

Supplementary Material for “Politically feasible
reforms of non-linear tax systems”
On the prevalence of monotonic tax reforms in OECD
countries*

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1 Summary

This supplementary material has several parts. We first document in detail the extent to which reforms of statutory personal income tax schedules in OECD countries are monotonic, see Section 2. There we cover the years 2000 – 2016. We then cover a longer time horizon for three countries, namely the United States (1981-2016), France (1916-2016), and the United Kingdom (1981-2016), see Section 3.

We show that a vast majority of reforms in OECD countries is monotonic: Since 2000, 78% of the reforms are (strictly) monotonic. The total number of reforms equals 394. We obtain similar findings when looking at longer time horizon for specific countries, United Kingdom (77% of the reforms), the United States (80% of the reforms), and France (84% of the reforms). For these three countries, we also take a closer look at non-monotonic reforms. We find that most non-monotonic reforms are monotonic either above or below the median.

2 Personal income tax reforms in OECD countries since 2000

The OECD provides annual data on key parameters of the statutory personal income tax systems of its member countries (central governments). In particular, it documents personal income tax rates for wage income and the taxable income thresholds at which these statutory rates apply.¹ The information is applicable for a single person without dependents. We use this information to construct the corresponding tax function. A reform takes place if this tax function changes from one year to the next. The OECD also reports personal allowances and tax credits, and we include these parameters in our tax functions. Indeed, the OECD documents that the personal allowance corresponds to a basic/standard tax allowance that is a tax relief available to all taxpayers. In addition, such reliefs are universally/automatically available and are unrelated to expenditures incurred by the taxpayer. We observe that many countries use these allowances equivalently to a first bracket of taxable income with a marginal tax rate equal to zero (see, for instance, Belgium, Estonia, Japan, Spain, the United Kingdom, or the United States). Similarly, the basic/standard tax credit is a tax relief available to all taxpayers. Such reliefs are universally/automatically available and are unrelated to expenditures incurred by the taxpayer. We observe again that many countries use these tax credits equivalently to a first bracket of taxable income with a marginal tax rate equal to zero (see, for instance, the Czech Republic, Italy, or the Netherlands).² The threshold, tax allowance and tax

¹The database provided by the OECD is Table I.1. Central government personal income tax rates and thresholds accessible on http://stats.oecd.org/Index.aspx?DataSetCode=TABLE_I1.

²Our treatment of tax allowances and tax credits is not decisive for the finding that most tax reforms are monotonic. We report on a robustness check below.

credit amounts are expressed in national currencies.³

For every year, we compute the difference between the current tax schedule and the new tax schedule implied by the reform. If this difference is null for all income levels this is a year without reform.

We first document the monotonicity of the reforms of statutory personal income tax schedules that have been implemented (i.e. made into the law) for a panel of 33 OECD countries since 2000. The list of the 33 countries in our panel are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States. The OECD has 35 members: we excluded Slovenia because of an inconsistency in the OECD database for this country (see the threshold 6 in 2004) and Germany because the tax system is based on a polynomial formula that is not represented in the OECD database. As we show below, including data from an alternative and more accurate source for Germany leads to an increase in the number of monotonic reforms.

Total number of possible reforms (#years*#countries):	528	
Total number of reforms:	394	
Number of monotonic reforms:	309	(78%)
Number of non-monotonic reforms:	85	(22%)

Table 1: Summary statistics on the tax reforms for a panel of 33 OECD countries (2000-2016).

Summary statistics for all OECD countries in our panel are reported in Appendix A. Table 1 is based on the OECD database (Table I.1. Central government personal income tax rates and thresholds: accessible on http://stats.oecd.org/Index.aspx?DataSetCode=TABLE_I1).

Summary statistics. Table 1 shows that most reforms in OECD countries are monotonic: Since 2000, 78% of the reforms were monotonic. We notice that income tax reforms occur frequently: In total 528 annual tax reforms were possible and 394 took place. In the Appendix to this document, we provide the summary statistics for every OECD country in our panel (the statistics for France, the US, and the UK are provided in the main text below).

As a robustness check, we have run our analysis of reforms including Germany and found that 80% of the reforms are monotonic whereas 78% of the reforms were monotonic

³Additional details of the methodology applied by the OECD is accessible on <http://www.oecd.org/ctp/tax-policy/personal-income-tax-rates-explanatory-annex.pdf>.

First year of income taxes:	1916	
Total number of possible reforms until 2016:	100	
Total number of reforms until 2016:	74	
Number of monotonic reforms:	62	(84%)
Number of non-monotonic reforms:	12	(16%)

Table 2: Summary statistics on French tax reforms (1916-2016).

Table 2 is based on the Institut des politiques publiques (IPP) database (accessible on [http : //www.ipp.eu/](http://www.ipp.eu/)).

in our benchmark, see Table 37.⁴ The total number of reforms increases from 394 to 406 when Germany is included.

As another robustness check we have run our analysis of reforms excluding personal allowances and found that 82% of the reforms are monotonic in this case. Similarly, we have excluded tax credits and found that 77% of the reforms are monotonic in this case.

3 Income tax reforms in France, the United Kingdom and the United States

3.1 France (1916-2016)

This section relies on the historical account of French income tax in Chapter 4 of Piketty (2001; 2018) and the Institut des politiques publiques (IPP) database.⁵ The French tax schedule is such that the income tax paid in year t is based on the income generated in year $t - 1$, whereas the tax law for the income tax in year t is decided in the fall of year $t - 1$. We refer to the year in which the new tax law applies as the year of the reform.

Summary statistics on the whole history of French tax reforms. Table 2 reports on the reforms of income tax schedules in France from its creation in 1914 (the first year where the schedule applied is in 1916 on the income generated in 1915): 84% of the reforms are monotonic. In the following we look separately at the tax reforms before and after the second world war.

Summary statistics on the period 1916-1945. We begin with a detailed account of the reforms that took place before the second World War. Table 3 shows that only

⁴The database comes from the German Federal Ministry of Finance, accessible on [https : //www.bmf - steuerrechner.de/index.xhtml;jsessionid = 46D8EC6083BF2573A42C23A2B03B49DF](https://www.bmf-steuerrechner.de/index.xhtml;jsessionid=46D8EC6083BF2573A42C23A2B03B49DF).

⁵See also Delalande (2011). The IPP database can be accessed on [http : //www.ipp.eu/](http://www.ipp.eu/).

First year of income taxes:	1916
Total number of possible reforms until 1945:	29
Total number of reforms until 1945:	12
Number of monotonic reforms:	8 (67%)
Number of non-monotonic reforms:	4 (33%)

Table 3: Summary statistics on the French tax reforms before World War II (1915-1945).

In France out of the inspected 29 years (period 1916-1945) there were 8 monotonic and 4 non-monotonic income tax reforms. In 17 years there was no reform. Years with a monotonic reform: 1917, 1924, 1925, 1926, 1927, 1929, 1933, 1935. Years with a non-monotonic reform: 1918, 1920, 1937, 1943. Years without a reform: 1919, 1921, 1922, 1923, 1928, 1930, 1931, 1932, 1934, 1936, 1938, 1939, 1940, 1941, 1942, 1944, 1945.

Table 3 is based on the Institut des politiques publiques (IPP) database (accessible on [http : //www.ipp.eu/](http://www.ipp.eu/)).

4 reforms before World War II (WWII) are non-monotonic (1918, 1920, 1937, 1943). A careful inspection of these reforms shows, however, that they are “essentially” monotonic, even though the function that indicates the change in the tax burden exhibits some small non-monotonicities, see Figures 1, 2 and 3. Overall, before WWII, tax reforms were rare, there are 17 years without a reform.

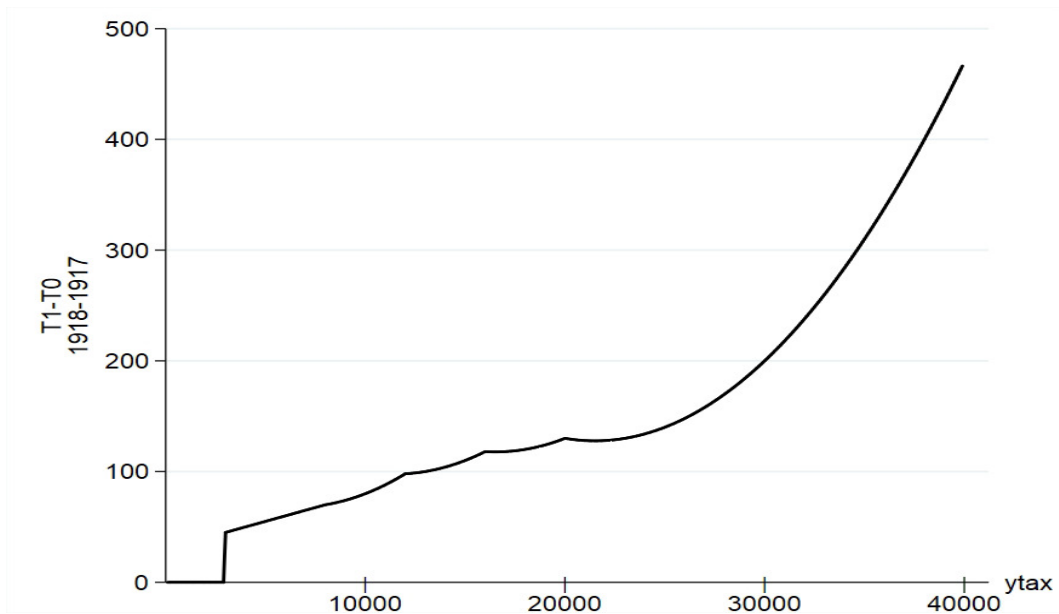


Figure 1: Reform of the French income tax in 1918

Figure 1 is based on the information provided by barèmes Institut des politiques publiques (IPP), [http : //www.ipp.eu/outils/baremes - ipp/](http://www.ipp.eu/outils/baremes-ipp/).

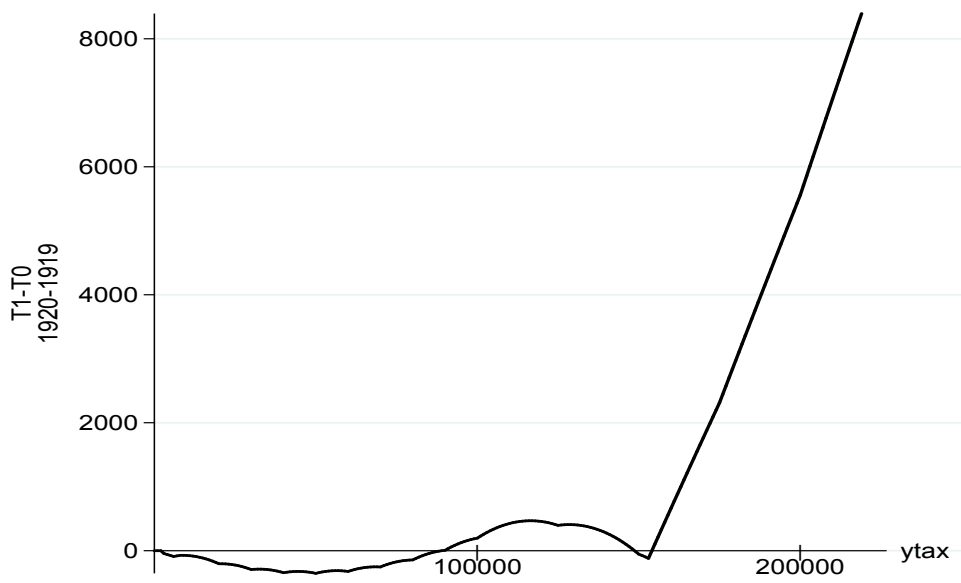


Figure 2: Reform of the French income tax in 1920

Figure 2 is based on the information provided by barèmes Institut des politiques publiques (IPP), [http : //www.ipp.eu/outils/baremes](http://www.ipp.eu/outils/baremes) – *ipp/*.

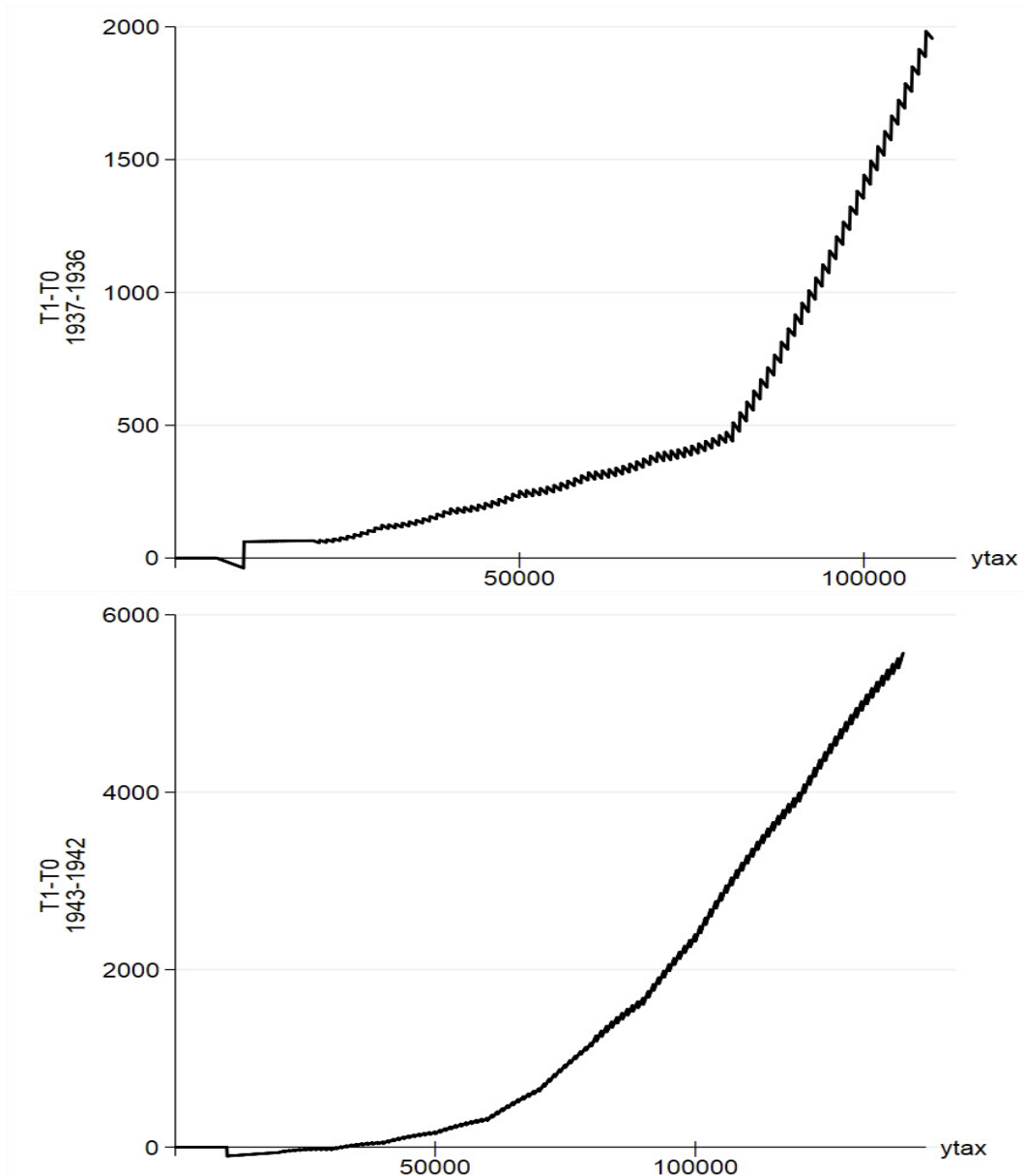


Figure 3: Reform of the French income tax in 1937 (first row) and 1943 (second row)

Figure 3 is based on the information provided by barèmes Institut des politiques publiques (IPP), [http : //www.ipp.eu/outils/baremes – ipp/](http://www.ipp.eu/outils/baremes-ipp/).

Beginning of examination:	1945	
Total number of possible reforms: (1945-2016)	71	
Total number of reforms:	62	
Number of monotonic reforms:	54	(87%)
Number of non-monotonic reforms:	8	(13%)

Table 4: Summary statistics on the French tax reforms after World War II (1945-2016).

In France out of the inspected 71 years (period 1945-2016) there were 54 monotonic and 8 non-monotonic income tax reforms. In 9 years there was no reform. Years with a monotonic reform: 1947, 1948, 1949, 1950, 1952, 1954, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1970, 1971, 1972, 1973, 1974, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2013, 2014, 2016. Years with a non-monotonic reform: 1946, 1951, 1961, 1975, 1983, 1994, 2011, 2015. Years without a reform: 1953, 1955, 1956, 1957, 1958, 1959, 1960, 1969, 2012.

Table 4 is based on the Institut des politiques publiques (IPP) database (accessible on [http : //www.ipp.eu/](http://www.ipp.eu/)).

Summary statistics on the period 1945-2016. We now provide a detailed account of the reforms that occurred after the second World War. Table 4 shows that there are adjustments of the French income tax system almost every year since WWII. In most of the cases the changes in tax payments are monotonic for all incomes. There are eight exceptions. Under at least two of those (2011 and 1983), the changes in tax payments were strictly monotonic below the median, see Figures 4 and 5. More generally, an inspection of the non-monotonic reforms reveals that there is usually one bracket where monotonicity is violated. In some cases this bracket is, moreover, very narrow. Such tax reforms are monotonic above or below the median.

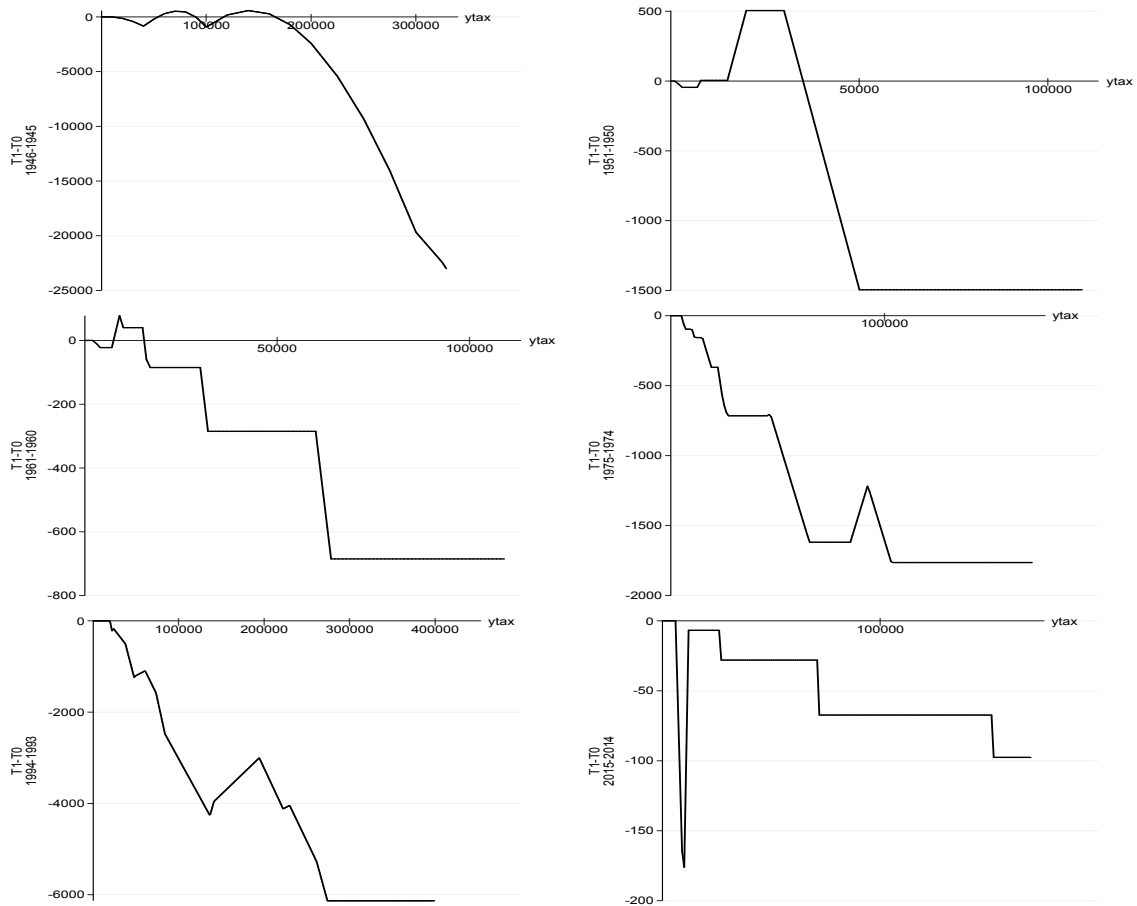


Figure 4: Non-monotonic reforms of the French income tax

Figure 4 shows some non-monotonic reforms. The reforms were implemented in years 1946 (first row, left panel), 1951 (first row, right panel), 1961 (second row, left panel), 1975 (second row, right panel), 1994 (third row, left panel), and 2015 (third row, right panel). Figure 4 is based on the information provided by

barèmes Institut des politiques publiques (IPP), <http://www.ipp.eu/outils/baremes-ipp/>.

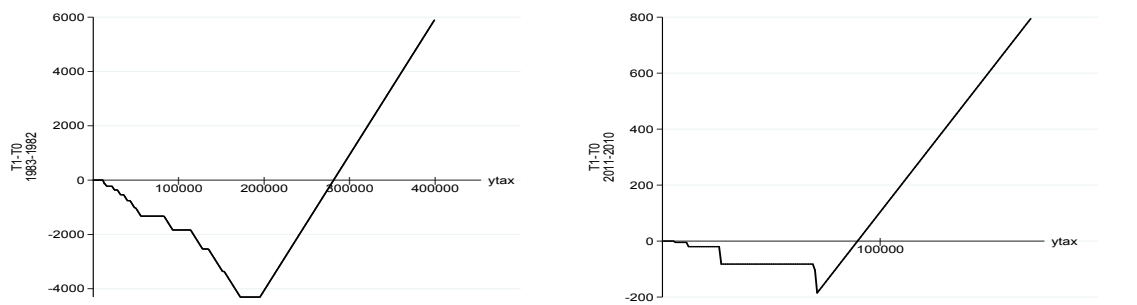


Figure 5: Non-monotonic reforms of the French income tax in years 1983 and 2011

Figure 5 shows the non-monotonic reform implemented in years 1983 (left panel) and 2011 (right panel).

Figure 5 is based on the information provided by barèmes Institut des politiques publiques (IPP), <http://www.ipp.eu/outils/baremes-ipp/>.

3.2 United Kingdom (1981-2016)

This section relies on an historical account of the UK income tax in the Mirrlees review (see in particular the Chapter 1 of Mirrlees (2010)), a timeline of the main tax changes announced in each Budget and Pre-Budget Report done by the Institute For Fiscal Studies (IFS),⁶ and the database from the United Kingdom HM Revenue & Customs (HMRC).⁷

Beginning of examination:	1981	
Total number of possible reforms until 2016:	35	
Total number of reforms until 2016:	35	
Number of monotonic reforms:	27	(77%)
Number of non-monotonic reforms:	8	(23%)

Table 5: Summary statistics on tax reforms in the United Kingdom (1981-2016).

In the United Kingdom out of the inspected 35 years there were 27 monotonic and 8 non-monotonic income tax reforms. Years with a monotonic reform: 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2010. Years with a non-monotonic reform : 1999, 2008, 2011, 2012, 2013, 2014, 2015, 2016.

Table 5 is based on the United Kingdom HM Revenue & Customs database (accessible on [https : //www.gov.uk/government/statistics/income – tax – personal – allowances – and – reliefs](https://www.gov.uk/government/statistics/income-tax-personal-allowances-and-reliefs)).

Summary statistics. Table 5 shows that there are adjustments of the UK income tax system every year since 1981. In most cases the changes in tax payments were monotonic for all incomes (77% of the reforms are monotonic). There are eight exceptions, see Figures 6 and 7. Under five of those, there is one bracket where monotonicity is violated, with the implication that the reform is monotonic either above or below median income.

⁶The description is available at [http : //www.ifs.org.uk/ff/budget_measures.xls](http://www.ifs.org.uk/ff/budget_measures.xls).

⁷The database can be accessed on [https : //www.gov.uk/government/collections/tax – structure – and – parameters – statistics](https://www.gov.uk/government/collections/tax-structure-and-parameters-statistics).

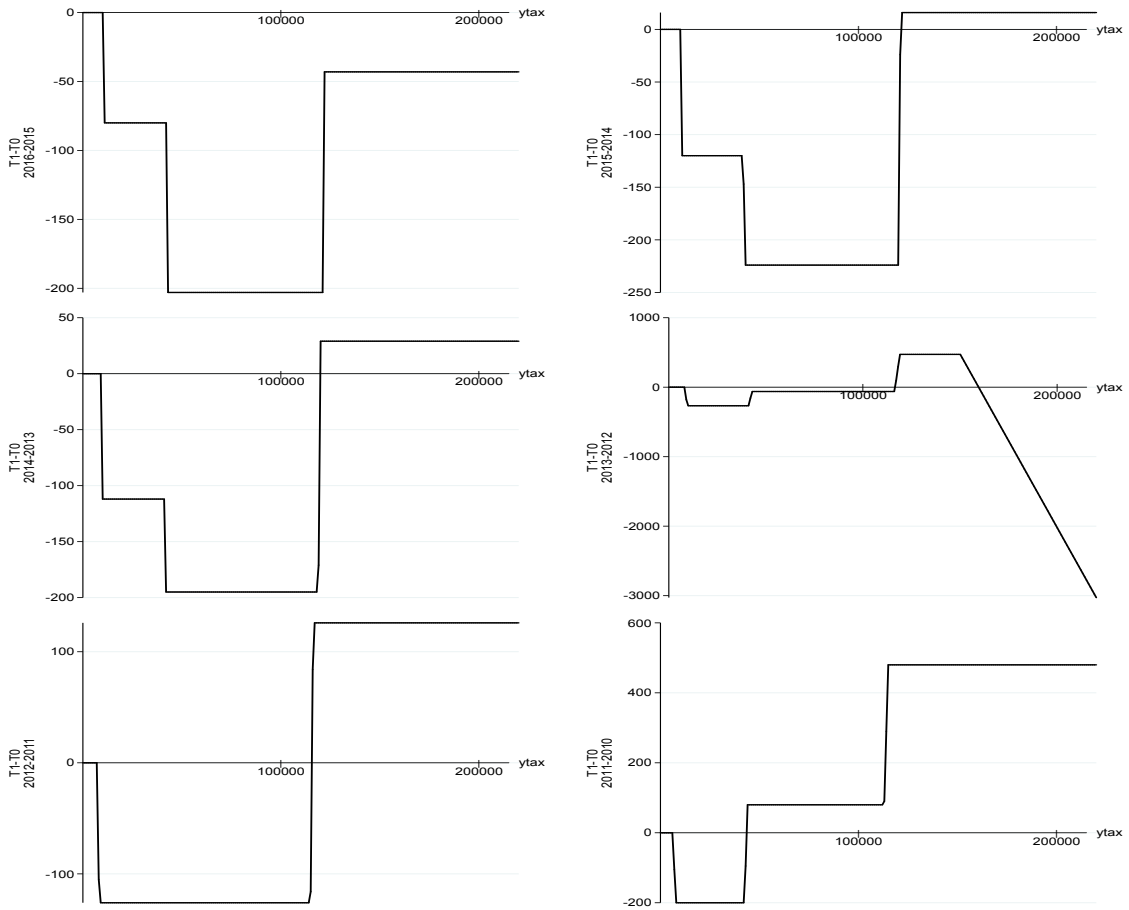


Figure 6: Non-monotonic reforms of the UK income tax

Figure 6 shows the reforms implemented in years 2016 (first row, left panel), 2015 (first row, right panel), 2014 (second row, left panel), 2013 (second row, right panel), 2012 (third row, left panel) and 2011 (third row, right panel).

Figure 6 is based on the information provided by the United Kingdom HM Revenue & Customs accessible on <https://www.gov.uk/government/collections/tax-structure-and-parameters-statistics>.

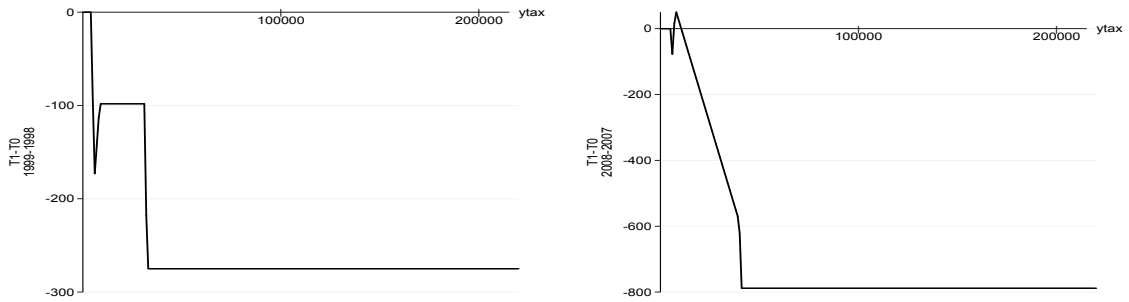


Figure 7: Non-monotonic reforms of the UK income tax

Figure 7 shows the reforms implemented in years 1999 (left panel) and 2008 (right panel).

Figure 7 is based on the information provided by the United Kingdom HM Revenue & Customs accessible on <https://www.gov.uk/government/collections/tax-structure-and-parameters-statistics>.

3.3 United States (1981-2016)

This section relies on accounts of US income tax reforms⁸ and the OECD database.⁹

Beginning of examination:	1981	
Total number of possible reforms until 2016:	35	
Total number of reforms until 2016:	35	
Number of monotonic reforms:	28	(80%)
Number of non-monotonic reforms:	7	(20%)

Table 6: Summary statistics on the tax reforms in the United States (1981-2016).

In the United States out of the inspected 34 years there were 28 monotonic and 7 non-monotonic income tax reforms. Years with a monotonic reform: 1982, 1983, 1984, 1985, 1986, 1989, 1990, 1992, 1994, 1996, 1997, 1998, 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2014, 2015, 2016. Years with a non-monotonic reform: 1987, 1988, 1991, 1993, 1995, 2000, 2013.

Table 6 is based on the OECD database (accessible on <http://www.oecd.org/tax/tax-policy/tax-database.htm>).

Summary statistics. Table 6 shows that 80% of the reforms are monotonic over the whole range of incomes, 7 out of 35 reforms are non-monotonic. These 7 reforms are either non-monotonic in a small range of incomes (1987, 1988), or monotonic either above or below median income (1991, 1993, 1995, 2000, 2013), see Figures 8, 9, and 10.

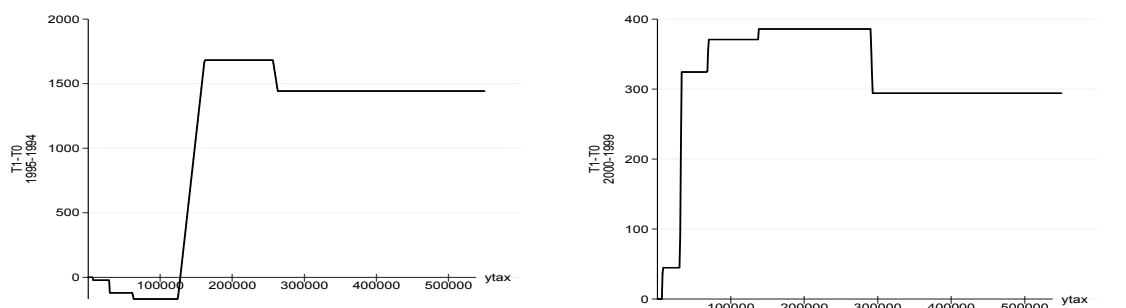


Figure 8: Reforms of the US income tax: 1995 and 2000

Figure 8 shows the reforms implemented in 1995 and 2000. Figure 8 is based on the information in the OECD database (accessible on <http://www.oecd.org/tax/tax-policy/tax-database.htm>).

⁸See Tempalski (2006), Romer and Romer (2009), Saez, Slemrod and Giertz (2012), Bargain, Dolls, Immervoll, Neumann, Peichl, Pestel and Siegloch (2015), and Saez (2017).

⁹See Table I.1. Central government personal income tax rates and thresholds: accessible on <http://www.oecd.org/tax/tax-policy/tax-database.htm>.

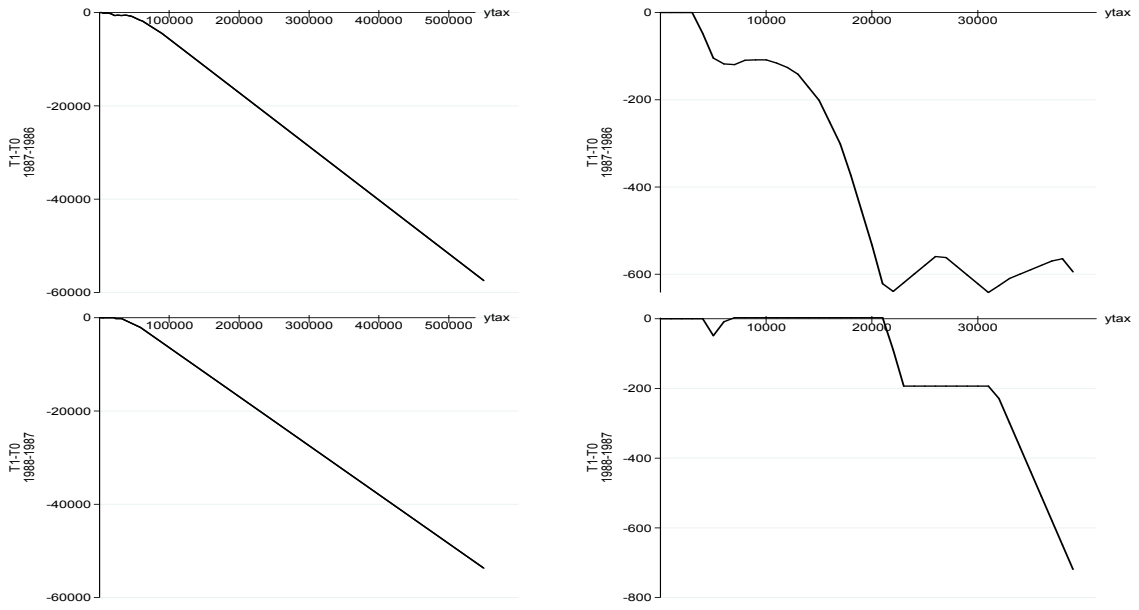


Figure 9: Reforms of the US income tax: 1987 and 1988

Figure 9 shows the TRA'86 reforms were implemented in years 1987 (first row with a zoom on low income on the right panel) and 1988 (second row with a zoom on low income on the right panel). Figure 9 is based on the information in the OECD database (accessible on <http://www.oecd.org/tax/tax-policy/tax-database.htm>).

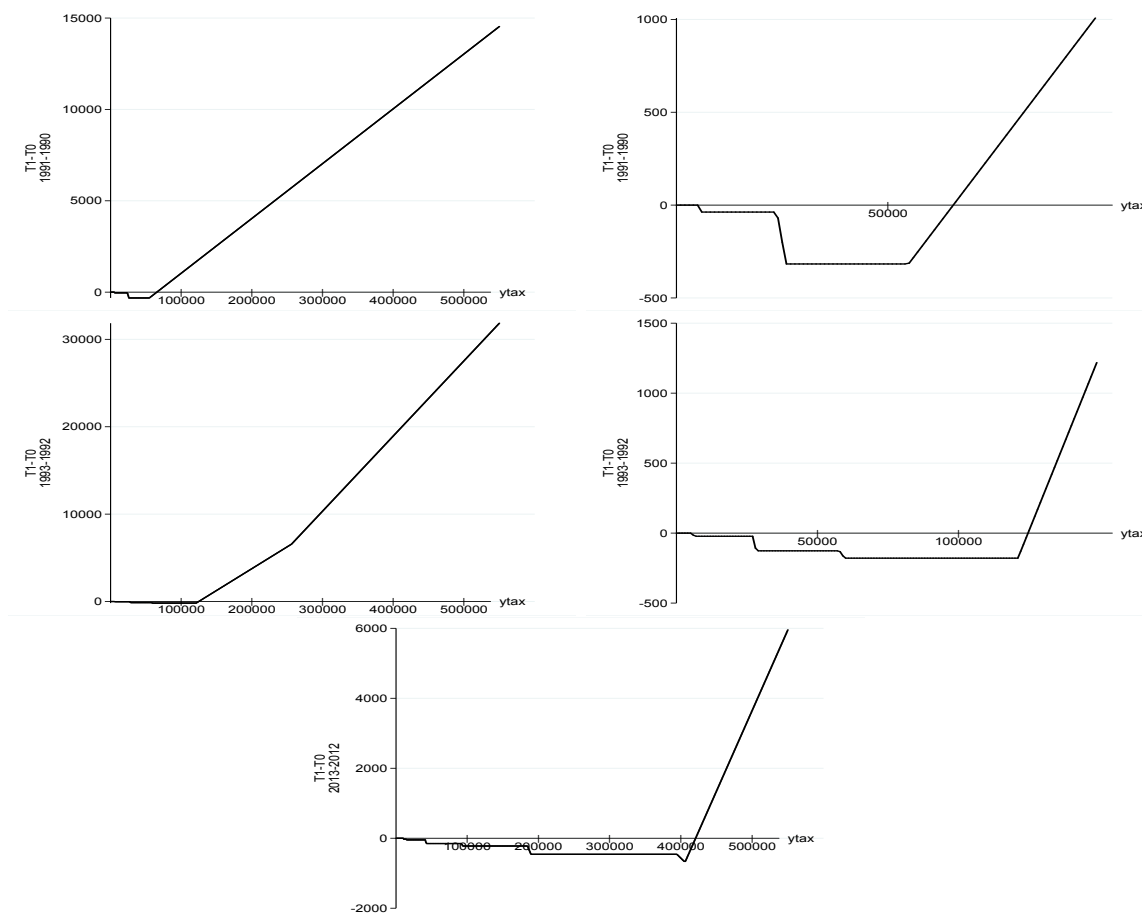


Figure 10: Reforms of the US income tax: 1991, 1993, and 2013

Figure 10 shows the reforms were implemented in years 1991 (first row), 1993 (OBRA'93, second row) and 2013 (third row). Figure 10 is based on the information in the OECD database (accessible on <http://www.oecd.org/tax/tax-policy/tax-database.htm>).

Appendix

A Additional material: Summary statistics on OECD countries

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	11	
Number of monotonic reforms:	10	(91%)
Number of non-monotonic reforms:	1	(9%)

Table 7: Summary statistics on the tax reforms in Australia (2000-2016).

In Australia out of the inspected 16 years there were 10 monotone and 1 non-monotone income tax reforms. In 5 years there was no reform. Years with a monotone reform: 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2015. Years with a non-monotone reform: 2013. Years without reforms: 2001, 2006, 2012, 2014, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	6	
Number of monotonic reforms:	2	(33%)
Number of non-monotonic reforms:	4	(67%)

Table 8: Summary statistics on the tax reforms in Austria (2000-2016).

In Austria out of the inspected 16 years there were 2 monotone and 4 non-monotone income tax reforms. In 10 years there was no reform. Years with a monotone reform: 2004, 2009. Years with a non-monotone reform: 2001, 2002, 2005, 2016. Years without reforms: 2003, 2006, 2007, 2008, 2010, 2011, 2012, 2013, 2014, 2015.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	16	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 9: Summary statistics on the tax reforms in Belgium (2000-2016).

In Belgium out of the inspected 16 years there were 16 monotone income tax reforms.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	14	(88%)
Number of non-monotonic reforms:	2	(13%)

Table 10: Summary statistics on the tax reforms in Canada (2000-2016).

In Canada out of the inspected 16 years there were 14 monotone and 2 non-monotone income tax reforms. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015. Years with a non-monotone reform in Canada: 2006, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	15	(94%)
Number of non-monotonic reforms:	1	(6%)

Table 11: Summary statistics on the tax reforms in Chile (2000-2016).

In Chile out of the inspected 16 years there were 15 monotone and 1 non-monotone income tax reforms. Years with a monotone reform in Chile: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016. Years with a non-monotone reform in Chile: 2015.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	5	
Number of monotonic reforms:	4	(80%)
Number of non-monotonic reforms:	1	(20%)

Table 12: Summary statistics on the tax reforms in the Czech Republic (2000-2016).

In Czech Republic out of the inspected 16 years there were 4 monotone and one non-monotone income tax reforms. In 11 years there was no reform. Years with a monotone reform: 2001, 2008, 2011, 2012. Year with a non-monotone reform: 2006. Years without reforms: 2002, 2003, 2004, 2005, 2007, 2009, 2010, 2013, 2014, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	7	(44%)
Number of non-monotonic reforms:	9	(56%)

Table 13: Summary statistics on the tax reforms in Denmark (2000-2016).

In Denmark out of the inspected 16 years there were 7 monotone and 9 non-monotone income tax reforms. Years with a monotone reform: 2002, 2005, 2006, 2008, 2009, 2011, 2012. Years with a non-monotone reform: 2001, 2003, 2004, 2007, 2010, 2013, 2014, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	8	
Number of monotonic reforms:	8	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 14: Summary statistics on the tax reforms in Estonia (2000-2016).

In Estonia out of the inspected 16 years there were 8 monotone and no non-monotone income tax reforms. In 8 years there was no reform. Years with a monotone reform: 2001, 2004, 2005, 2006, 2007, 2008, 2015, 2016. Years without reforms: 2002, 2003, 2009, 2010, 2011, 2012, 2013, 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	12	(75%)
Number of non-monotonic reforms:	4	(25%)

Table 15: Summary statistics on the tax reforms in Finland (2000-2016).

In Finland out of the inspected 16 years there were 12 monotone and 4 non-monotone income tax reforms. Years with a monotone reform: 2001, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014. Years with a non-monotone reform: 2002, 2006, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	13	
Number of monotonic reforms:	9	(69%)
Number of non-monotonic reforms:	4	(31%)

Table 16: Summary statistics on the tax reforms in Greece (2000-2016).

In Greece out of the inspected 16 years there were 9 monotone and 4 non-monotone income tax reforms. In 3 years there was no reform. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2008, 2009, 2011, 2015. Years with a non-monotone reform: 2007, 2010, 2013, 2016. Years without a reform in Greece: 2006, 2012, 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	11	
Number of monotonic reforms:	11	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 17: Summary statistics on the tax reforms in Hungary (2000-2016).

In Hungary out of the inspected 16 years there were 11 monotone and no non-monotone income tax reforms. In 5 years there was no reform. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2011, 2016. Years without reforms: 2008, 2012, 2013, 2014, 2015.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	14	(88%)
Number of non-monotonic reforms:	2	(13%)

Table 18: Summary statistics on the tax reforms in Iceland (2000-2016).

In Iceland out of the inspected 16 years there were 14 monotone and 2 non-monotone income tax reforms. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2011, 2012, 2013, 2014, 2015, 2016. Years with a non-monotone reform in Iceland: 2009, 2010.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	10	
Number of monotonic reforms:	8	(80%)
Number of non-monotonic reforms:	2	(20%)

Table 19: Summary statistics on the tax reforms in Ireland (2000-2016).

In Ireland out of the inspected 16 years there were 8 monotone and 2 non-monotone income tax reforms. In 6 years there was no reform. Years with a monotone reform: 2001, 2002, 2005, 2006, 2007, 2008, 2010, 2011. Years with a non-monotone reform: 2009, 2015. Years without a reform in Ireland: 2003, 2004, 2012, 2013, 2014, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	15	
Number of monotonic reforms:	8	(53%)
Number of non-monotonic reforms:	7	(47%)

Table 20: Summary statistics on the tax reforms in Israel (2000-2016).

In Israel out of the inspected 16 years there were 9 monotone and 6 non-monotone income tax reforms. In 1 years there was no reform. Years with a monotone reform: 2001, 2003, 2006, 2008, 2009, 2010, 2011, 2012, 2015. Years with a non-monotone reform: 2002, 2004, 2005, 2007, 2013, 2016. Year without a reform: 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	7	
Number of monotonic reforms:	2	(29%)
Number of non-monotonic reforms:	5	(71%)

Table 21: Summary statistics on the tax reforms in Italy (2000-2016).

In Italy out of the inspected 16 years there were 2 monotone and 5 non-monotone income tax reforms. In 9 years there was no reform. Years with a monotone reform: 2011, 2014. Years with a non-monotone reform: 2001, 2002, 2003, 2005, 2007. Years without a reform: 2004, 2006, 2008, 2009, 2010, 2012, 2013, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	3	
Number of monotonic reforms:	2	(67%)
Number of non-monotonic reforms:	1	(33%)

Table 22: Summary statistics on the tax reforms in Japan (2000-2016).

In Japan out of the inspected 16 years there were 2 monotone and 1 non-monotone income tax reforms. In 13 years there was no reform. Years with a monotone reform: 2013, 2015. Years with a non-monotone reform: 2007. Years without a reform: 2001, 2002, 2003, 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2014, 2016. We multiplied the personal allowance before the year 2012 by a factor of 1000, because it is wrongly indicated.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	9	
Number of monotonic reforms:	9	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 23: Summary statistics on the tax reforms in Korea (2000-2016).

In Korea out of the inspected 16 years there were 9 monotone and no non-monotone income tax reforms. In 7 years there was no reform. Years with a monotone reform: 2002, 2003, 2004, 2005, 2008, 2009, 2010, 2012, 2014. Years without a reform: 2001, 2006, 2007, 2011, 2013, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	10	
Number of monotonic reforms:	10	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 24: Summary statistics on the tax reforms in Latvia (2000-2016).

In Latvia out of the inspected 16 years there were 6 monotone and no non-monotone income tax reforms. In 10 years there was no reform. Years with a monotone reform: 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2013, 2014, 2015. Years without reforms: 2001, 2002, 2003, 2004, 2012, 2014, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	7	
Number of monotonic reforms:	7	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 25: Summary statistics on the tax reforms in Luxembourg (2000-2016).

In Luxembourg out of the inspected 16 years there were 7 monotone and no non-monotone income tax reforms. In 9 years there was no reform. Years with a monotone reform: 2001, 2002, 2008, 2009, 2011, 2013, 2014. Years without a reform: 2003, 2004, 2005, 2006, 2007, 2010, 2012, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	13	(81%)
Number of non-monotonic reforms:	3	(19%)

Table 26: Summary statistics on the tax reforms in Mexico (2000-2016).

In Mexico out of the inspected 16 years there were 13 monotone and 3 non-monotone income tax reforms. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2015, 2016. Years with a non-monotone reform: 2010, 2012, 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	13	(81%)
Number of non-monotonic reforms:	3	(19%)

Table 27: Summary statistics on the tax reforms in the Netherlands (2000-2016).

In the Netherlands out of the inspected 16 years there were 13 monotone and 3 non-monotone income tax reforms. Years with a monotone reform: 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2016. Years with a non-monotone reform: 2001, 2010, 2015.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	4	
Number of monotonic reforms:	4	(100%)
Number of non-monotonic reforms:	0	(0%)

Table 28: Summary statistics on the tax reforms in New-Zealand (2000-2016).

In New-Zealand out of the inspected 16 years there were 4 monotone and no non-monotone income tax reforms. In 14 years there was no reform. Years with a monotone reform: 2008, 2009, 2010, 2011. Years without a reform: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2012, 2013, 2014, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	9	(56%)
Number of non-monotonic reforms:	7	(44%)

Table 29: Summary statistics on the tax reforms in Norway (2000-2016).

In Norway out of the inspected 16 years there were 9 monotone and 7 non-monotone income tax reforms. Years with a monotone reform: 2001, 2003, 2006, 2009, 2010, 2012, 2013, 2014, 2016. Years with a non-monotone reform: 2002, 2004, 2005, 2007, 2008, 2011, 2015.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	7	
Number of monotonic reforms:	6	(86%)
Number of non-monotonic reforms:	1	(14%)

Table 30: Summary statistics on the tax reforms in Poland (2000-2016).

In Poland out of the inspected 16 years there were 6 monotone and 1 non-monotone income tax reforms. In 9 years there was no reform. Years with a monotone reform: 2001, 2003, 2004, 2007, 2008, 2009. Year with a non-monotone reform in Poland: 2002. Years without a reform in Poland: 2005, 2006, 2010, 2011, 2012, 2013, 2014, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	15	
Number of monotonic reforms:	10	(67%)
Number of non-monotonic reforms:	5	(33%)

Table 31: Summary statistics on the tax reforms in Portugal (2000-2016).

In Portugal out of the inspected 16 years there were 10 monotone and 5 non-monotone income tax reforms. In 1 years there was no reform. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2008, 2009, 2012, 2015, 2016. Years with a non-monotone reform: 2006, 2007, 2010, 2011, 2013. Years without a reform: 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	13	
Number of monotonic reforms:	9	(69%)
Number of non-monotonic reforms:	4	(31%)

Table 32: Summary statistics on the tax reforms in the Slovak Republic (2000-2016).

In the Slovak Republic out of the inspected 16 years there were 9 monotone and 4 non-monotone income tax reforms. In 3 years there was no reform. Years with a monotone reform: 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2015. Years with a non-monotone reform: 2002, 2004, 2013, 2014. Years without reforms: 2001, 2003, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	11	
Number of monotonic reforms:	8	(73%)
Number of non-monotonic reforms:	3	(27%)

Table 33: Summary statistics on the tax reforms in Spain (2000-2016).

In Spain out of the inspected 16 years there were 8 monotone and 3 non-monotone income tax reforms. In 5 years there was no reform. Years with a monotone reform: 2002, 2003, 2005, 2006, 2008, 2011, 2012, 2016. Years with a non-monotone reform: 2001, 2007, 2015. Years without a reform: 2004, 2009, 2010, 2013, 2014.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	15	(94%)
Number of non-monotonic reforms:	1	(6%)

Table 34: Summary statistics on the tax reforms in Sweden (2000-2016).

In Sweden out of the inspected 16 years there were 15 monotone and 1 non-monotone income tax reforms. Years with a monotone reform: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015. Year with a non-monotone reform: 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	6	
Number of monotonic reforms:	5	(83%)
Number of non-monotonic reforms:	1	(17%)

Table 35: Summary statistics on the tax reforms in Switzerland (2000-2016).

In Switzerland out of the inspected 16 years there were 5 monotone and 1 non-monotone income tax reforms. In 10 years there was no reform. Years with a monotone reform: 2008, 2010, 2011, 2012, 2014. Year with a non-monotone reform: 2006. Years without a reform: 2001, 2002, 2003, 2004, 2005, 2007, 2009, 2013, 2015, 2016.

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	16	
Number of monotonic reforms:	12	(75%)
Number of non-monotonic reforms:	4	(25%)

Table 36: Summary statistics on the tax reforms in Turkey (2000-2016).

In Turkey out of the inspected 16 years there were 12 monotone and 4 non-monotone income tax reforms. Years with a monotone reform: 2001, 2002, 2003, 2005, 2007, 2008, 2009, 2011, 2012, 2014, 2015, 2016. Years with non-monotone reforms: 2004, 2006, 2010, 2013. We adjusted the thresholds when the change of currency in 2005 got enacted (the OECD already recalculated the personal allowance).

Beginning of examination:	2000	
Total number of possible reforms until 2016:	16	
Total number of reforms until 2016:	11	
Number of monotonic reforms:	9	(82%)
Number of non-monotonic reforms:	2	(18%)

Table 37: Summary statistics on the tax reforms in Germany (2000-2016).

In Germany out of the inspected 16 years there were 9 monotone and 2 non-monotone income tax reforms. In 5 years there was no reform. Years with a monotone reform: 2001, 2004, 2005, 2007, 2009, 2010, 2013, 2014, 2016. Years with a non-monotone reform: 2002, 2015. Years without a reform in Germany: 2003, 2006, 2008, 2011, 2012. Germany uses a polynomial function that cannot be produced with the OECD database. We have excluded the “Soli” from the analysis. The database can be accessed on <https://www.bmf-steuerrechner.de/index.xhtml;jsessionid=46D8EC6083BF2573A42C23A2B03B49DF>.

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