wiiw Growth and Productivity Database

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1 Overview

This document summarises information on the data provided at www.euklems.eu on growth accounts and total factor productivity (TFP) growth. This follows the standard growth accounting framework as outlined in Chapter 2. Data are provided for the EU member states at the total economy and A*21 industry level. The coverage of underlying data, adjustments, and imputations are summarised in Chapter 3. To allow for a maximum coverage, contributions to growth of value added and labour productivity (hours based) three data sets are provided (see Chapter 2 for details):

1. *TFP growth and growth accounts based on growth rates of capital stocks and labour inputs in terms of hours worked and persons employed.* This approach allows to provide growth accounts for a large set of countries over a longer time period (1995-2023), as these calculations do not rely on information concerning detailed asset types or employment categories.

2. *TFP growth and growth accounts taking changes in capital composition (and therefore capital services) into account.* These data are provided for the period 1996-2023 at the total economy level and all countries, but – depending on data availability – only for selected countries at the industry level.

3. *TFP growth and growth accounts taking changes in capital and labour composition (and therefore labour services) into account.* Given data constraints, these accounts are provided for the period 2011-2023 for those countries[1] providing the necessary underlying data.[2]

In addition, shares for various asset types (ICT and Non-ICT, and tangible and intangible assets) based on user-costs of capital calculations are provided. This allows users to split growth contributions of capital services into these dimensions. Finally, selective descriptive charts at the total economy and industry level are presented in Part II.

[1] Austria and Ireland do not provide data on hourly wages in the EU SES microdata and therefore cannot be included.

[2] Labour services are calculated only differentiating between age and educational groups and therefore does not take gender differentiation into account. Gender wage differentials are often driven by discrimination rather than productivity aspects.

2 Growth decomposition and total factor productivity growth

In this section we summarize the approach to calculate total factor productivity growth and contributions to growth basically following the method as outlined in Jorgenson et al. (1987), Jorgenson et al. (2005), or Timmer et al. (2010).

2.1 Inputs for calculating growth accounts

2.1.1 Value added and productivity growth rates

Value added growth is calculated as log growth rate $\Delta \ln Y_t = \ln Y_t - \ln Y_{t-1}$, where Y_t denotes value added in chain-linked volumes at time t. Analogously, the log growth rate of persons employed is calculated as $\Delta \ln E_t = \ln E_t - \ln E_{t-1}$, and the log growth rate of hours worked is given by $\Delta \ln H_t = \ln H_t - \ln H_{t-1}$, respectively. Labour productivity growth (in terms of hours worked) is the difference between log value added and log hours worked growth, i.e. $\Delta \ln \mathrm{LPH}_t = \Delta \ln Y_t - \Delta \ln H_t$.[1]

2.1.2 Labour and capital income shares

The labour income share taking into account income of self-employed person is calculated as

$$s_{L,t} = \frac{1}{Y_{\mathrm{CP},t}} \cdot \mathrm{COMP}_t \cdot \frac{H_t}{H_{\mathrm{Employees},t}}$$

where Y_{CP} denotes value added in current prices, COMP denotes labour compensation in current prices, and $H_{\mathrm{Employees}}$ is the number of hours worked of employees.[2] In the case that $s_L > 1$, the shares are

[1] This can also be calculated from labour productivity levels given by $\mathrm{LPH}_t = Y_t / H_t$.

[2] This approximation implicitly assumes that self-employed persons get the same wage as employees as total labour income (including income of self-employed) is defined as

$$\mathrm{LAB}_t = \frac{\mathrm{COMP}_t}{H_t - H_{\mathrm{SelfEmpl},t}} \cdot H_{\mathrm{Employees},t} + \frac{\mathrm{COMP}_t}{H_t - H_{\mathrm{SelfEmpl},t}} \cdot H_{\mathrm{SelfEmpl},t}$$

from which above formula results.

set to the long-run average (by country and industry); in case $s_L > 1$ over the whole period, this is set to $s_L = 2/3$. The capital income share is by definition then given by $s_{K,t} = 1 - s_{L,t}$. .

2.1.3 Labour services

Using the employment shares by educational attainment and age groups for each industry combined with the hours worked at the industry level allows to calculate hours worked by labour type l in industry j denoted by $H_{l,j,t}$. Having also the hourly wages for these labour types $p_{L,l,j,t}$ allows to calculate the respective income shares of these labour groups by industry given by

$$v_{L,l,j,t} = \frac{p_{L,l,j,t} H_{l,j,t}}{\sum_l p_{L,l,j,t} H_{l,j,t}}$$

From this, labour services growth is calculated as

$$\Delta \ln L_{j,t} = \sum_l \bar{v}_{L,l,j,t} \Delta \ln H_{l,j,t} \qquad \text{with } \bar{v}_{l,j,t} = \tfrac{1}{2} \cdot (v_{L,l,j,t} + v_{L,l,j,t-1})$$

Labour services growth differ from hours worked growth as the change in labour composition (weighted by the income) shares is taken into account. The labour composition part of labour services growth is thus given by

$$\Delta \ln L_{c,j,t} = \Delta \ln L_{j,t} - \Delta \ln H_{j,t}$$

2.1.4 Capital services

The growth rate of capital services are derived in the following way. The user-costs of capital of asset type k in industry j are calculated as

$$p_{K,k,j,t} = p_{I,k,j,t-1} \cdot i_{j,t} + \delta_{k,j} \cdot p_{I,k,j,t} - (p_{I,k,j,t} - p_{I,k,j,t-1})$$

Here, $\delta_{k,j}$ denotes the depreciation rate of asset type k in industry j.[3] $p_{I,k,j,t}$ is the price index of gross fixed capital formation of asset type k in industry j. The nominal rate of return $i_{j,t}$ of industry j is given by

$$i_{j,t} = \frac{\mathrm{CAP}_{j,t} + \sum_l (p_{I,l,j,t} - p_{I,l,j,t-1}) \cdot K_{l,j,t} - \sum_l \delta_{l,j} p_{I,l,j,t} \cdot K_{l,j,t}}{\sum_l \delta_{l,j} \cdot p_{I,l,j,t-1} \cdot K_{l,j,t}}$$

where $\mathrm{CAP}_{j,t} = s_{K,t} \cdot Y_{\mathrm{CP},t} = Y_{\mathrm{CP},t} - \mathrm{LAB}_t$ is nominal capital income, $K_{l,j,t}$ is the capital stock of asset l in industry j in chain-linked volumes. In cases in which the user-costs of capital or the nominal rate turn negative, these are set to zero. These user-costs of capital are then used to calculate the cost shares of each asset by industry, i.e.

$$v_{K,k,j,t} = \frac{p_{K,k,j,t} \cdot K_{k,j,t}}{\sum_l p_{K,l,j,t} \cdot K_{l,j,t}}$$

[3] However, this is assumed to differ only across asset types and thus is not differentiated by industry.

which allows to calculate capital services growth as

$$\Delta \ln C_{j,t} = \sum_l \bar{v}_{K,l,j,t} \cdot \Delta \ln K_{l,t} \qquad \text{with } \bar{v}_{K,l,j,t} = \tfrac{1}{2} \cdot (v_{K,l,j,t} + v_{K,l,j,t-1})$$

The capital composition part of capital services growth in industry j is then given by

$$\Delta \ln K_{c,j,t} = \Delta \ln C_{j,t} - \Delta \ln K_{j,t}$$

2.2 Growth accounts

The growth accounts and decomposition are provided in three different ways depending on the details in underlying data (i.e. availability of capital data by asset type and detailed labour categories).[4]

2.2.1 TFP0: Decomposition based on capital stocks and hours worked

When considering only growth of capital stocks and hours worked (i.e. not the more sophisticated measures of labour or capital services as inputs) the growth of value added decomposition is given by

$$\Delta \ln Y_t = \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} \Delta \ln H_t$$

with $\bar{s}_{L,t} = \frac{1}{2} \cdot (s_{L,t} + s_{L,t+1})$ and $\bar{s}_{K,t} = 1 - \bar{s}_{L,t}$. The growth rate of TFP_0 is calculated as a residual. The contribution of the changes in the average hours worked per employee is taken into account by rewriting this equation as

$$\begin{aligned} \Delta \ln Y_t &= \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} \Delta \ln H_t - \bar{s}_{L,t} \Delta \ln E_t + \bar{s}_{L,t} \Delta \ln E_t \\ &= \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} (\Delta \ln H_t - \Delta \ln E_t) + \bar{s}_{L,t} \Delta \ln E_t \end{aligned}$$

which results in the decomposition

$$\Delta \ln Y_t = \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} \Delta \ln H_{\mathrm{avg},t} + \bar{s}_{L,t} \Delta \ln E_t \tag{2.1}$$

This is the first decomposition provided in the data with the largest coverage across countries, industries, and years.

2.2.2 TFP1: Growth contributions taking capital services growth into account

In a second step capital services growth is considered resulting in the decomposition

$$\Delta \ln Y_t = \Delta \ln \mathrm{TFP}_{1,t} + \underbrace{\bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{K,t} \Delta \ln K_{c,t}}_{= \bar{s}_{K,t} \Delta \ln C_t} + \bar{s}_{L,t} \Delta \ln H_{\mathrm{avg},t} + \bar{s}_{L,t} \Delta \ln E_t \tag{2.2}$$

[4] In the following outline we omit the industry subscript for simplicity.

This changes the total factor productivity growth rate as the weighted share of capital composition growth is taken out, thus $\Delta \ln \mathrm{TFP}_{1,t} = \Delta \ln \mathrm{TFP}_{0,t} - \bar{s}_{K,t} \Delta \ln K_{c,t}$. This constitutes the second decomposition provided in the data.

2.2.3 TFP2: Growth composition taking capital and labour services growth into account

Analogously the change in labour labour services growth can be considered resulting in

$$\Delta \ln Y_t = \Delta \ln \mathrm{TFP}_{2,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{K,t} \Delta \ln K_{c,t} + \underbrace{\bar{s}_{L,t} \Delta \ln H_{avg,t} + \bar{s}_{L,t} \Delta \ln E_t + \bar{s}_{L,t} \Delta \ln L_{c,t}}_{= \bar{s}_{L,t} \Delta \ln L_t} \quad (2.3)$$

where $\Delta \ln L_{c,t} = (\Delta \ln L_t - \Delta \ln H_t)$. This further changes the growth rate of total factor productivity. Specifically, it holds that

$$\Delta \ln \mathrm{TFP}_{2,t} = \Delta \ln \mathrm{TFP}_{1,t} - \bar{s}_{L,t} \Delta \ln L_{c,t} = \Delta \ln \mathrm{TFP}_{0,t} - \bar{s}_{K,t} \Delta \ln K_{c,t} - \bar{s}_{L,t} \Delta \ln L_{c,t}.$$

This is the third value added growth decomposition provided in the data.

2.2.4 Contributions to labour productivity growth (hours worked)

The contributions to labour productivity growth (based on hours worked) can be derived by subtracting the growth rate of hours worked from both sides and rearranging the equation:

$$\begin{aligned} \Delta \ln Y_t - \Delta \ln H_t &= \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} \Delta \ln H_{avg} + \bar{s}_{L,t} \Delta \ln E_t - \Delta \ln H_t \\ &= \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} \Delta \ln K_t + \bar{s}_{L,t} \Delta \ln H_{avg} + \bar{s}_{L,t} \Delta \ln E_t - \bar{s}_{K,t} \Delta \ln H - \bar{s}_{L,t} \Delta \ln H_t \end{aligned}$$

resulting in

$$\Delta \ln Y_t - \Delta \ln H_t = \Delta \ln \mathrm{TFP}_{0,t} + \bar{s}_{K,t} (\Delta \ln K_t - \Delta \ln H_t) \quad (2.4)$$

i.e. labour productivity growth (hours work based) depends on total factor productivity growth and capital-deepening (i.e. the change in the capital-labour ratio in terms of hours worked). Analogous expressions can be derived for the other two decompositions in equations (2.2) and (2.3). (In these cases, capital-deepening might also be expressed in terms of capital services.) Note, that total factor productivity growth is unchanged and thus is the same for value added and labour productivity growth.

2.2.5 Additional dimensions

Using these decompositions contributions of various aggregates can be easily calculated from the data:

1. Contribution of hours worked growth:

$$\bar{s}_{L,t} \Delta \ln H_t = \bar{s}_{L,t} \Delta \ln E_t + \bar{s}_{L,t} \Delta \ln H_{\mathrm{avg},t}$$

2. Contribution of labour services growth:

$$\bar{s}_{L,t}\Delta \ln L_t = \bar{s}_{L,t}\Delta \ln E_t + \bar{s}_{L,t}\Delta \ln H_{\text{avg},t} + \bar{s}_{L,t}\Delta \ln L_{c,t}$$

3. Contribution of capital services growth:

$$\bar{s}_{K,t}\Delta \ln C_t = \bar{s}_{K,t}\Delta \ln K_t + \bar{s}_{K,t}\Delta \ln K_{c,t}$$

4. Capital-deepening in terms of capital services growth:

$$\bar{s}_{K,t}(\Delta \ln C_t - \Delta \ln H_t) = \bar{s}_{K,t}(\Delta \ln K_t - \Delta \ln H_t) + \bar{s}_{K,t}\Delta \ln K_{c,t}$$

3 Data

In this section we summarise the information underlying the data on productivity indicators and growth contributions provided in the database. Data have been downloaded from Eurostat on November 05, 2024.

3.1 Industry breakdown

The indicators and growth accounts in this database are provided at the NACE Rev. 2 1-digit industry classification (A*21) which is presented in Table 3.1. This is dictated by the availability of the underlying

Table 3.1: List of A*21 industries

Code	Description
A-U	Total economy
A	Agriculture, forestry and fishing
B	Mining and quarrying
C	Total manufacturing
D	Electricity, gas, steam and air conditioning supply
E	Water supply; sewerage; waste management and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transportation and storage
I	Accommodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific and technical activities
N	Administrative and support service activities
O	Public administration and defence; compulsory social security
P	Education
Q	Health and social work
R	Arts, entertainment and recreation
S	Other service activities
T	Activities of households as employers; undifferentiated goods - and services - producing activities of households for own use
U	Activities of extraterritorial organisations and bodies

Note: T and U not included in data, but in the aggregate A-U (Total economy).
Source: Eurostat.

data concerning detailed capital asset types by industry and detailed employment data as discussed below. Specifically, the data include the total economy (industries A-U) and 19 1-digit industries (no data are provided for industries T and U.

3.2 Value added and labour

Data are taken from Eurostat using series *nama_10_a64* for value added in current prices and in chain-linked volumes, and compensation in current prices.[1] For employment data the series *nama_10_a64_e* for the number of persons employed and hours worked is used. Data are generally available over the period 1995-2023 with a few countries reporting data only until 2022 or start in year 2000. Table 3.2 provides an overview over data availability for at the total economy and A*21 industry level.

Table 3.2: Availability of value added and employment data

	Value added		Employment	
Country	Total economy	A*21	Total economy	A*21
AT	✓	✓	✓	✓
BE	✓	✓	✓	✓
BG	1995-2022	1995-2022	✓	✓
CY	✓	✓	✓	✓
CZ	✓	✓	✓	✓
DE	✓	✓	✓	✓
DK	✓	✓	✓	✓
EE	✓	✓	✓	✓
EL	✓	✓	✓	✓
ES	✓	✓	✓	✓
FI	✓	✓	✓	✓
FR	✓	✓	✓	✓
HR	✓	✓	✓	✓
HU	✓	✓	✓	✓
IE	✓	✓	✓	✓
IT	✓	✓	✓	✓
LT	✓	✓	✓	✓
LU	1995-2022	1995-2022	1995-2022	1995-2022
LV	✓	✓	✓	✓
MT*	2000-2023	2000-2023	2000-2023	2000-2023
NL	✓	✓	✓	✓
PL	✓	✓	✓	✓
PT*	✓	1995-2022/2023	✓	1995-2022/2023
RO	✓	✓	✓	✓
SE	✓	✓	✓	✓
SI	✓	✓	✓	✓
SK	✓	✓	✓	✓

Notes: * MT: data for VA cp and Comp for years 1995-2023; B and D are not available.
* PT: For B, D, E, G, H, I, M, N, O, P, Q, R, S data until 2022.
✓... 1995-2023
Source: Eurostat, own elaboration.

[1] Data in NCU are used; the series in chain-linked volumes are calculated using the data in current and previous year prices.

3.3 Capital stocks and gross fixed capital formation

For net capital stocks the series *nama_10_nfa_st* and for gross fixed capital formation (GFCF) the series *nama_10_nfa_fl* is used. Data in chain-linked volumes are calculated from the data in current and previous year replacement costs. Table 3.3 provides a list of the available asset types.[2] For calculation of capital services the detailed assets marked by * are used. Asset type N117X is calculated as residual.[3] For this asset category the price index of asset type N117 is applied.

Table 3.3: List of capital asset types

Code	Description	
N11	Total fixed assets	
... N11K	... Total Construction	
... ... N111	... ... Dwellings	*
... ... N112	... ... Other buildings and structures	*
...N11M	... Machinery and equipment and weapons systems	
... ... N1131	... ... Transport equipment	*
... ... N1132	... ... ICT equipment	
... ... N11321	... ... Computer hardware	*
... ... N11322	... ... Telecommunications equipment	*
... ... N11O	... ... Other machinery and equipment and weapons systems	*
... N115	... Cultivated biological resources	*
... N117	... Intellectual property products	
... ... N1171	... ... Research and development	*
... ... N1173	... ... Computer software and databases	*
... ... N117X(1)	... ... Other intellectual property products	*

Note: (1) Calculated as N117N - (N1171N + N1173N).
Source: Eurostat, own elaboration.

Various adjustments are made to make the coverage as comprehensive and consistent as possible. First, missing GFCF price indexes at the industry level by asset type are replaced with total economy GFCF price index by asset type. Second, in case the time series of GFCF is longer than the series for stocks, the series have been completed using the PIM method. In some cases, the time series for stocks starts later than that for GFCF in which case backward PIM is applied.[4] Third, some countries report an entry in one year only which has been set to missing. Fourth, in some cases stocks are reported, but not data on GFCF. In this case the PIM formula is used to construct flows. Fifth, in case of no data over the whole period these are set to 0. Sixth, in some cases country specific adjustments have to be made. A couple of countries do not report detailed asset types at the industry level and are set to missing. These countries

[2]The transmission program requires that – according to Table 20 – all asset types except for total construction and research and development must be delivered at the total economy level. However, all countries deliver R&D stocks at the total economy level. At the A*21 industry level only assets N111, N112, N11M, N1131, and N115 are compulsory; thus, not even total stocks by industry are compulsory. Nonetheless, all countries deliver total stocks by A*21 industries, many countries also provide all detailed assets.

[3]Note that this is not an official code.

[4]The PIM equation is $K_{t+1} = K_t(1-\delta) + J_t$ where K denotes the capital stock, δ the depreciation rate, and J is gross fixed capital formation.

are BG, CY, DE, DK, ES, HR, HU, IE, MT, PL, PT, and RO.[5] These adjustments result in a coverage of data as reported in Table 3.4.

Table 3.4: Availability of capital stock and GFCF data

	Total economy		A*21	
Country	Total (N11)	Detailed asset types	Total (N11)	Detailed asset types
AT	✓	✓	✓	✓
BE	✓	✓	✓	✓
BG	1995-2021	1995-2021		
CY	1995-2021	2015-2021		
CZ	✓	✓	✓	✓
DE	✓	✓	✓	
DK	1995-2022	1995-2022	1995-2023	
EE	✓	✓	✓	✓
EL	✓	✓	✓	✓
ES	1995-2021	1995-2021	1995-2021	
FI	✓	✓	✓	✓
FR	✓	✓	✓	✓
HR	✓	✓		
HU	✓	✓	✓	
IE	✓	✓	✓	
IT	1995-2022	1995-2022	1995-2022	1995-2022
LT	✓	✓	✓	✓
LU	1995-2021	1995-2021	1995-2021	1995-2021
LV	1995-2022	1995-2022	1995-2022	1995-2022
MT	2000-2023	2000-2023	2001-2023	
NL	1995-2022	1995-2022	1995-2022	1995-2022
PL	2000-2021	2000-2021	2000-2021	
PT	2000-2022	2000-2022		
RO	2000-2022	2000-2022	2000-2022	
SE	✓	✓	✓	✓
SI	1995-2022	1995-2022	1995-2022	1995-2022
SK	2000-2022	2000-2022	2000-2022	2000-2022

Notes: ✓... 1995-2023
Source: Eurostat, own elaboration.

BG, CY, HR, and PT not even provide data for capital stocks and the industry level. DE, DK, ES, HU, IE, MT, PL, PT and RO do not provide data by industry and detailed asset types which are required to calculate capital services.

3.4 Detailed employment data

Finally, data on employment and wages by educational attainment (ISCED 0-2, ISCED 3-4, and ISCED 5-8) and age (15-19, 20-24, ..., 60-64, 65+) are taken from the EU Labour Force Survey (EU LFS) and the European Structure of Earnings Survey (EU SES), respectively. The EU LFS data are available from

[5] In IE the stock of asset N1171 (Research and development) at the total economy level increased by a factor 8.5 from 2014 to 2015 in the official data.

Table 3.5: Availability of detailed employment and wage data

	LFS		SES	
Country	Total	A21	Total	A21
AT	✓	✓		
BE	✓	✓	✓	✓
BG	✓	✓	✓	✓
CY	✓	✓	✓	✓
CZ	✓	✓	✓	✓
DE	✓	✓	✓	✓
DK	✓	✓	✓	✓
EE	✓	✓	✓	✓
EL	✓	✓	✓	✓
ES	✓	✓	✓	✓
FI	✓	✓	✓	✓
FR	✓	✓	✓	✓
HR	✓	✓	✓	✓
HU	✓	✓	✓	✓
IE	✓	✓		
IT	✓	✓	✓	✓
LT	✓	✓	✓	✓
LU	✓	✓	✓	✓
LV	✓	✓	✓	✓
MT	✓	✓	✓	✓
NL	✓	✓	✓	✓
PL	✓	✓	✓	✓
PT	✓	✓	✓	✓
RO	✓	✓	✓	✓
SE	✓	✓	✓	✓
SI	✓	✓	✓	✓
SK	✓	✓	✓	✓

Notes: ✓... 2011-2023
Source: EU LFS, EU SES, own elaboration.

2011 to 2022; data for 2023 are calculated using trend changes. Using these data hours worked from the National Accounts are split by educational attainment and age categories.[6] To calculate the nominal labour cost shares these are multiplied by the hourly wages derived from the EU SES data. Industries not covered by the EU SES (e.g. agriculture) are approximated with the wage rates at the total economy level. These are available for the years 2014 and 2018 which are inter- and extrapolated based on trends to cover the period 2011-2023 consistent with the EU LFS data. Applying these imputations detailed labour and wage data are available for all countries except AT and IE (see Table 3.5) which do not provide these data in the EU SES microdata.

[6]The EU LFS data provide this breakdown at the level of persons employed; these shares are applied to the hours worked.

3.5 Description of provided data

In the data we therefore provide the indicators and growth contributions for value added growth as listed in Table 3.6 and labour productivity per hour worked growth as listed in Table 3.7. These correspond to equations (2.1) to (2.3) and (2.4) (and correspondingly to the more detailed LPH growth decompositions) above. The availability of these – given the coverage of the underlying data – is presented in Table 3.8.

Table 3.6: Value added growth decomposition

Dataset	Variable	Description	
TFP0	VA_0	Value added	$\Delta \ln Y_t =$
	VA_1	Persons employed	$\bar{s}_{L,t}\Delta \ln E_t$
	VA_2	Average hours worked	$+\bar{s}_{L,t}\Delta \ln H_{\text{avg},t}$
	VA_3	Capital stock	$+\bar{s}_{K,t}\Delta \ln K_t$
	VA_4	TFP0	$+\Delta \ln \text{TFP}_{0,t}$
TFP1	VA_0	Value added	$\Delta \ln Y_t =$
	VA_1	Persons employed	$\bar{s}_{L,t}\Delta \ln E_t$
	VA_2	Average hours worked	$+\bar{s}_{L,t}\Delta \ln H_{\text{avg},t}$
	VA_3	Capital stock	$+\bar{s}_{K,t}\Delta \ln K_t$
	VA_4	Capital composition	$+\bar{s}_{K,t}\Delta \ln K_{c,t}$
	VA_5	TFP1	$+\Delta \ln \text{TFP}_{1,t}$
TFP2	VA_0	Value added	$\Delta \ln Y_t =$
	VA_1	Persons employed	$\bar{s}_{L,t}\Delta \ln E_t$
	VA_2	Average hours worked	$+\bar{s}_{L,t}\Delta \ln H_{\text{avg},t}$
	VA_3	Labour composition	$+\bar{s}_{L,t}\Delta \ln L_{c,t}$
	VA_4	Capital stock	$+\bar{s}_{K,t}\Delta \ln K_t$
	VA_5	Capital composition	$+\bar{s}_{K,t}\Delta \ln K_{c,t}$
	VA_6	TFP2	$+\Delta \ln \text{TFP}_{2,t}$

Source: Own elaboration.

Table 3.7: Labour productivity per hour worked growth decomposition

Dataset	Variable	Description	
LPH0	LPH_0	Labour productivity	$\Delta \ln \text{LPH}_t =$
	LPH_1	Capital deepening	$\bar{s}_{K,t}(\Delta \ln K_t - \Delta \ln H_t)$
	LPH_2	TFP0	$+\Delta \ln \text{TFP}_{0,t}$
LPH1	LPH_0	Labour productivity	$\Delta \ln \text{LPH}_t =$
	LPH_1	Capital deepening	$\bar{s}_{K,t}(\Delta \ln K_t - \Delta \ln H_t)$
	LPH_2	Capital composition	$+\bar{s}_{K,t}\Delta \ln K_{c,t}$
	LPH_3	TFP1	$+\Delta \ln \text{TFP}_{1,t}$
LPH2	LPH_0	Labour productivity	$\Delta \ln \text{LPH}_t =$
	LPH_1	Labour composition	$\bar{s}_L\Delta \ln L_{c,t}$
	LPH_2	Capital deepening	$+\bar{s}_{K,t}(\Delta \ln K_t - \Delta \ln H_t)$
	LPH_3	Capital composition	$+\bar{s}_{K,t}\Delta \ln K_{c,t}$
	LPH_4	TFP2	$+\Delta \ln \text{TFP}_{2,t}$

Source: Own elaboration.

Table 3.8: Data coverage

	Total economy				A*21 industries			
	VA & LPH	TFP0	TFP1	TFP2	VA & LPH	TFP0	TFP1	TFP2
AT	1996-2023	1996-2023	1996-2023		1996-2023	1996-2023	1996-2023	
BE	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
BG	1996-2022	1996-2021	1996-2021	2012-2021	1996-2022			
CY	1996-2023	1996-2021	2017-2021	2017-2021	1996-2023			
CZ	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
DE	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023		
DK	1996-2023	1996-2022	1996-2022	2012-2022	1996-2023	1996-2022		
EE	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
EL	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
ES	1996-2023	1996-2021	1996-2021	2012-2021	1996-2023	1996-2021		
FI	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
FR	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
HR	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023			
HU	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023		
IE	1996-2023	1996-2023	1996-2023		1996-2023	1996-2023		
IT	1996-2023	1996-2022	1996-2022	2012-2022	1996-2023	1996-2022	1996-2022	2012-2022
LT	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
LU	1996-2022	1996-2021	1996-2021	2012-2021	1996-2022	1996-2021	1996-2021	2012-2021
LV	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
MT*	2001-2023	2001-2023	2001-2023	2012-2023	2001-2023	2001-2023		
NL	1996-2023	1996-2022	1996-2022	2012-2022	1996-2023	1996-2022	1996-2022	2012-2022
PL	1996-2023	2001-2021	2001-2021	2012-2021	1996-2023	2001-2021		
PT	1996-2023	2001-2022	2001-2022	2012-2022	1996-2023			
RO	1996-2023	2001-2022	2001-2022	2012-2022	1996-2023	2001-2022		
SE	1996-2023	1996-2023	1996-2023	2012-2023	1996-2023	1996-2023	1996-2023	2012-2023
SI	1996-2023	1996-2022	1996-2022	2012-2022	1996-2023	1996-2022	1996-2022	2012-2022
SK	1996-2023	2001-2022	2001-2022	2012-2022	1996-2023	2001-2022	2001-2022	2012-2022

Note: MT does not provide data for industries B and D.

Source: Own elaboration.

In addition, the time series on labour and capital income shares $\bar{s}_L$ and $\bar{s}_K$ are provided. Further the contribution of capital services can be split into various categories for which reason shares based on the user costs of capital are provided according to the following dimensions:

1. ICT and Non-ICT asset types:

   (a) Non-ICT: Dwellings (N111), Other buildings and structures (N112), Transport equipment (N1131), Other machinery and equipment (N11O), Cultivated biological resources (N115), Research and development (N1171), Other intellectual property products*

   (b) ICT: Computer hardware (N11321), Telecommunications equipment (N11322), Computer software and databases (N1173)

2. Tangibles and intangible asset types

   (a) Tangibles: Dwellings (N111), Other buildings and structures (N112), Transport equipment (N1131), Other machinery and equipment (N11O), Cultivated biological resources (N115), Computer hardware (N11321), Telecommunications equipment (N11322)

   (b) Intangibles: Research and development (N1171), Computer software and databases (N1173), Other intellectual property products (N117X)

Users can split the growth contributions of capital services applying these shares to split the capital share $\bar{s}_K$ into these dimensions.

References

Jorgenson, D. W., Gollop, F. M., & Fraumeni, B. M. (1987). *Productivity and U.S. economic growth.* Cambridge MA: Harvard University Press.

Jorgenson, D. W., Ho, M. S., & Stiroh, K. J. (2005). *Information technology and the American growth resurgence.* Cambridge, MA: The MIT Press.

Timmer, M. P., Inklaar, R., O'Mahony, M., & van Ark, B. (2010). *Economic growth in Europe. A comparative industry perspective.* Cambridge: Cambridge University Press.

Part II

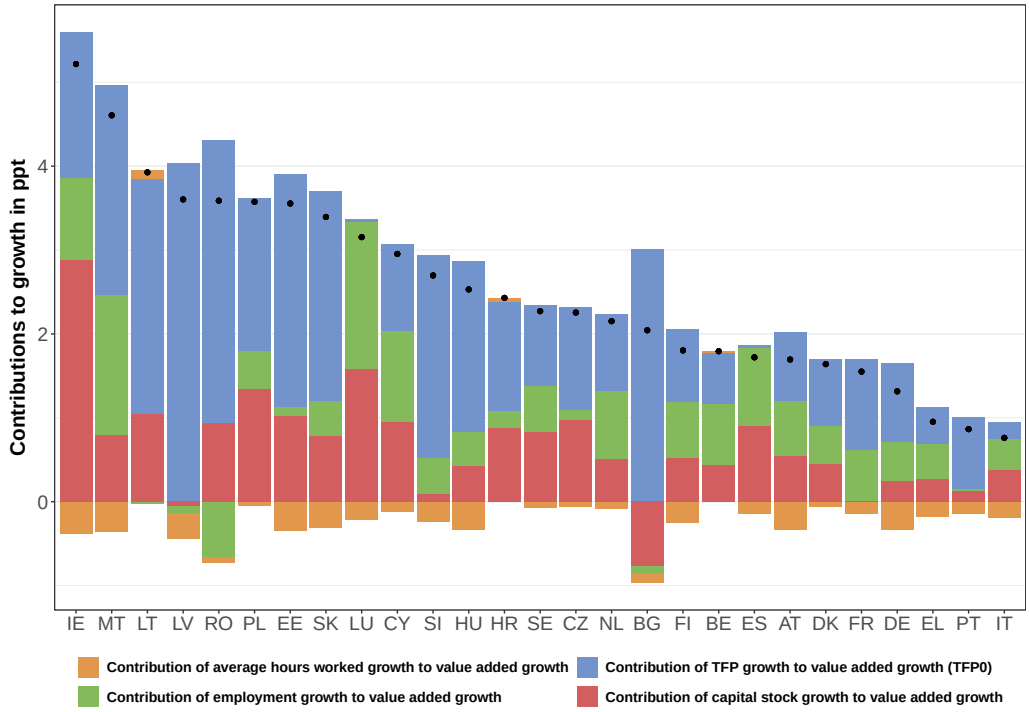
Descriptive results (selected charts)

List of Figures

4 Total economy

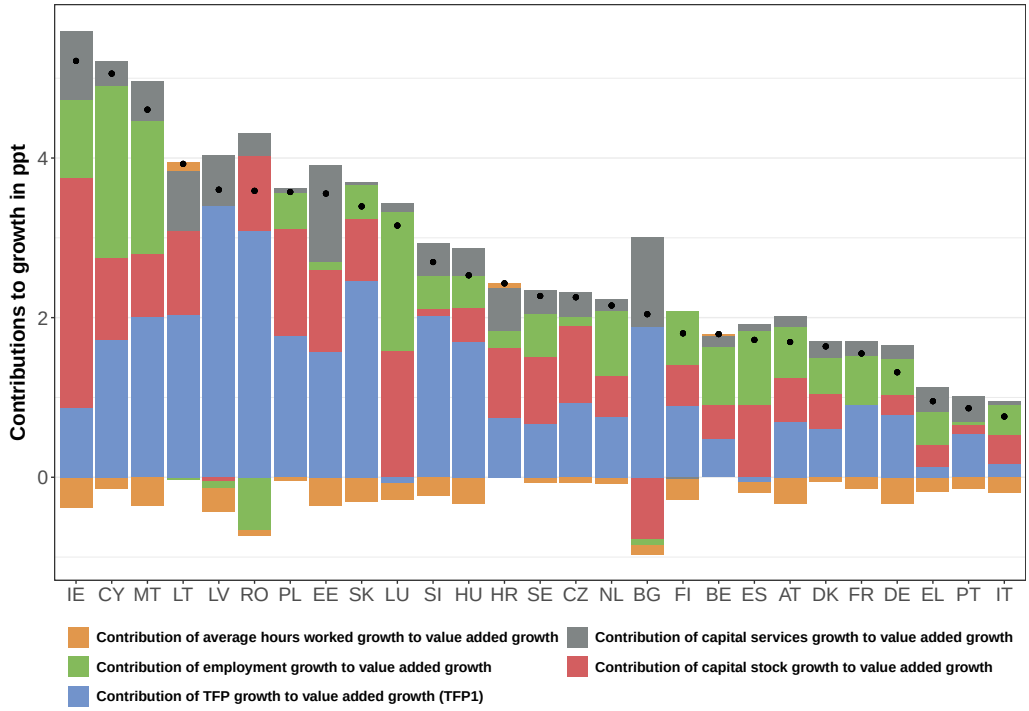
4.1 Growth contributions

Figure 4.1: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

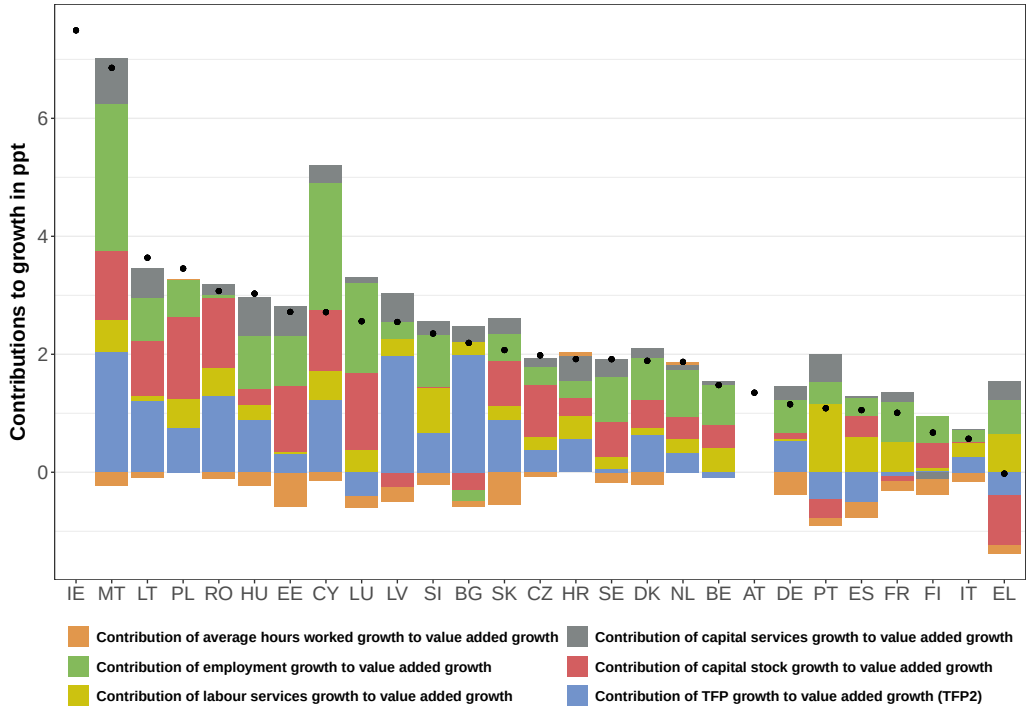
Figure 4.2: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 4.3: Contributions to value added growth (TFP2), 2011-recent*

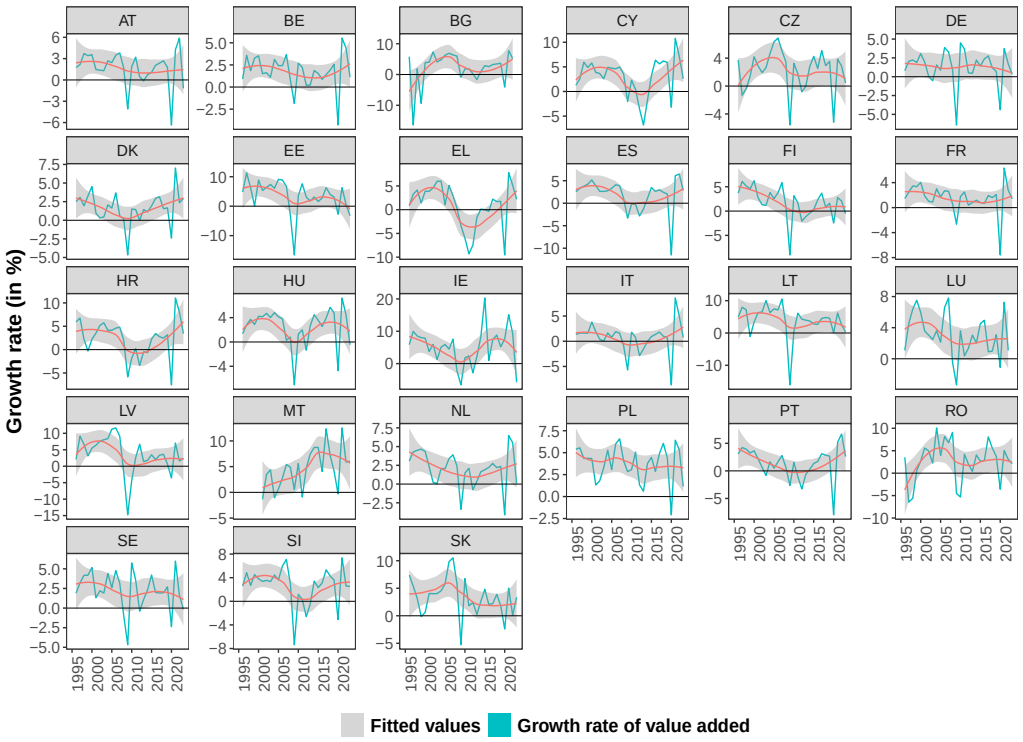


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

4.2 Value added and input growth

Figure 4.4: Value added growth

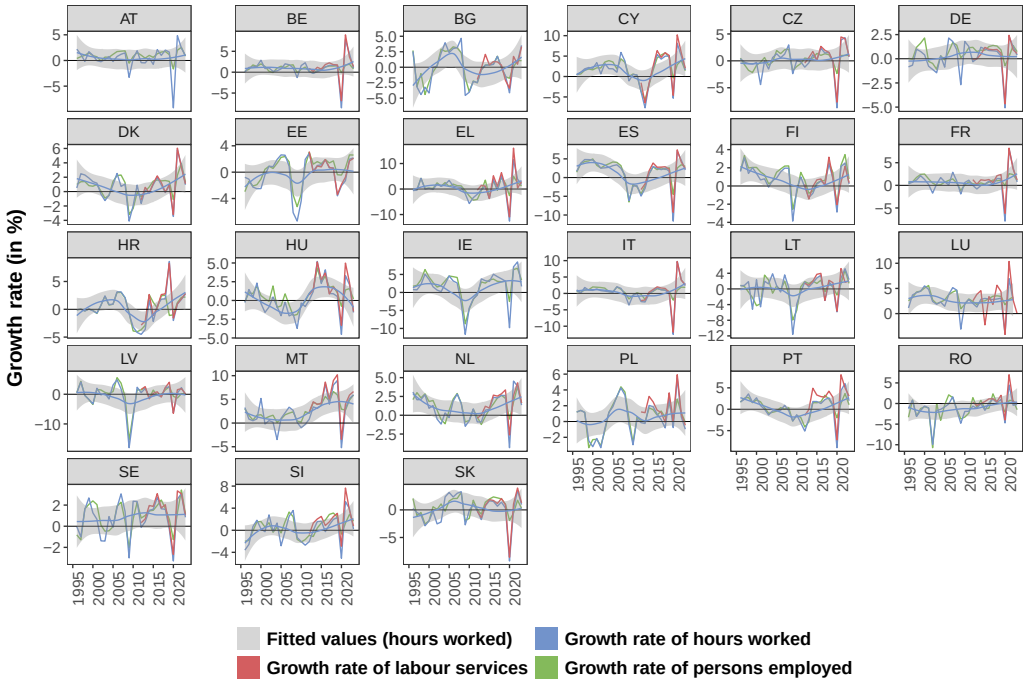


Source: National Accounts, own calculations.

Figure 4.5: Labour income shares

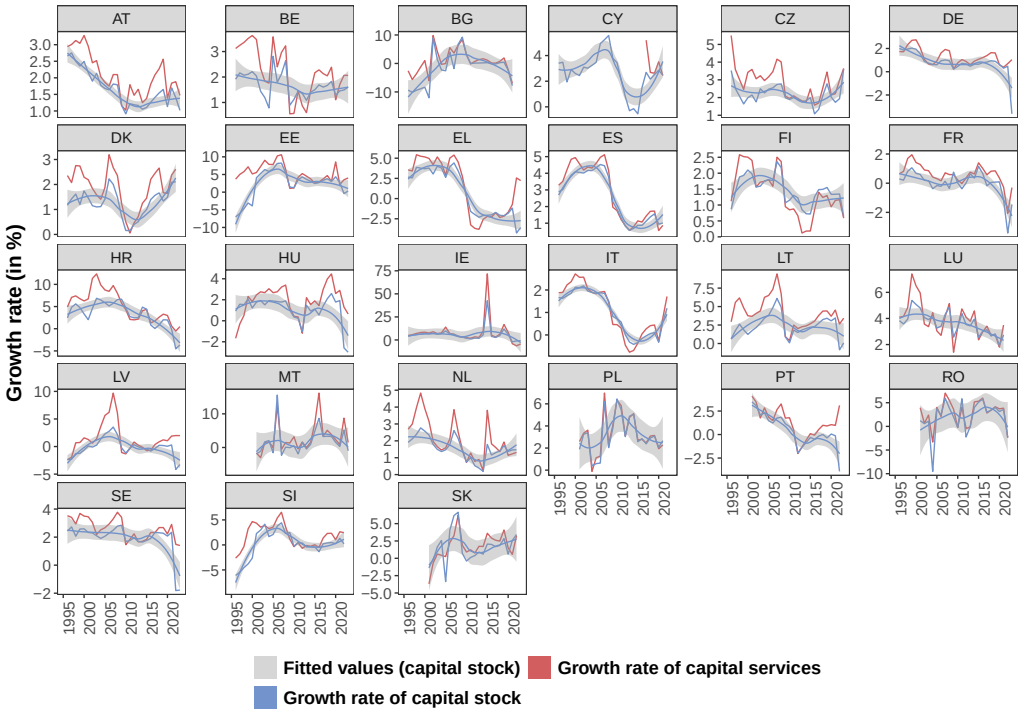
Source: National Accounts, own calculations.

Figure 4.6: Labour input growth



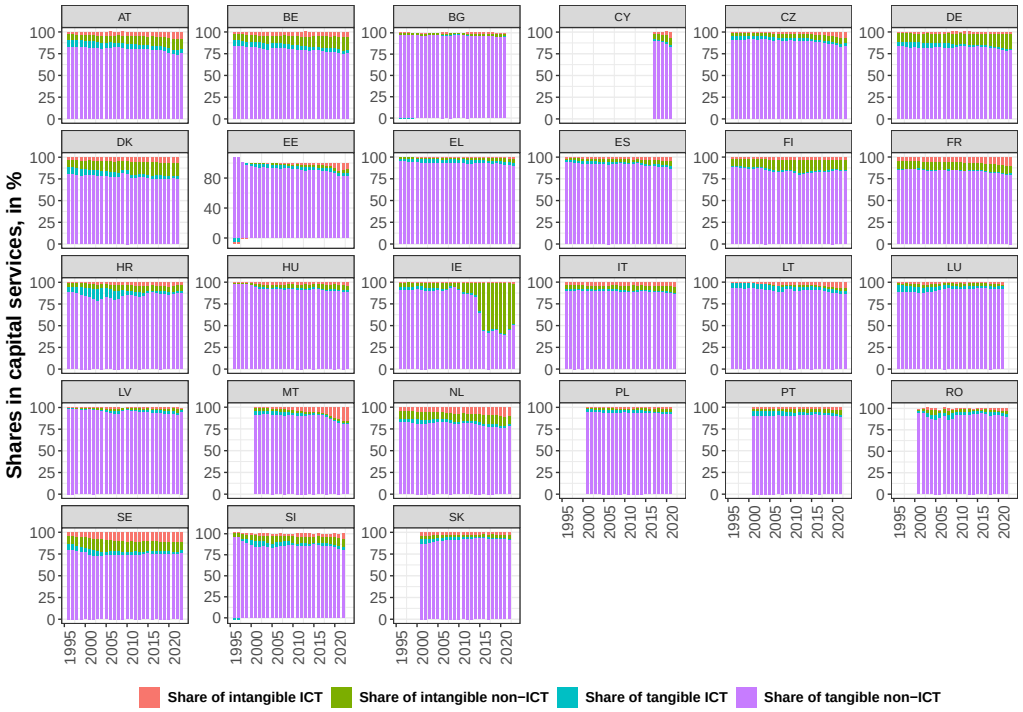
Source: National Accounts, own calculations.

Figure 4.7: Capital input growth



Source: National Accounts, own calculations.

Figure 4.8: Shares of asset types

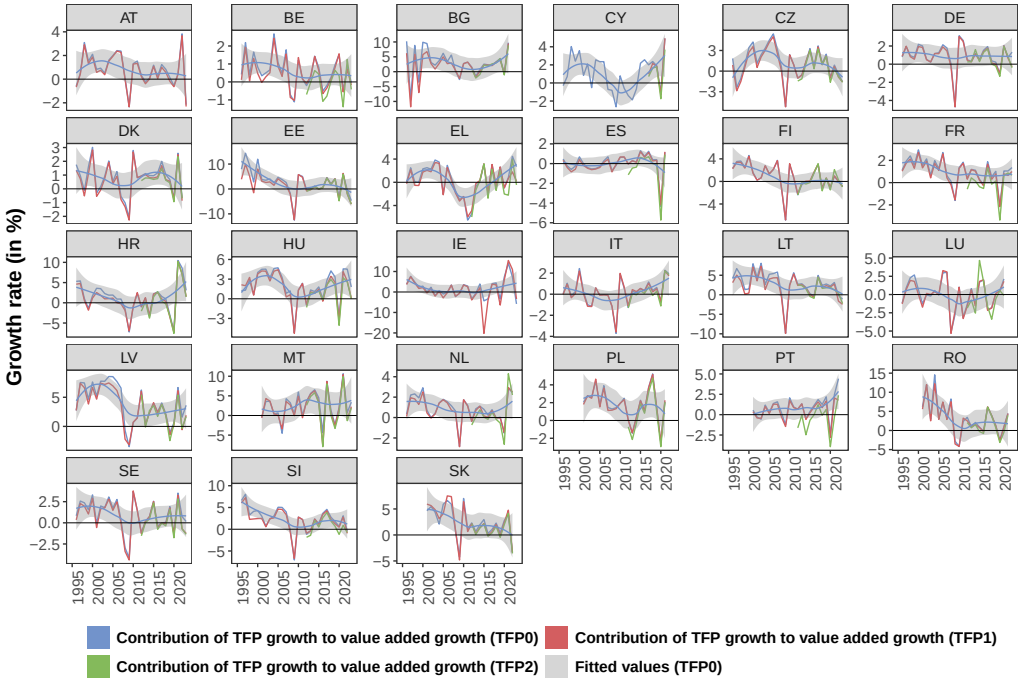


Source: National Accounts, own calculations.

4.3 Productivity indicators

4.3.1 TFP growth

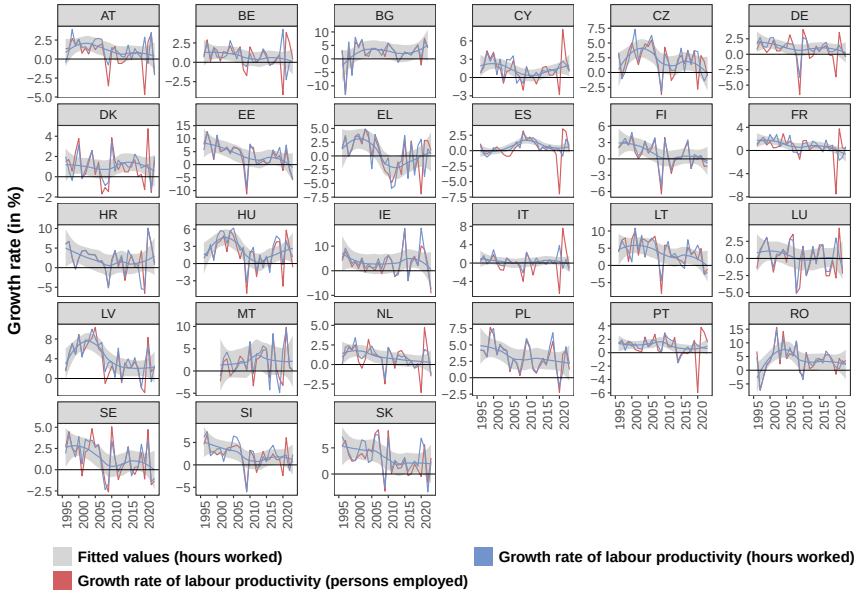
Figure 4.9: TFP growth



Source: National Accounts, EU LFS, EU SES, own calculations.

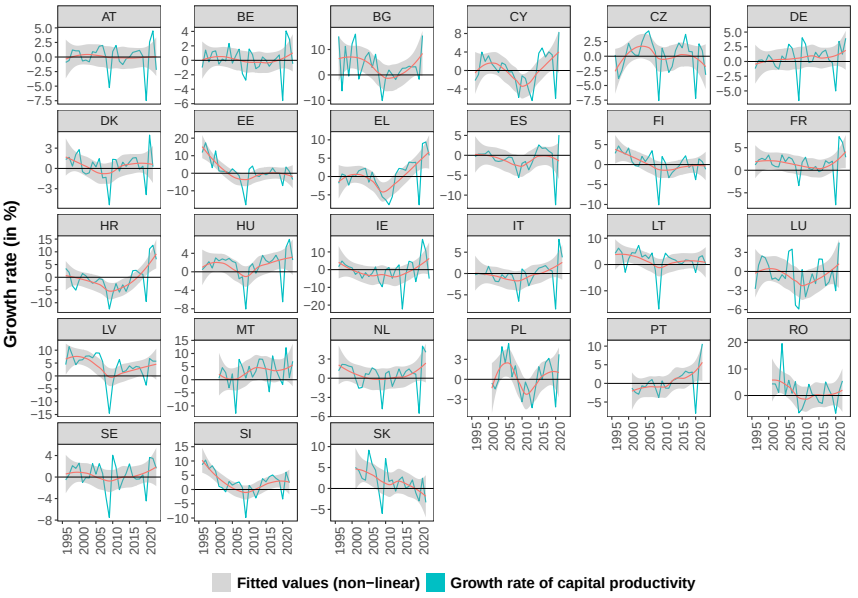
4.3.2 Labour and capital productivity

Figure 4.10: Labour productivity



Source: National Accounts, own calculations.

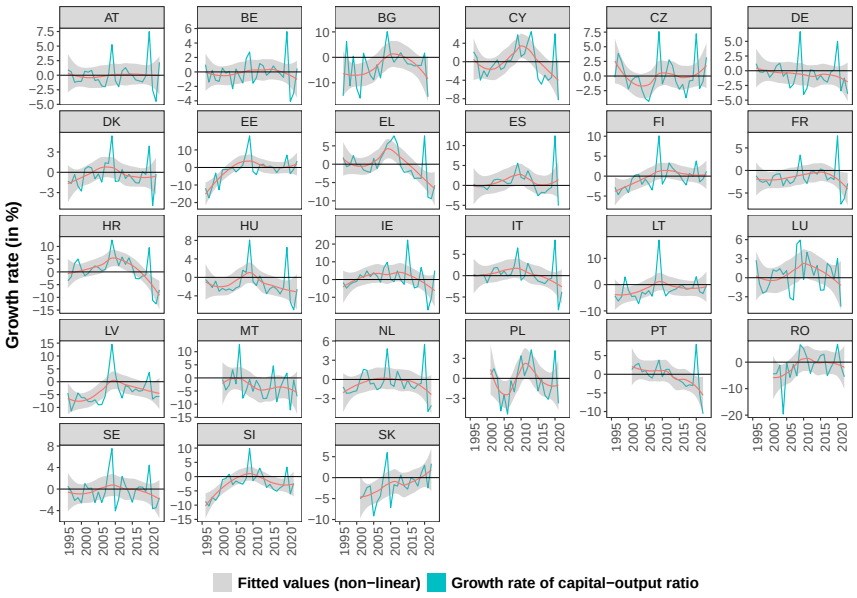
Figure 4.11: Capital productivity



Source: National Accounts, own calculations.

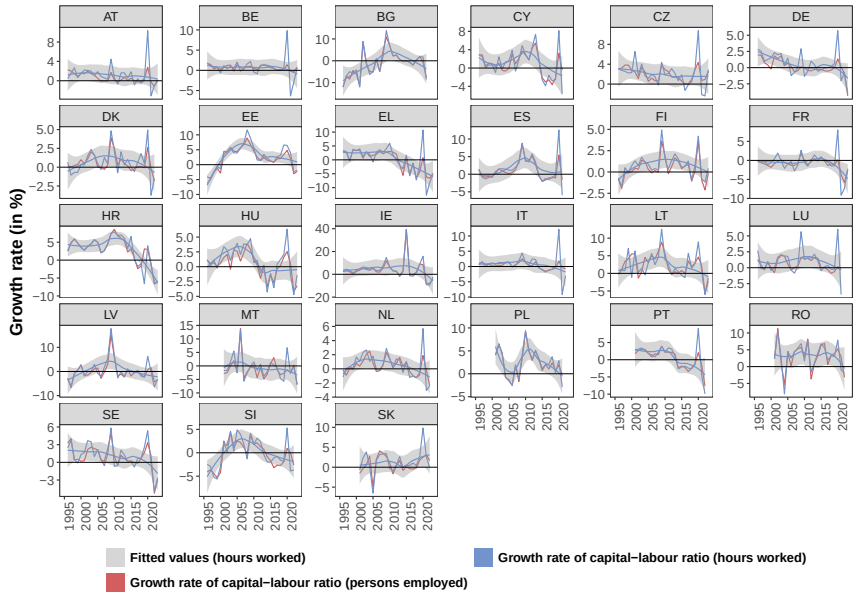
4.3.3 Capital-output ratios and capital deepening

Figure 4.12: Capital-output ratio



Source: National Accounts, own calculations.

Figure 4.13: Capital-labour ratios (capital-deepening)

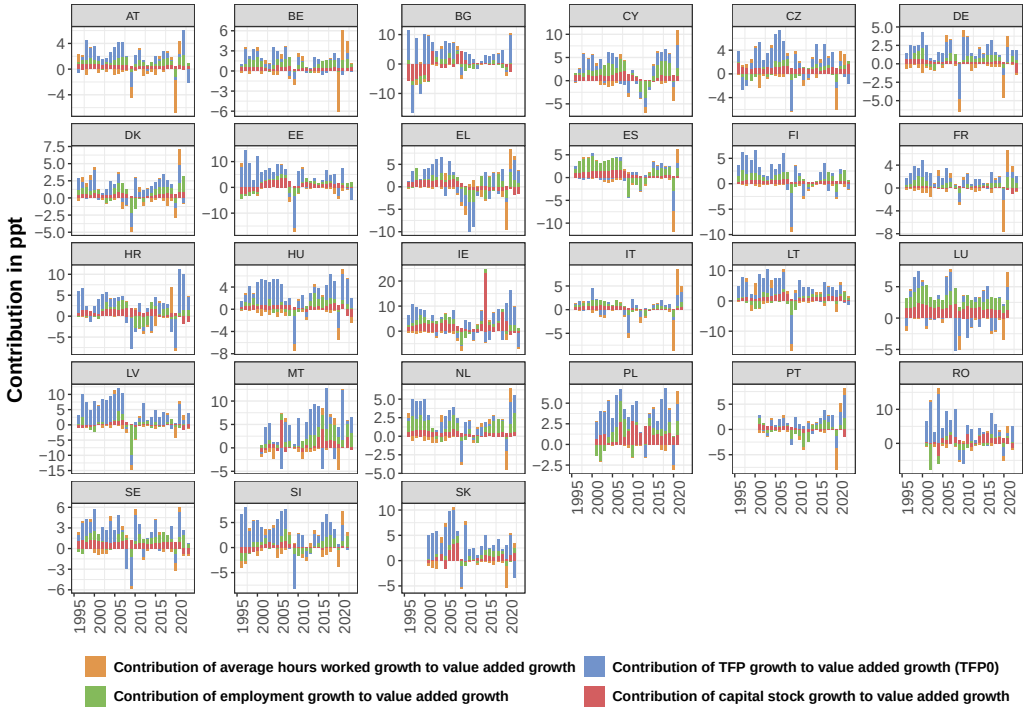


Source: National Accounts, own calculations.

4.4 Growth contributions

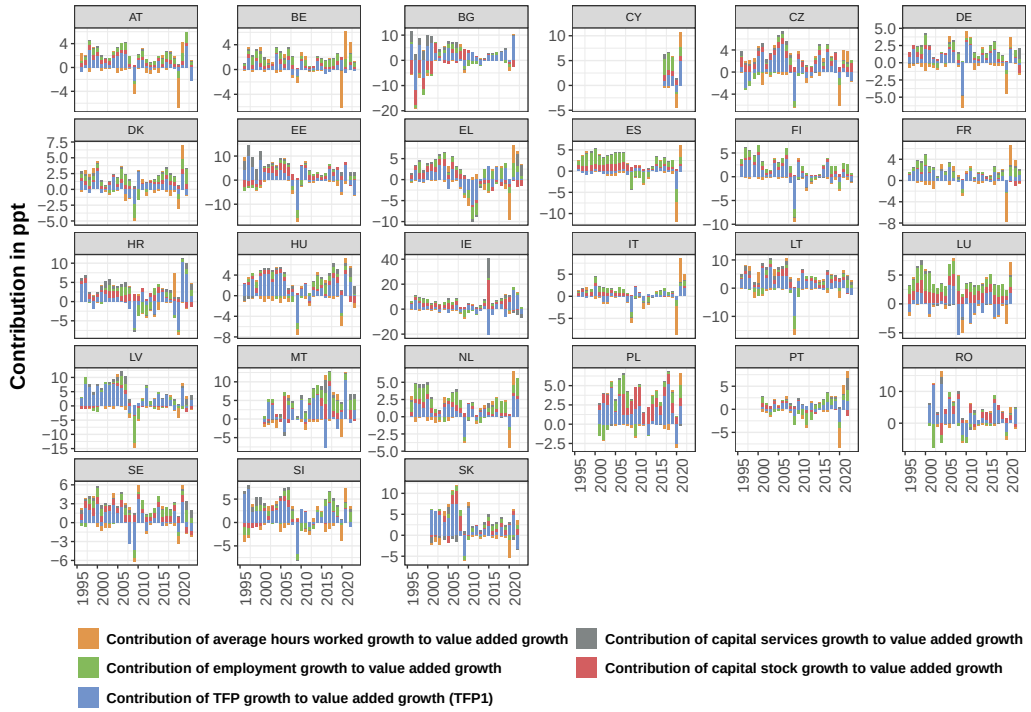
4.4.1 Contributions to value added growth

Figure 4.14: Value added growth contributions (TFP0)



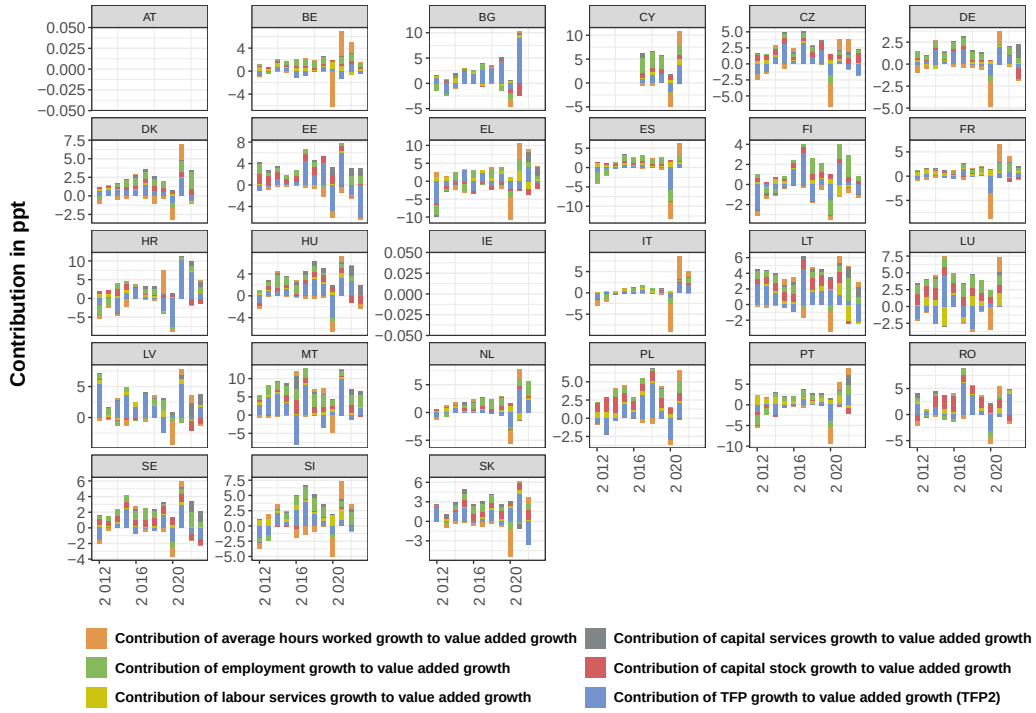
Source: National Accounts, own calculations.

Figure 4.15: Value added growth contributions (TFP1)



Source: National Accounts, own calculations.

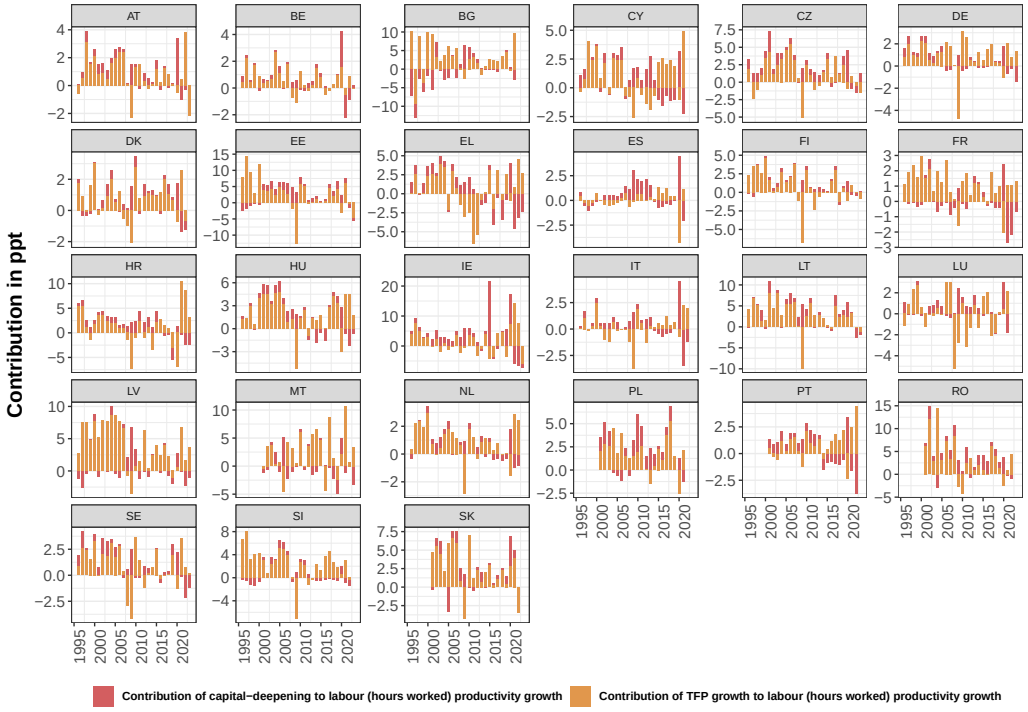
Figure 4.16: Value added growth contributions (TFP2)



Source: National Accounts, EU LFS, EU SES, own calculations.

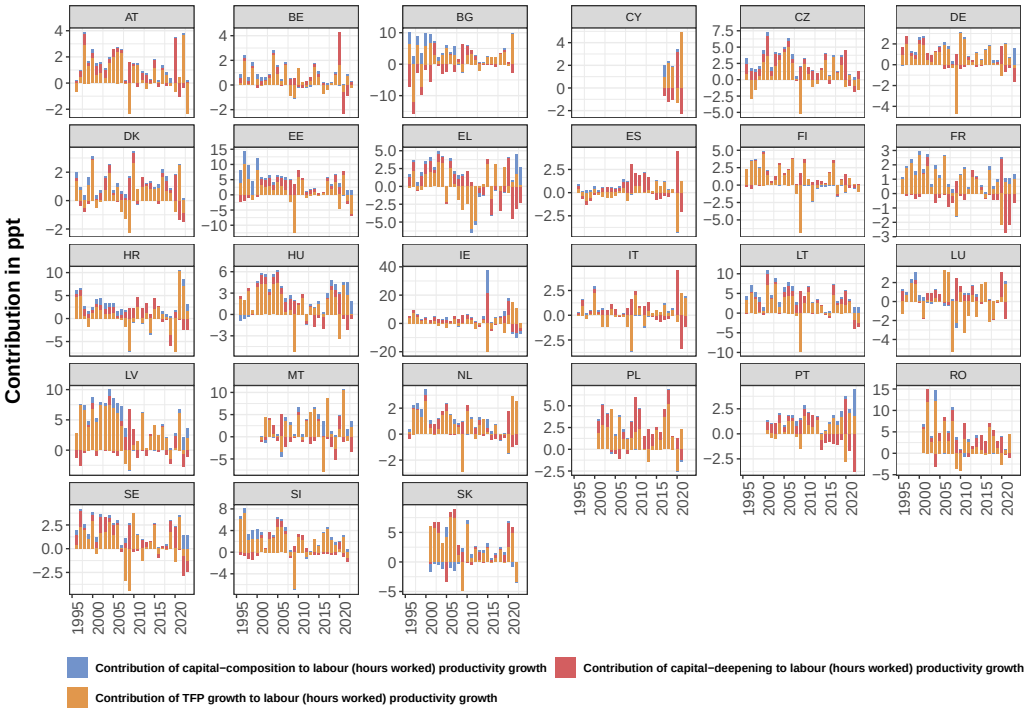
4.4.2 Contributions to labour productivity growth (hours worked)

Figure 4.17: Labour productivity growth contributions (TFP0)



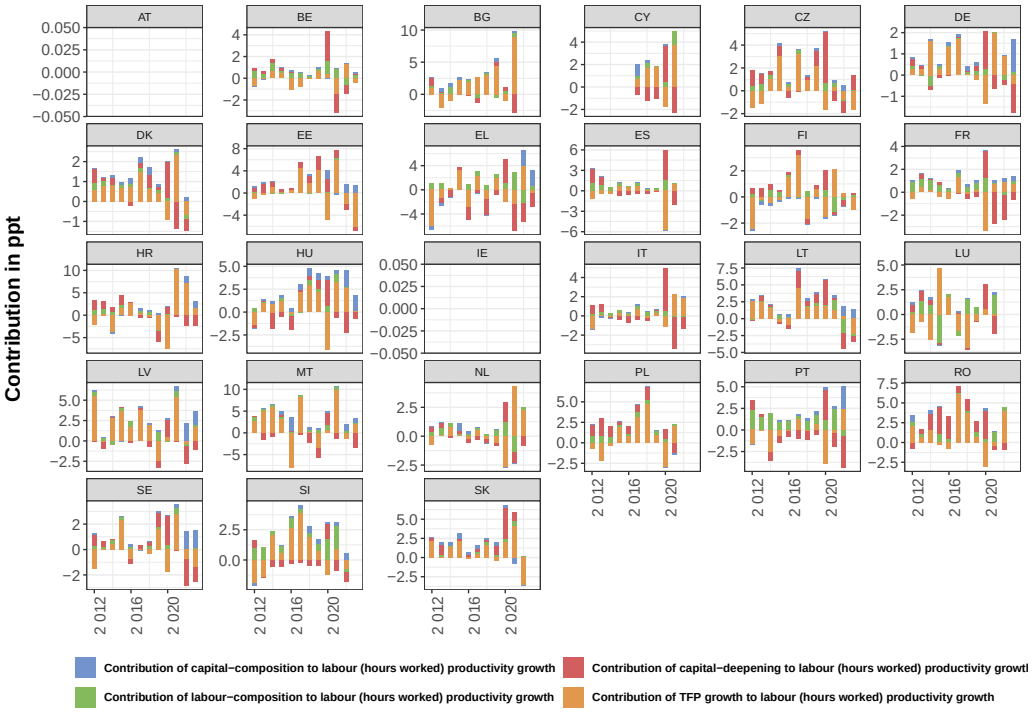
Source: National Accounts, own calculations.

Figure 4.18: Labour productivity growth contributions (TFP1)



Source: National Accounts, own calculations.

Figure 4.19: Labour productivity growth contributions (TFP2)

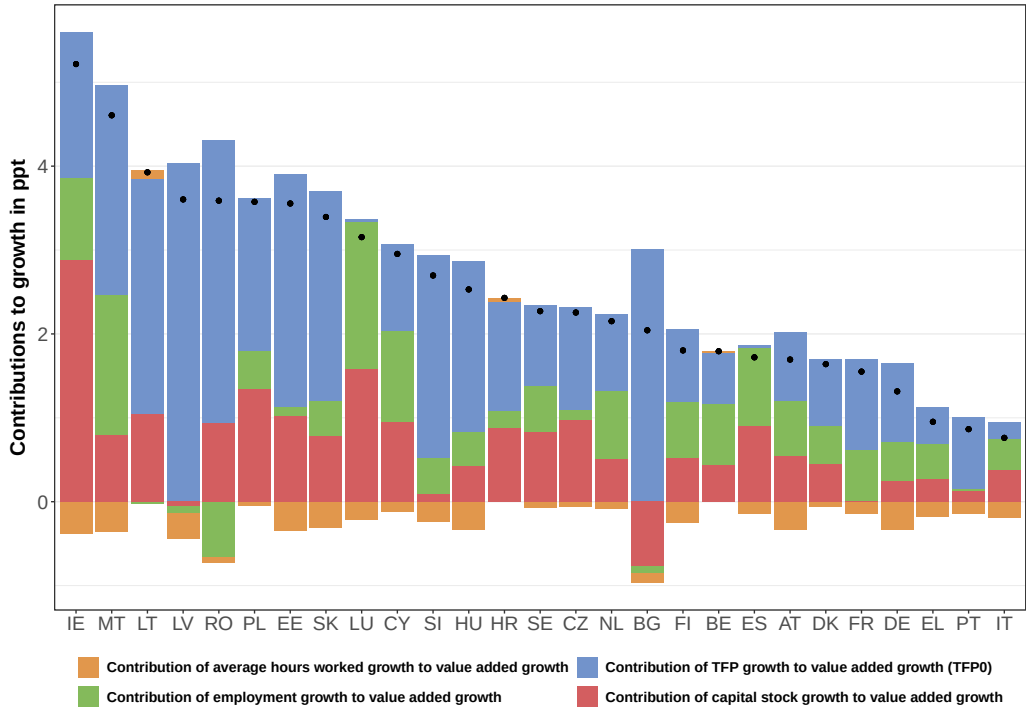


Source: National Accounts, EU LFS, EU SES, own calculations.

5 Contributions to value added growth

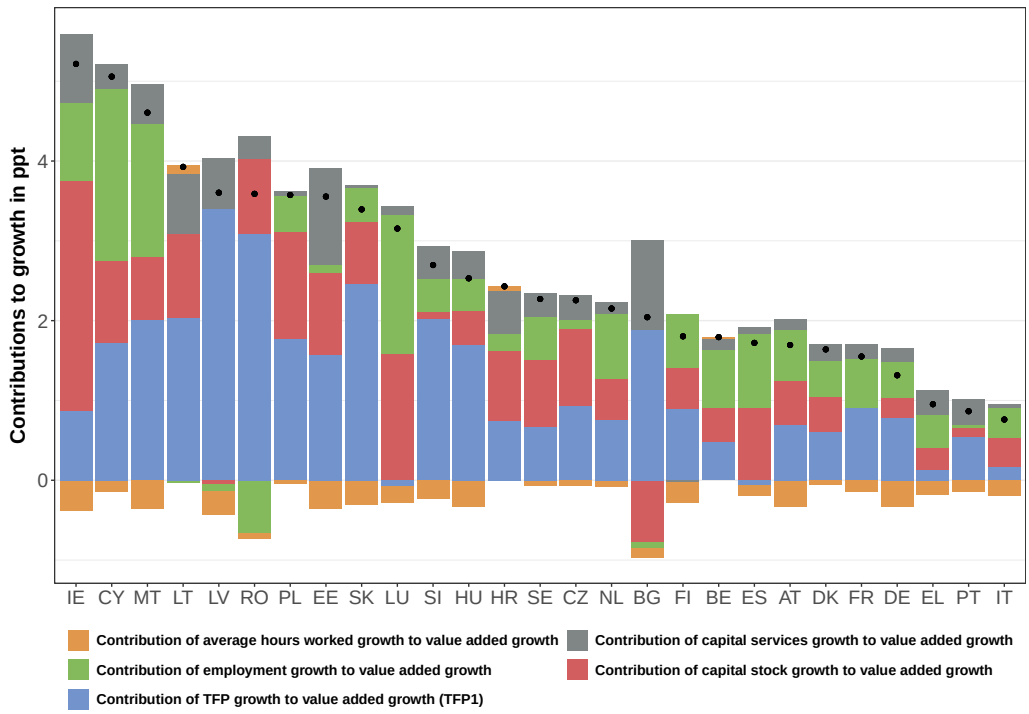
5.1 A-U: Total economy

Figure 5.1: A-U: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

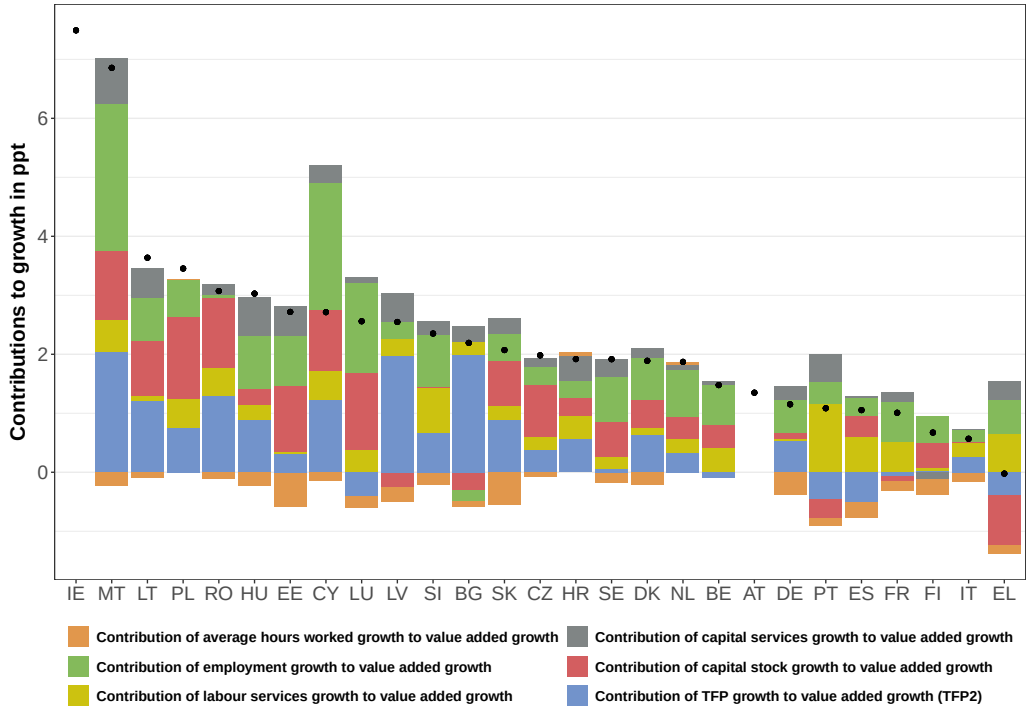
Figure 5.2: A-U: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.3: A-U: Contributions to value added growth (TFP2), 2011-recent*

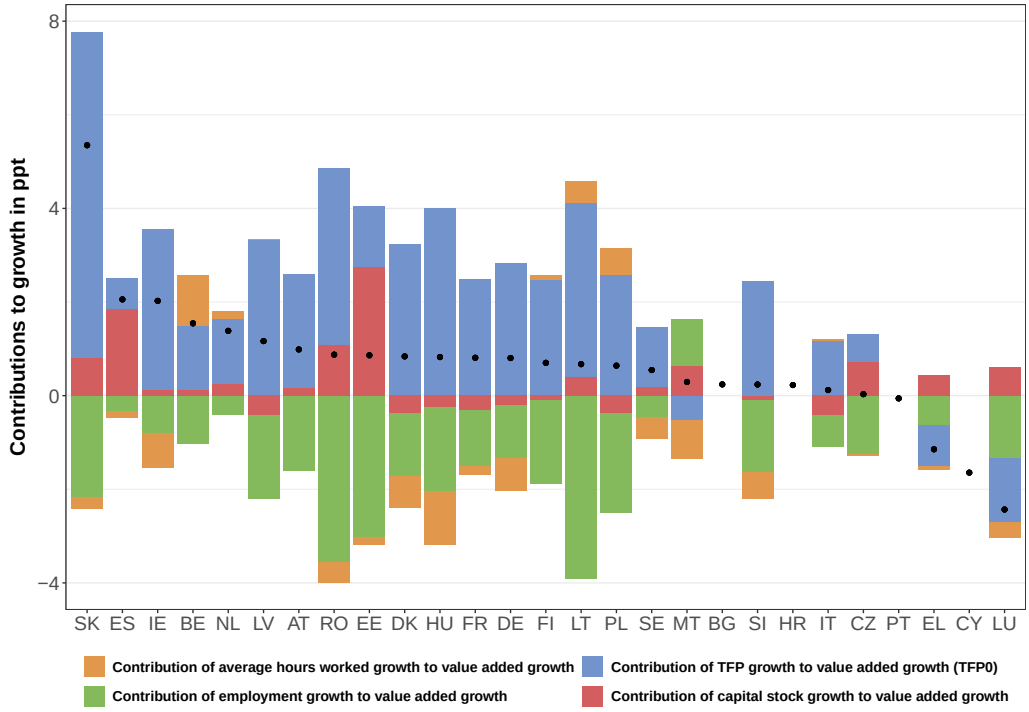


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

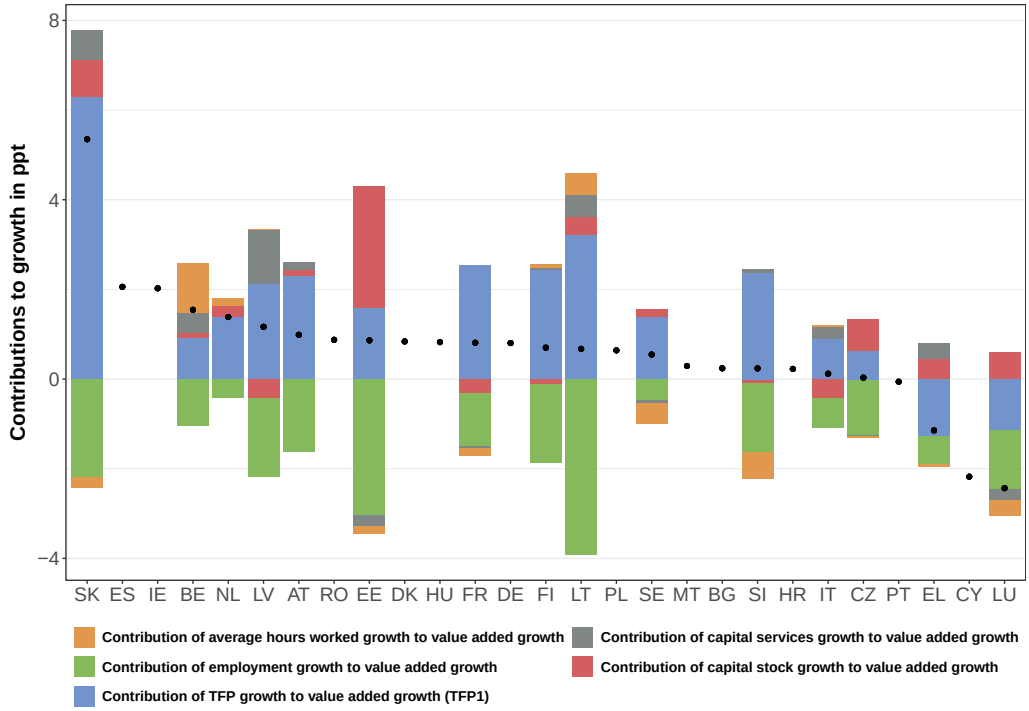
5.2 A: Agriculture, forestry and fishing

Figure 5.4: A: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

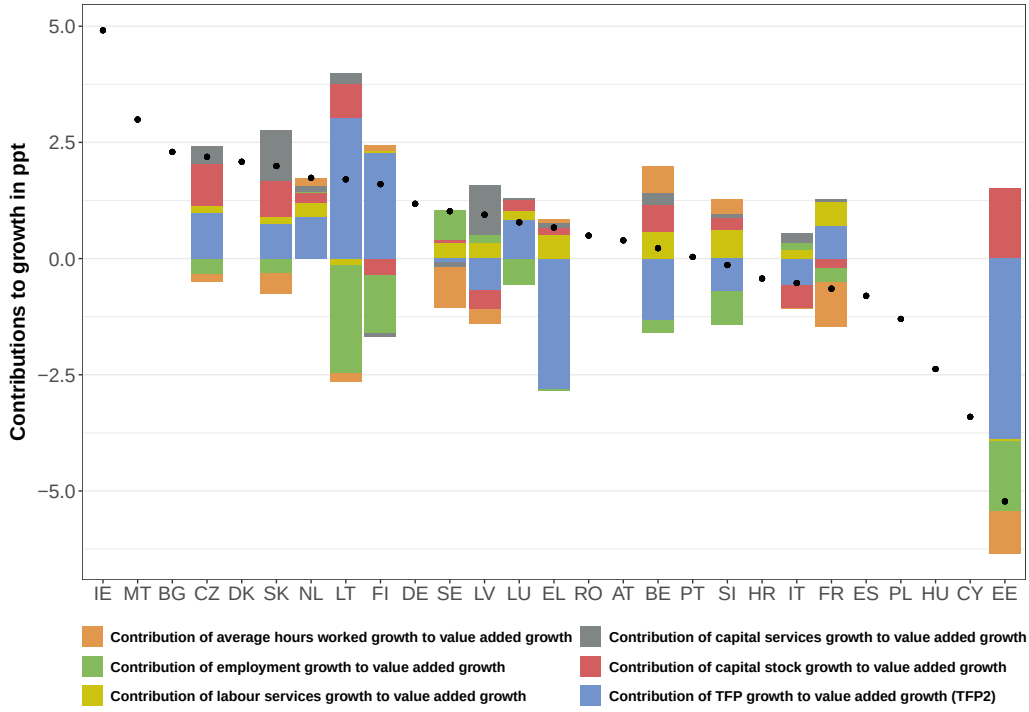
Figure 5.5: A: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.6: A: Contributions to value added growth (TFP2), 2011-recent*

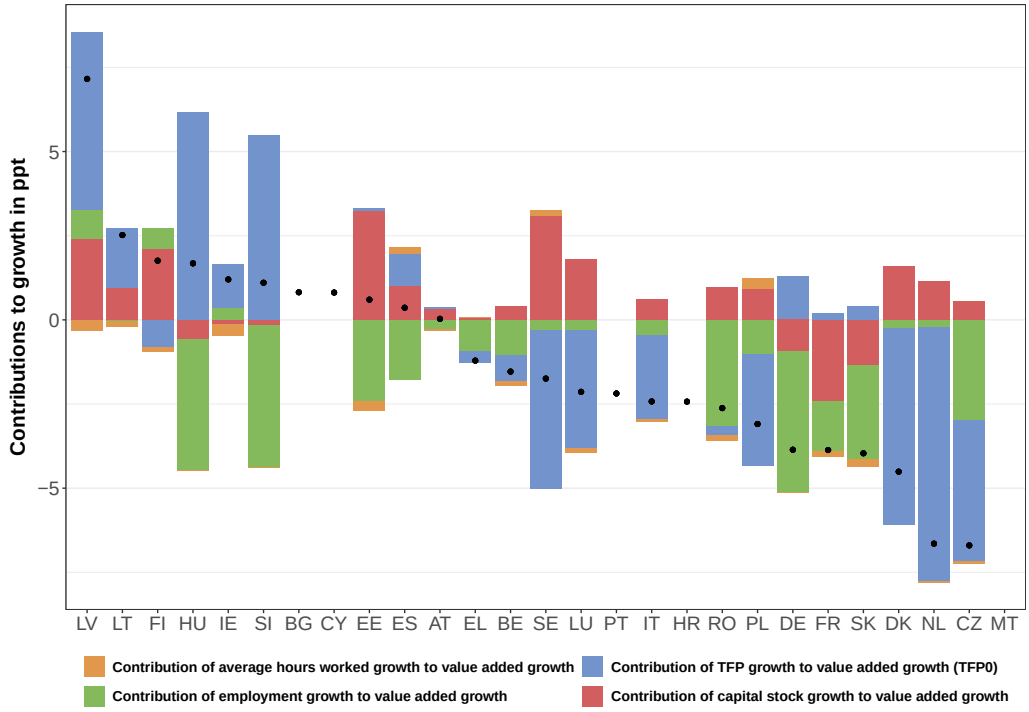


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

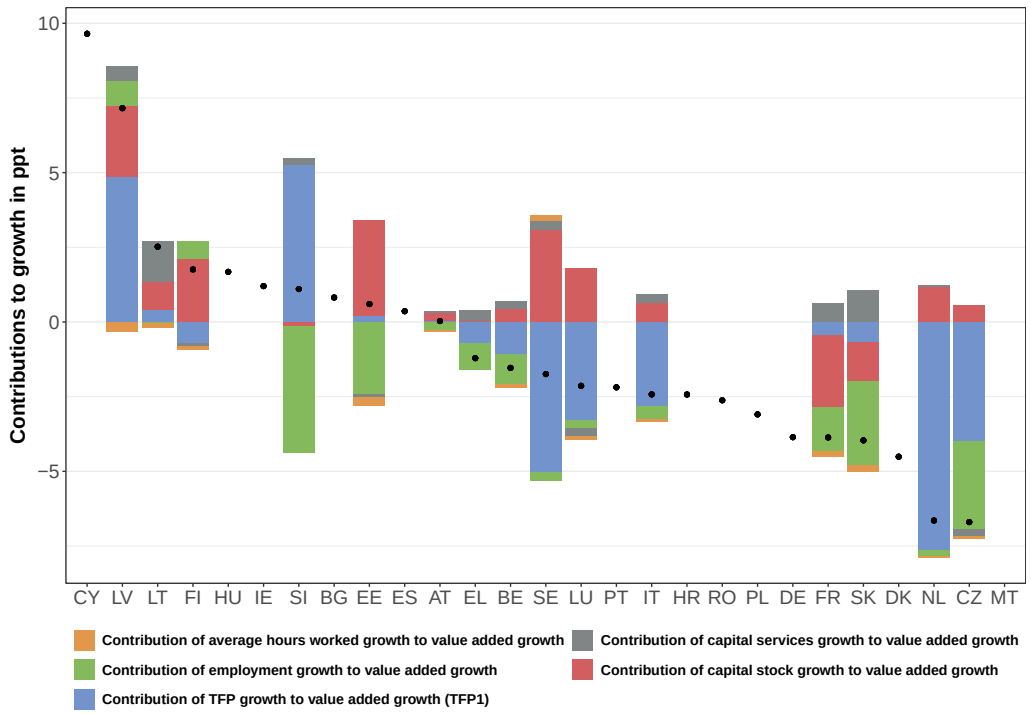
5.3 B: Mining and quarrying

Figure 5.7: B: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

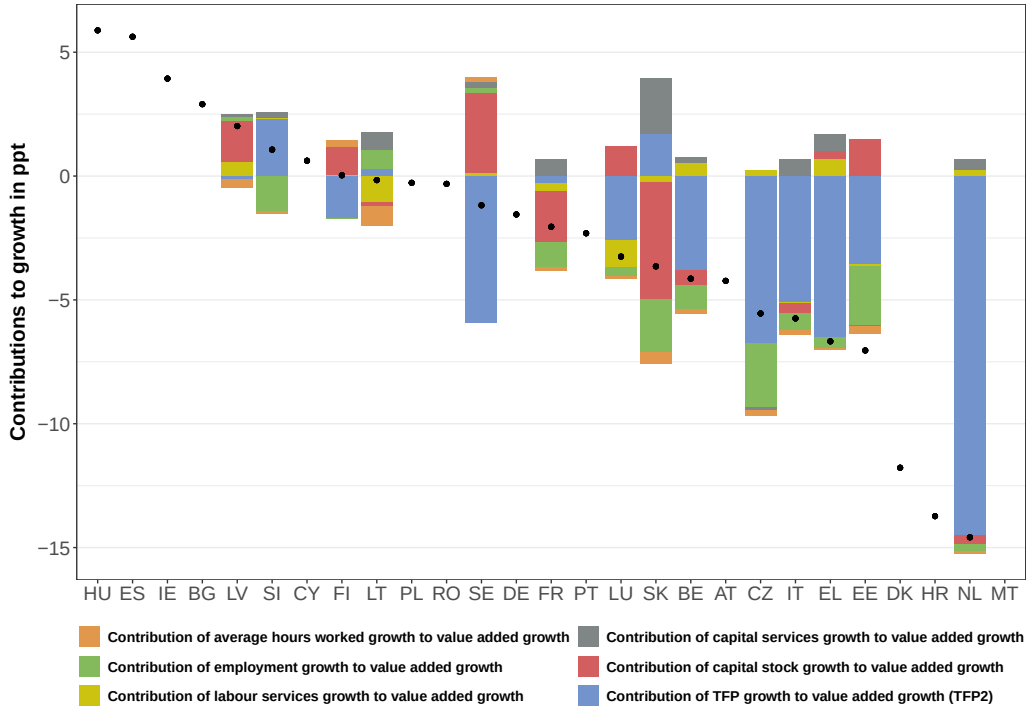
Figure 5.8: B: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.9: B: Contributions to value added growth (TFP2), 2011-recent*

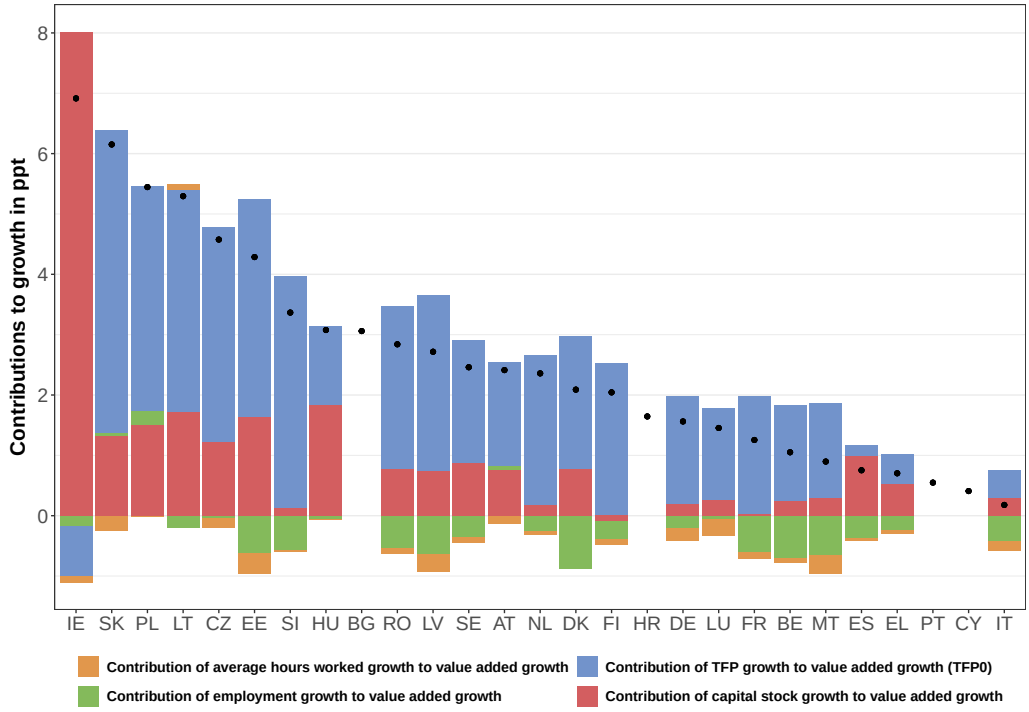


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

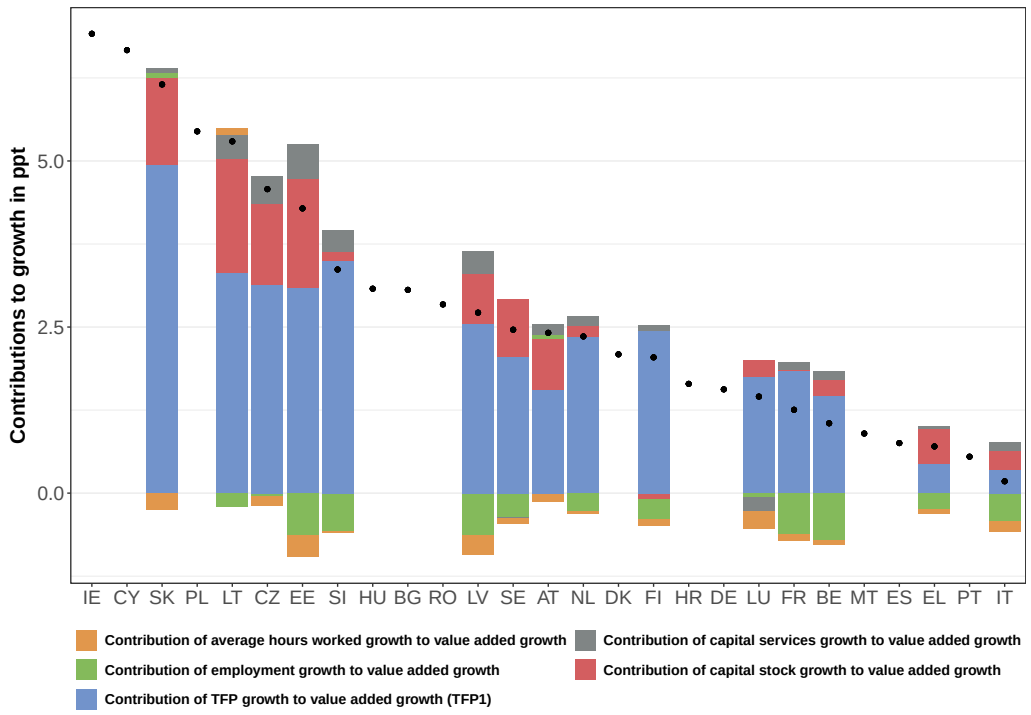
5.4 C: Manufacturing

Figure 5.10: C: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

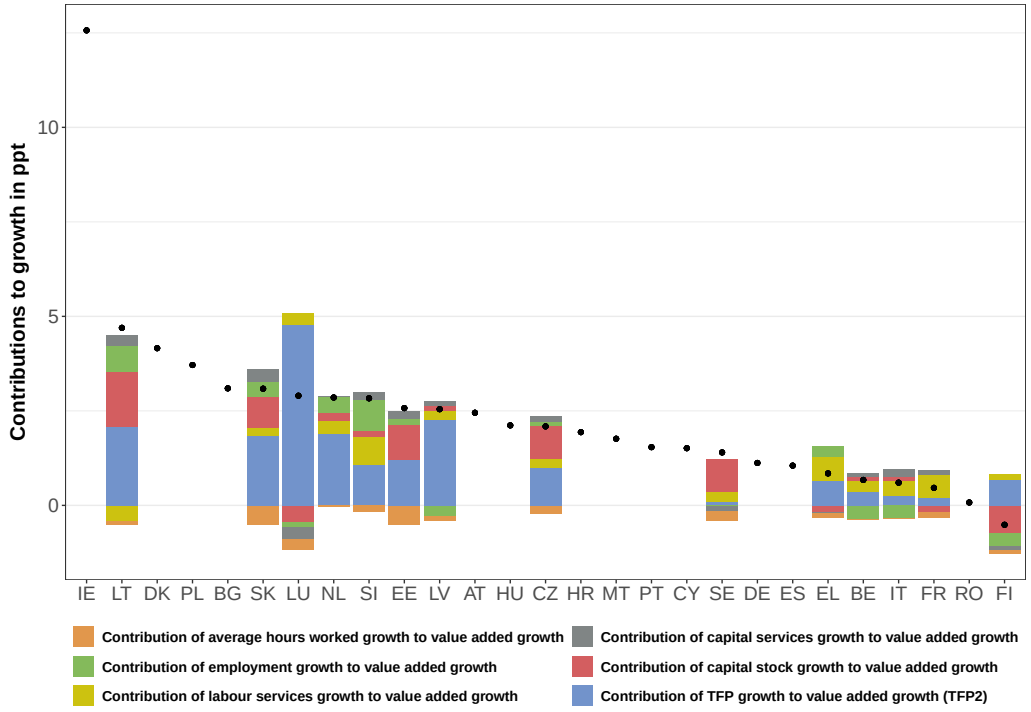
Figure 5.11: C: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.12: C: Contributions to value added growth (TFP2), 2011-recent*

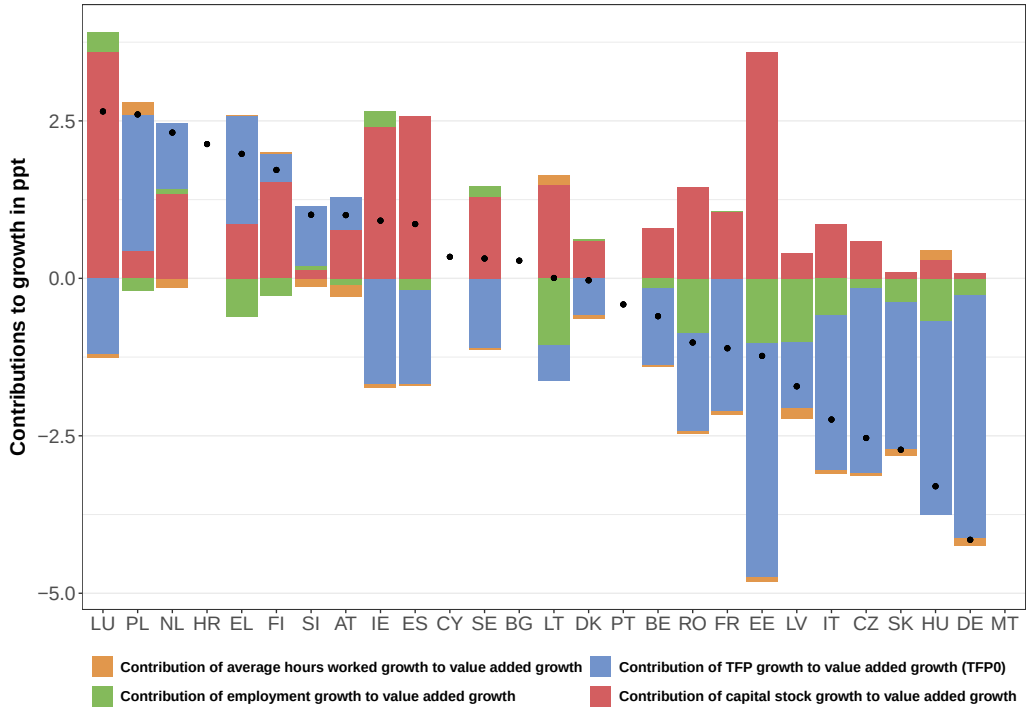


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

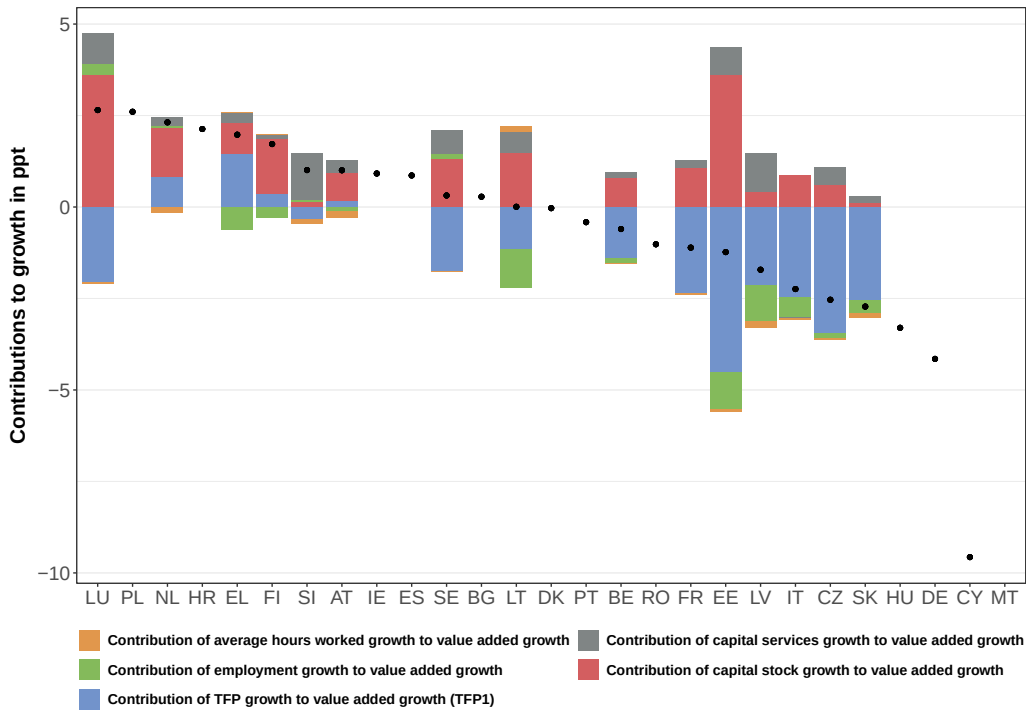
5.5 D: Electricity, gas, steam and air conditioning supply

Figure 5.13: D: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

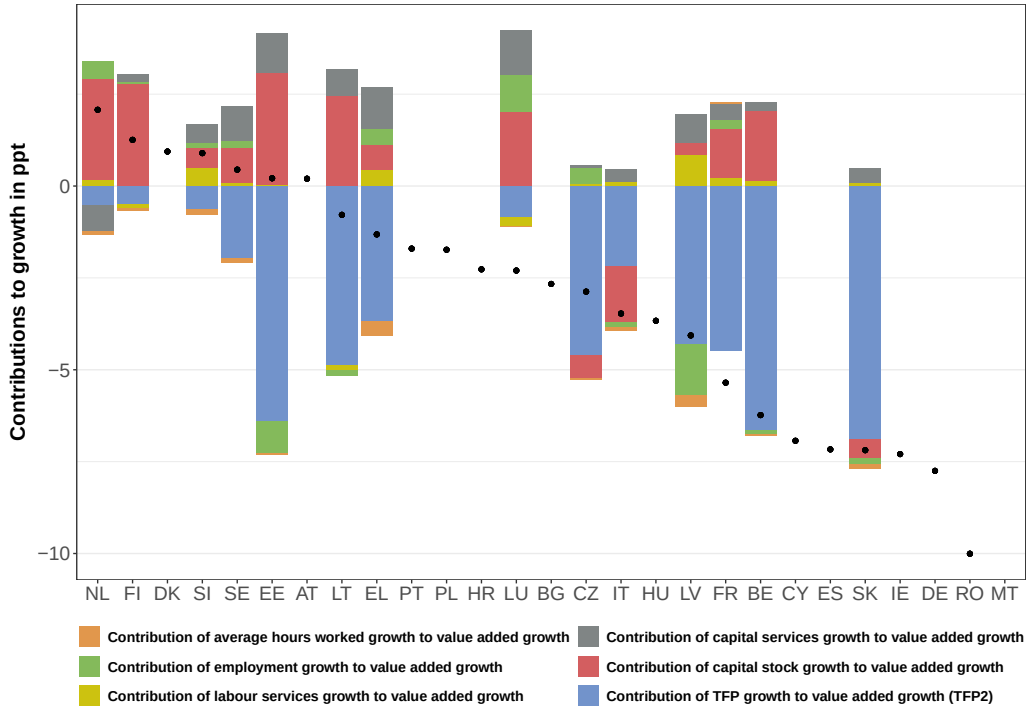
Figure 5.14: D: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.15: D: Contributions to value added growth (TFP2), 2011-recent*

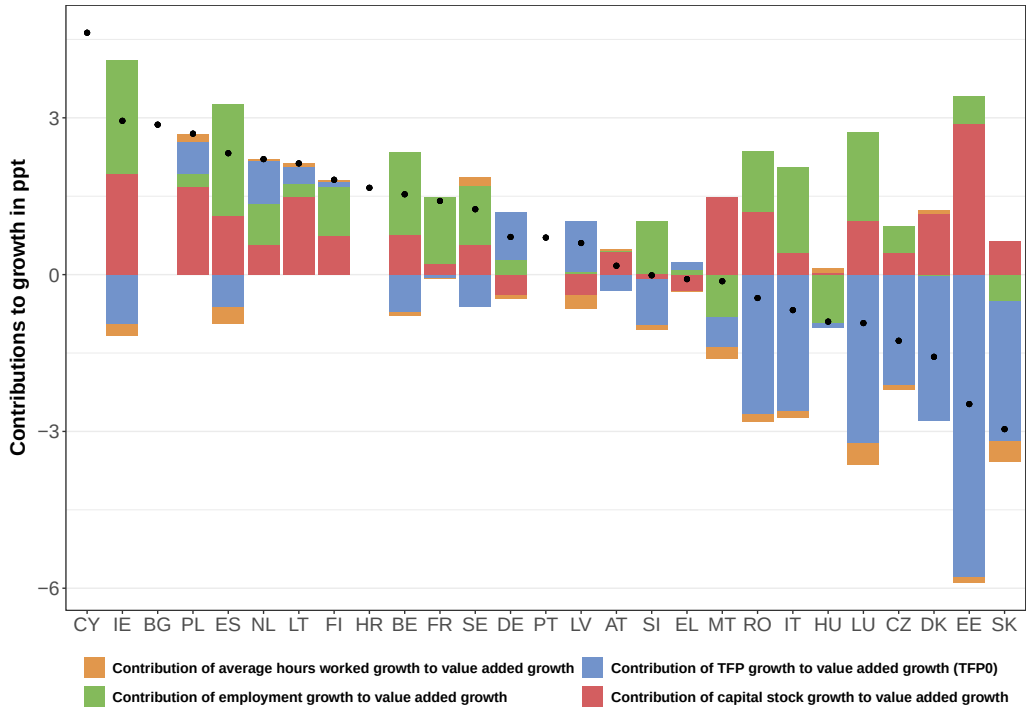


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

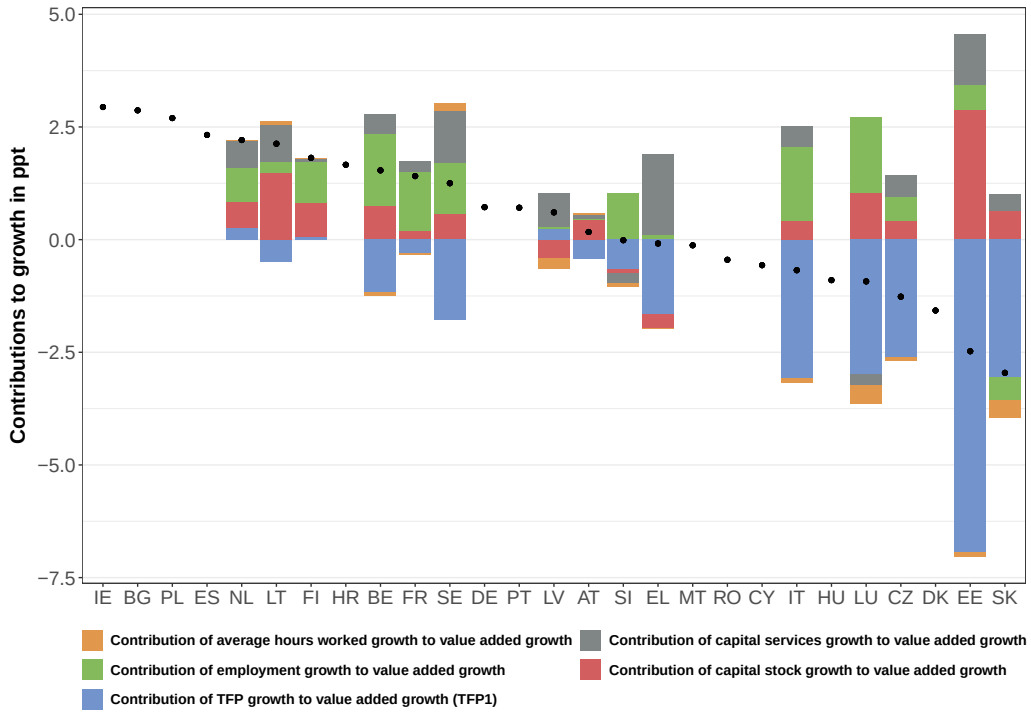
5.6 E: Water supply; sewerage; waste management and remediation activities

Figure 5.16: E: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

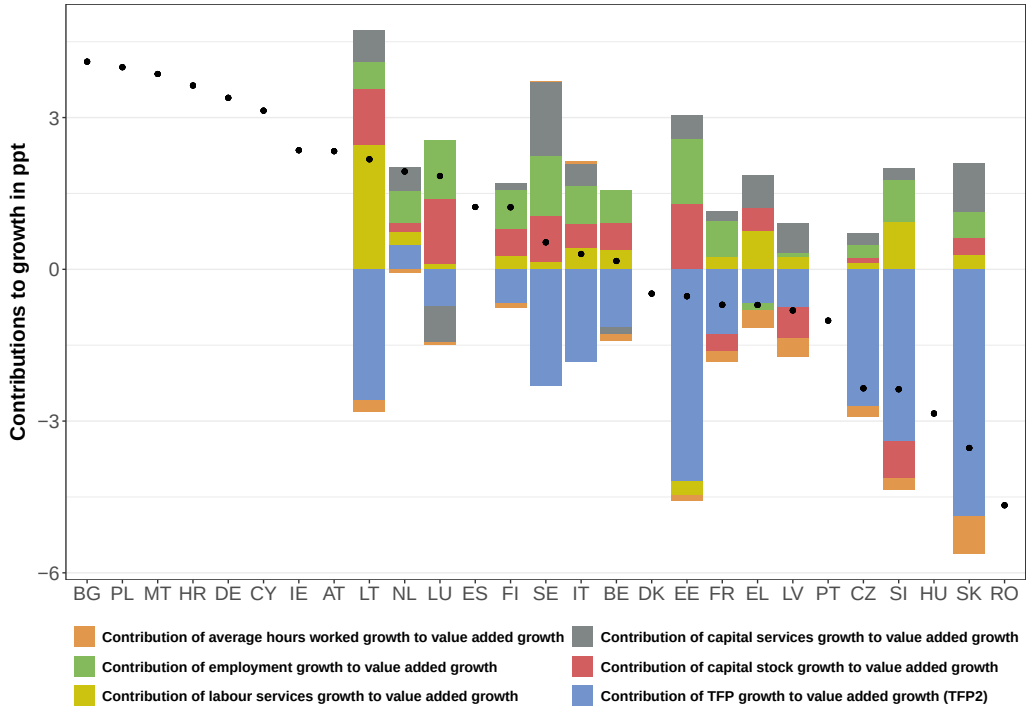
Figure 5.17: E: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.18: E: Contributions to value added growth (TFP2), 2011-recent*

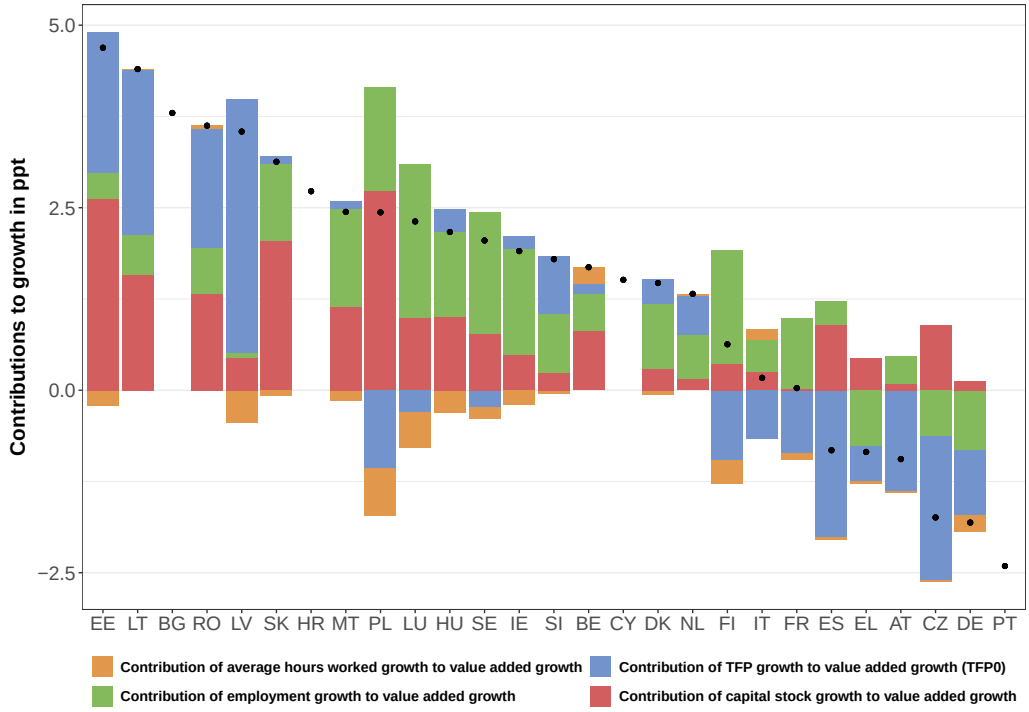


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

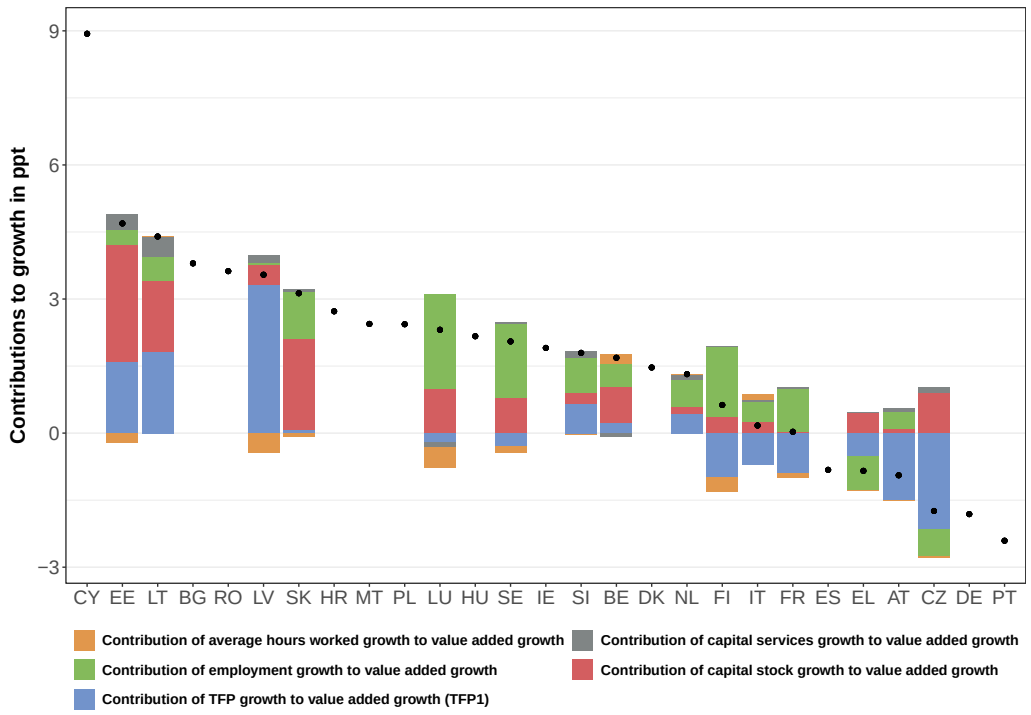
5.7 F: Construction

Figure 5.19: F: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

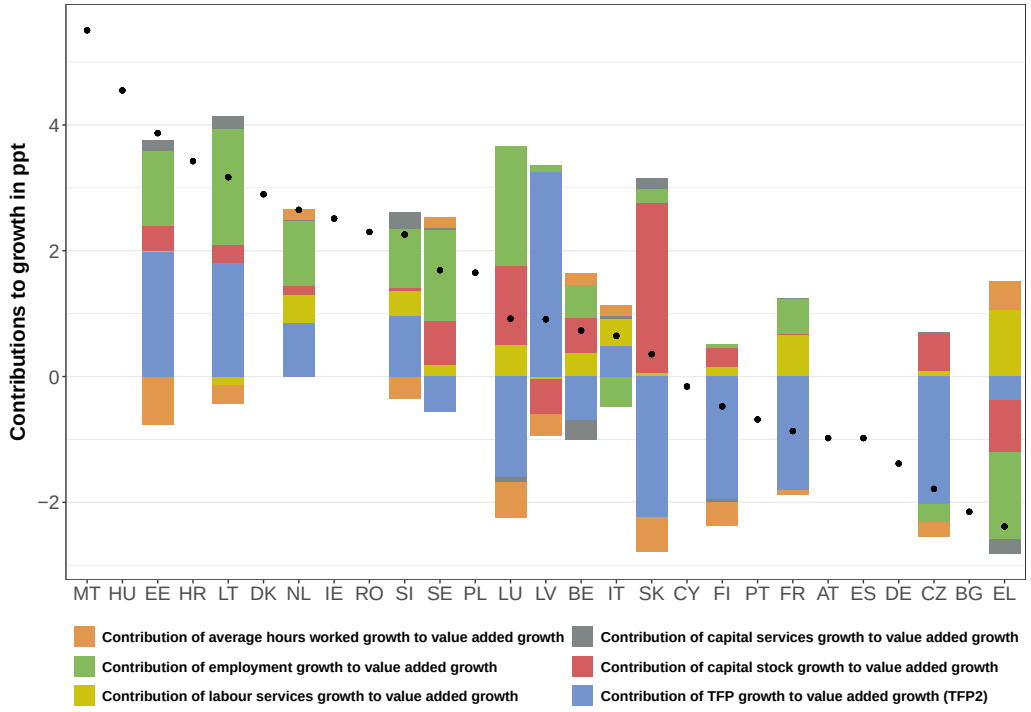
Figure 5.20: F: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.21: F: Contributions to value added growth (TFP2), 2011-recent*

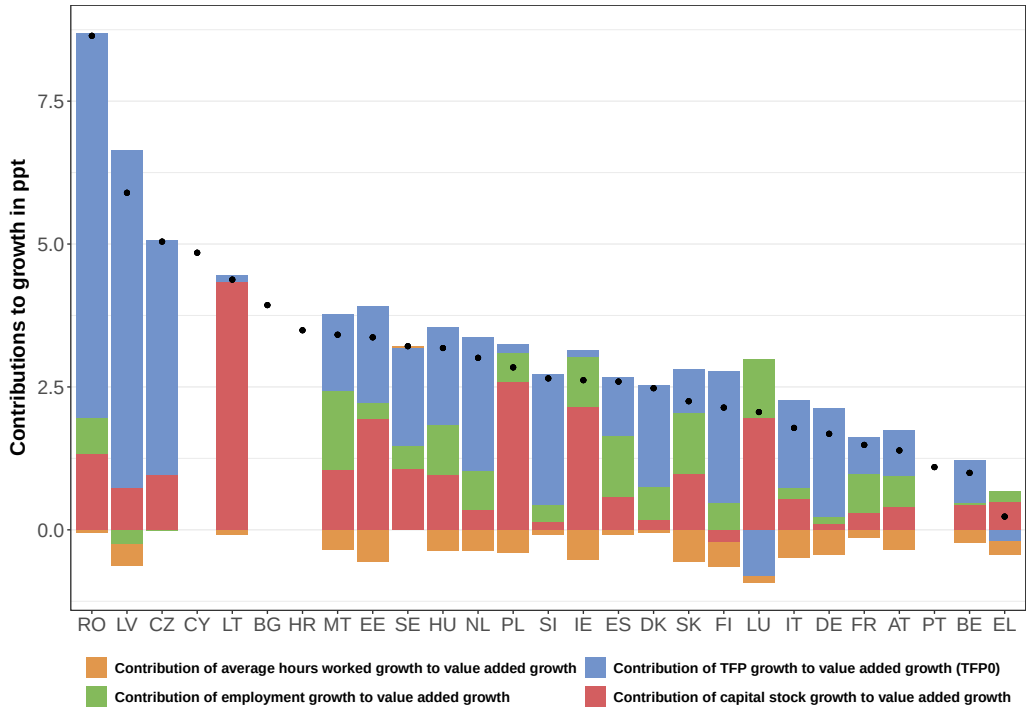


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

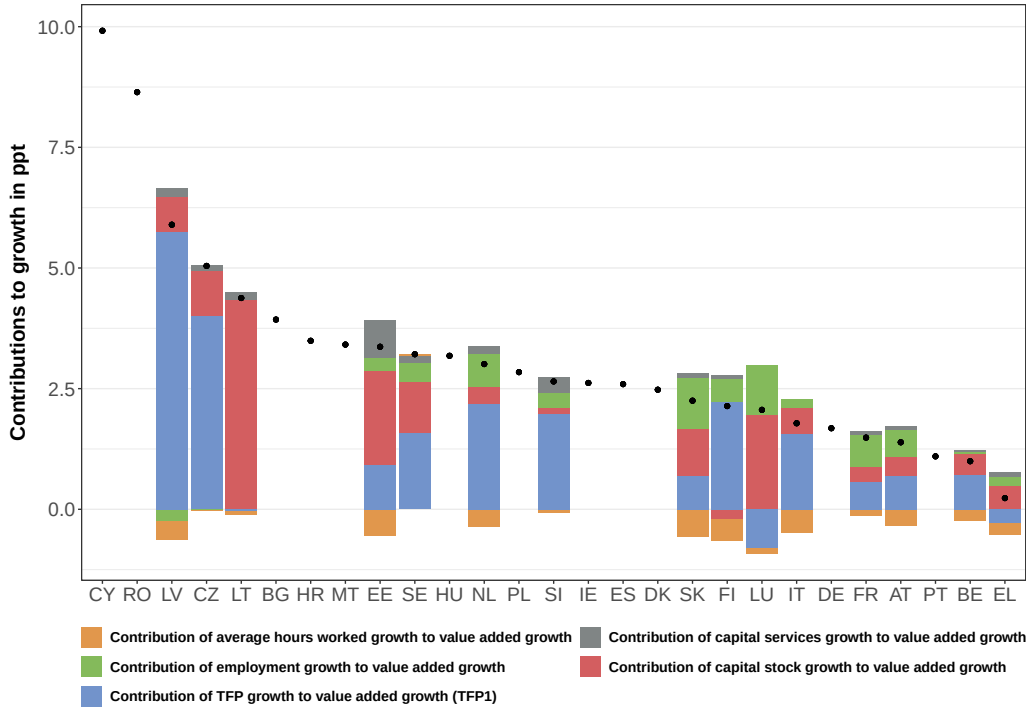
5.8 G: Wholesale and retail trade; repair of motor vehicles and motorcycles

Figure 5.22: G: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

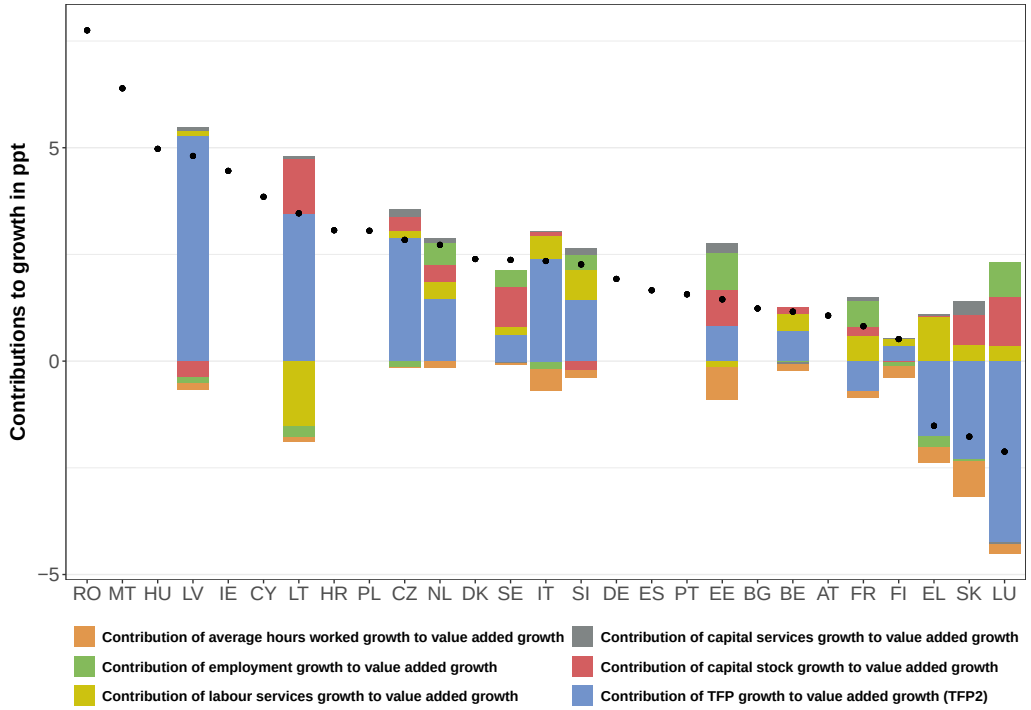
Figure 5.23: G: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.24: G: Contributions to value added growth (TFP2), 2011-recent*

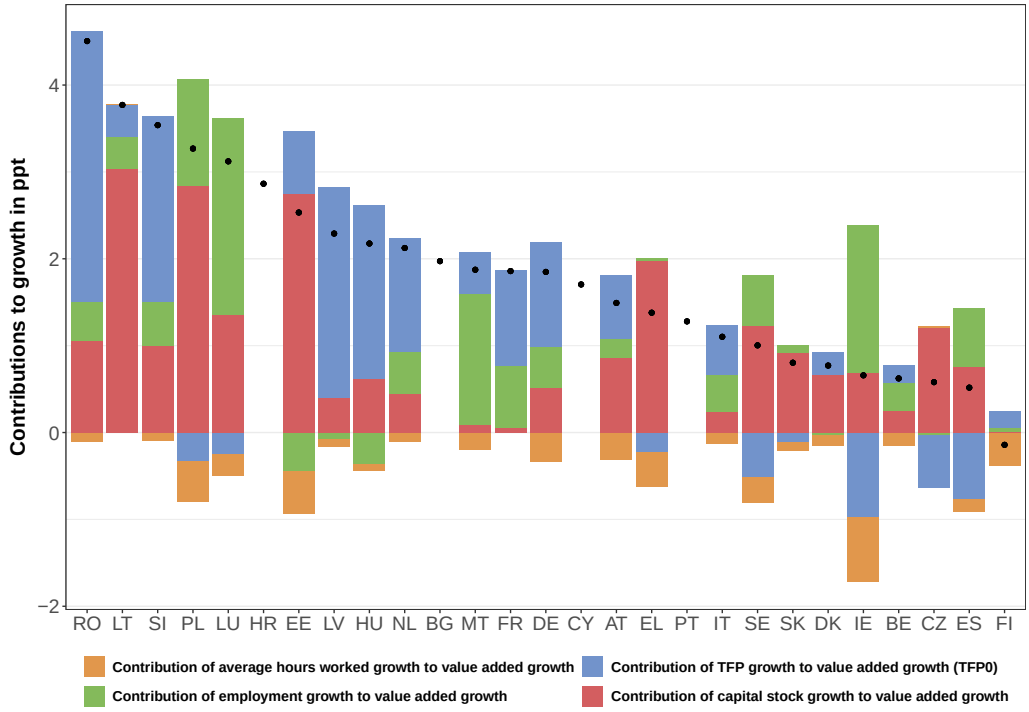


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

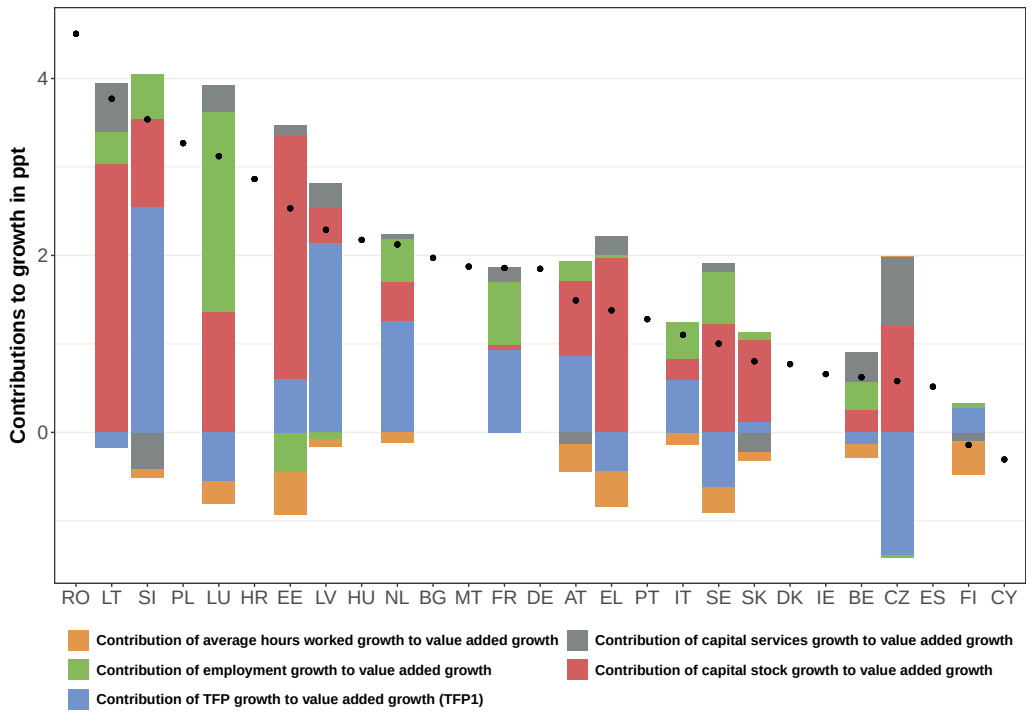
5.9 H: Transportation and storage

Figure 5.25: H: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

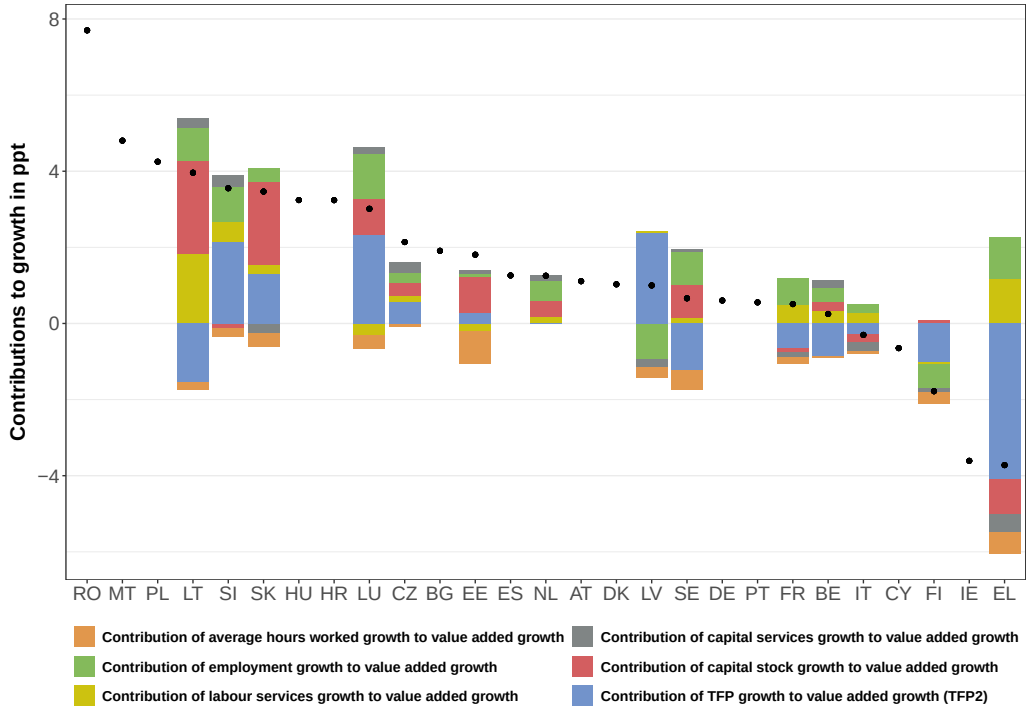
Figure 5.26: H: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.27: H: Contributions to value added growth (TFP2), 2011-recent*

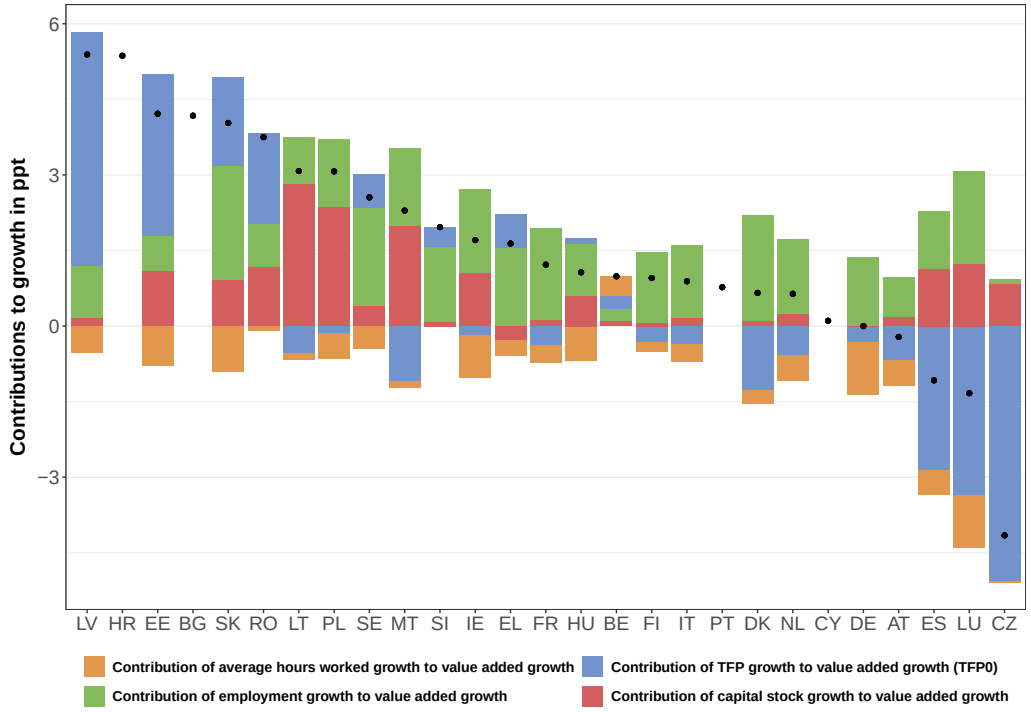


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

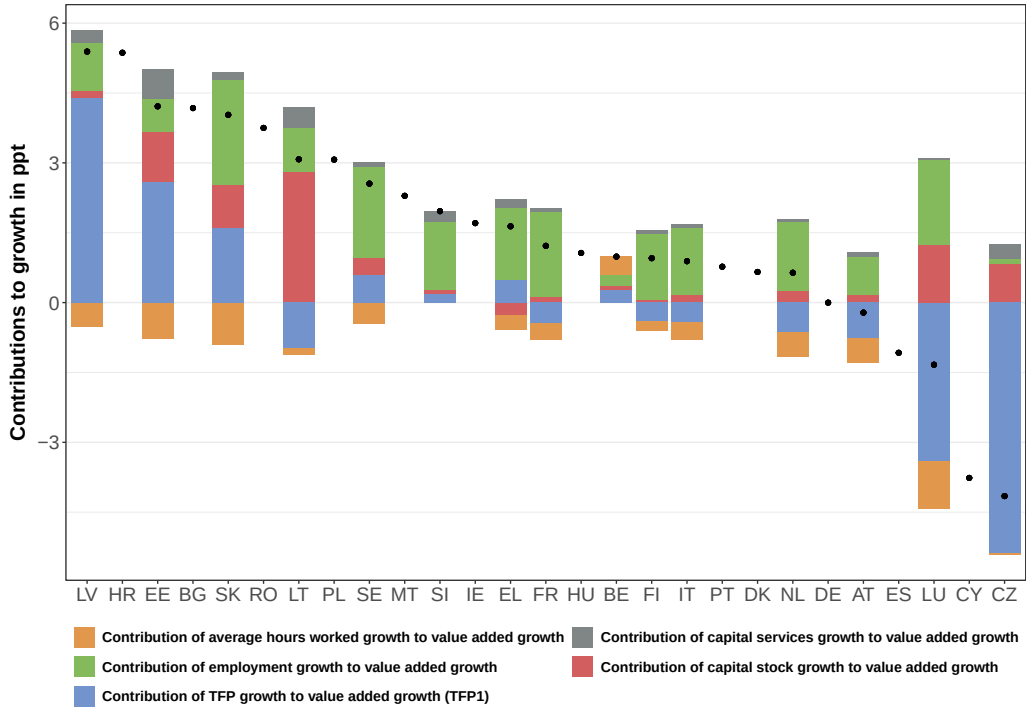
5.10 I: Accommodation and food service activities

Figure 5.28: I: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

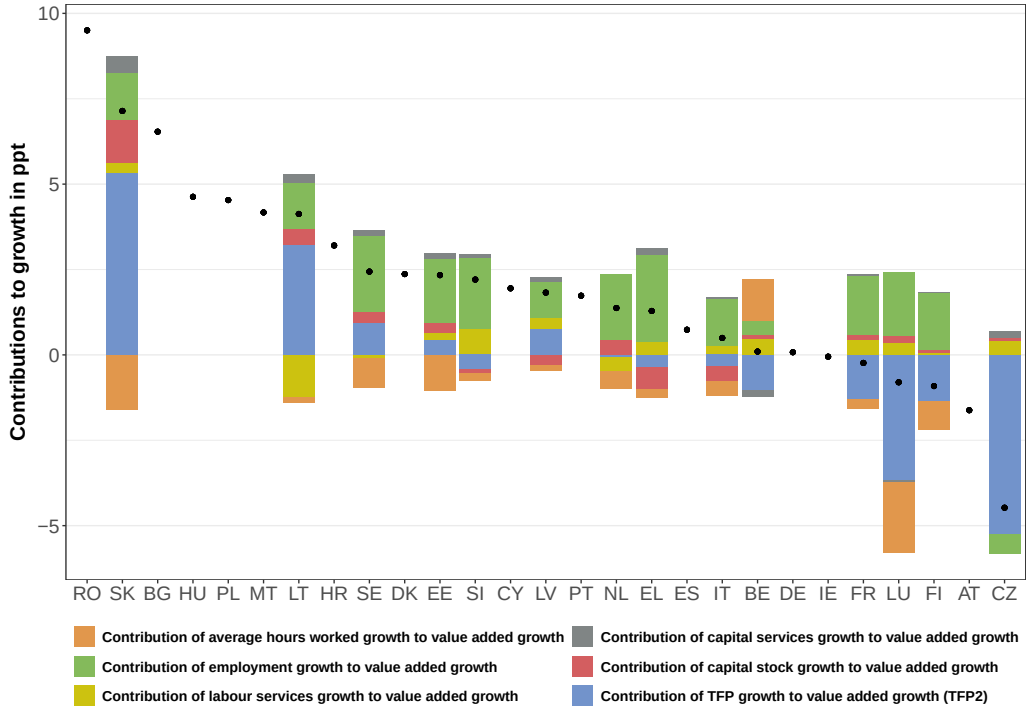
Figure 5.29: I: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.30: I: Contributions to value added growth (TFP2), 2011-recent*

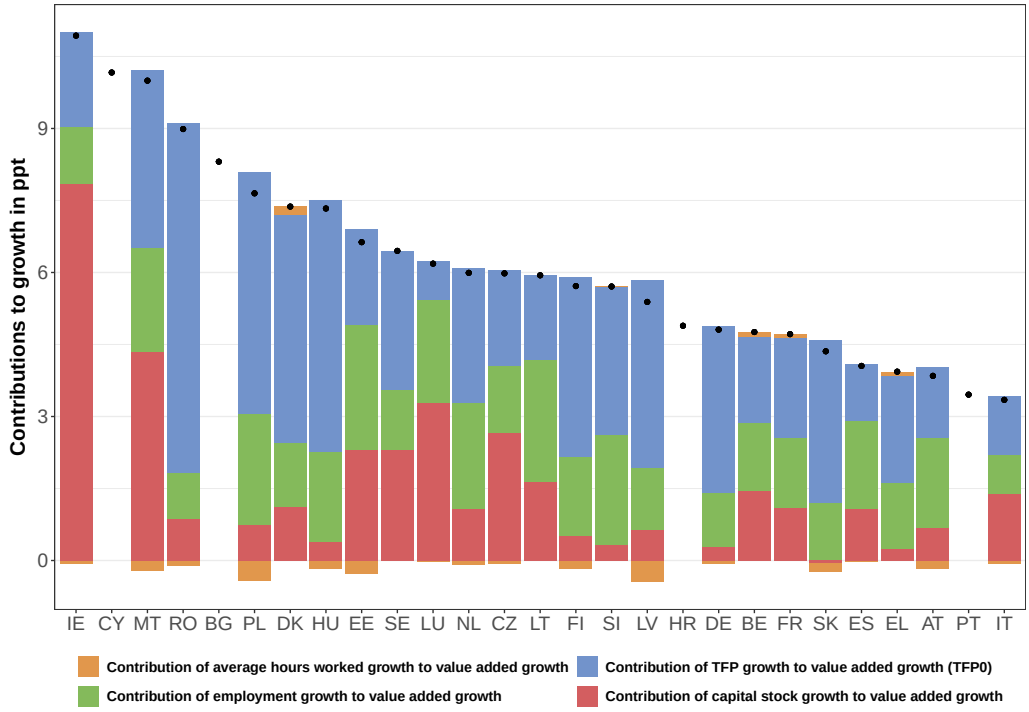


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

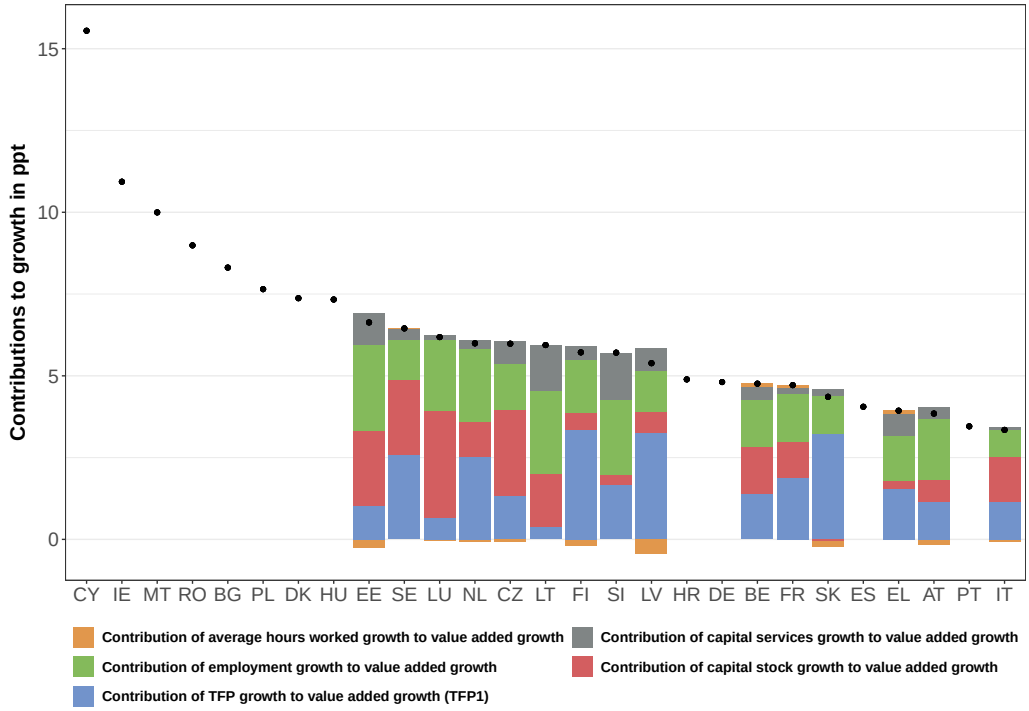
5.11 J: Information and communication

Figure 5.31: J: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

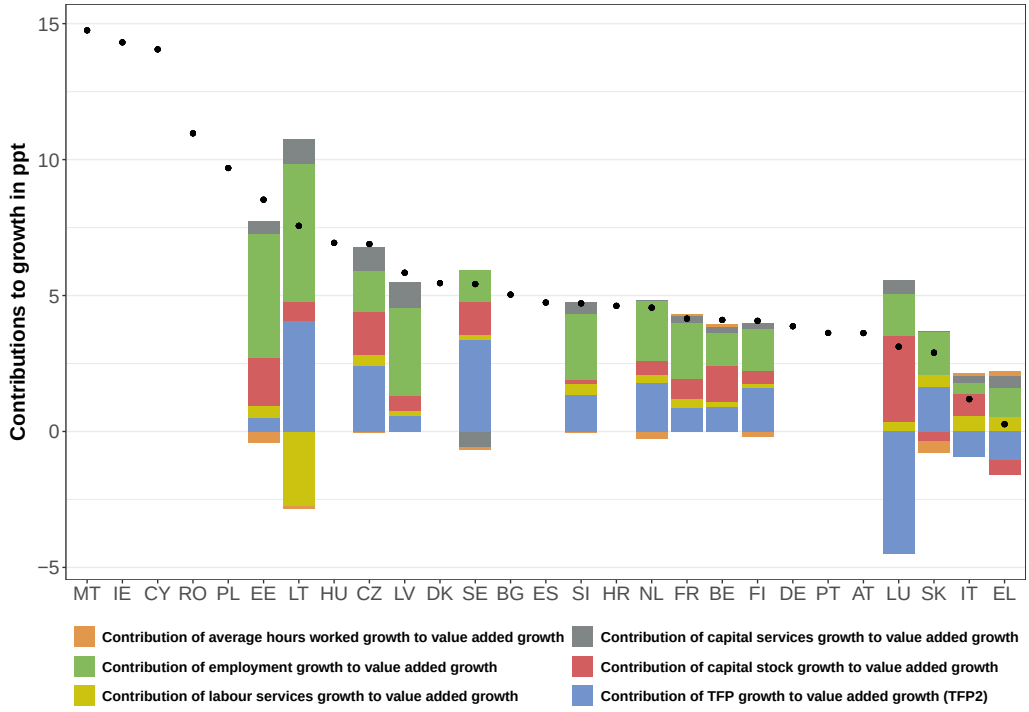
Figure 5.32: J: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.33: J: Contributions to value added growth (TFP2), 2011-recent*

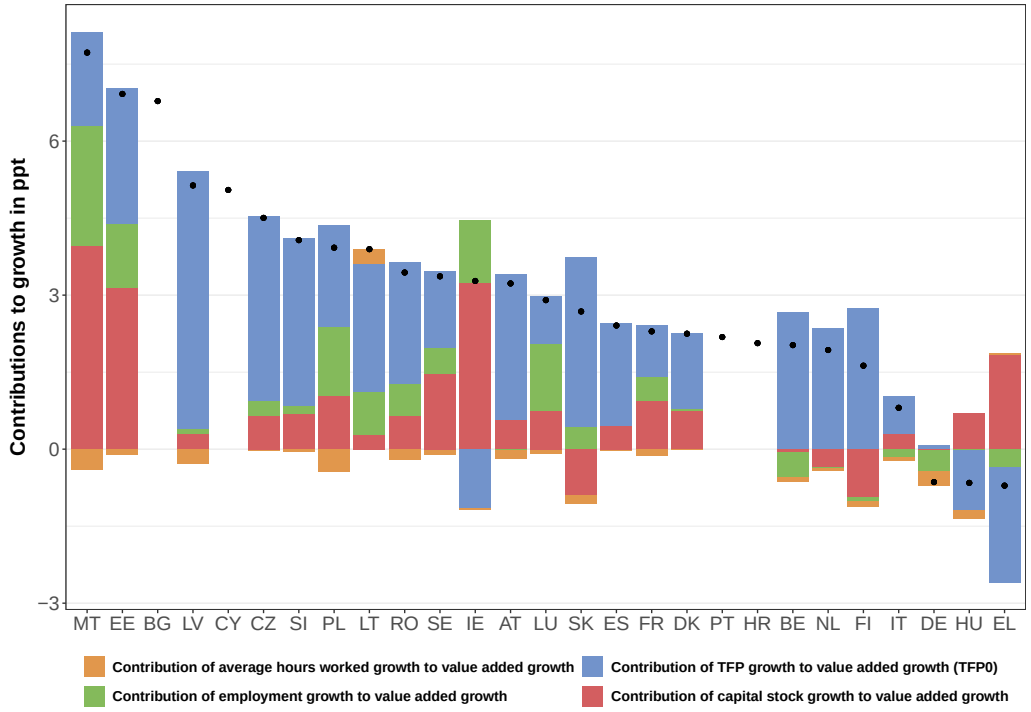


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

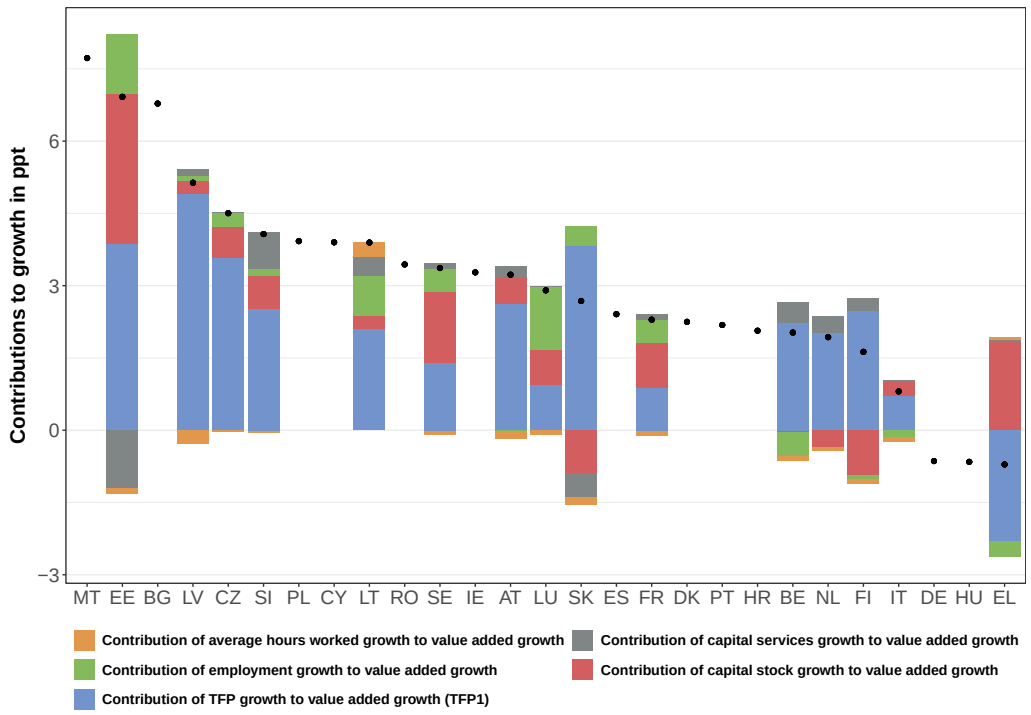
5.12 K: Financial and insurance activities

Figure 5.34: K: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

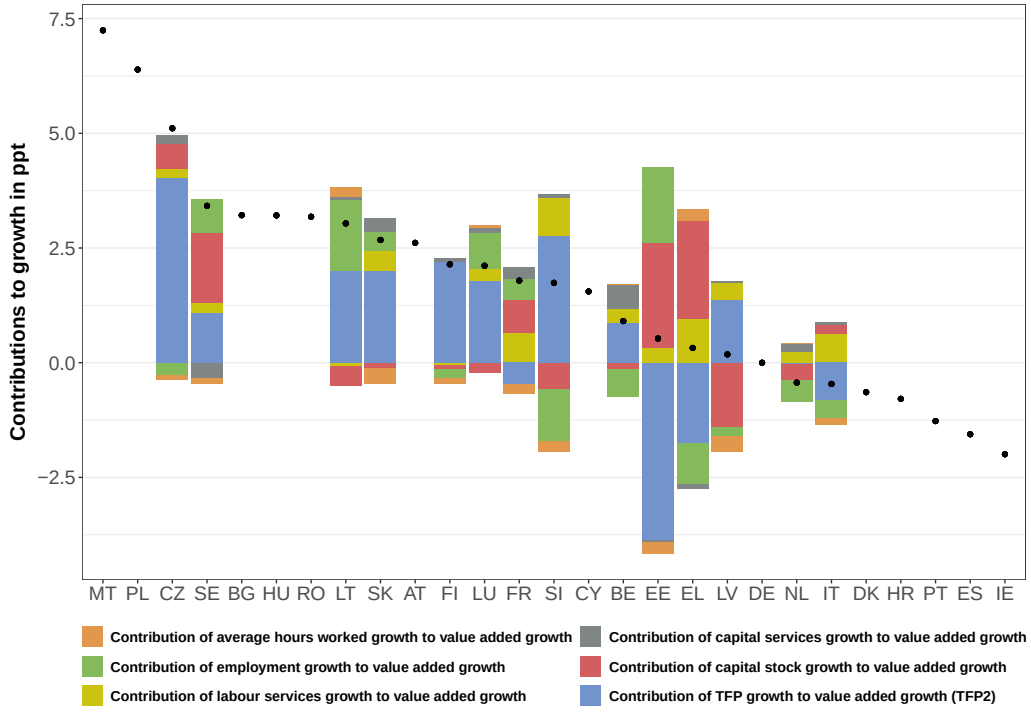
Figure 5.35: K: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.36: K: Contributions to value added growth (TFP2), 2011-recent*

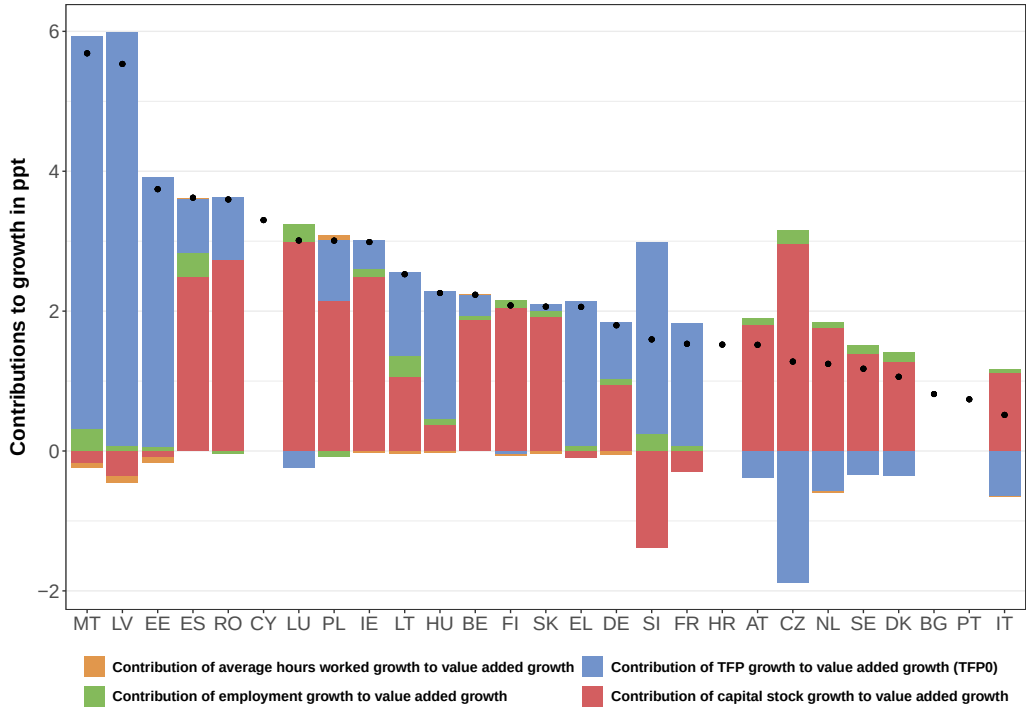


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

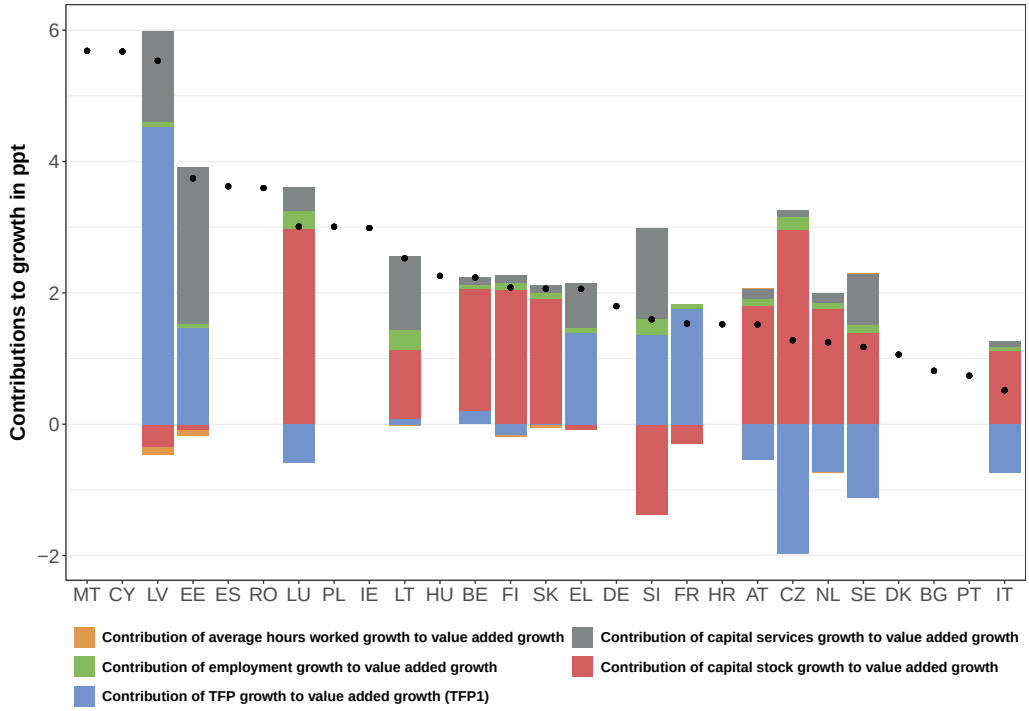
5.13 L: Real estate activities

Figure 5.37: L: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

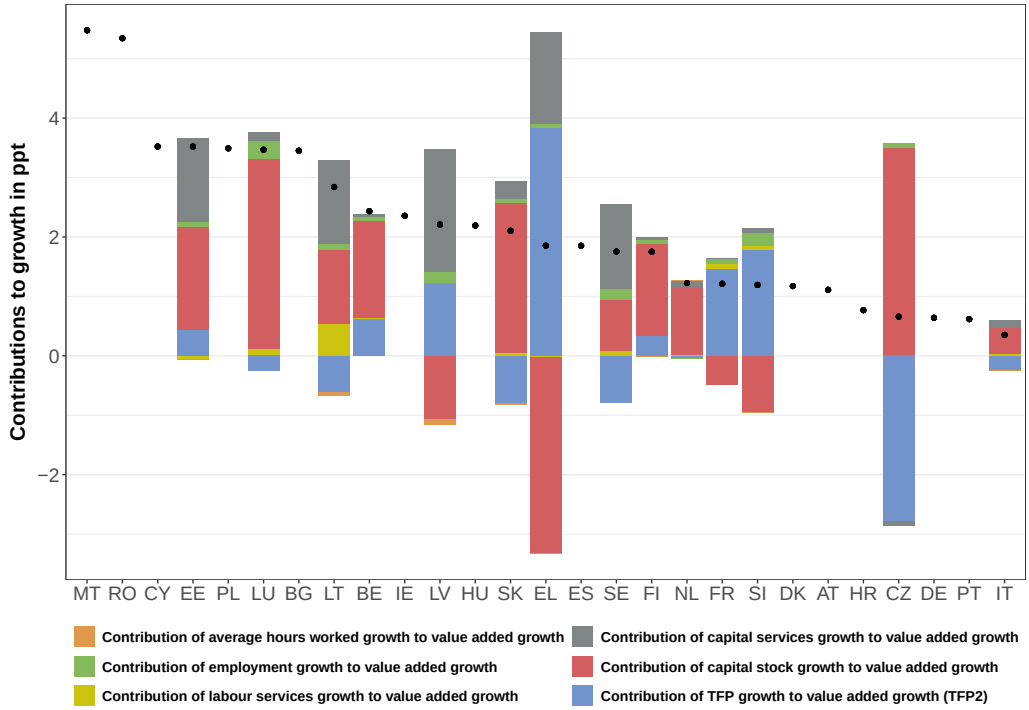
Figure 5.38: L: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.39: L: Contributions to value added growth (TFP2), 2011-recent*

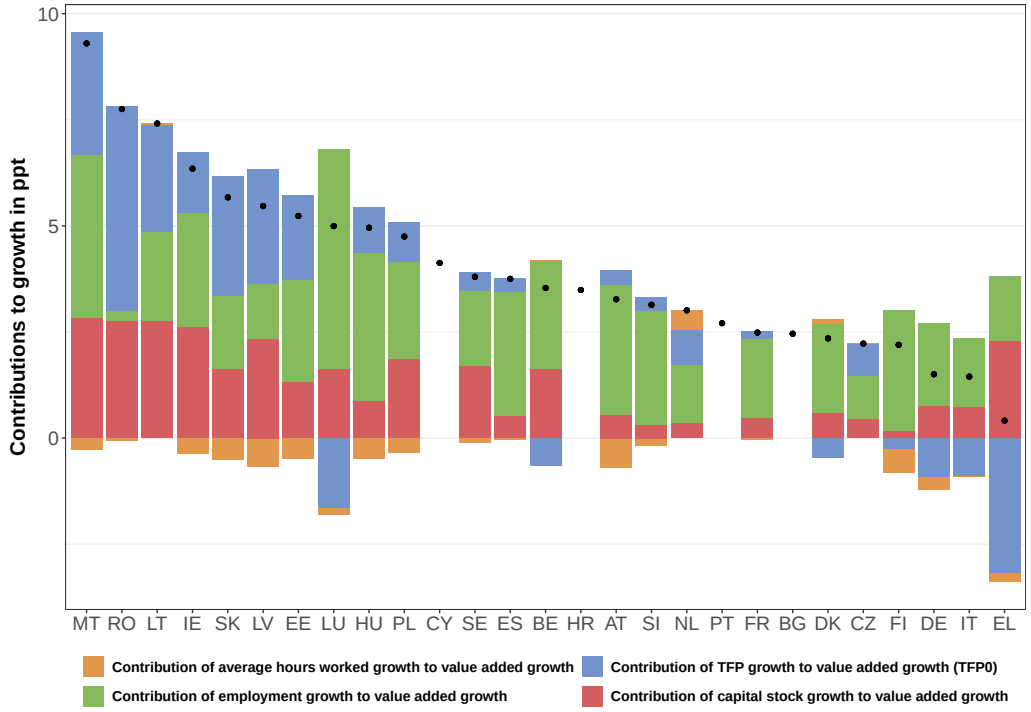


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

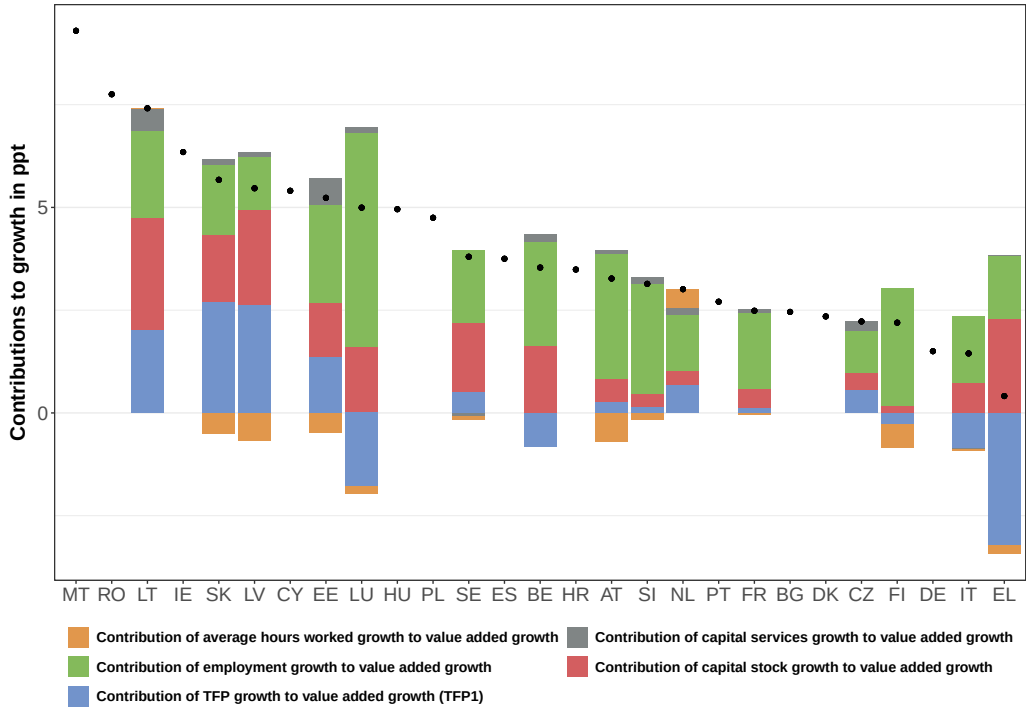
5.14 M: Professional, scientific and technical activities

Figure 5.40: M: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

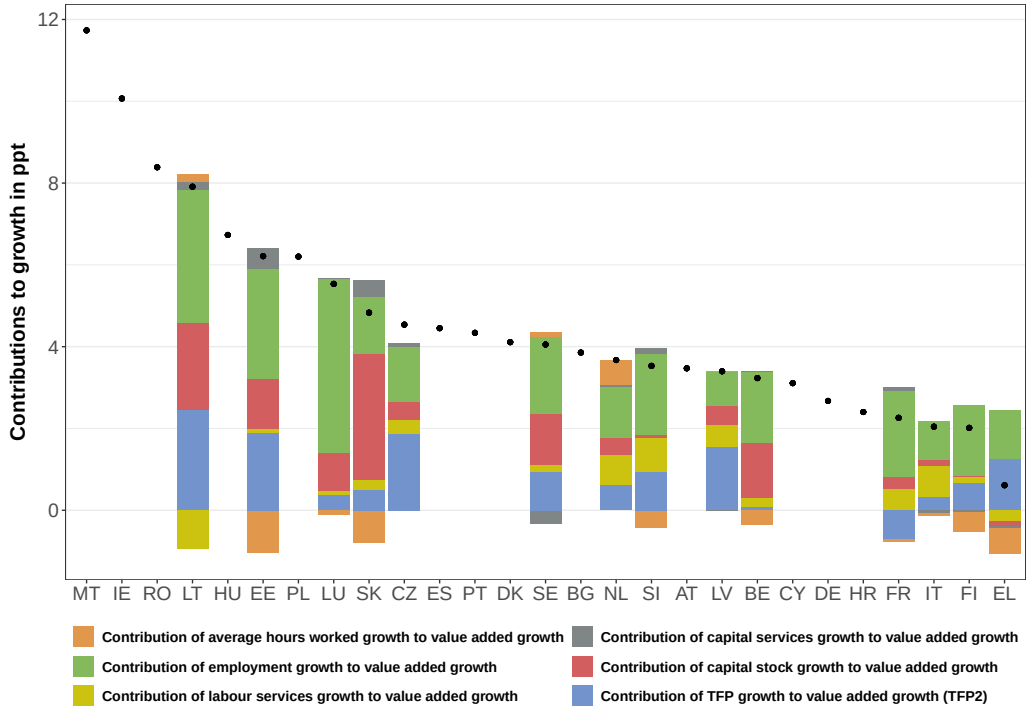
Figure 5.41: M: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.42: M: Contributions to value added growth (TFP2), 2011-recent*

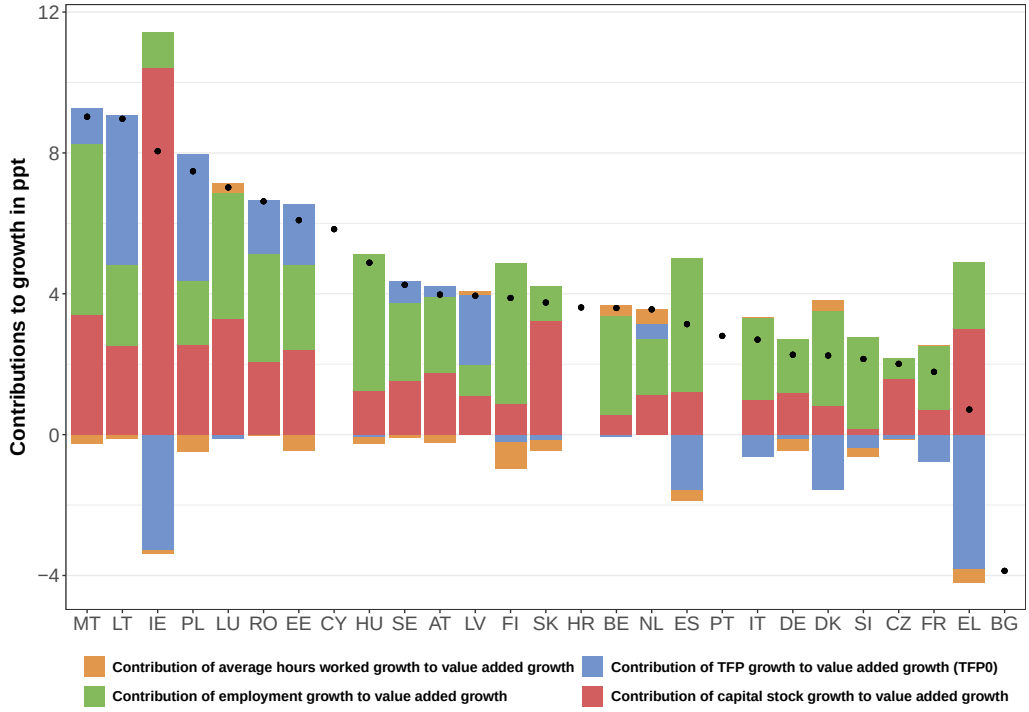


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

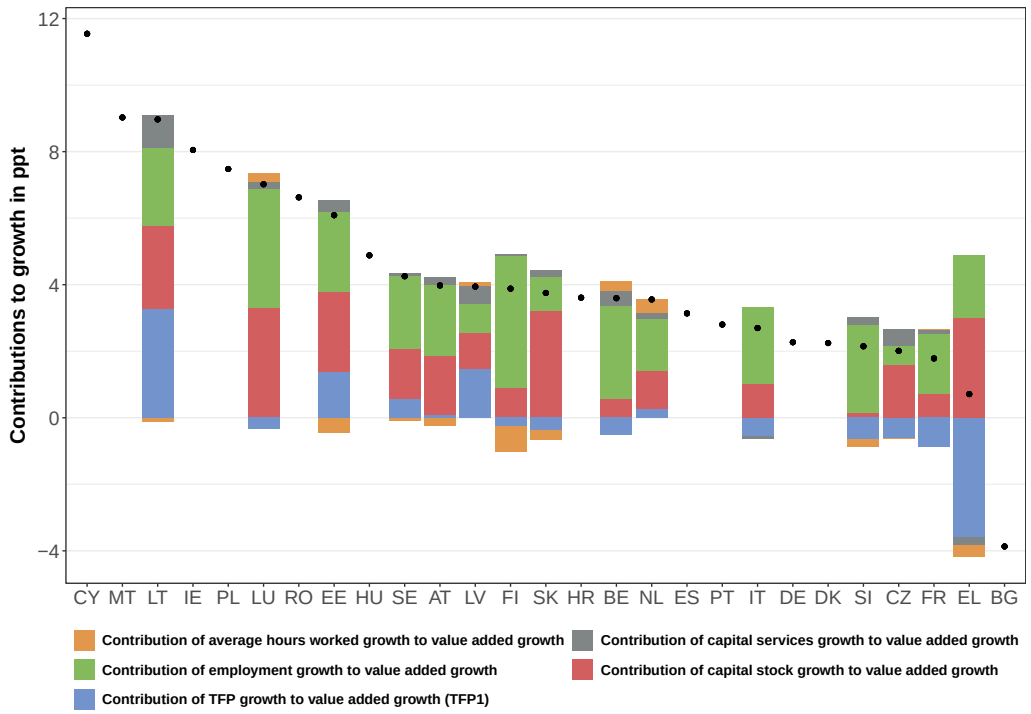
5.15 N: Administrative and support service activities

Figure 5.43: N: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

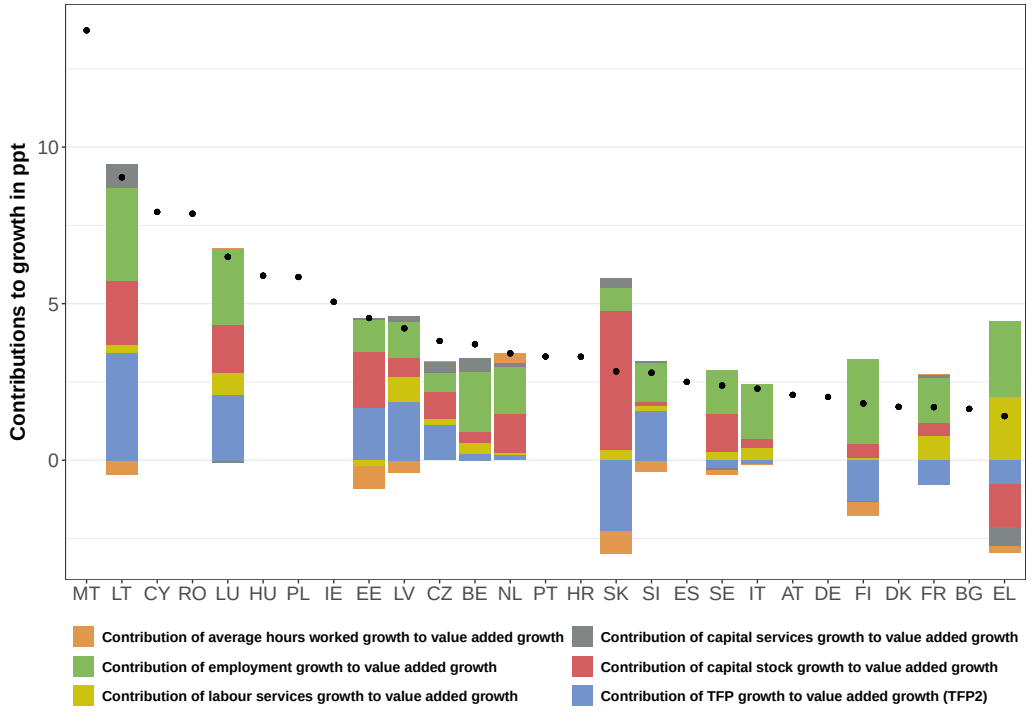
Figure 5.44: N: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.45: N: Contributions to value added growth (TFP2), 2011-recent*

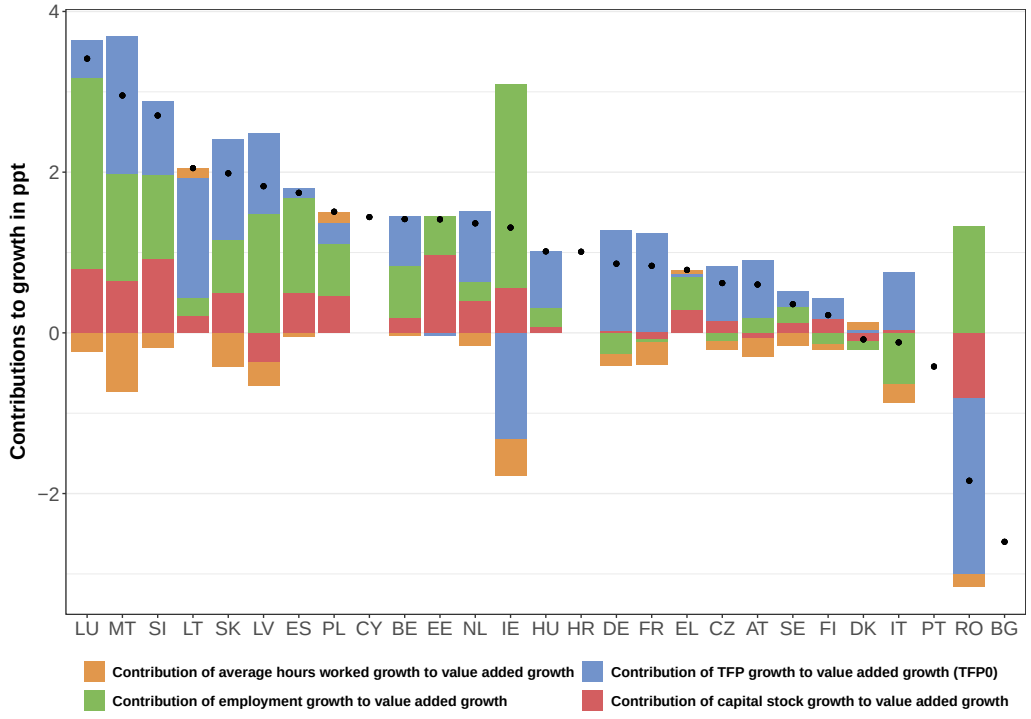


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

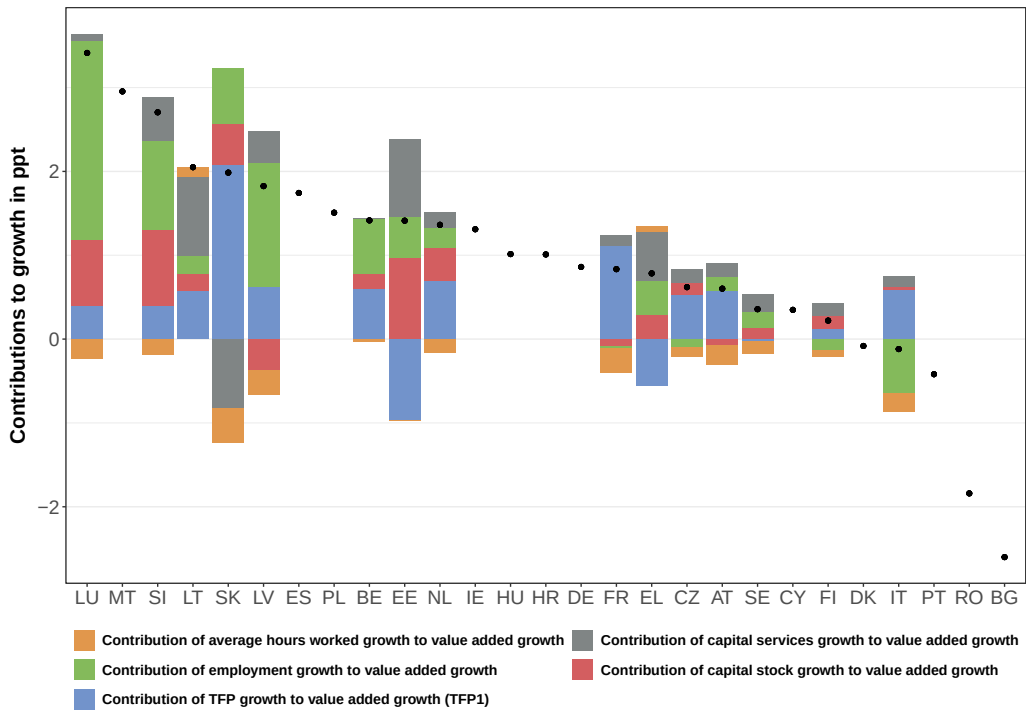
5.16 O: Public administration and defence; compulsory social security

Figure 5.46: O: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

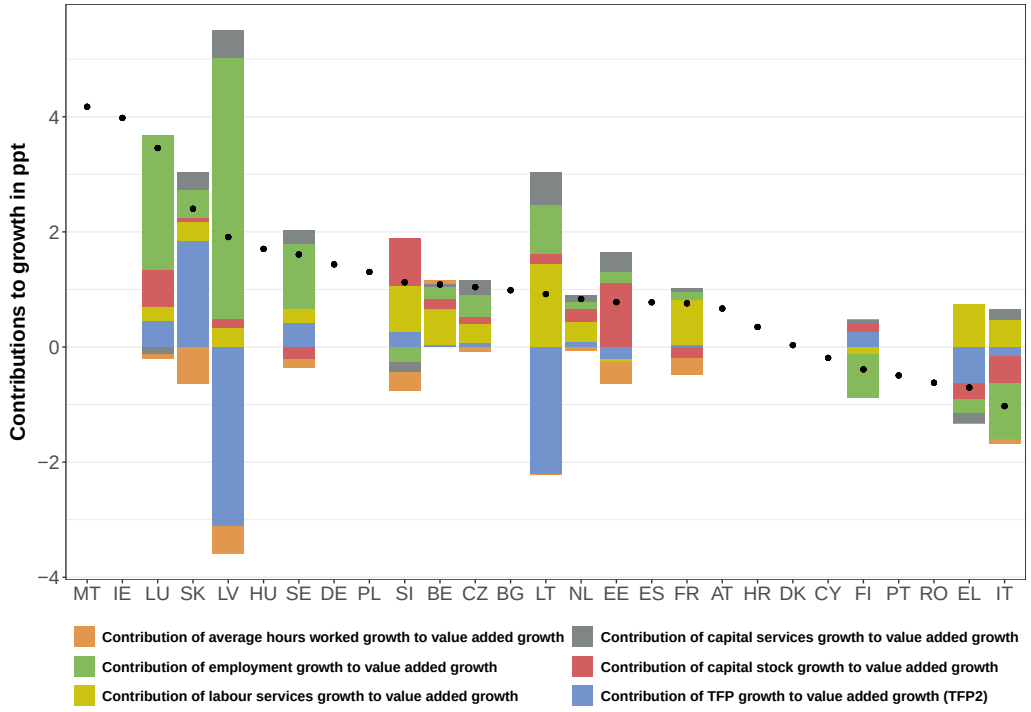
Figure 5.47: O: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.48: O: Contributions to value added growth (TFP2), 2011-recent*

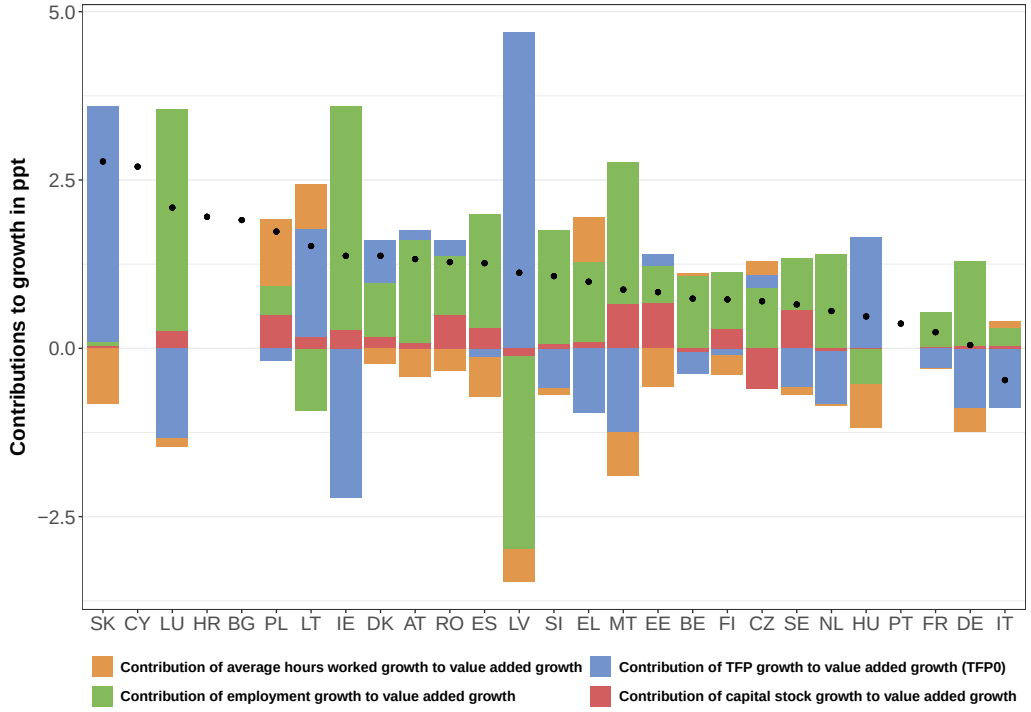


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

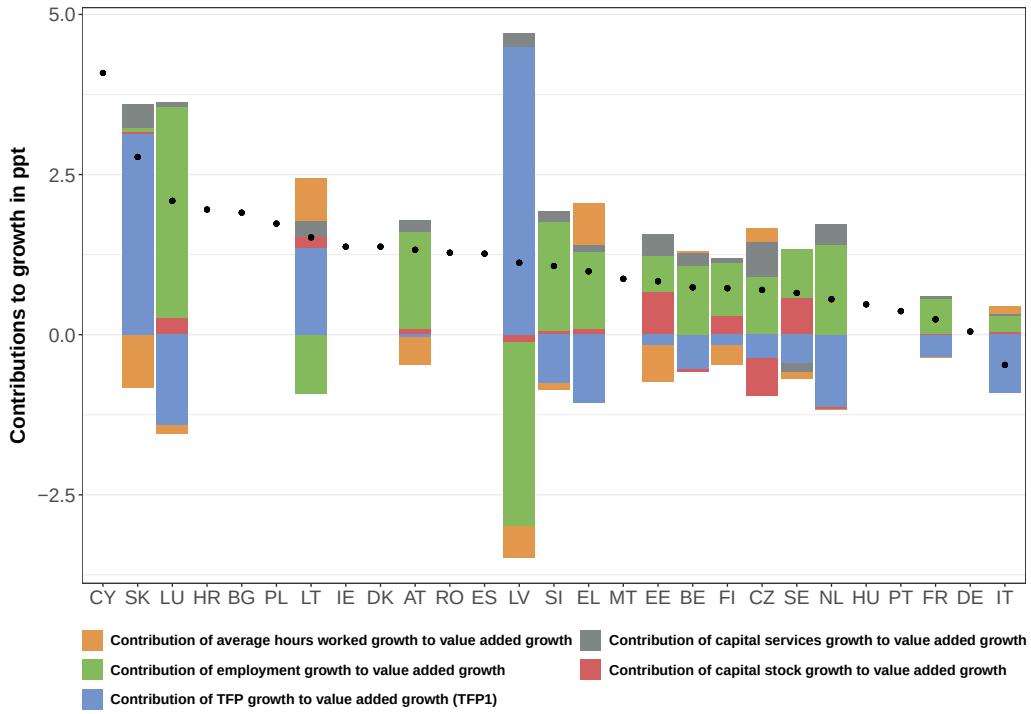
5.17 P: Education

Figure 5.49: P: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

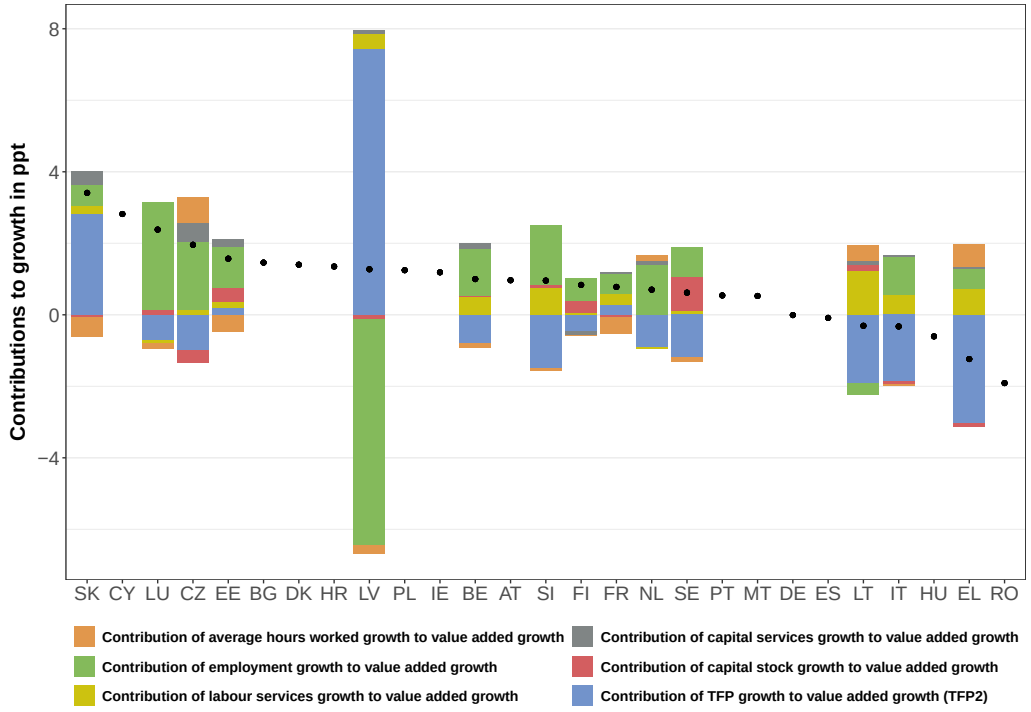
Figure 5.50: P: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.51: P: Contributions to value added growth (TFP2), 2011-recent*

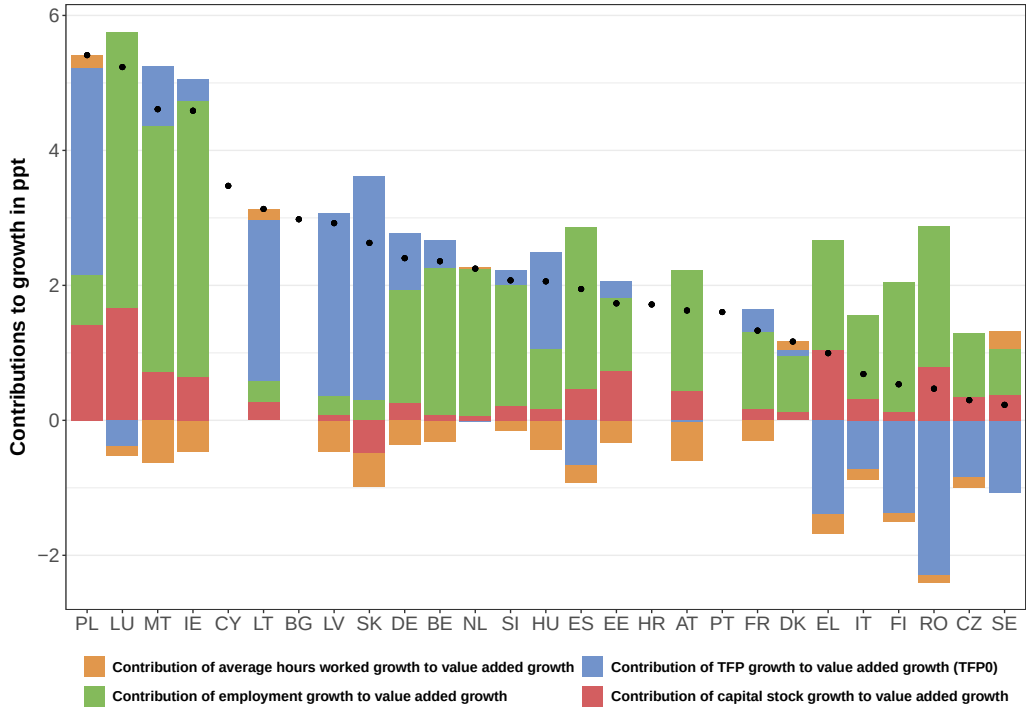


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

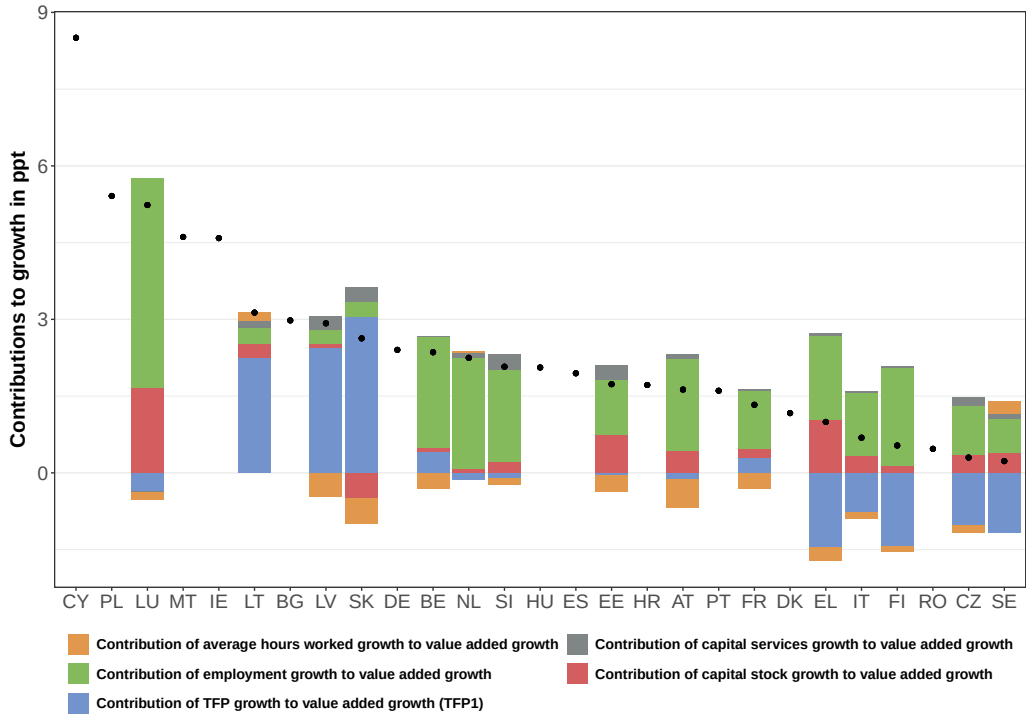
5.18 Q: Health and social work

Figure 5.52: Q: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

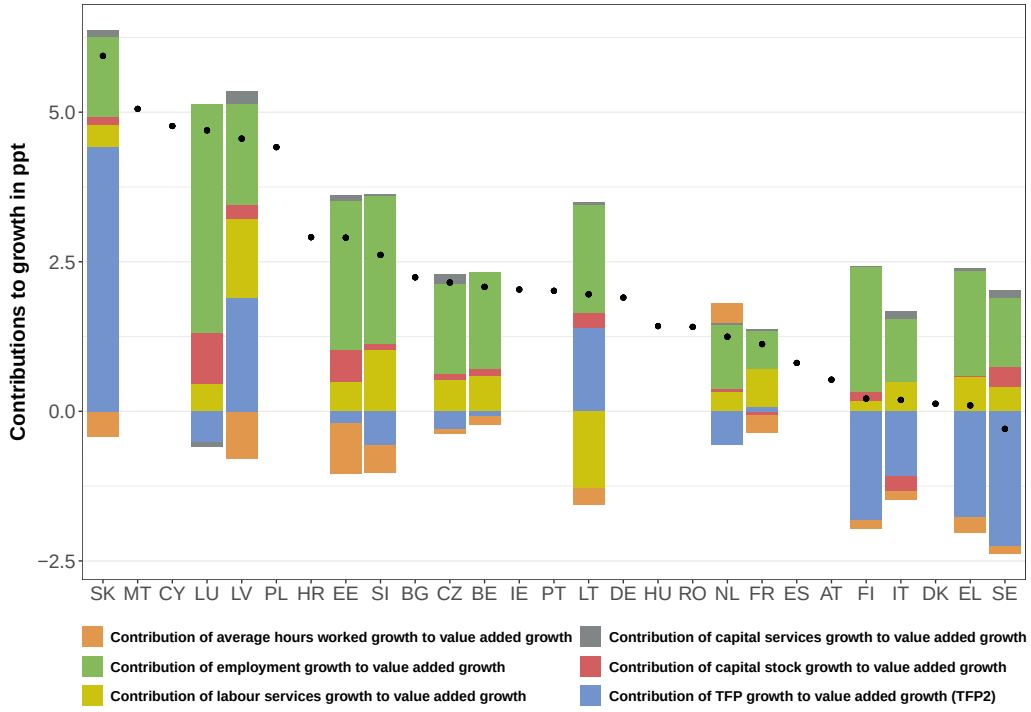
Figure 5.53: Q: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.54: Q: Contributions to value added growth (TFP2), 2011-recent*

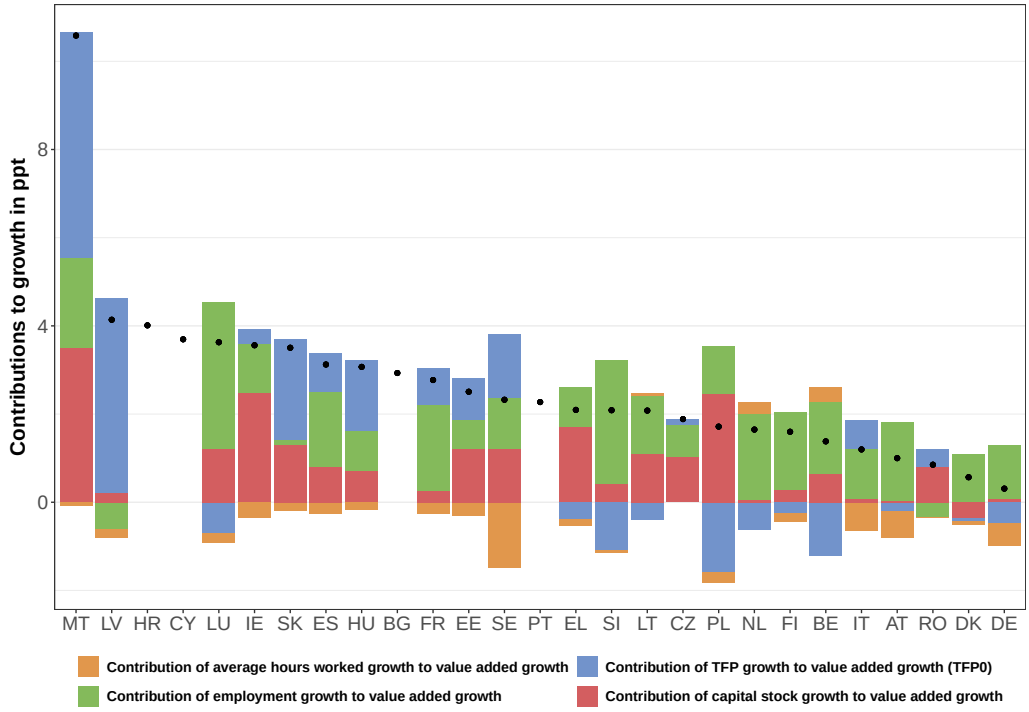


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

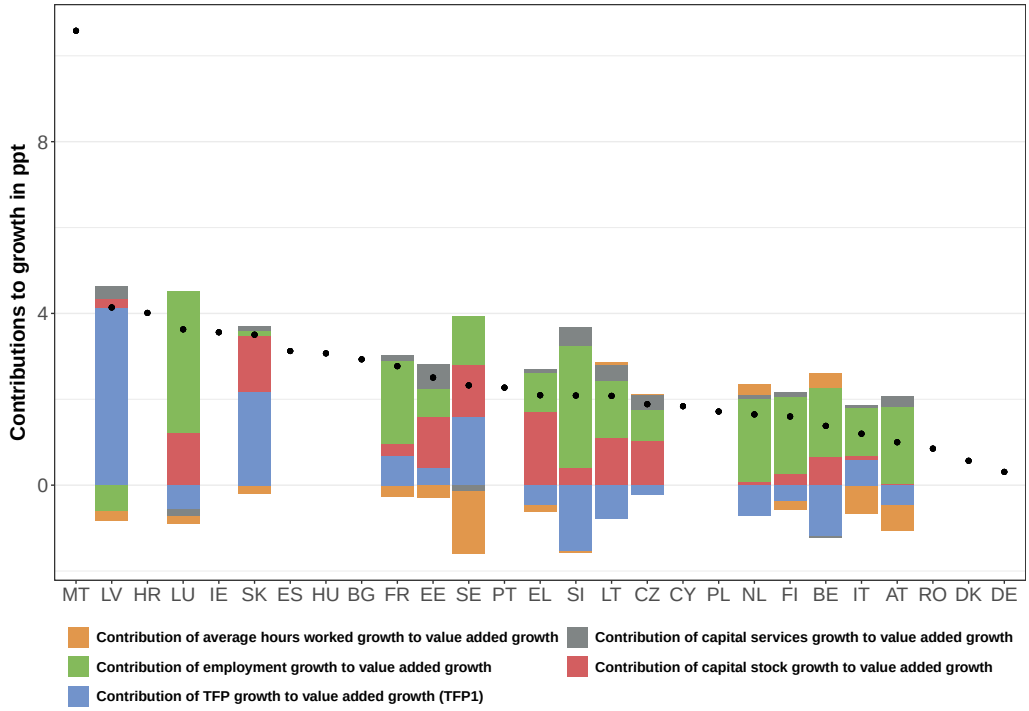
5.19 R: Arts, entertainment and recreation

Figure 5.55: R: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

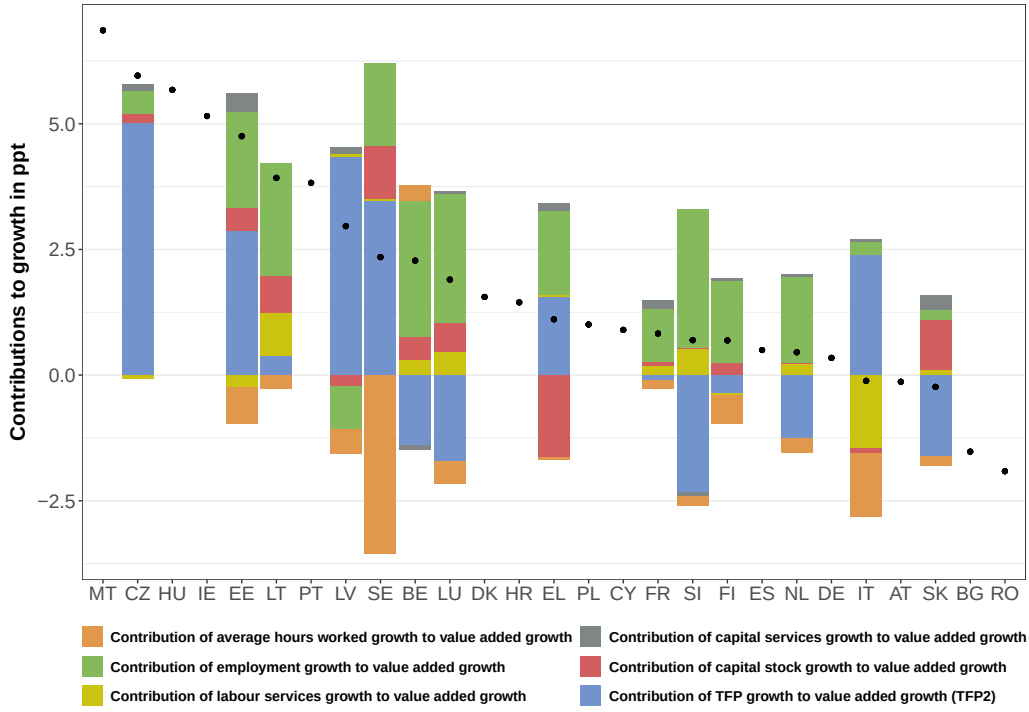
Figure 5.56: R: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.57: R: Contributions to value added growth (TFP2), 2011-recent*

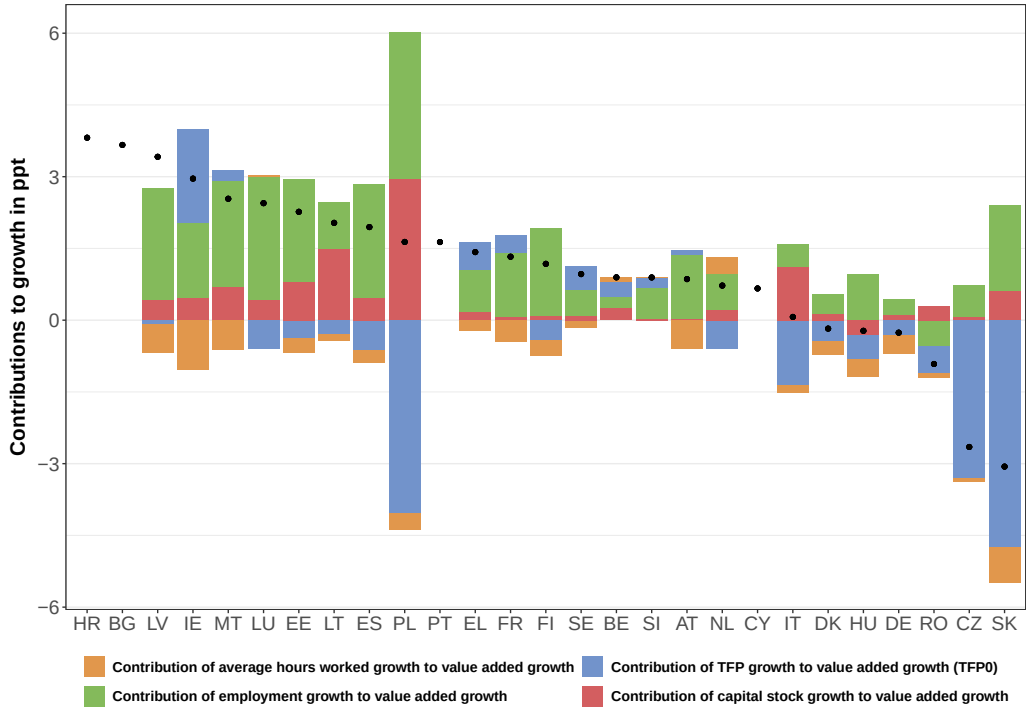


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

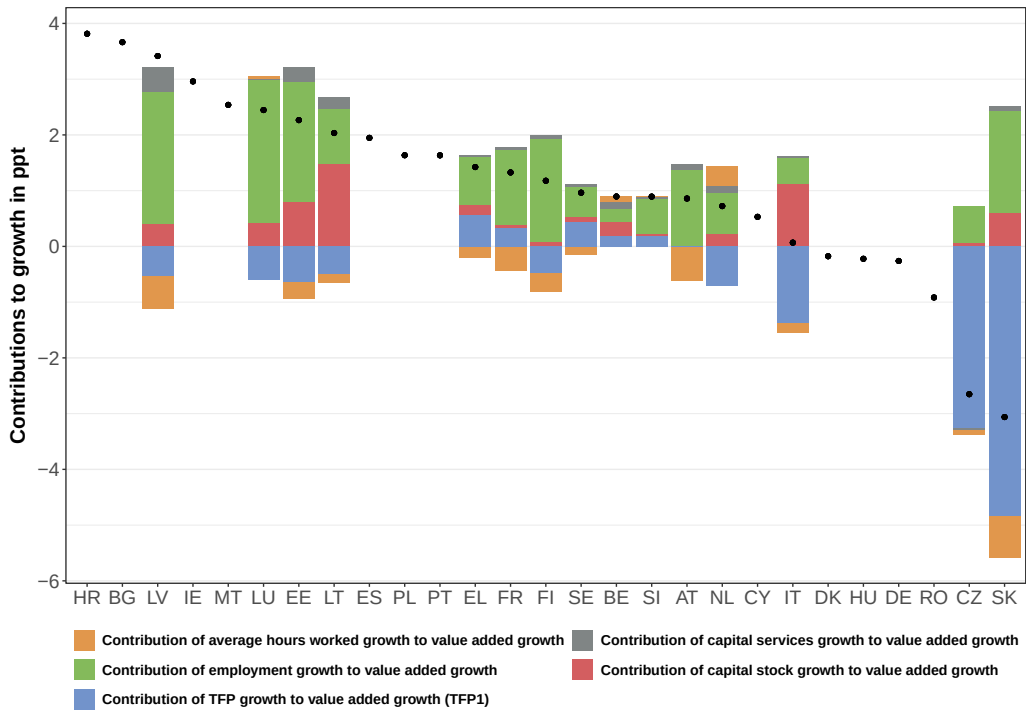
5.20 S: Other service activities

Figure 5.58: S: Contributions to value added growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

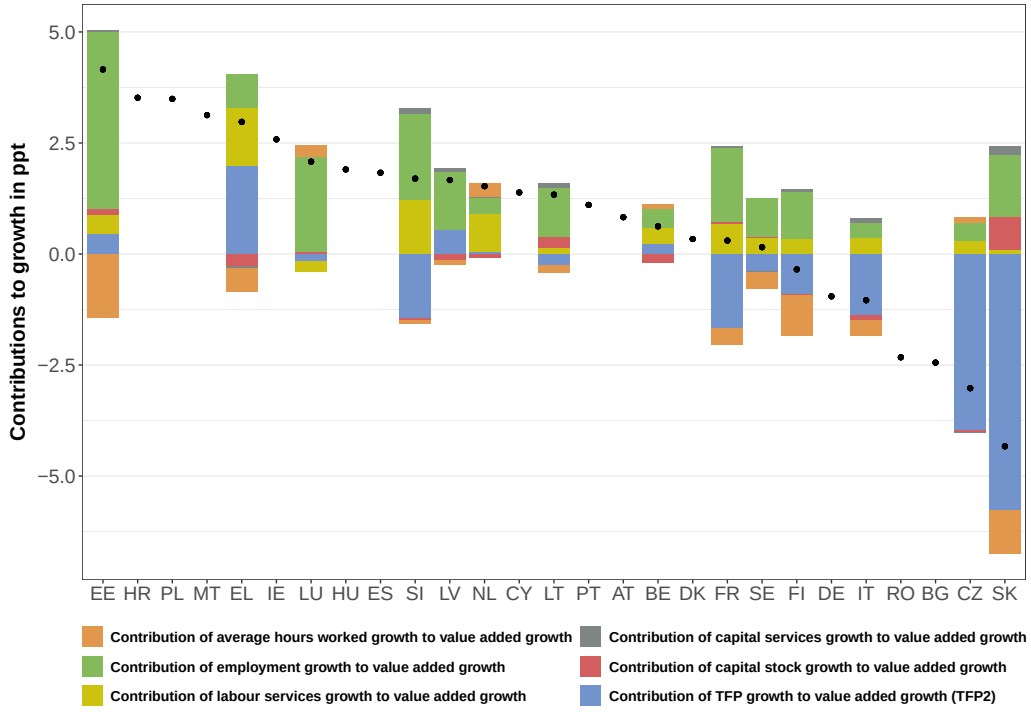
Figure 5.59: S: Contributions to value added growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 5.60: S: Contributions to value added growth (TFP2), 2011-recent*



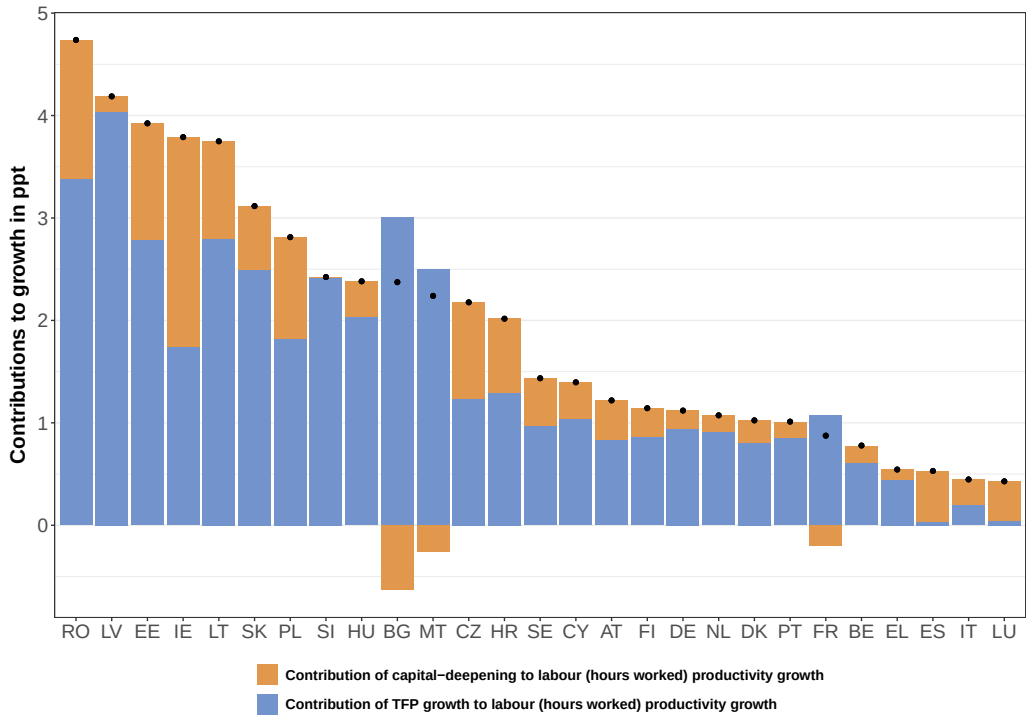
Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

6 Contributions to labour productivity growth

6.1 A-U: Total economy

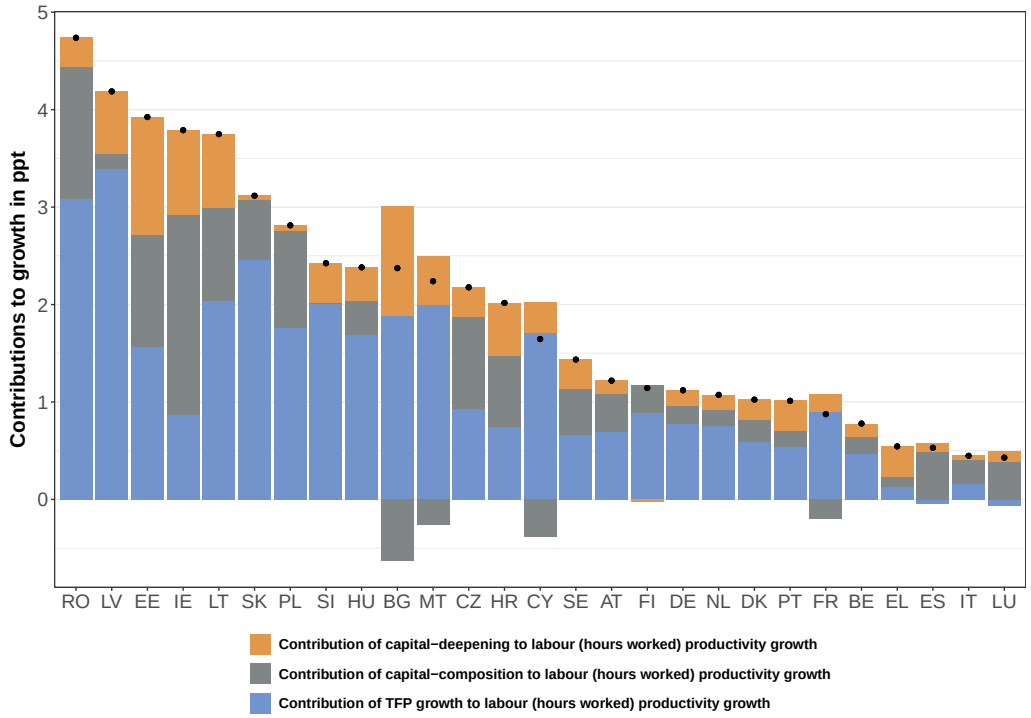
Figure 6.1: A-U: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

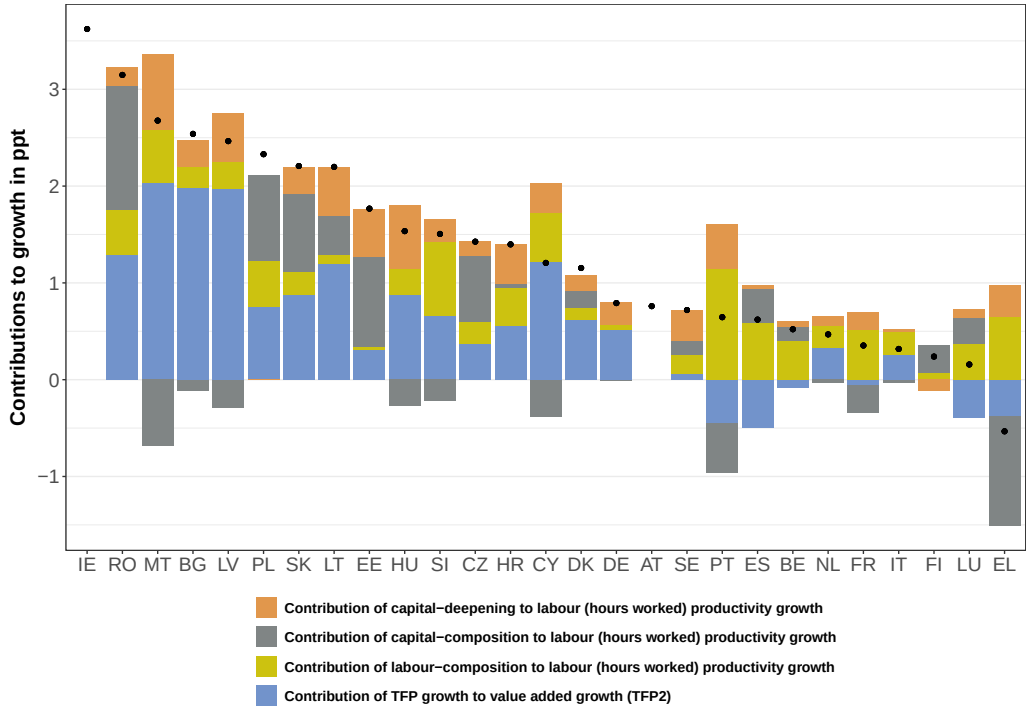
Figure 6.2: A-U: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.3: A-U: Contributions to labour productivity growth (TFP2), 2011-recent*

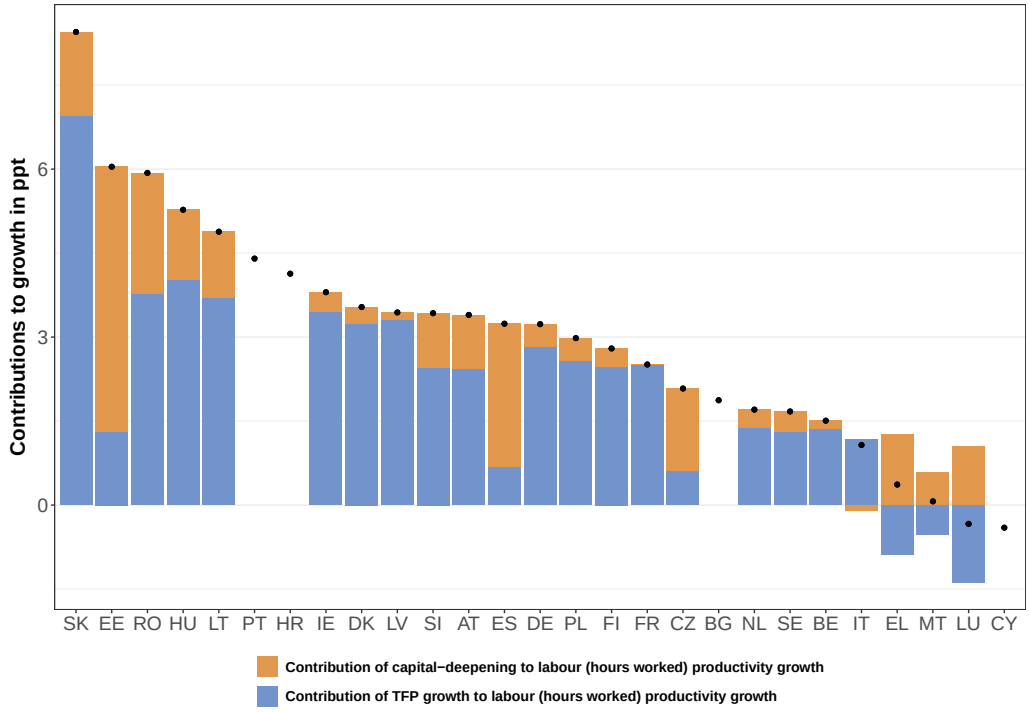


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

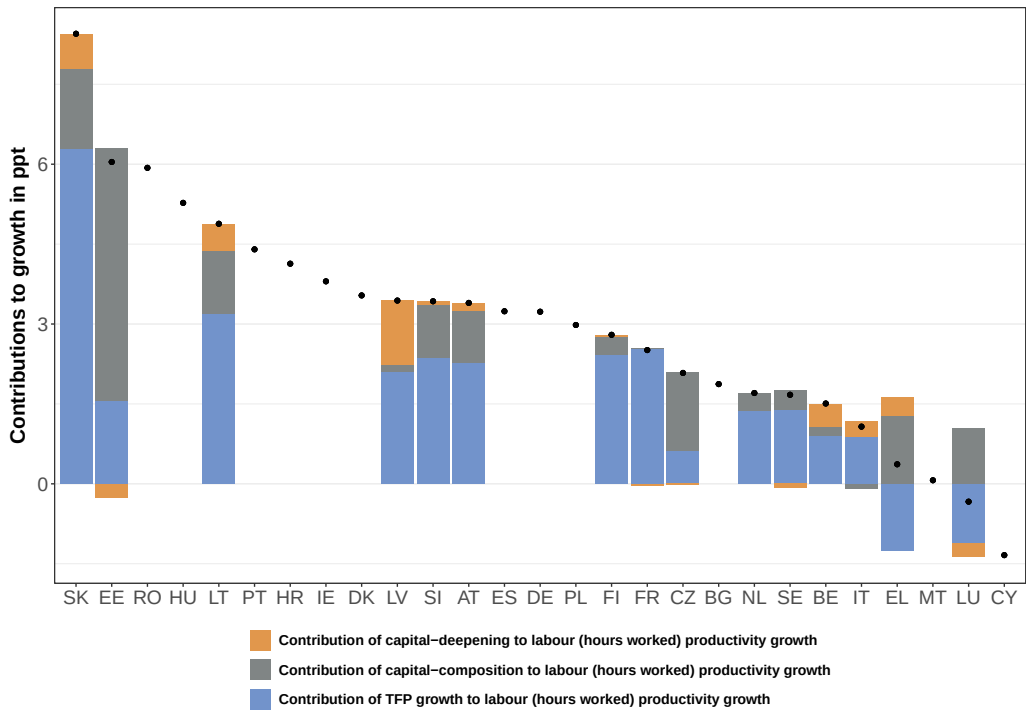
6.2 A: Agriculture, forestry and fishing

Figure 6.4: A: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

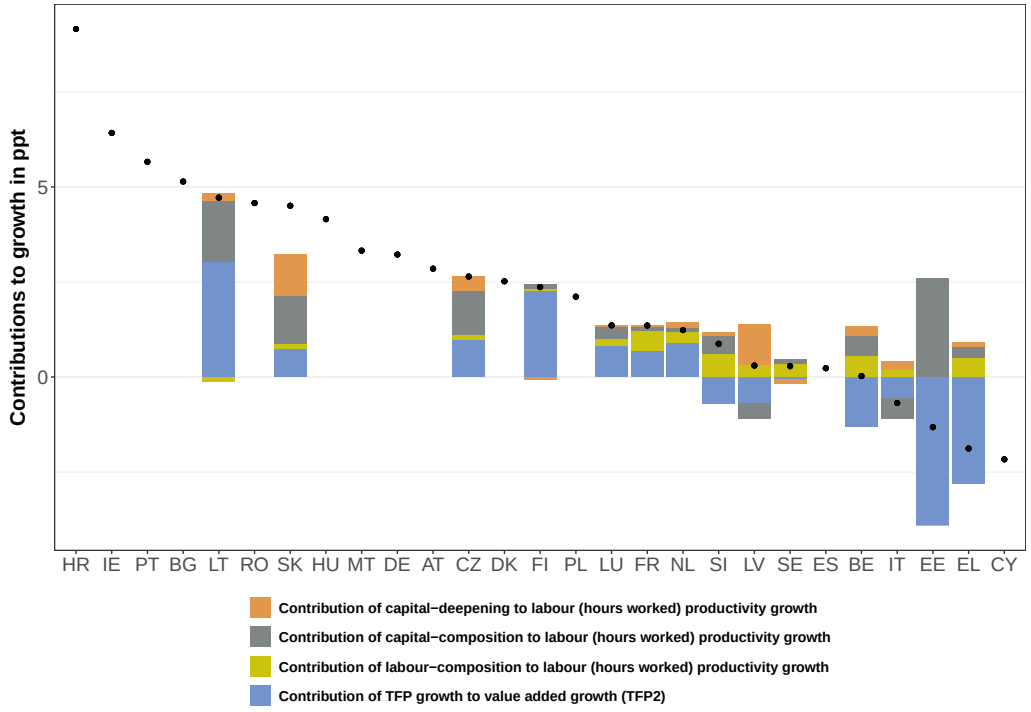
Figure 6.5: A: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.6: A: Contributions to labour productivity growth (TFP2), 2011-recent*

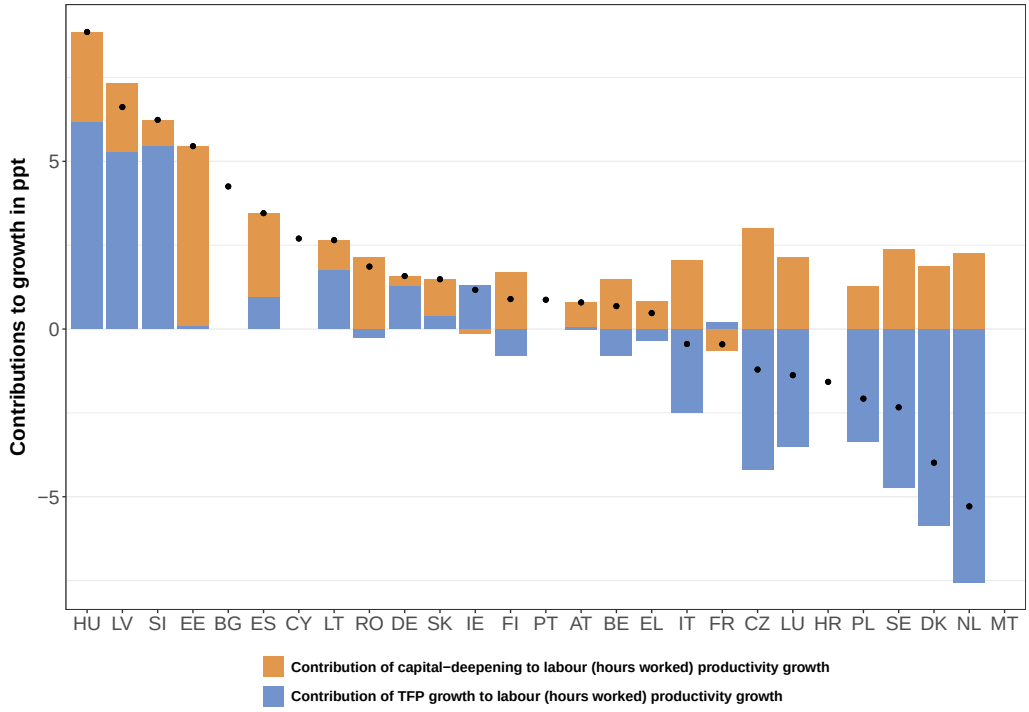


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

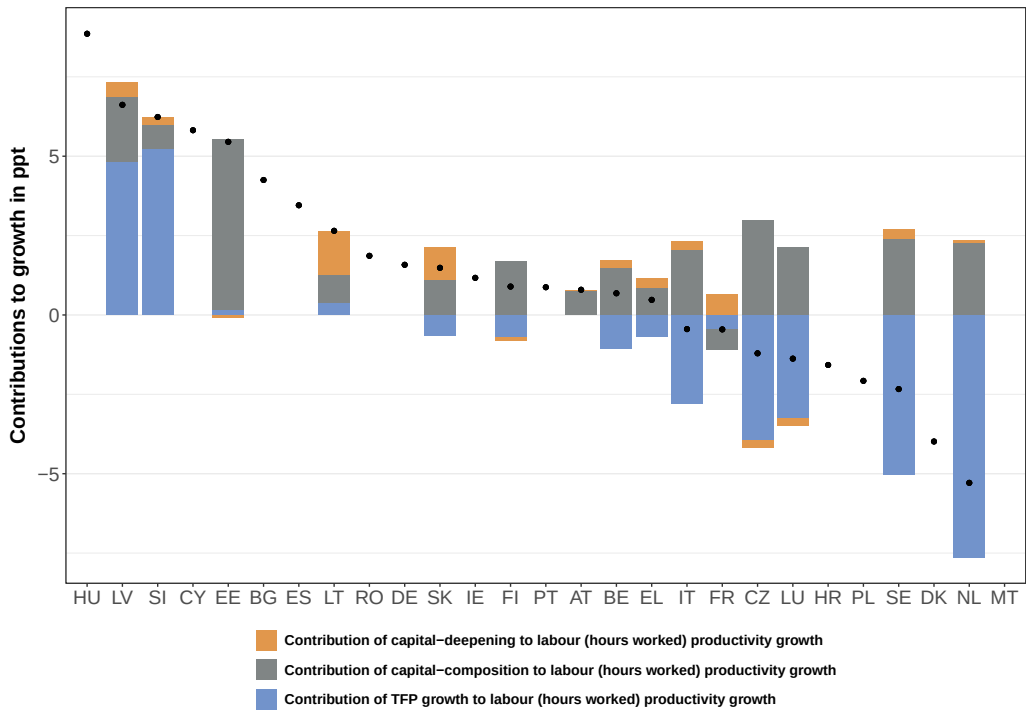
6.3 B: Mining and quarrying

Figure 6.7: B: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

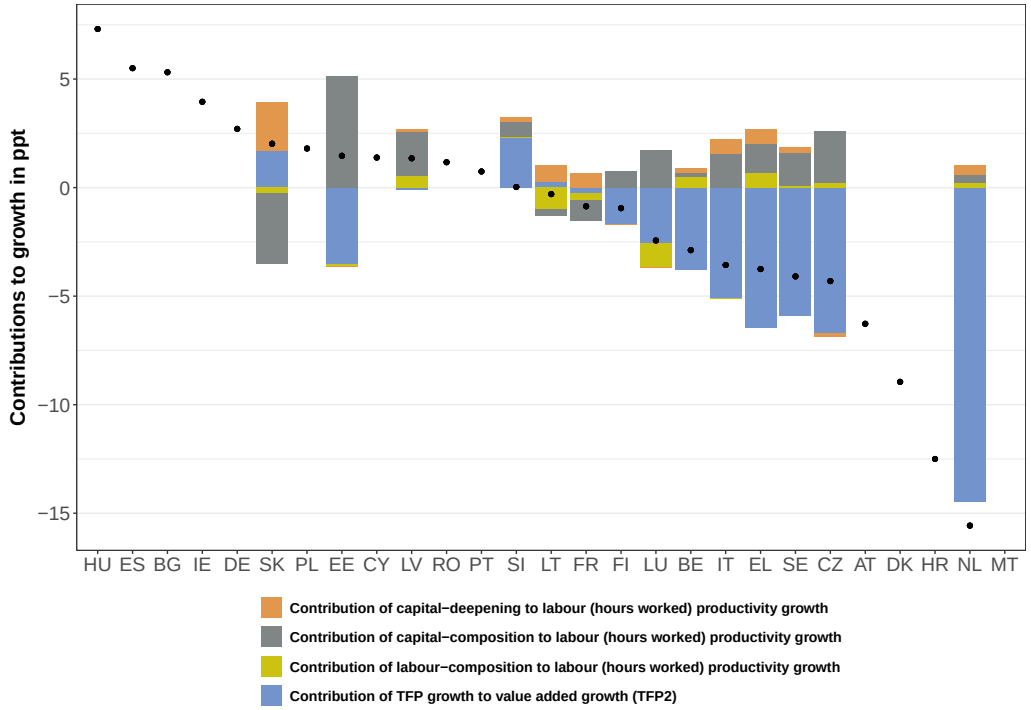
Figure 6.8: B: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.9: B: Contributions to labour productivity growth (TFP2), 2011-recent*

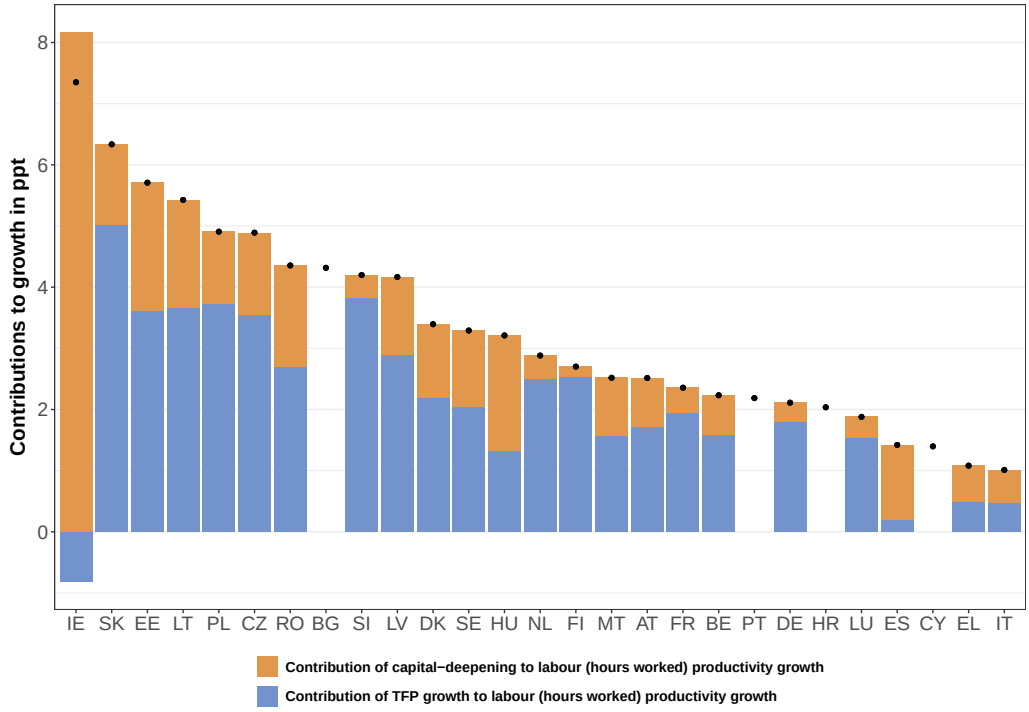


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

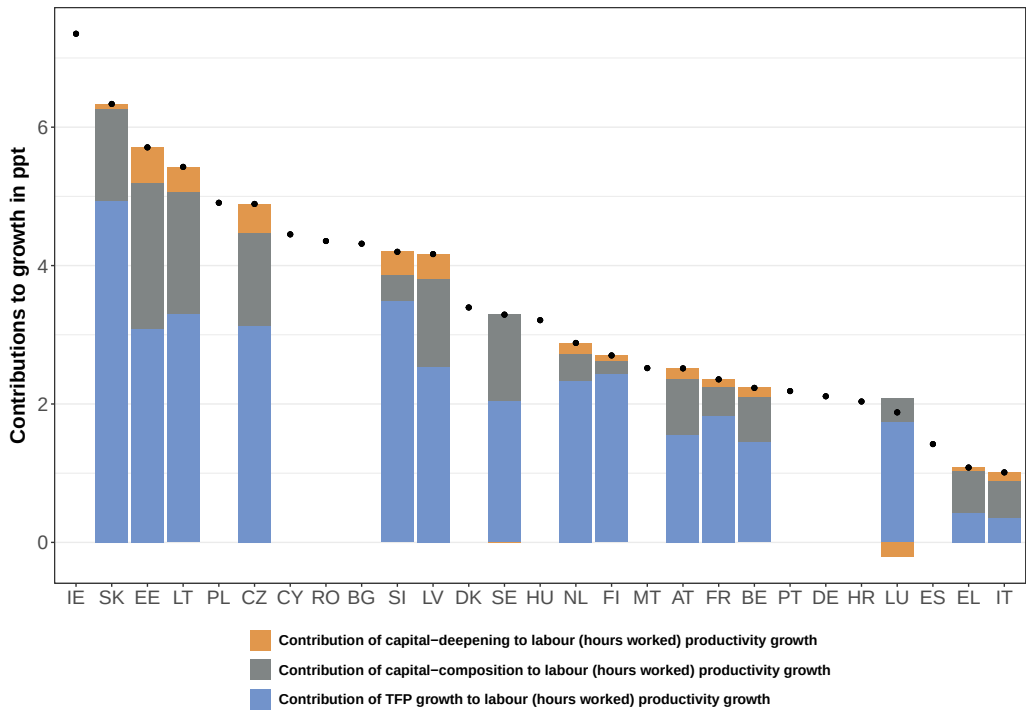
6.4 C: Manufacturing

Figure 6.10: C: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

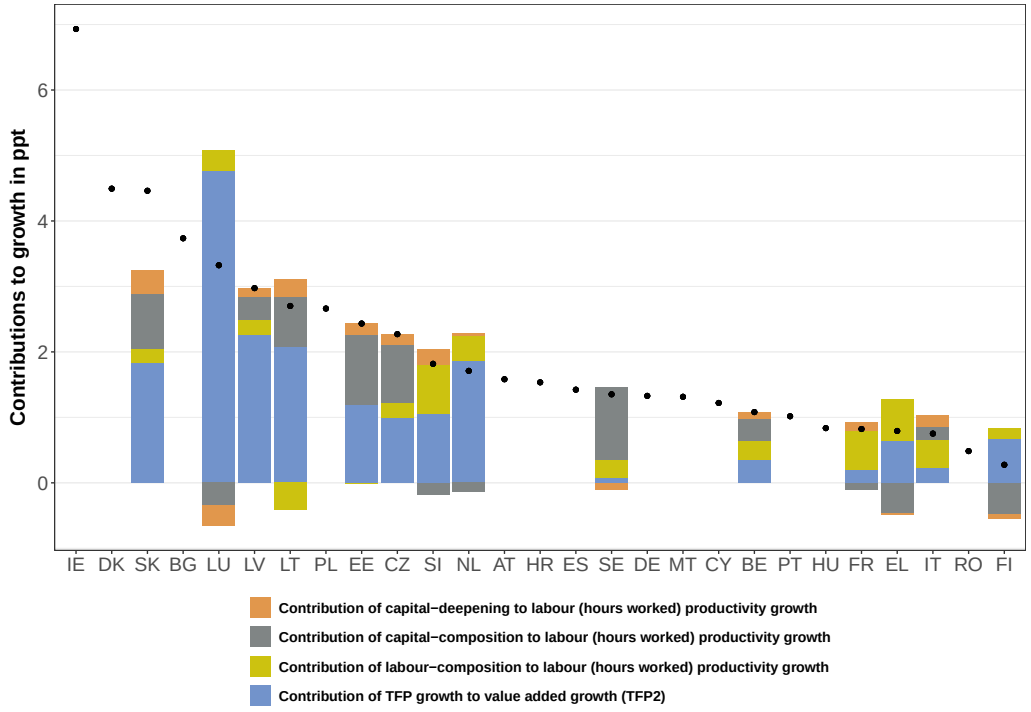
Figure 6.11: C: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.12: C: Contributions to labour productivity growth (TFP2), 2011-recent*

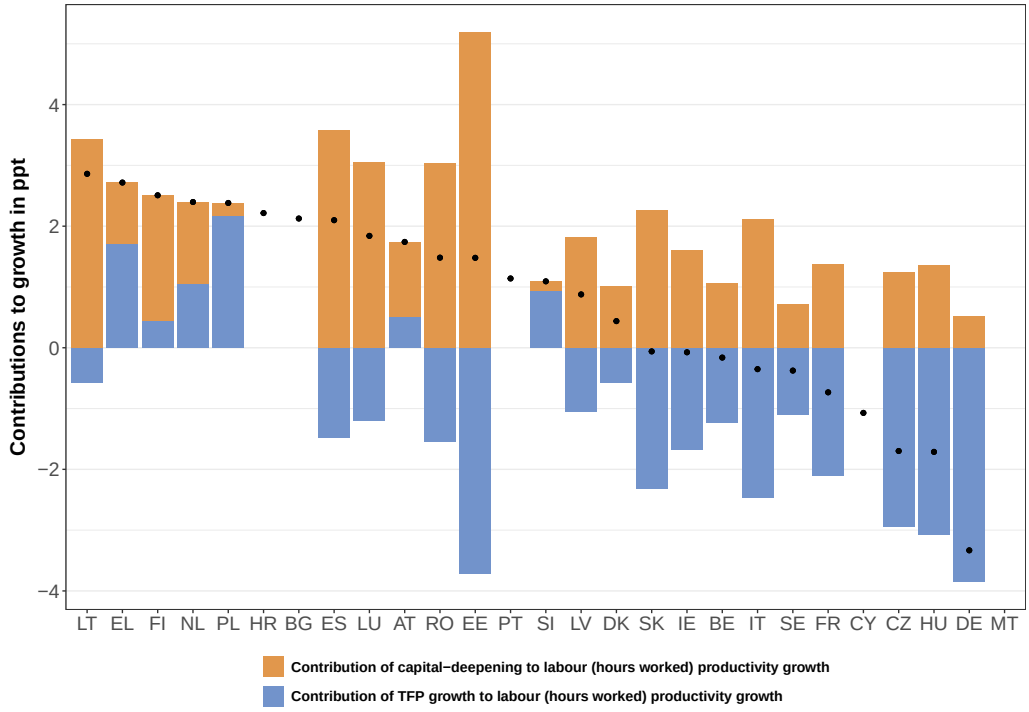


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

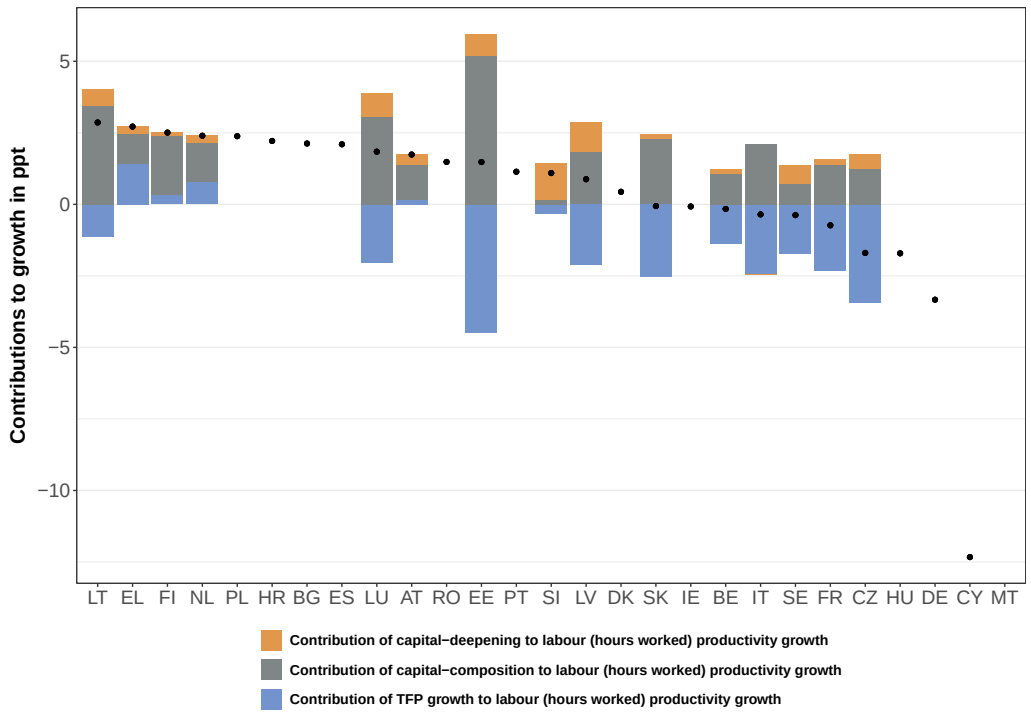
6.5 D: Electricity, gas, steam and air conditioning supply

Figure 6.13: D: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

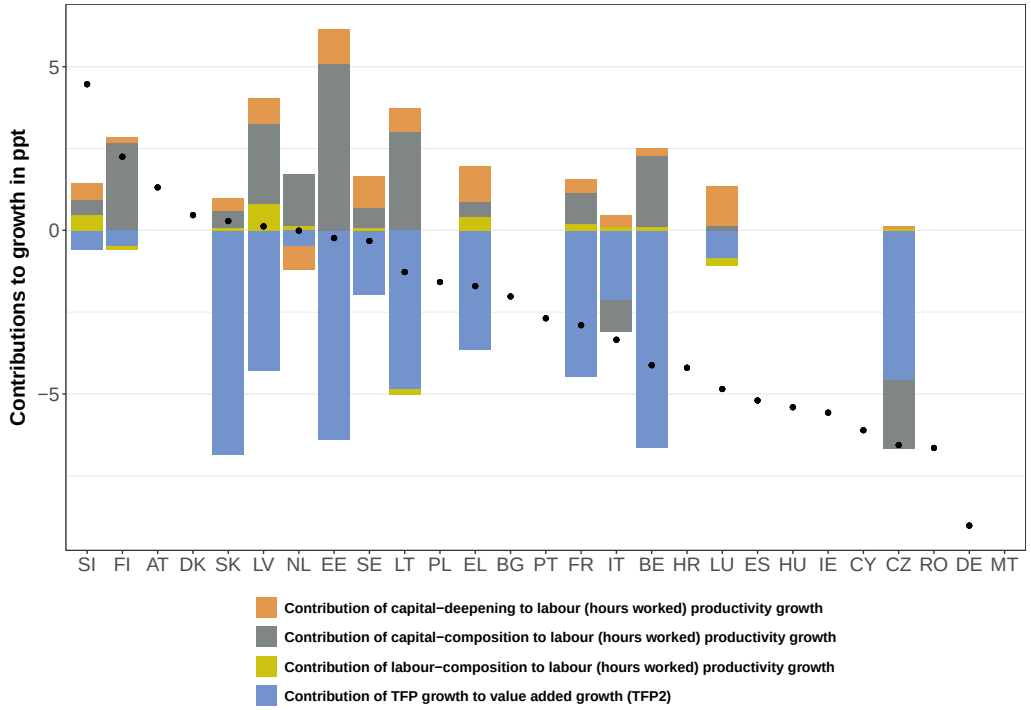
Figure 6.14: D: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.15: D: Contributions to labour productivity growth (TFP2), 2011-recent*

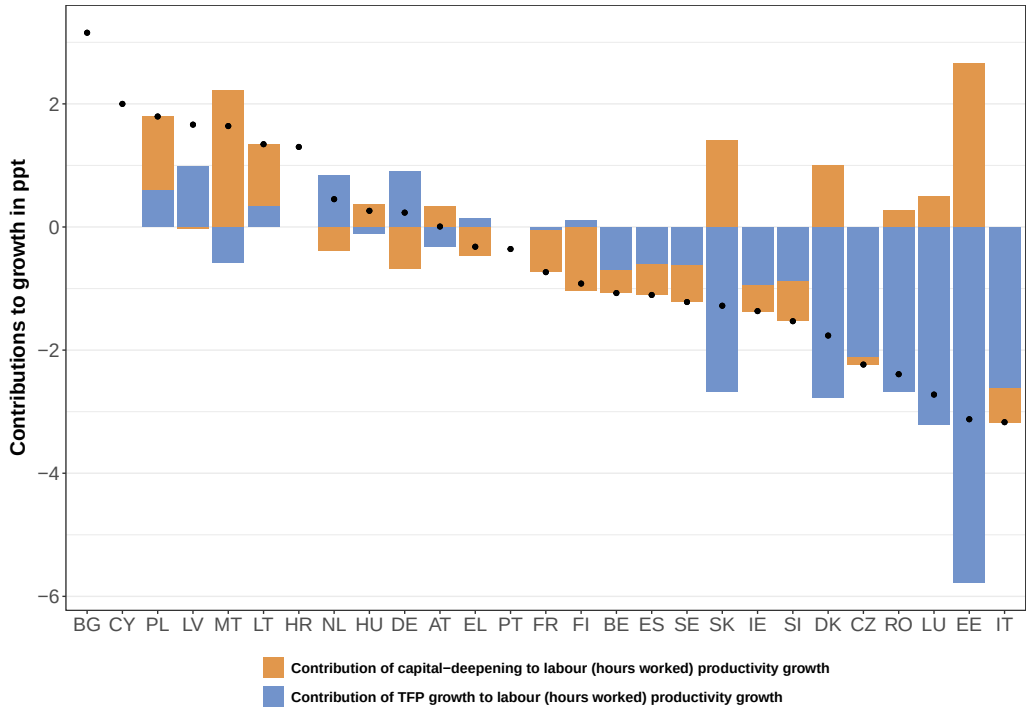


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

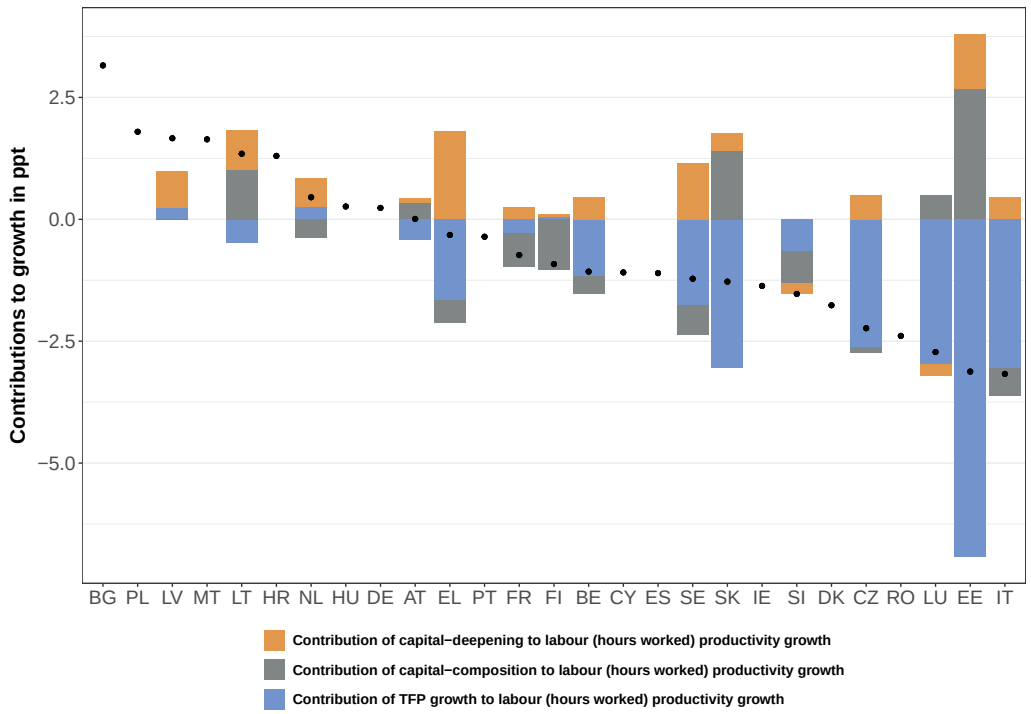
6.6 E: Water supply; sewerage; waste management and remediation activities

Figure 6.16: E: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

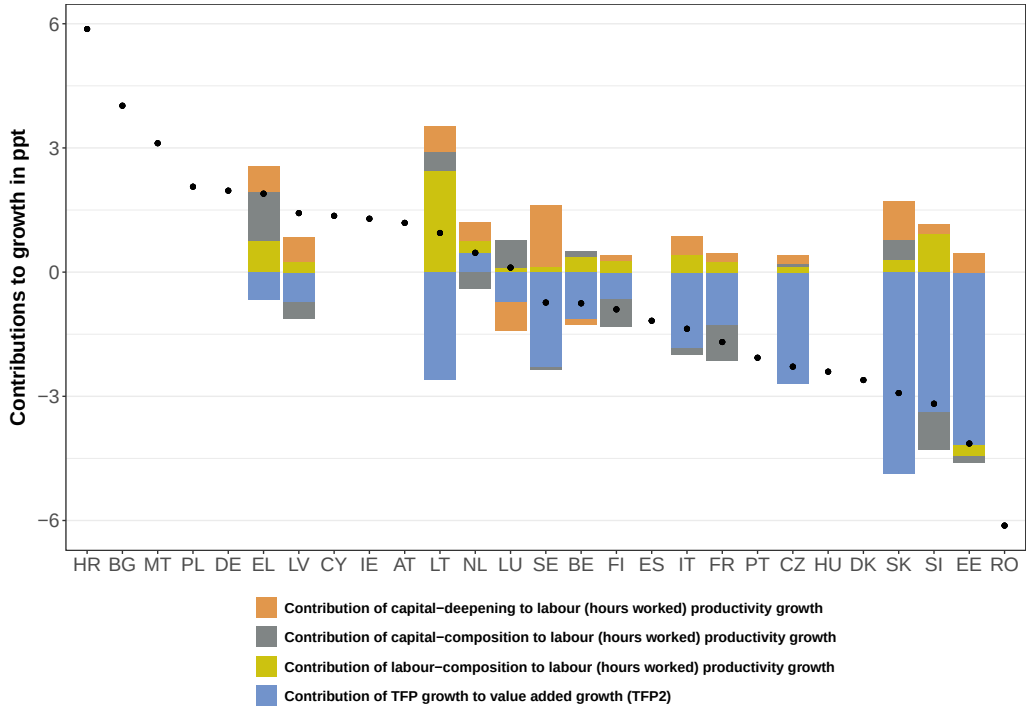
Figure 6.17: E: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.18: E: Contributions to labour productivity growth (TFP2), 2011-recent*

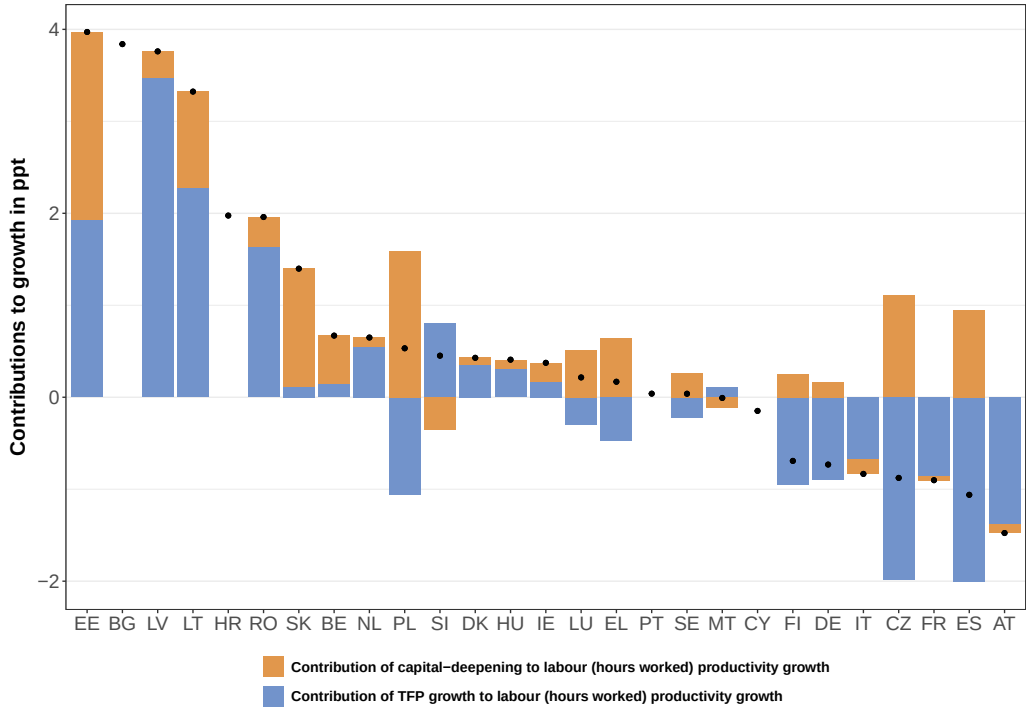


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

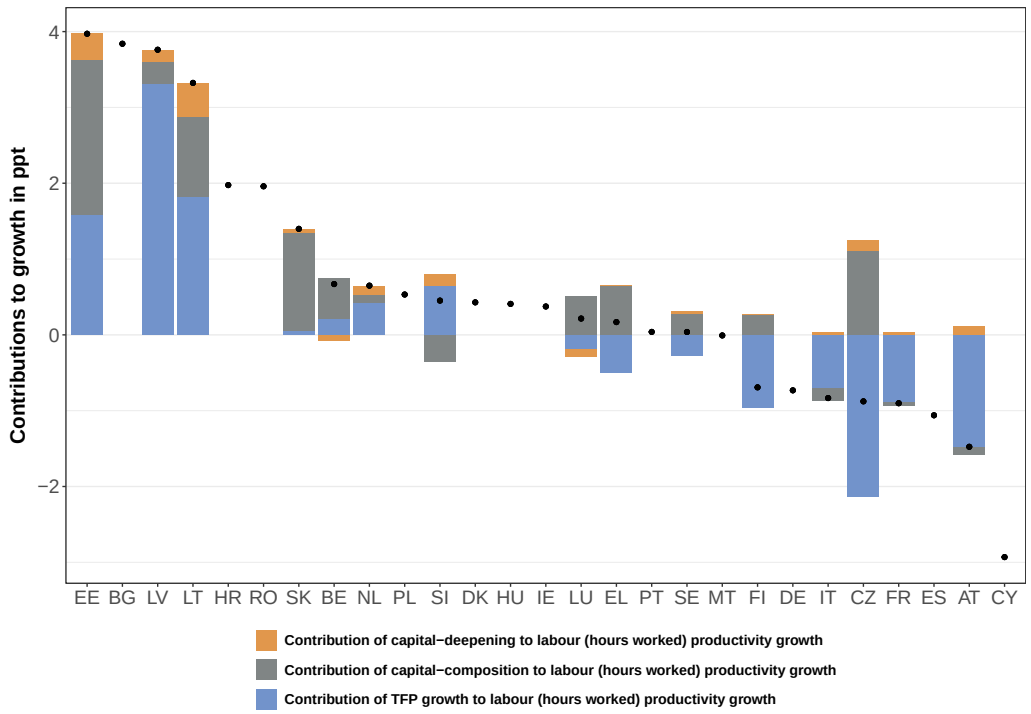
6.7 F: Construction

Figure 6.19: F: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

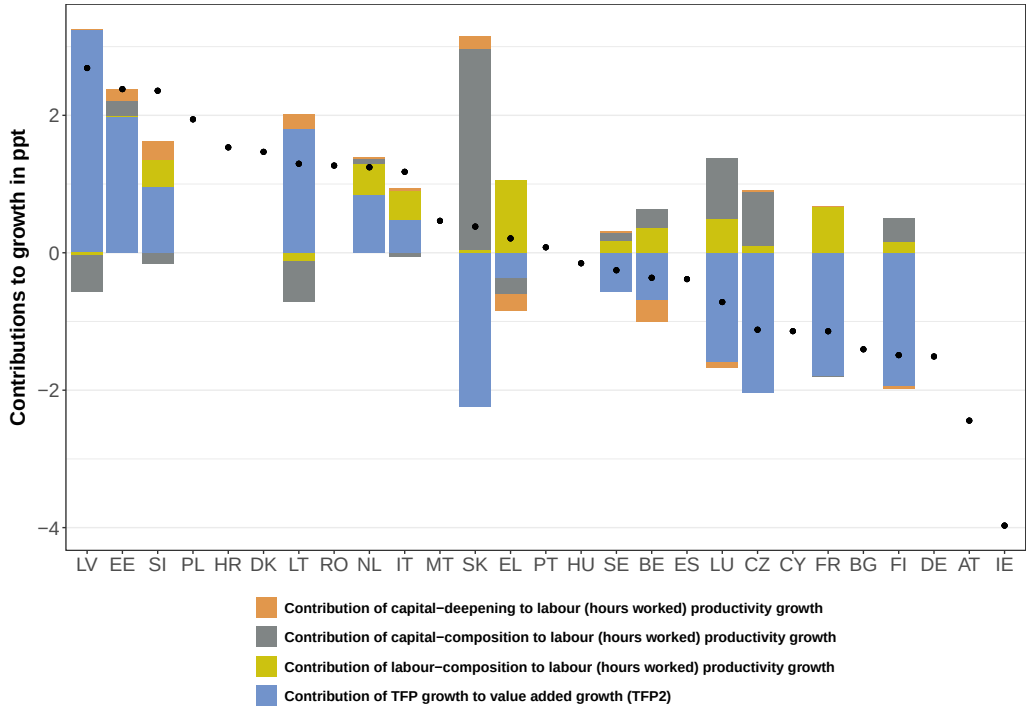
Figure 6.20: F: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.21: F: Contributions to labour productivity growth (TFP2), 2011-recent*

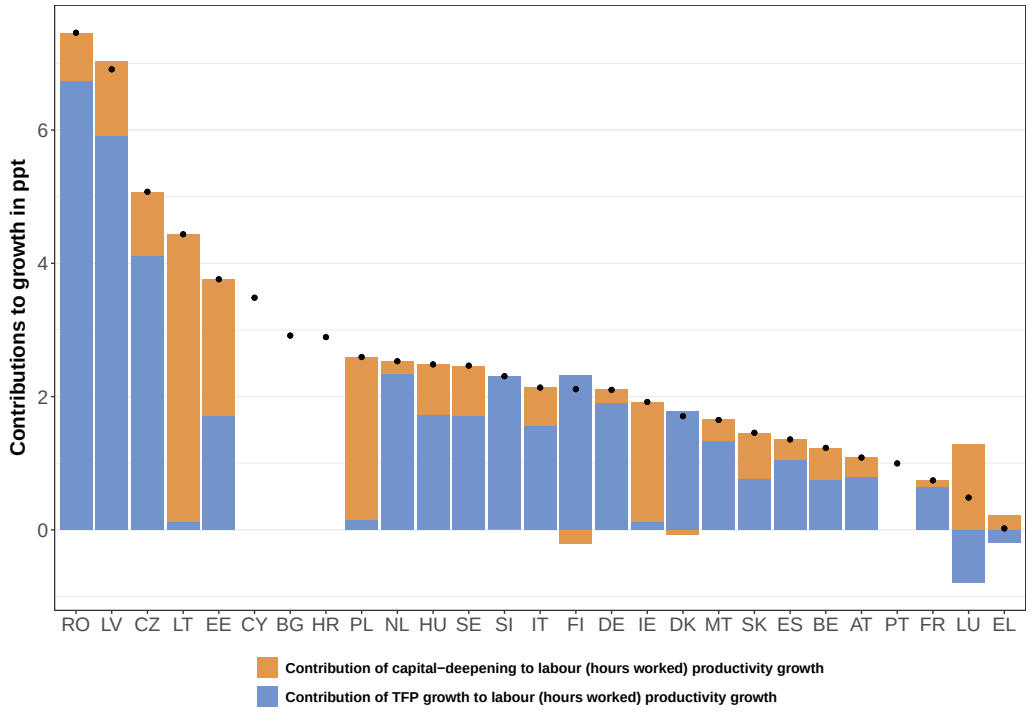


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

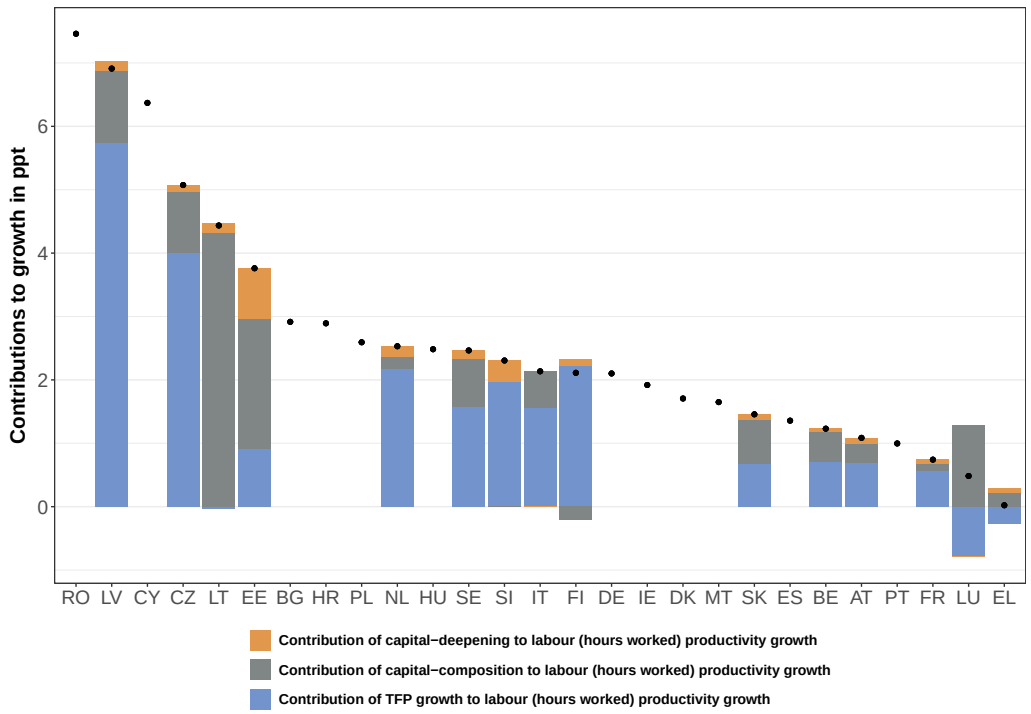
6.8 G: Wholesale and retail trade; repair of motor vehicles and motorcycles

Figure 6.22: G: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

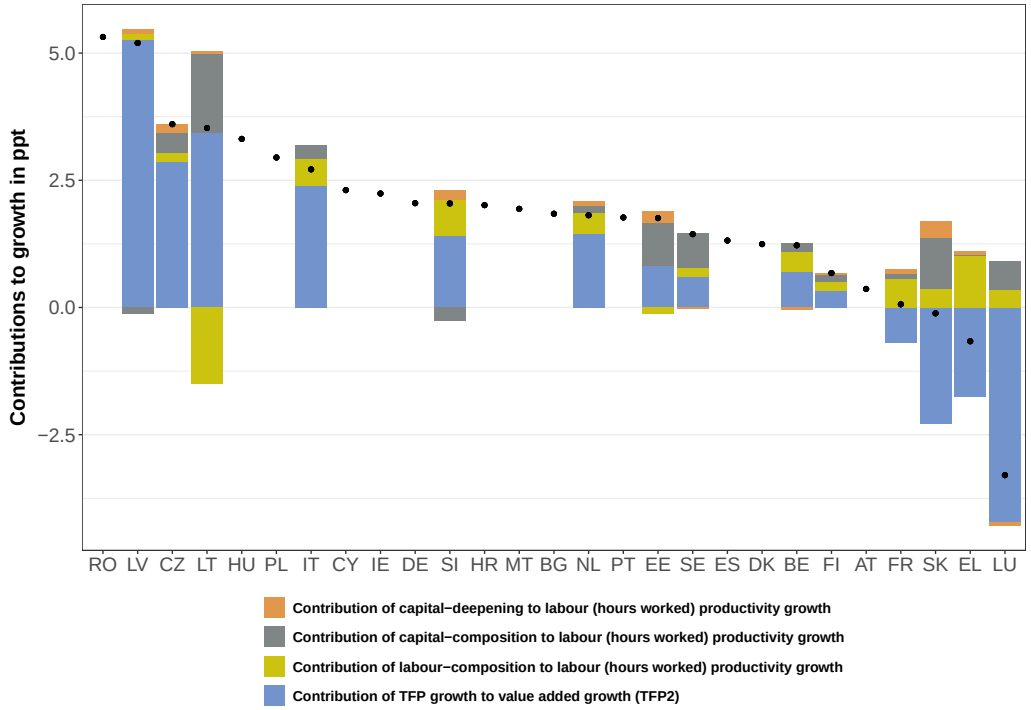
Figure 6.23: G: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.24: G: Contributions to labour productivity growth (TFP2), 2011-recent*

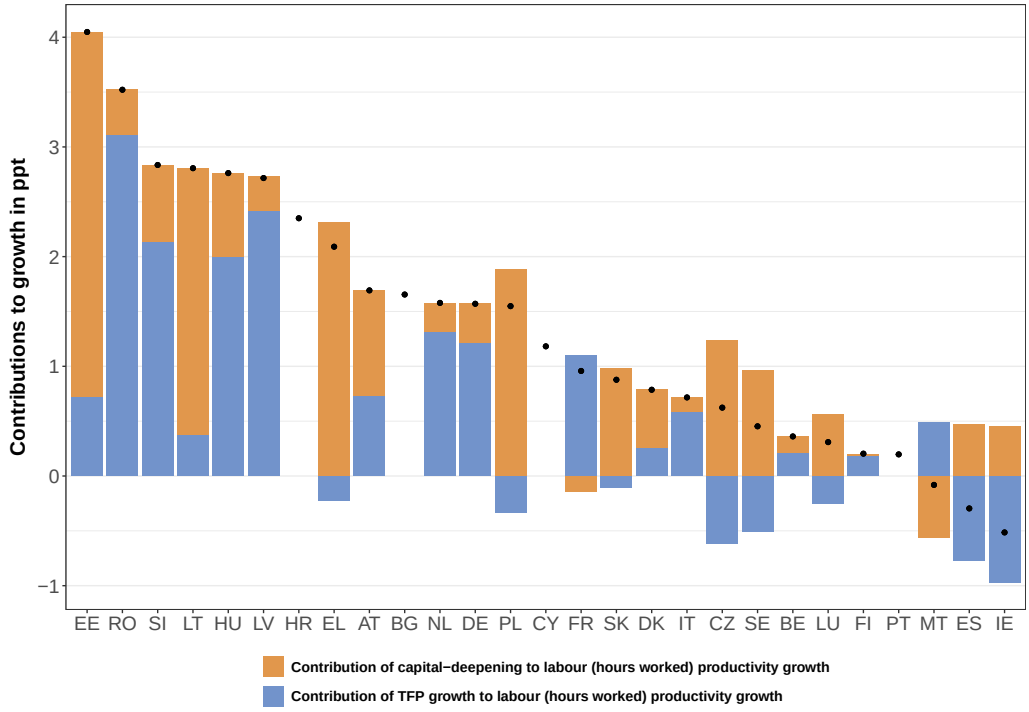


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

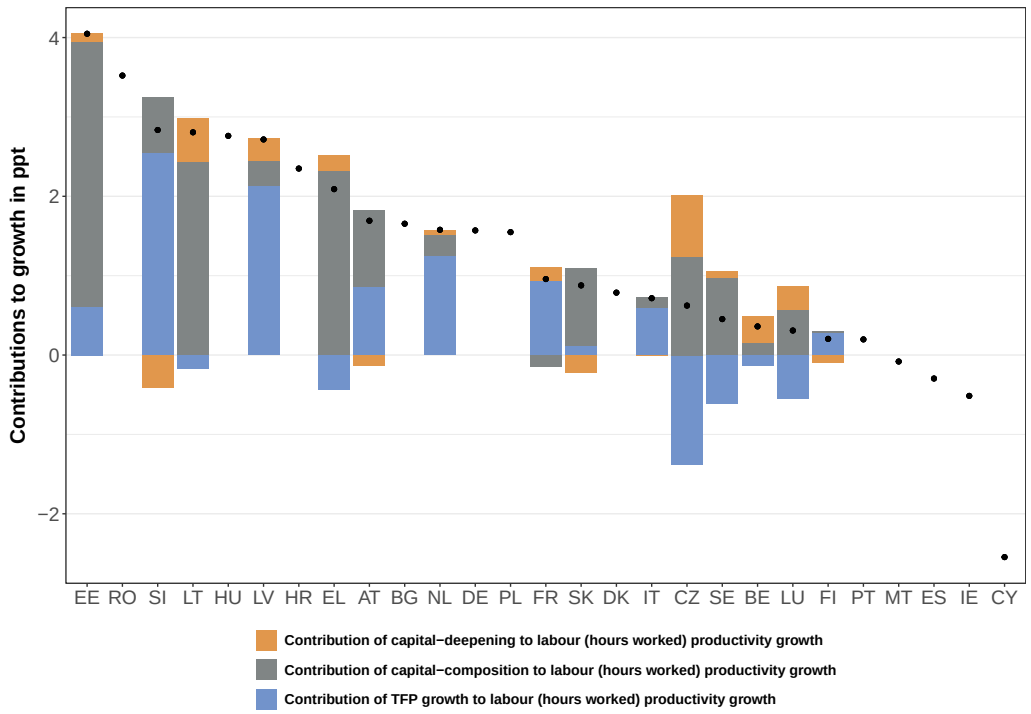
6.9 H: Transportation and storage

Figure 6.25: H: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

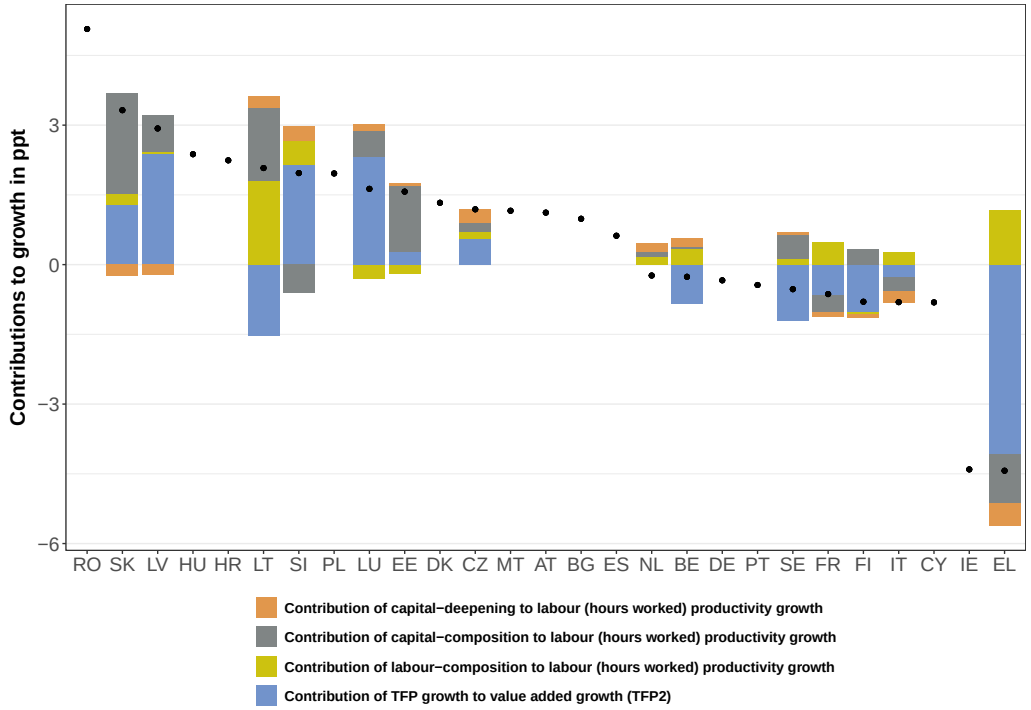
Figure 6.26: H: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.27: H: Contributions to labour productivity growth (TFP2), 2011-recent*

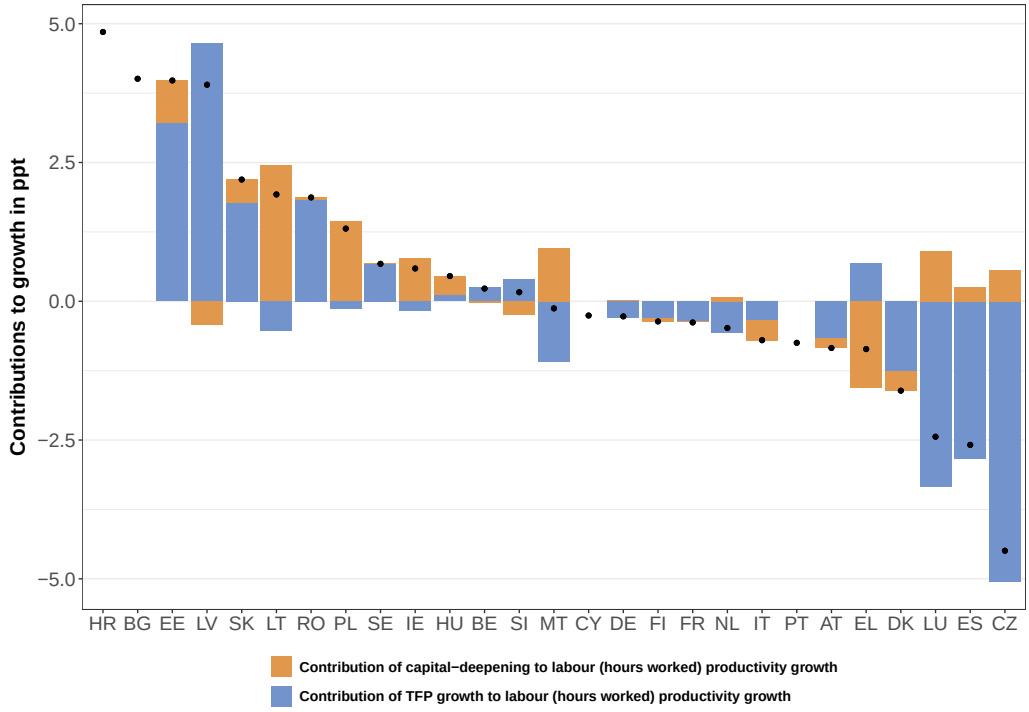


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

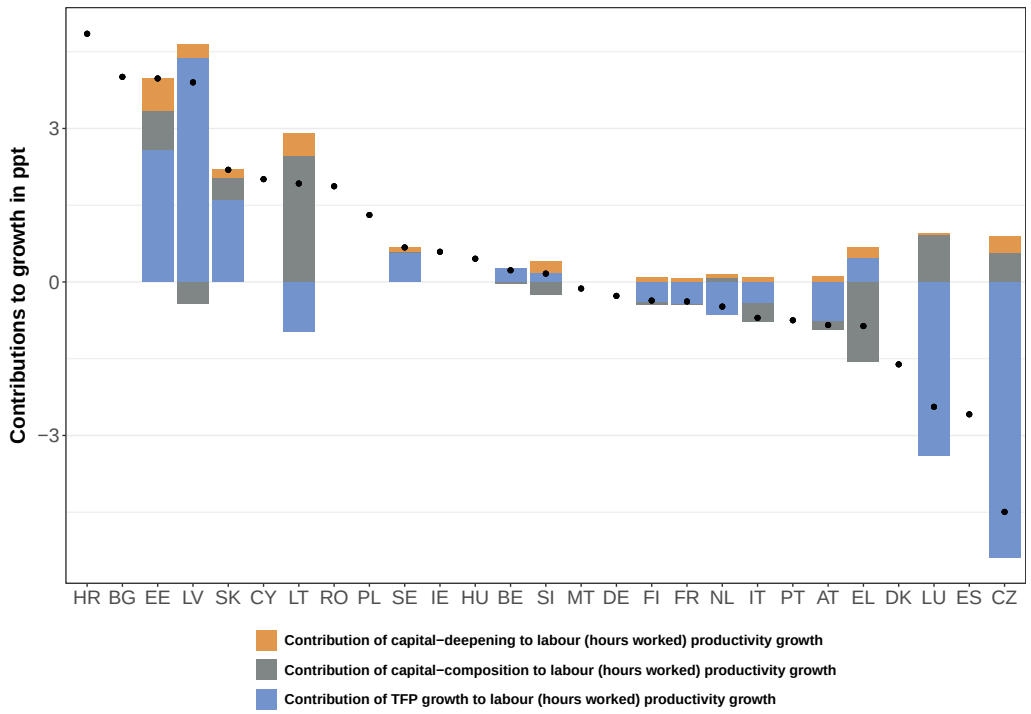
6.10 I: Accommodation and food service activities

Figure 6.28: I: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

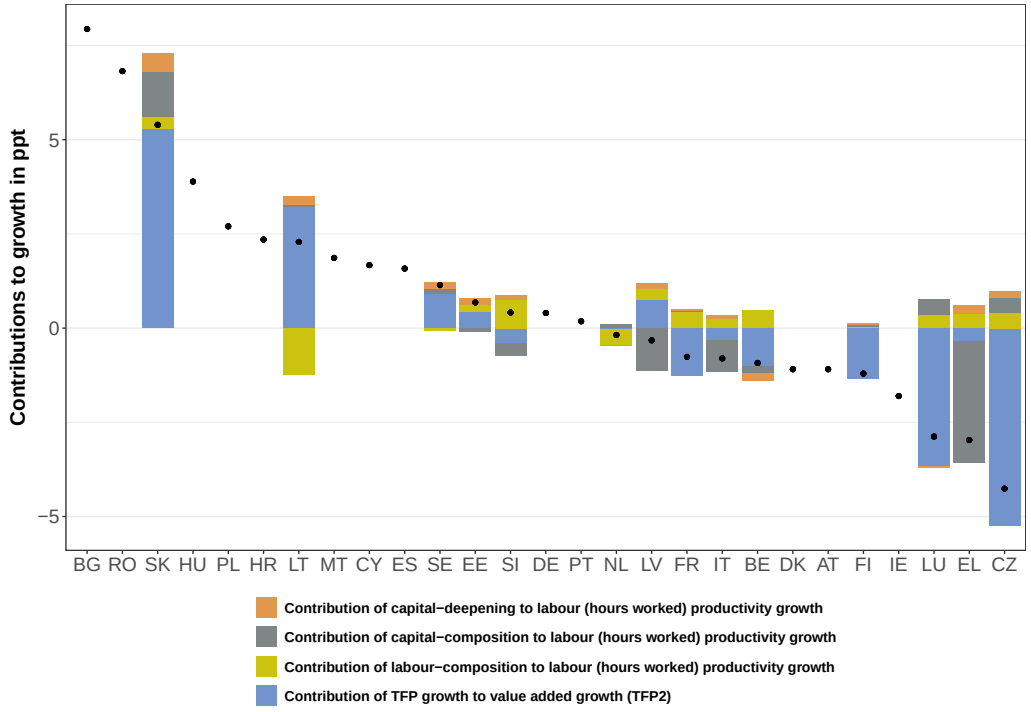
Figure 6.29: I: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.30: I: Contributions to labour productivity growth (TFP2), 2011-recent*

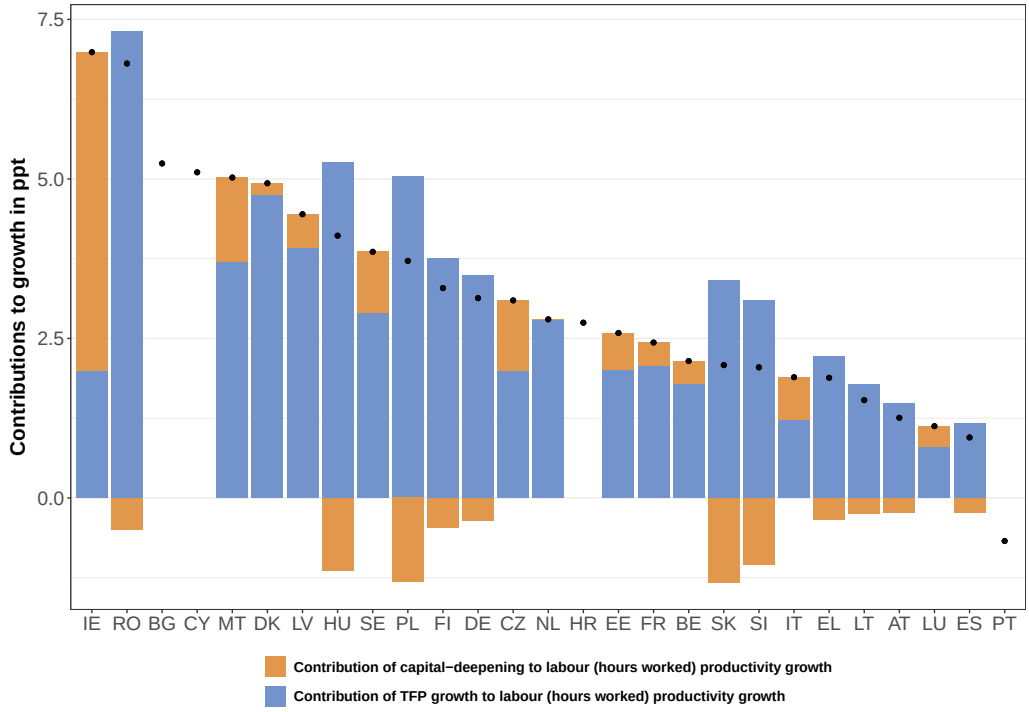


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

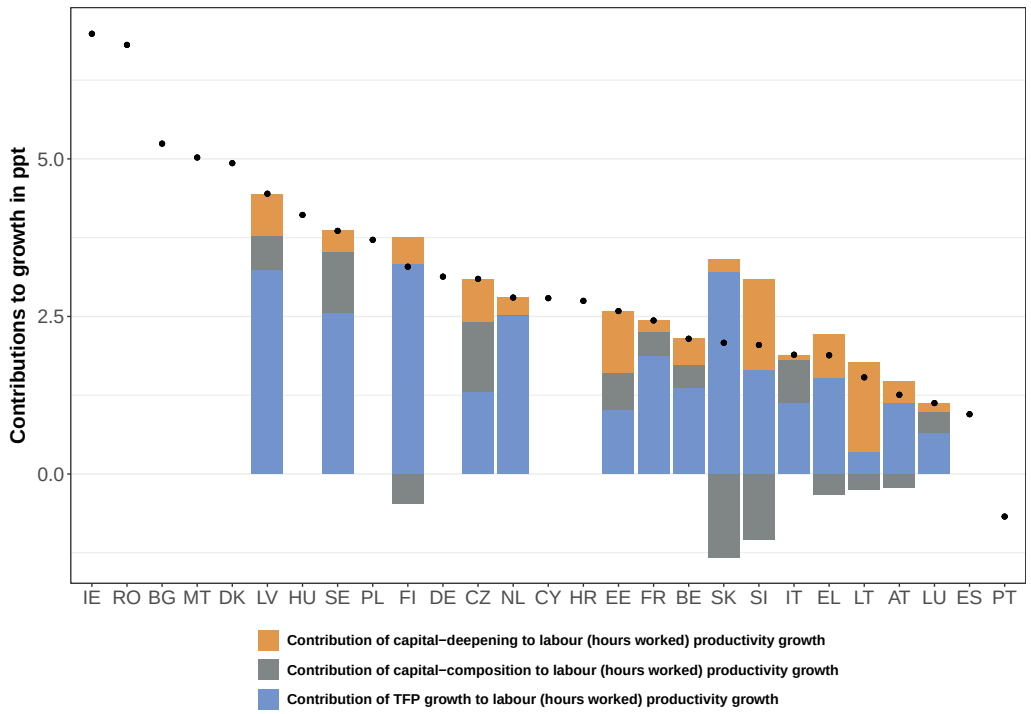
6.11 J: Information and communication

Figure 6.31: J: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

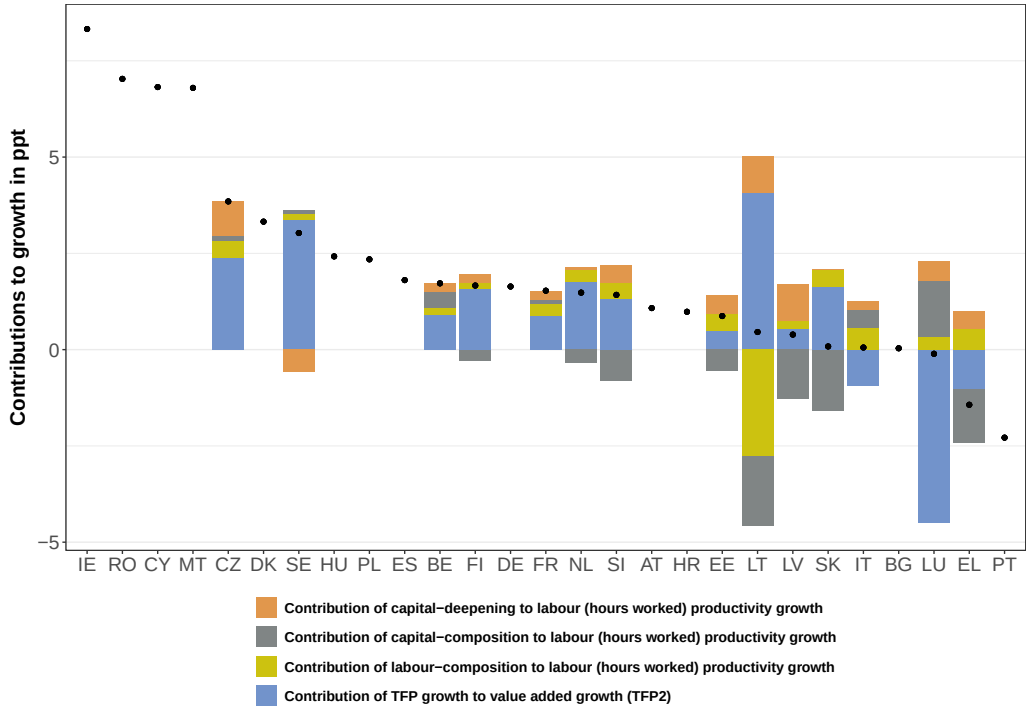
Figure 6.32: J: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.33: J: Contributions to labour productivity growth (TFP2), 2011-recent*

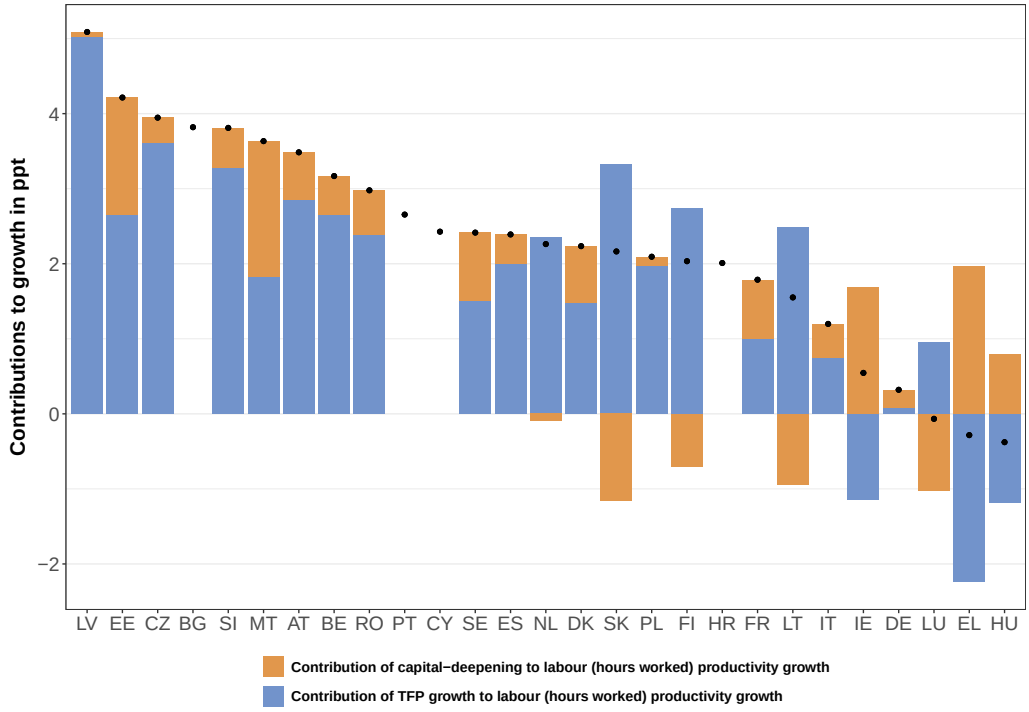


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

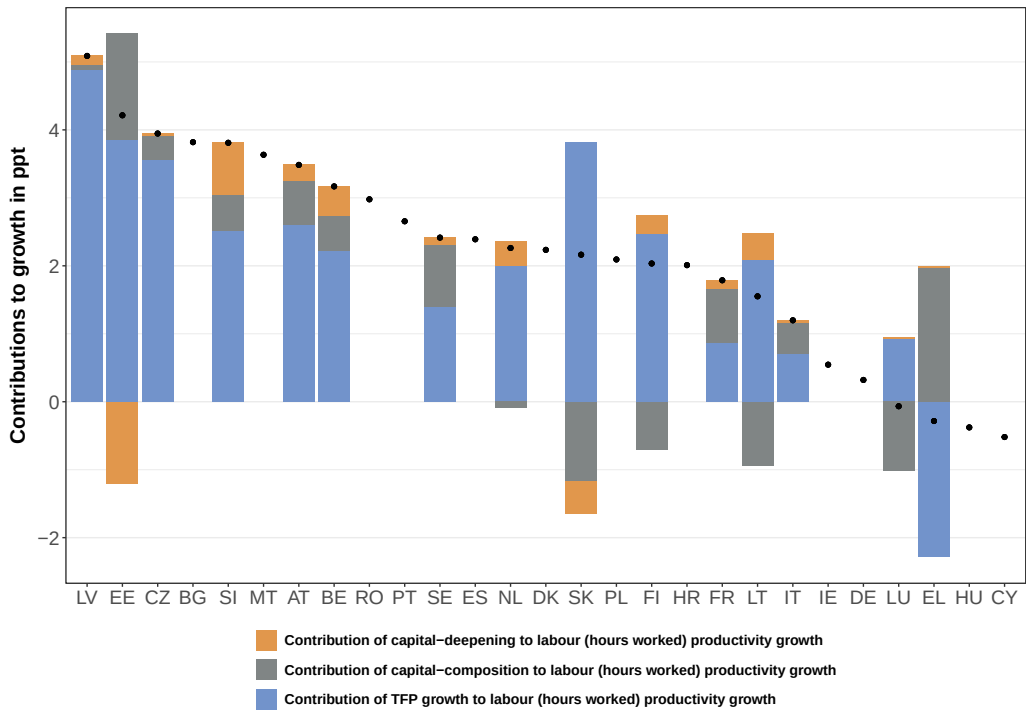
6.12 K: Financial and insurance activities

Figure 6.34: K: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

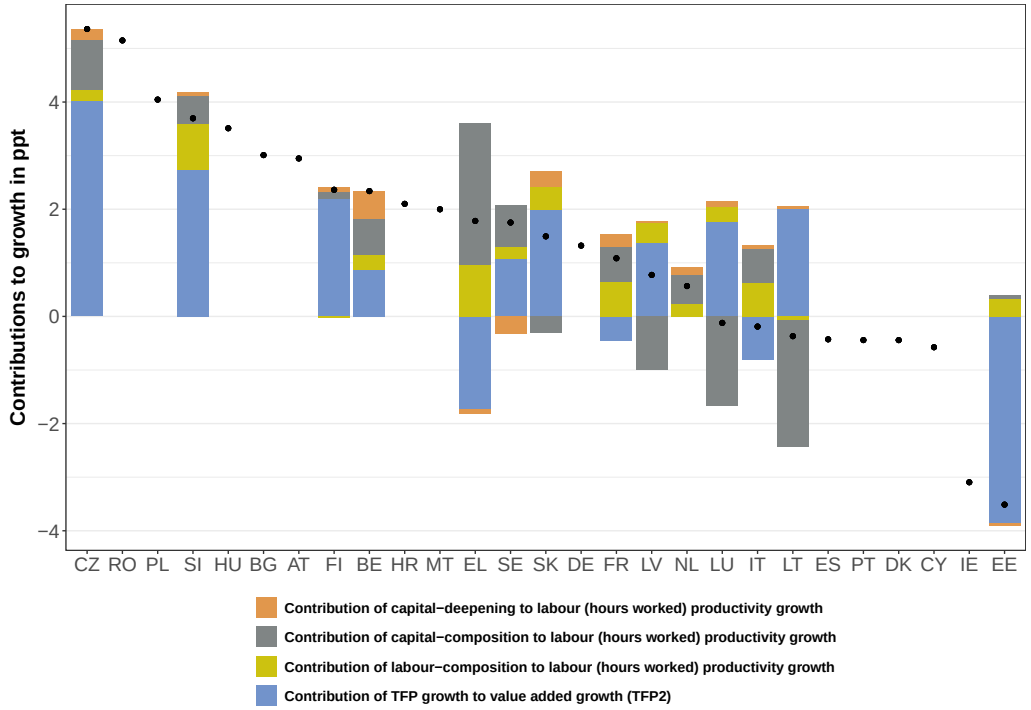
Figure 6.35: K: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.36: K: Contributions to labour productivity growth (TFP2), 2011-recent*

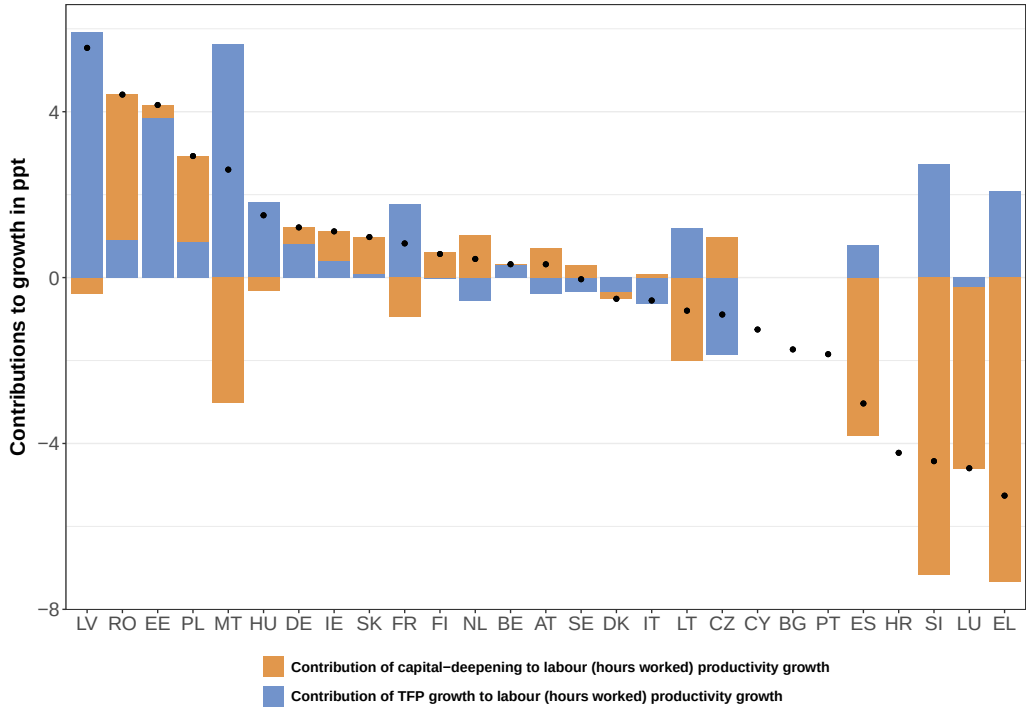


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

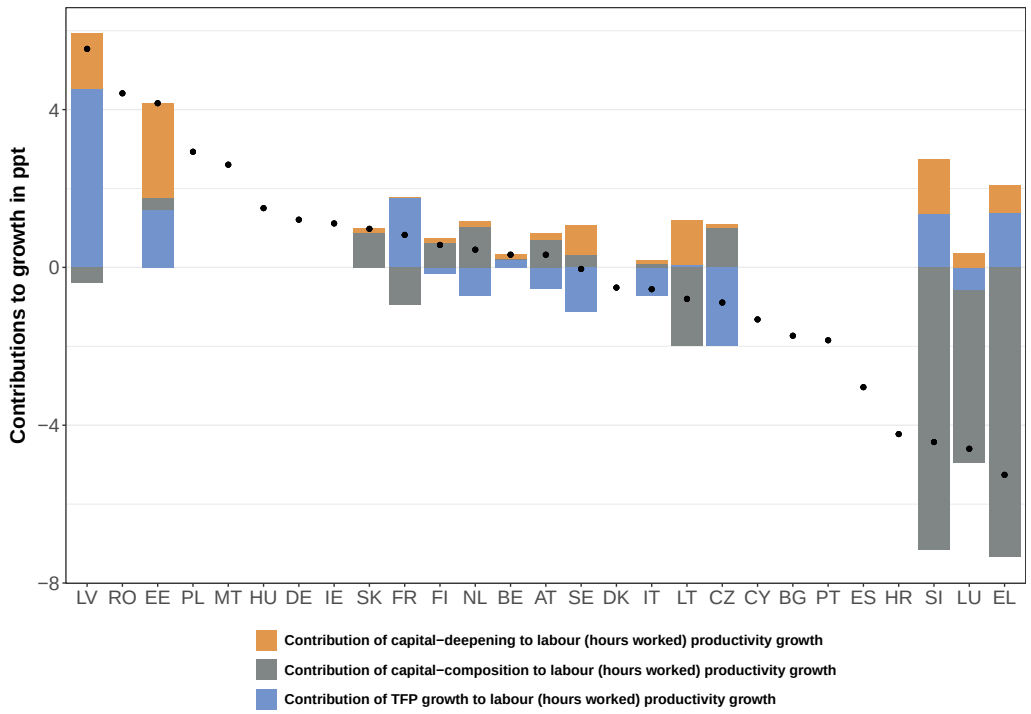
6.13 L: Real estate activities

Figure 6.37: L: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

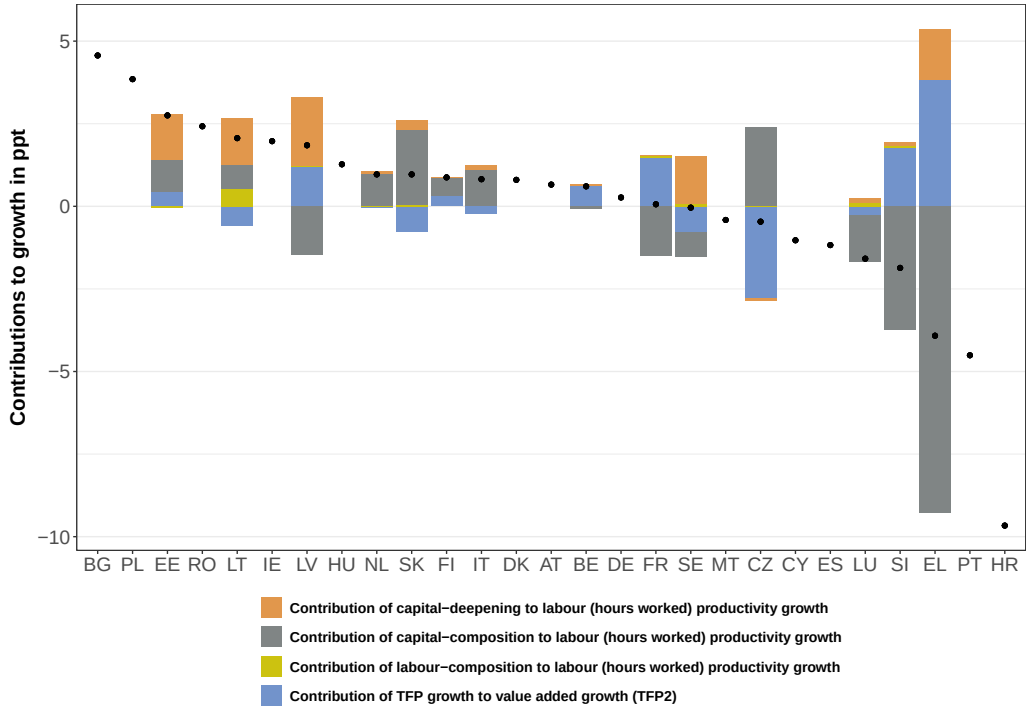
Figure 6.38: L: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.39: L: Contributions to labour productivity growth (TFP2), 2011-recent*

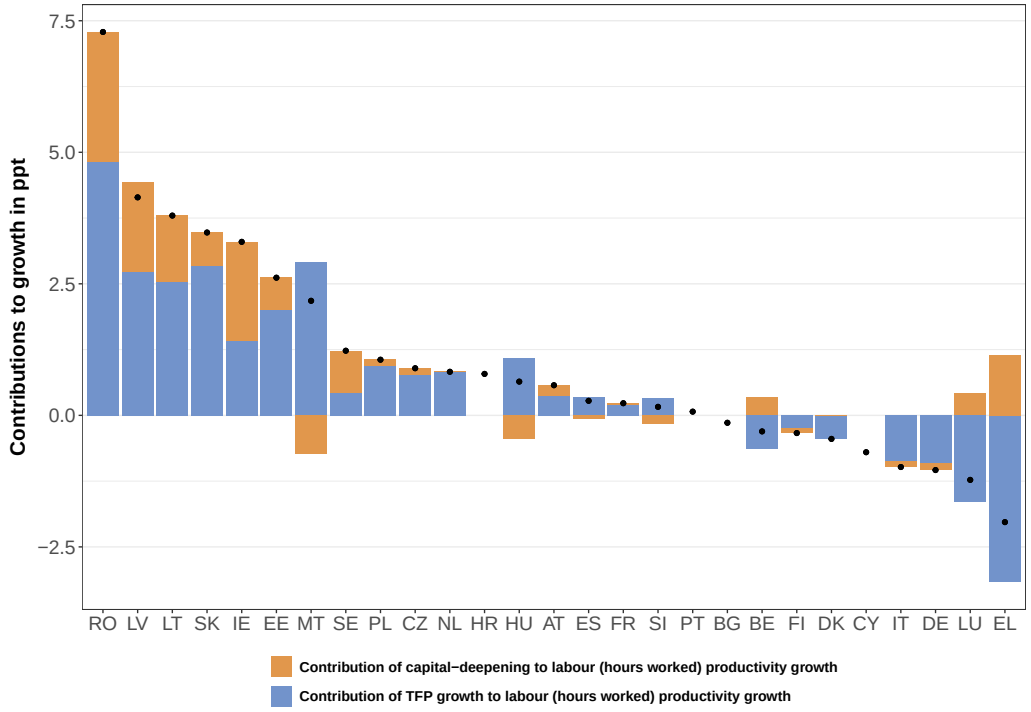


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

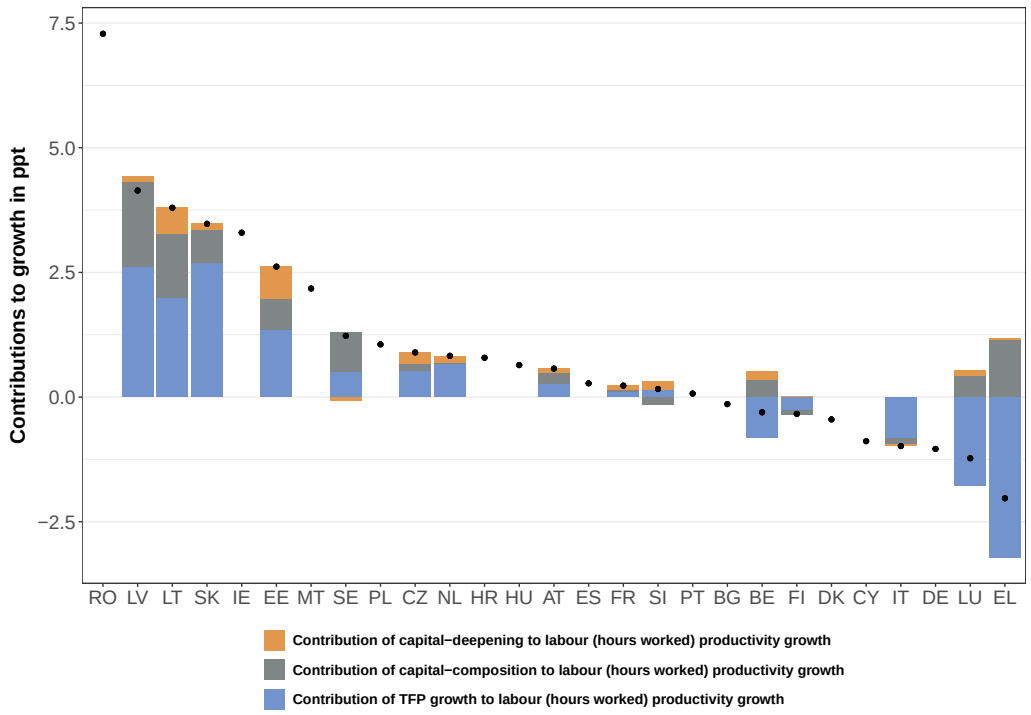
6.14 M: Professional, scientific and technical activities

Figure 6.40: M: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

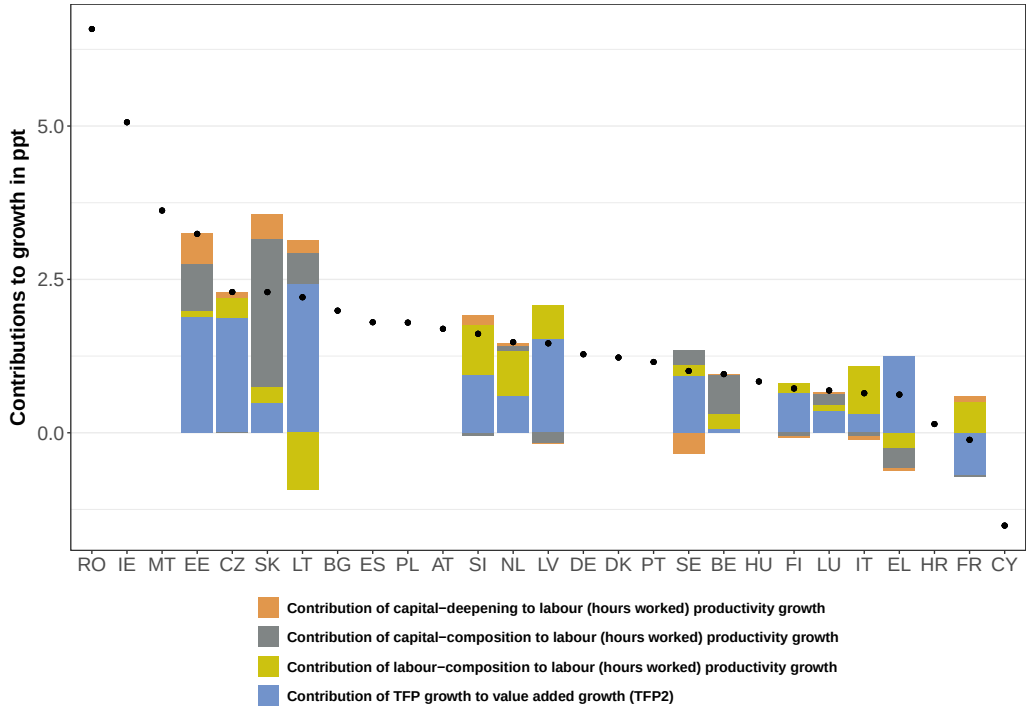
Figure 6.41: M: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.42: M: Contributions to labour productivity growth (TFP2), 2011-recent*

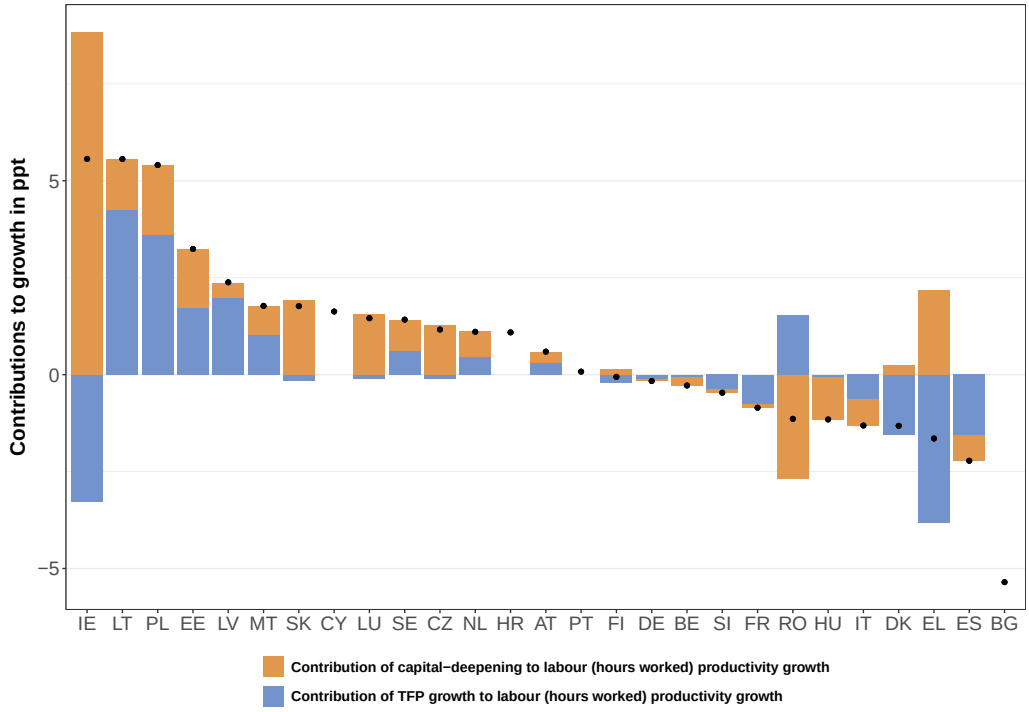


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

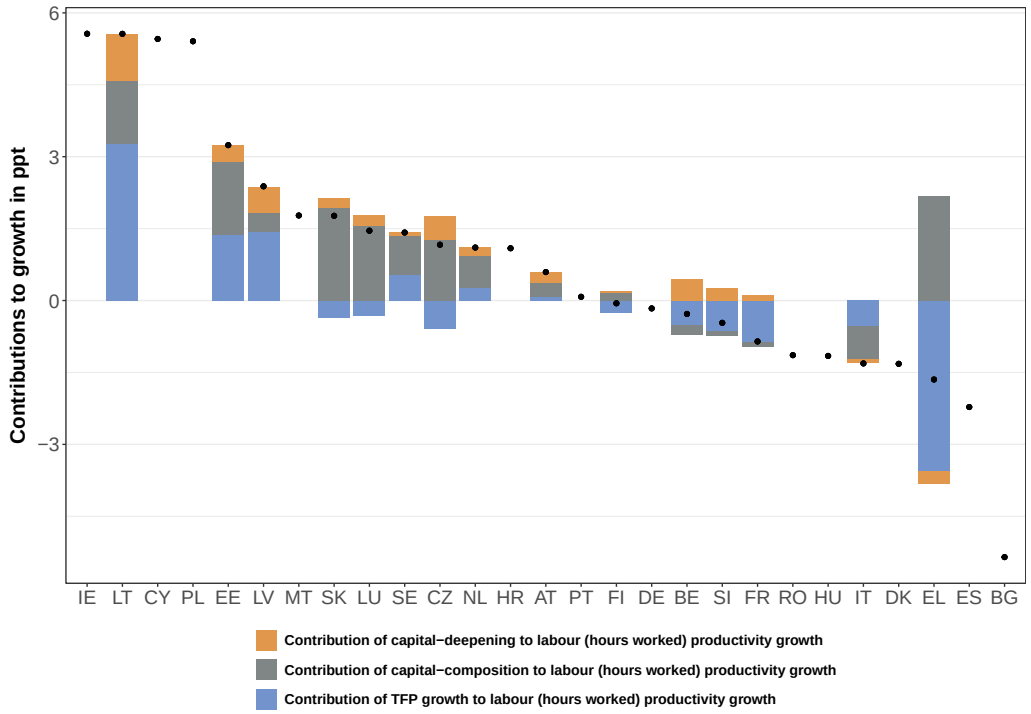
6.15 N: Administrative and support service activities

Figure 6.43: N: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

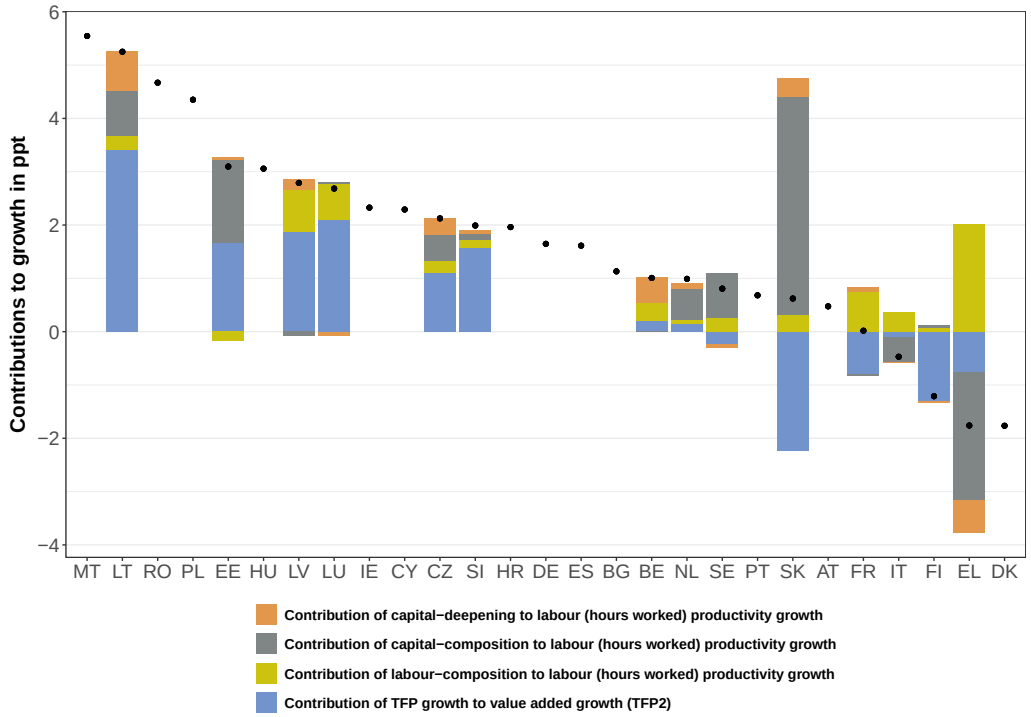
Figure 6.44: N: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.45: N: Contributions to labour productivity growth (TFP2), 2011-recent*

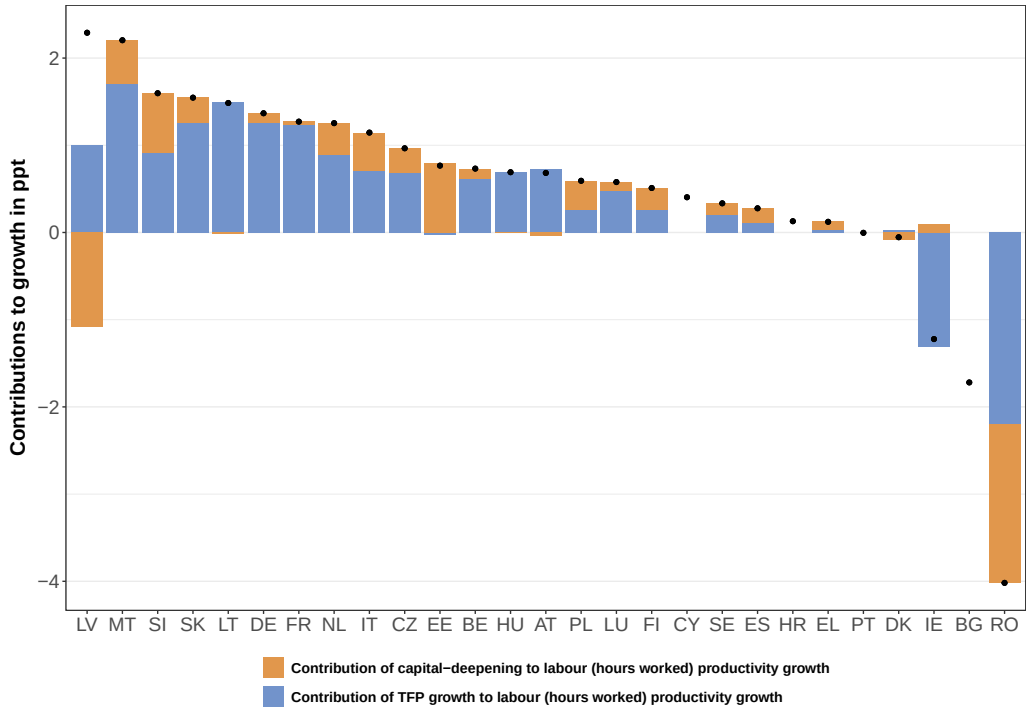


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

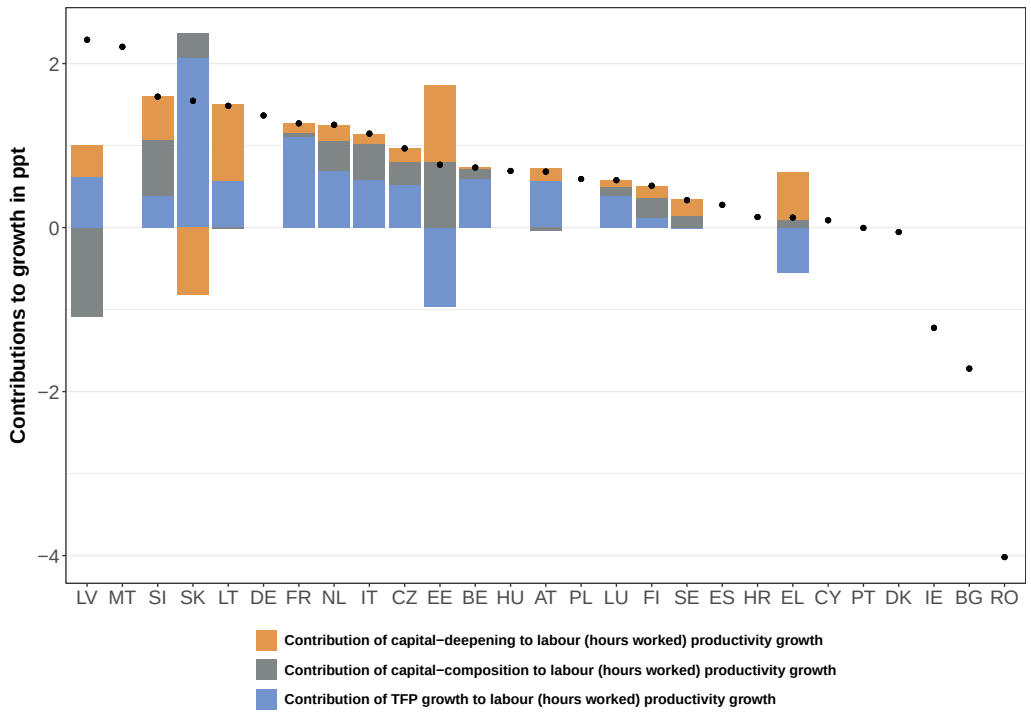
6.16 O: Public administration and defence; compulsory social security

Figure 6.46: O: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

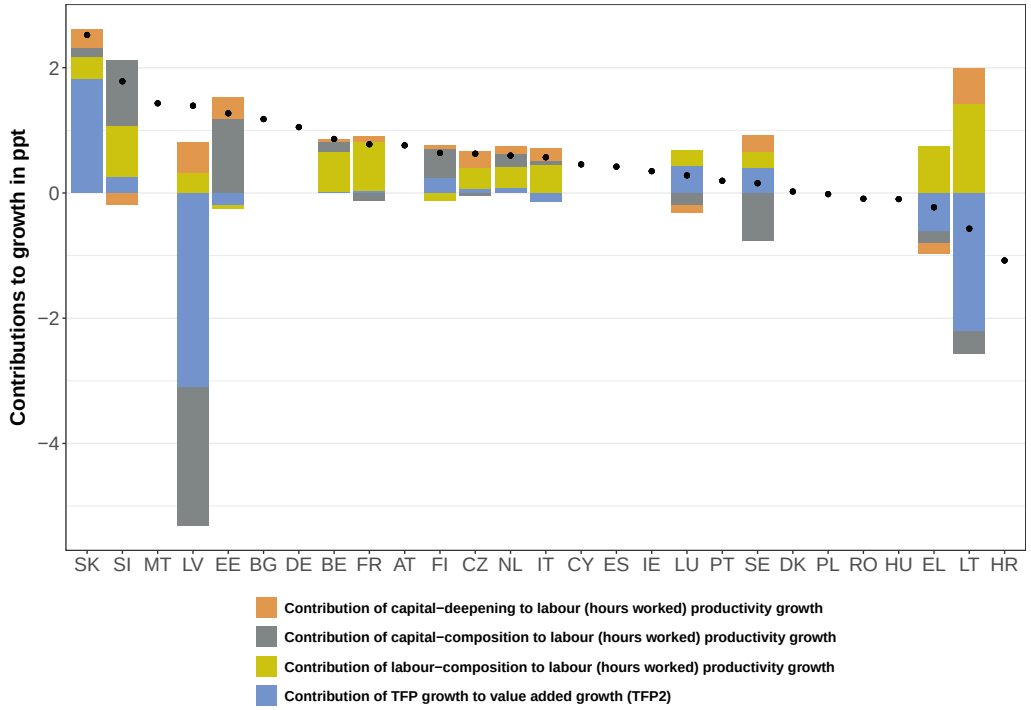
Figure 6.47: O: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.48: O: Contributions to labour productivity growth (TFP2), 2011-recent*

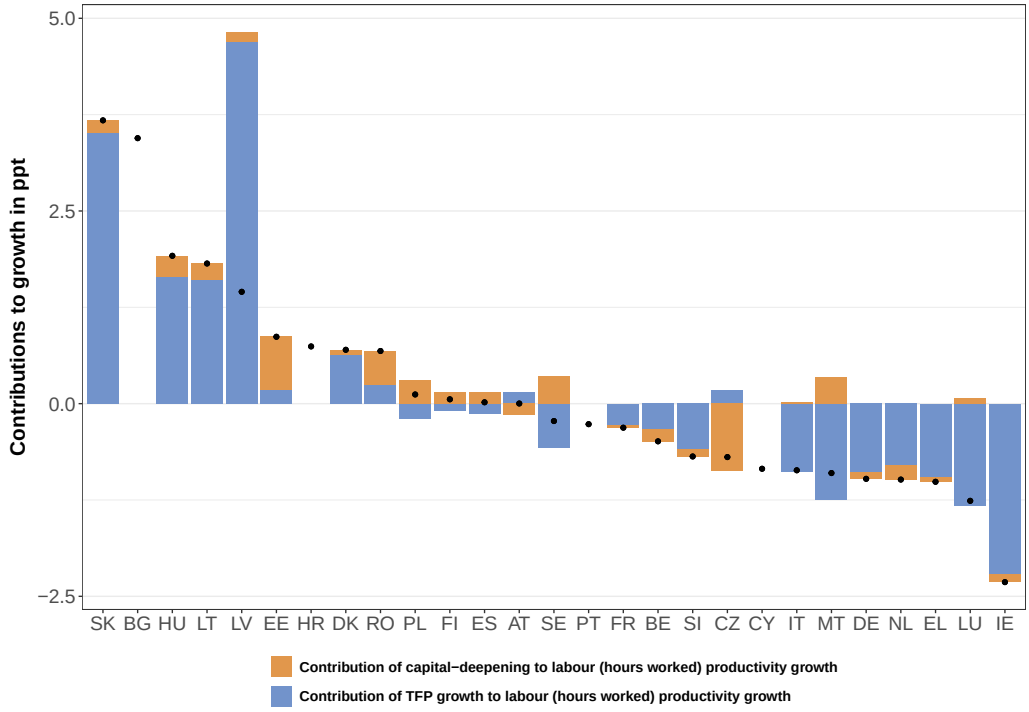


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

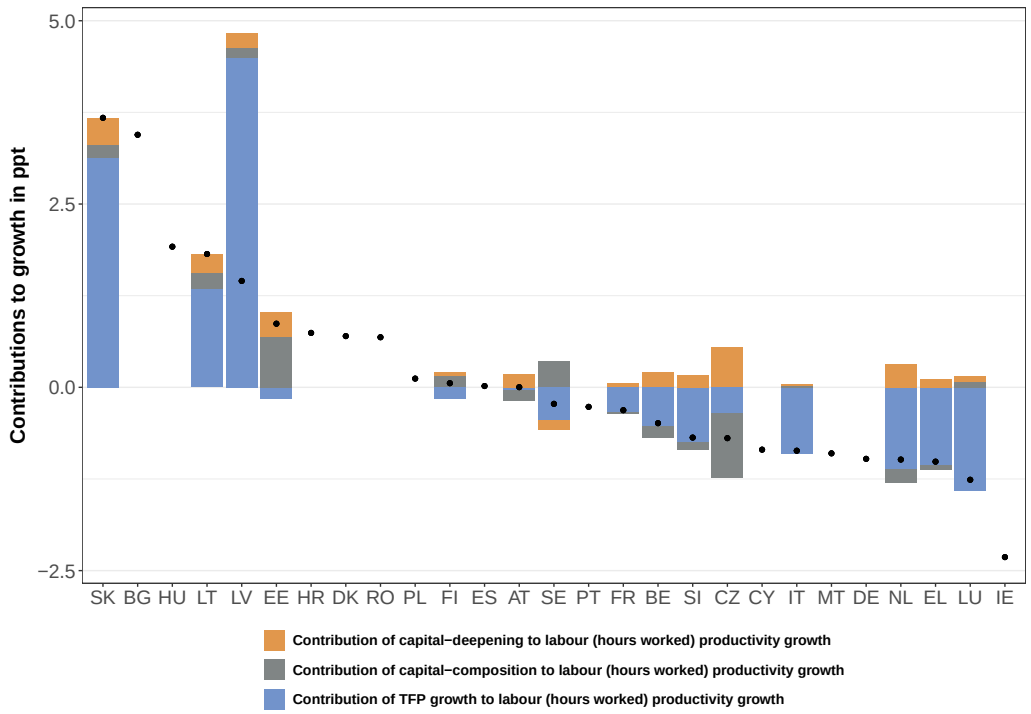
6.17 P: Education

Figure 6.49: P: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

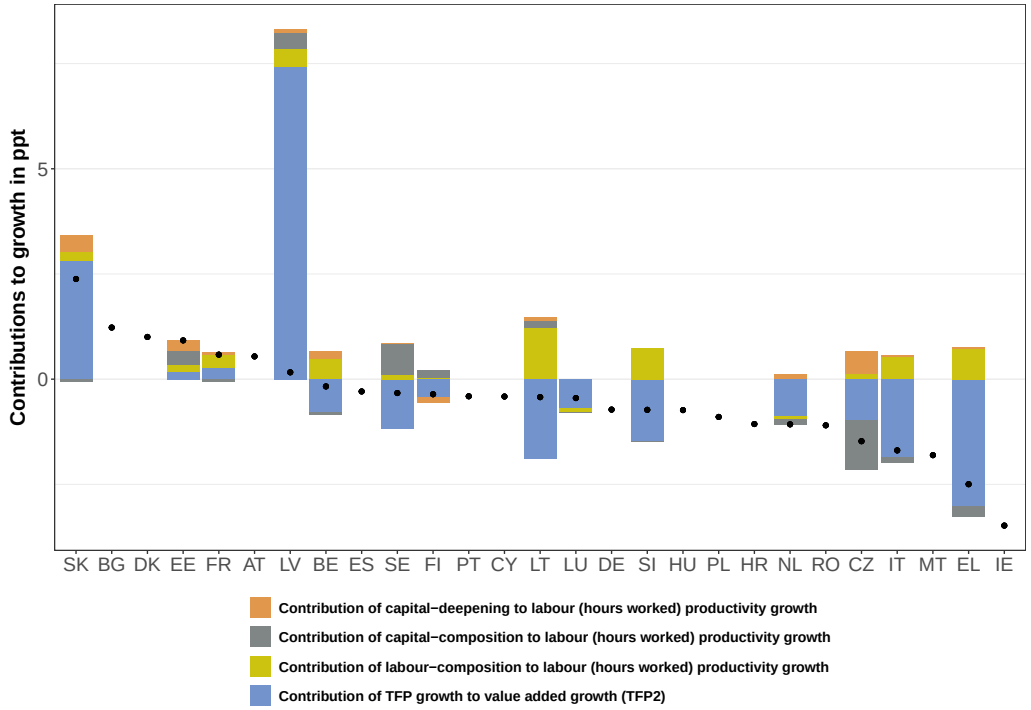
Figure 6.50: P: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.51: P: Contributions to labour productivity growth (TFP2), 2011-recent*

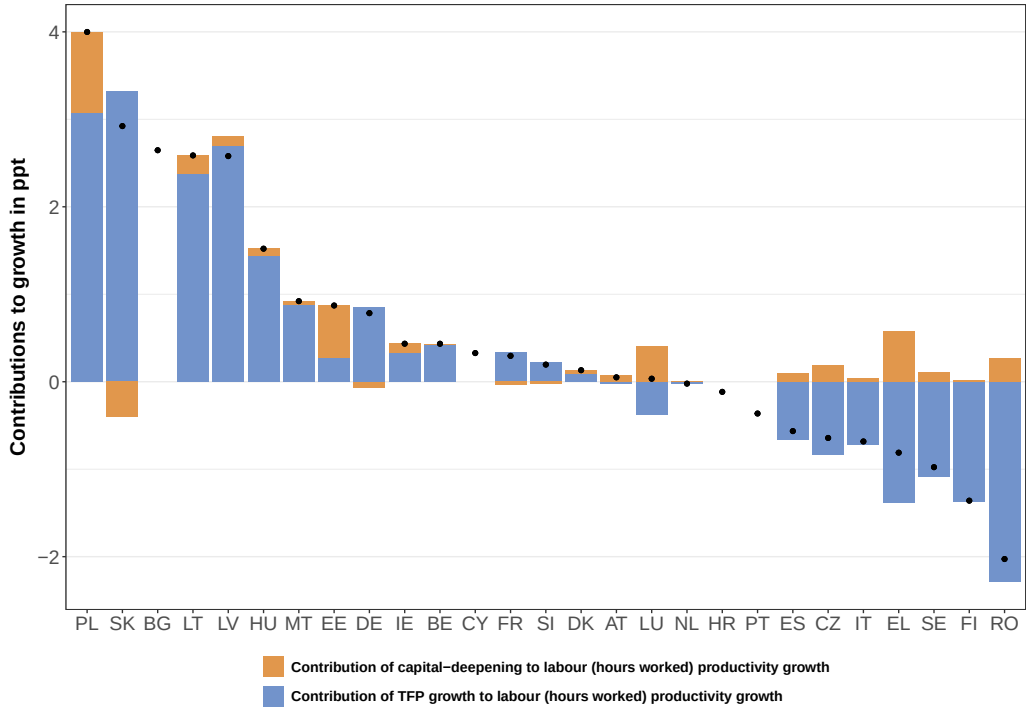


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

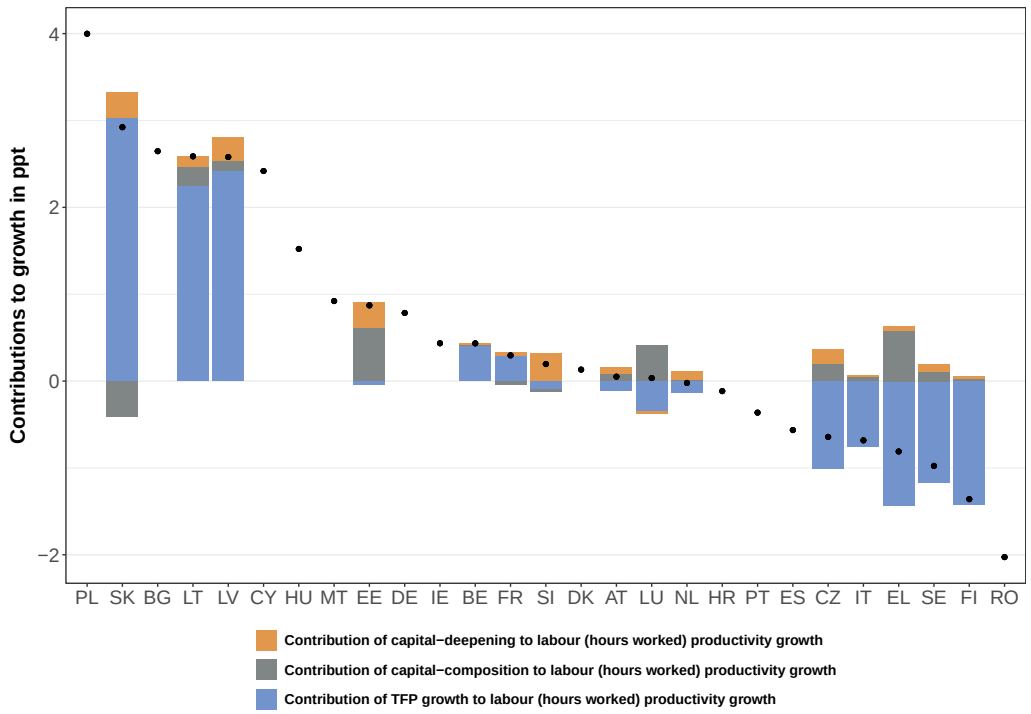
6.18 Q: Health and social work

Figure 6.52: Q: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

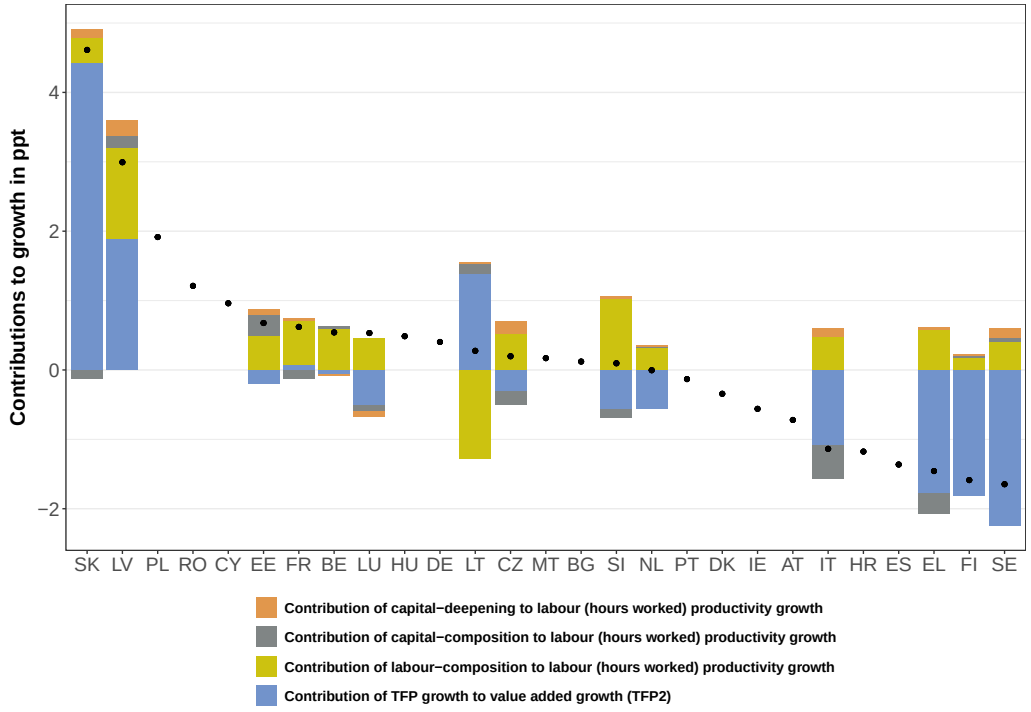
Figure 6.53: Q: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.54: Q: Contributions to labour productivity growth (TFP2), 2011-recent*

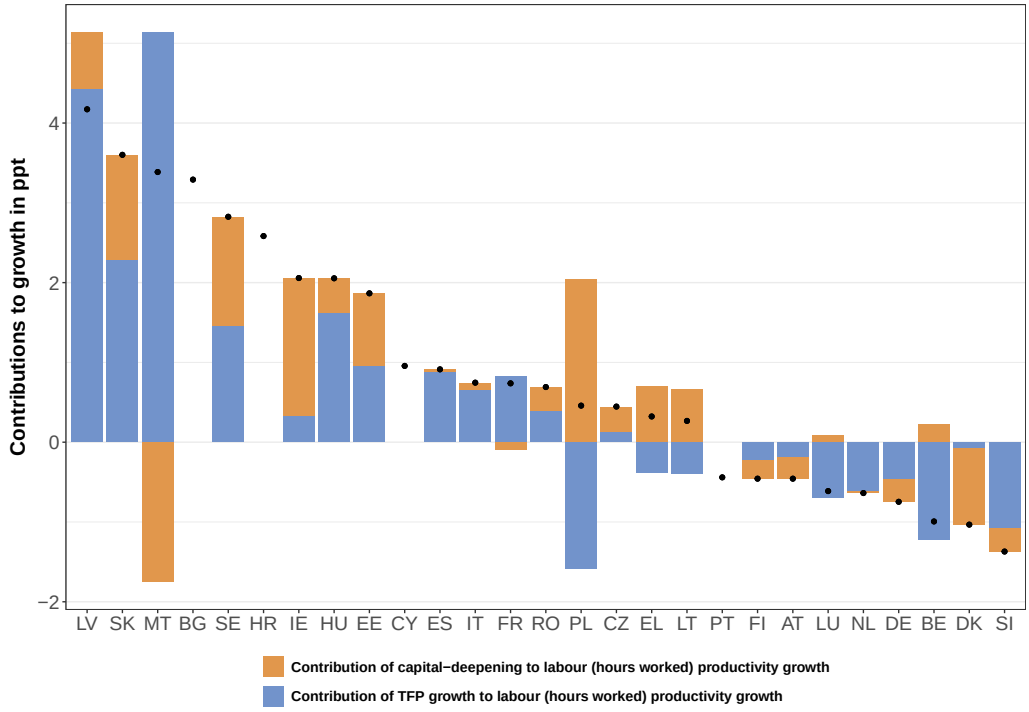


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

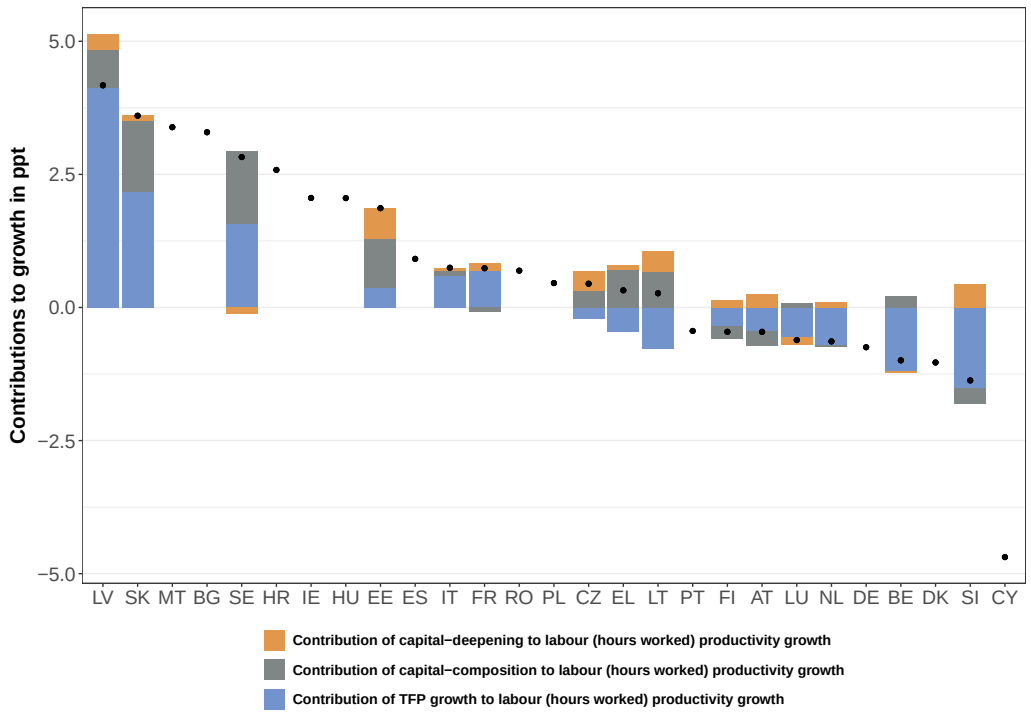
6.19 R: Arts, entertainment and recreation

Figure 6.55: R: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

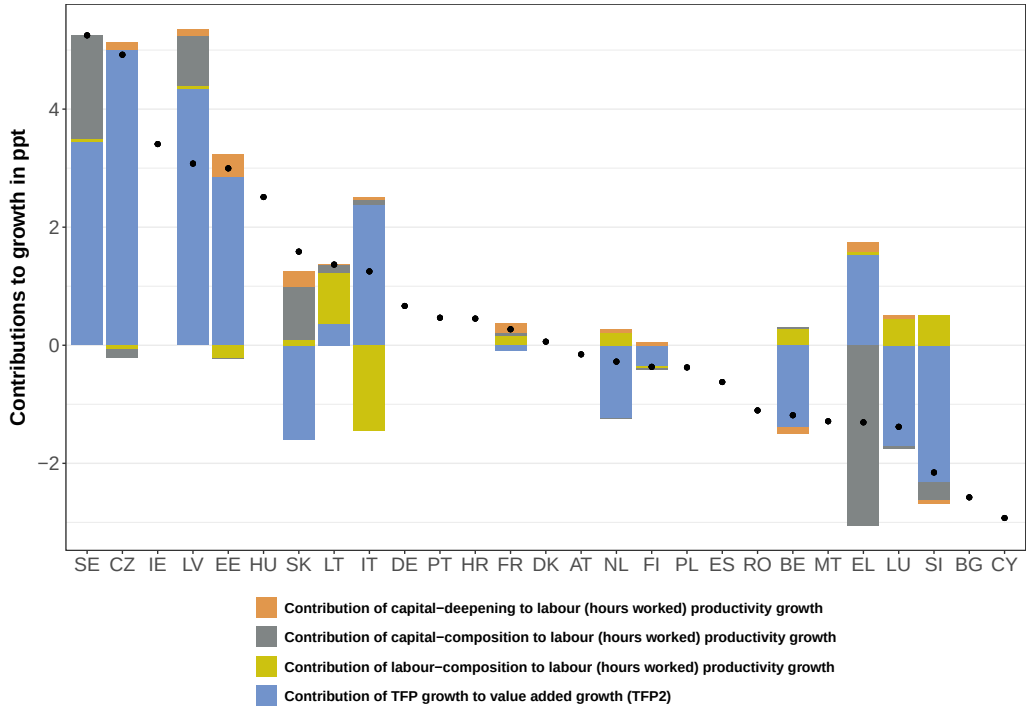
Figure 6.56: R: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.57: R: Contributions to labour productivity growth (TFP2), 2011-recent*

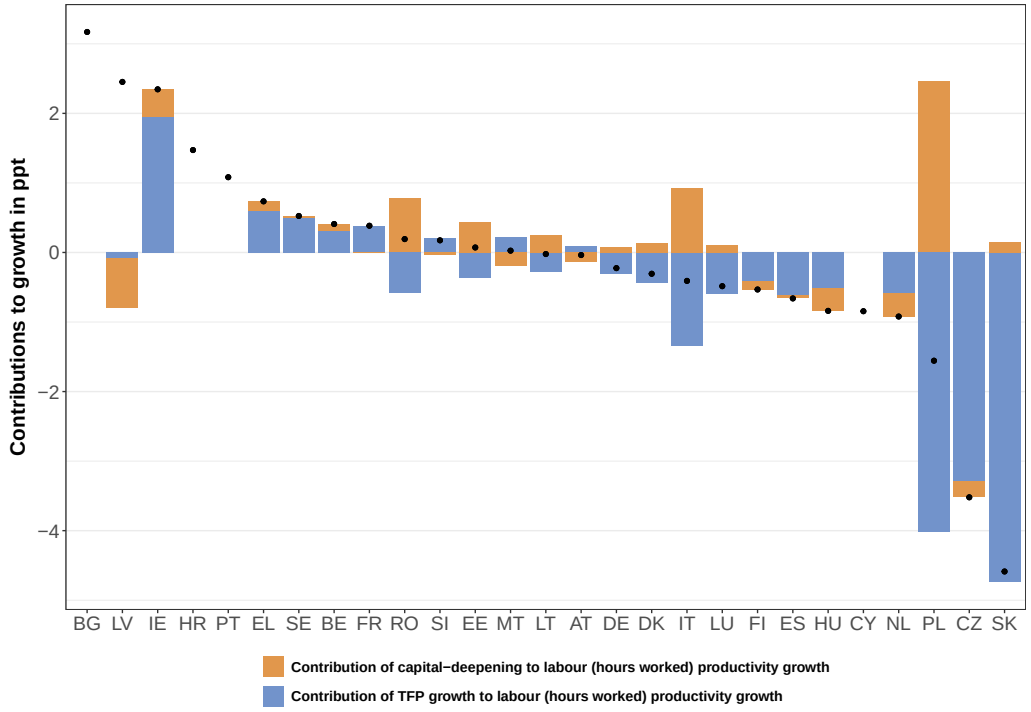


Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.

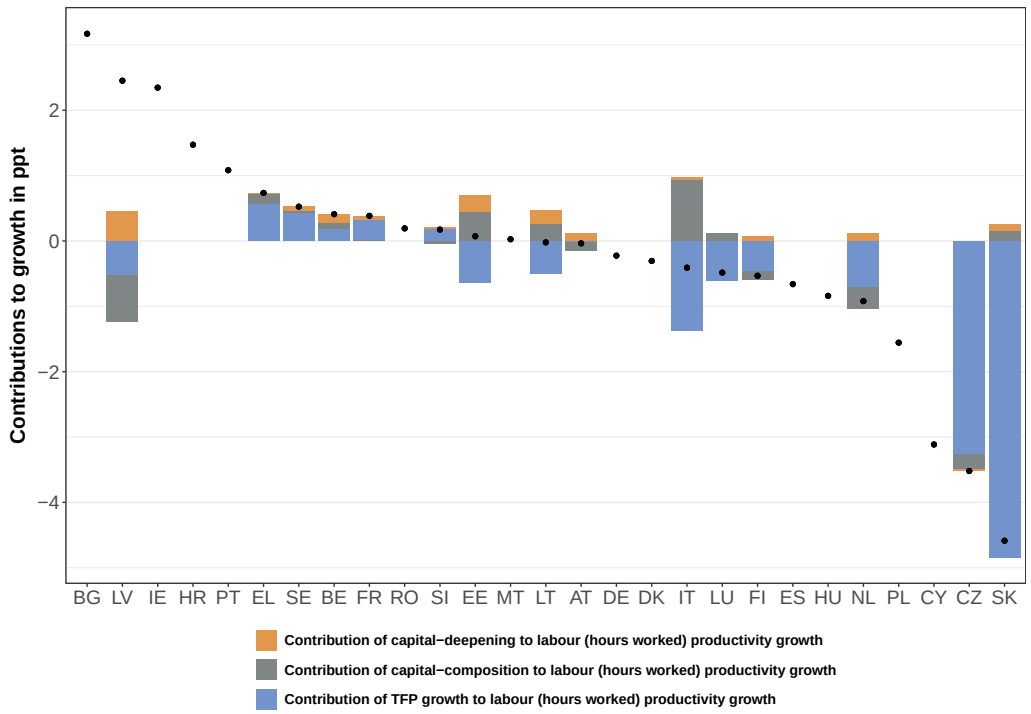
6.20 S: Other service activities

Figure 6.58: S: Contributions to labour productivity growth (TFP0), 1996-recent*



Note: *Depending on data availability (see Table 3.8).
Source: National Accounts, own calculations.

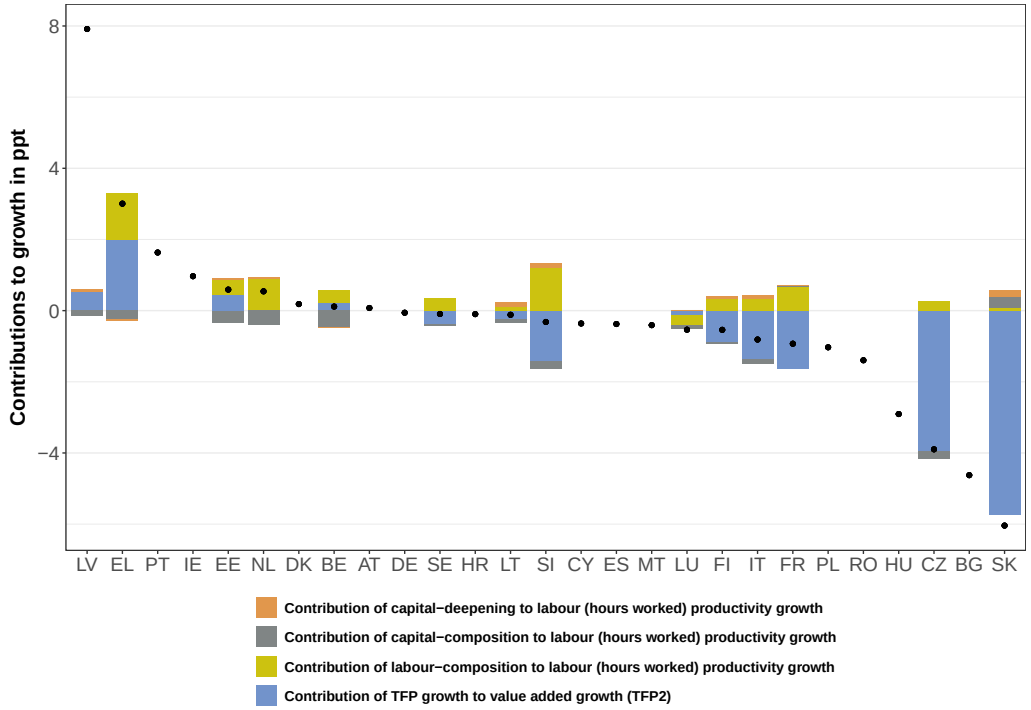
Figure 6.59: S: Contributions to labour productivity growth (TFP1), 1996-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, own calculations.

Figure 6.60: S: Contributions to labour productivity growth (TFP2), 2011-recent*



Note: *Depending on data availability (see Table 3.8).

Source: National Accounts, EU LFS, EU SES, own calculations.