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The drivers of differences
between growth in GDP
and household adjusted
disposable income in OECD
countries

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**THE DRIVERS OF DIFFERENCES BETWEEN GROWTH IN GDP AND HOUSEHOLD ADJUSTED
DISPOSABLE INCOME IN OECD COUNTRIES**

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THE DRIVERS OF DIFFERENCES BETWEEN GROWTH IN GDP AND HOUSEHOLD ADJUSTED DISPOSABLE INCOME IN OECD COUNTRIES

By Jennifer Ribarsky, Changku Kang, Esther Bolton¹

ABSTRACT

Growth in household income has evolved differently from gross domestic product (GDP) in most OECD countries over the last eighteen years. Using the wealth of information available in the System of National Accounts, this paper provides an assessment of what may be driving this gap. A clear relationship, based on national accounts identities, between GDP and household income exists. This link allows for the calculation of each component's contribution to the divergence in the growth rates. Based on this deconstruction, differences between the growth rates reflect several underlying effects that (often) offset each other. In many OECD countries, real GDP grew at a faster pace than real household income over the last eighteen years driven by different developments in prices faced by producers versus prices faced by consumers and a rising profit share of corporations. The positive evolution of the other components (such as government intervention) contributed to reducing the gap between the growth rates. Several indicators are investigated to help explain the underlying developments.

RESUME

La croissance des revenus des ménages ont évolué différemment de celle du Produit Intérieur Brut (PIB) dans la plupart des pays de l'OCDE ces 18 dernières années. En utilisant la richesse des informations disponibles dans le Système de Comptabilité Nationale, ce document de travail donne une évaluation de ce qui pourrait être à l'origine de cet écart. Une relation claire, établie sur la base des identités de comptabilité nationale, entre le PIB et le revenu des ménages existe. Cette relation permet le calcul de la contribution de chaque composante à la divergence entre les taux de croissance. À partir de cette déconstruction, les différences entre les taux de croissance reflètent plusieurs effets sous-jacents lesquels (souvent) s'annulent entre eux. Dans de nombreux pays de l'OCDE, le PIB en termes réels a crû à un rythme plus soutenu que le revenu réel des ménages ces 18 dernières années, poussé par des évolutions différentes des prix payés par les producteurs de ceux payés par les consommateurs, ainsi qu'une hausse des taux de marges des sociétés. L'évolution positive des autres composantes (telle que l'intervention gouvernementale) ont contribué à la baisse de l'écart entre les taux de croissance. Plusieurs indicateurs complémentaires sont examinés afin d'explicitier des facteurs sous-jacents.

¹ This paper benefitted from discussions with and/or comments from Paul Schreyer and Peter van de Ven. Special thanks to Florent Laval for his programming expertise.

Main findings:

- Real GDP grew at a faster pace on average than real adjusted household disposable income for the time period 1996-2013 in the majority of OECD countries studied. Exceptions occurred in Norway, Australia, New Zealand, United Kingdom, Estonia, United States, Canada, and France where real household income grew faster than real GDP on average over that period.
- Prices faced by producers compared to prices faced by consumers were a key driver of the differences in the two growth rates.
 - Prices faced by consumers grew at a faster pace than prices faced by producers in a majority of countries for the time period 1996-2013. Exceptions occurred mainly in countries that are commodity exporters benefitting from the substantial increases in commodity prices over the time period leading to improvements in the terms of trade (countries most affected are Norway, Australia, New Zealand, and Canada).
- Remaining differences between the nominal growth rates of GDP and adjusted household disposable income reflects several underlying effects that offset each other in many countries:
 - Rising value added of corporations and government that is not distributed as labour income (mainly operating surplus of corporations) widens the difference in growth rates at the expense of household income; this is the largest driver of the difference in growth rates in the 22 countries studied.
 - The positive evolution of the value added produced in households, the compensation of employees paid by corporations and government (i.e., that part of value-added of corporations and government that is distributed as labour income), net property income received, and in particular government intervention all contributed to reducing the gap between GDP and adjusted household disposable income.
- Several indicators based on nominal data are investigated to help explain the gap between the growth rate of adjusted household disposable income and GDP.
 - The value added produced in households decreased from 1995 to 2013 for all countries except Italy, Finland, Slovak Republic, the United Kingdom, and the United States. With the exception of Italy, the latter countries show a positive gap between the growth rate of nominal adjusted household disposable income and nominal GDP. In each country where GDP is growing faster than adjusted household disposable income, the share of households as a producing sector is decreasing.
 - The share of compensation of employees to gross value added of corporations has a downward trend in many of the countries studied. Countries with the most notable declines in the ratio are Germany, Spain, the United States, Poland, and Slovenia showing that the returns to labour have fallen relative to gross operating surplus of corporations.
 - Net transfers to the household sector ratio indicate that the redistribution of income, mainly through government intervention, has had a net positive impact on the level of household income for the most recent time periods in every country except for Switzerland. In addition, government intervention contributed to a positive gap between the growth rate of adjusted household disposable income and GDP (except for Switzerland).

1. Introduction

Gross Domestic Product (GDP) is the most widely-used measure of economic activity. However it falls short of providing a suitable measure of people's material well-being. The disadvantages of only focusing on GDP were spelt out in the report of the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP) published in 2010. The report emphasised the need to measure material well-being of people in the society, and came up with five (out of twelve) recommendations that dealt with household issues.² This is not to say that GDP measures should be dropped. However, it stressed the importance to also look from the perspective of households instead of only focusing on production. There is a wealth of information available within the System of National Accounts (SNA) to help determine households' economic well-being in a more appropriate way. Data on household (adjusted) disposable income (HDI) may provide a better indicator of material well-being for the population as a whole. As a way to assess living standards, adjusted HDI represents the maximum amount that the average household can consume without having to reduce its assets or to increase its liabilities (disregarding the possible impact of holding gains or losses).

As adjusted HDI is deemed to be a better indicator for household material conditions than GDP, it is interesting to see how these two indicators are related and what drives the differences in growth. Therefore, this paper focuses on what drives the differences between the growth rate in real GDP and the development in real adjusted HDI. For the underlying analyses annual data from OECD countries have been used. The paper is structured as follows. Section 2 presents the basic concepts of household income. Section 3 then compares the growth rate of real GDP with the growth rate of real adjusted HDI. Section 4 compares the growth rates in nominal terms and discusses the main contributors to the growth rate of nominal adjusted HDI. Section 5 discusses the drivers of the difference between the growth rates in real GDP and real adjusted HDI. Section 6 introduces a further set of indicators to explain that difference. Section 7 concludes with a summary of the results.

2. Basic concept of household income

GDP is the standard measure of the value added created through the production of goods and services in a country during a certain period. Equivalently it measures the income generated from that production, or the total amount spent on final goods and services (less imports). While GDP captures these economic activities very well, not all the benefits from these activities accrue to households.

Households participate in the production process in various ways. They participate directly as producers, as suppliers of labour, and as suppliers of capital. Below, the various components are addressed, starting with a discussion of households as producers.

Following the System of National Accounts (SNA 2008), the production account of households shows the activities of unincorporated enterprises that are not considered as quasi-corporations. Quasi-corporations are not corporations in the legal sense but have similarities to corporations and therefore are classified within the corporations sector. The SNA specifies that entities with complete sets of accounts that are operated as if they were separate corporations and whose de facto relationship to the owner is that of a corporation to its shareholders should be treated as quasi-corporations.³ In addition, the production account

² Recommendation 1: When evaluating material well-being, look at income and consumption rather than production. Recommendation 2: Emphasise the household perspective. Recommendation 3: Consider income and consumption jointly with wealth. Recommendation 4: Give more prominence to the distribution of income, consumption and wealth. Recommendation 5: Broaden income measures to non-market activities.

³ The allocation of quasi-corporations is not fully consistently applied across OECD countries. Some countries use a strictly legal concept to define units that are allocated to the corporate sector (such as France and the United States) where other countries (such as Germany and Italy) may allocate quite a few quasi-corporations to

includes own-account production of goods by households, and the housing services ‘produced’ by people who rent accommodation to others or who own and use their own accommodation (known as owner-occupiers).

The value-added of households is distributed between compensation of employees, mixed income and operating surplus. Compensation of employees consists of the compensation paid to the employees of unincorporated enterprises and domestic staff. The second component is called mixed income because the labour component – that is the remuneration of the unpaid work of owners of unincorporated enterprises and their families – cannot be separated from the return to the owner as entrepreneur (i.e., return on capital). Thus, the mixed income represents the income that is appropriated by households from their involvement in the production process by running their own business. For owner-occupiers and those leasing dwellings all the value-added is recorded as gross operating surplus. Table 1 illustrates the resources and uses of gross value added. It may be clear that most of the income generated through this production of goods and services remains within the households’ sector, with the exception of taxes (less subsidies) on production paid to government and a generally very small part of compensation of employees which is earned by employees resident in another country.⁴

Table 1. Generation of income account for households

Uses	Resources
D1. Compensation of employees	B1G. Gross value added
D2. Taxes on production and imports, payable	
D3. (-) Subsidies on production, receivable	
B2G. Operating surplus, gross	
B3G. Mixed income, gross	

The next account in the sequence shows the allocation of primary income of households (table 2). The balancing items operating surplus (B2) and mixed income (B3) are carried over from the generation of income account. Under resources, compensation of employees represents the compensation received by all employees from all corporations, general government, and non-profit institutions as well as the compensation received from unincorporated enterprises. As such it reflects the total remuneration of employees’ labour input into the production process. The remaining item is property income that accrues to owners of financial assets and natural resources that are put at the disposal of other institutional units. Under resources, the main property incomes receivable by households are interest (D41) and distributed income of corporations (D42) which includes dividends paid by companies to households and withdrawals of income of quasi-corporations by households. A further item of property income concerns the so-called investment income disbursements (D44), which consist of imputed items such as interest received by households on their life insurance policies even though (unlike the interest earned on bonds) households are not able to use the interest freely. Rent (D45) relates to income received from the ownership of land and other natural resources. The uses column of the account shows the property incomes paid by households which consist primarily of interest paid by households when they take out consumer or housing loans and the interest paid by unincorporated enterprises on their borrowings for investments in machinery, equipment, and structures. The uses are subtracted from the resources to obtain the balancing item primary income (B5). Thus primary income is the income that accrues to households as a consequence of their involvement in the production process plus the income accrued from putting financial assets and natural

the corporate sector. For more information, see OECD *Statistics Working Papers*, 2015/3 Pionnier P. and E. Guidetti).

⁴ Please note that this does not relate to employees, including paid domestic staff, who live longer than one year in the country of employment, as they are considered to be resident.

resources at the disposal of other sectors. It should be noted that primary income includes the net primary income received from the rest of the world. For instance, compensation of employees includes income earned by residents who work abroad, so for example, French household primary income would include the compensation of a worker who lives in France but works in Switzerland.

Table 2. Allocation of primary income account for households

Uses	Resources
D4. Property income, paid	B2G. Operating surplus, gross
D41. Interest, paid	B3G. Mixed income, gross
D45. Rent, paid	D1. Compensation of employees, received
	D11. Wages and salaries
	D12. Employers' social contributions
	D4. Property income, received
	D41. Interest, received
	D42. Distributed income of corporations
	D44. Investment income disbursements
	D45. Rent, received
	B5G. Balance of primary income, gross

The next account in the sequence shows the impact of the redistribution of income on households' income levels (table 3). The main part of these transfers result from government intervention to redistribute income through the payment by households of taxes on income and wealth (D5) and social contributions (D61), and the receipts of transfers from government (both monetary (D62) and in kind (D63)). For some countries a significant part may also relate to pension contributions to and benefits from funded pension schemes which are recorded as part of financial corporations.⁵

Social benefits other than social transfers in kind (D62) are current social transfers benefiting households such as retirement pensions, unemployment benefits, family and maternity allowances. Note that social transfers in kind (STiK) such as provision of medical services or housing allowances by the government are included in D63, also when they are reimbursed after initial payment by the households in question. Other current transfers (D7) include settlements of accident insurance claims by households (resources), net non-life insurance premiums (uses), and miscellaneous current transfers (such as money sent by and received from relatives living abroad).

Table 3. Secondary distribution of income account for households

Uses	Resources
D5. Current taxes on income and wealth	B5G. Balance of primary income, gross
D61. Net social contributions	D61. Net social contributions
D62. Social benefits other than social transfers in kind	D62. Social benefits other than social transfers in kind
D7. Other current transfers, paid	D63. Social transfers in kind
B7G. Adjusted disposable income, gross	D7. Other current transfers, received

⁵ In the rest of the note, reference may be made to "government interventions" to describe the process of income redistribution, for reasons of convenience.

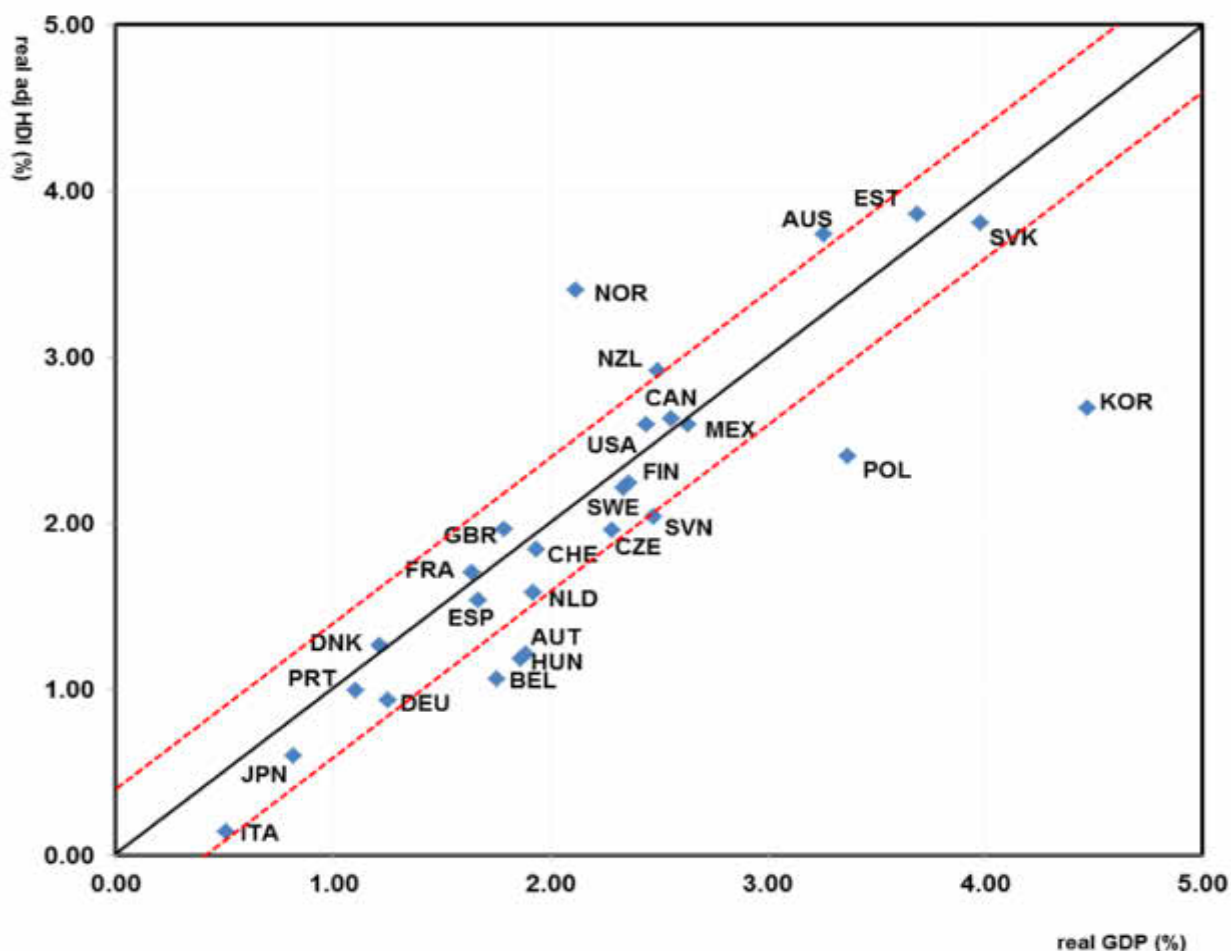
3. Comparison between the growth rate of GDP and adjusted household gross disposable income

This section begins with comparing the differences in growth rates between volume GDP and real gross adjusted HDI.⁶ Figure 1 shows the average annual growth rates for the two indicators from 1996 to 2013 for 27 countries.⁷ For 17 countries the growth rate of volume GDP is higher than the growth rate of real adjusted HDI, for 8 countries real adjusted HDI grows faster, and for 2 countries the average annual growth rates are the same between the two measures. The gap between the average growth rates is within 0.4%-point for 18 countries (i.e. within the red lines in Figure 1). However there are 9 countries where the gap is larger than 0.4%-point. The largest negative gaps, that is, where GDP grows much faster than adjusted HDI, occur in Korea, Poland, Belgium, Hungary, Austria, and Slovenia. Conversely, adjusted HDI grows 1.3%-points more than GDP in Norway, and 0.5%-point and 0.4%-point more in Australia and New Zealand, respectively.

⁶ While the net adjusted disposable income—income that is available to households for consumption after the deduction of depreciation—measure more appropriately reflects the resources that households are able to consume the gross measure is investigated because the primary goal of this paper is to describe the differences in the growth rates compared to GDP which is a gross measure. The difference between the average annual growth rates of the gross versus net measure of adjusted household disposable income is 0.04% on average.

⁷ Nineteen countries have data available from 1995 to 2013. The other time periods were 1995-2012 for Switzerland; 1999-2012 for New Zealand; 1999-2013 for Hungary, Spain, and the United Kingdom; 2000-2013 for Estonia and Poland; and 2003-2013 for Mexico.

Figure 1. Volume GDP and real adjusted HDI (average annual growth rate of 1996-2013)



Data are based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; 2001-2013 for Estonia and Poland; and 2004-2013 for Mexico. Japanese and Norwegian data are based on 93 SNA /ESA 95. Note that the black line simply divides the graph plot and if a country is on the black line it means that real GDP and real adjusted HDI are growing at the same rate.

The growth rates of volume GDP and real adjusted HDI provide measures of growth free of the effects of price changes. Using the familiar formula that changes in value can be deconstructed into price and volume changes, the growth rates of each component can be analysed to determine its impact. Table 4 presents a comparison of the real and the nominal growth rates for GDP and adjusted disposable income of households, including the relevant deflators, for the 27 countries analysed.

Table 4. Comparison of GDP and adjusted HDI (average annual growth rate of 1996-2013, %, %-points)

	Real			Nominal			Deflator		
	GDP	adj HD I	Adj HDI less GDP	GDP	adj HD I	Adj HDI less GDP	GDP	adj HD I	Adj HDI less GDP
Norway **	2.1	3.4	1.3	6.6	6.0	-0.6	4.4	2.5	-1.9
Australia	3.3	3.7	0.5	6.3	6.4	0.1	2.9	2.6	-0.4
New Zealand *	2.5	2.9	0.4	5.1	5.2	0.1	2.5	2.2	-0.3
United Kingdom *	1.8	2.0	0.2	4.2	4.4	0.2	2.4	2.4	0.0
Estonia *	3.7	3.9	0.2	8.9	8.7	-0.2	4.7	4.3	-0.3
United States	2.4	2.6	0.2	4.4	4.7	0.2	2.0	2.0	0.1
Canada	2.6	2.6	0.1	4.7	4.5	-0.2	2.1	1.8	-0.3
France	1.6	1.7	0.1	3.1	3.2	0.1	1.4	1.4	0.0
Denmark	1.2	1.3	0.0	3.4	3.3	-0.1	2.1	2.0	-0.1
Mexico *	2.6	2.6	0.0	7.6	7.4	-0.3	3.5	3.3	-0.2
Switzerland *	1.9	1.8	-0.1	2.6	2.5	-0.1	0.6	0.7	0.0
Portugal	1.1	1.0	-0.1	3.6	3.6	-0.1	2.5	2.5	0.0
Sweden	2.4	2.2	-0.1	3.9	4.2	0.2	1.5	1.9	0.4
Finland	2.3	2.2	-0.1	4.1	4.5	0.4	1.7	2.2	0.5
Spain *	1.7	1.5	-0.1	4.1	4.2	0.0	2.4	2.6	0.2
Slovak Republic	4.0	3.8	-0.2	7.6	8.4	0.8	3.5	4.5	1.0
Japan **	0.8	0.6	-0.2	-0.2	0.0	0.2	-1.1	-0.6	0.4
Germany	1.3	0.9	-0.3	2.2	2.1	-0.1	0.9	1.2	0.3
Czech Republic	2.3	2.0	-0.3	5.4	5.3	-0.1	3.1	3.3	0.2
Netherlands	1.9	1.6	-0.3	3.9	3.7	-0.2	2.0	2.1	0.1
Italy	0.5	0.1	-0.4	2.8	2.5	-0.3	2.2	2.3	0.1
Slovenia	2.5	2.0	-0.4	7.1	6.9	-0.2	4.5	4.8	0.3
Austria	1.9	1.2	-0.7	3.4	3.0	-0.4	1.5	1.8	0.2
Hungary *	1.9	1.2	-0.7	7.0	6.6	-0.4	5.0	5.3	0.3
Belgium	1.8	1.1	-0.7	3.5	3.2	-0.4	1.8	2.1	0.3
Poland *	3.4	2.4	-1.0	6.3	5.2	-1.1	2.4	2.6	0.1
Korea	4.5	2.7	-1.8	6.9	6.4	-0.5	2.3	3.7	1.3

* Data based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; 2001-2013 for Estonia and Poland; and 2004-2013 for Mexico.

** Japanese and Norwegian data are based on 93 SNA /ESA 95.

For the eight countries where the growth rate of real adjusted HDI outpaced volume GDP, much of this is driven by the fact that prices faced by consumers grew differently than the GDP deflator. The GDP deflator represents the aggregate price that producers face, whereas the *Actual Individual Consumption* (AIC) deflator represents the aggregate price of consumer goods and services acquired by households. Here, AIC includes (1) the value of household's expenditures on consumption goods or services; (2) the value of the expenditures incurred by government units on individual consumption goods or services provided free or at reduced prices to households (social transfers in kind); and (3) the value of the expenditures incurred by non-profit institutions serving households (NPISHs) on individual consumption goods or services provided free or at reduced prices to households, again recorded as social transfers in kind⁸.

As can be seen in table 4, the robust growth in real adjusted HDI in Norway as compared to the growth rate in volume GDP is more than accounted for by the divergence in the growth rates in the two deflators. The GDP deflator is rising faster than the actual individual consumption deflator. Rising income from extraction of natural resources allowed for increases in real adjusted HDI that outpaced economic growth. This reflects substantial increases in commodity prices over the time period leading to improvement in the terms of trade. This same phenomenon can also be seen in Australia (albeit not as spectacularly) where the

⁸ 2008 SNA 9.81.

similar growth rates in the nominal measures widens when looking at the growth rates in the real measures because household inflation is increasing less than the GDP deflator. New Zealand also benefitted from a favourable terms of trade⁹.

It is interesting to note that for the United Kingdom, the United States, and France the (slightly) stronger average annual growth rate in real adjusted HDI is coming from the stronger growth rate in the nominal measure, as consumers are facing about the same amount of inflation as producers.

In countries where volume GDP grew more than 0.4%-points faster than real adjusted HDI much of this difference is due to the AIC deflator showing an average growth which is higher than the growth of the GDP deflator, although these countries also experienced nominal GDP growing faster than nominal HDI. For Korea most of the divergence is explained by the faster increase in the AIC deflator (due to unfavourable terms of trade), conversely, the difference for Poland is (almost) entirely explained by the divergence in the growth rate of the nominal measures. For the remaining four countries (Belgium, Hungary, Austria, and Slovenia), the higher inflation experienced by households accounted for around half of the difference between the real growth rates.

Since the divergence between the two deflators has been explained in the paragraphs above the rest of this paper primarily investigates possible drivers of the differences between the growth rates of nominal GDP and nominal adjusted HDI. While the differences in the two deflators explain much of the variation across countries, it most certainly does not tell the whole story. The next section investigates the diverging growth rates in the nominal measures.

4. Nominal GDP and adjusted household disposable income

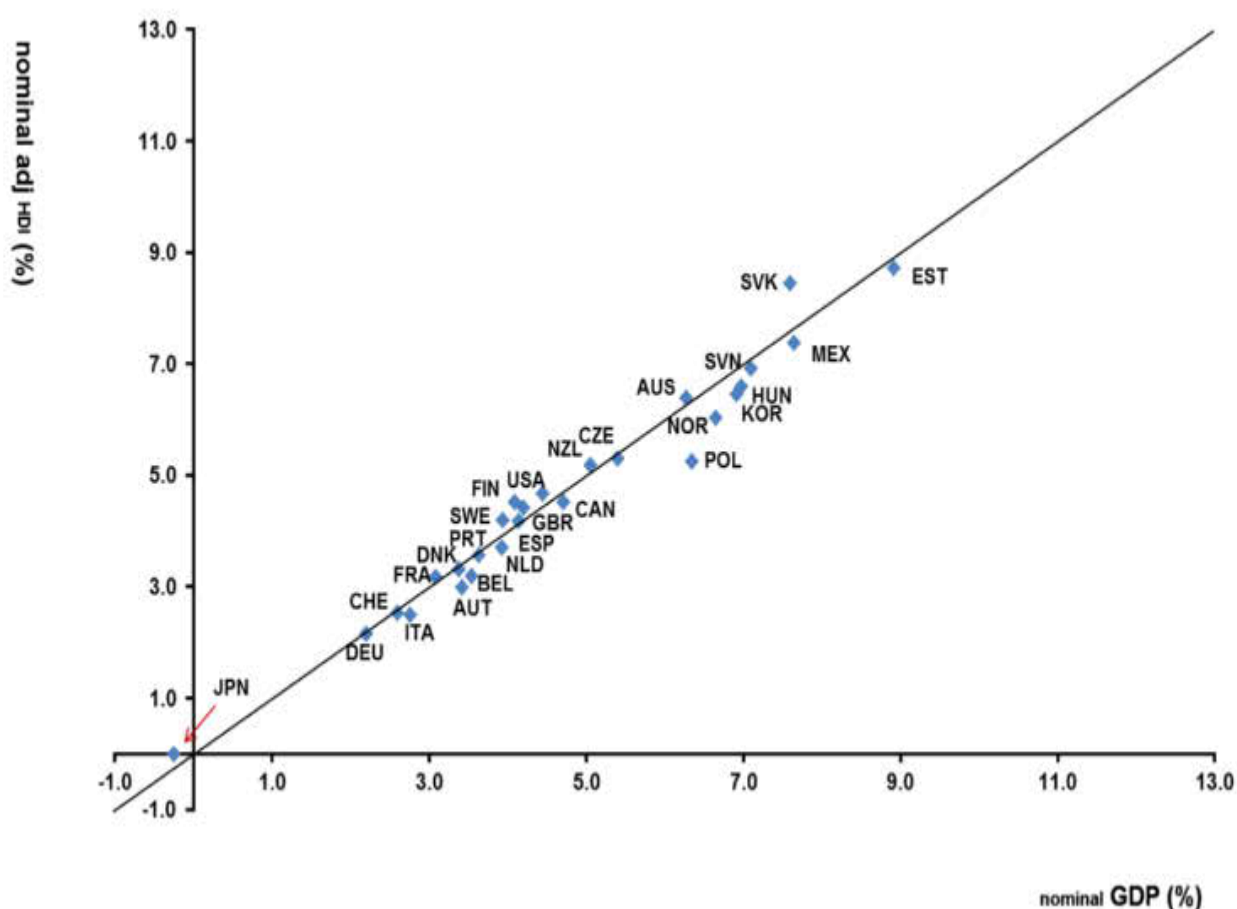
Figure 2 shows that cross-country differences in the growth rates of nominal measures are large. The growth rate of nominal adjusted HDI is highest in Estonia at 8.7%, whereas Japan exhibits a slightly negative growth rate. For 17 countries the growth rate of nominal GDP is higher than the growth rate of adjusted HDI, for 9 countries nominal adjusted HDI grows faster, and for 1 country the average annual growth rates are the same between the two measures.

The gap between the growth rates in nominal GDP and nominal adjusted HDI is within 0.4%-point for 21 countries. Six countries have a gap between the two growth rates larger than 0.4%-point (9 countries had this gap when comparing the real measures); in those six countries nominal GDP growth outpaced adjusted HDI in Poland, Norway, Korea, and Austria, whereas nominal adjusted HDI outpaced nominal GDP in Slovak Republic and Finland by more than 0.4%-point.

It is interesting to note that 10 countries change categories – that is whether adjusted HDI grows faster than GDP (or vice versa) – between the volume measures and the nominal measures. Those countries where the nominal adjusted HDI grows faster than nominal GDP but in the real measures the opposite is true (i.e., volume GDP grows faster than real adjusted HDI) are Finland, Japan, Slovak Republic, and Sweden. Spain shows the same growth rates in nominal terms but in real terms GDP grows slightly faster than real adjusted HDI. A few countries (Canada, Estonia, and Norway) show nominal GDP grow faster than nominal adjusted HDI, but in the real measures adjusted HDI grows faster than volume GDP. In Denmark and Mexico, nominal GDP grows faster than nominal adjusted HDI, but the growth rates in the real measures are the same.

⁹ See “How volatile are New Zealand’s terms of trade? An international comparison” by Daan Steenkamp at http://www.rbnz.govt.nz/research_and_publications/reserve_bank_bulletin/2014/2014jun77_2steenkamp.pdf

Figure 2. Nominal GDP and nominal adjusted HDI (average annual growth rate of 1996 -2013)



Data are based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; Estonia and Poland 2001-2013; and 2004-2013 for Mexico. Japanese and Norwegian data are based on 93 SNA /ESA 95.

Main contributors to the growth rate in nominal adjusted household disposable income

In order to determine what are the main drivers of the growth rate of nominal adjusted HDI it is useful to start by examining the size and evolution of the share of each component in household income. As can be seen in table 5, the largest component of household income is compensation of employees accounting for at least 60% of the adjusted HDI in most countries, exceptions being Mexico where the combined item of mixed income and operating surplus has a similar share as compensation of employees (around 35% each), and Italy and Poland where the share of compensation is around 50%. The second largest component in most countries is mixed income (especially if the impact of government interventions on the income levels of households is taken net, as receipts minus payments); here, the exceptions are New Zealand where net property income received by households has a 21% share and in Sweden where government intervention has a 13 % share.

Table 5. Components of adjusted household disposable income

Share of total adjusted HDI, Average share (1995-2012)

	CoE	MI & OPS	of which OPS	PI	Other CT	Gov Inter *	* Components of Gov Inter			
							SB	Taxes	SC	STiK
Australia	0.64	0.20	0.09	0.05	0.02	0.08	0.11	-0.16	-0.01	0.14
Austria	0.64	0.17	0.06	0.13	0.01	0.05	0.26	-0.14	-0.22	0.16
Belgium	0.68	0.18	0.09	0.13	0.01	-0.01	0.25	-0.17	-0.26	0.18
Canada	0.69	0.16	0.00	0.09	0.00	0.07	0.13	-0.17	-0.06	0.17
Czech Republic	0.61	0.28	0.07	0.06	0.01	0.04	0.19	-0.06	-0.24	0.15
Denmark	0.79	0.14	0.05	0.02	0.00	0.04	0.30	-0.40	-0.12	0.27
Estonia *	0.72	0.15	0.01	0.03	0.06	0.03	0.16	-0.09	-0.19	0.16
Finland	0.69	0.16	0.08	0.06	0.02	0.07	0.25	-0.20	-0.19	0.20
France	0.65	0.19	0.10	0.07	0.02	0.07	0.25	-0.11	-0.26	0.18
Germany	0.65	0.17	0.05	0.17	0.00	0.01	0.24	-0.11	-0.26	0.15
Hungary *	0.65	0.21	0.07	0.06	0.02	0.06	0.21	-0.10	-0.22	0.16
Italy	0.48	0.30	0.08	0.19	0.00	0.04	0.23	-0.14	-0.19	0.13
Japan **	0.69	0.17	0.10	0.06	0.01	0.07	0.19	-0.07	-0.18	0.13
Korea	0.65	0.24	n.a.	0.09	0.03	-0.01	0.08	-0.06	-0.12	0.09
Mexico *	0.35	0.36	0.11	0.22	0.06	0.01	0.03	-0.04	-0.05	0.07
Netherlands	0.74	0.16	0.03	0.09	0.00	0.00	0.26	-0.11	-0.36	0.22
New Zealand *	0.61	0.08	n.a.	0.21	0.02	0.07	0.18	-0.21	-0.06	0.16
Norway **	0.72	0.14	n.a.	0.03	0.02	0.09	0.25	-0.18	-0.19	0.21
Poland *	0.51	0.34	0.04	0.05	0.02	0.08	0.20	-0.06	-0.19	0.14
Portugal	0.58	0.22	0.05	0.07	0.05	0.09	0.20	-0.07	-0.17	0.13
Slovak Republic	0.58	0.32	0.07	0.04	0.01	0.05	0.20	-0.06	-0.21	0.12
Slovenia	0.69	0.22	0.08	0.02	0.00	0.07	0.22	-0.08	-0.21	0.15
Spain *	0.65	0.25	0.07	0.05	0.01	0.04	0.19	-0.10	-0.19	0.14
Sweden	0.69	0.10	0.05	0.05	0.03	0.13	0.27	-0.25	-0.16	0.27
Switzerland *	0.77	0.19	0.00	0.15	0.00	-0.11	0.26	-0.15	-0.31	0.08
United Kingdom *	0.67	0.16	0.08	0.14	0.02	0.01	0.22	-0.15	-0.22	0.15
United States	0.68	0.22	0.10	0.09	-0.01	0.02	0.15	-0.12	-0.08	0.08

Note: (1) CoE (Compensation of employees, received), MI (Mixed Income), OPS (gross operating surplus of household sector), PI (Property income, net), Other CT (other current transfers), Gov inter. (government intervention), SB (Social benefits other than social transfer in kind (STiK), net), SC (social contribution, paid), STiK (Social transfers in kind).

* Data based on 1995-2012 with the following exceptions: 1999-2012 for New Zealand; 1999-2012 for Hungary, Spain, and the United Kingdom; 2000-2012 for Estonia and Poland; and 2003-2012 for Mexico.

** Japanese and Norwegian data are based on 93 SNA /ESA 95.

By multiplying each component's growth rate by its share (weight) one can obtain that component's contribution to the growth rate in the aggregate. Table 6 presents the average contributions to the growth rate of adjusted HDI for the time period 1996-2013. Note that current taxes on income and wealth and social contributions paid by households are a subtraction in the calculation of disposable income, thus, an increase in taxes or social contributions contributes negatively to adjusted HDI, whereas decreases in taxes or social contributions contribute positively.

Not surprising given its large share, compensation of employees is the main driver of the growth rate of nominal adjusted HDI for all countries, with the exception of Japan and Mexico. Japan experienced zero growth in nominal adjusted HDI over the time period mainly due to decreases in compensation of employees, but also in net property income and mixed income; however, these declines were offset by government intervention mainly by increasing social benefits, both in cash and in kind. In Mexico, the main driver of the growth rate of adjusted HDI was mixed income and operating surplus (the largest component of disposable income in Mexico) closely followed by compensation of employees.

The second largest driver of the growth rate of nominal adjusted HDI varies across countries. But if the impact of government intervention is taken together, the combined item of mixed income and operating surplus is clearly the second largest contributor. However, in Norway, Denmark, and Sweden, government interventions account for the second largest driver, and in Germany and New Zealand net property income is the second largest category.

Table 6. Contributions to growth in nominal adjusted HDI (average of 1996-2013, contributions in %-points)

	CoE	MI & OPS	of which OPS	of which MI	PI	Other CT	Gov Inter *	* Components of Gov Inter				Adj HDI
								SB	Taxes	SC	STiK	
Australia	3.9	1.3	0.7	0.7	0.3	0.1	0.7	0.7	-0.9	-0.1	0.9	6.4
Austria	1.9	0.5	0.3	0.2	0.3	0.0	0.2	0.8	-0.5	-0.7	0.6	3.0
Belgium	2.5	0.5	0.2	0.2	0.0	0.0	0.2	1.0	-0.6	-1.0	0.8	3.2
Canada	3.3	0.7	0.0	0.7	0.3	0.0	0.3	0.5	-0.7	-0.3	0.8	4.5
Czech Republic	3.5	1.2	0.5	0.7	0.3	0.0	0.4	1.3	-0.3	-1.4	0.8	5.3
Denmark	2.8	0.1	0.2	0.0	0.1	0.1	0.2	1.0	-1.4	-0.6	1.1	3.3
Estonia *	7.1	0.8	0.2	0.7	0.5	0.4	0.2	1.6	-0.8	-2.0	1.4	8.7
Finland	3.0	0.7	0.5	0.3	0.3	0.1	0.5	0.9	-0.8	-0.7	1.0	4.5
France	2.1	0.5	0.4	0.2	0.2	0.1	0.2	0.9	-0.6	-0.7	0.7	3.2
Germany	1.3	0.2	0.1	0.1	0.6	0.1	0.1	0.5	-0.2	-0.6	0.4	2.1
Hungary *	4.8	1.0	0.4	0.6	0.2	0.1	0.6	1.6	-0.6	-1.5	1.0	6.6
Italy	1.4	0.8	0.4	0.4	-0.1	0.0	0.4	0.9	-0.5	-0.5	0.5	2.5
Japan **	-0.3	-0.1	0.1	-0.2	-0.1	0.0	0.6	0.4	0.1	-0.2	0.3	0.0
Korea	4.4	1.2	n.a.	n.a.	0.7	0.3	0.0	0.7	-0.4	-1.1	0.9	6.4
Mexico *	2.4	2.6	0.7	1.9	1.8	0.4	0.2	0.3	-0.3	-0.4	0.6	7.4
Netherlands	2.8	0.4	0.0	0.4	0.3	0.0	0.3	0.9	-0.4	-1.4	1.2	3.7
New Zealand *	3.6	0.3	n.a.	n.a.	0.7	0.1	0.6	0.7	-0.9	-0.2	1.1	5.2
Norway **	4.6	0.4	n.a.	n.a.	0.3	0.1	0.6	1.5	-1.1	-1.4	1.6	6.0
Poland *	2.9	1.9	0.2	1.8	0.0	0.0	0.4	1.1	-0.4	-1.2	0.9	5.2
Portugal	2.0	0.8	0.4	0.4	0.2	0.1	0.6	1.2	-0.4	-0.7	0.6	3.6
Slovak Republic	4.4	3.0	0.6	2.4	0.1	0.1	0.9	1.5	-0.4	-1.6	1.4	8.4
Slovenia	4.6	1.4	0.5	0.9	0.1	0.0	0.8	1.7	-0.6	-1.4	1.1	6.9
Spain *	2.6	0.9	0.6	0.3	0.2	0.0	0.6	1.2	-0.5	-0.8	0.7	4.2
Sweden	3.1	0.2	0.1	0.2	0.4	0.0	0.5	0.7	-0.9	-0.5	1.2	4.2
Switzerland *	2.0	0.3	0.0	0.3	0.3	0.0	-0.1	1.0	-0.4	-1.0	0.2	2.5
United Kingdom *	2.8	0.8	0.5	0.3	0.2	0.1	0.5	1.2	-0.6	-1.0	0.9	4.4
United States	2.9	1.1	0.5	0.7	0.4	-0.1	0.3	0.8	-0.6	-0.3	0.4	4.7

Note: CoE (Compensation of employees, received), MI (Mixed Income), OPS (gross operating surplus of household sector), PI (Property income, net), Gov inter. (government intervention), SB (Social benefits other than social transfer in kind (STiK), received), Taxes (Current transfer other than STiK), SC (social contribution, paid)

* Data based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; 2001-2013 for Estonia and Poland; and 2004-2013 for Mexico.

** Japanese and Norwegian data are based on 93 SNA /ESA 95.

Table 6 also provides an additional breakout for the combined item of mixed income (MI) and operating surplus (OPS). Recall that households' operating surplus is exclusively housing services (both owner-occupied and rental services), so are housing services driving the contributions for this component? Looking at the 'of which' columns show that for nearly two-thirds of the countries mixed income contributed more to the growth rate of adjusted household disposable income than housing services.

5. Drivers of the difference between the growth rates in GDP and adjusted household disposable income

This section of the paper only focuses on countries which supply a full set of detailed information on the institutional sector accounts so that the full analysis of the various indicators can be done. As a consequence, the number of countries to be analysed is 22, a subset of the 27 countries discussed in sections 3 and 4.

There is a clear and direct relationship between GDP and household disposable income. Part of value added is generated by unincorporated enterprises, the income from which, in the form of compensation of employees and mixed income, directly adds to the disposable income of households. Furthermore, a large part of value added generated by the other sectors is distributed to households, as compensation for their labour input. The following equations decompose the difference in growth rates of volume GDP and real adjusted household disposable income, taking account of these relationships.

The decomposition starts with setting up some accounting identities in current prices:

Box 1 Legend to variables	
GDP	Gross domestic product at market prices (purchaser prices)
GVA	Gross value added generated by the total economy at basic prices
TLS	Taxes less subsidies on products
COE _c	Compensation of employees paid by corporations (financial and non-financial corporations)
OTH _c	Gross operating surplus and other taxes less subsidies on production of corporations
COE _g	Compensation paid by general government
OTH _g	Gross operating surplus and other taxes less subsidies on production of general government
COE _{hh}	Compensation of employees paid by households, including NPISH
MI&OPS _{hh}	Mixed income and operating surplus of households, including NPISH
OTH _{hh}	Other taxes less subsidies on production paid by households, including NPISH
aHDI	Adjusted household disposable income
COE _{row}	Net receipts of compensation of employees from the rest of the world (ROW)
PI	Net receipts of property income received by households (i.e., received minus paid)
SB	Social benefits excluding social transfers in kind (STiK)
STiK	Social transfers in kind
Taxes	Taxes on income and wealth paid by households
SC	Social contributions paid by households
other CT	Net receipts of other current transfers (i.e., received minus paid)
PGDP	GDP deflator
PHDI	Adjusted household disposable income deflator
V	Volume GDP at market prices
V _b	Volume GDP at basic prices

Generation of income account

GDP is the sum of gross value-added generated by the total economy at basic prices plus taxes less subsidies on products

$$(1) \quad \text{GDP} = \text{GVA} + \text{TLS}$$

Gross value added generated by the total economy (corporations, general government, households and NPISHs) at basic prices can be further broken down into:

$$(2) \quad \text{GVA} = \text{COE}_c + \text{OTH}_c + \text{COE}_g + \text{OTH}_g + \text{COE}_{hh} + \text{MI\&OPS}_{hh} + \text{OTH}_{hh}$$

Allocation of primary income and secondary distribution of income account of households:

The components of adjusted household disposable income presented in table 5 can be further decomposed into the compensation received by households from the various institutional sectors.

$$(3) \quad \text{aHDI} = \text{COE}_{hh} + \text{COE}_c + \text{COE}_g + \text{COE}_{row} + \text{MI\&OPS}_{hh} + \text{PI} + \text{SB} + \text{STiK} - \text{Taxes} - \text{SC} + \text{other CT}$$

The difference in logarithmic growth rates between volume GDP and real adjusted household income is:

$$(4) \quad V = \Delta \ln(\text{GDP}/P_{\text{GDP}}) - \Delta \ln(\text{aHDI}/P_{\text{HDI}})$$

Equation 4 can be re-written as:

$$(5) \quad V = \Delta \ln(\text{GDP}) - \Delta \ln(\text{aHDI}) + \Delta \ln(P_{\text{HDI}}/P_{\text{GDP}})$$

Equation 5 breaks the difference between the real growth rates down into a difference between nominal growth rates and a 'terms of trade' effect that represents the difference in the relative growth rates of $P_{\text{HDI}}/P_{\text{GDP}}$.

However, equation 5 ignores the fact that GDP and aHDI are actually linked through the primary income generated by the households sector (i.e., COE_{hh} and MI\&OPS_{hh}) and that a large part of value added generated by the other sectors is distributed to households, as compensation for their labour input (i.e., COE_c and COE_g) or as property income for putting households' financial assets and natural resources at the disposal of other institutional units (net of any payments on households' liabilities) (i.e. PI).

Since the value-added by each institutional sector is valued at basic prices the further decomposition begins with expressing equation 2 in terms of a growth rate of nominal GVA. Equation 6 shows the contribution of each component's growth rate to the growth rate of GVA.

$$(6) \quad \Delta \ln(\text{GVA}) = (\text{COE}_c/\text{GVA}) \Delta \ln(\text{COE}_c) + (\text{COE}_g/\text{GVA}) \Delta \ln(\text{COE}_g) + (\text{COE}_{hh}/\text{GVA}) \Delta \ln(\text{COE}_{hh}) + (\text{MI\&OPS}_{hh}/\text{GVA}) \Delta \ln(\text{MI\&OPS}_{hh}) + (\text{OTH}_{\text{allsectors}}/\text{GVA}) \Delta \ln(\text{OTH}_{\text{allsectors}})$$

Note that equation 6 combines the operating surplus of the corporations and general government sectors and the other taxes less subsidies on production for all sectors into one term, i.e., $\text{OTH}_{\text{allsectors}} = \text{OTH}_c + \text{OTH}_g + \text{OTH}_{hh}$.

Similarly, equation 7 expresses equation 3 as the contributions of each components growth rate to the growth rate of adjusted household disposable income (aHDI) is given by

$$(7) \quad \Delta \ln(aHDI) = (COE_{hh}/aHDI) \Delta \ln(COE_{hh}) + (COE_c/aHDI) \Delta \ln(COE_c) + (COE_g/aHDI) \Delta \ln(COE_g) + (COE_{row}/aHDI) \Delta \ln(COE_{row}) + (MI\&OPS_{hh}/aHDI) \Delta \ln(MI\&OPS_{hh}) + (PI/aHDI) \Delta \ln(PI) + (SB/aHDI) \Delta \ln(SB) + (STiK/aHDI) \Delta \ln(STiK) - (Taxes/aHDI) \Delta \ln(Taxes) - (SC/aHDI) \Delta \ln(SC) + (Other CT/aHDI) \Delta \ln(Other CT)$$

Ignoring for now the impact of the growth rates of taxes less subsidies on products on the growth rate of GDP, equation 5 can be further decomposed by inserting in equation 6 and 7.

$$(8) \quad V_b = \Delta \ln(GVA) - \Delta \ln(aHDI) + \Delta \ln(P_{HDI}/P_{GDP})$$

$$V_b = \text{equation 6} - \text{equation 7} + \Delta \ln(P_{HDI}/P_{GDP})$$

After collecting terms, it can be decomposed to

$$(9) \quad V_b = \Delta \ln(GVA/P_{GDP}) - \Delta \ln(aHDI/P_{HDI})$$

(9) $V_b = \Delta \ln(GVA/P_{GDP}) - \Delta \ln(aHDI/P_{HDI}) =$	Difference in growth rates of volume gross value added and real adjusted household disposable income = effect of...
$+ [(COE_c/GVA) - (COE_c/aHDI)] \Delta \ln(COE_c)$	→ Growth of compensation of employees paid by corporations Corresponds to CoE Corp in table 7
$+ [(COE_{hh}/GVA) - (COE_{hh}/aHDI)] \Delta \ln(COE_{HH})$	→ Growth of Compensation of employees paid by households, including NPISH Included in HH producer in table 7
$+ [(COE_g/GVA) - (COE_g/aHDI)] \Delta \ln(COE_g)$	→ Growth of Compensation of employees paid by general government Included in CoE oth in table 7
$- (COE_{row}/aHDI) \Delta \ln(COE_{row})$	→ Growth of net receipts of compensation of employees from the rest of the world (ROW) Included in CoE oth in table 7
$+ [(MI\&OPS_{hh}/GVA) - (MI\&OPS_{hh}/aHDI)] \Delta \ln(MI\&OPS_{HH})$	→ Growth of mixed income and operating surplus of households. Included in HH producer in table 7.
$+ (OTH_{allsectors}/GVA) \Delta \ln(OTH_{allsectors})$	→ Gross operating surplus of corporations and general government plus other taxes less other subsidies on production paid by all sectors Corresponds to Oth VA corp+gov in table 7
$- (PI/aHDI) \Delta \ln(PI)$	→ Growth of net receipts of property income received by households (i.e., received minus paid) Corresponds to PI in table 7
$- (SB/aHDI) \Delta \ln(SB)$	→ Growth of social benefits excluding social transfers in kind (STiK) received by households Included in gov inter in table 7
$- (STiK/aHDI) \Delta \ln(STiK)$	→ Growth of STiK Included in gov inter in table 7
$+ (Taxes/aHDI) \Delta \ln(Taxes)$	→ Growth in taxes on income and wealth paid by households Included in gov inter in table 7
$+ (SC/aHDI) \Delta \ln(SC)$	→ Growth of social contributions paid by households Included in gov inter in table 7
$- (Other CT/aHDI) \Delta \ln(Other CT)$	→ Growth of net receipts of other current transfers (i.e., received minus paid) Corresponds to Oth CT in table 7
$+ \Delta \ln(P_{HDI}/P_{GDP})$	→ Terms of trade Corresponds to deflator aHDI – GDP in table 7

Note that the effect of the growth of compensation (from corporations, households, or government) will be negative or positive depending on whether the share of compensation in gross value added exceeds the share of compensation in adjusted household disposable income. The same is true for mixed income and operating surplus generated in the household sector. It can also be noted that since GVA exceeds household income in every country the difference in these ratios will always be negative. Therefore, when households' share of compensation and mixed income in GVA increases this will always contribute to a faster growth of adjusted HDI than GDP. However, it is also apparent that there are many other factors that contribute to the differential between the growth rates and that an increasing share of compensation maybe offset, for example, by increasing taxes.

Table 7 summarises the results of implementing equation 9.¹⁰ And provides a further breakdown of the differences in table 4: the last column of table 7 corresponds to the difference between real adjusted HDI and real GDP presented in table 4 (with sign reversed). In addition, the differences in the deflators as presented in table 4 and table 7 are the same.¹¹

Table 7. Contributions to the difference in growth rates of volume GDP and real adjusted HDI (average of 1996-2013, contributions in %-points)

	Oth VA corp+gov	HH producer	CoE Corp	CoE oth	PI	Gov Inter	Other CT	Difference between GDP - GVA	deflator aHDI- GDP	Total Real GDP - aHDI
Austria	1.26	-0.10	-0.22	-0.07	-0.31	-0.19	-0.02	0.06	0.24	0.65
Belgium	1.06	-0.08	-0.29	-0.17	0.00	-0.18	-0.04	0.04	0.34	0.69
Czech Republic	1.94	-0.35	-0.75	-0.18	-0.25	-0.35	-0.02	0.09	0.21	0.35
Denmark	1.07	-0.06	-0.47	-0.19	-0.13	-0.16	0.00	0.03	-0.12	-0.03
Estonia*	3.49	-0.27	-1.45	-0.59	-0.49	-0.18	-0.36	0.16	-0.36	-0.06
Finland	1.07	-0.19	-0.44	-0.17	-0.26	-0.46	-0.07	0.10	0.54	0.12
France	0.77	-0.08	-0.18	-0.08	-0.16	-0.24	-0.09	0.00	0.02	-0.04
Germany	0.89	-0.05	-0.13	-0.02	-0.56	-0.05	0.00	0.04	0.25	0.37
Hungary*	2.24	-0.20	-0.53	-0.30	-0.15	-0.60	-0.13	0.14	0.30	0.77
Italy	0.77	-0.10	-0.10	-0.04	0.14	-0.44	0.00	0.02	0.09	0.35
Mexico*	3.51	-0.49	-0.18	-0.15	-1.70	-0.19	-0.42	-0.12	-0.02	0.24
Netherlands	1.43	-0.11	-0.54	-0.08	-0.30	-0.23	0.00	0.09	0.11	0.37
New Zealand	2.04	-0.10	-0.68	-0.20	-0.63	-0.62	-0.05	0.12	-0.29	-0.41
Poland*	2.25	-0.31	-0.27	-0.17	-0.03	-0.39	0.02	-0.01	0.16	1.25
Portugal	1.02	-0.06	-0.08	-0.04	-0.17	-0.57	-0.05	0.02	0.03	0.10
Slovak Republic	2.21	-0.83	-0.59	-0.35	-0.13	-0.88	0.00	-0.09	0.94	0.28
Slovenia	2.01	-0.22	-0.43	-0.22	-0.10	-0.81	0.00	-0.04	0.25	0.44
Spain*	1.35	-0.17	-0.30	-0.11	-0.17	-0.57	0.03	-0.05	0.16	0.15
Sweden	1.53	-0.09	-0.56	-0.19	-0.43	-0.44	0.03	-0.06	0.36	0.15
Switzerland*	0.74	-0.10	-0.49	0.00	-0.27	0.10	0.00	0.01	0.02	0.02
United Kingdom*	1.08	-0.15	-0.24	-0.08	-0.19	-0.52	-0.09	0.00	0.02	-0.18
United States	1.17	-0.35	-0.33	-0.10	-0.41	-0.27	0.07	0.00	0.06	-0.15

Note: Oth VA corp+gov (gross operating surplus of corporations and government and other taxes less other subsidies on production for all sectors), HH producer (compensation of employees paid by households, including NPISH, and mixed income and gross operating surplus of households.), CoE Corp (Compensation of employees paid by corporations), CoE oth (Compensation of employees paid by government and net receipts of compensation from ROW), PI (Property income, net), Gov inter (Social benefits (cash and kind) received less Taxes and social contribution paid by households, including NPISH), Other CT (other current transfers, net).

Data based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; 2001-2013 for Estonia and Poland; and 2004-2013 for Mexico.

¹⁰ Equation 9 is first calculated based on the yearly difference in growth rates between GDP and adjusted HDI using average weights of adjacent periods, i.e., a Törnqvist index. This provides the contributions to the yearly difference in growth rates. The time period of 1996 – 2013 is simply an average of these contributions.

¹¹ Slight differences may appear due to the fact that logs are used to calculate the growth rates for table 7 while table 4 uses the geometric mean to calculate the average annual growth rate.

The largest driver of the difference in the growth rates of volume GDP and real adjusted HDI is ‘other’ value added of corporations and government (mainly operating surplus of corporations). In other words, as shown in equation 9, as the share of gross operating surplus of corporations and government increase this will contribute to GDP outpacing adjusted HDI (as long as the growth rate is positive). An increasing share of operating surplus of corporations as a share of total value added can be explained by two phenomena: (1) the share of value added of corporations increased because the relevant share of households’ as producers declined (thus, impacting the mixed income of households and the compensation of employees paid by households, shown in equation 9), and/or (2) the share of operating surplus of corporations increased because the share of value added that accrues to labour has declined (shown in equation 9 as the contribution of compensation of employees paid by corporations).

The other components, in general, contribute to adjusted HDI outpacing GDP. Exceptions to this occur in a few places. In Italy, net property income received by households contributed to GDP outpacing adjusted HDI over the time period covered, because net property income fell (this is also seen in table 6, where net property income contributed negatively to the growth rate of adjusted HDI over the time period). The impact of government intervention on the income levels of households may have a positive or negative impact depending on whether or not social benefits (both in cash and in kind) received are more than taxes and social contributions paid. In practice, especially for the most recent time period, every country with the exception of Switzerland shows social benefits (both in cash and in kind) received which are larger than taxes and social contributions paid. This highlights the fact that every country (except Switzerland) shows government intervention contributing to adjusted HDI outpacing GDP for the time period 1996-2013.

It may not be surprising, given the time period studied includes the financial crisis of 2007-2009, that government intervention is the second largest contributor to the difference in the growth rates in 8 out of 22 countries (France, Hungary, Italy, Poland, Portugal, Slovenia, Spain, and United Kingdom). For 7 countries (Czech Republic, Denmark, Estonia, the Netherlands, New Zealand, Sweden, and Switzerland) compensation of employees paid by corporations is the second largest contributor. For 4 countries (Austria, Germany, Mexico, and the United States) net property income received by households is the second largest contributor. For the remaining 3 countries (Belgium, Finland and Slovak Republic) the differential in the deflators is the second largest contributor for the time period 1996-2013.

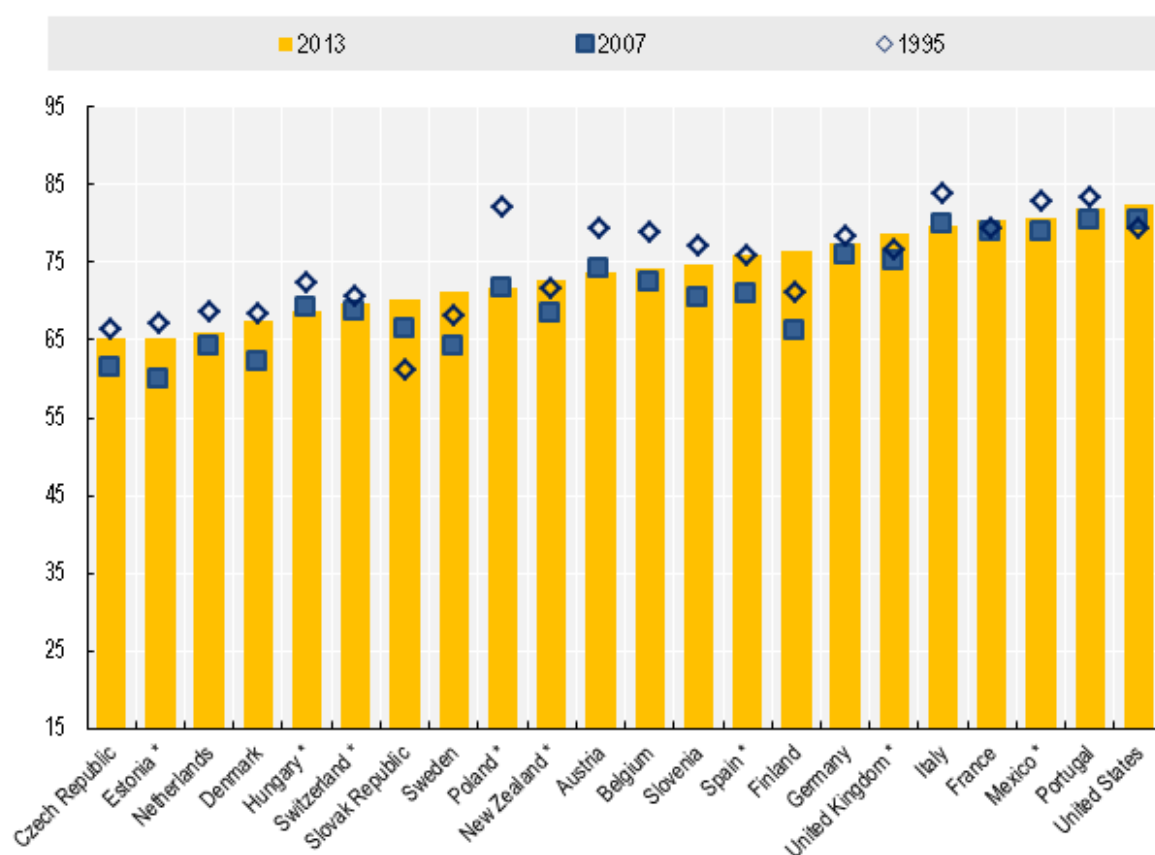
6. Further analysis of the difference between nominal GDP and adjusted household disposable income

So far the focus has been on average annual growth rates over an extended period of time, but for any given year there can be quite substantial divergences between the growth rates of GDP compared to adjusted HDI (see appendix A that focuses on the global financial crisis). This section begins with the ratio of nominal adjusted HDI to GDP that can be used to show the annual variation (as well as the trend overtime) between GDP and adjusted HDI.

In 2013, the ratio of nominal adjusted HDI to GDP (figure 3) ranges from 65.1 in Czech Republic to 82.6 in the United States. Only 3 countries show a ratio below two-thirds of GDP, the Netherlands, Estonia, and Czech Republic. Most countries show a downward trending ratio with some notable exceptions like France, New Zealand, United Kingdom, Sweden, United States, Finland, and Slovak Republic (the same 7 countries which exhibited an average annual growth rate in nominal adjusted HDI higher than nominal GDP, see table 4 “nominal” panel). The change in the ratio between 2013 and 1995 for Slovak Republic is remarkable (it changes 9.2 percentage points), but 1995 appears to be an outlier as the ratio jumps considerably, from 61.1 in 1995 to 70.3, in 1996.¹²

¹² In addition, if the average annual growth rate for the Slovak Republic were calculated from 1997-2013 the growth rates in the two measures (nominal GDP and nominal adjusted HDI) would be the same.

Figure 3. Ratio of nominal adjusted household disposable income to GDP



* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

The percentage change in the ratio of nominal adjusted HDI to GDP obviously reflects the differences in growth rates. For example in 2013 for Austria nominal adjusted HDI grew 0.6% whereas GDP grew 1.8%, together accounting for a difference of -1.3%-points between the two growth rates, this is the same amount that the ratio changed in 2013, see table 8. As can be derived from table 8, during the great recession (2008 and 2009) the ratio increased in every country, with the exception of Hungary, the Netherlands, and Switzerland in 2008, and the exception of Mexico in 2009. In 2009 nominal GDP annual growth rates turned negative in all countries shown with the exception of New Zealand and Poland.

Table 8. Change in the ratio of nominal adjusted household disposable income to GDP

Percent change from prior period

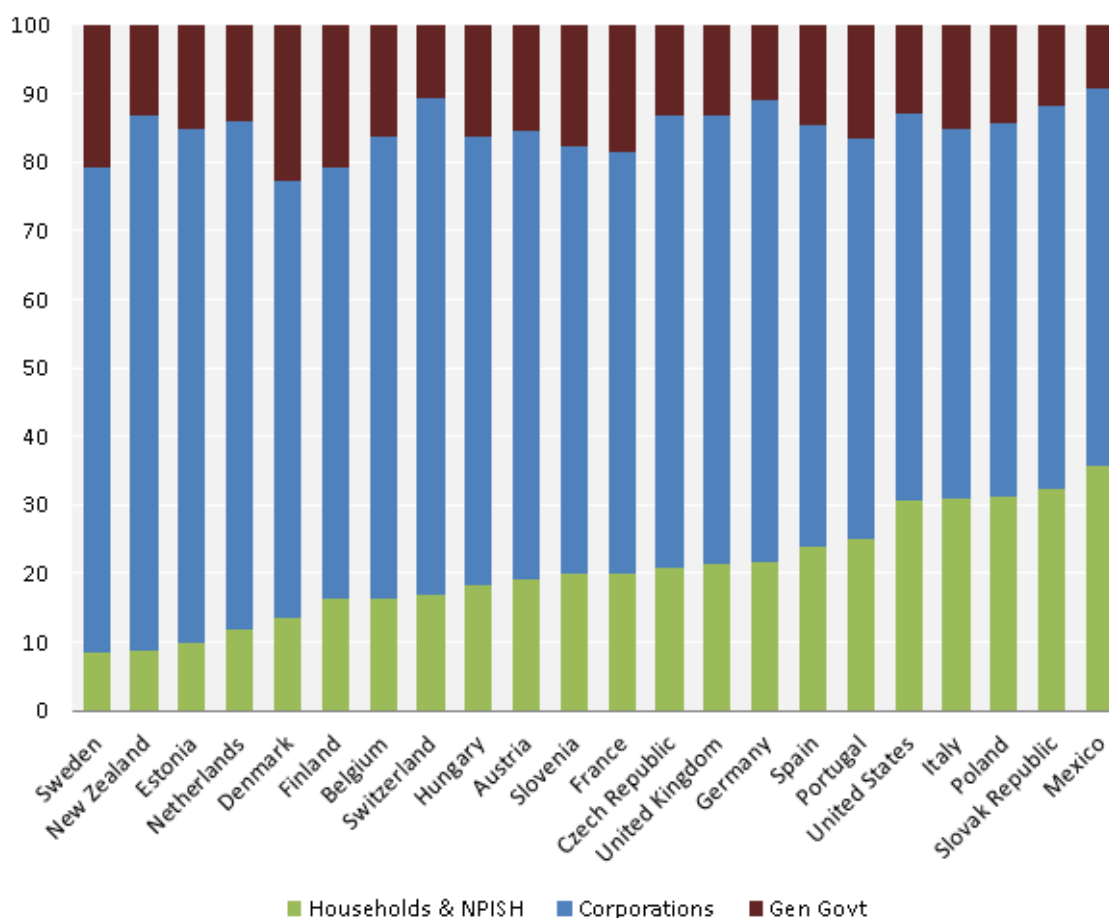
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	-1.7	-2.0	-0.6	0.2	-1.2	-1.2	-0.5	1.4	-0.8	1.1	-0.4	-1.1	0.1	2.9	-1.5	-2.2	1.4	-1.3
Belgium	-0.7	-2.3	-0.3	-1.3	-0.5	2.0	-1.8	-0.4	-2.6	-0.3	0.1	-0.4	3.0	3.8	-2.8	-0.9	0.2	-0.6
Czech Republic	-0.1	3.3	-2.8	0.1	-0.2	-1.2	1.5	-0.1	-3.1	-1.6	-0.7	-2.7	1.9	6.1	-0.2	-1.5	0.5	-0.6
Denmark	-2.6	-3.2	1.0	-3.4	-3.3	2.6	2.4	1.7	-1.0	-1.5	-1.1	-1.1	0.2	8.9	0.3	0.1	0.3	-1.0
Estonia *						-1.9	-2.8	-2.0	-0.6	-2.3	-1.6	0.1	11.9	8.1	-5.3	-3.5	-2.5	1.1
Finland	-1.9	-2.1	-2.9	0.7	-2.2	-0.6	2.2	2.7	0.5	-0.5	-0.7	-2.3	2.4	10.3	0.3	-0.7	1.9	0.8
France	-0.2	-0.6	-1.0	-0.8	0.1	1.1	1.4	0.4	-0.1	-0.5	-0.2	0.0	0.6	3.8	-0.5	-1.0	-0.5	-0.4
Germany	0.8	-0.7	-1.1	0.2	-0.6	1.3	-0.4	2.1	-1.0	0.6	-1.7	-2.7	0.7	4.3	-2.0	-1.0	0.3	0.2
Hungary *					-1.8	-0.3	0.2	1.6	-0.1	0.7	-1.9	-2.9	-1.8	2.6	-1.6	2.2	0.0	-1.9
Italy	-0.2	-1.5	-2.9	-0.2	-0.9	0.5	0.4	0.2	-0.1	0.4	-0.1	-0.5	0.6	2.1	-2.0	-0.2	-1.0	0.5
Mexico *									-2.9	0.0	-1.3	-0.7	1.4	-0.2	0.7	-2.2	-0.5	3.0
Netherlands	-1.1	-0.2	-1.1	-1.1	-1.6	3.3	0.8	-0.3	-1.5	-2.4	-0.3	-1.5	-1.3	5.4	-1.0	0.0	0.4	-0.2
New Zealand *					-5.8	-0.8	-2.0	2.5	0.2	0.2	2.3	-1.1	2.6	1.6	0.8	-0.5	1.8	
Poland *						2.9	-1.1	-2.3	-5.4	-2.4	-1.7	-3.1	1.1	1.9	-0.2	-3.4	0.4	0.3
Portugal	-0.3	-1.8	0.0	0.2	-0.5	0.2	0.0	0.1	0.9	0.7	-1.5	-1.4	1.9	2.4	-0.3	-2.3	-0.1	0.6
Slovak Republic	15.0	3.6	1.3	-2.4	-1.2	-0.2	-0.3	-3.7	-0.8	-0.6	-2.0	0.6	1.8	8.7	-1.6	-2.8	-1.2	1.5
Slovenia	-0.6	0.4	-1.7	-2.0	2.5	0.5	-1.2	-2.1	-1.0	0.9	-2.1	-2.7	0.3	6.5	0.9	0.1	-0.5	-1.0
Spain *					0.7	-1.1	-0.5	0.2	-0.3	-1.2	-2.1	-2.3	2.7	7.4	-2.8	1.8	-1.8	0.0
Sweden	-1.1	-3.4	-1.4	-0.8	-1.1	4.4	1.7	-0.9	-2.3	-0.2	-1.1	0.0	2.2	7.4	-3.7	1.2	3.1	0.7
Switzerland *	0.5	0.5	0.2	1.5	-0.8	1.1	0.0	-0.3	-1.2	-0.9	-1.6	-1.5	-1.2	4.0	-1.7	-0.2	0.6	
United Kingdom *					1.0	1.8	-0.5	-1.4	-1.1	-0.6	-0.7	-0.2	1.2	6.9	-0.3	-2.4	0.9	-1.5
United States	-0.6	-0.9	1.0	-1.1	1.0	1.8	1.4	0.2	-0.4	-1.9	0.8	0.1	3.1	1.8	-1.1	1.0	0.5	-2.5

As discussed in section 5, the drivers of the differences in growth rates in GDP and adjusted HDI can be explained by an increasing (decreasing) share of operating surplus of corporations to value added. Looking at this phenomenon from a different perspective, one could also look whether the share of households' value added is declining (increasing) and/or if compensation of employees as a share of value added of corporations is declining (increasing). Section 5 further illustrates that net receipts of property income and net transfers as a consequence of government intervention can also explain the divergence in growth rates. The rest of this section looks at each individual indicator and then compares them to the ratio of nominal adjusted HDI to GDP to see if their movements coincide.

6.1. *Ratio of value added of households to total gross value added*

The importance of each sector to total gross value added (or GDP) varies across countries as can be seen in figure 4. For every country the corporations sector is the largest sector in 2012 – ranging from 54% in Italy to 78% in New Zealand. The second largest sector is the households sector for 15 out of 22 countries shown in figure 4. It shows that the importance of the household sector varies greatly across countries, from 8.6% in Sweden to over 30% in Italy, United States, Poland, Slovak Republic, and Mexico. There are six countries for which the general government sector is larger than the households sector: Denmark, Finland, Sweden, Estonia, the Netherlands, and New Zealand. For most countries over the time period analysed the standard deviation of the share is around 1 or 2 %-points, meaning that the share is fairly stable over time. However, slight changes in the share over time may translate into divergent growth rates between nominal adjusted HDI and GDP as will be discussed next.

Figure 4. Importance of sectors (Gross value added shares, 2012, %)



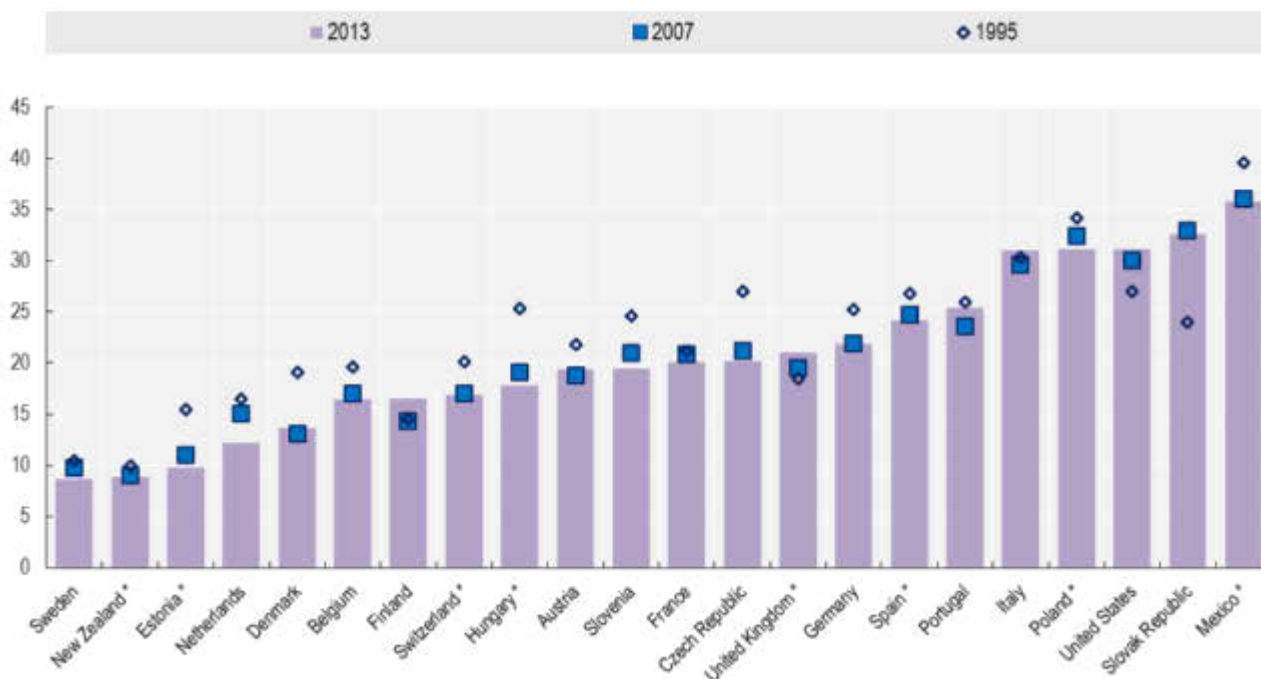
Almost all of the value added of the household sector remains as income acquired by this sector. As equation 9 illustrates, because mixed income and operating surplus as well as compensation of employees paid by households has a larger share in adjusted HDI than in GVA, an increase in the share of households as a producing sector over time contributes to adjusted household disposable income growing faster than GDP (unless of course household value added exhibits negative growth), and vice versa. Thus, this section reviews the *ratio of value added of households to total gross value added* over time to see if it helps explain the divergent patterns in the two series.

The ratio decreased from 1995 to 2013 for all countries except Italy, Finland, Slovak Republic, the United Kingdom, and the United States (figure 5). It is interesting to note that, with the exception of Italy, the latter countries show a positive gap between the growth rate of nominal adjusted HDI and GDP (see table 4 'nominal' panel). For the remaining three countries that show a positive gap between the growth rate of nominal adjusted HDI and GDP, the ratio of gross value added of the household sector is flat (for France) or slightly decreasing (for New Zealand and Sweden); however, New Zealand and Sweden have a low overall share of households that are producers, as a consequence of which the decreasing share does not have much of an impact on the level of adjusted HDI (and hence the growth rate).¹³ This can be confirmed by table 7 that shows that the income acquired by households as producers does not contribute much to the

¹³ In particular France shows a fairly significant divergence for the time period from 2008. Much of the divergence occurs in 2009 when government intervention sustained household incomes.

divergence in the growth rates, an average of 0.1 percentage point from 1996-2013 for France, New Zealand, and Sweden.

Figure 5. Ratio of value added produced in the household sector as a share of GVA (%)



* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

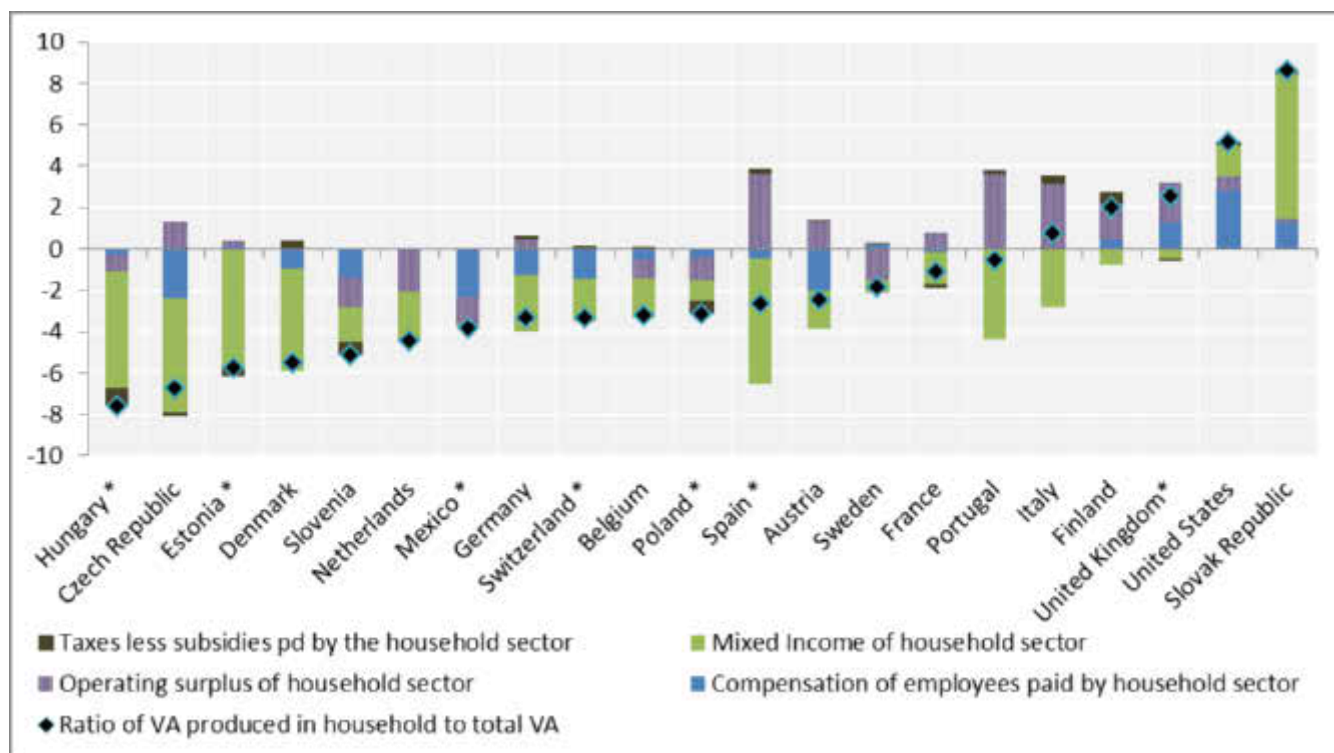
It is also notable that in each country where GDP is growing faster than adjusted HDI the share of households as a producing sector is decreasing over time, with the exception of Italy. In Italy the ratio increased from 1995 to 2013 but only slightly and it does not vary much over time. In fact, the standard deviation of the ratio is only 0.4%, the lowest of the countries analysed, so even though households as a producing sector is large in Italy and there is a slight increase in the share over time, it did not contribute much (see table 7 for Italy where households as producers contributes an average of 0.1 percentage point from 1996-2013) to the divergence between the growth rate of nominal adjusted HDI to GDP. The result for Italy is reinforced by the fact that the two indicators are not very correlated.

It is worth looking at the co-movement of the household value added share with the ratio of nominal adjusted HDI to GDP. The expectation is that if the household value added share increases over time this translates into adjusted HDI growing faster than GDP, hence an increase in the ratio of nominal adjusted HDI to GDP (and vice versa). This can be seen in the accompanying graphs for each country exhibited in appendix B, figure B1.

The value added generated by the household sector can be further decomposed by its components presented in table 1. Figure 6 decomposes the change in the ratio of value added produced in the household sector between 1995 and 2013.

Figure 6. Decomposition of the change in the ratio of value added produced in the household sector as a share of GVA (%-points)

Change between 1995 and 2013



* For Hungary, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For Switzerland the latest data available is 2012 instead of 2013.

For three out of the five countries exhibiting an increase in the ratio it is mainly due to an increase in the share of operating surplus of the household sector to total gross value added (Italy, Finland, and the United Kingdom). The two remaining countries showed a different pattern. In the Slovak Republic the strong increase in the share of mixed income was the main driver of the increase in the ratio. For the United States, the share of compensation of employees paid by the household sector was the main driver of the increase followed by an increase in mixed income. Figure 6 clearly shows that mixed income as a share of total value added has fallen in all the countries except the United States and Slovak Republic. Furthermore in the countries exhibiting a decline in households as a producing sector, the drop in the mixed income share is the main driver of the decline in almost all countries; exceptions occur in Austria and Mexico (compensation paid by the household sector was the main driver in the decline) and Poland and Sweden (operating surplus was the main driver in the decline).

It is also interesting to further analyse the underlying developments of mixed income since it is driving the decline in the share of value added produced in the household sector in many countries. Table 9 shows the average annual growth rate from 1996-2013 in mixed income, compensation of employees, the number of self-employed, as well as the number of employees.

Table 9. Comparison of mixed income, number of self-employed, compensation of employees, and number of employees

Average annual growth rate 1996-2013, %

	Mixed income per self-employed		Number of self-employed	Compensation per employee		Number of employees
	Nominal	Real		Nominal	Real	
Austria	1.5	-0.2	0.7	2.1	0.3	0.9
Belgium	1.8	-0.1	0.4	2.7	0.8	1.0
Czech Republic	1.6	-1.4	1.5	6.0	2.9	-0.3
Denmark	0.5	-1.4	-1.0	3.1	1.2	0.4
Estonia *	3.5	-0.9	0.8	9.2	4.6	0.1
Finland	2.9	1.0	0.4	3.0	1.1	1.2
France	1.4	0.1	0.4	2.4	1.1	0.8
Germany	-0.2	-1.4	0.9	1.4	0.1	0.6
Hungary *	7.8	2.3	-4.2	7.0	1.5	0.4
Italy	1.7	-0.6	0.2	2.2	-0.2	0.7
Mexico *	5.8	1.2	1.7	3.9	-0.6	2.7
Netherlands	1.9	-0.1	0.7	2.6	0.7	1.1
New Zealand *	n.a	n.a	n.a	3.3	1.6	2.1
Poland *	7.4	4.6	-1.3	4.4	1.7	1.1
Portugal	3.2	0.6	-1.2	3.2	0.7	0.2
Slovak Republic	5.8	1.3	4.0	7.7	3.2	-0.3
Slovenia	6.1	1.4	0.2	6.7	2.0	0.0
Spain *	1.7	-1.0	-0.6	2.7	0.0	1.1
Sweden	4.1	2.7	-1.0	3.7	2.2	0.8
Switzerland *	1.8	1.2	-0.2	1.4	0.8	1.2
United Kingdom *	1.9	-0.3	1.8	3.5	1.3	0.6
United States	6.0	4.0	-0.6	3.3	1.4	0.9

Note: Real mixed income uses actual individual consumption deflator.

* Data based on 1996-2013 with the following exceptions: 1996-2012 for Switzerland; 2000-2012 for New Zealand; 2000-2013 for Hungary, Spain, and the United Kingdom; 2001-2013 for Estonia and Poland; and 2004-2013 for Mexico.

The average annual growth rate in the number of self-employed fell in eight countries (Denmark, Hungary, Poland, Portugal, Spain, Sweden, Switzerland, and the United States) yet the nominal average annual growth rate in mixed income per self-employed increased in all countries except Germany suggesting that the average income levels of the self-employed grew (at least in nominal terms). Even though average income levels of the self-employed increased in nominal terms it is important to recall from figure 6 that mixed income fell as a share of total value added (in nominal terms). It is also interesting to note the relative strength of the average annual growth rate in average income levels of employees. As table 9 shows, average compensation of employees increased in every country (in nominal terms) and at a faster pace than the average income levels of the self-employed in most countries.

However, in real terms, average income levels for the self-employed fell in ten countries (Austria, Belgium, Czech Republic, Denmark, Estonia, Germany, Italy, the Netherlands, Spain, and the United Kingdom) and average income levels for the compensation of employees fell in 2 countries (Italy and Mexico).

6.2. Ratio of compensation of employees as a share of value added

Value added, the total income generated by the production of goods and services, is distributed to the providers of labour and capital. The labour share accrues entirely to households, resident as well as non-

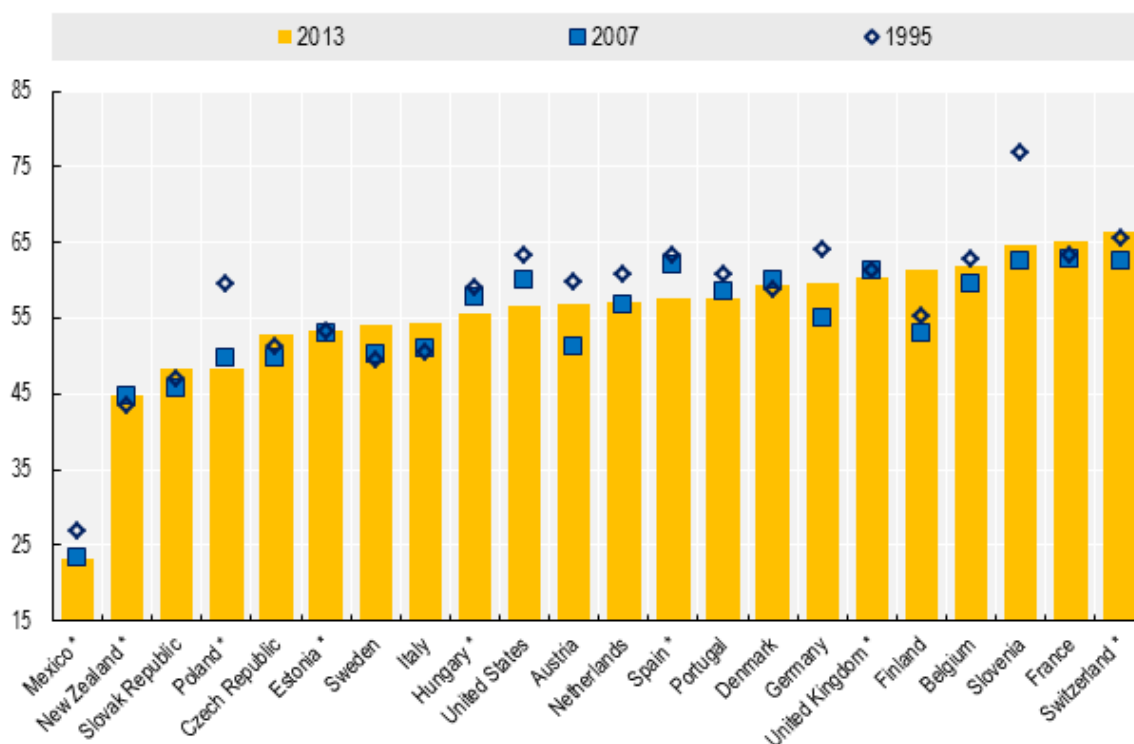
resident, whereas the capital share can accrue to other sectors of the economy (including households through property income flows such as dividends and interest) and the rest of the world. Since compensation of employees is the largest item of household income and as discussed in section 5 significantly contributes to the divergence in the growth rates between GDP and adjusted HDI, it is interesting to see how the share of compensation relative to value added evolves over time.

As shown in the previous section, the value added generated by unincorporated enterprises and self-employed persons almost entirely feeds into disposable income of households. Furthermore, apart from depreciation, value added of government is almost equivalent to compensation of employees paid to civil servants (see also further below). Therefore, this section predominantly investigates whether a change in the share of value added attributable to labour for corporations, financial as well as non-financial, can explain differences between the changes in nominal adjusted HDI and GDP. If for the corporate sector the return on labour is increasing faster than the return on capital, leading to an increase of the *ratio of compensation of employees to the gross value added of corporations*, this may explain a positive difference between the growth of nominal adjusted HDI and GDP (and vice versa).

Figure 7 shows the ratio of compensation of employees to the value added (VA) of corporations for 22 countries. In 2013, most countries have a ratio larger than 50%, with the exceptions of Poland, Slovak Republic, New Zealand, and Mexico. Countries with the most notable declines in the ratio between 1995 and 2013 are Germany, Spain, the United States, Poland, and Slovenia showing that the returns to labour have fallen relative to gross operating surplus. Conversely, 9 countries show an increasing trend, most notably in Italy, Sweden, and Finland.

In the 7 countries where nominal adjusted HDI outpaced GDP growth, 5 show an increasing trend in the ratio of compensation of employees to gross value added of corporations (Slovak Republic, New Zealand, France, Sweden, and Finland) and two show a declining trend (United Kingdom and United States).

Figure 7. Ratio of compensation of employees to gross value added of corporations (%)

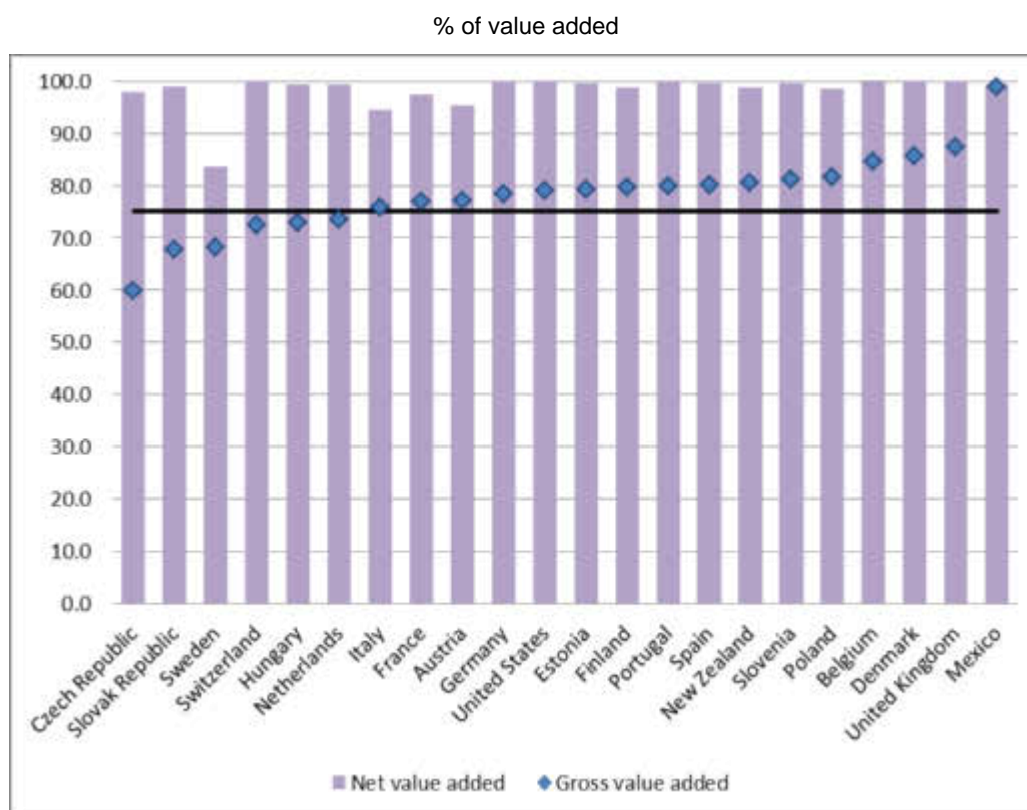


* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

One would expect a co-movement between the share of compensation of employees and the increase in the ratio of nominal adjusted HDI to GDP. As table 7 shows, compensation of employees as a percentage of gross value added of corporations is a main driver in explaining the differences in the growth rate of nominal adjusted HDI to GDP for many countries. However, in the case of the United States, even though the share of compensation of employees to gross value added of corporations is trending down over time, it did not translate into a declining share of adjusted HDI relative to GDP. The divergence in the two indicators for the United States mainly occurs from 2001 to 2007. During this time government intervention, net property income received by households, and households as producers worked to counter the effects of the declining share of compensation of employees to gross value added of corporations. Table 7 confirms that net property income receipts and the income generated by households as producers contributed more to the divergence of the growth rates between GDP and adjusted HDI (from 1996 to 2013) than compensation of employees paid by corporations in the United States. See the accompanying graphs for each country exhibited in appendix B, figure B2.

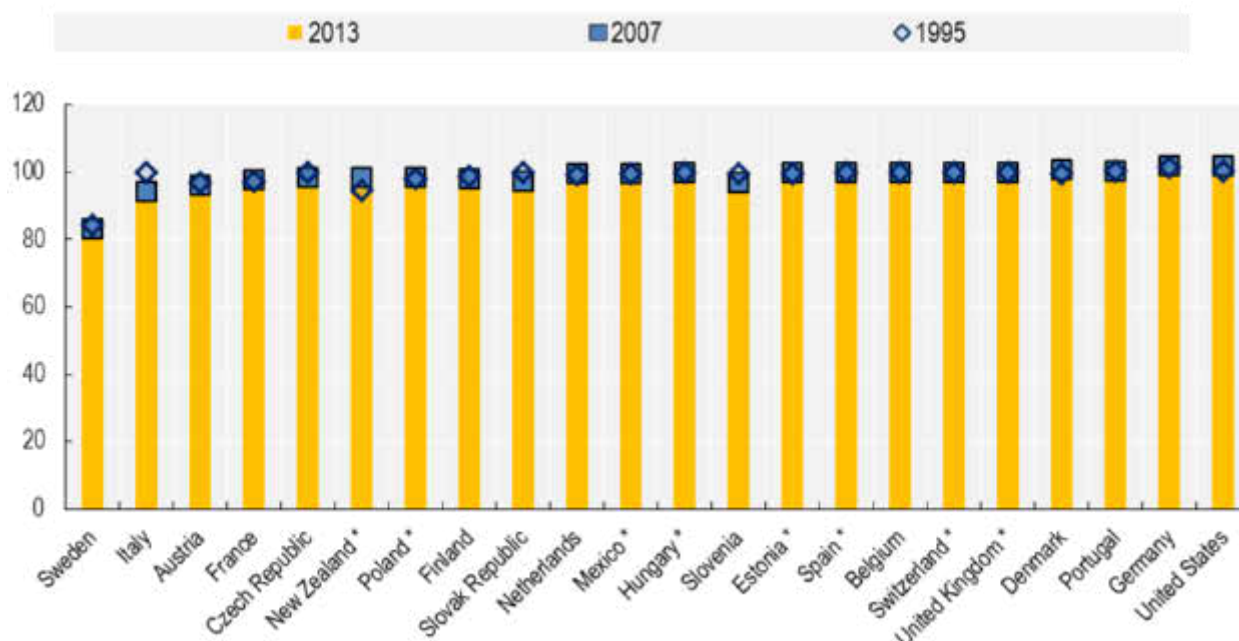
For the government sector, the share of compensation to gross value added is much larger than for the corporations sector, usually larger than 75% (the black line in figure 8). If one were to take the share of compensation to net value added of the government sector the share would be greater than 90% for all countries with the exception of Sweden where the general government sector pays around 15% in taxes (less subsidies) on production.

Figure 8. Share of compensation of employees of the government sector, 2012



Most of the value added of the government sector is for the remuneration of labour because, by convention, for most countries the government does not have net operating surplus. There are a few countries that report some net operating surplus (positive or negative) but it is less than 2%-points. Therefore, in most countries, the variation in the share of compensation to gross value added for the government sector is due to the variation in the amounts of depreciation costs.

Figure 9 shows compensation of employees as a share of net value added of the government sector. Countries with the most notable declines in the ratio between 1995 and 2013 are Austria (-1.4%-points), Czech Republic (-2.4%-points), and Italy (-5.6%-points). In Austria and Italy this is due to a rising share of net value added going to taxes on production, and for the Czech Republic net operating surplus went from being slightly negative in 1995 (-0.3%) to positive in 2013 (2.1%). The country with the most notable increase in the ratio between 1995 and 2013 is New Zealand (3.8%-points), mainly due to a drop in net operating surplus (the ratio of net operating surplus to net value added goes from 3.2% in 1995 to 0.5% in 2013).

Figure 9. Ratio of compensation of employees to net value added of government sector (%)

* For the United States (1998), Hungary, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For Switzerland the latest data available is 2012 instead of 2013.

As the share is relatively low and does not change much for most countries, it does not add much to the explanation of the variation between the growth rates in nominal GDP and adjusted HDI. In the countries where the share changed the most, the only country with a significantly positive correlation is Italy; however, it should be noted that for Italy most of the variation in the share occurred in 1998 when taxes paid on production were first reported for the government sector. This and the fact that the share of government compensation of employees in value added is more or less a technical phenomenon, and as such not considered as a policy target, are the reasons why this indicator is usually ignored and analysis is limited to the ratio of compensation of employees of the corporate sector.

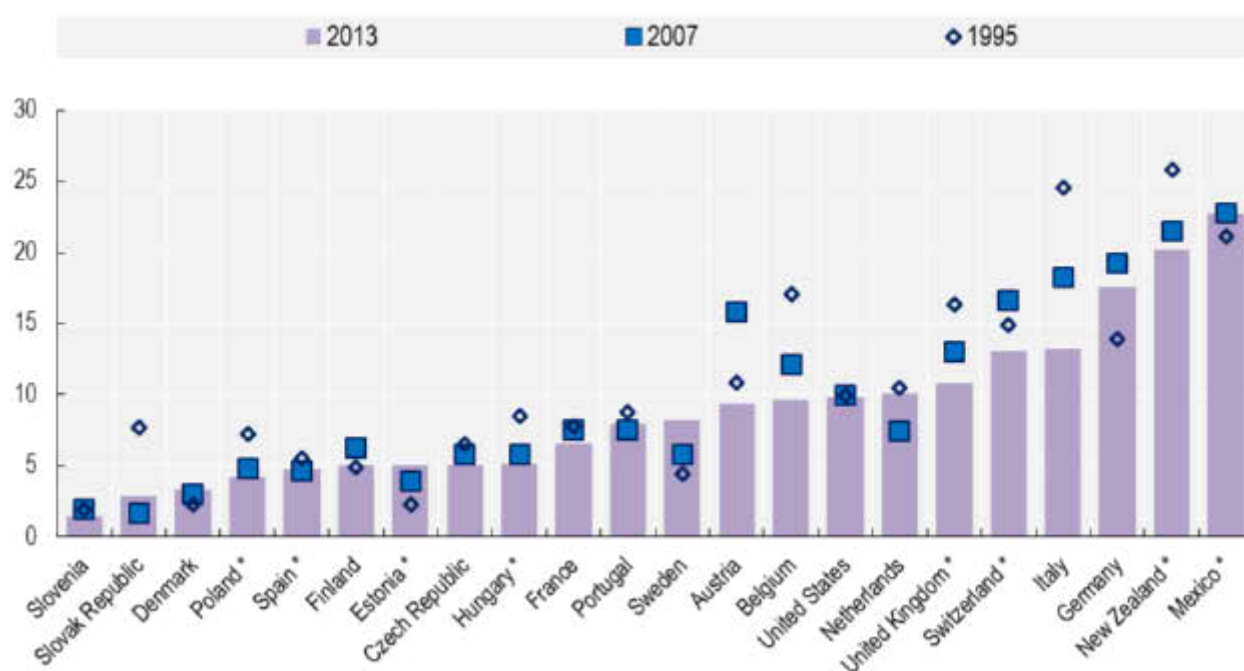
6.3. *Ratio of net property income to adjusted household disposable income*

Households generally are net receivers of property income; therefore, as shown in equation 9 an increase in the share of property income to adjusted HDI contributes to a positive difference in the growth rate of nominal adjusted HDI relative to GDP as long as net property income is increasing.¹⁴

However, many countries show a decreasing share of net property income from 1995 to 2013, see figure 10. Countries showing more than 5%-points decline were New Zealand, United Kingdom (both by 5.6 %-points), Belgium (7.4%-points), and Italy (11.4%-points).

¹⁴ It should be noted that property income does not include capital gains or losses on assets. Holding gains and losses are recorded as revaluations, and are not recorded as being part of the income definition.

Figure 10. Ratio of net property income to adjusted HDI (%)



* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

Looking at the co-movement of this indicator with the gaps in the growth rates between GDP and adjusted HDI, it is less robust than the correlation of the other indicators studied (see appendix B, figure B3). In addition it is a net number that illustrates different sets of behaviour of the relevant actors involved. On the one hand it includes interest received that is an indication of households' saving behaviour but also distributed income of corporations which is dependent on whether or not corporations retain (part of) their earnings. To fully analyse these interactions a future area of research could be to further decompose the various types of property income, and to also analyse the relationship between distributed and retained earnings of corporations.

6.4. Net transfers to the household sector

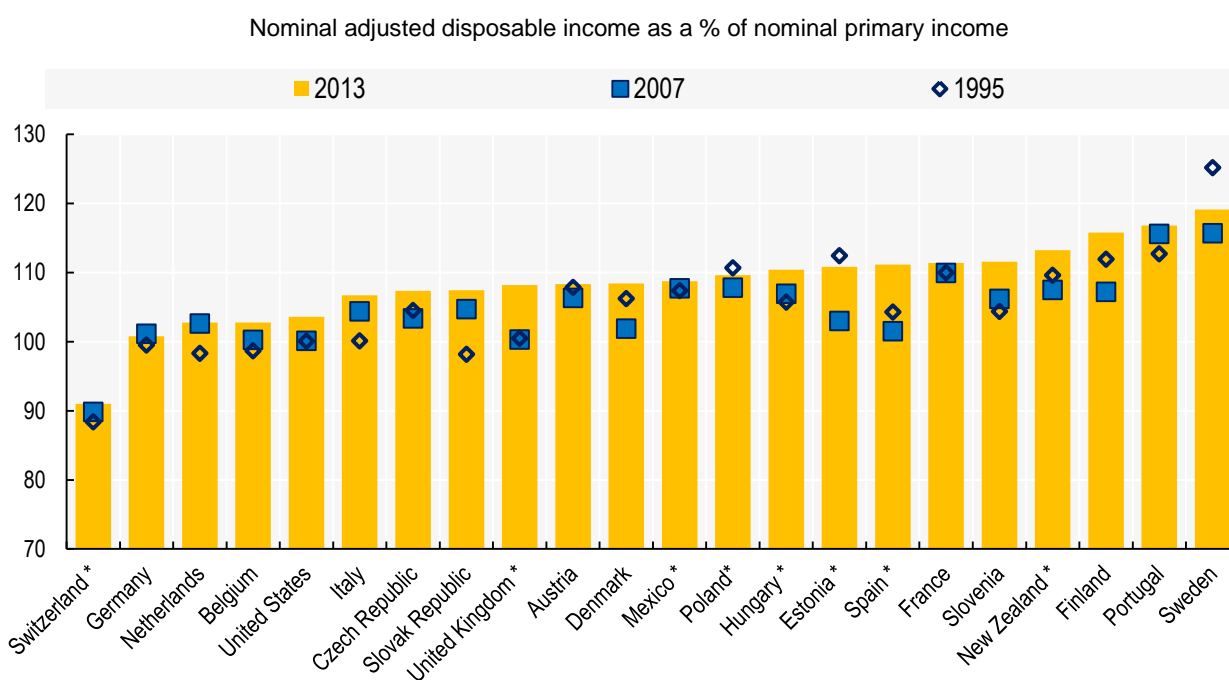
As illustrated in equation 9 adjusted HDI is also affected by the redistribution of income, mainly through government intervention. The indicator showing the impact of income redistribution is calculated as the **ratio of adjusted household gross disposable income to household gross primary income**. Since these numbers are only available at the level of the main sectors of the economy, the indicator only provides information for the sector of households (and NPISHs) as a whole. It does not give an indication of how income is distributed among groups of households (e.g. between households at the lower end of the income distribution and households at the higher end).

As described in section 2, adjusted HDI is derived from primary income by taking into account net current transfers; for example, the payments of taxes on income and wealth and social contributions, and the receipts of social benefits including in-kind transfers (such as those related to health and education provided free or at economically insignificant prices by government). Note that taxes deducted from income do not take into account the payments of consumption taxes (such as value added taxes). This type of tax is included in consumption expenditures.

A ratio above 100% indicates that households' adjusted gross disposable income is higher than primary income. For a given country, an increase in the ratio between time periods may explain a positive difference between the growth of adjusted HDI and GDP growth, and vice versa. However, as an increase in the ratio over time reflects a higher rise (lower decrease) in the numerator as compared to the denominator, an increase in the ratio does not necessarily reflect an increase in the level of disposable income or one of its components. It merely indicates that the redistribution process is having a higher impact over time, given the level of primary income received by households. The same applies for the comparison across countries. A higher ratio in country A compared to country B indicates that the redistribution process has a higher impact in country A than in country B, given the level of primary income received by households. It does not provide any information on the income levels in country A as compared to country B.

For the most recent time periods every country except Switzerland has a household adjusted HDI that is larger than primary income, showing that the redistribution of income has had a net positive impact on the level of household income. This can also be derived from table 7 where every country showed that government intervention contributed to a positive gap between the growth rate of adjusted HDI and GDP except for Switzerland. In addition, in every country except Poland, Estonia, and Sweden, the net transfers to the household sector increased between 1995 and 2013 (figure 11).

Figure 11. Net transfers to the household sector



* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

The long term trend may hide the fact that government intervention can have a sizable impact on the income levels of households at particular points in time. For example, income levels of households were sustained during the economic crisis as is shown in table 10 for 2009 (highlighted with the darker black line). The net transfers to the household sector ratio went up substantially in all countries. This also shows up in the real measures where, in 2009, adjusted HDI outpaced volume GDP growth in every country except Mexico (see appendix A).

Table 10. Change in the net transfers to the household sector

Percent change from prior period

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	-1.3	-0.8	-0.2	0.3	0.2	-0.3	1.2	0.7	-0.9	0.6	-0.4	-0.4	-0.1	2.7	0.4	-0.9	-0.3	0.0
Belgium	0.6	-0.9	-0.4	-0.1	-0.5	0.3	0.4	1.3	0.3	0.5	0.5	-0.4	0.4	3.0	-0.5	-0.2	0.3	-0.4
Czech Republic	-0.2	-0.3	0.4	1.0	0.3	-0.6	0.9	-0.6	-0.7	-0.8	-0.1	-0.4	1.2	4.5	-0.3	-1.0	0.0	-0.5
Denmark	-1.1	-0.8	0.2	-1.5	-1.7	0.0	2.9	1.0	-0.3	-0.5	-1.2	-1.0	0.2	5.6	1.9	0.3	-0.2	-1.4
Estonia *						0.6	-1.0	-2.3	-1.2	-0.6	-1.3	-3.0	4.9	7.6	-0.4	-2.8	0.0	-1.4
Finland	-1.7	0.0	-1.5	-0.7	-3.0	0.1	2.2	2.1	0.4	-0.4	-0.6	-1.1	0.8	4.9	1.3	-0.6	0.6	0.9
France	-0.5	0.0	-0.3	-1.0	-0.3	0.1	1.4	0.4	0.2	-0.1	-0.4	0.4	0.0	2.4	0.3	-0.7	-0.6	-0.1
Germany	1.4	-0.2	-0.5	0.2	-0.8	1.4	1.2	0.7	0.4	0.2	-1.4	-1.0	-1.1	2.1	0.5	-1.3	-0.7	0.1
Hungary *					-1.5	0.4	1.9	2.8	0.1	0.3	-0.1	-2.6	-0.6	3.2	1.6	1.5	-1.7	-0.6
Italy	-0.3	0.3	2.3	0.0	0.5	0.7	0.8	0.7	-0.1	0.2	0.0	-1.0	-0.2	2.2	0.1	-0.3	-0.4	0.8
Mexico *									-0.1	-0.1	0.1	0.4	0.2	0.4	-0.6	0.4	-1.2	1.8
Netherlands	-0.4	0.6	-0.3	-1.5	-0.8	4.8	0.1	0.5	0.3	-0.7	2.7	-0.8	-1.4	2.3	1.6	-0.9	-0.8	-0.5
New Zealand *					-0.8	0.2	-0.8	0.7	-0.5	-0.5	0.0	-0.3	2.0	3.6	0.4	0.4	-1.0	
Poland *						0.6	1.6	1.7	-3.0	-1.8	0.3	-1.9	0.6	2.2	1.4	-1.4	-1.4	0.4
Portugal	0.2	0.7	0.1	0.6	0.4	1.1	0.0	-0.7	1.0	-0.2	0.0	-0.7	0.0	1.9	0.4	-0.5	0.2	-1.0
Slovak Republic	8.4	1.3	1.3	-1.6	-1.1	0.6	-0.4	-1.5	1.9	-1.2	-1.2	0.4	-0.4	4.6	0.7	-1.6	-0.4	-0.1
Slovenia	1.2	1.9	0.3	0.9	0.0	0.4	-0.3	0.1	-1.0	0.6	-0.8	-1.6	-0.5	2.7	1.2	1.6	-0.7	0.7
Spain *					-0.2	-1.3	0.4	0.3	0.6	-0.3	-1.3	-0.8	2.7	5.8	0.0	-0.5	0.7	0.5
Sweden	-3.7	-2.3	2.8	-0.9	-5.5	3.7	2.9	1.1	-1.1	-1.1	-1.4	-2.0	-0.9	5.2	-1.1	-0.4	0.1	0.2
Switzerland *	0.2	1.4	-0.3	0.4	-1.0	1.8	-0.8	1.3	1.0	-0.9	-0.4	-0.9	-0.4	1.9	0.1	-0.9	0.6	
United Kingdom *					-0.9	0.4	1.7	0.3	-0.4	-0.5	0.2	-1.0	2.3	4.9	-0.9	0.2	2.0	-0.7
United States	-0.8	-1.3	-1.0	-0.4	-0.6	1.5	3.3	1.1	0.0	-0.9	-0.6	-0.2	2.0	5.1	0.5	-1.2	-1.1	-1.8

* For Hungary, New Zealand, Spain, and United Kingdom (1999), Estonia and Poland (2000), Mexico (2003) the earliest data available instead of 1995. For New Zealand and Switzerland the latest data available is 2012 instead of 2013.

It seems logical that if government intervention has a positive impact on the income levels of households it should also be positively correlated with the gap between the growth rates of adjusted HDI relative to GDP. Indeed during severe economic crisis (such as 2009) this is true, but what is the impact of government intervention over a longer time period? In looking at the movement of government intervention compared with the ratio of nominal adjusted HDI to GDP, the impact of government intervention is moderately positively correlated with the movement of the gap between the growth rates of nominal adjusted HDI to GDP as shown in figure B4. Countries exhibiting quite strong correlations are United Kingdom, New Zealand, United States, France, and Finland where an upward trend in the ratio corresponds with an upward trend in the ratio of adjusted HDI to GDP. Denmark and especially Estonia have in general a downward trending ratio with a few notable exceptions (like 2009). Italy shows somewhat different results, that is, two trends show in the opposite direction. One of the main reasons for this gap is the divergence during the time period of 1997-1999 where even though government intervention is increasing the ratio of adjusted HDI to GDP is falling. A contributing factor to this divergence is net property income falling during this time period in Italy.

7. Summary

Although GDP is a useful indicator of a country's economic activity, it does not sufficiently represent the material well-being of households. Adjusted HDI better reflects the material conditions of households. Both measures evolve differently over time. A gap between the developments in the two measures can be significant, especially if annual differences are maintained over a longer period of time. For example, in Australia real household adjusted disposable income grew, on average, about 0.5 %-point per year more than GDP for the time period 1996-2013. This translates into real adjusted HDI growing about 15%-points more than GDP over the entire time period.

For the period at hand, in a majority of countries real GDP grew quicker than real adjusted disposable income of households. A key driver of the differences in the growth rate of real adjusted HDI compared to GDP is differences in prices faced by producers versus prices faced by consumers. Remaining differences between the nominal growth rates reflects several underlying effects that offset each other in many countries:

- nearly everywhere, rising value-added of corporations and government that is not distributed as labour income (mainly operating surplus of corporations) widens the difference in growth rates at the expense of household income;
- the positive evolution of the value added produced in households, the compensation of employees paid by corporations and government (i.e., that part of value-added of corporations and government that is distributed as labour income), net property income received, and in particular government intervention all contributed to reducing the gap between GDP and adjusted HDI.

With this in mind several indicators based on nominal data were investigated to help explain the gap between the growth rates of nominal adjusted HDI compared to nominal GDP. While it is difficult to pinpoint any particular indicator as being the best explanation of what is causing the gap in the growth rate since many times there are offsetting factors, this paper attempts to identify them. Looking at the possible indicators, it appears that three of the indicators discussed have the most explanatory power, the changing share of compensation of employees as percentage of value added of corporations, the changing importance of households as a producing sector, and the impact of (predominantly) government intervention on the income levels of households.

APPENDIX A. COMPARISON OF GDP AND ADJUSTED HDI BEFORE AND AFTER GLOBAL CRISIS

Comparing GDP and adjusted HDI growth rates for several short time periods obviously may provide more specific information than the average growth rates for the whole time period under consideration. Especially during more severe recessions or rapid expansions the two growth rates may diverge quite significantly. Below, figures A1 to A3 show the average growth rates for real GDP and real adjusted HDI for 27 countries for three time periods, 2001-2007, 2008-2009 and 2010-2013.

For the period 2001 to 2007, figure A1, real GDP outpaced real adjusted HDI in two-thirds of the 27 countries. Countries where GDP outpaced real adjusted HDI by more than a percentage point occurred in Slovak Republic, Poland, Korea, Slovenia, and Czech Republic. There are 9 countries where real adjusted HDI outpaced GDP, most notably in Norway, Australia, and New Zealand.

When looking at the crisis years (2008-2009), figure A2, the picture is quite different. Real adjusted HDI outpaced real GDP growth in every country except Mexico. In addition, real adjusted HDI grew in most countries for which real GDP contracted, and for some countries the divergence between the two growth rates was quite significant. Real adjusted HDI outpacing GDP by more than 4%-points occurred in Estonia, Finland, Sweden, Spain, Norway, and Denmark.

For the period 2010 to 2013, figure A3 shows that real GDP outpaced real adjusted HDI in nearly all of the countries. For a significant part, this can be attributed to an economic policy of consolidation after the economic and financial crisis. There are however a couple of notable exceptions: Norway and New Zealand, where real adjusted HDI outpaced real GDP by 1.6 %-points and 0.7 %-point, respectively. The largest negative gap occurred in Estonia where real GDP outpaced real adjusted HDI by 3.3%-points.

Table A compares GDP and adjusted HDI over the three time periods. Producers faced higher inflation than households in half of the countries in the time period from 2001 to 2007; conversely, from 2010 to 2013 households experienced higher inflation than producers in every country except Norway, Canada, Switzerland, and Denmark.

Figure A1. Real GDP and real adjusted HDI (average annual growth rate of 2001-2007, %)

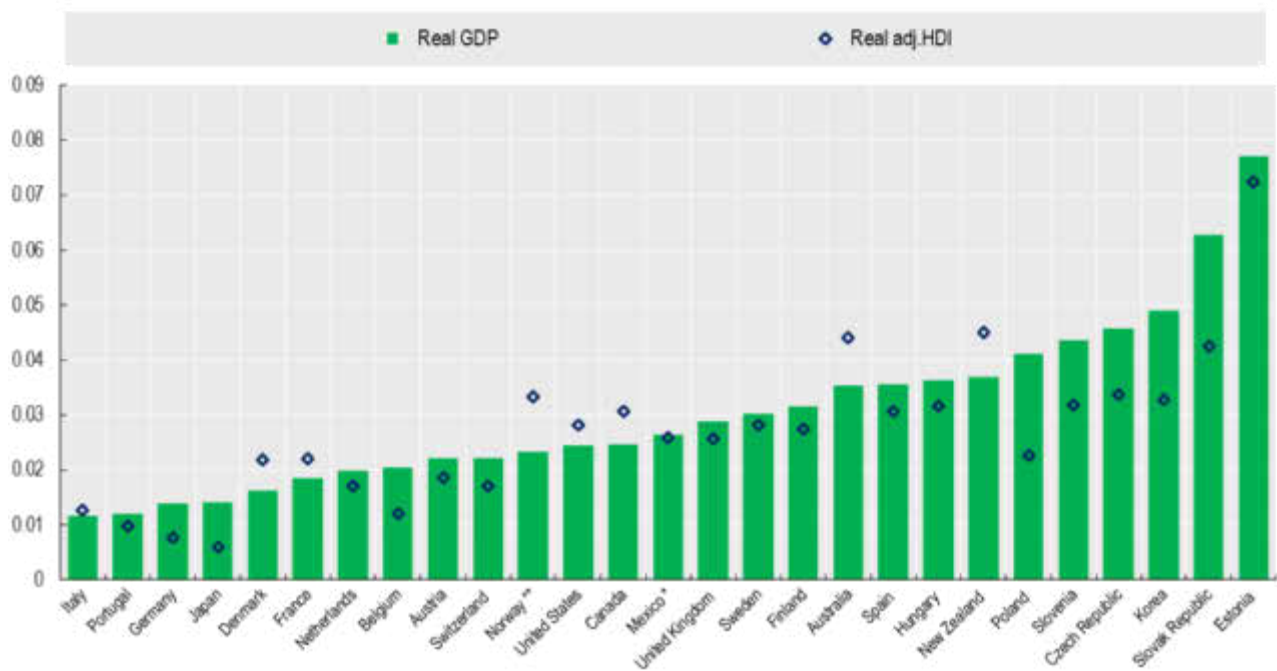


Figure A2. Real GDP and real adjusted HDI (average annual growth rate of 2008-2009, %)

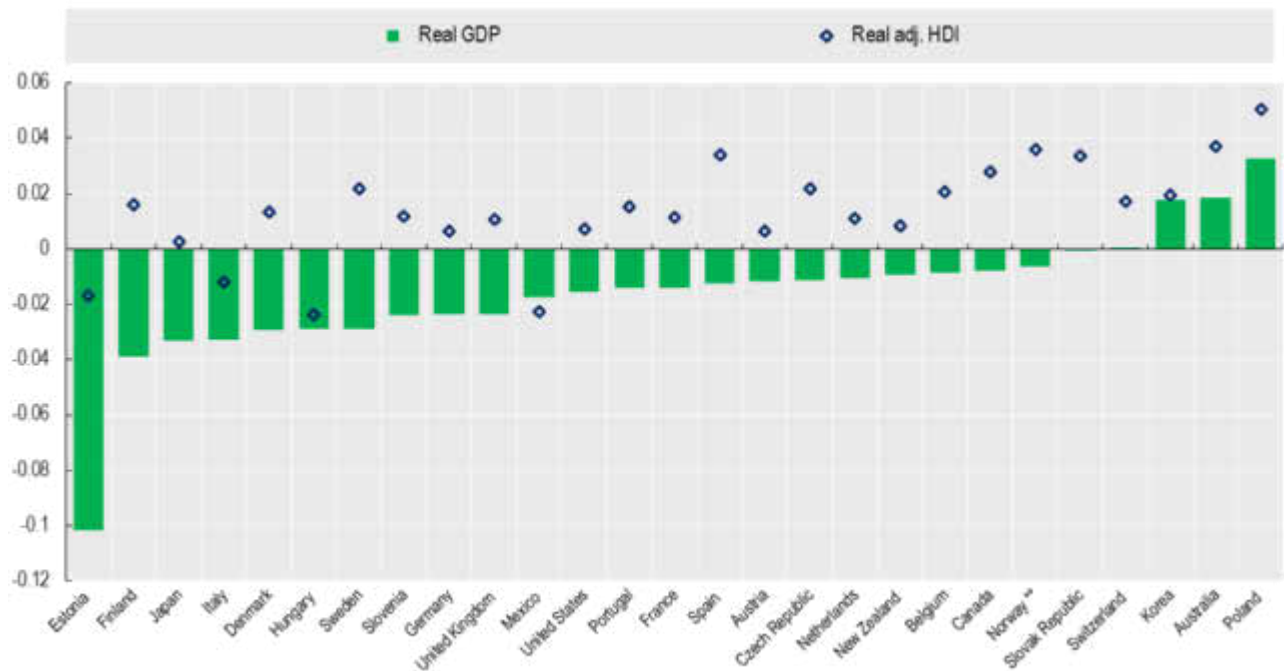


Figure A3. Real GDP and real adjusted HDI (average annual growth rate of 2010-2013, %)

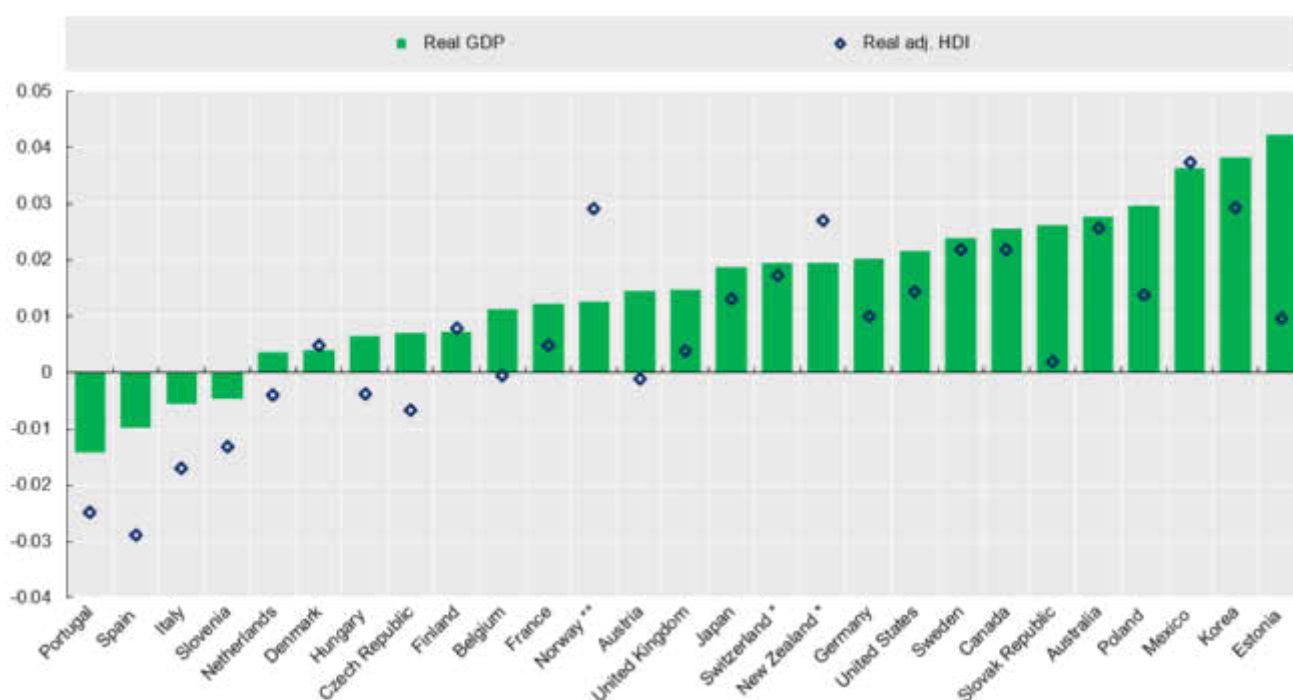


Table A. Comparisons of GDP and adjusted HDI, Average annual growth rates, selected time periods (%)

	Real						Nominal						Deflator					
	GDP			Adj HDI			GDP			Adj HDI			GDP			Adj HDI		
	2001-2007	2008-2009	2010-2013	2001-2007	2008-2009	2010-2013	2001-2007	2008-2009	2010-2013	2001-2007	2008-2009	2010-2013	2001-2007	2008-2009	2010-2013	2001-2007	2008-2009	2010-2013
Australia	3.5	1.8	2.8	4.4	3.7	2.6	7.6	4.9	5.1	7.3	6.8	5.1	3.9	3.0	2.3	2.8	3.0	2.5
Austria	2.2	-1.2	1.4	1.9	0.6	-0.1	4.1	0.7	3.1	3.9	2.2	2.1	1.8	1.9	1.6	2.0	1.5	2.3
Belgium	2.0	-0.8	1.1	1.2	2.0	-0.1	4.3	0.7	3.1	3.8	4.1	2.0	2.2	1.5	2.0	2.5	2.0	2.1
Canada	2.5	-0.8	2.6	3.1	2.8	2.2	5.2	0.0	4.8	5.2	4.3	4.0	2.7	0.8	2.2	2.0	1.5	1.8
Czech Republic	4.6	-1.1	0.7	3.4	2.1	-0.7	7.1	1.2	1.0	5.9	5.2	0.5	2.4	2.3	0.3	2.4	3.0	1.2
Denmark	1.6	-2.9	0.4	2.2	1.3	0.5	3.9	-0.7	2.4	4.2	3.7	2.4	2.3	2.3	2.0	2.0	2.4	1.9
Estonia	7.7	-10.2	4.2	7.2	-1.7	0.9	14.8	-6.7	7.3	13.0	2.6	4.5	6.6	3.8	2.9	5.4	4.4	3.6
Finland	3.2	-3.9	0.7	2.7	1.6	0.8	4.6	-1.5	2.9	4.8	4.6	3.5	1.4	2.5	2.1	2.0	3.0	2.7
France	1.9	-1.4	1.2	2.2	1.1	0.5	3.9	-0.2	2.2	4.2	2.0	1.6	2.0	1.2	1.0	2.0	0.9	1.1
Germany	1.4	-2.4	2.0	0.8	0.6	1.0	2.5	-1.1	3.4	2.2	1.4	2.7	1.1	1.3	1.4	1.4	0.7	1.7
Hungary	3.6	-2.9	0.7	3.2	-2.4	-0.4	9.7	1.4	3.3	9.3	1.8	3.0	5.9	4.5	2.7	5.9	4.3	3.4
Italy	1.2	-3.3	-0.6	1.3	-1.2	-1.7	3.8	-1.1	0.6	3.9	0.2	-0.1	2.6	2.2	1.1	2.6	1.4	1.6
Japan **	1.4	-3.3	1.9	0.6	0.2	1.3	0.1	-4.2	0.5	-0.2	-0.7	0.5	-1.3	-0.9	-1.4	-0.8	-1.0	-0.8
Korea	4.9	1.8	3.8	3.3	1.9	2.9	7.3	5.1	5.5	6.6	5.7	5.3	2.3	3.2	1.7	3.2	3.7	2.3
Mexico*	3.9	-1.7	3.6	4.0	-2.3	3.7	10.3	2.9	7.4	9.0	3.5	7.7	6.2	4.7	3.7	4.8	6.0	3.8
Netherlands	2.0	-1.1	0.4	1.7	1.1	-0.4	4.6	0.3	1.3	4.3	2.3	1.1	2.6	1.4	0.9	2.5	1.2	1.5
New Zealand*	3.7	-0.9	1.9	4.5	0.8	2.7	6.5	1.8	3.7	6.7	3.9	4.4	2.7	2.8	1.7	2.1	3.1	1.7
Norway**	2.3	-0.6	1.3	3.3	3.6	2.9	6.5	1.7	6.0	5.7	7.4	5.3	4.1	2.3	4.7	2.3	3.7	2.3
Poland	4.1	3.3	3.0	2.3	5.0	1.4	6.8	7.1	5.1	4.8	8.7	4.3	2.6	3.7	2.1	2.5	3.5	2.9
Portugal	1.2	-1.4	-1.4	1.0	1.5	-2.5	4.6	0.0	-0.9	4.4	2.1	-1.4	3.3	1.4	0.5	3.4	0.6	1.1
Slovak Republic	6.3	-0.1	2.6	4.3	3.3	0.2	10.3	0.7	3.6	9.2	5.9	2.6	3.8	0.8	1.0	4.7	2.5	2.4
Slovenia	4.4	-2.4	-0.5	3.2	1.2	-1.3	9.3	1.4	0.0	8.0	4.9	-0.1	4.7	3.9	0.4	4.7	3.7	1.2
Spain	3.6	-1.3	-1.0	3.1	3.4	-2.9	7.6	-0.1	-0.7	6.5	4.9	-1.4	3.9	1.2	0.3	3.3	1.5	1.6
Sweden	3.0	-2.9	2.4	2.8	2.1	2.2	4.8	-0.1	3.5	5.0	4.6	3.8	1.7	2.9	1.1	2.1	2.4	1.6
Switzerland*	2.2	0.0	2.0	1.7	1.7	1.7	3.2	1.2	2.1	2.6	2.6	1.7	1.0	1.2	0.1	0.9	0.9	-0.1
United Kingdom	2.9	-2.3	1.5	2.6	1.0	0.4	5.4	0.0	3.7	5.0	4.1	2.8	2.5	2.4	2.2	2.4	3.0	2.4
United States	2.4	-1.5	2.2	2.8	0.7	1.4	5.0	-0.2	3.8	5.3	2.2	3.3	2.5	1.4	1.6	2.4	1.5	1.8

*: Data are based on 2001-2013 with the following exceptions: Mexico covers 2004-2013; New Zealand and Switzerland cover 2001-2012
 **: Data are based on 93 SNA/ESA 95

APPENDIX B. INDIVIDUAL COUNTRY GRAPHS OF INDICATORS

Note that scales are different for each axis and each country.

Figure B1. Comparison of ratio of value added of households to gross value added and ratio adjusted household gross disposable income to GDP

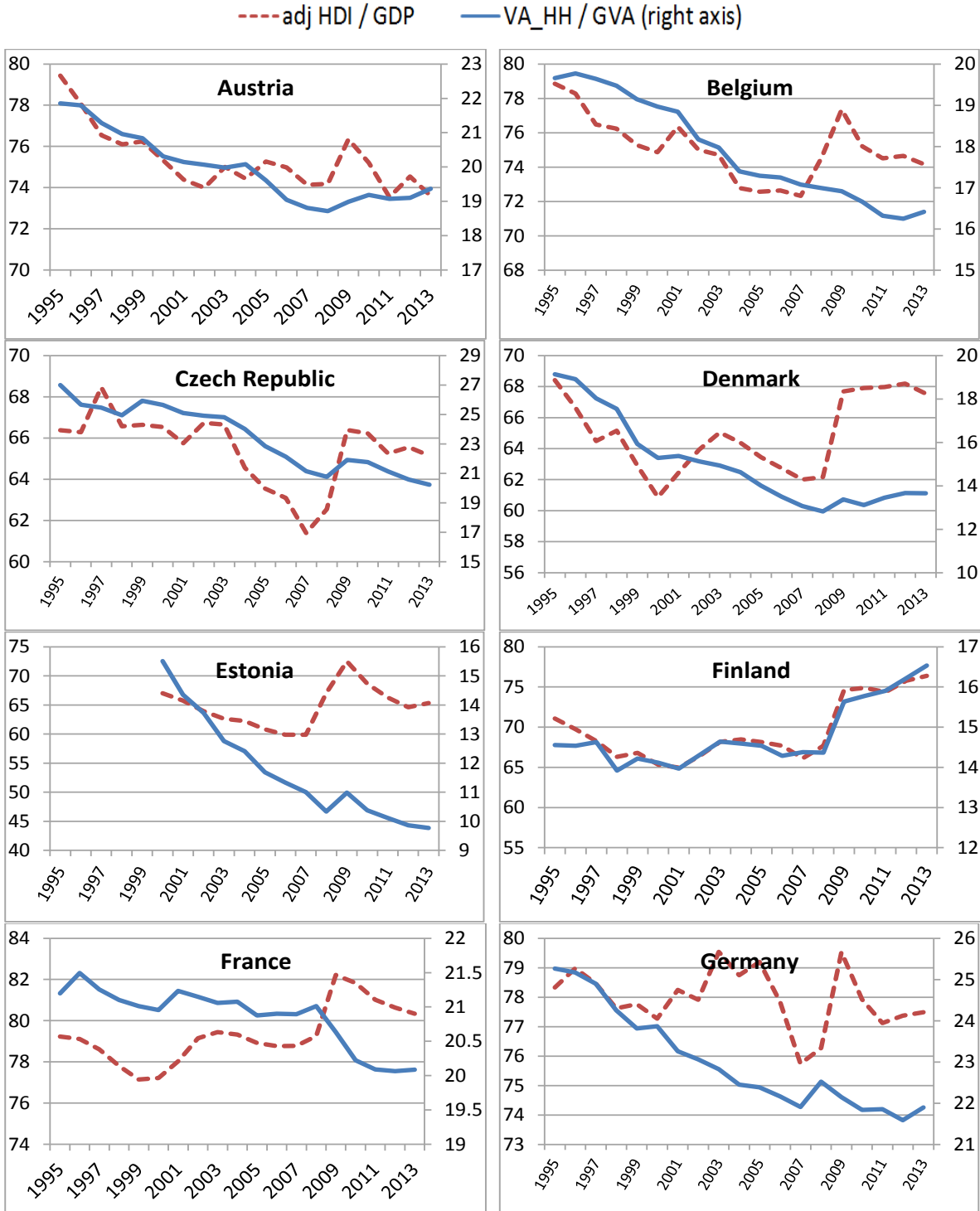


Figure B1. Comparison of VA of households / GVA to adjusted HDI / GDP (cont)

Note that scales are different for each axis and each country.

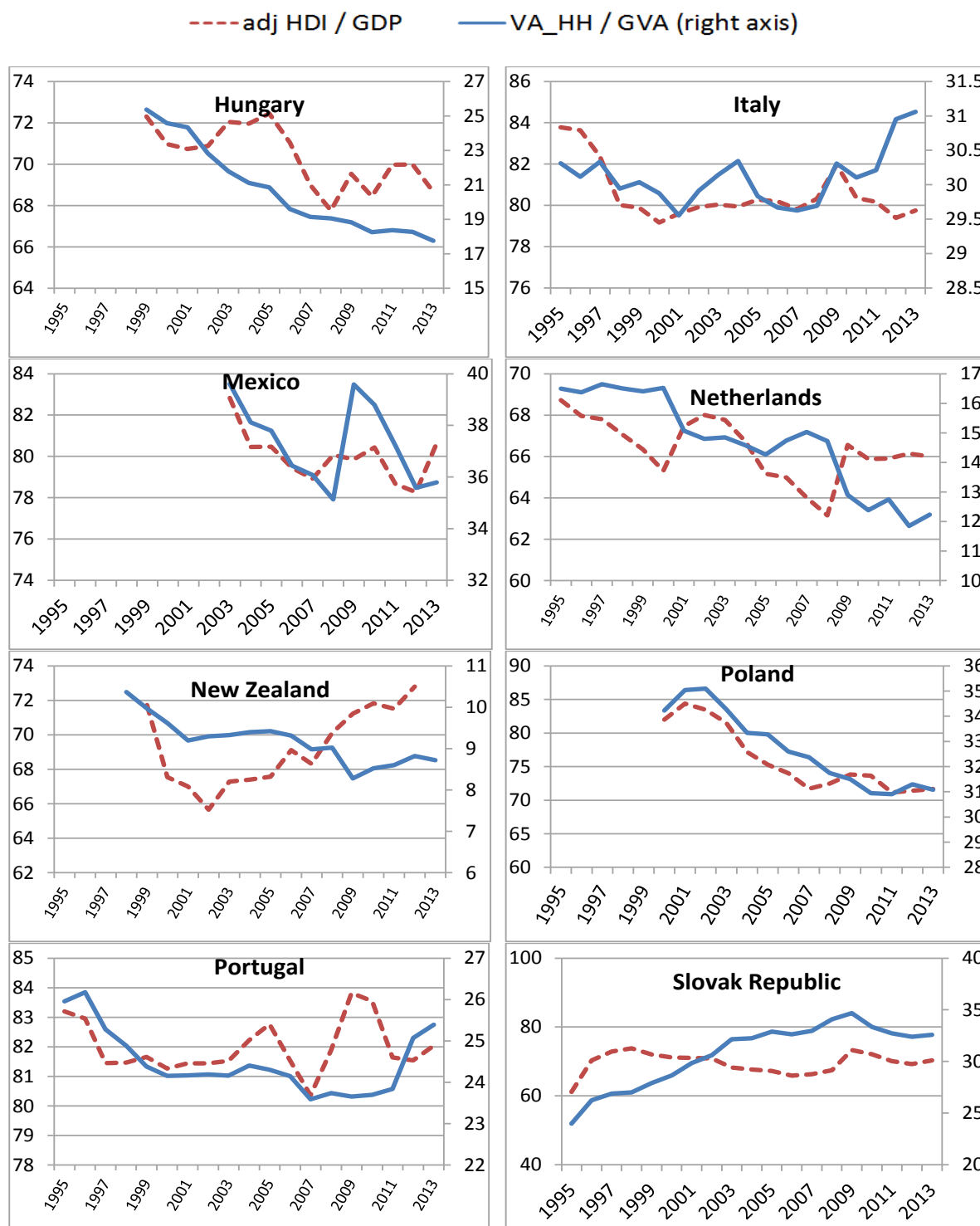


Figure B1. Comparison of VA of households / GVA to adjusted HDI / GDP (cont.)

Note that scales are different for each axis and each country.

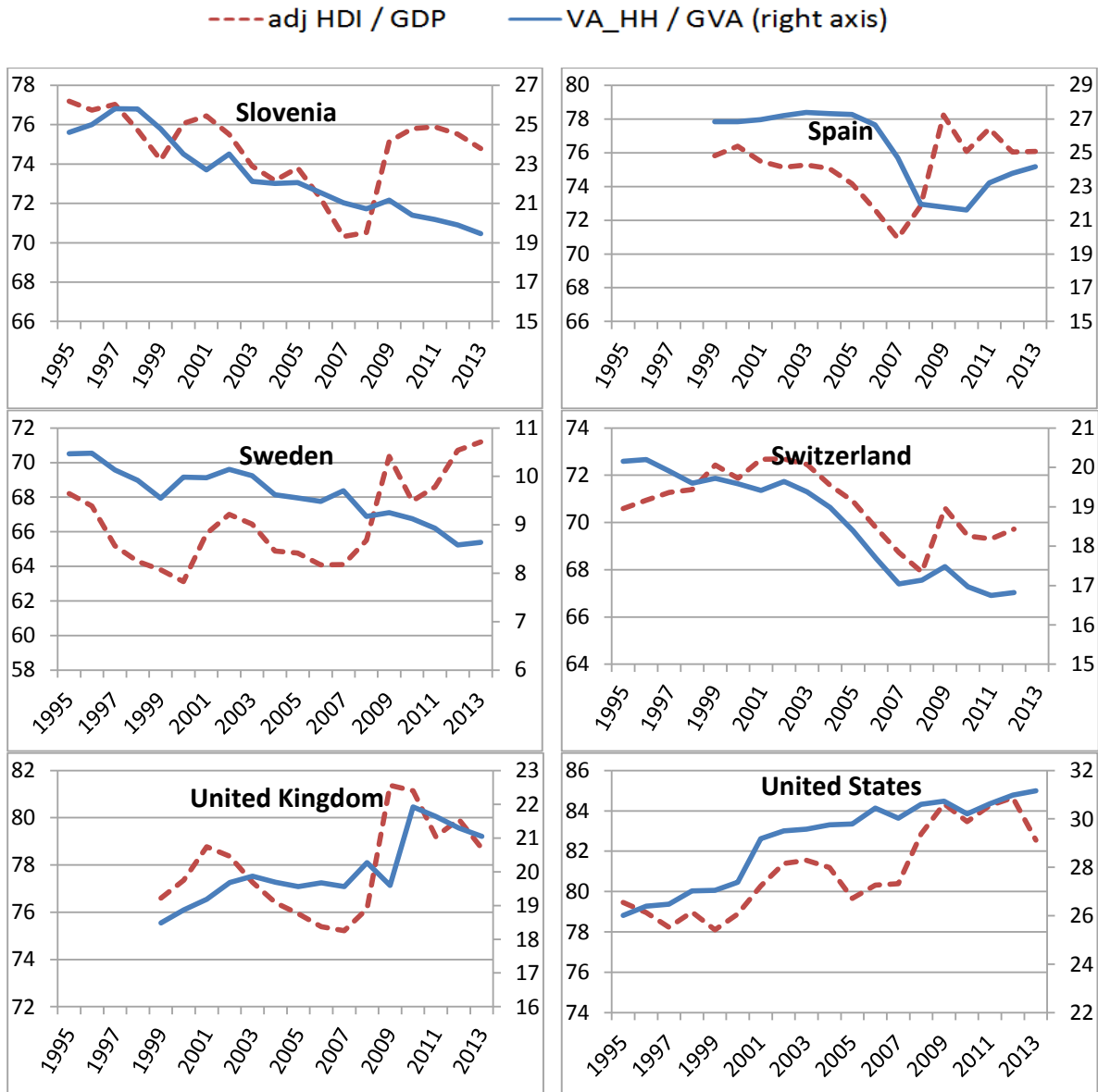


Figure B2. Comparison of ratio of compensation of employees to VA corporations and ratio of adjusted household gross disposable income to GDP

Note that scales are different for each axis and each country.

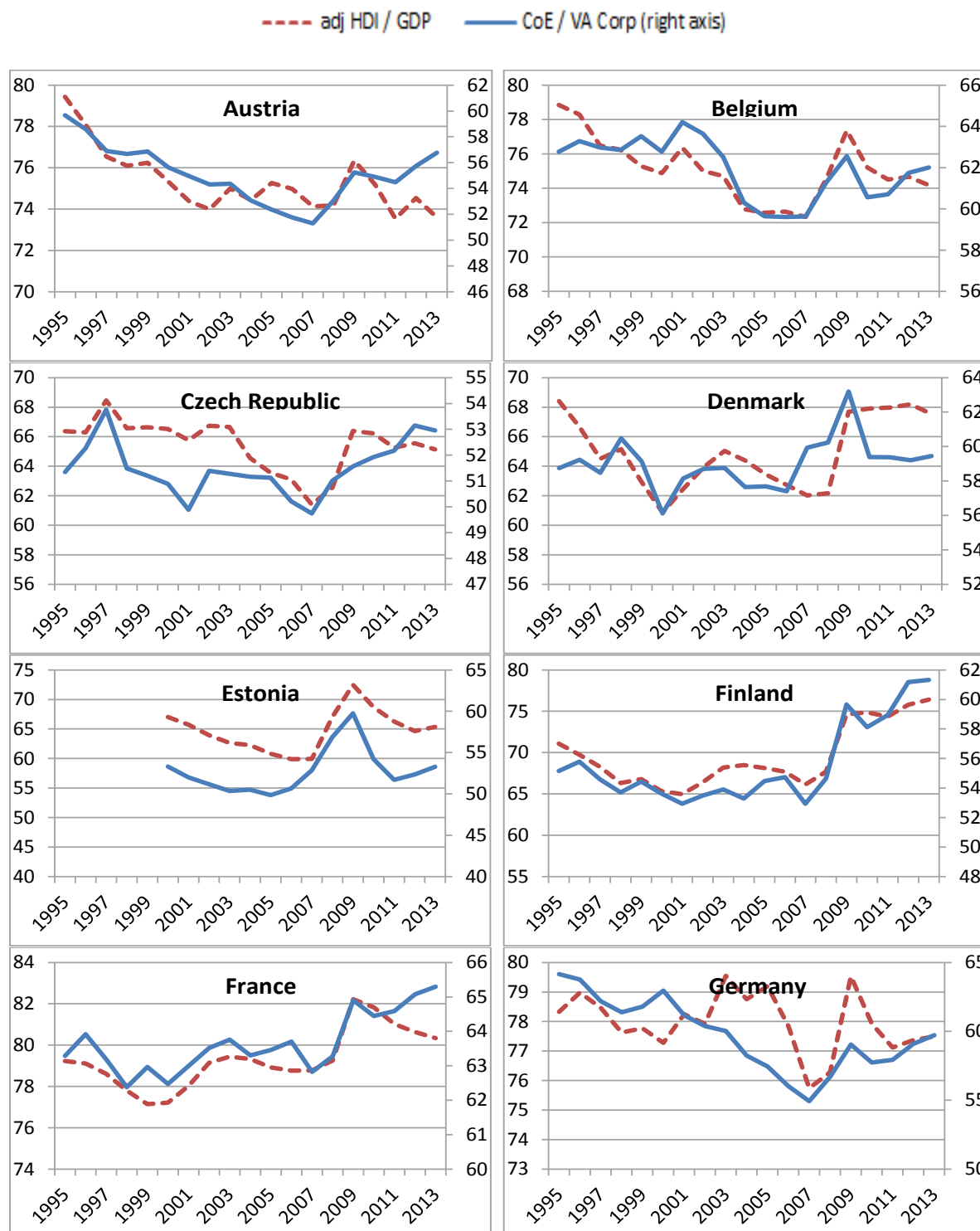


Figure B2. Comparison of COE / VA corporations to adjusted HDI / GDP (cont.)

Note that scales are different for each axis and each country.

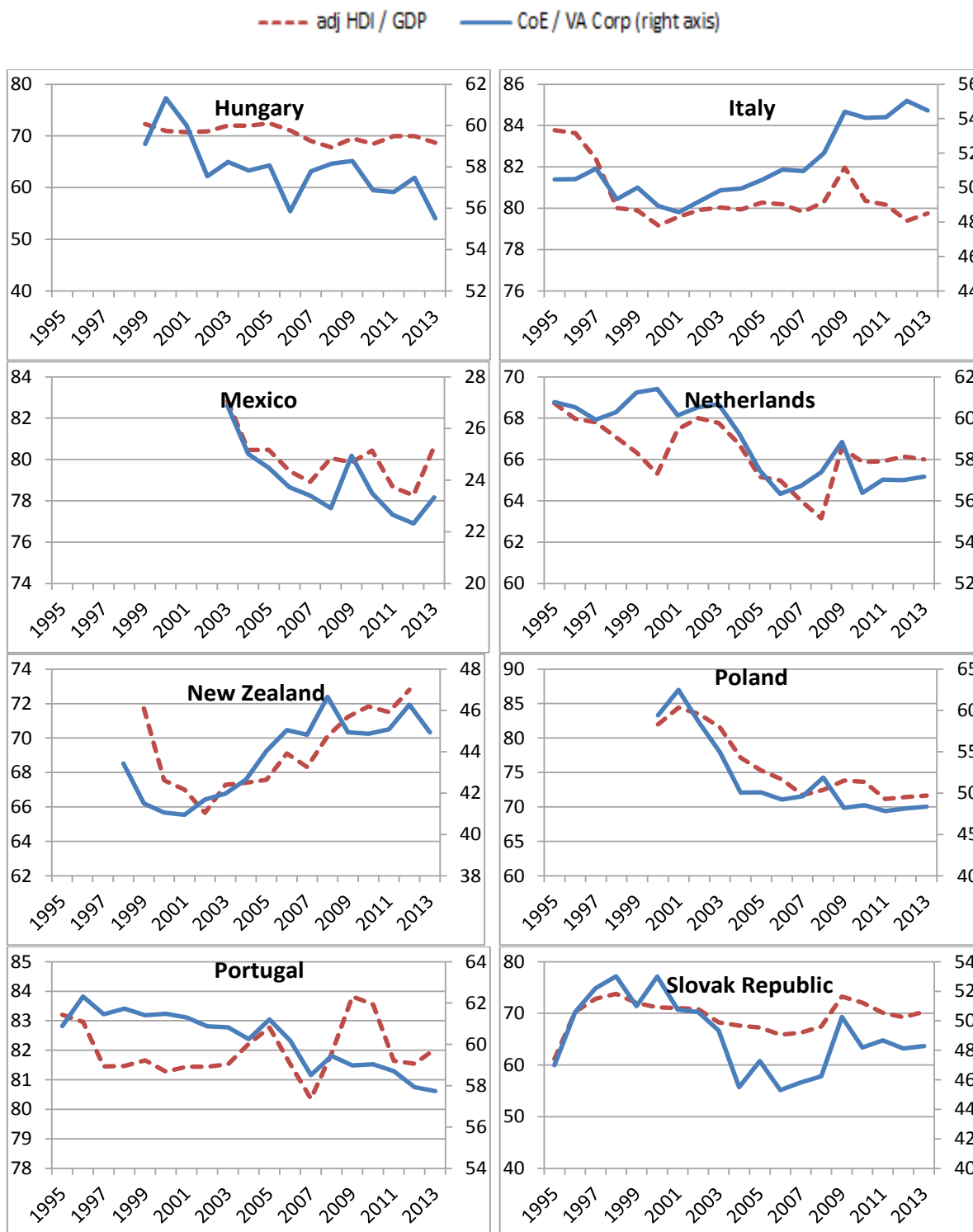


Figure B2. Comparison of COE / VA corporations to adjusted HDI / GDP (cont.)

Note that scales are different for each axis and each country.

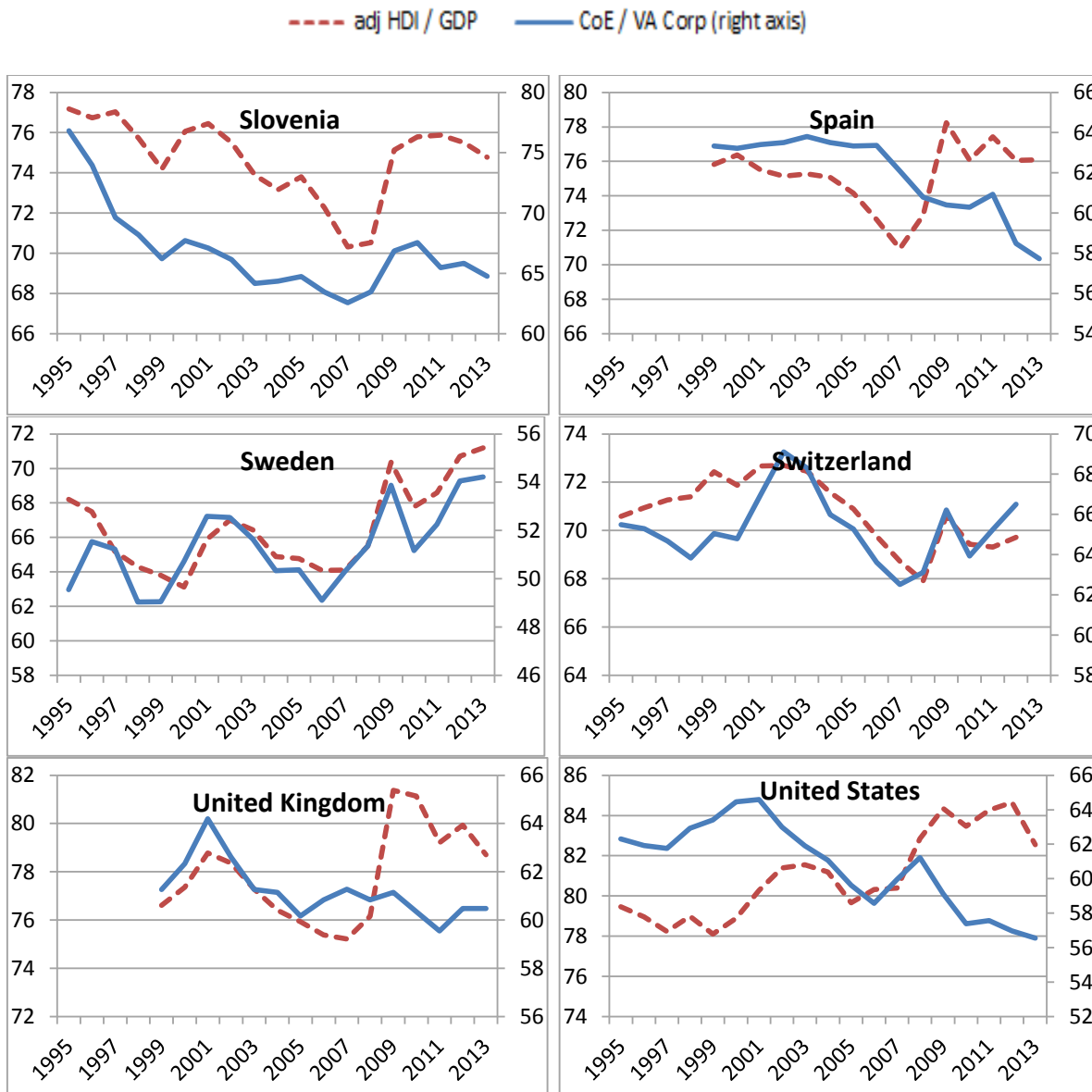


Figure B3. Comparison of ratio of Net property income to adjusted household gross disposal income and ratio of adjusted household gross disposable income to GDP

Note that scales are different for each axis and each country.

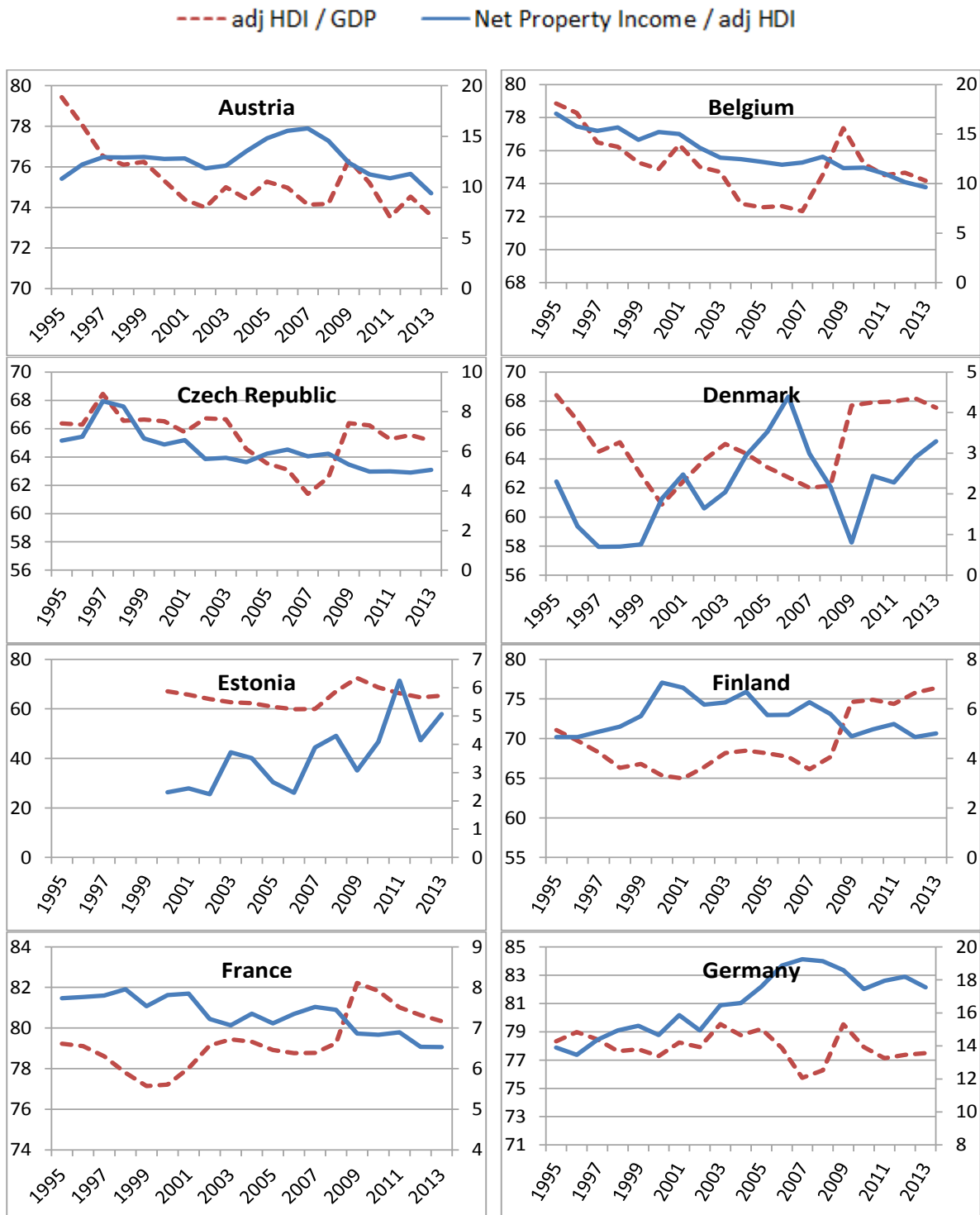


Figure B3. Net property income /adj HDI to adjusted HDI/GDP (cont.)

Note that scales are different for each axis and each country.

--- adj HDI / GDP — Net Property Income / adj HDI

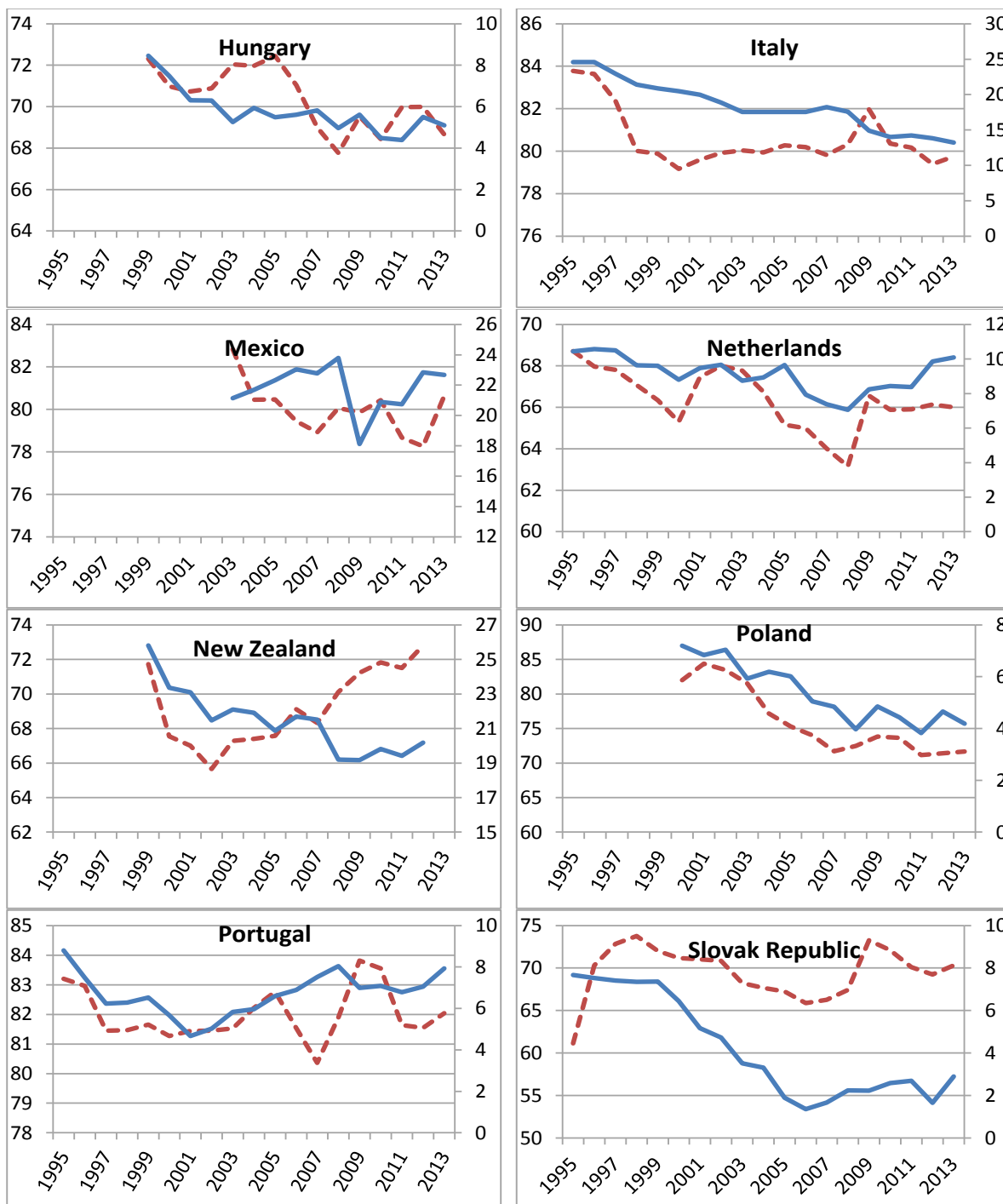


Figure B3. Net property income /adj HDI to adjusted HDI/GDP (cont.)

Note that scales are different for each axis and each country.

--- adj HDI / GDP — Net Property Income / adj HDI

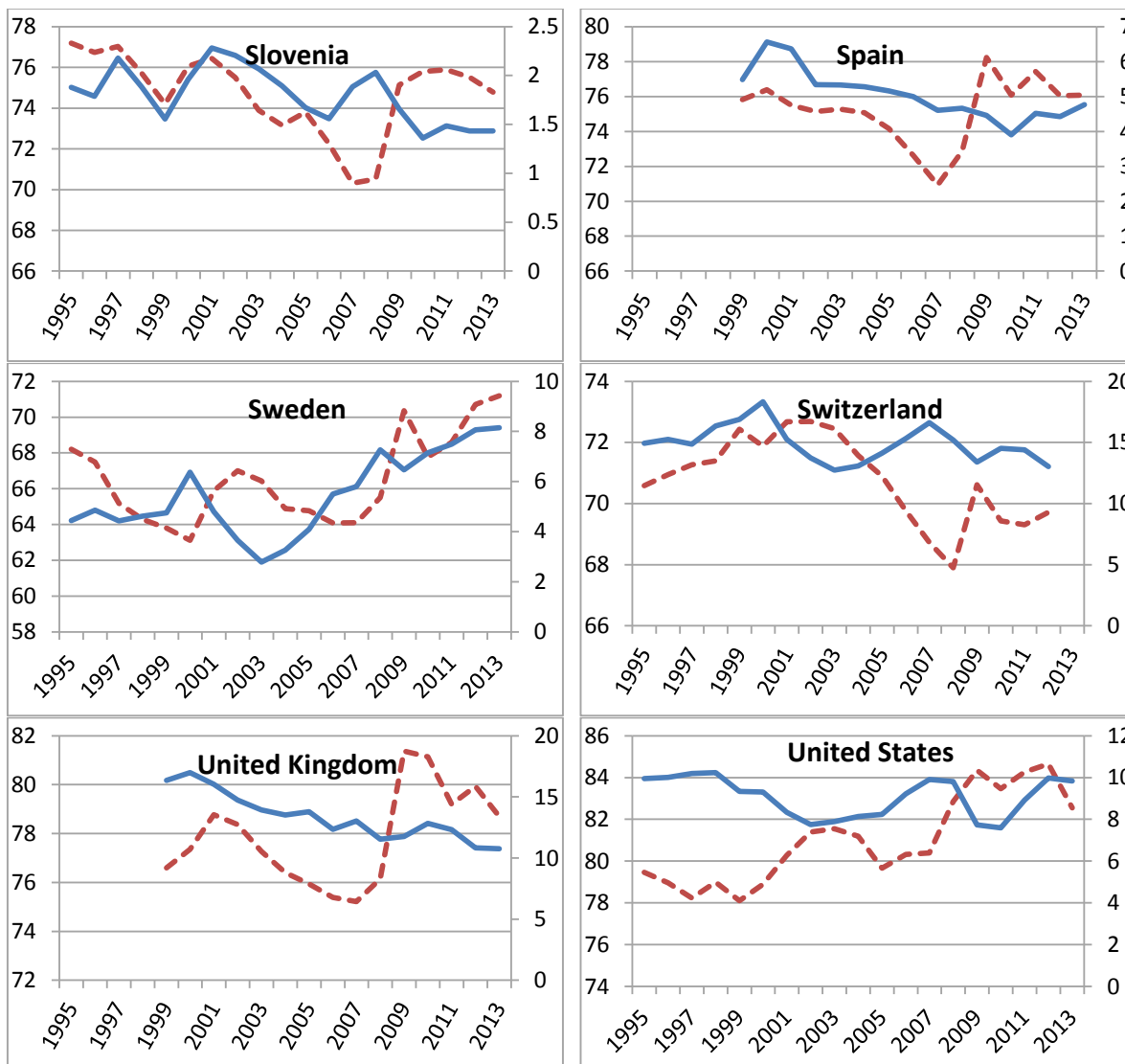


Figure B4. Comparison of the net transfers to the household sector and ratio of adjusted household gross disposable income to GDP.

Note that scales are different for each axis and each country.

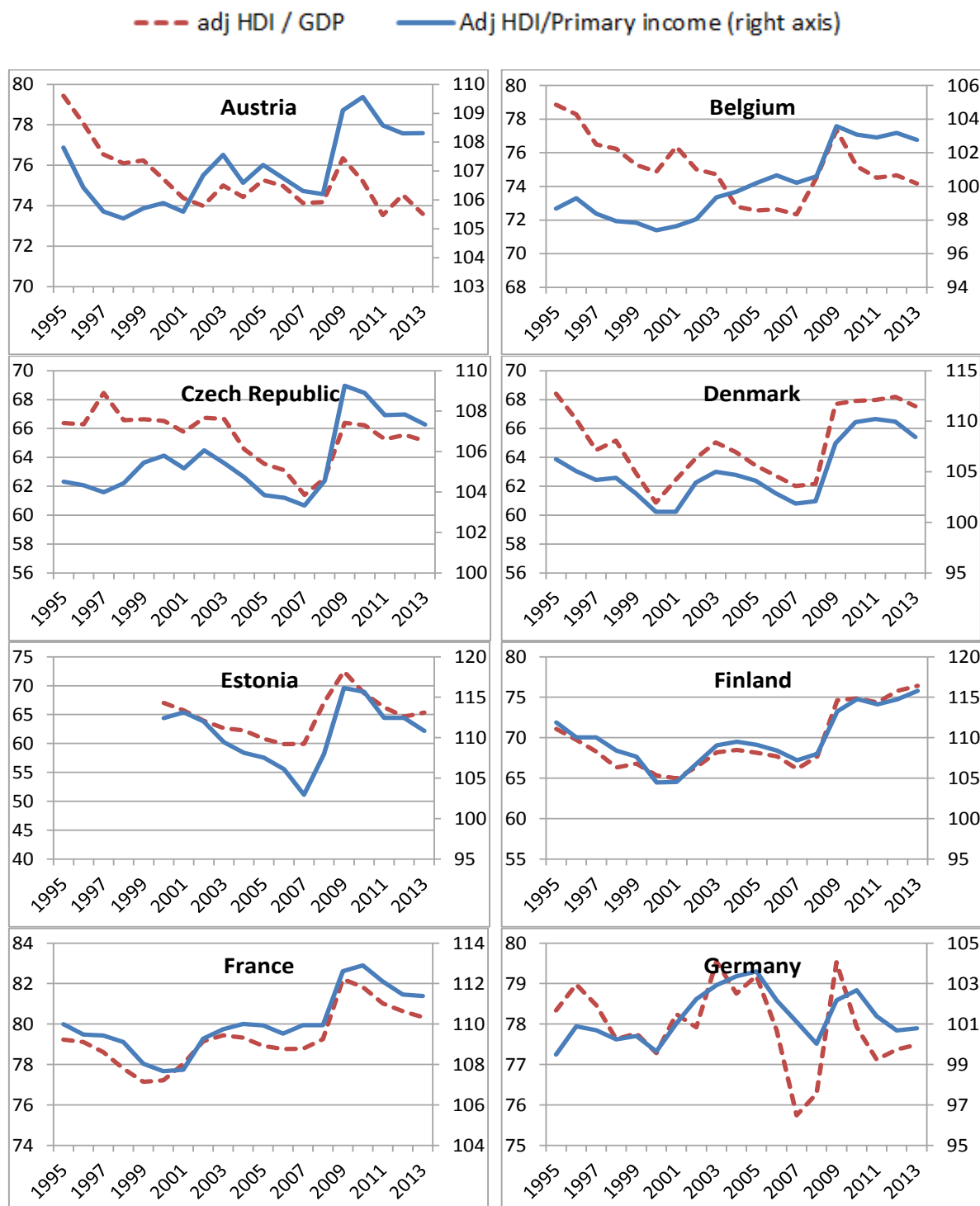


Figure B4. Comparison of the Adj.HDI/Primary Income to Adj HDI/GDP (cont.)

Note that scales are different for each axis and each country.

--- adj HDI / GDP — Adj HDI/Primary income (right axis)

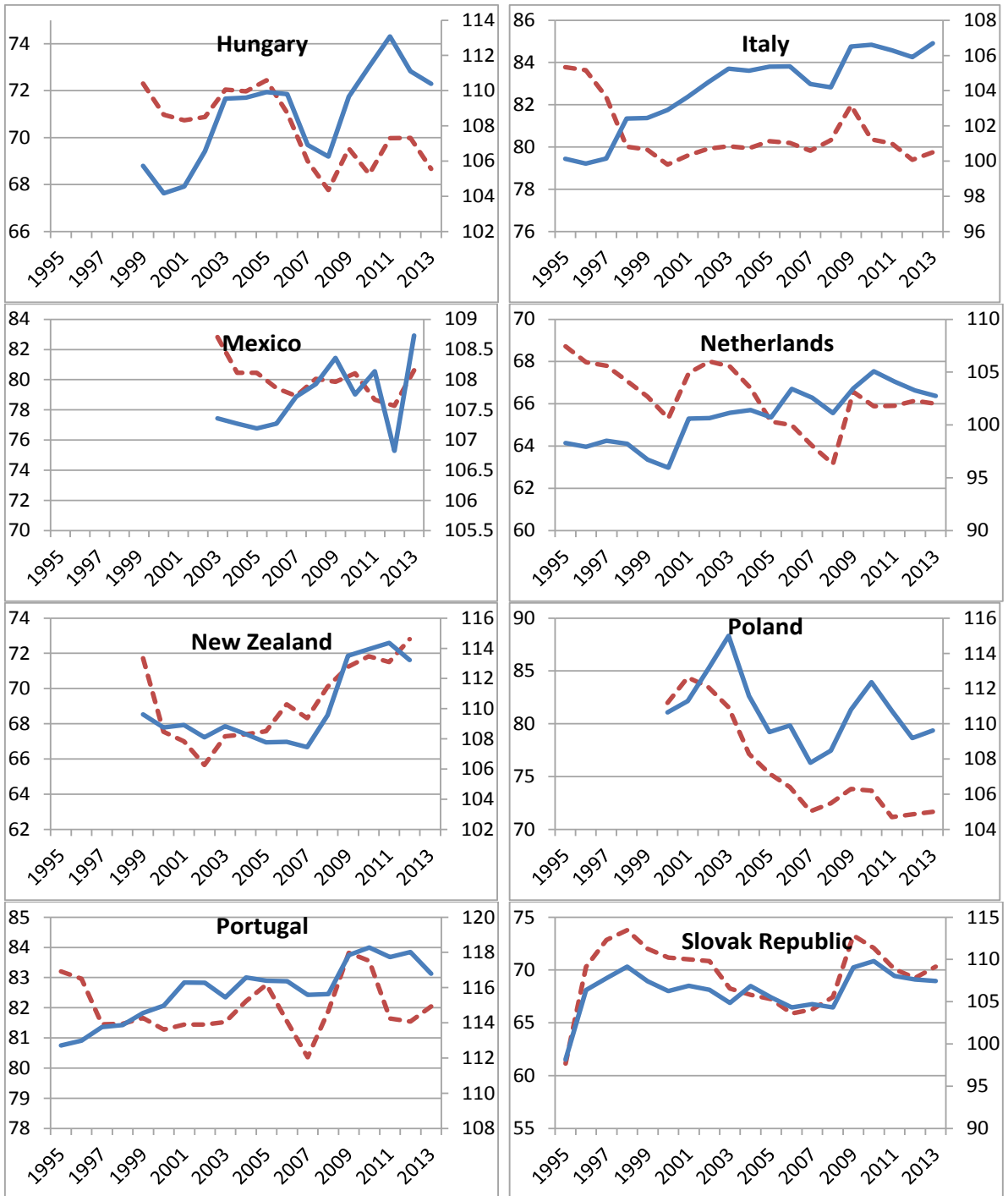
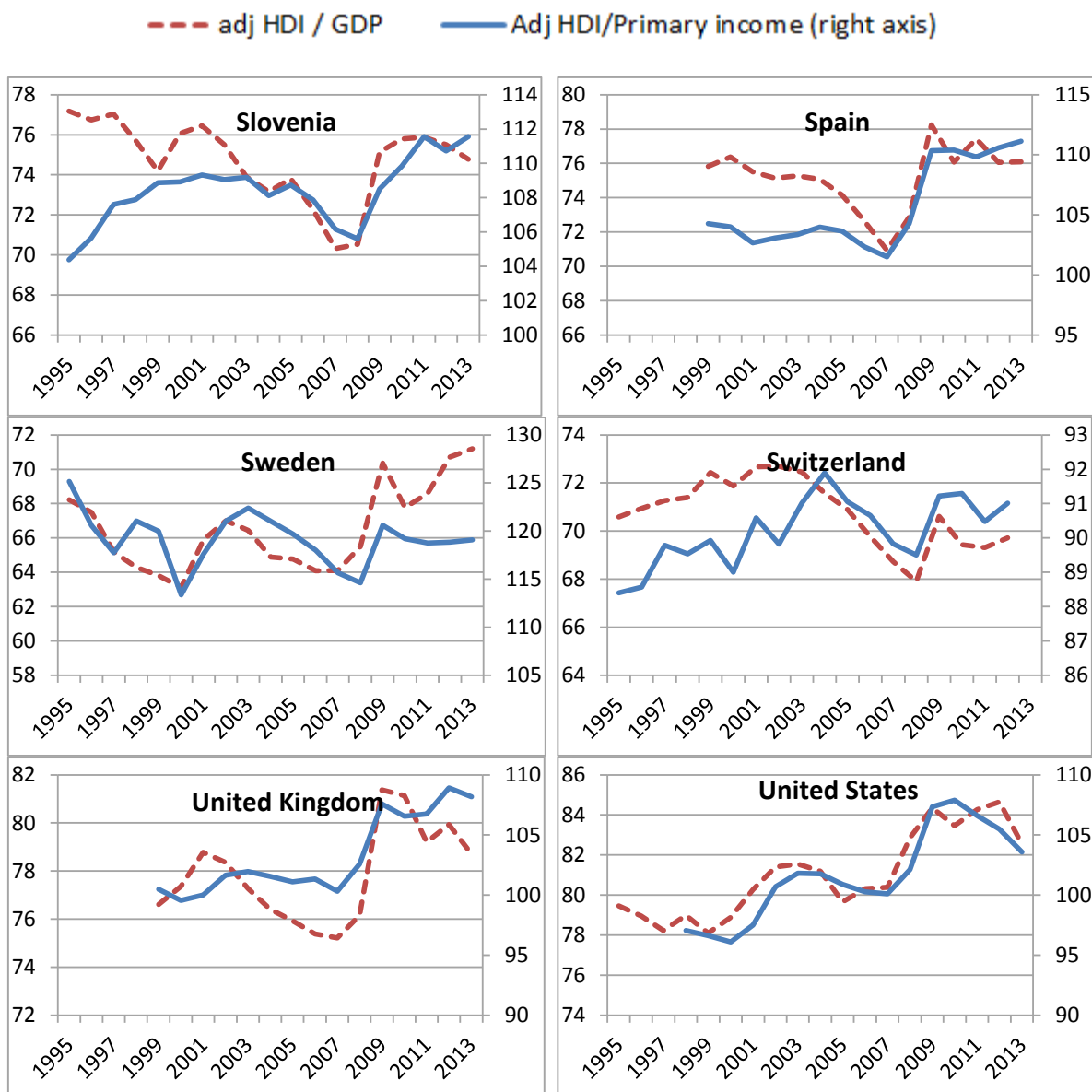


Figure B4. Comparison of the Adj.HDI/Primary Income to Adj HDI/GDP (cont.)

Note that scales are different for each axis and each country.



APPENDIX C. CORRELATION COEFFICIENTS OF INDICATORS

Coefficients of correlation compared to the ratio of adjusted HDI to GDP (1995-2013)

Appendix C. Correlation coefficients of indicators

Coefficients of correlation compared to the ratio of adjusted HDI to GDP (1995-2013)

	Compensation share in GVA of corporations	Net transfers to the household sector	GVA of households as a share of total GVA	Net Property Income / adj HDI
Austria	0.70	-0.09	0.77	-0.11
Belgium	0.75	-0.20	0.62	0.63
Czech Republic	0.55	0.32	0.61	0.40
Denmark	0.46	0.93	0.11	-0.09
Estonia *	0.81	0.85	-0.08	0.19
Finland	0.96	0.97	0.96	-0.70
France	0.86	0.96	-0.67	-0.78
Germany	0.37	0.51	0.27	-0.36
Hungary *	0.33	-0.14	0.66	0.54
Italy	0.03	-0.62	0.13	0.57
Mexico	0.83	0.05	0.57	-0.16
Netherlands	0.67	-0.34	0.30	0.76
New Zealand *	0.62	0.80	-0.48	-0.31
Poland	0.92	0.65	0.94	0.91
Portugal	-0.01	0.12	0.19	0.38
Slovak Republic	0.76	0.91	0.03	0.22
Slovenia	0.74	0.20	0.44	0.04
Spain *	-0.30	0.69	-0.22	0.03
Sweden	0.80	0.36	-0.48	0.51
Switzerland *	0.68	0.00	0.79	0.00
United Kingdom *	-0.04	0.75	0.54	-0.25
United States	-0.71	0.92	0.82	-0.36

Note: GVA is gross value added and HDI is gross household adjusted disposable income

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