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Working Paper

Fiscal redistribution in comparative perspective: Recent evidence from the Luxembourg Income Study (LIS) Datacenter

LIS Working Paper Series, No. 717

Provided in Cooperation with:

Luxembourg Income Study (LIS)

Suggested Citation: Jesuit, David K.; Mahler, Vincent A. (2017) : Fiscal redistribution in comparative perspective: Recent evidence from the Luxembourg Income Study (LIS) Datacenter, LIS Working Paper Series, No. 717, Luxembourg Income Study (LIS), Luxembourg

This Version is available at:

<https://hdl.handle.net/10419/203004>

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LIS

Working Paper Series

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Fiscal Redistribution in Comparative Perspective: Recent Evidence from the Luxembourg Income Study (LIS) Datacenter

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September 2017



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**Fiscal Redistribution in Comparative Perspective:
Recent Evidence from the Luxembourg Income Study (LIS) Datacenter**

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Revised version of a paper prepared for a conference on “Leviathan after the Boom: Public Finance in the Industrialized Western Countries since the 1970s,” sponsored by Humboldt University, Berlin, in Cologne, Germany, 13-15 June, 2013.

The final revised version of this paper is published in *The Political Economy of Public Finance*, Marc Buggeln, Martin Daunton and Alexander Nützenadel (eds.), Cambridge, UK: Cambridge University Press, 177-198 (2017).

ABSTRACT

Fiscal Redistribution in Comparative Perspective: Recent Evidence from the Luxembourg Income Study (LIS) Datacenter

This paper offers an overview of income inequality and government redistribution between the late 1960s and 2010 in 20 developed countries. Our primary data source is household-level income surveys available from the Luxembourg Income Study Database (LIS). These data allow us to measure overall redistribution; to explore whether redistribution has been achieved primarily through direct taxes or social transfers; to compare the redistributive effect of old-age pensions and transfers to those of working age; and to explore several approaches to second-order feedback effects whereby taxes and transfers affect private sector income. We find that there is substantial cross-national variation in overall fiscal redistribution and that transfers account for the majority of redistribution in the countries we examine. With respect to changes over time, we find that overall redistribution has increased steadily since the early 1970s in most countries and has largely, but not entirely, kept pace with a substantial growth of private sector inequality.

The aim of this chapter is to offer an overview of recent trends in income inequality and government redistribution in 20 developed countries, using data that have been computed from household-level income surveys available from the Luxembourg Income Study Database (LIS).¹ The central accomplishment of the LIS, which was established in 1983, has been to harmonize household-level income surveys produced by national statistical agencies and other authoritative bodies so that they conform to a common definitional framework. LIS micro-data are then made available to researchers, who can use them to calculate, among other things, the redistributive effect of direct taxes and various types of social transfers. LIS data are available for ten waves centered on 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2004, 2007 and 2010.² However, not every country is represented in every wave and some countries include more than one year in a single wave.

The LIS offers data on a wide variety of sources of private sector income, including wages and salaries, self-employment income, interest and dividends, rental income and royalties. It also measures income from a large number of individual public social transfers, including pensions, unemployment compensation, child allowances and means-tested public assistance. Finally, most LIS surveys account for direct taxes, including income taxes and social insurance contributions.³

¹LIS Cross-National Datacenter in Luxembourg, *Luxembourg Income Study Database* (2015) <http://www.lisdatacenter.org/our-data/lis-database/>.

²Technically, the datasets before 1980 are called “historical” datasets, since they preceded the establishment of the LIS and were not initially fully harmonized. “Wave I” thus refers to income surveys centered on 1980. However, historical datasets have recently been harmonized, and are thus comparable to later datasets, and we have employed them when available. For clarity, we will use the generic term “wave” in referring to LIS surveys in general, including historical surveys. However, we will use the official LIS designation, in which Wave I centers on 1980, when referring to individual LIS waves.

³Property taxes are not, however, included in LIS’s coverage of direct taxes. Across our 20 countries these accounted for an average of 2.1 percent of GDP in 2011, in comparison with 19.7 percent for individual income taxes and social insurance contributions (Organization for Economic Cooperation and Development (OECD) (2015) *Revenue Statistics – OECD Member Countries*. <http://stats.oecd.org/Index.aspx?DataSetCode=REV> (2015)).

The figures described in this chapter update and extend our “Fiscal Redistribution Dataset,” which has provided data on a number of aspects of inequality reduction in developed countries by way of taxes and social transfers. The dataset was first compiled from LIS micro-data in 2005.⁴ In 2008, it was updated to reflect changes in LIS methodology and to include several newly available income surveys.⁵ Some of our measures were further extended and updated in 2011 in a separate effort by Caminada and Wang.⁶ Our revised dataset, as well as that of Caminada and Wang, are available on the LIS website and have been widely used by researchers interested in income inequality and government redistribution.

The purpose of this chapter is to describe the results of a thorough update of our data on fiscal redistribution that we have recently undertaken, an update in which we have not only added new figures but also recalculated earlier ones to reflect recent changes in LIS methodology. For a number of reasons, we believe that this is a good time to update our dataset “from the ground up.” First, in mid-2011 the LIS implemented a new data template that made a number of changes in traditional LIS variables. One important revision was a new definition of post-government income, which is now called “disposable household income” (DHI). The main change is that most non-cash income (but not imputed rent) is now included in market income. This matters most for developing countries, but it also has some effect on the developed

⁴Vincent A. Mahler and David K. Jesuit, *Fiscal Redistribution Dataset*, version 1 (2005); Mahler and Jesuit, “Fiscal Redistribution in the Developed Countries: New Insights from the Luxembourg Income Study,” *Socio-Economic Review* 4 (2006): 483-511.

⁵Jesuit and Mahler, *Fiscal Redistribution Dataset*, <http://www.lisdatacenter.org/wp-content/uploads/2011/02/fiscal-redistribution-details.pdf> (2008).

⁶Koen Caminada and Chen Wang (2011) *Leiden LIS Budget Incidence Fiscal Redistribution Dataset*, <http://www.lisdatacenter.org/wp-content/uploads/2011-Fiscal-Redistribution-Doc.pdf> (2011) and Koen Caminada, Kees Goudswaard and Chen Wang, “Disentangling Income Inequality and the Redistributive Effect of Taxes and Transfers in 20 LIS Countries over Time,” Luxembourg City, Luxembourg: Luxembourg Income Study Working Paper no. 581 (2012).

countries that are our focus. Since this new DHI income concept has become the basis for the LIS's widely used "Key Figures⁷," we believed that it was important for us to employ it as well.

Beyond this, there has been a broader effort in the new LIS template to improve standardization of income definitions across countries, and numerous smaller revisions and corrections have been made to various datasets in the last few years, some initiated by the LIS and others by the national statistical agencies that supply the original data. Finally, nearly all LIS variable names were changed in 2011, in an effort to develop a consistent nomenclature. In this revision we will use the new names, which should make it easier for other researchers to replicate, update or extend our calculations.

Aside from the new template just described, the LIS database has grown considerably since our last calculations. While our original data set included 59 country-years, the version described here includes 116. One reason for this is that LIS Waves have become more frequent: they are now conducted approximately every three years instead of every five. Of special interest is the fact that Wave VIII includes surveys conducted in 2010, after the onset of the 2008 global financial crisis. In addition, the figures described here include no fewer than seven countries that were not represented in earlier versions, either because the starting point of then-available surveys measured income net of direct taxes, or because they have recently joined the LIS project.

To be specific, this revision includes all currently available (as of June, 2015) LIS "gross income" datasets, that is, data sets whose starting point is pre-tax income.⁸ It does not include "net income" datasets, for which it is not possible to account for direct taxes, or "mixed"

⁷ Available for download at <http://www.lisdatacenter.org/data-access/key-figures/download-key-figures/>.

⁸The one exception is the 2013 US dataset, which is not included because it is, at present, the only available appropriate dataset from LIS Wave IX.

datasets, for which coverage of direct taxes is incomplete.⁹ Furthermore, our coverage is limited to the developed countries; it does not include LIS datasets for transitional or developing economies. In all, we include 20 countries for an average of 5.8 points in time ranging from 1967 through 2010. The exact countries and years, along with all data and details on household size equivalization, household weighting, survey weighting, the treatment of zero income, and top and bottom coding, are available in the on-line Appendix (available at <http://www.lisdatacenter.org/resources/other-databases/>).

Measuring Income Inequality and Government Redistribution

The starting point in computing summary figures for income redistribution is to measure the distribution of private sector income. The most important source is earnings, which are comprised of wages, salaries and income from self-employment, including (as much as possible) non-cash compensation. To this figure are added income from property, such as interest and dividends, rental income, royalties, non-cash income (as much as possible) and pensions received by private and public sector employees. The total of these sources of income is defined as “factor income.” Finally, we add to factor income three additional, relatively minor, sources of private but non-market income: merit-based educational transfers, transfers from non-profit institutions, and inter-household transfers such as alimony and child support.

In measuring the effect of direct state redistribution via taxes and transfers, it is first necessary to add to private sector income a number of public sector social transfers. As has been indicated, the coverage of such transfers in LIS income surveys is quite extensive. The main benefit modes include retirement pensions; child and family allowances; unemployment compensation; sick pay; accident pay; disability pay; maternity pay; “other social insurance”;

⁹The LIS characterizes all three Italian datasets as “mixed,” but we have included them because they account for the most important direct taxes, income taxes and social insurance contributions.

and means-tested social assistance of various kinds. After summing private and public sector sources of income, we arrive at “total gross income.” The final step is to deduct from total gross income the most important taxes that are paid directly by households: income taxes and mandatory social insurance contributions. When this is done, we arrive at our measure of post-tax and -transfer income, called “disposable household income”—the income households actually receive.

There is an additional measurement issue that must be taken into account. This is the inherent difficulty of separating public and private sector pensions in countries in which there is a substantial private pension system. In particular, in a number of countries supplementary private pensions are mandated or strongly encouraged (through various incentives) by the state, but entirely financed and allocated by employers and employees. In these cases, the distinction between public and private pensions is somewhat artificial: in countries with closely linked supplementary private pensions one would not expect the state to provide the same level of public pension coverage as in countries in which the public system is more dominant, since part of the income need of pensioners is already being met. Beyond this conceptual difficulty, for 27 of our 116 income surveys it is impossible in practice to disaggregate income from public and linked private systems.

There is clearly no perfect solution to this problem, but for the conceptual reasons noted above, as well as a desire for consistency across countries and a reluctance to lose a fifth of our income surveys, our main measure of transfer redistribution considers the pension system as a whole. In addition to this broad measure of pensions, we have reported data for unambiguously public programs for the smaller number of countries for which they are available.

Income Inequality and Government Redistribution: An Overview

It is now time to begin to describe our data, with a particular focus on changes since our dataset was last updated. As we have indicated, our complete 116-case dataset is available in the Appendix to our chapter. For ease of exposition, we will begin our summary by focusing on national averages over multiple LIS Waves for each of our 20 countries.

TABLE 1 ABOUT HERE

We begin with pre-tax and –transfer inequality.¹⁰ As can be seen in the first column of Table 1, countries vary quite widely in the extent of income inequality generated by the market and (to a much lesser extent) private transfers: pre-tax and –transfer inequality ranges 164 Gini points across our 20 countries, from a high of 0.542 in Greece to a low of 0.378 in Iceland.¹¹

The large countries of the developed world fall between these extremes: Italy reports the third

¹⁰Many readers will be interested in the highest income groups, those above the 95th or 99th percentile, which are an important focus of Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge, MA: Harvard University Press, 2014), among others. However, LIS data are not well-suited to focusing on these groups because of top-coding issues. For those interested in cross-national data on top incomes we recommend Facundo Alvaredo, Tony Atkinson, Thomas Piketty and Emmanuel Saez (2014) *The World Top Incomes Database*, <http://topincomes.g-mond.parisschoolofeconomics.eu/>. In addition, readers are referred to LIS Cross-National Data Center in Luxembourg, *The Luxembourg Wealth Study* (LIS Cross-National Datacenter in Luxembourg (2014) <http://www.lisdatacenter.org/our-data/lws-database/>, a companion to the LIS that measures accumulated wealth—but whose data are available for many fewer countries and years.

¹¹In measuring inequality we have employed the Gini index, which ranges from 0 (all households receive the same income) to 1 (one household receives all income). Gini coefficients can be measured on either a 0-1.000 scale or a 0-100 scale; we use the former. By “Gini point” we mean an increment of 0.001. As to redistribution, we have reported the absolute rather than the relative change in the Gini index as a result of redistribution, a measure that is not only more straightforward but also has the benefit of allowing one to compare the extent of state redistribution in a way that is not affected by levels or trends in market income inequality. In practice, these variables are strongly positively related, with a bivariate r of +0.930 across our 116 country-years. For those who prefer them, relative-change figures can easily be calculated from our pre- and post-tax/transfer figures. In calculating redistribution, we employ the approach often attributed to Morgan Reynolds and Eugene Smolensky, *Public Expenditures, Taxes and the Distribution of Income: The U.S., 1950, 1961, 1970*. (New York: Academic Press, 1977), which re-ranks households after public social transfers have been added and direct taxes deducted from private sector income when calculating the Gini coefficient (see also Caminada and Wang, 2011, and Caminada et al., 2012). This is termed “net redistribution.” Later in the paper we will consider, and offer figures for, an alternative approach to measuring redistribution that decomposes net redistribution into two components: mobility (re-ranking) and progressivity. This method first ranks households by disposable household income and then maintains this ranking when computing private household income. We use the “INEQDECO” Stata module to compute the Gini coefficients Stephen Jenkins, “INEQDECO: Stata Module to Calculate Inequality Indices with Decomposition by Subgroup,” <http://EconPapers.repec.org/RePEc:boc:bocode:s366002>. (2015) in the first approach and the “SGINI” Stata module when computing the Gini indices on the latter approach (Philippe van Kerm, “SGINI: Generalized Gini and Concentration coefficients (with factor decomposition) in Stata.” http://www.researchgate.net/publication/255589700_Generalized_Gini_and_Concentration_coicients_%28with_factor_decomposition%29_in_Stata (2010).

highest level, followed by the United Kingdom in fourth, the United States in sixth, and Germany in thirteenth place. As to the Nordic countries, all but Finland are in the lower part of this spectrum, along with Canada, Switzerland and Japan.

Pre-tax and –transfer inequality, of course, bears only a limited resemblance to inequality of disposable income in our countries, since in every case the state plays an important role in redistributing income by way of taxes and social transfers. Having said this, there is considerable variation in the extent of redistribution—as is evidenced by comparing the distribution of pre-tax and –transfer inequality to that of disposable income, which is listed in section A of Table 1. Fully 121 Gini points separate the country with the highest level of disposable income inequality (the United States) from the country with the lowest (Sweden). With respect to rankings, one of the most dramatic changes is the rise of the United States from the sixth most inegalitarian of our countries in terms of pre-tax and –transfer inequality to the most inegalitarian in terms of disposable income. Switzerland, for its part, moves from the third most egalitarian pre-tax and transfer distribution to the middle of the pack when taxes and social transfers are taken into account. In the lower part of the disposable income spectrum are the Nordic countries, Belgium and the Netherlands. As to the remaining countries, only Germany and Luxembourg are in the lower half. Italy and Greece have the second and third highest levels of disposable income inequality, followed by Spain, the United Kingdom, Australia and Ireland.

The cause of these shifts is the extent to which pre-tax and –transfer inequality is reduced by the redistributive effect of direct taxes and social transfers. The third column of section A of Table 1 shows redistribution for our 20 countries. (Countries in this part of the Table are listed in descending order on this value.) At the top of the scale are Belgium, Finland and Greece, in which pre-tax and –transfer inequality is reduced 229, 228 and 216 Gini points respectively.

Next are Sweden, Ireland, the Netherlands and Denmark, for which pre-tax and –transfer Gini coefficients are reduced by 205 or more points. At the bottom are the United States, Switzerland and Japan, with Gini reductions of 118, 108 and 80 points respectively. As has been noted, these three countries ranked very differently in terms of pre-tax/transfer inequality. Switzerland and Japan rose considerably in the inequality rankings because of limited redistribution but remained in the middle of the spectrum in terms of disposable income inequality because of their relatively egalitarian distribution of private sector income. The United States, for its part, started in the upper third of the inequality spectrum, but well below the top. It ended at the top of the list in terms of inequality of disposable income not so much because of an exceptionally high level of pre-tax and –transfer inequality but because of limited redistribution in comparison to the other countries we examine.

Disaggregating Taxes and Transfers

Fiscal redistribution by the state is, of course, not of one piece. In particular, it is possible that different trends will be in evidence for the two main modes of direct redistribution, taxes and social transfers. To explore this, we have partitioned the total Gini reduction accomplished by the state into two components, the part achieved by direct taxes and the part achieved by social transfers. We have further disaggregated the Gini reduction as a result of transfers into programs aimed primarily at the elderly and those aimed primarily at persons of working age.

We begin with taxes. Unfortunately, there is a limitation in using LIS data to explore tax redistribution. The problem is that the national income surveys from which the LIS derives its data do not measure indirect taxes, such as sales, value added and excise taxes, whose precise amount is rarely known even by those paying them and whose incidence is thus very difficult to

determine. Because of this limitation, we consider Gini reduction by way only of direct taxes, the primary components of which are income taxes and mandatory employee social insurance contributions. The omission of indirect taxes is an important one because the countries we examine vary greatly in the share of revenue such taxes raise, from a low in 2011 of 4.4 percent of GDP in the United States to a high of 15.2 percent in Denmark. Moreover, a number of scholars have argued that, even though indirect taxes are not themselves redistributive—in fact, are commonly regressive—they nonetheless play a critical role in raising the revenue that funds redistributive social benefits.¹² Is there empirical evidence for such a relationship? One way of exploring this, at least in a preliminary way, is to relate the share of indirect taxes in a country's GDP to the extent to which inequality of private sector income there is reduced by social transfers.¹³ When these variables are related we find that the magnitude of indirect taxes is indeed strongly positively related to the degree to which public social transfers reduce private sector inequality; the bivariate correlation is +0.62, a relationship that is statistically significant at the $p < .001$ level. This is not to say that consumption taxes directly finance social transfers in a manner similar to social security contributions; with that exception, taxes are fungible. It does, however, offer evidence that indirect taxes on consumption represent a powerful revenue-raising vehicle that supports an array of social transfers that in turn substantially ameliorate market inequality.

With this qualification, we report the shares of total redistribution accounted for by direct taxes and social transfers in the first column of Table 1's Section B. In describing the results, we

¹²See, for example, Pablo Beramendi and David Rueda, "Social Democracy Constrained: Indirect Taxation in Industrialized Democracies." *British Journal of Political Science* 37 (2007): 619-641; Junko Kato, *Regressive Taxation and the Welfare State: Path Dependence and Policy Diffusion*. (New York: Cambridge University Press, 2003); and Peter H. Lindert, *Growing Public: Social Spending and Economic Growth since the Eighteenth Century, Volume I: The Story*. (New York: Oxford University Press, 2004).

¹³Date are from Organization for Economic Cooperation and Development (OECD), *Revenue Statistics – OECD Member Countries*. <http://stats.oecd.org/Index.aspx?DataSetCode=REV> (2015).

begin with the observation that overall government redistribution in our countries is much more a product of the redistributive effect of social transfers than of direct taxes: across our 20 countries the average share of Gini reduction accomplished by taxes is 22.9 percent while that accomplished by transfers is 77.1 percent. There is, however, considerable variation about these averages. In particular, the United States and Australia top the list of our countries in the share of fiscal redistribution accomplished by taxes: in these countries 36.7 and 32.0 percent respectively of all redistribution is achieved by direct taxes, well above the 20-country average. Because total redistribution in these countries is below average, they do not rank quite as high in absolute tax redistribution (see column 3 of section B), although both are in the upper third of that spectrum as well. Other countries are lower on the absolute-redistribution list, with Spain, Japan and Switzerland at the bottom.

We now turn to redistribution by way of social transfers. We start with Gini reduction as a result of social transfers as a whole. As can be seen in the final column of section B of Table 1, our countries vary considerably on this measure. At the top of the scale are Finland and Greece, whose pre-tax and –transfer Gini coefficient is reduced by 181 Gini points by transfers alone. The Nordic countries are mostly in the upper third of the list, as are the Netherlands and Belgium. The large transfer reduction value for Greece was somewhat unexpected. Recall, however, that this country began with a much more inegalitarian distribution of pre-tax and –transfer income than our other countries; even after extensive redistribution it remained among the most inegalitarian of our 20 countries. At the low end in terms of transfer reduction are Switzerland, Australia, Canada, Iceland, the United States and Japan. These countries differ greatly in the pre-tax and –transfer “starting point”; in particular, Switzerland, Iceland and Japan have relatively low levels of private sector inequality.

Total fiscal redistribution by way of public social transfers encompasses a number of distinct programs. The most basic breakdown is between pensions, which are aimed primarily at the elderly, and transfers aimed mainly at the working-age population—a category that includes a wide variety of individual programs, including unemployment benefits, child allowances, and means-tested social assistance.¹⁴ We begin with pensions, which not only constitute the largest social benefit program in the developed world but also produce the most redistribution, at least in absolute terms. These figures are reported in Table 1, section C. On average, across our 20 countries, pensions alone reduced private sector inequality by 91 Gini points, more than twice as much as all other transfer programs combined and just over half of the total reduction in inequality achieved by taxes and transfers together. At the top of the list for pension redistribution were Austria, Belgium and the Netherlands, in which pensions reduced the private sector Gini coefficient by 115 points or more. In the bottom part were Australia, Canada, the US and Japan, in which pensions reduced the pre-tax and transfer Gini by 60 or fewer points.

Part of the explanation for the wide cross-country divergence in the redistributive effect of pensions is cross-national variation in the proportion of elderly persons in the population. However, the size of public programs and their internal progressivity also matter: the R^2 of a regression across our 116 LIS datasets that uses the share of the population that is aged 65 or older (from Armingeon et al., 2014) to explain variation in our pension reduction variable is 0.38, indicating that less than half of the variation in this mode of redistribution across countries and years is explained by demographics.¹⁵

¹⁴For most countries it is not possible to distinguish between pensions for the elderly and the (much smaller) coverage of survivors and the disabled.

¹⁵Klaus Armingeon, Laura Knöpfel, David Weisstanner and Sarah Engler, *Comparative Political Data Set I 1960-2012*. (Bern, Switzerland: Institute of Political Science, University of Bern, 2014).

What of programs aimed mainly at the working-age population? To start, it should be noted that these programs accomplish a good deal less redistribution than do pensions: as shown in the third column of section C in Table 1, on average they result in a reduction of income inequality by 42 Gini points, less than half the amount for pensions. Even so, the extent of redistribution is substantial—in fact, on average, greater than that of tax redistribution. It should be noted that, although all of these programs are aimed primarily at the working-age population, they are quite heterogeneous in many other respects. Some (particularly child and family allowances) typically offer flat-rate benefits; some offer means-tested public assistance; and some (particularly unemployment compensation benefits) are commonly tied to the income of beneficiaries when they were working. It is possible to disaggregate these programs further using LIS data, but only at the expense of comparability. LIS harmonization, which entails converting national definitions into a common framework, tends to become more difficult as the scope of programs becomes narrower—something that is exacerbated by the fact that programs sometimes supplement or substitute for one another. In particular, although we would have liked to, we were unable to separate unemployment compensation benefits from other work-related social insurance transfers for a large number of our datasets.

The next to last column of Table 1 reports the national averages of our estimates of redistribution from pensions that are unambiguously public. Unfortunately, our data are, for the first time so far, incomplete. The reason for this is that the LIS does not allow us to distinguish purely public pensions from closely linked private pension programs for 27 of our datasets, including several datasets for Denmark, Germany, Luxembourg, the Netherlands and Sweden, as well as all available datasets for Austria, Iceland, Japan and Norway. As result of these missing data, this series is not strictly comparable to our mean national estimates for redistribution from

public pensions. In order to be able to make meaningful comparisons, we recomputed national means for pension redistribution using only those datasets that also reported our measure of public pensions alone and report these values in the final column of section C of Table 1. As shown, unambiguously public pensions reduce inequality by an average of 85 Gini points, which comprises nearly 90 percent of pension redistribution in the countries we examine. However, the mix between public and linked private pensions varies widely. For example, nearly half of pension redistribution in Canada may be attributed to linked private pensions while in Belgium all redistribution is due to public pensions.¹⁶ Although not shown in the Table, the Appendix reveals that redistribution by way of public pensions has declined over time while the redistributive role of linked occupational and other individual pension plans has increased—as one would expect given pension reforms of the last decade.¹⁷ (OECD, 2010).

Second-Order Effects

Until now, we have measured government redistribution in the conventional way, by comparing income inequality before and after accounting for taxes and social transfers. However, like all measures of direct redistribution, this conventional measure has one potentially serious limitation. The problem is that, although Gini-change measures like those described in this chapter capture “first-order” effects whereby taxes and social transfers directly affect the extent of income inequality in a country, they do not capture any “second-order” feedback effects whereby taxes and social transfers affect private sector income. Specifically, it is often claimed that any direct redistributive effect of taxes and transfers will be wholly or partly

¹⁶The LIS does offer data on “voluntary individual pensions” that are completely separate from the public system, but data are unavailable for a large number of datasets and these figures are not reported.

¹⁷Organization for Economic Cooperation and Development (OECD), *OECD Principles of Occupational Pension Regulation: Methodology for Assessment and Implementation*. (Paris: OECD, 2010). <http://browse.oecdbookshop.org/oecd/pdfs/free/2110031e.pdf>.

undermined if it dampens the incentives of households to increase their private sector income or accumulate a reserve of savings (Beramendi, 2001; Bergh, 2005; Pressman, 2005; Lupu and Pontusson, 2011: 320; van Kersbergen and Vis, 2014: 80-81).¹⁸

Discussions of second-order effects have been especially heated in the area of tax policy, with critics of progressive tax systems arguing that the high marginal income tax rates that prevailed in many developed countries until the 1980s imposed disincentives to earners (Katz et al., 1983; Diamond and Saez, 2011).¹⁹ However, high marginal rates have declined sharply in many countries in recent decades; as will be seen in the discussion of trends in redistribution that follows, the absolute amount of Gini reduction accomplished by direct taxes in our 20 countries has changed little over the last four decades, despite a substantial increase in private sector inequality.

Another potential second-order effect that has received a good deal of attention has been associated with public sector pensions (Bradley et al., 2003: 209).²⁰ The basic concern is that in countries that maintain generous and predominantly public pension coverage, workers will have little incentive to save for their retirement, since they enjoy concrete guarantees of adequate retirement income from the state. When they do retire, their private sector income is likely to be

¹⁸Pablo Beramendi, "The Politics of Income Inequality in the OECD: The Role of Second Order Effects," Luxembourg City, Luxembourg: Luxembourg Income Study Working Paper no. 284 (2001); Andreas Bergh, "On the Counterfactual Problem of Welfare State Research: How Can We Measure Redistribution?" *European Sociological Review* 21 (2005): 345-357; Steven Pressman, "Income Guarantees and the Equality-Efficiency Tradeoff," *Journal of Socio-Economics* 34 (2005): 83-100; Noam Lupu and Jonas Pontusson, "The Structure of Inequality and the Politics of Redistribution," *American Political Science Review* 105 (2011): 316-336; and Kees Van Kersbergen and Barbara Vis, *Comparative Welfare State Politics: Development, Opportunities and Reform*. (Cambridge: Cambridge University Press, 2014).

¹⁹Claudio J. Katz, Vincent A. Mahler and Michael G. Franz, "The Impact of Taxes on Growth and Distribution in the Developed Capitalist Countries: A Cross-national Study," *American Political Science Review* 77 (1983): 871-886; Peter Diamond and Emmanuel Saez, "The Case for a Progressive Tax: From Basic Research to Policy Recommendations," *Journal of Economic Perspectives* 25 (2011): 165-190.

²⁰David Bradley, Evelyne Huber, Stephanie Moller, François Nielsen and John D. Stephens, "Distribution and Redistribution in Postindustrial Democracies," *World Politics* 55 (2003): 193-228.

low, but these retirees are poor only in a nominal sense, since they benefit from guarantees of future income throughout their retirement.

In a recent article, we have discussed the problem of second-order effects as they apply to pensions in some detail.²¹ This is thus not the place for a full-scale discussion of this topic, for which we refer readers to our earlier piece. However, we have extended and updated the data we used in that paper and recalculated the figures presented there using the new LIS template.

Country averages are reported in Table 2.

TABLE 2 ABOUT HERE

As described in our earlier article, a common alternative to the conventional measure of pension redistribution is to eliminate the elderly from consideration by focusing inequality comparisons only on households headed by persons of “prime age” (Bradley et al., 2003: 209; Kenworthy and Pontusson, 2005).²² In this context, “prime age” household heads are defined as persons between the ages of 25 and 59, who are very likely to be either full-time members of the work force or involuntarily unemployed or underemployed, rather than retired or still in school. One problem with this approach is that it is a blunt instrument: it simply eliminates from consideration not only a major part of the contemporary welfare state but also a potent political actor, the elderly. Nonetheless, since focusing on “prime age” household heads is common and useful for some purposes, we have calculated basic redistribution statistics covering only households headed by persons between the ages of 25 and 59.

²¹David K. Jesuit and Vincent A. Mahler, “Comparing Government Redistribution across Countries: The Problem of Second-Order Effects,” *Social Science Quarterly* 91 (2010): 1391-1404.

²²Bradley et al., “Distribution and Redistribution”; Lane Kenworthy and Jonas Pontusson, “Rising Inequality and the Politics of Redistribution in Affluent Countries,” *Perspectives on Politics* 3 (2005): 449-471.

There is yet another approach to measuring redistribution that may help us to account for second-order effects associated with pensions. We adapt a technique that has been used to estimate the effects of economic growth on income inequality using panel data (Jenkins and van Kerm, 2006), but the same method has been employed using cross-sectional data by, among others, Joumard et al. (2014).²³ Our approach thus far has been to measure the net redistributive effect of taxes and transfers, following the logic of Reynolds and Smolensky (1977).²⁴ It is possible, however, to decompose this net redistributive effect into two components. The first is the extent to which taxes and transfers result in re-ranking households. For example, households with zero private incomes are ranked at the bottom, but often move up in the ranking when transfers, especially pensions---the largest component, as we have shown---are taken into account. This may be termed the mobility component of inequality reduction. The second component captures progressivity: the extent to which changes in the income distribution are due to redistribution from richer to poorer households.²⁵ One may estimate each of these components by constructing a Gini index of private sector income that, however, is not ranked by private income; instead, each household is ranked according to their disposable income ranking. The result is an index that focuses on progressivity or the movement of income across income groups. It is this second component that is particularly helpful in addressing second-order effects, particularly those associated with pensions, since when households are not re-ranked they maintain their disposable income as a “starting point.” With this background, we have computed

²³Isabelle Joumard, Mauro Pisoni and Debbie Bloch, “Income Redistribution via Taxes and Transfers,” pp. 85-137 in Peter Hoeller, Isabelle Joumard and Isabel Koske. *Income Inequality in OECD Countries: What Are the Drivers and Policy Options?* (Hackensack, NJ: World Scientific, 2014).

²⁴Morgan Reynolds and Eugene Smolensky, *Public Expenditure*.

²⁵Stephen Jenkins, Philippe Van Kerm, P. (2006), ‘Trends in Income Inequality, Pro-Poor Income Growth and Income Mobility’, *Oxford Economic Papers*, 58 (3) (2006):531-548.

redistribution figures employing this approach for all of our countries, which are available in our on-line appendix.

As can be seen in section B of Table 2, there are some differences in figures. As would be expected the extent of Gini reduction is, on average, smaller when examining this one component of net redistribution: the average Gini change across our countries due to movement of income across groups is 105 points, as opposed to 171 points when mobility (re-ranking) is taken into account.²⁶ However, in most cases the relative position of countries does not change greatly; the major exception is Greece, which moves sharply down on the redistribution scale. The reason is the unusually large share of the population in that country (37%) whose only income was from public pensions, a share that is substantially higher than for any other country. This is consistent with Joumard et al.'s (2014: 90) observation that "The difference [in measures] is most pronounced for countries . . . which are characterized by a large share of pensions paid to the working-age population due to a low effective retirement age."²⁷ (Obviously, the Greek pension system has changed dramatically since the most recent available income survey in 2010.) Even including Greece, the two measures are fairly strongly positively correlated: $r = .743$ across our 116 country-years. Without Greece the figure increases to $r = .812$

As is probably evident from the foregoing discussion, the second-order effects problems that affect the measurement of income redistribution involve some difficult and imperfect choices. Moreover, while counterfactual concerns have been raised primarily in the context of taxes and pensions, there is no reason why they would not also affect programs aimed at those of working age: indeed, the conservative critique of such programs emphasizes the disincentives to earn and save that they are said to impose on the unemployed and poor (Danziger and

²⁶Thus, the reduction in income inequality that is due to re-ranking households is equal to 66 Gini points (171-105).

²⁷Joumard et al., "Income Redistribution."

Smolensky, 1985; Kim, 2000).²⁸ For that matter, incentives associated with social insurance need not necessarily be negative; one of the basic justifications for the welfare state is that offering a measure of income security to workers across their lifetimes contributes to their productivity, in a manner similar to insurance in other contexts.

In the final analysis, any “pre-government” counterfactual at all is ultimately artificial; as put by Esping-Andersen and Myles (2009), “To really estimate redistribution we would need to invent a counterfactual ‘virgin’ distribution that was unaffected by social policy altogether. No such distribution exists in the real world.” In light of this, whether one chooses to rank households by pre- or post-government income or whether one decides to rank or re-rank by one income concept or another, the approach employed in most of this paper has the advantage of being concrete and tangible: it represents the income that all households report that they actually receive from private sector sources, as opposed to income that might have been received had government incentives been different.

In conclusion, we agree with McCarty and Pontusson that “second-order effects represent a difficult theoretical as well as empirical problem that the existing literature on the politics of redistribution has yet to tackle in a comprehensive way” (2009: 668).²⁹ The discussion above is intended to contribute to a better understanding of this difficult problem and to offer data that may shed some light on it.

The Temporal Dimension of Fiscal Redistribution

²⁸Sheldon Danziger, and Eugene Smolensky, “Income Transfer Policies and the Poor: A Cross-National Perspective,” *Journal of Social Policy* 14 (1985): 257-262; and Hwanjoon Kim, “Anti-Poverty Effectiveness of Taxes and Transfers in Welfare States,” *International Social Security Review* 53 (2000): 105-129.

²⁸Gøsta Esping-Andersen and John Myles, “Economic Inequality and the Welfare State,” in Wiemer Salverda, Brian Nolan and Timothy M. Smeeding, eds. *The Oxford Handbook of Economic Inequality*. (Oxford: Oxford University Press, 2009): 641.

²⁹Nolan McCarty and Jonas Pontusson, “The Political Economy of Inequality and Redistribution,” pp. 665-692 in Wiemer Salverda, Brian Nolan and Timothy M. Smeeding, eds. *The Oxford Handbook of Income Inequality*. (Oxford: Oxford University Press, 2009).

Our discussion thus far has neglected changes over time in order to focus on cross-country comparisons. At this point, it is useful to turn to the temporal dimension of tax and transfer redistribution. This discussion speaks to the large literature on welfare state retrenchment of the last decade, with some scholars emphasizing the constraints on longstanding benefit programs (Clayton and Pontusson, 1998; Korpi and Palme, 2003) and others stressing their resilience (Pierson, 1996; Swank, 2006).³⁰

As noted previously, it is possible to group LIS surveys not by country but by wave, comparing fiscal redistribution over the 10 LIS waves centering on 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2004, 2007 and 2010.³¹ In this section we will first discuss results in which we compute wave averages. It should be noted that in these comparisons the number and composition of countries included in each wave varies, so that average wave values to some extent reflect the countries for which data are available at various points in time. (Unfortunately, only 3 countries have data for all 10 time points.) Later, we will report results for several individual countries with relatively long time series.

Figure 1 reports mean pre- and post-tax and –transfer Gini coefficients for each wave. As is evident, the last four decades have witnessed considerable growth in income inequality on both of these measures. The greatest increase was in pre-government inequality, which grew by 110 Gini points between about 1970 and 2010. Inequality of disposable income also grew, but

³⁰Among the former, see Richard Clayton and Jonas Pontusson, “Welfare State Retrenchment Revisited: Entitlement Cuts, Public Sector Restructuring and Inegalitarian Trends in Advanced Capitalist Societies,” *World Politics* 51 (1998): 67-98; and Walter Korpi, and Joakim Palme, “New Politics and Class Politics in the Context of Austerity and Globalization: Welfare State Regress in 18 Countries, 1975-95,” *American Political Science Review* 97 (2003): 425-446. Among the latter, see Paul Pierson, “The New Politics of the Welfare State,” *World Politics* 48 (1996): 143-179; and Duane Swank, D., “Globalisation, Domestic Politics, and Welfare State Retrenchment in Capitalist Democracies,” *Social Policy and Society* 4 (2006): 183-195. For a comprehensive review of the large literature on this topic see Peter Starke, “The Politics of Welfare State Retrenchment: A Literature Review,” *Social Policy and Administration* 40 (2006): 104-120.

³¹As has been noted, the two earliest time points are designated by the LIS as “historical” datasets. Wave I is thus centered on 1980.

only by 18 points over the same period. This provides further evidence that redistribution has continued to play an important role in moderating market-driven growth in inequality, but has not entirely kept pace with large increases in private sector inequality.

FIGURE 1 ABOUT HERE

Although the increase in income inequality over the last four decades was fairly steady, there were several notable fluctuations within this period. In particular, the mid-1990s saw a spike in private sector income inequality, which also grew between 2007 and 2010, a trend no doubt associated with the economic crisis in the period after 2008.

FIGURE 2 ABOUT HERE

Figure 2 disaggregates the overall redistribution picture of Figure 1, reporting not only redistribution as a whole but also, separately, redistribution by way of pensions, transfers aimed primarily at the working-age population and taxes. The first trend of note is in total redistribution. In accordance with the steady growth in income inequality reported in the previous figure, redistribution grew fairly steadily until about 1995 and then alternated between decreases and increases over the four remaining LIS waves. The largest component, pension redistribution, grew steadily over the entire period, explaining a good deal of the growth in overall fiscal redistribution. Transfers aimed at those of working age, including unemployment compensation, child allowances and means-tested social assistance, also grew, but the growth was more uneven; clearly, these benefits are more susceptible short-term market forces than are pensions. As to taxes, this mode of redistribution remained almost flat over the entire period, at a time that other modes of redistribution were growing in many countries. This trend was noted

by Esping-Andersen more than two decades ago: “The role of tax systems is gradually [being] replaced by social transfers as the major weapon for redistribution.”³²

Although the wave-averaged results reported above provide important insights into general trends over the last four decades, our conclusions are limited by the fact that somewhat different numbers and types of countries are included in each wave. Figures 3 and 4 report private sector and disposable income Gini coefficients for six countries that are represented by relatively long and continuous time series: Australia, Canada, Germany, Norway, the United Kingdom and the United States.

FIGURES 3 AND 4 ABOUT HERE

As shown in Figure 3, although there is some national variation in the rate of growth, private sector income inequality in the developed world grew steadily in all of the above countries. The single greatest increase was in the United Kingdom, where the Gini coefficient grew by fully 190 Gini points over the period (although from a relatively egalitarian starting point). Pre-tax and –transfer inequality in Germany and the United States also grew significantly: 135 and 95 Gini points, respectively. In most cases the increase in inequality began around 1980, which has been said to mark the start of a “great U-turn” in inequality that reversed the egalitarian trend of the preceding three decades.³³ In sum, on the basis of an analysis of a number of individual countries over several decades, we conclude that the growth of pre-government income inequality in the developed world was both steady and considerable.

As to post-tax and -transfer inequality, depicted in Figure 4, it is clear that this too has grown over time, although the growth is less pronounced and more variable than is the case for

³²Gøsta Esping-Andersen, *The Three Worlds of Welfare Capitalism*. (Princeton, NJ: Princeton University Press, 1990): 56.

³³Arthur S. Alderson, and François Nielsen, “Globalization and the Great U-Turn: Income Inequality Trends in 16 OECD Countries,” *American Journal of Sociology* 107 (2002):1244-1299.

private sector inequality. The United Kingdom is a good example. Over four decades, its disposable income Gini coefficient grew by 68 points—among the highest of any country, but only half the growth of private sector inequality. Broadly similar trends were in evidence for the other countries.

FIGURE 5 ABOUT HERE

Finally, levels of overall redistribution for these six countries are reported in Figure 5. As can be seen, there are a number of spikes and troughs during this period. Overall, though, it is clear that all of the redistributive regimes for which we have long time series grew over the last four decades, although at different rates and from different starting points.

Conclusion

The purpose of this chapter has been to carefully measure and describe overall fiscal redistribution and its major components using comparative data from the Luxembourg Income Study (LIS). In so doing, we have also computed and reported pre- and post-tax and -transfer inequality measures. We provide these data for 20 countries for all available LIS waves, resulting in a total of 116 observations ranging from 1967 to 2010.

In describing our results, we began by reporting average national values over all available time points. We observed substantial cross-national variation in the degree and nature of redistribution. In particular, liberal market economy countries consistently report the lowest levels of redistribution and highest levels of disposable income inequality. In addition, in disaggregating overall fiscal redistribution into its major components we noted that most fiscal redistribution is accomplished by transfers rather than taxes. More than half occurs as a result of a single benefit mode, pensions. Next, we offered a discussion of second-order feedback effects whereby taxes and social transfers are said to affect pre-government income by offering

incentives or disincentives to households to earn and save. We proposed alternative measures that addressed this problem with respect to pensions, but also defended the value of traditional measures.

With respect to changes of redistribution over time, we found that overall redistribution by way of taxes and social transfers has increased rather steadily since 1970. Much of this growth was due to an increase in redistribution resulting from pensions. Redistribution resulting from taxes, in contrast, remained flat over the four decades we explored. Finally, redistribution by way of transfers aimed primarily at the working-age population fluctuated over the period we investigated to a greater degree than redistribution by either pensions or taxes.

Table 1. Aspects of fiscal redistribution: Averages by country

Country ¹	A			B				C				
	Gini Coefficients			Relative Shares		Fiscal Redistribution		Redistribution from				
	Private	Dispos.	Fiscal Redist.	Tax	Trans.	From Taxes	From Trans.	Country ¹	Pensions	Working aged	Public pensions	Pub. pen./ pension ³
Belgium	0.466	0.236	0.229	29.8	70.2	0.068	0.161	Austria	0.122	0.033	-	-
Finland	0.466	0.238	0.228	20.9	79.1	0.047	0.181	Belgium	0.115	0.046	0.115	100%
Greece	0.542	0.326	0.216	16.9	83.1	0.035	0.181	Netherlands	0.115	0.050	0.090	78%
Sweden	0.439	0.228	0.212	21.9	78.1	0.043	0.168	Luxembourg	0.112	0.039	0.113	100%
Ireland	0.518	0.309	0.209	25.4	74.6	0.053	0.156	Germany	0.110	0.031	0.119	90%
Netherlands	0.462	0.255	0.207	20.5	79.5	0.043	0.165	Italy	0.110	0.004	0.109	99%
Denmark	0.440	0.236	0.205	19.5	80.5	0.040	0.165	Spain	0.109	0.022	0.103	95%
Austria	0.458	0.269	0.189	18.0	82.0	0.034	0.155	Sweden	0.108	0.060	0.104	100%
Luxembourg	0.458	0.271	0.187	18.9	81.1	0.035	0.152	Denmark	0.107	0.057	0.095	84%
Germany	0.450	0.268	0.181	21.5	78.5	0.040	0.141	Finland	0.107	0.074	0.088	82%
Norway	0.415	0.240	0.175	23.4	76.6	0.040	0.134	Greece	0.107	0.073	0.105	98%
UK	0.485	0.317	0.168	19.2	80.8	0.030	0.138	Switzerland	0.088	0.014	0.069	79%
Italy	0.493	0.330	0.163	30.0	70.0	0.049	0.114	Norway	0.083	0.051	-	-
Spain	0.472	0.320	0.152	14.2	85.8	0.021	0.131	UK	0.079	0.059	0.062	79%
Australia	0.457	0.309	0.148	31.8	68.2	0.047	0.101	Ireland	0.067	0.089	0.056	84%
Canada	0.435	0.300	0.134	28.3	71.7	0.037	0.097	Iceland	0.063	0.023	-	-
Iceland	0.378	0.259	0.119	27.3	72.7	0.033	0.086	Australia	0.060	0.041	0.051	85%
USA	0.467	0.349	0.118	36.7	63.3	0.043	0.075	Canada	0.058	0.039	0.032	56%
Switzerland	0.396	0.287	0.108	7.6	92.4	0.007	0.102	USA	0.055	0.020	0.050	90%
Japan	0.382	0.302	0.080	25.0	75.0	0.020	0.060	Japan	0.051	0.009	-	-
MEAN	0.454	0.282	0.171	22.8	77.2	0.038	0.137	MEAN	0.091	0.042	0.085	88%

¹Listed in descending order of total fiscal redistribution.²Listed in descending order of pension redistribution.³Ratio computed using only those datasets where public pensions are reported.

Table 2. Alternative measures of redistribution: Averages by country

Country ¹	A			Country ¹	B				
	Private	Prime-age Disposable	Fiscal Redist.		Fiscal Redist.	Pensions	Working aged	Public pensions	Pub. pen./ pension ²
Ireland	0.470	0.303	0.167	Ireland	0.165	0.043	0.074	0.044	100%
Finland	0.373	0.220	0.153	Belgium	0.162	0.064	0.037	0.064	100%
Belgium	0.361	0.224	0.137	Denmark	0.152	0.080	0.037	0.076	90%
Greece	0.462	0.330	0.132	Finland	0.152	0.067	0.042	0.056	84%
Sweden	0.333	0.205	0.127	Sweden	0.137	0.066	0.037	0.063	100%
Denmark	0.335	0.211	0.125	Australia	0.129	0.049	0.036	0.044	90%
Netherlands	0.363	0.246	0.117	Norway	0.125	0.052	0.037	0.049	100%
Luxembourg	0.377	0.275	0.103	UK	0.121	0.049	0.048	0.044	90%
Australia	0.397	0.297	0.100	Netherlands	0.110	0.047	0.030	-	-
Norway	0.322	0.223	0.099	Canada	0.097	0.029	0.034	0.018	62%
Austria	0.363	0.265	0.098	Germany	0.095	0.043	0.023	0.056	100%
UK	0.408	0.312	0.096	Luxembourg	0.094	0.034	0.031	0.032	100%
Canada	0.376	0.294	0.083	Italy	0.093	0.043	0.004	0.042	98%
Germany	0.334	0.257	0.076	USA	0.085	0.028	0.017	0.027	96%
USA	0.415	0.339	0.076	Spain	0.084	0.050	0.015	0.048	96%
Iceland	0.323	0.250	0.074	Iceland	0.083	0.034	0.020	-	-
Italy	0.405	0.331	0.074	Austria	0.082	0.026	0.027	-	-
Spain	0.384	0.320	0.064	Switzerland	0.048	0.038	0.010	0.037	97%
Switzerland	0.310	0.278	0.033	Greece	0.044	0.033	-0.017	0.014	42%
Japan	0.309	0.281	0.027	Japan	0.041	0.018	0.005	-	-
MEAN	0.371	0.273	0.098	MEAN	0.105	0.045	0.027	0.045	91%

¹Listed in descending order of total fiscal redistribution.

²Ratio computed using only those datasets where public pensions are reported.

Figure 1. Private and disposable income Gini coefficients: Mean by LIS wave

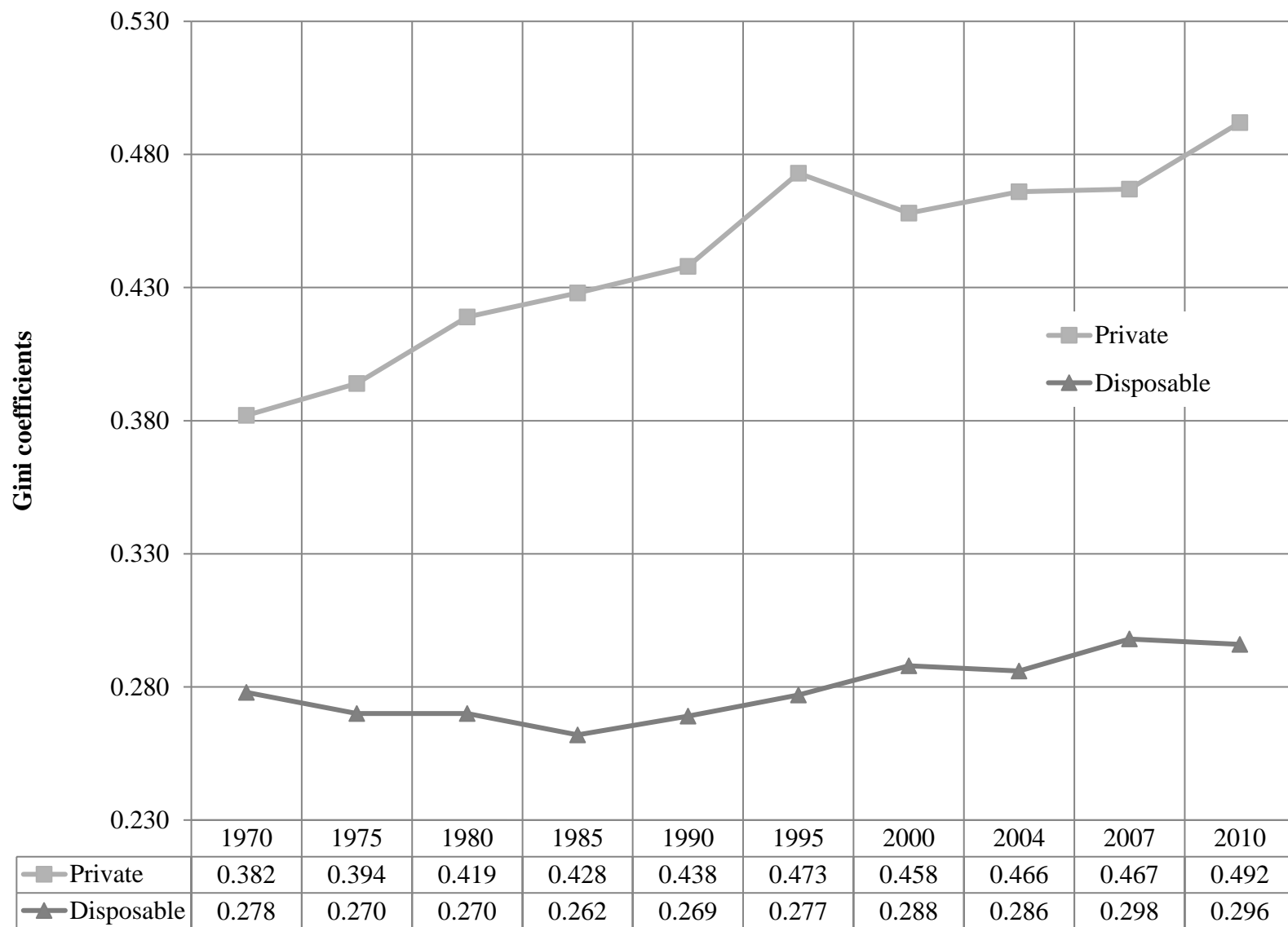
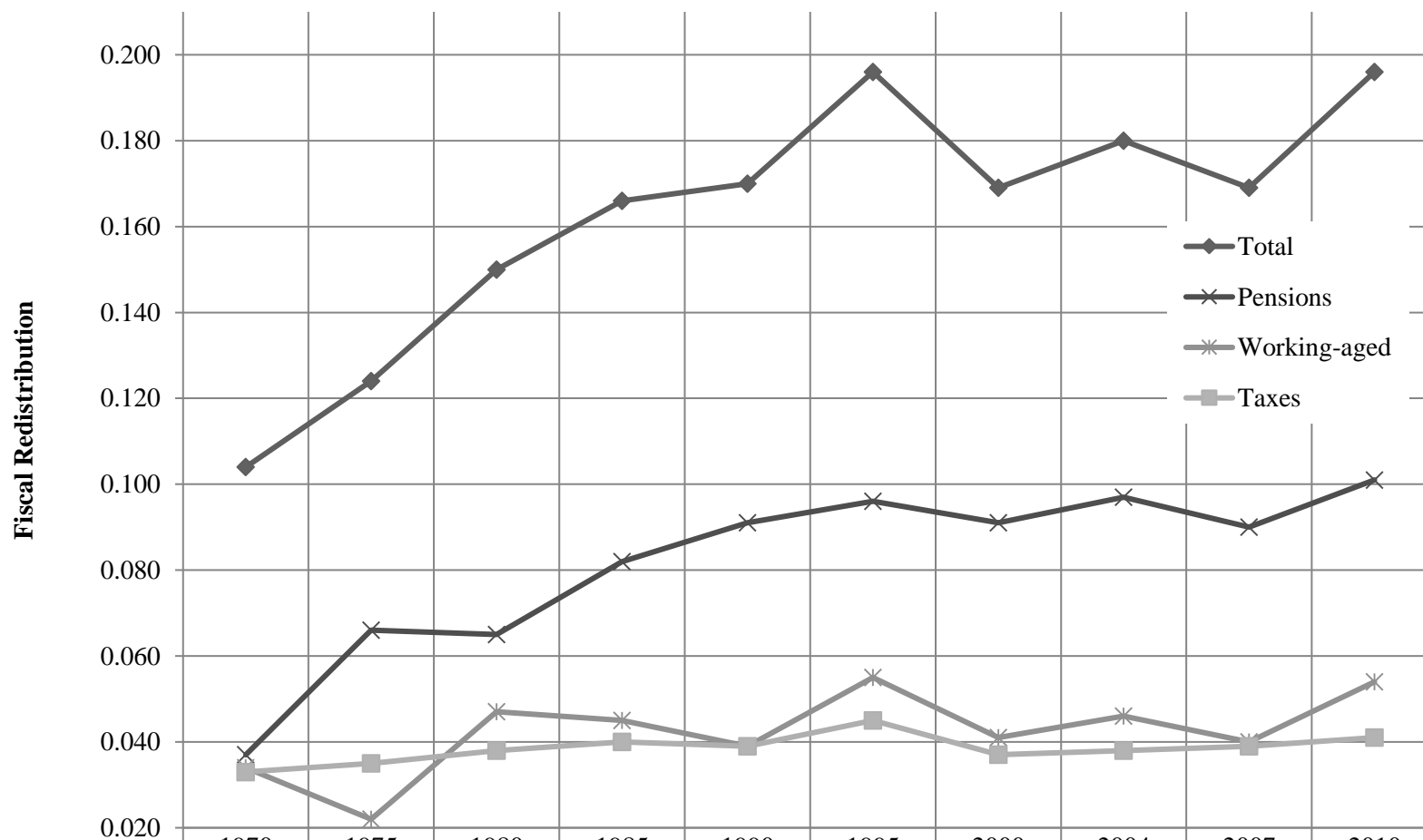
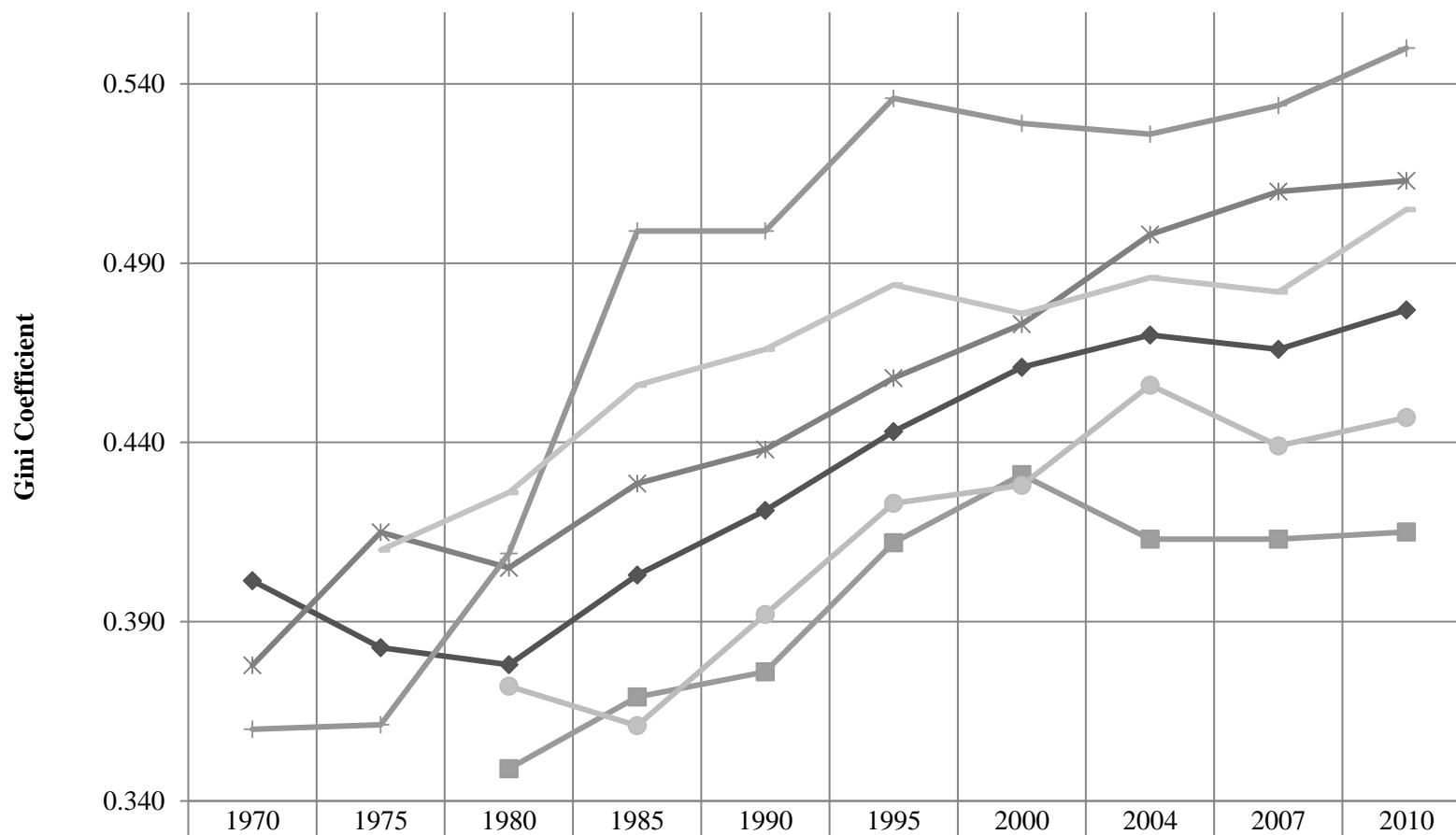


Figure 2. Aspects of fiscal redistribution: averages by LIS wave



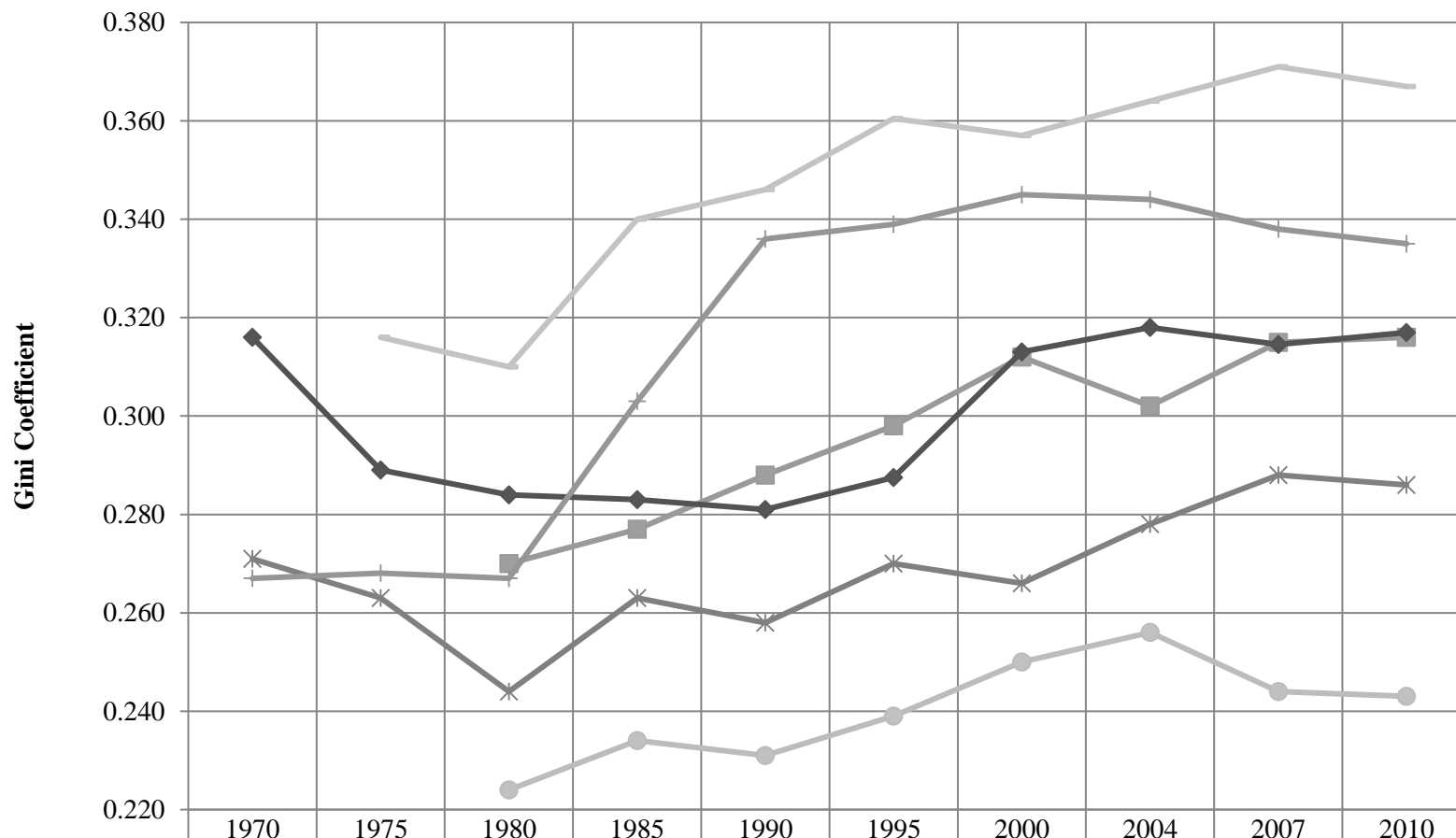
	1970	1975	1980	1985	1990	1995	2000	2004	2007	2010
Total	0.104	0.124	0.150	0.166	0.170	0.196	0.169	0.180	0.169	0.196
Pensions	0.037	0.066	0.065	0.082	0.091	0.096	0.091	0.097	0.090	0.101
Working-aged	0.034	0.022	0.047	0.045	0.039	0.055	0.041	0.046	0.040	0.054
Taxes	0.033	0.035	0.038	0.040	0.039	0.045	0.037	0.038	0.039	0.041

Figure 3. Pre-government Gini coefficients by LIS wave for selected countries



	1970	1975	1980	1985	1990	1995	2000	2004	2007	2010
■ Australia			0.349	0.369	0.376	0.412	0.431	0.413	0.413	0.415
◆ Canada	0.401	0.383	0.378	0.403	0.421	0.443	0.461	0.470	0.466	0.477
* Germany	0.378	0.415	0.405	0.429	0.438	0.458	0.473	0.498	0.510	0.513
● Norway			0.372	0.361	0.392	0.423	0.428	0.456	0.439	0.447
+ UK	0.360	0.361	0.409	0.499	0.499	0.536	0.529	0.526	0.534	0.550
— USA		0.410	0.426	0.456	0.466	0.484	0.476	0.486	0.482	0.505

Figure 4. Post-government Gini coefficients by LIS wave for selected countries



	1970	1975	1980	1985	1990	1995	2000	2004	2007	2010
■ Australia			0.270	0.277	0.288	0.298	0.312	0.302	0.315	0.316
◆ Canada	0.316	0.289	0.284	0.283	0.281	0.288	0.313	0.318	0.315	0.317
* Germany	0.271	0.263	0.244	0.263	0.258	0.270	0.266	0.278	0.288	0.286
● Norway			0.224	0.234	0.231	0.239	0.25	0.256	0.244	0.243
+ UK	0.267	0.268	0.267	0.303	0.336	0.339	0.345	0.344	0.338	0.335
— USA		0.316	0.31	0.34	0.346	0.361	0.357	0.364	0.371	0.367

Figure 5. Overall fiscal redistribution by LIS wave for selected countries

