorts, with the income situation for the 75+ cohort eroding at a faster pace.

The interpretation of the Atkinson index for wave-specific coefficients indicates that in the more recent datawaves, the 65-74 age cohort in the United States has higher levels of inequality relative to the 75+ cohort and it would take a larger redistribution of income to remove the inequality. For example, in Wave IV (1994), if incomes were completely equal, 80.15% of current national income would be required to achieve the same level of social welfare for the 65-74 cohort (as the current national income is currently distributed) compared to only 79.36% of current national income being required to achieve the level of social welfare for the 75+ cohort, meaning an additional 0.79% of national income is required for the 75+ age cohort in the United States to achieve the level of social welfare of their younger counterparts.

**Figure 6.3 Atkinson Index (e-weighted) by Age Cohort**
The age cohort-based Theil index for the United States data replicates the Atkinson results (See Figure 6.4). For Waves III (1991) and IV (1994) of the United States data, the Atkinson index for age cohort 65-74 is less than for age cohort 75+, thereby demonstrating lower inequality. The trend for age cohort 75+ is one of increasing inequality (overall 25.08%). The trend for age cohort 65-74 is more volatile across all data waves with an overall increase in inequality of 6.58%. From Wave II (1986) to Wave III (1991), there is a 7.75% decrease in inequality for age cohort 65-74. However, this decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 9.67% increase in inequality for age cohort 65-74. Consistent with the Atkinson Index, results from the Theil Index indicate that the income situation is deteriorating for both age cohorts in the United States with the 75+ cohort fairing worse over time.

Figure 6.4 Theil Index (e-weighted) by Age Cohort
Germany — Age Cohort

For all waves of the German data except Wave III (1989), the Atkinson index for age cohort 65-74 is less than that for age cohort 75+, demonstrating lower inequality for age cohort 65-74 (See Figure 6.3). The trend for age cohort 75+ is one of modestly decreasing inequality (overall 25.44% or -.035 point decrease). The inequality trend for age cohort 65-74 is parabolic between Waves I (1981) and III (1989) with a negligible overall decrease in inequality of 13.38% (-.015 points). From Wave II (1984) to Wave III (1989), there is a 17.70% (.021 point) increase in inequality for age cohort 65-74. However, this modest increase reverses from Wave III (1989) to Wave IV (1994) exhibiting a modest 24.68% (-.032 point) decrease in age cohort 65-74 inequality. Within Germany, results from the Atkinson Index show an improvement in share of national income for both age cohorts, with the income situation for the 75+ cohort improving more substantially compared with age cohort 65-74.

Interpretation of the Atkinson index for wave-specific coefficients indicates that recently, the 65-74 age cohort in Germany have lower levels of inequality relative to the 75+ cohort and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 90.39% of current national income would be required to achieve the same level of social welfare for the 65-74 cohort (as the current national income is currently distributed) compared to 89.79% of current national income being required to achieve the level of social welfare for the 75+ cohort, meaning an additional 0.60% of national income is required for the 75+ age cohort in Germany to achieve the level of social welfare of their younger counterparts.

The age cohort-based Theil index for the German data offers slightly different results than the Atkinson Index analysis (See Figure 6.4). For the first two data waves of the German data, the Theil index for age cohort 65-74 is less than that for age cohort 75+, indicating less inequality among age cohort 65-74 for this time period. However, for Wave III (1989), inequality for age cohort 65-74 is greater than for age cohort 75+. Over the course of the data, the trend for 75+ is more hyperbolic with an overall inequality decrease of 24.29%. The trend for age cohort 65-74 is a steady increase (20.06%) in inequality across data waves I (1981) - III (1989) with an overall decrease in
inequality across all four waves of data of 18.82%. Consistent with the Atkinson Index, results from the Theil Index indicate that the income situation is improving for both age cohorts in Germany with the 65-74 cohort fairing worse over time.

**Sweden – Age Cohort**

For all waves of the Sweden data, the Atkinson index for age cohort 65-74 is greater than that for age cohort 75+, demonstrating higher inequality (See Figure 6.3). The trend for age cohort 75+ is one of modestly increasing inequality (overall 105.85% or .030 point increase) with a negligible reduction of 18.00% (-.010 points) from Wave II (1987) to Wave III (1992). The trend for age cohort 65-74 is less variable across all data waves with an overall increase in inequality of 80.94% (.027 points). This modest increase is large because Sweden’s coefficients are smaller at baseline, so very small increases in the coefficient result in large proportional increases. From Wave II (1987) to Wave III (1992), there is a 23.73% (.014 point) increase in inequality for age cohort 65-74. However, this negligible increase reverses from Wave III (1992) to Wave IV (1995) exhibiting a 15.16% (-.011 point) decrease in inequality for age cohort 65-74. Within Sweden, results from the Atkinson Index show a decrease in share of national income for both age cohorts at a similar pace.

Interpretation of the Atkinson index for wave-specific coefficients indicates that recently, the 65-74 age cohort in Sweden have higher levels of inequality relative to the 75+ cohort and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1995), if incomes were completely equal, 93.97% of current national income would be required to achieve the same level of social welfare for the 65-74 cohort (as the current national income is currently distributed) compared to 94.23% of current national income being required to achieve the level of social welfare for the 75+ cohort, meaning an additional 0.26% of national income is required for the 65-74 age cohort in Sweden to achieve the level of social welfare of their older counterparts.

The age cohort-based Theil index for the Sweden data mostly replicates the Atkinson results for both age cohorts (See Figure 6.4). For all waves of the Sweden data except Wave IV (1995), the Theil index for age cohort 65-74 is greater than that for
age cohort 75+, consistently demonstrating more inequality among age cohort 65-74. The trend for age cohort 75+ is one of increasing inequality (overall 126.09%) with a moderating reduction of 6.75% from Wave II (1987) to Wave III (1992). Again, the large percentage increase is a result of Sweden’s very small coefficients at baseline. The trend for age cohort 65-74 is a steady increase in inequality (overall 87.63%) with a 20.55% inequality reduction between Wave III (1992) and Wave IV (1995). The majority of this increase (84.91%) occurs from Wave I (1981) to Wave II (1987). The increase moderates over the remaining time periods. There is a 27.72% increase in inequality for age cohort 65-74 from Wave II (1987) to Wave III (1992). Consistent with the Atkinson Index, results from the Theil Index indicate that the income situation is deteriorating for both age cohorts in Sweden.

**Finland – Age Cohort**

For two of the three waves of the Finland data (the exception is Wave IV, 1995), the Atkinson index for age cohort 65-74 is less than age cohort 75+, demonstrating less inequality among age cohort 65-74 (See Figure 6.3). Over the three waves of data, there is a moderate hyperbolic inequality trend for age cohort 65-74 with a negligible overall increase in inequality of 15.71% (.011 points). The trend for age cohort 75+ is similar to that of the age cohort 65-74 across all data waves with a negligible overall decrease in inequality of 6.05% (.004 points). From Wave II (1987) to Wave III (1991), there is a 19.05% (.014 point) increase in inequality for age cohort 65-74. However, this negligible increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 9.17% (-.002 point) decrease in age cohort 65-74 inequality. The 75+ age cohort exhibits a larger, but still negligible, decrease (22.63% or .020 points) from Wave III (1991) to Wave IV (1995). Within Finland, results from the Atkinson Index show slight improvement in share of national income for both age cohorts.

Interpretation of the Atkinson index for wave-specific coefficients indicates that recently, the 65-74 age cohort in Finland have lower levels of inequality relative to the 75+ cohort and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1995), if incomes were completely equal, 91.79% of current national income would be required to achieve the same level of social welfare for the
65-74 cohort (as national income is currently distributed) compared to 93.29% of current national income being required to achieve the level of social welfare for the 75+ age cohort, meaning an additional 1.50% of national income is required for the 65-74 age cohort in Finland to achieve the level of social welfare of their older counterparts.

The age cohort-based Theil index trend for the Finland data replicates the Atkinson results (See Figure 6.4). For all waves of the Finland data except Wave III (1991), the Theil index for age cohort 65-74 is greater, demonstrating more inequality, than for age cohort 75+. Over the course of the data, there is a hyperbolic inequality trend for age cohort 65-74 with a slight overall decrease in inequality of 0.64%. The trend for age cohort 75+ is similar to that of the age cohort 65-74 across all data waves with an even larger overall decrease in inequality of 7.38%. From Wave II (1987) to Wave III (1991), there is a 14.26% increase in inequality for age cohort 65-74. However, this increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 13.04% decrease in age cohort 65-74 inequality. Age cohort 75+ exhibits a larger decrease (28.07%) from Wave III (1991) to Wave IV (1995). Consistent with the Atkinson Index, results from the Theil Index indicate that the income situation is slightly improving for both age cohorts in Finland.

United States – Age Cohort by Gender

Figure 6.5 shows the comparison of the overall Atkinson Index with the indices calculated for age cohort 65-74 by gender. For all waves of the United States data, the Atkinson index for females age 65-74 is greater, thereby demonstrating greater inequality, than for males age 65-74. Over the four waves of data, the trend for males age 65-74 is one of fluctuating inequality with a negligible overall increase of 5.79%. The trend for females age 65-74 is similarly fluctuating with a negligible overall decrease in inequality across all data waves of 1.07% (-.002 points). From Wave II (1986) to Wave III (1991), there is a 13.58% (-.029 point) decrease in inequality for females age 65-74. However, this modest decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 10.18% (.019 point) increase in inequality among females aged 65-74. Within the United States, results from the Atkinson Index show a gradual
decrease in the share of national income for males age 65-74, while females age 65-74 show a very slight increase.

Interpretation of the Atkinson index for wave-specific coefficients indicates that recently, females age 65-74 in the United States have experienced higher levels of inequality relative to males age 65-74 and it would take a larger redistribution of income to remove the inequality. For example, in Wave IV (1994), if incomes were completely equal, 81.64% of current national income would be required to achieve the same level of social welfare for the males age 65-74 (as the current national income is currently distributed) compared to 79.91% of current national income being required to achieve the level of social welfare for females age 65-74, meaning an additional 1.73% of national income is required for females age 65-74 in the United States to achieve the level of social welfare of their male counterparts.

**Figure 6.5 Atkinson Index (e-weighted) by Age Cohort (65-74) and Gender**

Figure 6.6 shows the comparison of the overall Atkinson Index with the indices calculated for age cohort 75+ by gender. For all waves of the United States data except
Wave III (1991), the Atkinson index for females age 75+ is greater, thereby demonstrating more inequality, than for males age 75+. Over the four waves of data, the trend for males age 75+ is parabolic with a modest overall increase in inequality of 5.79% (.023 points). The trend for females age 75+ is parabolic between Wave I (1979) and Wave III (1991) with a reversal in Wave IV (1995) resulting in a modest overall increase in inequality across all data waves of 12.21% (.021 points). Between Wave II (1986) and Wave III (1991), there is an 11.84% (-.022 point) decrease in inequality for females age 75+. However, this modest decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 17.26% (.028 point) increase in female ages 75+ inequality. Within the United States, results from the Atkinson Index show a decrease in share of national income for both genders aged 75+.

Interpretation of the Atkinson index for wave-specific coefficients indicates that recently, the females age 75+ in the United States have higher levels of inequality relative to their male counterparts and it would take a larger redistribution of income to remove the inequality. For example, in Wave IV (1994), if incomes were completely equal, 80.98% of current national income would be required to achieve the same level of social welfare for males age 75+ (as the current national income is currently distributed) compared to 80.89% of current national income to achieve this level of social welfare for females age 75+, meaning an additional 0.10% of national income is required for females age 75+ in the United States to achieve the level of social welfare of their male counterparts.
The Theil index for age cohort 65-74 by gender for the United States data mostly replicates the Atkinson results (See Figure 6.7). For all waves of the United States data, the Theil index for females age 65-74 is greater, consistently demonstrating higher inequality, than for males age 65-74. Over the course of the data, the trend for males age 65-74 is one of fluctuating inequality but with an overall increase of 9.14%. The trend for females age 65-74 is more volatile across all data waves with a very slight overall decrease in inequality of 0.13%. From Wave II (1986) to Wave III (1991), there is a 14.51% decrease in inequality for females age 65-74. However, this decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 7.67% increase in female age 65-74 inequality. Consistent with the Atkinson Index, results from the Theil Index show a gradual decrease in share of national income for both males and females aged 65-74.
The Theil index for age cohort 75+ for the United States data also mostly replicates the Atkinson results (See Figure 6.8). For two waves of the United States data, Waves I (1979) and II (1986), the Theil index for females age 75+ is greater than for males of the same age, demonstrating higher inequality. Over the four waves of data, the trend for males age 75+ is one of slightly increasing inequality (overall 23.01%). The trend for females age 75+ is more volatile across all data waves with an overall increase in inequality of 12.57%. From Wave II (1986) to Wave III (1991), there is a 14.26% decrease in inequality for females age 75+. However, this decrease reverses from Wave III (1991) to Wave IV (1994) exhibiting a 19.35% increase in female age 75+ inequality. Consistent with the Atkinson Index, results from the Theil Index show a decrease in share of national income for both genders age 75+.
Germany – Age Cohort by Gender

For all waves of the German data except Wave I (1981), the Atkinson index for females age 65-74 is greater than for males age 65-74 (See Figure 6.5), thereby demonstrating more inequality. Over the four waves of data, the trend for males age 65-74 is one of modestly decreasing inequality (overall 27.21% or -.031 points) with a reversal from Wave II (1984) to Wave III (1989). The trend for females age 65-74 is opposite with a modest overall increase in inequality of 30.13% (.029 points). From Wave II (1984) to Wave III (1989), there is an 18.51% (.022 point) increase in inequality for females age 65-74. However, this modest increase reverses from Wave III (1989) to Wave IV (1994) exhibiting a 10.17% (-.014 point) decrease in female age 65-74 inequality. The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, females age 65-74 in Germany have higher levels of inequality relative to their male counterparts and it would take a larger redistribution of income to
remove this inequality. For example, in Wave IV (1994), if incomes were completely equal, 91.85% of current national income would be required to achieve the same level of social welfare for males age 65-74 (as the current national income is presently distributed) compared to only 87.45% of current national income to achieve this level of social welfare for females age 65-74, meaning an additional 4.40% of national income is required for German females age 65-74 to achieve the level of social welfare of their male counterparts.

For two waves of the German data, Waves I (1981) and IV (1994), the Atkinson index for females age 75+ is greater than for males age 75+ (See Figure 6.6), thereby demonstrating higher inequality. Over the four waves of data, the overall trend for males age 75+ is one of modestly decreasing inequality of 39.87% (-.051 points). The trend for female age 75+ inequality is decreasing as well with a modest overall decrease of 27.54% (-.040 points). From Wave II (1984) to Wave III (1989), there is a 30.75% (-.034 point) decrease in inequality for females age 75+. However, this modest decrease reverses from Wave III (1989) to Wave IV (1994) exhibiting a 35.92% (.028 point) increase in female age 75+ inequality. The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, females age 75+ in Germany have higher levels of inequality relative to their male counterparts and it would take a larger redistribution of income to remove this inequality. For example, in Wave IV (1994), if incomes were completely equal, 92.34% of current national income would be required to achieve the same level of social welfare for males age 75+ (as national income is currently distributed) compared to 89.53% of current national income to achieve this level of social welfare for females age 75+, meaning an additional 2.81% of national income is required for German females age 75+ to achieve the level of social welfare of their male counterparts.

The Theil index for age cohort 65-74 by gender for the German data offers slightly different results than the results of the Atkinson Index analysis (See Figure 6.7). For all data waves of the German data except Wave I (1981), the Theil index for females age 65-74 is greater than that for males, indicating higher inequality among females age 65-74 for this time period. Over the four waves of data, the trend for males age 65-74 is one of decreasing inequality (overall 31.15%). The trend for females is
opposite with an overall increase in inequality of 27.31%. However, from Wave III (1989) to Wave IV (1994), there is a 28.92% decrease in inequality for females age 65-74. This is a reversal from the trend between Wave II (1984) to Wave III (1989) and Wave III (1989) to Wave IV (1994) respectively exhibiting a 51.75% and 18.03% increase in female age 65-74 inequality over these time periods.

The Theil index for age cohort 75+ by gender for the German data replicates the results of the Atkinson Index analysis (See Figure 6.8). For data waves I (1981) and IV (1994) of the German data, the Theil index for females age 75+ is greater than that for males, indicating higher inequality among female age 75+ for these time periods. Over the four waves of data, the overall trend for males age 75+ is one of decreasing inequality of 36.49% after a sharp increase (53.70%) from Wave I (1981) to Wave II (1984). The trend for females age 75+ is similarly decreasing across all data waves with an overall decrease in inequality of 25.85%. However, from Wave III (1989) to Wave IV (1994), there is a 50.54% increase in inequality for females age 75+. This is a reversal from the trend between Wave II (1984) to Wave III (1989) and Wave III (1989) to Wave IV (1994) respectively exhibiting a 13.83% and 42.84% decrease in female age 75+ inequality over these time periods.

Sweden – Age Cohort by Gender

For all waves of the Sweden data, the Atkinson index for females age 65-74 is less than that for males age 65-74, demonstrating lower inequality (See Figure 6.5). The trend for males age 65-74 is one of modestly increasing inequality (overall 71.46% or .025 point increase) with a negligible reduction of 4.32% (.003 points) from Wave III (1992) to Wave IV (1995). The trend for females age 65-74 is parabolic across all data waves with a negligible overall increase in inequality of 77.79% (.016 points). This finding may appear to be counterintuitive. However, while the percentage change is larger for females age 65-74, the absolute change in the coefficient is interpreted as negligible using the OECD trend scale. From Wave III (1992) to Wave IV (1995), there is a 35.26% (.019 point) decrease in inequality for females age 65-74. This negligible decrease is a reversal from the previous trend from Wave I (1981) to Wave II (1987) and Wave II (1987) to Wave III (1992) which exhibit 110.55% (.022 point) and 30.43%
The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, males age 65-74 in Sweden have higher levels of inequality relative to their female counterparts and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 93.92% of current national income would be required to achieve the same level of social welfare for males age 65-74 (as the current national income is currently distributed) compared to 96.46% of current national income being required to achieve the level of social welfare for females age 65-74, meaning an additional 2.54% of national income is required for Swedish males age 65-74 to achieve the level of social welfare of their female counterparts.

For all waves of the Sweden data except Wave II (1987), the Atkinson index for females age 75+ is less than that for males, demonstrating lower inequality (See Figure 6.6). The overall trend for males age 75+ is one of modestly, but steadily, increasing inequality (overall 104.42% or .030 point increase) with a moderating reduction of 4.48% (.002 points) from Wave II (1987) to Wave III (1991). The trend for females age 75+ is highly volatile across all data waves with a modest overall increase in inequality of 118.55% (.028 points). From Wave II (1987) to Wave III (1992), there is a 56.39% (-.036 point) decrease in inequality for females age 75+. However, this modest decrease reverses from Wave III (1992) to Wave IV (1995) exhibiting an 85.29% (.024 point) increase in female age 75+ inequality.

The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, males age 75+ in Sweden have higher levels of inequality relative to their female counterparts and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 94.22% of current national income would be required to achieve the same level of social welfare for males age 75+ (as national income is currently distributed) compared to 94.86% of current national income being required to achieve the same level of social welfare for females age 75+, meaning than only an additional 0.64% of national income is required for Swedish males age 75+ to achieve the level of social welfare of their female counterparts.
The Theil index for age cohort 65-74 by gender for the Sweden data mostly replicates the Atkinson results (See Figure 6.7). For all waves of the Sweden data, the Theil index for females age 65-74 is less than that for males age 65-74, consistently demonstrating lower inequality for females age 65-74. The trend for males age 65-74 is one of increasing inequality (overall 81.46%) with a moderating reduction of 15.56% from Wave III (1991) to Wave IV (1994). The trend for females age 65-74 is an increase in inequality (overall 69.48%). The majority of this increase (98.45%) occurs from Wave I (1981) to Wave II (1987). The increase moderates and begins to reverse over the remaining time periods. There is a 23.15% increase in inequality for females age 65-74 from Wave II (1987) to Wave III (1992) and a 30.65% decrease from Wave III (1992) to Wave IV (1995).

The Theil index for age cohort 75+ by gender for the Sweden data mostly replicates the Atkinson results for males age 75+, but exhibits a less pronounced trend in inequality for females age 75+ (See Figure 6.8). For all waves of the Sweden data, the Theil index for females age 75+ is less than that for males age 75+, consistently demonstrating lower inequality for females age 75+. The trend for males age 75+ is one of increasing inequality (overall 117.48%) with a moderating reduction of 10.46% from Wave II (1987) to Wave III (1992). The trend for females age 75+ is an increase in inequality (overall 155.08%). The majority of this increase (113.16%) occurs from Wave III (1992) to Wave IV (1995).

Finland – Age Cohort by Gender

For all waves of the Finland data, the Atkinson index for females age 65-74 is less than that of males, demonstrating lower inequality for females age 65-74 (See Figure 6.5). Over the three waves of data, there is a trend of negligibly increasing inequality for males age 65-74 with an overall increase in inequality of 16.07% (.011 points). The trend for females age 65-74 is hyperbolic across the three data waves with a negligible overall increase in inequality of 22.77% (.012 points). From Wave II (1987) to Wave III (1991), there is a 27.21% (.014 point) increase in inequality for females age 65-74. This negligible increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 3.49% (-.002 point) decrease in female age 64-74 inequality, thus
suggesting an improvement in the income status of this subpopulation. The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, the males age 65-74 in Finland have higher levels of inequality relative to their female counterparts and it would take a larger redistribution of income to equalize the inequality. For example, in Wave IV (1994), if incomes were completely equal, 92.38% of current national income would be required to achieve the same level of social welfare for males age 65-74 (as the current national income is currently distributed) compared to 93.75% of current national income being required to achieve the level of social welfare for females age 65-74, meaning an additional 1.37% of national income is required for Finnish males age 65-74 to achieve the level of social welfare of their female counterparts.

For all waves of the Finland data, the Atkinson index for females age 75+ is less than that of males, demonstrating lower inequality for females age 75+ (See Figure 6.6). Over the three waves of data, there is a hyperbolic inequality trend for males with a negligible overall decrease in inequality of 10.47% (-.007 points). The trend for females age 75+ is similar to that of the males age 75+ across the three data waves with a negligible overall decrease in inequality of 22.65% (-.012 points). From Wave II (1987) to Wave III (1991), there is a 45.52% (.024 point) increase in inequality for females age 75+. However, this modest increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 46.85% (-.035 point) decrease in female age 75+ inequality. The interpretation of the Atkinson index for wave-specific coefficients indicates that recently, Finnish males age 75+ have higher levels of inequality relative to their female counterparts and it would take a larger redistribution of income to remove the inequality. For example, in Wave IV (1994), if incomes were completely equal, 93.78% of current national income would be required to achieve the same level of social welfare for males age 75+ (as the current national income is currently distributed) compared to 96.01% of current national income being required to achieve the level of social welfare for females age 75+, meaning an additional 2.23% of national income is required for Finnish males age 65-74 to achieve the level of social welfare of their female counterparts.

The Theil index for age cohort 65-74 by gender for the Finland data replicates the Atkinson results (See Figure 6.7). For all waves of the Finland data, the Theil index for
females age 65-74 is less than that of males age 65-74, demonstrating lower inequality for females age 65-74. Over the three waves of data, there is a moderate hyperbolic inequality trend for males age 65-74 with a slight increase in inequality (overall 0.94%). The trend for females age 65-74 is similar to that of the males age 65-74 across all three data waves with an overall decrease in inequality of 9.75%. From Wave II (1987) to Wave III (1991), there is a 13.58% increase in inequality for females age 65-74. However, this increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 20.54% decrease in female age 65-74 inequality.

The Theil index for age cohort 75+ by gender for the Finland data replicates the Atkinson results (See Figure 6.8). For all waves of the Finland data, the Theil index for females age 75+ is less than that of males age 75+, demonstrating lower inequality among females 75+. Over the three waves of data, there is a hyperbolic inequality trend for males age 75+ with an overall decrease in inequality of 16.09%. The trend for females age 75+ is similar to that of the males age 75+ across all data waves with an overall decrease in inequality of 17.48%. From Wave II (1987) to Wave III (1991), there is a 63.03% increase in inequality for females age 75+. This increase reverses from Wave III (1991) to Wave IV (1995) exhibiting a 49.38% decrease in female age 75+ inequality.

Relative Micro Change between Finland and Comparative Nations

**Age Cohort 65-74**

*Finland vis-à-vis the United States:* Relative to the overall e-weighted Theil index for the age cohort 65-74, these United States and Finland subpopulations are diverging (See Figure 6.9). Although, there is a slight movement toward convergence between Waves II & III. What this means is that Finland’s outcomes at this specific micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

*Finland vis-à-vis Germany:* Relative to the overall e-weighted Theil index for the age cohort 65-74, these Germany and Finland subpopulations are diverging between
Waves II and Wave III. However, Wave IV indicates a convergence (See Figure 6.9). What this means is that Finland’s outcomes at this specific micro level are possibly moving toward those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism may no longer be valid at this level of analysis for this subpopulation.

*Finland vis-à-vis Sweden*: Relative to the overall e-weighted Theil index for the age cohort 65-74, these Sweden and Finland subpopulations are parallel across all datawaves while the actual level of inequality is slightly higher for Finland (See Figure 6.9). What this means is that Finland’s outcomes at this specific micro level are replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

**Figure 6.9 Theil Index (e-weighted) for Age Cohort 65-74**
**Age Cohort 75+**

*Finland vis-à-vis the United States:* Relative to the overall e-weighted Theil index for the age cohort 75+, these United States and Finland subpopulations are diverging across all datawaves (See Figure 6.10). What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The results are consistent with the Three Worlds of Welfare Capitalism typology at this level of analysis for this subpopulation.

*Finland vis-à-vis Germany:* Relative to the overall e-weighted Theil index for the age cohort 75+, these Germany and Finland subpopulations exhibit a crossover pattern between Waves II and Wave III with Germany actually exhibiting less inequality in age cohort 75+. However, Wave IV indicates a return to divergence (See Figure 6.10). What this means is that for age cohort 75+, Finland may not be replicating conservative regime outcomes as classified by Esping-Andersen. There appears to be no reason to refute the Three Worlds of Welfare Capitalism typology at this level of analysis for this subpopulation.

*Finland vis-à-vis Sweden:* Relative to the overall e-weighted Theil index for the age cohort 75+, these Sweden and Finland subpopulations are diverging between Waves II & III with Finland producing greater inequality in age cohort 75+ (See Figure 6.10). Between Wave III & IV, there is a return to convergence with Finland and Sweden’s coefficients closely approaching one another. What this means is that Finland’s outcomes at the micro level are not consistently replicating those of a social-democratic nation over time as classified by Esping-Andersen. Although, Wave IV data show a convergence, the results may suggest the Three Worlds of Welfare Capitalism appears are not consistently valid at this level of analysis for this subpopulation.
Gender – Male

Finland vis-à-vis the United States: Relative to the overall e-weighted Theil index for males, these United States and Finland subpopulations are diverging or remaining stable across three datawaves (See Figure 6.11). What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. There is no evidence to suggest that the Three Worlds of Welfare Capitalism typology has become invalid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for males, these Germany and Finland subpopulations appear to be converging in Wave IV. Between Waves II and Wave III, Finland and Germany may be converging due to an increase in male inequality for Finland coupled with a decrease in male inequality in Germany (See Figure 6.11). What this means is that Finland’s outcomes at the micro level are possibly replicating those of a conservative nation as classified by Esping-
Andersen. The Three Worlds of Welfare Capitalism typology may no longer be valid at this level of analysis for this subpopulation.

*Finland vis-à-vis Sweden*: Relative to the overall e-weighted Theil index for males, these Sweden and Finland subpopulations are converging across all datawaves while the actual level of inequality is slightly higher for Finland (See Figure 6.11). This convergence appears to be tightening in Wave IV due to a larger decrease in inequality for Finland males. What this means is that Finland’s outcomes at the micro level appear to be replicating those of a social-democratic nation as classified by Esping-Andersen thus providing continuing support for the Three Worlds of Welfare Capitalism typology for this subpopulation.

**Figure 6.11 Theil Index (e-weighted) for Males**

![Figure 6.11 Theil Index (e-weighted) for Males](image)

**Gender - Female**

*Finland vis-à-vis the United States*: Relative to the overall e-weighted Theil index for females, these United States and Finland subpopulations are mainly diverging.
across all datawaves (See Figure 6.12). There is a slight trend toward convergence between Waves II & III. What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. There is no evidence to suggest that the Three Worlds of Welfare Capitalism typology has become invalid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for the females, these Germany and Finland subpopulations are converging between Waves II and Wave III. However, Wave IV indicates the beginning of a slight divergence (See Figure 6.12). What this means is that Finland’s outcomes at the micro level are not replicating those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Sweden: Relative to the overall e-weighted Theil index for females, these Sweden and Finland subpopulations are converging across the later datawaves while the actual level of inequality is slightly higher for Finland until Wave IV (See Figure 6.12). There is a slight divergence in Wave III with Finland’s level of inequality increasing slightly more than the increase in Sweden. What this means is that Finland’s outcomes at the micro level are replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.
Age Cohort 65-74 - Male

Finland vis-à-vis the United States: Relative to the overall e-weighted Theil index for males aged 65-74, these United States and Finland subpopulations are converging between Waves II and III and diverging between Waves III and IV. There is only a slight movement toward convergence between Waves II & III. Overall, the United States has much higher levels of inequality across all datawaves (See Figure 6.13). What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for males aged 65-74, these Germany and Finland subpopulations are diverging between Waves II and Wave III. Between Wave III and Wave IV, almost complete convergence is apparent from the data (See Figure 6.13). What this means is that Finland’s
outcomes at the micro level during Wave IV are possibly replicating those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology may no longer be valid at this level of analysis for this subpopulation.

**Finland vis-à-vis Sweden:** Relative to the overall e-weighted Theil index for males aged 65-74, these Sweden and Finland subpopulations are converging between Waves II and III. The trend from Wave III to IV suggests the beginning of a slight divergence, while the actual level of inequality is slightly higher for Finland for all datawaves (See Figure 6.13). What this means is that Finland’s outcomes at the micro level are replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

**Figure 6.13 Theil Index (e-weighted) for Male Age Cohort 65-74**
Age Cohort 65-74 - Female

Finland vis-à-vis the United States: Relative to the overall e-weighted Theil index for females aged 65-74, these United States and Finland subpopulations are diverging across Waves III and IV (See Figure 6.14). There is a movement toward convergence between Waves II & III as demonstrated by the relatively large decrease in United States inequality and the slight increase in inequality for Finnish females age 65-74. What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for females aged 65-74, these Germany and Finland subpopulations are diverging between Waves II and Wave III. However, Wave IV indicates a beginning of a convergence trend (See Figure 6.14). However, the level of inequality for German females age 65-74 is still higher than for the equivalent Finnish population. What this means is that Finland’s outcomes at the micro level are possibly beginning to replicate those of a conservative nation as classified by Esping-Andersen. However, inequality for this German subpopulation is still greater than for Finland rendering any general statement about this trend cautionary as best. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Sweden: Relative to the overall e-weighted Theil index for females aged 65-74, these Sweden and Finland subpopulations are parallel across three datawaves while the actual level of inequality is slightly higher for Finland across three datawaves (See Figure 6.14). What this means is that Finland’s outcomes at the micro level are replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.
Age Cohort 75+ - Male

Finland vis-à-vis the United States: Relative to the overall e-weighted Theil index for males aged 75+, these United States and Finland subpopulations are diverging between Waves II and III (See Figure 6.15). There is a parallel movement between Waves III and IV with inequality for Finland remaining substantially lower. What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for males aged 75+, these Germany and Finland subpopulations are sharply converging between Waves II and Wave III. This convergence comes after a sharp increase in inequality for German males aged 75+ between Wave I & II with no Finnish data available for comparison. However, Wave IV indicates a crossover with inequality for
German males age 75+ actually decreasing below that of Finland for the same subpopulation (See Figure 6.15). What this means is that Finland’s outcomes at the micro level are replicating those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology may no longer be valid at this level of analysis for this subpopulation.

*Finland vis-à-vis Sweden:* Relative to the overall e-weighted Theil index for the males age 75+, these Sweden and Finland subpopulations are diverging between Waves II & III with Finnish inequality for males age 75+ increasing. However between Wave II & IV, inequality for both countries’ males age 75+ is converging (See Figure 6.15). What this means is that Finland’s outcomes at the micro level are replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism appears to remain valid at this level of analysis for this subpopulation.

**Figure 6.15 Theil Index (e-weighted) for Male Age Cohort 75+**
Age Cohort 75+ - Female

Finland vis-à-vis the United States: Relative to the overall e-weighted Theil index for the females age 75+, these United States and Finland subpopulations are converging between Waves II & III with the United States still experiencing greater inequality for females age 75+ (See Figure 6.16). There is a movement toward divergence between Waves III & IV with a complete reversal of the previous inequality reduction for the United States. What this means is that Finland’s outcomes at the micro level are not replicating those of a liberal nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology appears to remain valid at this level of analysis for this subpopulation.

Finland vis-à-vis Germany: Relative to the overall e-weighted Theil index for females age 75+, these Germany and Finland subpopulations exhibit a crossover between Waves II and Wave III with inequality for this German subpopulation actually decreasing below that of the equivalent Finnish subpopulation. Between Waves III & IV, this crossover is reversed because the divergence emerges with Finland exhibiting decreasing inequality and inequality for German females 75+ increasing (See Figure 6.16). What this means is that Finland’s outcomes at the micro level may be replicating those of a conservative nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism typology may no longer be valid at this level of analysis for this subpopulation.

Finland vis-à-vis Sweden: Relative to the overall e-weighted Theil index for females age 75+, these Sweden and Finland subpopulations are diverging between Waves II & III with Finland showing a sharp increase in inequality for females age 75+. Between Waves III & IV, there is a crossover. The coefficients for Finland and Sweden actually intersect with Finland actually reducing inequality below that of Sweden for females age 75+ in Wave IV (See Figure 6.16). What this means is that Finland’s outcomes at the micro level are possibly not replicating those of a social-democratic nation as classified by Esping-Andersen. The Three Worlds of Welfare Capitalism may no longer be valid at this level of analysis for this subpopulation.
Figure 6.16 Theil Index (e-weighted) for Female Age Cohort 75+

![Graph showing Theil Index for different countries over waves]

- Sweden
- Finland
- Germany
- United States
Chapter Seven

Theil Confidence Interval Results

Validity of Theil Results

The Stata program ineqerr (Jolliffe & Krushelnytsky, 1999) generated the Theil Index with normal, bias-corrected, and percentile confidence intervals. Selected graphs were chosen to show the normal confidence intervals for the overall and subpopulation coefficients to discuss the potential validity of the Theil coefficients calculated with the LIS data and associated Atkinson interpretation. Because the LIS data sources vary in content from large samples of census survey data to registry-based population data, the discussion of confidence intervals for the selected Theil coefficients adds a further dimension to the interpretation of the Atkinson results.

Figure 7.1 shows the overall Theil Index (e-weighted) plotted with a 95% confidence interval for the selected LIS datasets. As seen in the figure, the confidence intervals for Sweden, Finland, and the United States are relatively compressed. This indicates stronger inference for these data waves. Analyzing the data in quartiles reveals The German waves I (1981), II (1984), and III (1989) have confidence intervals in the 75% (fourth) quartile. This may indicate larger variation in these waves of German data and thus indicate the need for more caution in inferences from these data waves. An interesting point to make is that LIS does not indicate that Waves I-III for Germany are problematic. Additionally, Wave III (1991) for the United States is in the fourth quartile. This may indicate increased variation and reduced potential for valid inference from data for this wave.
Figure 7.2 displays the 95% confidence interval plotted with the Theil Index for males. As seen in the figure, the confidence intervals for Finland and the United States are relatively compressed. This indicates stronger potential inference for these data waves. The German waves II (1984) and III (1989) are in the 75% (fourth) quartile of the data and have much larger confidence intervals. Consistent with the finding of the previous analyses, this may indicate larger variation in these waves of German data. The Swedish wave III (1992) is also in the fourth quartile of the data and exhibits a larger confidence interval. This may indicate larger variation in this wave of Swedish data. The United States wave III (1991) also exhibits a larger confidence interval because it is in the fourth quartile of the data. This may indicate larger variation in this wave of United States data.
Figure 7.2 Theil Index (e-weighted) for Males with 95% CI

Figure 7.3 displays the 95% confidence interval for the Theil Index for females. As seen in the figure, the confidence intervals for Finland and the United States are relatively compressed. This indicates stronger potential inference for these data waves. The German waves II (1984), III (1989), and IV (1994) have much larger confidence intervals as determined by the quartile analysis. This may indicate larger variation in these waves of German data. Swedish wave IV (1995) is also in the fourth quartile and exhibits a larger confidence interval. This may indicate higher variation in this wave of Swedish data.
Figure 7.4 displays the 95% confidence interval plotted with the Theil Index for age cohort 65-74. As seen in the figure, the confidence intervals for Finland and the United States are relatively compressed. This indicates stronger potential for accurate inference with regard to generalization to the larger population for these data waves. Analyzing the data in quartiles reveals that German waves II (1984) and III (1989) have confidence intervals in the 75% (fourth) quartile. As with the overall Theil index, this may once again indicate larger variation in these waves of German data. Additionally, waves II (1987) and III (1991) for Sweden are in the fourth quartile of the data. This may indicate increased variation in the data for these subpopulations and suggests that we have less confidence in inferences drawn from these data.
Figure 7.5 displays the 95% confidence interval plotted with the Theil Index for age cohort 75+. As seen in the figure, the confidence intervals for Sweden are relatively compressed. This indicates stronger potential for inference for these data waves. Yet again, the German waves I (1981) and II (1984) are in the 75% (fourth) quartile and have a much wider confidence interval. This may indicate larger variation in these waves of German data. The Finnish wave III (1991) is also in the fourth quartile of the data and exhibits a wide confidence interval. This may also indicate larger variation in this wave of Finnish data. The United States wave III (1991) also exhibits a larger confidence interval because it is in the fourth quartile of the data and may exhibit a larger variation in this wave of United States data.
In the overall context of this research, the confidence intervals provide a measurement to assess the validity of the Theil Index and corresponding Atkinson Index. From the data, German datawaves display the largest confidence intervals around the specific subpopulation Theil coefficient and possibly caution relative to the interpretation of the indices. However, for the majority of the remaining datawaves, the validity of the Theil coefficients is strong and suggests that inference to the corresponding Atkinson coefficient can be with reasonable confidence.
Chapter Eight

Synthesis, Implications, and Conclusions

Synthesis

This dissertation has 1) examined the continuing viability of Esping-Andersen’s Three Worlds of Welfare Capitalism typology; 2) employed a new analytical approach involving the application of a disaggregated model of subpopulations in nations to Esping-Andersen’s typology; and 3) explored the value of current inequality indices that take us beyond the use of the Gini coefficient. Before addressing the specific aims of the research, a summary of the overall findings for each nation and respective subpopulations is presented.

The United States has experienced a modest increase in inequality for the overall population as measured by both the Atkinson and Theil indices (See Figures 5.2 and 5.3). Relative to Finland, inequality for the aggregate United States population appears to be exhibiting a divergent trend (See Figure 5.4). A modest increase in inequality is also exhibited for gender and age cohort 75+ subpopulations in aggregate and both genders aged 75+ when disaggregated (See Figures 6.1 - 6.4, 6.6, and 6.8). Effectively, no change is exhibited in inequality for both the age cohort 65-74 subpopulation and when gender is disaggregated within this cohort (See Figures 6.3 - 6.5, and 6.7). Relative to Finland, all subpopulations are exhibiting a divergent trend in inequality (See Figures 6.9-6.16). This is consistent with the continuing validity of Esping-Andersen’s Three Worlds of Welfare Capitalism typology with respect to the United States liberal regime in both the aggregate and disaggregate population. In addition, these findings suggest that the trend of higher inequality over time is both gender and age-neutral because the increase occurs in all subpopulations. This is not to discount the need for targeted public policy as the levels of inequality for each subpopulation vary. Given the overall trend toward higher income inequality, the United States may be in a more volatile policy dilemma as policymakers address pension viability issues in the future. Also, these findings of higher income inequality across the entire population are consistent with a liberal regime’s dependence on market economic forces in generating adequate income for pensioners (Esping-Andersen, 1990).
Conversely, Germany has experienced a modest decrease in inequality for the overall population (See Figures 5.2 and 5.3). Relative to Finland, inequality for the aggregate German population appears to exhibit a convergent trend in inequality (See Figure 5.4). Modest decreases in inequality are also exhibited for males, age cohorts 65-74 and 75+, males aged 65-74, and both genders aged 75+ (See Figures 6.1-6.8). These lower levels of inequality may indicate a shift in German public policy with a resulting more equalized income distributions among certain subpopulations of older adults. In contrast, there is effectively no change over time in inequality for overall German females, while females aged 65-74 have exhibited a modest increase in inequality (See Figures 6.1, 6.2, 6.5, and 6.7). Unchanged inequality does not suggest an improvement in the income situation for females; nonetheless, is also does not suggest a decline in the income status of females. These findings may suggest that German pension policy outcomes are gender-neutral for females versus being gender-positive for males. This policy outcome is consistent with Esping-Andersen’s definition of a conservative regime with regard to its policy focus on the male as sole breadwinner (Esping-Andersen, 1990). Relative to Finland, subpopulation analyses reveal a split with regard to a convergence-divergence trend. Four subpopulations exhibit a convergence with regard to Finland: males, 65-74 age cohort and males aged 65-74 and aged 75+ (See Figures 6.9, 6.11, 6.13, and 6.15). The remaining four subpopulations (females, age cohort 75+, and females aged 65-74 and aged 75+) exhibit a divergent trend with regard to Finland (See Figures 6.10, 6.12, 6.14, and 6.16). The convergent trend findings suggest that Germany and Finland are beginning to producing similar outcomes relative to the income status of certain subpopulations. One possibility is that pension policy in Germany is producing more egalitarian outcomes for young-old and old-old German males as well as young old adults across gender. The alternative explanation of Finnish pension policy producing more conservative outcomes does not appear as plausible because the convergence may be occurring more as a result of the downward movement in the inequality measurement for Germany rather than an upward movement for Finland. Esping-Andersen’s Three Worlds of Welfare Capitalism typology may not remain valid with respect to these subpopulations as they may be converging into a European (Euro) regime. The
divergent trend findings may suggest that for young-old (65-74) and old-old (75+)
German females as well as the old-old aggregate population, German pension policy
may still be producing less egalitarian income distributions. These findings lend support
for the need for gender-specific pension policy to address continuing inequalities.

Sweden has experienced an increase in inequality for the overall population (See
Figures 5.2 and 5.3). Relative to Finland, inequality for the aggregate Swedish
population appears to be exhibiting a parallel trend (See Figure 5.4). Sweden also
exhibits effectively no change in inequality for females aged 65-74 (See Figures 6.5 and
6.7). Modest increases in income inequality were exhibited for the remaining
subpopulations: male, female, age cohorts 65-74 and 75+, males aged 65-74 and 75+,
and females aged 75+ (See Figures 6.1-6.8). Relative to Finland, Sweden exhibits a
mixed trend depending on subpopulation. Convergence is suggested for males,
females, 75+ age cohort, and males aged 75+ (See Figures 6.10, 6.11, 6.12, and 6.15).
These findings suggest that nations classified within the social-democratic regime by
Esping-Andersen (1990) produced similar inequality outcomes from the 1980’s to mid-
1990’s for these subpopulations. This suggests that Esping-Andersen’s Three Worlds
of Welfare Capitalism typology remains valid at this level of analysis. A divergent trend
is suggested for females aged 75+ in Sweden in comparison with Finland (See Figure
6.16). For older Swedish females, this may suggest a decline in their income status
possibly as a result of gender-negative pension policy such as a reduction in the
number of females receiving the national pension. A parallel trend is exhibited between
Sweden and Finland for age cohort 65-74, and both genders of age cohort 65-74 with
income inequality being greater for all datawaves (See Figures 6.9, 6.13, and 6.14).
These findings suggest that Finland and Sweden are experiencing their respective
income inequality trends in concert. However, Finland has a slightly higher level of
inequality over the time period analyzed.

Finland has experienced a neutral trend in inequality for the overall population
(See Figures 5.2 and 5.3). For the aggregate population, Finland appears to be
diverging from the United States, converging with Germany, and remaining parallel with
Sweden in terms of overall inequality as discussed previously (See Figure 5.4). The
convergence of conservative and social-democratic regimes offers a possible
modification to Esping-Andersen’s typology. In the future, there may be only two
regimes in the world of welfare capitalism; one liberal and the other characterized as
either “European” or “continental”. Specific to Finland, the primary focus of this study,
this finding may be perceived as contrary to previous research (Jantti, Kangas, &
Ritakallio, 1994). Jantti and colleagues (1994) proposed that the Finnish pension
system was actually converging with those of continental Europe, a finding that was
discussed with Dr. Olli Kangas during my field research in Finland. However, findings
from this research suggest that Germany may actually be converging with Scandinavia
as opposed to Finland converging with Germany. The evidence for this phenomenon
from the present analysis is the larger decrease in German inequality for subpopulations
where convergence is suggested. Given Finland’s aggressive European Union (EU)
integration, it is conceivable that Finland is emerging as a policy leader versus a
historical policy follower.

Concerning the continued viability of Esping-Andersen’s Three Worlds of Welfare
Capitalism typology, the findings suggest two main points. First, Esping-Andersen’s
typology appears to remain viable over the time period covered in this analysis at the
macro level for at least one nation classified within the liberal regime (the United
States). This conclusion is supported by the previous discussion of the divergent trend
between the United States and Finland. Second, the conservative (Germany) and
social-democratic regimes (Sweden and Finland) may be shifting from their respective
classifications at the macro level into a more European (Euro) regime. This shared
pattern is leading to a newly emergent “Euro” welfare state typology; It may be
characterized by conservative regimes shifting away from status-reinforcing pension
policy to a more egalitarian policy attitude toward certain subpopulations. The findings
from this research that lend support to the conservative regime shifting toward the
social-democratic regimes are those with certain micro level areas of decreasing
inequality for Germany (See Figures 6.9 and 6.11). This conclusion is also supported
by the previous discussion on the trend between Finland and the comparative nations of
Germany and Sweden. This finding addresses the research of Myles and Quadagno
(1997) regarding retrenchment and the convergence of European social policy in the
1990’s. Specifically, the findings from this research question Myles and Quadagno’s
(1997) view that retrenchment is causing all nations to reduce their levels of social spending, e.g., developing policies to reduce pension benefits and/or the number of beneficiaries, because of the reduction in inequality for German males and overall stability in inequality for Finland and Sweden. However, the LIS data ending with Wave IV in the mid-1990s may not fully reflect the actual effect of retrenchment.

Concerning the disaggregated analytic approach, the typology shows a similar conservative-social democratic convergence at the micro level as discussed in the preceding paragraphs. Specifically, the trend for males across all age cohorts suggests that for these subpopulations, the two regimes are converging. The trend for males in this conservative regime may indicate an improving inequality status relative to historical experience (See Figures 6.13 and 6.15). Findings for males in these social-democratic regimes exhibit a stable trend in inequality (See Figures 6.13 and 6.15). However, the findings for females do not reflect a conservative-social democratic convergence for this subpopulation (See Figures 6.14 and 6.16). In the context of Finland, this non-converging trend may indicate that the Finnish pension system is maintaining autonomy for females relative to spousal employment as well as pension eligibility and related benefits. This provides evidence that gender-constructed pension policies, as suggested by Sainsbury (1999), currently exist in some form within these social-democratic regimes, but still need developing in this conservative regime. In order to attain full convergence, Germany needs to address the entitlement features of both national and employment pensions as they are now tied to employment status.

Finally, concerning the value of multi-index analysis versus a single-index analysis, the research suggests that the basic interpretability of the Atkinson Index combined with the generation of 95% confidence intervals for the Theil index provides a more robust method of analysis not offered with a single index, such as the Gini, alone. For example, Pearson correlations suggest a very high correlation between the Atkinson and Theil coefficients (See Table 5.2). These high correlations suggest that the interpretability of the Atkinson Index can be augmented by the inferential validity of the Theil Index. Interpreting the specific Atkinson Index allows the impact of a given inequality change to be estimated. For example, with respect to Finland, the Theil Index confidences are small (indicating a high level of confidence) except for Wave II for age
cohort 75+, and even this interval passes the quartile test. The interpretation of the changes in the Atkinson Index over the time periods and subpopulations should more accurately reflect the experience of the entire population. In other words, the validity gained from the confidence interval estimates of the Theil Index provides better inference to the value of the Atkinson Index interpretation across the general population. The dual-index analysis design in this research provides additional support for the use of the LIS data in comparative research because it alleviates the concerns of those skeptics who criticize the use of population weighted data.

In this research, the Atkinson and Theil Indices provided similar trend results for the majority of macro and micro analyses. The German datasets displays the most variation in the indices. Instances where the inequality trends differ include: Swedish females between Waves II and III; Finnish males and age cohort 65-74 between Waves II and III; German males, females, 65-74 and 75+ age cohorts, and overall between Waves I and II; and United States males and 75+ age cohort between Waves III-IV. These trend differences may be result of problems with the specific datasets and reported income for those specific subpopulations or algorithmic difference in index calculations. One research design modification that might reduce the number of variations in the indices is to adjust the selected level of epsilon for the Atkinson Index.

Limitations

As with all research, there are some limitations to both the analysis and subsequent interpretation of the results in this dissertation. First, there are only three waves of data for Finland. This data limitation is due to Statistics Finland only submitting data for Waves III, III, and IV of the LIS project. Finland will submit 2000 registry-based income data for Wave V, thus making it possible to conduct research on more than three waves in future research. Second, limitations also exist in the interpretation of Atkinson results where the Theil Index varied in a particular datawave for certain subpopulations as discussed in the previous section. However, this limitation should not diminish the utility of the dual-index method as an analytic technique because selecting a different level of epsilon may produce complete alignment of the indices trends over time. In addition, this research did not allow for the determination of
the specific income variables contributing most to the specific inequality of subpopulations as the main foci were to validate Esping-Andersen’s typology, disaggregate the analysis, and use a new dual-index approach. Knowing the directional change of these regimes is important in and of itself because areas where policy modifications are needed have been identified. While this research has assumed the transfer of confidence level of the Theil Index to the interpretation of the Atkinson is appropriate because of the high levels of correlation, there are of course statistical scenarios where this might not be the case.

Implications for Understanding Finland

This dissertation has revealed several implications for generating a better understanding of Finland and Finnish policy direction relative to pensions. Although Finland’s inequality outcomes do not show a convergence with the liberal regime, future policy adding more aggressive private investments to pension portfolios may cause a shift in this direction. Future LIS data may provide empirical evidence for an increase in inequality as the pension system takes on more economic risk. If there is actually a convergence between Germany and Finland relative to inequality outcomes, then Finland is possibly in a stronger position to direct future policy development within the European Union. In addition, as Germany exhibited inequality shifts toward the social-democratic regimes, targeted policy should be developed for other conservative nations in order to replicate the female outcomes for Finland. Finland may be in a policy position to assist in the development of these policies as EU integration continues. In a broader context, the measured inequality outcomes for Finland suggest that the corrective policy action taken in the early-1990’s may need more time to become manifest in public data.

Specific to Finland, this dissertation suggests the addition of occupational categories in an analysis relative to income inequality to identify specific occupations, if any, that may require targeted policy resulting from higher levels of income inequality. If Finland is to emerge as a policy leader, then more in-depth analysis of all pension schemes should be conducted. As global aging trends cause nations, such as Finland, to actively address pension income and economic well-being of older adults, more in-
depth research should be conducted via the use of factor analysis on the Theil Index inequality measures. A factor analysis would identify income variables that are contributing more to the overall inequality for the subpopulations.

**Implications for Older Adult Pensioners**

This dissertation research suggests some key implications for older adults regarding pension policy development and the viability of future pension benefits. The evidence from this research suggests that if the current trend continues, older adults in the United States will continue to experience increasing income inequality. Also, German older adults entering retirement are likely to have increased income inequality as they age given the 65-74 age cohort is experiencing greater inequality than their older counterparts. Older adults in Finland and Sweden are experiencing relatively stable levels of inequality; as new private pension options are implemented, these older adults will likely have to make future consumption and investment adjustments to reflect the variable returns on pensions in the private market in social-democratic regimes.

**Implications for Policy Development**

This research suggests some key implications for policy development. First, if Esping-Andersen’s typology is no longer valid in contemporary time regarding the conservative and social-democratic regimes, then policymakers must begin to address policy changes with this regime convergence in mind. Second, if Germany is converging with Finland for certain subpopulations, the fiscal impact of this convergence should be addressed because pension contributions may not be able to fund the anticipated expenditures, especially for German males.

This research has implications for policy development in less developed nations. As non-OECD nations, such as Brazil and Chile, begin to assimilate into the world economy and develop social benefit programs, policymakers from these nations will look for developmental frameworks (Paul & Paul, 1995). Esping-Andersen’s typology may not be applicable to these nations given non-OECD nations were omitted from the typology development. Furthermore, developing a non-OECD sensitive typology may be difficult as data collection and reporting problems for these nations may confound...
any typology development (Diamond, 1996; Feldstein, 1998; Montecinos, 1997; Williamson & Hochman, 1995). In addition, as Eastern European nations, e.g., Hungary and the Czech Republic, stand out as future exemplars for pension development in the former Eastern bloc, they may exhibit policy characteristics that merit adoption by the developed nations (Ferge, 1997). Developing nations need to be integrated into the welfare state discussion to reduce the likelihood of past inequalities being repeated (Buss, Beres, Hofstetter, & Pomidor, 1994; Haney, 1997; Lee, 2000; Musil, 1995; Orosz, 1990; Velkoff Victoria & Kinsella, 1993).

Suggestions for Future Research

The use of factor analysis on the Theil indices of each subpopulation would allow the identification of the income inequality relative to its location in specific income variables. This type of analysis would provide further empirical support to direct pension policy toward specific income types or targeted subpopulations. This type of analysis would have been inappropriate for the scope of this dissertation because the income variables are only disaggregated in Wave IV and this research used all available datawaves. This dissertation suggests future examination of different nations within Esping-Andersen’s framework to further validate countries using the duel-index approach. All twenty-five LIS nations should be examined to further clarify the usefulness of the dual-index approach. In addition, the addition of occupational status (where available in the LIS datasets), and geographical location could enhance this research by determining if location or employment inequality trends are shifting as well.

Finally, select registry-based nations such as Finland or Norway should be selected for a pilot study linking actual health outcomes with income data. Research on income and health could enhance the overall scope of the LIS data. I look forward to subsequent LIS datawaves becoming available to confirm or modify the findings in this research. A few nations have released Wave V (2000) data for integration into the LIS database. From a theoretical point of view, for those interested in the social welfare index literature, it might also be useful to explore setting epsilon at different levels depending on the characteristics of each welfare state in the individual nation. In addition, epsilon may be set across a continuum, e.g., 0 to 2 in .10 increments, for all
comparative nations to examine how slight changes in epsilon affect inequality for each nation.
Appendix A

The Administrative and Benefit Structure of the Finnish Pension System

The information is compiled from several sources at Kansaneläkelaitos (KELA) – The Social Insurance Institution of Finland (KELA - The Social Insurance Institute of Finland, 2000).

Administrative Organization

Currently, the Sosiaali ja Terveysministeriö - Finnish Ministry of Social Affairs and Health has the responsibility of general supervision of the private-sector statutory pension schemes. Kansaneläkelaitos (KELA) - The Social Insurance Institution has the responsibility of administering the universal and disability pensions through district offices, which are directed by Parliament-appointed governing body. Local boards determine old-age and survivors' benefit. Local municipalities collect universal pension contributions via municipal (local) taxation. Eläketurvakeskus - The Central Pension Security Institute is the statutory central body that managed private sector earnings-related pension schemes. Carriers for earnings-related pension schemes are approved private insurance companies, pension funds and foundations that are supervised, as of April 1, 1999, by the Finnish Insurance Supervision Authority. Pension programs in the public sector are administered by the Local Government Pensions Institute under the general supervision of the Sisäasiainministeriö – Finnish Ministry of the Interior. Pension programs for State employees are administered by the Valtiokonttori - State Treasury Office under the general supervision of the Valtiovarainministeriö - Ministry of Finance.

Old Age and Death Coverage

The universal (national) pension is income-tested. Coverage for the universal (national) pension is extended to all Finnish citizens (age 16 and older) who have resided in Finland for at least 3 years as well as citizens of other countries who have resided in Finland for 5 years or more immediately preceding pension. The earnings-related pensions are not income-tested. Coverage is extended to all regular employees aged 14 and older. There is no lower limit of earnings or duration of work. The Finnish
government has special systems for seasonal, part-time, maritime, public employees, farmers, and self-employed workers.

**Source of Funds**

**Insured person:**
- Universal pension--employees, none.
- Earnings-related pension--employees, 4.7% of earnings.
- Earnings-related pension--self-employed: 21.0% (if under age 43, 10.5% for the first three years of self-employment), maximum earnings: 474,111 marks a year [Exchange rate: U.S. $1.00 equals 5.17 marks. One euro equals 5.95 marks].

**Employer:**
- Universal pension: 2.4% to 4.9% of payroll (private employers, depending on capital of employer) or 3.95% of payroll (public employers).
- Earnings-related pension: 17.4% for employers with fewer than 50 employees; 10.34% to 24.35%, according to age and gender of employee, for employers with more than 50 employees.

**Government:**
About 36% of universal pensions (about 3/4 of this borne by local governments); and all universal survivor pensions. Also pays cost of earnings-related pension for self-employed and farmers not covered by their own contributions. Earnings-related pension contributions are paid on total wage. Average for all employees and employers: 21.5% of payroll in 1999.

**Qualifying Conditions**
To qualify for the universal (national) old-age pension, a person must attain the age of 65. Retirement is not necessary to obtain this specific pension. One qualifying codicil is that the universal (national) pension is not payable to Finnish citizens living abroad after 1 year unless the person has previously been a resident of Finland for at least 10 years before beginning pension or abroad for medical reasons. A person can
qualify for an early universal (national) pension beginning as early at 60, but no later than 64. Otherwise, full pension benefit rates apply for that individual.

To qualify for an earnings-related pension, a person must be 65 years older and retired covered employment. This is known as the agent-state relationship (Kenc & Perraudin, 1997). Also, the person must have 40 years’ of work coverage to be entitled to the full earning-related pension. A person can qualify for an early earnings-related pension (reduced a percentage for each year prior to reaching age 65) beginning as early at 60, but no later than 64. Otherwise, full benefit rates apply for that individual.

Part-time pension (earnings-related pension only): Aged 56-64
Reduced work schedule (16-28 hours per week and earnings equal to 35% to 70% of full-time earnings), employed full-time for 12 of past 18 months, and covered during at least 5 of preceding 15 years.

Individual early retirement pension: Age 58-64, unable to work due to mental or physical exhaustion; age, long-term service, working conditions, etc. also considered.
Survivor pension--Universal pension: (no income-test) deceased lived in Finland at date of death for at least 3 years if citizen (if not citizen, 5 years); widow(er), if Finnish citizen must have lived in Finland at date of death or move to Finland within one year of death of spouse (non-citizen must have lived in Finland 5 years before date of death). Widow (er) must be under age 65, married to deceased before age 65, caring for a child under age 18 or, if childless, be at least 50 years old at spouse's death; in addition, must have been married at least 5 years.
Supplementary survivor's pension (income-tested): Same as under universal old-age pension.
Universal orphan's pension: Under age 18 (under age 20 if student); resident of Finland or moved to Finland within one year.
Orphan's supplement (income-tested): Under age 18 (not for students aged 18-20).
Earnings-related pension: deceased was insured or pensioner at death, married before the deceased spouse's 65th birthday; if childless, couple must have been married for at least 5 years, and survivor must have been under age 50 at time of marriage and at least age 50 or disability pensioner for at least 3 years when widowed. Paid to widower
on equal terms and under certain circumstances to former spouse. An orphan's pension is paid to a child under age 18.

**Old-Age Benefits**

Universal old-age pension (income-tested): 60 to 2,547 marks per month, according to municipality, marital status, other income (including other pension) received. Income test: Benefit reduced to 50% of the difference between other pension income and 245 marks per month; pension not payable if other pension income exceeds 4,406-5,219 marks per month, according to family status and municipality. The amount is also adjusted to the length of residence in Finland, with the full amount payable after 40 years of residence, reduced on a pro-rata basis if less than 40 years.

Other components (as of January 1996): Housing allowance, proportional to income and housing expenses, up to 722 to 2,594 marks a month [Exchange rate: U.S. $1.00 equals 5.17 marks. One euro equals 5.95 marks], according to municipality, marital status, and number of family members; pensioner care allowance: 278, 691, or 1,382 marks a month, based on extent of care needed. Early pension: Payable from age 60; amount reduced by 4-6 percent per year claimed before age 65.

Deferred pension: Increment of 1 percent of pension for each month deferred after age 65. Universal pension and supplements adjusted automatically each year for changes in cost-of-living index.

Earnings-related pension: 1.5% of average pensionable earnings for each year of employment between ages 23 and 59. 2.5% for ages 60 to 65. 0.5% for each year before July 1962. Pensionable earnings are average revalued earnings for the last 10 years. Pension is determined separately for each employment contract.

Early retirement pension (from age 60) reduced by 5.64%-6% per year depending on the year of birth of the beneficiary. Pension increased by 1% for each month of deferment beyond age 65.

Partial pension: 50% of the difference between former full-time income and part-time income.

Adjustment: Earnings-related benefits payable to pensioners aged 65 and older are adjusted yearly according to 20% of the annual average increase in wage (or 50% if
pensioner under age 65) and 80% of annual average increase in price (50% if pensioner under age 65) changes.

Survivor Benefits

Universal survivor pension: First 6 months following spouse's death, maximum basic pension of 1,351 marks a month, plus means-tested supplement up to 1,196 marks a month, and housing allowance--according to geographical area--payable to widow(er). From 7th month, income-tested (same as universal old-age basic benefit, except if surviving spouse caring for dependent child). Adjusted for length of residence of the deceased. Orphans (under age 18, or age 20 if student): Up to 264 marks a month; full orphan, up to 528 marks a month; either may be increased by maximum 352 marks a month (income-tested); increase not applicable to student aged 18-20.

Adjustment: Universal pension and allowances adjusted automatically each year for changes in the cost-of-living index.

Earnings-related survivor pension: Widow(er), up to 50% of pension payable to insured. No means test for first 6 months if surviving spouse under age 65 and not receiving a pension in his/her own right. If the survivor is supporting children, no income test before the youngest child is 18 years old. Income-test: the retirement or disability pension personally accrued by the surviving spouse (even if not in payment) reduces the amount of the survivor's pension. Orphans (under age 18): 1/3 of insured's pension for 1, up to 5/6 for 4 or more. Full orphan's pension increased by another 1/6, not to exceed insured's pension. Adjustment: Earnings-related benefits payable to pensioners aged 65 and older are adjusted yearly according to 20% of the annual average increase in wage (or 50% if pensioner under age 65) and 80% of annual average increase in price (50% if pensioner under age 65) changes.

Survivor pension: Payable to widow, widower, and orphans. Maximum survivor pension: 70% of earnings of insured. Funeral grant: 19,900 marks.
Appendix B

Stata Program Code

STATA Program to calculate Selected Inequality Indices
** user=id
** password=password
** package=stata
** project=lis
run profile
#delimit;
global keepit "casenum hweight num6574 numge75 d1 d3 d4 d5 d7 d27 dpi";
program define setups;
drop if d5==3;
drop if dpi==.;
drop if dpi==0;
replace hweight=1 if hweight==0;
generate ey=(dpi/(d4^0.5));
generate pweight=(hweight*d4);
gen cweight=hweight*d27;
gen eweight=((num6574+numge75)*hweight);
end;
program define bottom;
setups;
quietly sum ey [w=pweight];
generate botlin=0.01*_result(3);
replace ey=botlin if ey<botlin;
end;
program define top;
quietly sum dpi [w=pweight], de;
generate toplin=10*_result(10);
replace ey=(toplin/(d4^0.5)) if dpi>toplin;
end;
program define povl;
qui summ ey [w=pweight], de;
qui gen povl1=_result(10)*.4;
qui gen povl2=_result(10)*.5;
qui gen povl3=_result(10)*.6;
end;
program define lisdiss;
**1-17;
recode d1 1/17=1;
**18-64;
recode d1 18/64=2;
**65-74;
recode d1 65/74=3;
**75plus;
recode d1 75/100=4;
label define d1lbl 1 "1-17" 2 "18-64" 3 "65-74" 4 "75 plus";
label values d1 d1lbl;
label define d3lbl 1 "Male" 2 "Female";
label values d3 d3lbl;
egen region=group(d1);
table d1;
table region;
table region d3;
ineqdeco ey [w=eweight], by(region);
in(eqdeco ey [w=eweight], by(d3);
in(eqdeco ey [w=eweight], by(region d3);
atkinson ey;
atkinson ey if d1==3;
atkinson ey if d1==4;
atkinson ey if d3==1;
atkinson ey if d3==2;
atkinson ey if d1==3 & d3==1;
atkinson ey if d1==3 & d3==2;
atkinson ey if d1==4 & d3==1;
atkinson ey if d1==4 & d3==2;
in(eqerr ey [w=eweight] if d1==3;
in(eqerr ey [w=eweight] if d1==4;
in(eqerr ey [w=eweight] if d3==1;
in(eqerr ey [w=eweight] if d3==2;
in(eqerr ey [w=eweight] if d1==3 & d3==1;
in(eqerr ey [w=eweight] if d1==3 & d3==2;
in(eqerr ey [w=eweight] if d1==4 & d3==1;
in(eqerr ey [w=eweight] if d1==4 & d3==2;
end;
use $keepit using $ccyyh;
di "Income Inequality Coefficients for LIS Country YY";
bottom;
top;
povl;
lisdiss;
use $keepit using $ccyyh, clear;
di "Income Inequality Coefficients for LIS Country YY";
bottom;
top;
povl;
lisdiss;
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