Are Distributional Impacts of Political Regime Shifts on Personal Income Taxation Significant in Korea?

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Abstract: This paper evaluates the distributional impacts of political regime shifts on personal income tax (PIT) between the radical and the conservative parties over the last two decades in Korea; most Korean people believe that tax policies have alternated between equity (i.e., redistribution) and efficiency (i.e., growth) depending significantly on the political stance of administrative government, even though their subjective belief has never been rigorously verified. The analysis includes estimation of changes in effective PIT burden and its redistributive effects between administrations. The changes in PIT burden were decomposed by factor to consistently compare the real effects of political regime shifts by eliminating the noise caused by other factors. The radical administrations were likely to fortify the redistributive effects of the PIT, while the conservative administrations were likely to enhance efficiency at the expense of equity. The conservative administrations were likely to decrease effective PIT burden to a certain extent. The radical administrations were likely to lower marginal PIT rates to cope with inflation, but this strategy did not fully offset the inflationary effects of nominal income growth; as a result, effective PIT rates increased a little, unlike during the conservative administrations. However, contrary to the subjective belief of Korean people, the changes in redistributive effects of the PIT were not obvious or clearly distinctive between administrations.

Keywords: personal income tax, effective rate, redistribution, microsimulation, political regime shift

INTRODUCTION

This paper evaluates the distributional impacts of political regime shifts on personal income tax (PIT) between radical and conservative parties for the last two decades in

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Korea, based on microsimulation analyses. A microsimulation model helps predict the effects of economic policies and is often useful for evaluating enacted policies by providing indirect evidences for counterfactual situations.

Korea has recently experienced two political regime changes: from conservative to radical and from radical to conservative administrations in the 1997 and 2007 presidential elections, respectively. Most Korean people believe that main aspects of economic policies are determined primarily by the political stance of administrative government and that therefore tax policies either seek income redistribution or pursue economic efficiency aimed at growth depending on whether the administration leans to the left or right. The conservative administrations lowered PIT rates significantly to boost the economy by encouraging labor supply. About 40% of wage and salary income earners were not affected by the PIT cut, since their taxable incomes were below the exemption levels. As a result, high-income households benefited more in terms of tax relief from the tax cut. The radical administrations favored redistribution and welfare expenditure more than economic growth and tried to increase effective tax burden of the rich more than the poor. Therefore, Koreans tend to believe that the shifts in the tax policy of each administration affected income redistribution significantly.

This subjective belief had never been rigorously verified until recently, particularly for Korea. In their study, Park et al. (2010) briefly analyze the effect of the political leanings of administrations on fiscal stance, financial resource allocation, tax incidence, government's subsidies for fertility improvement, and so forth. However, they do not fully address the distributional effects of political regime shifts. This study thus aims to examine this subjective belief rigorously by estimating the changes in effective PIT burdens for both the conservative and radical administrations. In order to identify the real effects of political regime shifts, noise has been eliminated by decomposing factors such as the changes in income distribution, tax compliance, and demographic characteristics, including population structure, and so forth.

Recently, we developed a microsimulation model that estimates not only the distributions of Korean taxes but also the impact of policy changes on income redistribution. There have been several studies undertaken to analyze the incidence and distributional effects of government tax and fiscal policies in Korea, such as Na and Hyun (1993), Sung (1997), Park et al. (2006), Jeon and Hong (2009), Sung, Jeon and Jun (2009), Sung and Park (2008, 2011), and Sung (2011b). This paper extends the existing literature by comparing the effects of changes in the PIT by administrations. It also takes into account behavioral changes induced by the changes in economic policy variables that were not analyzed in the previous studies, such as marginal tax rates. Finally, the microsimulation model can be used to evaluate the tax policies of former Korean governments.

This paper is organized as follows. The second section offers a brief political history of Korea. The basic structure of PIT is also discussed. The third explains the basic structure of the microsimulation model and the data set used for simulations. The fourth presents and discusses simulation results, and the fifth concludes the paper.

INSTITUTIONAL BACKGROUND

Political History of Korea

In 1945, Korea was divided into two countries: South and North Korea. The political regimes in the countries are diametrical opposites. Democracy and capitalism became the political and economic foundations of South Korea (the Republic of Korea, hereafter just "Korea"). North Korea (the Democratic People's Republic of Korea), by contrast, became a socialist country.

Since 1987, in Korea, the president is elected in mid-December every five years and begins his or her five-year-term in late February of the following year. Traditionally, conservative parties have almost always been the ruling parties in Korea. Their economic policies were usually oriented toward growth rather than redistribution because redistributive policies would likely have been seen as prosocialist. In December 1997, Korea experienced a regime change for the first time in its political history. Kim Dae-jung was elected from the radical opposition party and succeeded Kim Young-sam in February 1998. The Kim Dae-jung administration gave more consideration to redistributive policies compared with previous administrations.[1] The next president, Roh Moo-hyun, was elected from the same party in December 2002, and his administration sustained the emphasis on social welfare. Korea experienced another political regime change in the following presidential election in December 2007. The conservative party regained political power under Lee Myung-bak. Accordingly, his administration shifted the direction of economic policy back toward economic growth. This political regime has made significant changes to the basic structure of the PIT. PIT rates have been reduced

1. The conservative opposition party held a majority in the National Assembly of Korea during Kim Dae-jung administration's, which was not the case in any other administration considered in this paper. From May 1996 to May 2000, there were 79 from the radical party and 139 from the conservative party in the assembly, from May 2000 to May 2004, there were 134 from the radical party and 154 from the conservative party. This could have posed political obstacles to the incumbent Kim Dae-jung administration. However, it did not, because the opposition party was heavily blamed for the severe economic crisis that took place at the end of Kim Young-sam's administration in the late twentieth century in Korea.

to boost economic growth by stimulating individuals to supply more labor.

This paper tries to evaluate the distributional impacts of political regime shifts from conservative to radical in late 1990s and again from radical to conservative in the last decade in Korea by inquiring what the effect might be if current economic policies are maintained.

PIT

Korea has a progressive PIT structure. Tax rates and deductions are illustrated in Table 1. As of 2012, the marginal PIT rates ran from 6% to 38%. In 1997, by contrast, they ranged from 10% to 40%. Basic personal deductions are provided both to the self-employed and to labor income earners.[2] In addition, labor income earners are eligible for additional deductions, such as special deductions for medical expenses, education costs, life and fire insurance payments, credit card usage, and so forth.[3] Between 1992 and 2012, basic deductions were increased, and the deductions allowed only to labor income earners were adjusted. Because the increases in the former deductions were greater than those in the latter, overall deductions increased under the 2012 PIT law, resulting in increased PIT exemption thresholds.

The PIT burden tended to be highly concentrated and the shares of PIT-exempt income earners relatively high until recently, and PIT revenue was largely collected from high-income groups in Korea. In 2002, for instance, 48.5% of labor income earners and 51.7% of self-employed were exempt from PIT according to the National Tax Service (NTS) of Korea. A large share of PIT revenue was borne by less than top 20% of PIT filers, who were responsible for more than 90% of total PIT revenue. More specifically, according to the NTS, the top 20.6% of labor (that is, wage and salary) income earners paid 90.6% of the labor income tax revenue, and the top 19.3% of the self-employed paid 95.5% of the business income tax revenue in 2002. This trend was sustained until 2009, when the top 17.9% of the former and the top 14.3% of the latter paid 92.3% and 93.6% of labor and business income tax revenues.[4] Tax reforms that reduced marginal tax rates and increased exemption levels over the past two decades have thus relieved the PIT burden of high-income earners significantly.

2. The term “labor income” is used to refer to wage and salary income in Korea. Throughout the paper the two terms are equivalently used without any reservation.
3. The credit card usage deduction is determined by the amount of taxpayer’s credit card usage and level of salary and wage income. This deduction has been introduced to discourage an underground economy; in order to receive the deduction, the taxpayer must submit taxable transaction records.
4. See NTS (2010) for more in detail.

Table 1. Tax rates and Deductions of PIT (1992-2012) (in ₩1,000)

	1992		1997		2002		2007		2012	
	Tax Base	Tax Rate	Tax Base	Tax Rate	Tax Base	Tax Rate	Tax Base	Tax Rate	Tax Base	Tax Rate
tax rates	0 - 4,000	5%	0 - 10,000	10%	0 - 10,000	9%	0 - 10,000	8%	0 - 12,000	6%
	4,000 - 10,000	16%	10,000 - 40,000	20%	10,000 - 40,000	18%	10,000 - 40,000	17%	12,000 - 46,000	15%
	10,000 - 25,000	27%	40,000 - 80,000	30%	40,000 - 80,000	27%	40,000 - 80,000	26%	46,000 - 88,000	24%
	25,000 - 50,000	38%	80,000 -	40%	80,000 -	36%	80,000 -	35%	88,000 - 300,000	35%
	50,000 -	50%							300,000 -	38%
	Income Interval	Deduction Rate	Income Interval	Deduction Rate	Income Interval	Deduction Rate	Income Interval	Deduction Rate	Income Interval	Deduction Rate
deduction for wage & salary Income	0 - 2,300	100%	0 - 5,000	100%	0 - 5,000	100%	0 - 5,000	100%	0 - 5,000	80%
	2,300 -	30%	5,000 -	30%	5,000 - 15,000	45%	5,000 - 15,000	50%	5,000 - 15,000	45%
					15,000 - 30,000	15%	15,000 - 30,000	15%	15,000 - 30,000	15%
					30,000 - 45,000	10%	30,000 - 45,000	10%	30,000 - 45,000	10%
					45,000 -	5%	45,000 -	5%	45,000 -	5%
deduction ceiling		(4,900)		(9,000)		(Unlimited)		(Unlimited)		(Unlimited)
	Type	Per-Capita Deduction	Type	Per-Capita Deduction	Type	Per-Capita Deduction	Type	Per-Capita Deduction	Type	Per-Capita Deduction
basic deduction	– taxpayer	480	– per person	1,000	– per person	1,000	– per person	1,000	– per person	1,500
	– spouse	540	– disabled	500	– disabled	1,000	– disabled	1,000	– disabled	1,000
	– per dependent	480	– elderly over 65	500	– elderly over 65	1,000	– elderly over 65	2,000	– elderly over 65	2,000
	– disabled	480					– third children or more	1,000	– third children or more	2,000
	– elderly over 65	480					– two children	500	– two children	1,000

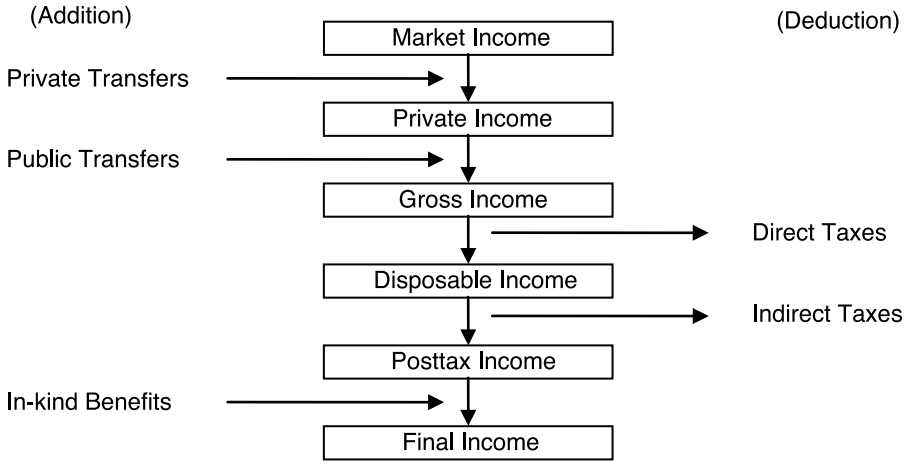
STRUCTURE OF MODELS, DATA, AND METHODS OF ANALYSIS

Types of Income

The microsimulation model for the PIT considered in this paper is a part of a model that analyzes the distribution of incomes along with taxes and benefits; it runs from market to final incomes, as illustrated in Figure 1.

Market income is the income a person earns in the market by supplying labor and capital. Private income and gross income are calculated by adding up private and public transfers, respectively, to market income. Disposable income and posttax income are derived by subtracting direct taxes, including social security contributions, and by cumulatively subtracting indirect taxes from gross income. Final income is arrived at by adding in-kind benefits (that is, services from public sectors) to posttax income. Market income, private income, gross income, and disposable income are observable, while posttax income and final income are not, and they are conventionally defined and widely used, while posttax income and final income are new. They were developed by the UK's Office for National Statistics. They are well illustrated in Jones (2008) and Barnard (2010) as well as in studies they draw on.

Figure 1. Types of Income



Sources: Jones 2008; Barnard 2010; Sung and Park 2011.

Data

This paper draws on the Household Income and Expenditure Survey (HIES) compiled and released by Statistics Korea for the years 1992, 1997, 2002, 2007, and 2012. The sample coverage differed by period. Until 2005, Statistics Korea surveyed households of two or more only and excluded single households. Since 2006, however, single households have been included in the survey. Therefore, to ensure consistency in estimating distributions throughout the period, in this paper, only households of two or more are considered.

The HIES provides income- and expenditure-related information in addition to the demographic characteristics of surveyed households. It reports on about 30 income-related variables, about 500 expenditure-related variables, and about 60 demographic variables. It is surveyed on a monthly basis, and its annual values are obtained by summing up the monthly information of each household. The descriptive statistics are shown in Table 2 for 2012, the most recent year for which the data set is available.

Table 2. Descriptive Statistics (2012 HIES) (in 1,000)

	Average	Standard Deviation	Max.	Min.
age of head	49.56	12.50	88	20
household size	3.25	1.03	7	2
number of income earners	1.46	0.85	5	0
market income	46,444	29,243	249,596	0
gross income	50,737	28,226	249,596	0
disposable income	46,029	24,041	191,445	-2,828
consumption expenditure	28,923	14,979	140,026	2,429
PIT	1,916	3,442	54,601	0
property tax burden	200	346	5,878	0
private transfers	2,274	7,888	113,000	0
public transfers	2,009	5,564	80,590	0
social security contributions	2,567	2,110	15,245	0

Note: Households of two or more are used in this analysis. The sample size is 4,420 after eliminating seasonal and sample selection biases.

Method of Analysis

Changes were made to the Korean Constitution in 1987 that limit presidential terms to five years and prohibit reelection. Presidential elections are held in December, and the new administration takes office on February 25 of the following year. The official terms of Kim Young-sam, Kim Dae-jung, Roh Moou-hyun and Lee Myung-bak were 1993-1998, 1998-2003, 2003-2008, and 2008-2012, respectively, but since the term begins and ends in February, the terms were, in effect, 1993-1997, 1998-2002, 2003-2007, and 2008-2012, respectively. The political regime shifts are evaluated in terms of the effects on distributional characteristics of PIT. To reinforce the validity of findings, the administrations before and after the shifts are analyzed: the conservative administrations of Kim Young-sam (1993-1998) and Lee Myung-bak (2008-2013) are compared to the radical administrations of Kim Dae-jung (1998-2003) and Roh Moou-hyun (2003-2008), respectively.

In order to compare pure effects of changes in tax policy that reflect the political stance between administrations, noise has been eliminated by decomposition. Otherwise, the real effects of these changes might have been contaminated by the influences of other factors and lead one to make false inferences. The effective burden of the PIT is usually affected by changes in income distribution, tax compliance (inclusive of tax administration), population structure (i.e., demography), tax law, and so forth.[5] Changes in income distribution are often characterized by changes in average income growth and its dispersion between one year and the next. These changes can be specified by the two factors: mean and variance of income. Tax compliance generally changes over time not only due to changes in tax administration but also due to changes in the level of voluntary compliance. It is well known in Korea that the self-employed generally underreport their income to the NTS but also that their compliance has increased sharply since early 2000s. Population has been rapidly aging in Korea: those of age 65 or higher comprised 2.8% of the population in 1970, 3.4% in 1980, 4.4% in 1990, 7.2% in 2000, and 11.8% in 2012. This change significantly affected the basic structure of PIT bases. Changes in tax law are one of the most important factors in determining PIT burden.

The decomposition analysis of changes in the various factors has been conducted in the following order: first, population (weight adjustment), then average income growth, or income mean (mean adjustment) followed by income inequality, or the relative dispersion of income (variance adjustment), and tax compliance (compliance

5. There may additional factors that determine effective burdens. However, these five factors are the most important. See Sung (2003) more in detail.

Table 3. Base Years of Analysis by Factor

Factor	Data Year	Weight Year	Compliance Year	Tax Law Year
t-th administration	t	t	t	t
weight adjustment	t	t+1	t	t
mean adjustment	t*	t+1	t	t
variance adjustment	t+1	t+1	t	t
compliance adjustment	t+1	t+1	t+1	t
(t+1)-th administration (tax law adjustment)	t+1	t+1	t+1	t+1

Note: t* denotes that the base year of the data set used is t (their values, however, are proportionately adjusted for (t+1)-values).

adjustment), and, finally, related tax law (tax law adjustment).[6]

Each adjustment has been implemented using the initial year's data set that reflects the initial year's tax law, and each one of the above factors is cumulatively substituted in order until all elements have been replaced using the final year's data set that reflects the final year's tax law. These processes are described in Table 3.

Any change in the decomposition order may lead to slightly different estimates by factor, but consistency of inference can be maintained so long as the given order a researcher chooses is kept fixed throughout the analysis of the periods considered.

The five factors are approximated respectively by changes in the population shares of each age group, mean and variance of income, average (estimated) business income reporting rate, and PIT law. More precisely, demographic changes are estimated by applying sample weights by age group of the target year. The change in income growth is estimated by applying average income growth rates between given two years, using the survey data set of the initial year. The change in income inequality is estimated by applying the income variance of the target year. Decomposition of the third factor is equivalent to applying the survey data set of the target year. The change in tax compliance is gauged by applying business income reporting ratios estimated for the target year. The business income reporting ratios used in the analysis are taken

6. Some other demographic characteristics also change over time. The household size may change due to births, death, or divorce or a family may have two or more houses in different places, for example. None of these can be explicitly incorporated in the analysis due to the lack of necessary information. Instead, they can only be indirectly reflected in the change of population structure. Since each age group has different demographic characteristics, most of these factors can be reflected through the change in sample weights of age groups between periods.

directly from the estimates of Sung (2011a).[7] In the final step, PIT law of the target year has been applied. From the decomposition of these factors, the effects of tax changes reflecting each administration's philosophy and political stance can be identified.

Derivation of Incomes, Taxes, and Benefits

The tax/benefit model uses either imputed values from tax/benefit calculators or reported values given in the HIES for which imputation is not possible. Market income, private income, and gross income are calculated directly from the corresponding reported values in the HIES. The PIT and excise duties are imputed based on demographic information and income- and expenditure-related variables in accordance with the tax laws. Reported values are used for property tax and social security contributions, because the information necessary to impute them is not available. Value added tax (VAT) and excise duties are imputed using consumption-related data. Excise duties include individual excise taxes, liquor taxes, tobacco tax, gasoline and diesel oil taxes and their surtaxes. Individual excise taxes are levied on automobiles, kerosene, heavy oil, natural gas, expensive furniture, and fur products.

The in-kind benefits studied in this paper fall into five categories: medical and education services rendered solely to poor households under the national basic livelihood security system, national health insurance, general education, child care, and housing services. The medical and education benefits for the poor are estimated by applying average benefit values to each eligible household based on the size and age distributions of household members among poor households, whose incomes are below the minimum subsistence level set by the central government of Korea. The national health insurance benefits are imputed by applying average benefit values to each household member based on gender and age. The general education benefits are estimated by allocating the government's average education expenditure by school level, from elementary schools to universities and colleges (head count method). There are two kinds of child care benefits: subsidies in the form of a voucher that is dispensed to parents or guardians and direct subsidies to child care facilities. These two types of child care benefit are added together and allocated to each eligible child of households whose means-tested incomes fall below certain threshold levels that are set by the Ministry of Health and Welfare of Korea. Housing services are provided to

7. Its ratio for 2012 has been computed by the author using the method developed by Sung (2011b). The estimates of income reporting ratios were 54.47%, 51.56%, 51.35%, and 73.71% in 1992, 1997, 2002, and 2007, respectively. Based on his method, the business income reporting rate is estimated to be 80.24% for 2012.

support medium- and low-income households. Eligible households are those that purchase or rent houses that are smaller than 85 square meters. The benefits are twofold: lower interest rates than offered in the market and lower thresholds for securing loans, allowing those who would not otherwise be approved in the private financial market to borrow money.

No direct information is available in the HIES that would permit one to identify either households eligible for subsidies or households that have been subsidized. Not all eligible households end up receiving the subsidies. The housing benefits have been estimated in three steps. In the first step, candidate households are picked out based on means-tested income and also on information such as family size. In the second, the interest payments that these eligible households would make if they were receiving a government-subsidized loan are estimated. In the final step, benefits are imputed by applying the difference between the government's housing loan interest rates and market rates to these households' interest payments using a deduction method. The second type of housing benefit is not easily measurable in monetary terms; thus, only the first type of benefit is counted in this paper.

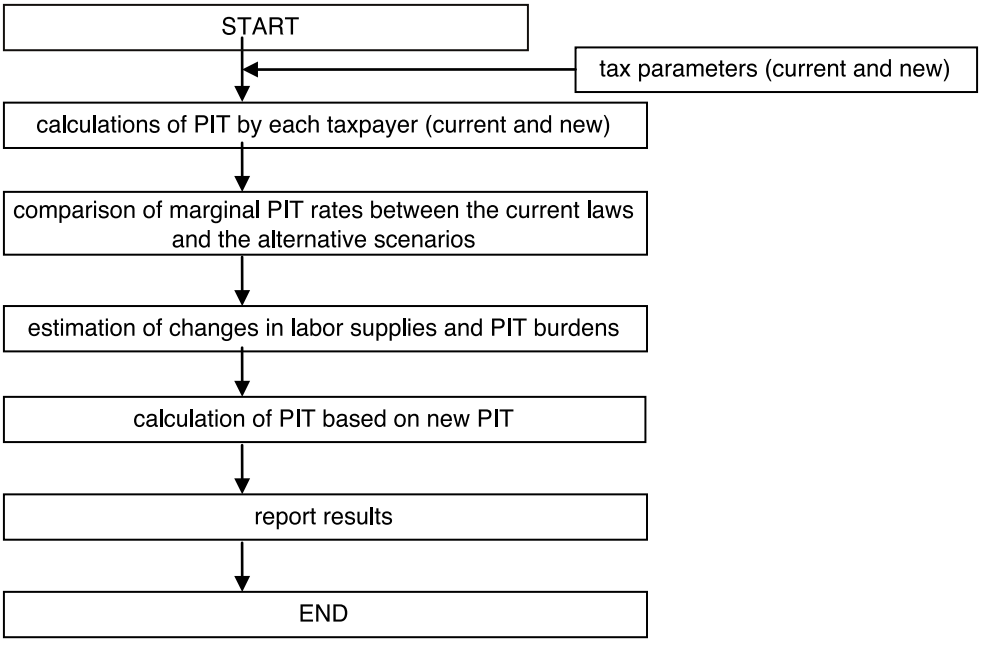
Microsimulation Model for PIT

The basic structure of the microsimulation model for the PIT stems from simple tax calculators. The tax calculator program can be modified by making changes in the input tax parameters, and it can be fortified with additional programs that allow behavioral changes, such as changes in labor supply decisions, to be incorporated (see Figure 2).

The PIT model consists of four subprograms. The first, second, and fourth ones calculate PIT burdens. The first one is executed using the parameters of current tax law and the latter two are run using alternative tax law parameters. The only difference between the second and the fourth subprograms is the incomes plugged in as input variables for the simulations: the fourth subprogram uses adjusted income, which is the sum of reported taxable income in the HIES and the changes in after-tax marginal wage rates induced by changes in the labor supply, while the second subprogram uses the taxable income reported in the original data set (HIES). The third subprogram estimates changes in the labor supply induced by the changes in after-tax marginal wage rates.[8] Finally, all the related simulation results are recorded and reported,

8. Behavioral changes induced by PIT burden are only considered in the first round of the PIT model. The effects on behavior from the second and subsequent rounds are ignored because they are negligibly small.

Figure 2. Microsimulation Model for PIT



including averages, variances, decile distributions, Gini estimates, tax revenue, labor supply, and so forth.

The change in labor supply has not been estimated by using an individual utility maximization process, as it is in Na et al. (2002), Lee (2004) and Seo and Lim (2004), but by applying a price (or wage) elasticity of labor supply to the change in the posttax wage rate. For simplicity of discussion, the elasticity of the labor supply is assumed to be the same for all individuals. The elasticity estimates are exogenously given by Kim and Sung (2007), Kim (2009) and Sung et al. (2010): in their studies, the elasticity estimates are close to or a little larger than 0.1. This paper uses the elasticity estimate of 0.1423 estimated in Sung et al. (2010) without modifying it to estimate the change in labor supply effected by changes in the PIT.

RESULTS

The taxes and benefits analyzed in this paper accounted for about 60% of national budget of Korea in 2012. The taxes include the PIT, property tax, consumption taxes, including VAT, and social security contributions but exclude other taxes such as

corporate income tax, taxes on capital gains, and others due to a lack of necessary information. Benefits include cash benefits, such as public pensions, unemployment benefits, and in-kind benefits from social expenditures including education expenditures, but exclude national defense, general administrative services, and other expenditures. In this section, their distributions are briefly explained and simulation results for the PIT are discussed.

Distributions of Incomes, Taxes, and Benefits

The distributions of incomes, taxes, and benefits, estimated using the HIES for the year 2012, are reported in Table 4. We use the reported values for market income, private and public transfers, property taxes, and social security contributions. PIT, VAT and excise taxes, and in-kind benefits are imputed. Private income, gross income, disposable income, posttax income, and final income are derived by adding benefits to or by subtracting taxes from relevant incomes.

As reported in Table 4, households of two or more earned a market income of ₩46.4 million on average in 2012 in Korea. In addition, they received total transfers of ₩4.3 million. Of this, a little more than half (₩2.3 million) was acquired from private sources (that is, relatives and friends). The transfers were concentrated more in low income deciles; in fact, they were almost evenly distributed in absolute volume. This resulted in a reduction of the income ratio of the tenth to the first deciles from 9.8 (market income) through 8.7 (private income) to 7.5 (gross income).

Estimated tax burdens and benefits are illustrated separately in Figure 3. In order to facilitate comparison between them, the scales of Y-axes are equalized in both histograms. The bars representing tax burdens illustrated in the left-hand side of Figure 3 are highly upward sloping to the right, while those for benefits in the right-hand side are quite evenly distributed. Taxes were very progressively distributed and so concentrated heavily in the high-income deciles. On the other hand, benefits were quite evenly distributed in volume across deciles. The ratio of the tenth to the first deciles of the total tax burden was 13.3 times (=₩19,028/₩1,492, shown in Figure 4). This was larger than that of market income (9.8 times, reported in Table 4). The ratio of the total benefits between the tenth and the first deciles was, by contrast, only 1.4 times (=₩8,506/₩6,175, shown in Figure 4).

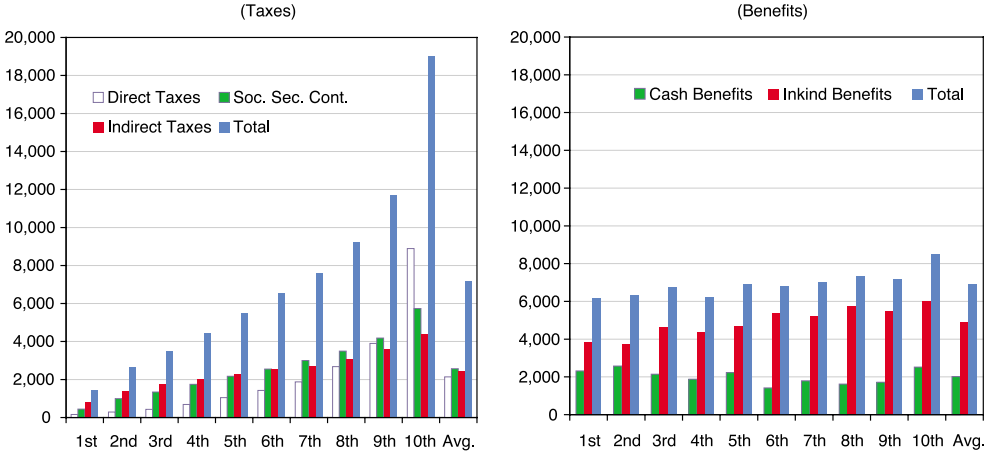
The combination of taxes and benefits is illustrated in Figure 4. Coincidentally, the taxes and benefits were, on average, almost balanced, average taxes and benefits per household being 7.17 and ₩6.93 million in 2012, respectively. The average net balance was only ₩-238,000, which was only 3.3% of total tax burdens and roughly equivalent to US$200. Although the average values of taxes and benefits were quite similar in

Table 4. Distributions of Incomes, Taxes, and Benefits by Income Deciles (2012 HIES) (in ₩1,000)

deciles	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	10th/1st
market income (A)	10,804	20,189	27,271	33,072	38,738	45,877	50,918	59,998	71,919	105,623	46,444	9.78
private transfers (a)	1,729	1,560	1,870	2,275	1,929	1,534	2,547	2,401	3,220	3,675	2,274	2.13
private income (B=A+a)	12,533	21,749	29,141	35,347	40,667	47,411	53,465	62,399	75,139	109,298	48,718	8.72
public pensions	1,558	1,833	1,310	1,397	1,780	1,020	1,217	1,071	934	2,057	1,418	1.32
other public transfers	757	741	834	479	445	395	574	547	780	460	601	0.61
public transfers (b)	2,315	2,574	2,144	1,876	2,225	1,415	1,792	1,617	1,715	2,518	2,019	1.09
total transfers (c=a+b)	4,044	4,134	4,014	4,151	4,153	2,949	4,339	4,018	4,935	6,192	4,293	1.53
gross income (C=B+c)	14,848	24,323	31,285	37,223	42,891	48,825	55,256	64,016	76,855	111,816	50,737	7.53
PIT (labor and business income tax)	32	160	311	536	872	1,234	1,693	2,399	3,585	8,336	1,916	260.50
interest and dividend income taxes	22	12	9	16	25	19	11	21	33	76	24	3.45
total PIT	54	172	321	553	898	1,253	1,704	2,419	3,617	8,412	1,941	155.78
property taxes	108	118	109	135	152	174	174	262	283	482	200	4.46
direct taxes (d)	161	290	430	688	1,050	1,426	1,878	2,681	3,901	8,894	2,140	55.24
public pension contributions	147	408	633	841	1,091	1,294	1,575	1,837	2,189	2,909	1,292	19.79
national health insurance fees	288	554	654	835	982	1,146	1,303	1,507	1,818	2,598	1,169	9.02
long-term care insurance fees	11	36	58	72	99	108	122	149	173	231	106	21.00
total social security contributions (e)	446	998	1,345	1,747	2,172	2,548	3,001	3,493	4,180	5,737	2,567	12.86
total direct taxes (f=d+e)	608	1,288	1,774	2,436	3,223	3,975	4,879	6,175	8,080	14,631	4,707	24.06
disposable income (D=C+f)	14,240	23,035	29,511	34,787	39,669	44,851	50,378	57,841	68,774	97,185	46,029	6.82
VAT	573	916	1,160	1,362	1,528	1,687	1,777	2,049	2,400	2,991	1,644	5.22
individual excise tax (plus surtaxes)	51	86	91	115	158	157	159	222	291	310	164	6.08
oil tax (plus surtaxes)	98	249	351	384	436	542	620	608	755	955	500	9.74
liquor tax (plus surtaxes)	22	24	31	37	35	44	40	37	44	41	35	1.86
tobacco tax (plus surtaxes)	77	105	114	135	123	122	116	141	126	99	116	1.29
total consumption taxes (g)	821	1,380	1,748	2,034	2,279	2,552	2,713	3,057	3,616	4,397	2,460	5.36
posttax income (E=D+g)	13,419	21,654	27,763	32,754	37,390	42,299	47,665	54,784	65,158	92,788	43,570	6.91
national basic livelihood security system	315	0	0	0	0	0	0	0	0	0	32	0.00
national health insurance benefits	2,711	2,093	1,978	1,801	1,803	1,854	1,792	1,802	1,947	1,965	1,975	0.72
education (general)	761	1,533	2,506	2,453	2,798	3,474	3,413	3,921	3,524	4,024	2,841	5.29
child care	56	67	98	98	100	47	23	1	2	0	49	0.00
housing	17	51	37	14	4	0	6	0	0	0	13	0.00
total in-kind benefits (h)	3,861	3,744	4,619	4,367	4,704	5,376	5,234	5,723	5,474	5,990	4,909	1.55
final income (F=E+h)	17,280	25,398	32,382	37,120	42,094	47,675	52,899	60,508	70,632	98,777	48,479	5.72

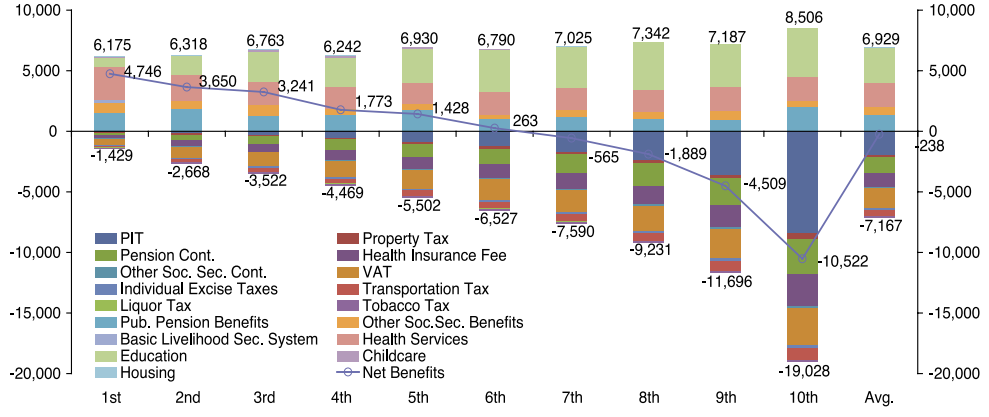
Notes: Based on author's calculations using the 2012 HIES for households of two or more.

Figure 3. Distribution of Burdens and Benefits by Income Decile (2012 HIES) (in ₩1,000)



Note: Based on author's calculations for households of two or more.

Figure 4. Joint Distribution of Burdens and Benefits by Income Deciles (2012 HIES) (in ₩1,000)



Note: Based on author's calculations for households of two or more.

volume, their patterns of distributions were radically different. The first decile enjoyed benefits of ₩6.2 million and paid only ₩1.4 million in taxes: its net benefit was ₩4.7 million. On the other hand, the tenth decile received benefits of ₩8.5 million but paid ₩19.0 million in taxes: its net burden was ₩10.5. The solid line in Figure 4 denotes the average net benefit by decile. It indicates that it was positive in the lower six deciles and negative in the upper four deciles.

On average, the lower 60% of all households had net benefits, and the upper 40%

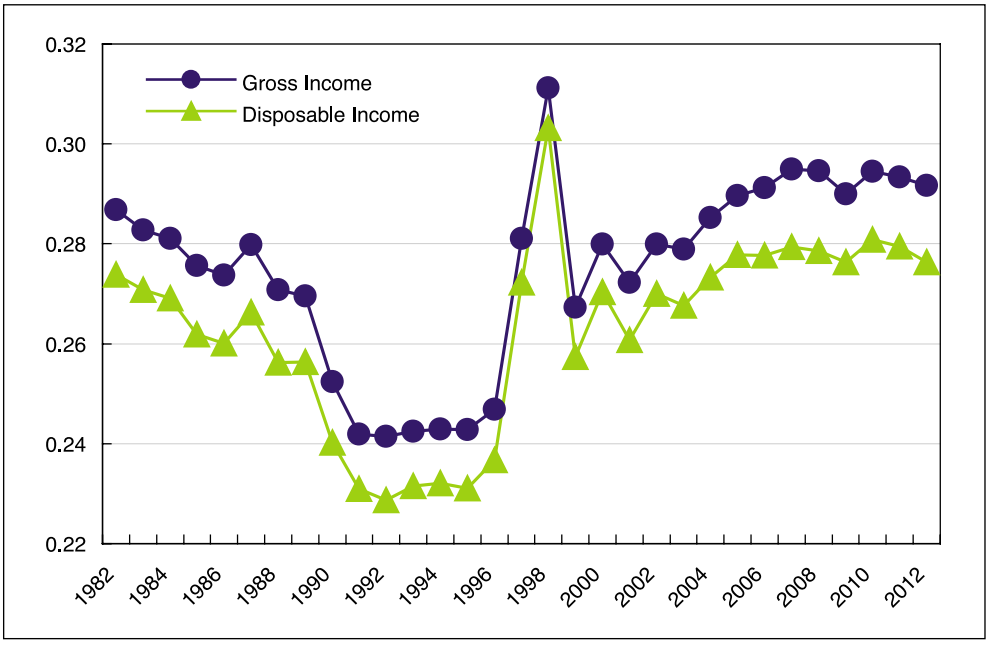
had net burdens. These distributional characteristics are similar to those Jones (2008) identified in the UK. According to the Office for National Statistics of the UK, about 60% of households had net benefits and 40% had net burdens in the UK for the fiscal year 2006-2007. The only difference between the UK and Korea was the slopes of the net benefit curves; the UK had a much steeper curve than Korea, probably due to differences in levels of economic development, the share of elderly, population composition, maturity of and coverage offered by social security systems, and so forth. Further investigation of the differences in the slopes is left for another study.

Policy Evaluation

Income Inequality

Park and Kim (2007), Shin and Shin (2007), Weon and Sung (2007), and Sung, Kang and Lee (2008) all show that income inequality expanded significantly beginning in the mid-1990s in Korea. This is also confirmed in this study, as shown in Figure 5. It illustrates the development of Gini coefficients for gross and disposable incomes

Figure 5. Changes in Gini Coefficients in Korea



Note: Based on author's calculations for households of two or more.

Table 5. Distribution of Incomes and PIT burdens in Korea (1992-2012) (units: ₩1,000, %, PPT)

gross income	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	10th/1st
1992	6,896	9,656	11,290	12,760	14,187	15,851	17,609	19,748	23,495	32,954	16,445	4.78
1997	6,966	13,373	17,105	20,152	22,951	25,686	29,057	33,135	39,042	55,514	26,299	7.97
2002	11,489	16,727	20,361	23,963	27,169	31,007	35,114	40,737	48,860	70,491	32,593	6.14
2007	12,416	20,017	25,734	30,555	35,385	40,648	46,434	53,708	64,475	95,029	42,449	7.65
2012	14,848	24,323	31,285	37,223	42,891	48,825	55,256	64,016	76,855	111,816	50,737	7.53
labor and business income	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	10th/1st
1992	5,276	7,876	9,495	10,641	12,348	13,487	15,228	16,923	20,150	27,697	13,912	5.25
1997	3,321	11,051	14,956	17,809	20,606	22,961	26,059	29,760	35,189	49,059	23,078	14.77
2002	6,860	11,511	15,862	19,447	22,463	25,590	29,580	34,627	42,264	59,468	26,768	8.67
2007	7,080	14,042	19,316	24,272	29,586	34,993	39,633	46,563	57,038	80,525	35,312	11.37
2012	7,802	17,106	24,270	29,996	36,541	43,217	48,187	56,644	69,007	98,168	43,096	12.58
PIT burden	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	10th/1st
1992	34	86	121	177	289	384	516	724	1,078	2,299	571	67.62
1997	6	73	188	269	411	545	726	995	1,497	3,207	792	534.50
2002	37	102	214	306	432	602	863	1,261	1,970	3,772	956	101.95
2007	42	151	330	529	810	1,182	1,618	2,132	3,395	7,096	1,729	168.95
2012	32	160	311	536	872	1,234	1,693	2,399	3,585	8,336	1,916	260.50
effective PIT burden (%)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	10th/1st
1992	0.64	1.09	1.28	1.67	2.34	2.84	3.39	4.28	5.35	8.30	4.10	12.97
1997	0.17	0.66	1.26	1.51	2.00	2.37	2.79	3.34	4.25	6.54	3.43	38.47
2002	0.53	0.89	1.35	1.57	1.92	2.35	2.92	3.64	4.66	6.34	3.57	11.96
2007	0.60	1.07	1.71	2.18	2.74	3.38	4.08	4.58	5.95	8.81	4.90	14.68
2012	0.41	0.94	1.28	1.79	2.39	2.86	3.51	4.23	5.19	8.49	4.45	20.71
difference in effective PIT rates (PPT)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.	
1992-1997 (Kim Young-sam administration)	-0.47	-0.43	-0.02	-0.16	-0.34	-0.47	-0.60	-0.94	-1.10	-1.76	-0.67	
1997-2002 (Kim Dae-jung administration)	0.36	0.23	0.09	0.06	-0.08	-0.02	0.13	0.30	0.41	-0.20	0.14	
2002-2007 (Roh Moou-hyun administration)	0.07	0.18	0.36	0.61	0.82	1.03	1.16	0.94	1.29	2.47	1.33	
2007-2012 (Lee Myung-bak administration)	-0.19	-0.13	-0.43	-0.39	-0.35	-0.52	-0.57	-0.35	-0.76	-0.32	-0.45	

Notes: Based on author's calculations using the HIES. The above statistics are for households of two or more.

over the past three decades based on the estimates using the HIES. Except for the period of economic crisis in Korea (1997-1998), the Gini coefficients reveal roughly a U-shaped pattern. Income inequality decreased drastically throughout 1980s until early 1990s and remained stable until 1995. It suddenly rose sharply in 1997 and 1998, an effect of the economic crisis. The shock was strong but temporary, resulting in abrupt increase in the unemployment rate as well as in income inequality and in negative real economic growth in 1998.[9] In the following year, income inequality recovered from its temporary overshooting. However, its longitudinal trend turned away from downward- to upward sloping right after the economic crisis period and, then, increased gradually until recently.

Table 5 reports the distribution of gross income, labor and business income, and PIT burden by income decile for 1992, 1997, 2002, 2007, and 2012. The relative income gap between the top and the bottom deciles measured by their ratio increased for the whole period except 1997, when the economic crisis took place. The ratio for gross income increased from 4.78 in 1992 to 7.53 in 2012. Labor and business income accounted for about 85% of gross income on average. Its ratio of the tenth to the first deciles was greater than that of gross income throughout the whole period considered.[10] Furthermore, the longitudinal change in the ratio increased over time both for gross income and labor and business income, but relatively more for labor and business income than for gross income.

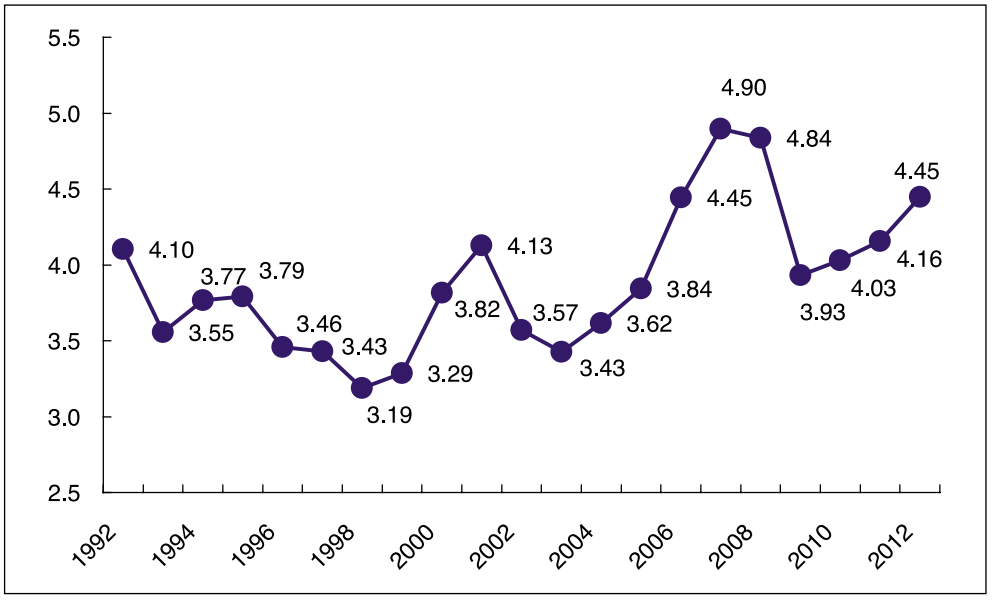
Changes in Average Effective PIT Burden

The average effective rate of the PIT for the past two decades has been estimated using the HIES and is illustrated in Figure 6. It ranged from 3.2% to 4.9%, oscillating

9. According to Statistics Korea, the unemployment rate was 2.6% in 1997 and rose to 6.8% in 1998. It decreased slightly to 6.3% in 1999 and dropped to 4.1% in 2000. These figures are based on the old series statistics that was compiled until 2004. The new series were compiled starting in 1999. According to the Bank of Korea, the real GDP growth rate was 5.8% in 1997 but drastically dropped to -5.7% in 1998, mainly due to the severe economic crisis. The Korean economy resumed its steady-state economic growth path by recovering its past level of economic growth, 10.7% and 8.8% in the following two years, respectively.
10. Most of the elderly belong to low-income deciles because they are mostly retirees and, so, their market income is low in general. On the other hand, they receive relatively more transfers than members of younger generations, including national pension benefits. The market income ratio between the tenth and the first deciles is thus greater than that of gross income mainly due to the asymmetrically distributed transfers skewed to the low-income deciles.

about every five or six years (the curve peaks in 1995, 2001, 2007, and 2012), the trend having a slightly positive slope. The estimates of effective PIT rates by decile are reported for selected years in Table 6. They are estimated for all of the decomposition scenarios differentiated by five factors in the upper half of the table. Their marginal changes are reported in the lower half.

Figure 6. Effective PIT Rates in Korea (in %)



Note: Based on author's calculations for households of two or more.

Table 6. Changes in Effective PIT Rates for Taxable Income (in %)

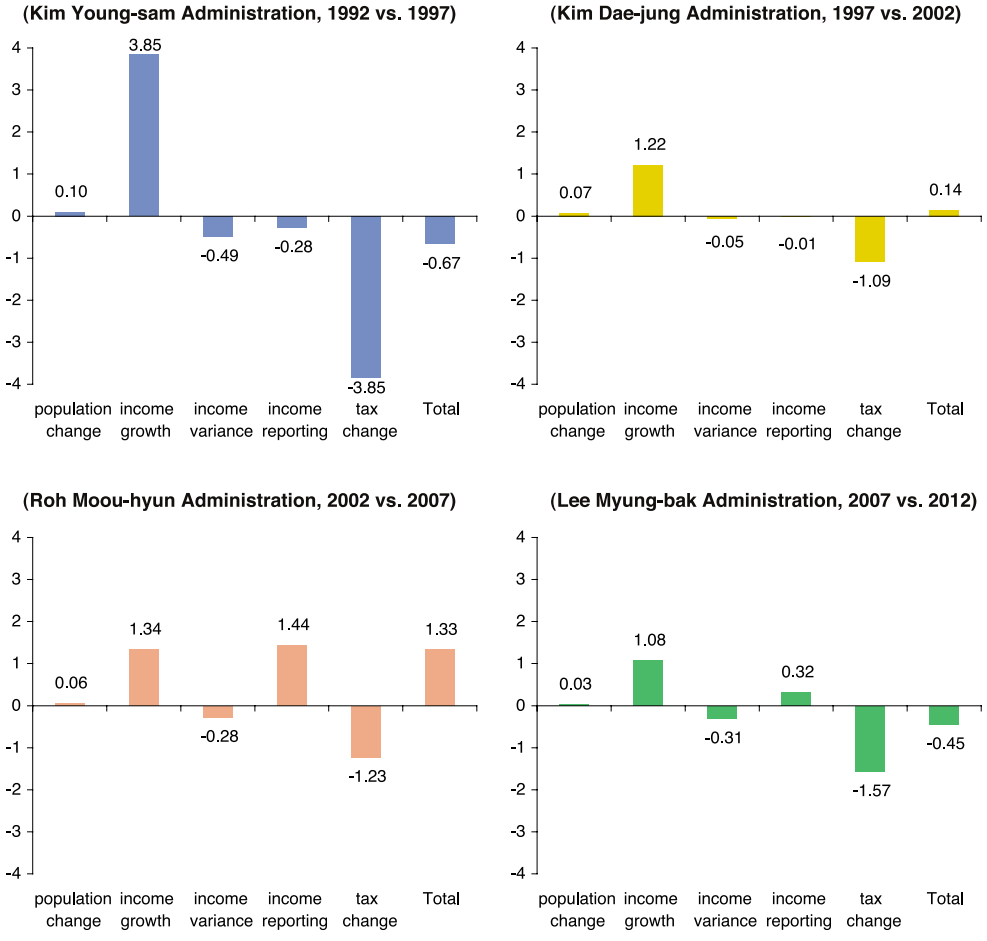
Effective Rates	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.
1992	0.64	1.09	1.28	1.67	2.34	2.84	3.39	4.28	5.35	8.30	4.10
weight adjustment	0.56	1.07	1.21	1.67	2.33	2.83	3.39	4.30	5.46	8.53	4.20
mean adjustment	1.31	2.91	3.59	4.56	5.37	6.13	7.14	8.73	10.32	13.87	8.05
variance adjustment	0.87	2.18	3.49	4.38	5.28	5.98	7.18	8.12	9.06	12.08	7.56
compliance adjustment	0.82	2.06	3.30	4.23	5.08	5.69	6.88	7.84	8.78	11.68	7.28
1997 (tax law adjustment)	0.17	0.66	1.26	1.51	2.00	2.37	2.79	3.34	4.25	6.54	3.43
weight adjustment	0.08	0.56	1.18	1.51	1.95	2.37	2.84	3.34	4.39	6.56	3.50
mean adjustment	0.14	0.96	1.71	2.14	2.73	3.43	4.24	4.92	5.94	8.10	4.72
variance adjustment	0.49	1.06	1.67	2.04	2.43	3.14	3.89	4.90	6.30	8.13	4.67
compliance adjustment	0.49	1.06	1.66	2.03	2.42	3.13	3.87	4.88	6.29	8.11	4.66

Effective Rates	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.
2002 (tax law adjustment)	0.53	0.89	1.35	1.57	1.92	2.35	2.92	3.64	4.66	6.34	3.57
weight adjustment	0.57	0.84	1.32	1.63	1.83	2.39	2.83	3.68	4.72	6.36	3.63
mean adjustment	0.86	1.31	1.87	2.36	2.83	3.79	4.30	5.26	6.32	8.04	4.97
variance adjustment	0.44	0.92	1.55	1.93	2.56	3.24	4.15	4.71	5.96	8.06	4.69
compliance adjustment	0.93	1.41	2.52	3.16	4.00	4.67	5.66	6.08	7.23	10.07	6.13
2007 (tax law adjustment)	0.60	1.07	1.71	2.18	2.74	3.38	4.08	4.58	5.95	8.81	4.90
weight adjustment	0.57	1.07	1.78	2.11	2.70	3.37	4.12	4.59	5.95	8.81	4.93
mean adjustment	0.71	1.39	2.29	2.73	3.48	4.32	5.18	5.64	7.29	10.36	6.01
variance adjustment	0.52	1.31	1.85	2.57	3.43	3.96	4.68	5.57	6.67	10.31	5.70
compliance adjustment	0.60	1.46	2.05	2.82	3.69	4.25	5.01	5.90	7.03	10.70	6.02
2012 (tax law adjustment)	0.41	0.94	1.28	1.79	2.39	2.86	3.51	4.23	5.19	8.49	4.45
Marginal Changes	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.
1992	–	–	–	–	–	–	–	–	–	–	–
weight adjustment	-0.08	-0.02	-0.07	0.00	-0.01	-0.01	0.00	0.02	0.11	0.23	0.10
mean adjustment	0.75	1.84	2.38	2.89	3.04	3.30	3.75	4.43	4.86	5.34	3.85
variance adjustment	-0.44	-0.73	-0.10	-0.18	-0.09	-0.15	0.04	-0.61	-1.26	-1.79	-0.49
compliance adjustment	-0.05	-0.12	-0.19	-0.15	-0.20	-0.29	-0.30	-0.28	-0.28	-0.40	-0.28
1997 (tax law adjustment)	-0.65	-1.40	-2.04	-2.72	-3.08	-3.32	-4.09	-4.50	-4.53	-5.14	-3.85
weight adjustment	-0.09	-0.10	-0.08	0.00	-0.05	0.00	0.05	0.00	0.14	0.02	0.07
mean adjustment	0.06	0.40	0.53	0.63	0.78	1.06	1.40	1.58	1.55	1.54	1.22
variance adjustment	0.35	0.10	-0.04	-0.10	-0.30	-0.29	-0.35	-0.02	0.36	0.03	-0.05
compliance adjustment	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.01	-0.02	-0.01
2002 (tax law adjustment)	0.04	-0.17	-0.31	-0.46	-0.50	-0.78	-0.95	-1.24	-1.63	-1.77	-1.09
weight adjustment	0.04	-0.05	-0.03	0.06	-0.09	0.04	-0.09	0.04	0.06	0.02	0.06
mean adjustment	0.29	0.47	0.55	0.73	1.00	1.40	1.47	1.58	1.60	1.68	1.34
variance adjustment	-0.42	-0.39	-0.32	-0.43	-0.27	-0.55	-0.15	-0.55	-0.36	0.02	-0.28
compliance adjustment	0.49	0.49	0.97	1.23	1.44	1.43	1.51	1.37	1.27	2.01	1.44
2007 (tax law adjustment)	-0.33	-0.34	-0.81	-0.98	-1.26	-1.29	-1.58	-1.50	-1.28	-1.26	-1.23
weight adjustment	-0.03	0.00	0.07	-0.07	-0.04	-0.01	0.04	0.01	0.00	0.00	0.03
mean adjustment	0.14	0.32	0.51	0.62	0.78	0.95	1.06	1.05	1.34	1.55	1.08
variance adjustment	-0.19	-0.08	-0.44	-0.16	-0.05	-0.36	-0.50	-0.07	-0.62	-0.05	-0.31
compliance adjustment	0.08	0.15	0.20	0.25	0.26	0.29	0.33	0.33	0.36	0.39	0.32
2012 (tax law adjustment)	-0.19	-0.52	-0.77	-1.03	-1.30	-1.39	-1.50	-1.67	-1.84	-2.21	-1.57

Note: Based on author's calculations using the HIES. The above statistics are for households of two or more.

Figure 7, which is based on the last column of Table 6, illustrates the overall changes in the average total effective PIT burden by factor for the four most recent governments. The sign of the total change in the average effective PIT rate during each presidential term alternates by administration. It was negative at -0.67% and -0.45% in the conservative administrations of Kim Young-sam and Lee Myung-bak, respectively. By contrast, it was positive at 0.14% and 1.33% in the radical administrations of Kim Dae-jung and Roh Moou-hyun, respectively. We may conclude indirectly from this observation that a conservative government is generally inclined to favor economic efficiency more

Figure 7. Changes in Effective Rates of PIT Burden by Factor



Note: It can be inferred that the number in the income reporting column reflects the effect of a change in the share of business income voluntarily reported to the tax authorities by taxpayers when filing their tax returns.

than equity and is likely to boost the economy by lowering the effective PIT burden, while a more radical government is inclined to favor equity over efficiency and is likely to increase the real tax burden to finance welfare expenditure by enhancing the effective PIT burden.[11]

The total change is decomposed by five factors: population aging, mean income growth, income inequality (measured by income variance), reporting rate of business income, and tax law change, as illustrated in Figure 7. In what follows, the effect of income growth and changes in tax law on the PIT burden is discussed.

The PIT system in Korea is not indexed to inflation. Therefore, without a change in the tax law to adjust for inflation, the real PIT burden could have increased tremendously over time due to the inflationary effects of the progressive structure of the PIT system, since inflation rates have always been positive in Korea.[12] All of the recent administrations more or less coped with nominal income growth by adjusting PIT law.

As illustrated in Figure 7, during Kim Young-sam Administration, the effective rate of the PIT burden increased by 3.85 PPT due to (nominal income growth, and the increase was fully and exactly offset by a change in tax law. The other three administrations also changed related tax laws in response to the increase in the effective PIT burden caused by nominal income growth. Just like the Kim Young-sam administration, the Lee Myung-bak administration lowered the effective PIT burden by 1.57 PPT, which served to counteract the increase of 1.08 PPT induced by nominal income growth. However, the other two radical administrations, Kim Dae-jung's and Roh Moou-hyun's, lowered the effective PIT burden by less than the increase caused by income growth: they lowered the PIT by 1.09 PPT and 1.23 PPT, respectively, while income growth induced a change of 1.22 PPT and 1.23 PPT, respectively.

These obvious differences between conservative and radical administrations accounted for most of the total change in effective PIT rates. In three administrations out of four, the signs of total changes in effective PIT rates coincided with those of the combined changes in effective PIT rates induced by income growth and changes to tax law. The only exception was the Kim Young-sam administration; the two changes were exactly offset, and the net effect was zero. The total change in the effective PIT rate was negative at -0.67 PPT. In sum, the conservative administrations were likely to cope with inflation to avoid inflationary effect on the increase in real PIT burden by introducing changes to tax laws. By contrast, the radical administrations were likely to

11. The share of the social security expenditure (or welfare expenditure) in the general account budget of Korea was 6.5% in 1992, 6.2% in 1997, 10.1% in 2002 and 2007, and 11.1% in 2012.
12. The CPI increases around 3% a year on average in Korea.

enjoy the inflationary effect, at least in part, with increased revenue from nominal income growth; they did not lower the effective PIT burden to the point where it would completely offset the effect of income growth.

In addition to income growth and changes in tax law, the change in the average share of business income reported to the tax authorities either voluntarily or compulsory by taxpayers played a significant role in determining the overall change in the effective PIT burden, particularly in the Roh Moou-hyun administration, which increased the effective PIT rate by 1.44 PPT. This finding is consistent with those of recent studies in closely related field. According to Sung (2011a), the business income reporting rate rose sharply from 51.4% to 73.7% during the period between 2002 and 2007, which overlapped with the Roh Moou-hyun administration. It is widely believed and also empirically verified by Song and Sung (2012) that the business income reporting rate increased significantly mainly due to the introduction of two tax policies between late 1990s and early 2000s: receipt lotteries and a deduction for credit card use.[13] The increase in the business income reporting rate was sustained in the Lee Myung-bak administration.[14] However, its effect was significantly weakened to a mere increase of 0.32 PPT in the effective PIT rate, about one-fourth as large as that under the Roh Moou-hyun administration, which was the result in part of weakened tax law enforcement and also in part of a saturation effect.

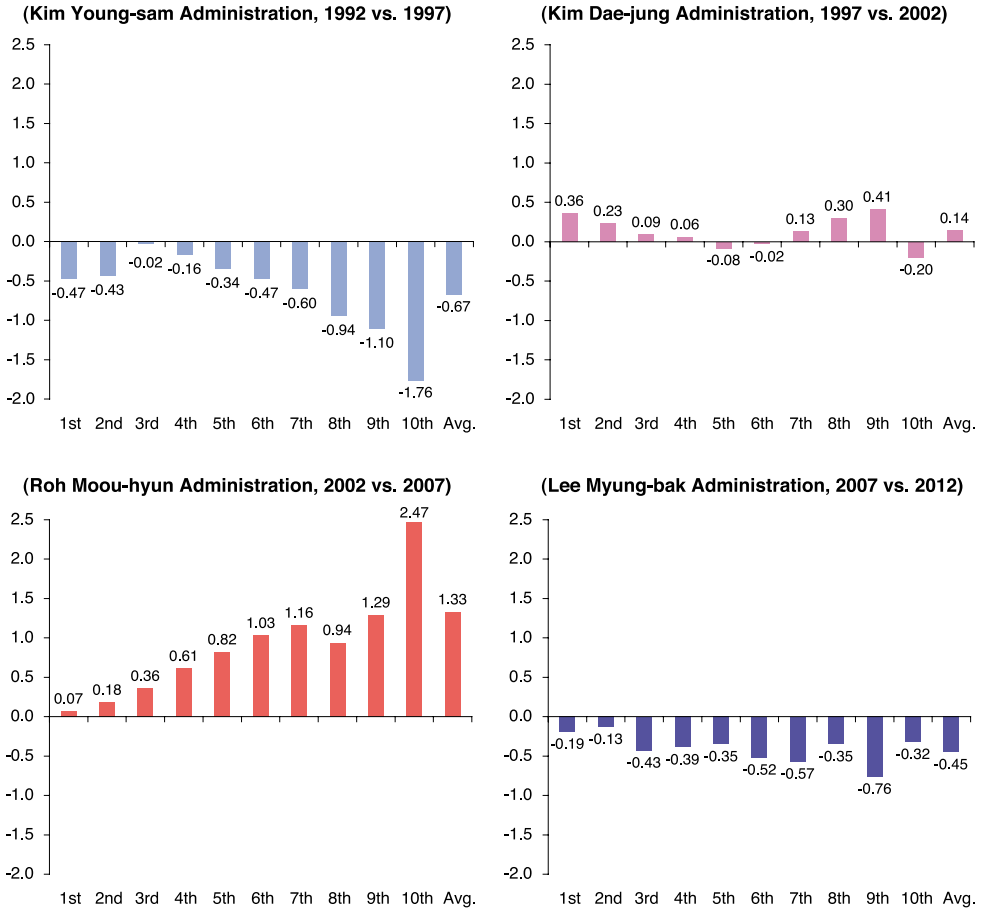
Generally speaking, an increase in the business income reporting rate means that the real PIT burden of the self-employed increases, which may dissuade the self-employed to invest their earnings. Thus, a conservative administration that favors economic efficiency over equity is not likely to seek to raise the business income reporting rate substantially above a certain level. This may be evidence of another difference caused by the political regime shift.

Change in Effective PIT Burden by Income Decile

Figure 8 illustrates the changes in effective PIT rates by income decile for each administration from Kim Young-sam's to Lee Myung-bak's. The patterns of distributions

13. The NTS randomly chose several receipts issued for the previous week and awarded lump-sum cash prizes once a week. The first place was entitled to receive ₩100 million (roughly US$100,000). Furthermore, a part of cumulative credit card use was deducted from taxable income and thus taxpayers' PIT burdens were relieved, depending on their marginal tax rates. These two policy tools significantly and almost instantaneously broadened the PIT base of business income.
14. As noted in note 7, the business income reporting rate was 73.71% in 2007 according to Sung (2011b) and 80.24% in 2012.

Figure 8. Changes in Effective Rates of PIT Burden by Income Decile



are marked by the political stance of each administration. The changes in effective PIT rates were negative in all deciles, under the conservative regimes of Kim Young-sam and Lee Myung-bak. On the other hand, the changes in effective rates were positive in almost all deciles during the radical administrations of Kim Dae-jung and Roh Moou-hyun: the only exceptions were the fifth, sixth, and tenth deciles during the Kim Dae-jung administration. These differences resulted from the choice of economic efficiency over equity or equity over economic efficiency.

Redistributive Effects

Redistributive effects can be measured by percentage changes in Gini coefficients. Let g be the percentage change in a Gini coefficient such that

$$g = \Delta G/G^{\circ} \text{ and } \Delta G \equiv G^{*} - G^{\circ}$$

where G^{*} and G° are Gini coefficients of before- and after-tax incomes, respectively. A negative value of g implies positive income redistributive effect, and a positive value of g implies negative redistributive effect. In this sense, the redistributive effect (RE) of PIT can be defined as $RE \equiv -g = -\Delta G/G^{\circ}$. The (percentage) change in RE is defined as

$$\Delta RE = -\Delta g.$$

Therefore, there exists perfect negative correlation between the differences of redistributive effect and of the change in Gini coefficients.

Table 7 reports the estimates of Gini coefficients for market, private, gross, and disposable incomes in the base and target years for each administration, together with their percentage changes (g). The RE can also be decomposed by factor just as effective PIT rates can be. Table 8 reports the Gini estimates of pre- and post-PIT incomes differentiated by the five factors between administrations. The elements in the third and fourth columns denote these estimates. The percentage changes (g or -RE) between the two columns measure the redistributive effects of PIT. These are reported in the fifth column. Marginal changes (that is, $\Delta g=-\Delta RE$) are derived from vertical differences within the fifth column between neighboring elements and denote the redistributive effects of PIT by each factor. These estimates are reported in the last column. Table 9 rearranges the last column of Table 8 and compares the (marginal) redistributive effects, $-\Delta RE$, by factor as well as by administration.

The PIT burden has tended to be highly concentrated in Korea. According to the tax return information released by NTS (2010), the top 14.3% of business income earners paid 93.6% of total business income tax in 2009. The tax burden on labor income was likewise highly concentrated: the top 17.9% of highest income earners bore 92.3% of the total labor income tax in 2009. The high degree of PIT concentration generally implies positive income redistribution because of progressively distributed PIT burden. Under this condition, an increase in the business-income reporting rate would increase the effective PIT burden and, thus, have positive marginal redistributive effect by reducing the after-PIT income inequality index. These arguments were

Table 7. Gini Estimates and Redistributive Effects of PIT in Terms of Percentage Changes in Gini

	1992		1997		2002		2007		2012	
market income	0.23897		0.28192		0.28352		0.32278		0.31575	
private income (market income plus private transfers)	0.24074		0.28070		0.28090		0.30992		0.30760	
gross income	0.24147		0.28102		0.27997		0.29935		0.29368	
gross income - PIT	0.22991	(-4.79)	0.27204	(-3.20)	0.27108	(-3.18)	0.28723	(-4.05)	0.28146	(-4.16)
disposable income	0.22865	(-5.31)	0.27225	(-3.12)	0.26997	(-3.57)	0.28373	(-5.22)	0.27846	(-5.18)

Note: The numbers in parentheses show the percentage changes in Gini coefficients between gross income and several selected after-tax incomes, such as after-PIT income and disposable income. They show the redistributive effect of direct taxes, including the PIT.

empirically verified in Korea through simulations by Sung (2007). He found that the 10 PPT increase in business income reporting rate decreased the after-PIT income Gini coefficient additionally by 0.3% from 0.31893 to 0.31813 for the year 2006. As stated earlier, the business income reporting rate increased from 51.4% to 73.7% during the Roh Moou-hyun administration and rose to 80.2% during the Lee Myung-bak administration. The third and fourth graphs in Figure 7 indicate that the effective PIT rate increased as much as 1.44 PPT and 0.32 PPT, respectively, during these two administrations, a change both induced by the increase in business income reporting rates. This increased the redistributive effect of PIT in both administrations.

The ideological differences between administrations were obvious in terms of the changes in effective PIT rates during each presidential term: increased real PIT burden in the Kim Dae-jung and the Roh Moou-hyun administrations vs. unchanged or decreased real PIT burden in the Kim Young-sam and the Lee Myung-bak administrations. However, contrary to the general perception, it was not obvious in terms of the changes in the RE of the PIT. A negative value of percentage change in Gini coefficients implies positive redistribution and vice versa, since $g=-RE$ and $\Delta g=-\Delta RE$. In this regard, the redistributive effect of PIT decreased from 4.79% to 3.20% during the conservative administration of Kim Young-sam, as expected (see Table 7). It increased from 3.18% to 4.05% during the radical administration of Roh Moou-hyun, as expected as well. However, the directions of the changes were opposite in Kim Dae-jung and Lee Myung-bak administrations, respectively. Even though it might be desired by the core group of political supporters at the inauguration of the new regime, complete reversal of the sign of the ΔRE of the PIT is difficult to realize at once by a new administration with an opposing political ideology. The new administration may intend to pursue its

Table 8. Decomposition of Redistributive Effects of PIT by Factor (in %, PPT)

Year	Factor	Gini Coefficient		% Change in Gini (g=ΔG/G)	Marginal Change in PPT (Δg=-ΔRE)
		Gross Income	Gross Income–PIT		
1992	–	0.24147	0.22991	-4.79	–
	population aging	0.24740	0.23549	-4.81	-0.02
	income growth	0.24740	0.22872	-7.55	-2.74
	income variance	0.28102	0.26505	-5.68	1.87
	income reporting	0.28102	0.26553	-5.51	0.17
1997	tax change	0.28102	0.27204	-3.19	2.32
	population aging	0.29266	0.28358	-3.10	0.09
	income growth	0.29266	0.28136	-3.86	-0.76
	income variance	0.27997	0.26817	-4.21	-0.35
	income reporting	0.27997	0.26819	-4.21	0.00
2002	tax change	0.27997	0.27108	-3.17	1.04
	population aging	0.28677	0.27780	-3.13	0.04
	income growth	0.28677	0.27554	-3.92	-0.79
	income variance	0.29935	0.28791	-3.82	0.10
	income reporting	0.29935	0.28593	-4.48	-0.66
2007	tax change	0.29935	0.28723	-4.05	0.43
	population aging	0.30352	0.29140	-3.99	0.06
	income growth	0.30352	0.28931	-4.68	-0.69
	income variance	0.29368	0.27896	-5.01	-0.33
	income reporting	0.29368	0.27849	-5.18	-0.17
2012	tax change	0.29368	0.28146	-4.16	1.02

Note: Marginal change indicates the marginal redistributive effect of each factor. A negative sign implies positive income redistribution, since it reduces the after-tax income Gini coefficient. On the other hand, a positive sign implies negative redistribution.

ideological goals but also may feel obliged to embrace political opponents so as to reinforce its political base, which may be relatively weak at the start.

The direction of the changes in the redistributive effect of the PIT was not reversed in the Kim Dae-jung and Lee Myung-bak administrations, even though the philosophy and political stance of ruling parties shifted from the right to the left. However, in

absolute terms, the RE changed significantly. The RE of the PIT decreased by 0.02 PPT (from 3.20% to 3.18%) during the Kim Dae-jung administration. This amount was quite small, compared to decrease of 1.59 PPT during the former conservative administration of Kim Young-sam. On the other hand, the RE of the PIT increased by 0.11 PPT (from 4.05% to 4.16%) during Lee Myung-bak administration. This was also relatively small, compared to the increase of 0.87 PPT during the former radical administration of Roh Moou-hyun. In each case, the main objective of taxation policy changed significantly in volume from that of the preceding administration. However, the policy of the preceding administration was not completely offset by the policy of new administration, probably due to the potential and invisible resistance of political opponents.

On the other hand, a successive administration that adhered to the same political philosophy as its predecessor could have stronger political base and thus its policies could have a stronger effect. This was the case for the Roh Moou-hyun administration, which succeeded the radical administration of Kim Dae-jung. During the Roh Moou-hyun administration, the RE of the PIT increased sharply. The changes in the RE are shown separately by factor in Table 9. The total RE of PIT changes was reduced by 1.59 PPT during the Kim Young-sam administration. It is reported as positive in $\Delta g = -\Delta RE$ at 1.59 PPT in Table 9, since it reflected the increase in percentage changes in Gini coefficients of before- and after-PIT incomes, from -4.79% to -3.20%.

During the Kim Young-sam administration, population aging and the rate of business income reporting played a relatively small role in the change of 1.59 PPT in the redistributive effect. Income growth increased the RE significantly to as much as 2.74 PPT by expanding the absolute value of the percentage changes in the Gini coefficients that were negative. This is denoted by -2.74 PPT in row B and in the second column in Table 9. Tax law changes decreased the PIT burden and reduced the RE by as much as 2.32 PPT as shown in row E in Table 9. Changes in tax law increased the percentage changes of the Gini coefficients (ΔRE) by that same amount (ΔRE=-2.32 PPT), thereby offsetting most of the increased redistributive effects from income growth (ΔRE=2.74 PPT). The increase in income inequality (that is, income variance) expanded significantly mainly due to the economic crisis at the end of Kim Young-sam administration, as illustrated in Figure 5. It had negative effect on income redistribution of PIT by -1.87 PPT as reported in row C.

During the Kim Dae-jung administration, tax laws were changed to cope with inflationary effect of taxation induced by income growth. The change was -1.04 PPT (negation of Δg=1.04 PPT in the third column), but it as not as much as that during the Kim Young-sam administration (-2.32 PPT). The effect of changes to tax law was also significantly weakened by the successive radical administration of Roh Moou-hyun to

Table 9. Marginal Redistributive Effect by Factor Measured in Percentage Changes in Gini (Δg=-ΔRE) (in PPT)

	Kim Young-sam Administration	Kim Dae-jung Administration	Roh Moou-hyun Administration	Lee Myung-bak Administration
population aging (A)	-0.02	0.09	0.04	0.06
income growth (B)	-2.74	-0.76	-0.79	-0.69
income variance (C)	1.87	-0.35	0.10	-0.33
income reporting (D)	0.17	0.00	-0.66	-0.17
tax change (E)	2.32	1.04	0.43	1.02
total (=A+B+C+D+E)	1.59	0.02	-0.87	-0.11
income growth + tax change (=B+E)	-0.42	0.28	-0.36	0.33
income distribution + tax change (=B+C+E)	1.45	-0.07	-0.26	0.00

Note: All figures indicate marginal redistributive effects of corresponding factors. A negative sign implies positive income redistribution since it reduces the after-tax income Gini coefficient. On the other hand, a positive sign implies negative redistribution. The value of total may be different from that of the column sum due to the error from round up.

-0.43 PPT (negation of Δg=0.43 PPT in the fourth column). However, it was reversed -1.02 PPT (negation of Δg=1.02PPT in the fifth column) during the following administration of Lee Myung-bak.

Unlike Kim Dae-jung's administration, Roh Moou-hyun's focused on broadening the tax base of business income by more tightly enforcing tax administration. This large increase in the rate of business income reporting during the Roh Moou-hyun administration contributed to increasing the effective PIT rate by 1.44 PPT, as shown in the third graph in Figure 7, and to enlarging positive redistribution by lowering the after-PIT income Gini coefficient by 0.66 PPT (negation of Δg=-0.66PPT in row D and in the fourth column in Table 9). This trend was weakly sustained with a much smaller effect in the successive conservative administration of Lee Myung-bak. The business income reporting rate increased slightly and the effective PIT rate also increased slightly, by 0.32 PPT as shown in the fourth graph in Figure 7. These changes increased the redistributive effect of the PIT by 0.17 PPT (negation of Δg= -0.17% in row D in the last column of Table 9). During the Lee Myung-bak administration, the joint effect (-1.02 PPT=-(0.69 PPT+0.33 PPT) in the last column of Table 9) of income growth and income variance was exactly offset by a tax policy change (1.02 PPT). The net redistributive effect stemmed mostly from the business income legalization process that led to the increase in the business-income reporting rate, as

discussed.

In sum, a successive administration with the same political leanings as its predecessor had stronger political base and thus had a wide and deeper impact on income redistribution through taxation policy in general than did a successive administration with different political leanings.

Effect on Income of Behavioral Changes

Taxpayers react both to real and anticipated policy changes. By considering the impact of such a change on the labor supply, the effect of behavioral changes induced by a change in PIT policies can be estimated in terms of (market) income. The results are reported in Table 10. As shown in the last column, the effect of changes in PIT policy was much greater in absolute terms during Kim Young-sam's and Lee Myung-bak's administrations than during Kim Dae-jung's and Roh Moou-hyun's. This is consistent with the argument made in the second section of this paper that conservative administrations generally favor economic efficiency over equity as a means of boosting economy.

Table 10. Effect on Income of Behavioral Changes Induced by PIT Law Change, by Administration (in ₩1,000, %)

Amount	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.
Kim Young-sam administration	3	23	45	72	96	116	165	209	253	414	140
Kim Dae-jung administration	0	3	7	13	16	30	42	65	106	165	45
Roh Moou-hyun administration	4	7	23	36	56	68	94	107	112	160	67
Lee Myung-bak administration	2	13	28	46	72	91	109	144	196	348	105
% change	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Avg.
Kim Young-sam administration	0.03	0.17	0.26	0.36	0.42	0.45	0.57	0.63	0.65	0.74	0.43
Kim Dae-jung administration	0.00	0.02	0.04	0.05	0.06	0.09	0.12	0.16	0.22	0.24	0.10
Roh Moou-hyun administration	0.02	0.04	0.09	0.12	0.16	0.17	0.20	0.20	0.17	0.18	0.13
Lee Myung-bak administration	0.01	0.05	0.09	0.12	0.17	0.19	0.20	0.23	0.25	0.31	0.16

Note: Based on author's calculations using the HIES. The above statistics are for households of two or more.

The table also shows that the changes in income were progressive: the ratio of income change to taxable income increased with income decile, increasing from 0.01% in the first decile to 0.19% and 0.31% in the sixth and the tenth deciles, respectively. This is mostly because the PIT was highly concentrated in high-income deciles and, thus the changes in the PIT affected high-income earners both relatively and absolutely more than low-income earners.

CONCLUDING REMARKS

The shift in the political ideology of the Korean government that the presidential elections in 1997 and 2007 brought turned out to affect income tax policy significantly to a certain extent. The philosophy and political stances of the regimes were reflected in their position on whether to support welfare policies or economic growth. The left-leaning Kim Dae-jung and Roh Moou-hyun administrations emphasized redistribution more, while the right-leaning Kim Young-sam and Lee Myung-bak administrations emphasized growth more. These differences were reflected in their PIT policies. All the administrations lowered effective PIT rates as a way of offsetting the inflationary effects of taxation from nominal income growth during their presidential terms. However, the extent to which they relied on this strategy differed significantly with their political stances. The inflationary effects were fully offset during Kim Young-sam and Lee Myung-bak administrations but only in part during Kim Dae-jung and Roh Moou-hyun administrations.

Political regime shifts influenced the redistributive effects of PIT significantly as well but not as much as they affected PIT rates. With the shift from the conservative Kim Young-sam administration to the radical Kim Dae-jung administration the reduction of the redistributive effect was significantly mitigated, from -1.59 PPT (4.79% → 3.20%) to -0.02PPT (3.20% → 3.18%). On the other hand, with the shift from the radical Roh Moou-hyun administration to the conservative Lee Myung-bak administration the augmentation of the redistributive effect was significantly mitigated, from +0.87 PPT (3.18% → 4.05PPT) to +0.11 PPT (4.05% → 4.16%), while it was strengthened from -0.02 PPT to +0.87% during the radical administration of Roh Moou-hyun's that followed the radical administration of Kim Dae-jung. These apparent differences might be the result of political stability of each administration. The switch from conservative to radical and radical to conservative no doubt made the Kim Dae-jung and Lee Myung-bak administrations politically less stable than the Roh Moou-hyun administration, perhaps obliging them to keep political opponents happy in order to broaden

their political support within a short period of time and thereby preventing them from fully implementing polities reflecting their political philosophy.[15]

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15. Of course, other exogenous factors may have significantly influenced the effective burden of the PIT as well as its income redistribution effects. They have been controlled for in this study by decomposition methods that analyze them as the effects of mean adjustment as shown in table 6. Changes in real effective PIT burdens induced by tax laws are therefore likely to reflect political stance of each administration.

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