Appendix: The Potential Impact of Procompetitive Regulatory Reforms on Productivity and Growth in Canada

Details on Variable Calculations

Total Factor Productivity ($TFP_{c,i,t}$) represents the efficiency with which factors of production are combined to generate value added. The definition of the variables are based on the Jorgenson production function framework.

Total factor productivity is provided directly by EUKLEMS & INTANProd in the form of an index, base 100 in 2015, calculated as the Solow residual using the Jorgenson approach.

We use two measures of total factor productivity (TFP):

The non-extended measure, taken from the EU-KLEMS & INTANProd statistical module, which serves as a reference for national accounts variables.

The extended measure, available in the EU-KLEMS & INTANProd analytical module, uses value added consistent with the new intangible assets that are not yet accounted for in national accounts, such as design, branding, organizational capital, training, and new financial products

Labour Productivity ($LP_{c,i,t}$) is calculated as the ratio between value added (chain-linked volumes (2015), millions of national currency) and the number of hours worked by persons employed (thousand hours).

As with total factor productivity, there are two measures of labour productivity: an extended version and a non-extended version.

The Capital Intensity (int $K)_{c,i,t}$ is calculated as the ratio between total tangible (excluding residential) and intangible assets (expressed in chained volumes, base 2015, in millions of national currency) and the number of hours worked (in thousands of hours). Depending on the definition of the endogenous variable (extended or non-extended labour productivity), new intangible assets are included or excluded from the calculation.

It is important to note that, due to a lack of information, the calculation of intangible assets for Sweden does not include "Computer software and databases" among the intangible assets included in the national accounts, nor "NFP - New Financial Products" among those excluded from the national accounts.

Table A1. Country Coverage of EU-KLEMS

Code	Label	Further information
AT	Austria	1995–2021
BE	Belgium	1999–2021
CA	Canada	2000–2020
CZ	Czech Republic	2002–2021
DE	Germany	1995–2021
DK	Denmark	2000–2021
ES	Spain	1995–2021 (lack of information for sectors C20, C26 and C27)
FI	Finland	1995–2021
FR	France	1995–2021
IT	Italy	1995–2021
NL	Netherlands	1995–2021
SE	Sweden	1995–2021 (lack of information for sector C20)
SK	Slovakia	2014–2021 (lack of information for sector I)
UK	United Kingdom	1995–2020
US	United States	1995–2021 (lack of information for sector C28)

Source: Computed by the authors based on sample data.

Table A2. Sector Coverage of EU-KLEMS

Code	Label	Description
C10–C12		Manufacture of food products; beverages and tobacco products
C13–C15		Manufacture of textiles, wearing apparel, leather and related products
C16–C18		Manufacture of wood, paper, printing and reproduction
C20		Manufacture of chemicals and chemical products
C22–C23		Manufacture of rubber and plastic products and other non-metallic mineral products
C24–C25		Manufacture of basic metals and fabricated metal products, except machinery and equipment
C28		Manufacture of machinery and equipment n.e.c.
C26		Manufacture of computer, electronic and optical products
C27		Manufacture of electrical equipment
C29–C30		Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment
C31–C33		Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment
D–E		Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities
F		Construction
G		Wholesale and retail distribution and repair of motor vehicles and motorcycles
I		Accommodation and food service activities
H		Land transport and transport via pipelines; Water transport; Air transport; Warehousing and support activities for transportation
J		Postal, courier activities and Telecommunication
K		Financial and insurance activities
M–N		Professional, scientific and technical activities; Administrative and support service activities

Source: Computed by the authors based on sample data.

Table A3. Non-Manufacturing Regulation: OECD PMR 2023 vs Simplified 1998–2023 OECD NMR Indicators

Panel A. Energy, Transport and Communication Regulation (ETCR) Indicators

ETCR PMR 2023									
Indicator	**Energy**		**Transport**					**Communications**	
	Electricity	Gas	Air	Rail	Road freight	Road coach	Water	Fixed	Mobile
Governance	3	3	3	3	3	3	3	3	3
Entry	8	9	6	5	8	5	5	11	10
Vertical separation	4	4	–	1	–	–	1	2	–
Price regulation	4	4	2	–	2	1	2	7	4
Other	–	New regulatory issues 4	–	–	Foreign entry 3	Foreign entry 2	Foreign entry 4	New regulatory issues 6	New regulatory issues 6
ETCR simplified 1998–2023									
Indicator	**Energy**		**Transport**					**Communications**	
	Electricity	Gas	Air	Rail	Road freight	Road coach	Water	Fixed	Mobile
Governance	1	1	1	–	–	–	–	1	1
Entry	3	2	2	2	3	–	–	2	2
Vertical separation	1	1	–	1	–	–	1	1	–

Panel B. Indicators of Regulation in Professional Services

Professions PMR 2023						
Indicator	**Lawyers**	**Notaries**	**Accountants**	**Civil engineers**	**Architects**	**Real estate agents**
Form of business/governance	6	6	6	6	6	6
Entry	6	6	6	6	6	6
Advertisement	1	1	1	1	1	1
Price regulation	2	2	2	2	2	2
Foreign entry	3	3	3	3	3	3
Professions simplified 1998–2023						
Indicator	**Lawyers**	**Notaries**	**Accountants**	**Civil engineers**	**Architects**	**Real estate agents**
Form of business/governance	2	–	2	2	2	–
Entry	3	–	3	3	3	–
Advertisement	1	–	1	1	1	–
Price regulation	2	–	2	2	2	–

Panel C. Indicators of Regulation in Retail Distribution

Retail Distribution PMR 2023			
Indicator	**Food**	**Clothes**	**Pharmaceuticals**
Entry	11	11	5
Opening hours	3	3	1
Price regulation	5	5	1
Advertisement	–	–	1
Retail Distribution simplified 1998–2023			
Indicator	**Food**	**Clothes**	**Pharmaceuticals**
Entry	4	4	–
Opening hours	3	3	–
Price regulation	5	5	–

Source: Computed by the authors using OECD PMR information.
Note: The numbers refer to the number of sub-indicators used to construct the aggregate indicator.

Table A4. Mapping of NMR Indicators to NACE Non-manufacturing Sectors

NACE code	NACE label	NMR indicator
D–E	Electricity, gas, steam and air conditioning supply ; Water supply; sewerage, waste management and remediation activities	Energy
G	Wholesale and retail distribution and repair of motor vehicles and motorcycles	Retail distribution
H	Land transport and transport via pipelines, Water transport, Air transport ; Warehousing and support activities for transportation	Transport
J	Postal, courier activities and Telecommunication	Communications
M–N	Professional, scientific and technical activities ; Administrative and support service activities	Professional services

Source: Provided by the authors of the article.

Table A5. Analysis of Variance (R^2)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	country	industry	year	Country*year	Country*industry	Industry*year	Country*industry Country*year Industry*year
TFP all intangibles (log)	0.0538	0.1782	0.0616	0.1896	0.4123	0.4890	0.7832
LP all intangibles (log)	0.1432	0.5408	0.0594	0.2383	0.7972	0.6642	0.9571
Capital intensity (all)	0.7646	0.1595	0.0146	0.7693	0.9914	0.1758	0.9970
NMR_{up}^{new} (lag)	0.4834	0.2510	0.1625	0.6650	0.8033	0.4242	0.9952
NMR_{up} (lag)	0.4033	0.2974	0.1848	0.6160	0.7611	0.5024	0.9912
EPL^d (lag)	0.4537	0.4376	0.0100	0.5047	0.9432	0.4487	0.9958

Source: Calculated by the authors based on our sample.
Example: The country*year fixed effects explain 18.96% of the variability in total factor productivity (TFP).

Table A6. Main Results with Total Factor and Labour Productivity not Extended (NA intangibles)

Period regression	1996–2021 (1)	1996–2013 (2)	1996–2013 (3)	1996–2021 (4)	1996–2013 (5)	1996–2013 (6)
VARIABLES	**tfp NA intangibles (log)**	**tfp NA intangibles (log)**	**tfp NA intangibles (log)**	**lp NA intangibles (log)**	**lp NA intangibles (log)**	**lp NA intangibles (log)**
Capital intensity (log-lag)				0.168***	0.162***	0.152***
				(0.014)	(0.019)	(0.019)
NMR_{up}^{new} (lag)	−0.549***	−0.568***		−0.428***	−0.584***	
	(0.105)	(0.137)		(0.103)	(0.134)	
NMR_{up} (lag)			−0.585***			−0.568***
			(0.097)			(0.095)
EPL^d (lag)	−0.288***	−0.305***	−0.230**	−0.039	−0.090	−0.013
	(0.090)	(0.104)	(0.104)	(0.088)	(0.101)	(0.102)
Constant	5.000***	4.978***	5.169***	−2.356***	−2.283***	−2.146***
	(0.094)	(0.113)	(0.113)	(0.098)	(0.120)	(0.117)
Observations	6,155	4,127	4,127	6,155	4,127	4,127
R-squared	0.764	0.854	0.855	0.997	0.998	0.998
Country*time	YES	YES	YES	YES	YES	YES
Country*industry	YES	YES	YES	YES	YES	YES
Industry*time	YES	YES	YES	YES	YES	YES

Source: Estimated by the authors.

Table A7. Main Results Without Employment Protection Law (EPL)

Period regression	1996–2021 (1)	1996–2013 (2)	1996–2013 (3)	1996–2021 (4)	1996–2013 (5)	1996–2013 (6)
VARIABLES	**TFP all intangibles (log)**	**TFP all intangibles (log)**	**TFP all intangibles (log)**	**LP all intangibles (log)**	**LP all intangibles (log)**	**LP all intangibles (log)**
Capital intensity (log-lag)				0.234***	0.235***	0.225***
				(0.014)	(0.020)	(0.020)
NMR_{up}^{new} (lag)	−0.400***	−0.400***		−0.317***	−0.429***	
	(0.096)	(0.125)		(0.093)	(0.121)	
NMR_{up} (lag)			−0.538***			−0.481***
			(0.088)			(0.085)
Constant	4.838***	4.806***	5.084***	−2.234***	−2.188***	−2.014***
	(0.083)	(0.101)	(0.102)	(0.088)	(0.108)	(0.106)
Observations	6,155	4,127	4,127	6,155	4,127	4,127
R-squared	0.773	0.862	0.863	0.997	0.998	0.998
Country*time	YES	YES	YES	YES	YES	YES
Country*industry	YES	YES	YES	YES	YES	YES
Industry*time	YES	YES	YES	YES	YES	YES

Source: Estimated by the authors.

Table A8. Results with Stepwise Break in NMR Indicator*

1996–2021	**(1)**	**(2)**
VARIABLES	**TFP all intangibles (log)**	**LP all intangibles (log)**
Capital intensity (log-lag)		0.232***
		(0.014)
$NMR_{uprc} \times (1 - d2016)$ (lag)	−0.335***	−0.301***
	(0.050)	(0.048)
$NMR_{uprc} \times d2016$ (lag)	−0.518***	−0.416***
	(0.080)	(0.078)
Constant	4.983***	−2.088***
	(0.072)	(0.077)
Observations	6,155	6,155
R-squared	0.775	0.997
Country*time	YES	YES
Country*industry	YES	YES
Industry*time	YES	YES

Standard errors in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.
*Results do not change when EPL is included.
Source: Estimated by the authors.

Table A9. Sensitivity to Year Exclusion

Panel A: Total Factor Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Exclusion of :	Y1996	Y1997	Y1998	Y1999	Y2000	Y2001	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007	Y2008
VARIABLES	TFP all intangibles (log)												
NMR_{up}^{new} (lag)	-0.340***	-0.352***	-0.365***	-0.369***	-0.451***	-0.454***	-0.447***	-0.483***	-0.459***	-0.445***	-0.428***	-0.412***	-0.413***
	(0.098)	(0.097)	(0.097)	(0.098)	(0.097)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)
EPL^{d} (lag)	-0.331***	-0.336***	-0.329***	-0.339***	-0.341***	-0.341***	-0.338***	-0.313***	-0.317***	-0.320***	-0.335***	-0.331***	-0.334***
	(0.087)	(0.087)	(0.087)	(0.082)	(0.083)	(0.083)	(0.083)	(0.082)	(0.083)	(0.084)	(0.083)	(0.084)	(0.083)
Constant	4.850***	4.874***	4.881***	4.885***	4.946***	4.949***	4.942***	4.963***	4.945***	4.937***	4.927***	4.911***	4.914***
	(0.085)	(0.086)	(0.086)	(0.087)	(0.086)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)
Observations	5,969	5,969	5,969	5,950	5,931	5,931	5,931	5,912	5,912	5,912	5,912	5,912	5,912
R-squared	0.760	0.763	0.763	0.766	0.768	0.766	0.767	0.770	0.769	0.770	0.771	0.772	0.774

1996-2021	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Exclusion of :	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021
VARIABLES	TFP all intangibles (log)												
NMR_{up}^{new} (lag)	-0.430***	-0.420***	-0.424***	-0.429***	-0.433***	-0.428***	-0.407***	-0.404***	-0.414***	-0.428***	-0.419***	-0.446***	-0.427***
	(0.098)	(0.098)	(0.097)	(0.097)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)	(0.098)	(0.099)	(0.098)	(0.098)
EPL^{d} (lag)	-0.324***	-0.347***	-0.341***	-0.339***	-0.334***	-0.335***	-0.337***	-0.338***	-0.362***	-0.358***	-0.334***	-0.325***	-0.314***
	(0.083)	(0.083)	(0.083)	(0.083)	(0.083)	(0.083)	(0.083)	(0.084)	(0.085)	(0.085)	(0.084)	(0.082)	(0.082)
Constant	4.926***	4.922***	4.925***	4.925***	4.929***	4.924***	4.908***	4.907***	4.917***	4.929***	4.915***	4.932***	4.914***
	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.088)	(0.087)	(0.087)
Observations	5,912	5,912	5,912	5,912	5,893	5,893	5,893	5,893	5,893	5,893	5,893	5,912	5,942
R-squared	0.775	0.776	0.776	0.779	0.779	0.780	0.781	0.781	0.780	0.781	0.783	0.785	0.781

Panel B: Labour Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Exclusion of :	Y1996	Y1997	Y1998	Y1999	Y2000	Y2001	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007	Y2008
VARIABLES	LP all intangibles (log)												
NMR_{up}^{new} (lag)	-0.230**	-0.242**	-0.265***	-0.275***	-0.352***	-0.350***	-0.342***	-0.375***	-0.357***	-0.346***	-0.330***	-0.318***	-0.317***
	(0.095)	(0.095)	(0.094)	(0.095)	(0.094)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)
EPL^{d} (lag)	-0.082	-0.081	-0.084	-0.093	-0.094	-0.091	-0.088	-0.073	-0.071	-0.072	-0.082	-0.077	-0.084
	(0.085)	(0.085)	(0.084)	(0.080)	(0.081)	(0.081)	(0.081)	(0.080)	(0.081)	(0.081)	(0.081)	(0.081)	(0.081)
Constant	-2.264***	-2.247***	-2.237***	-2.234***	-2.193***	-2.187***	-2.194***	-2.187***	-2.200***	-2.205***	-2.216***	-2.230***	-2.226***
	(0.090)	(0.091)	(0.091)	(0.091)	(0.091)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)
Observations	5,969	5,969	5,969	5,950	5,931	5,931	5,931	5,912	5,912	5,912	5,912	5,912	5,912
R-squared	0.998	0.998	0.998	0.998	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997

1996-2021	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Exclusion of :	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021
VARIABLES	LP all intangibles (log)												
NMR_{up}^{new} (lag)	-0.334***	-0.322***	-0.324***	-0.328***	-0.332***	-0.322***	-0.306***	-0.307***	-0.320***	-0.337***	-0.334***	-0.365***	-0.343***
	(0.095)	(0.095)	(0.095)	(0.094)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.096)	(0.095)	(0.095)
EPL^{d} (lag)	-0.069	-0.095	-0.091	-0.092	-0.091	-0.087	-0.088	-0.088	-0.111	-0.106	-0.084	-0.077	-0.069
	(0.081)	(0.081)	(0.081)	(0.081)	(0.081)	(0.081)	(0.081)	(0.081)	(0.082)	(0.082)	(0.082)	(0.080)	(0.080)
Constant	-2.211***	-2.208***	-2.202***	-2.187***	-2.193***	-2.207***	-2.219***	-2.221***	-2.212***	-2.208***	-2.212***	-2.179***	-2.200***
	(0.092)	(0.092)	(0.092)	(0.091)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)
Observations	5,912	5,912	5,912	5,912	5,893	5,893	5,893	5,893	5,893	5,893	5,893	5,912	5,942
R-squared	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.998	0.998

Source: Estimated by the authors.

Table A10. Sensitivity to Country Exclusion

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Exclusion of :	AT	BE	CA	CZ	DE	DK	ES	FI	FR	IT	NL	SE	SK	UK
VARIABLES	TFP all intangibles (log)													
NMR_{up}^{new} (lag)	-0.331***	-0.545***	-0.470***	-0.523***	-0.464***	-0.395***	-0.498***	-0.501***	-0.416***	-0.252**	-0.394***	-0.332***	-0.456***	-0.291***
	(0.103)	(0.102)	(0.099)	(0.096)	(0.100)	(0.099)	(0.107)	(0.100)	(0.101)	(0.101)	(0.100)	(0.101)	(0.097)	(0.091)
EPL^{d} (lag)	-0.327***	-0.386***	-0.345***	-0.289***	-0.301***	-0.303***	-0.284***	-0.324***	-0.372***	-0.442***	-0.288***	-0.319***	-0.331***	-0.416***
	(0.083)	(0.084)	(0.084)	(0.082)	(0.089)	(0.085)	(0.086)	(0.084)	(0.086)	(0.117)	(0.084)	(0.084)	(0.082)	(0.076)
Constant	4.542***	5.022***	4.958***	4.986***	4.938***	4.902***	4.967***	4.994***	4.916***	4.836***	4.880***	4.849***	4.945***	4.818***
	(0.054)	(0.090)	(0.088)	(0.085)	(0.090)	(0.089)	(0.093)	(0.089)	(0.090)	(0.091)	(0.089)	(0.090)	(0.086)	(0.080)
Observations	5,661	5,718	5,775	5,794	5,661	5,661	5,739	5,661	5,661	5,672	5,661	5,687	5,984	5,680
R-squared	0.779	0.779	0.780	0.782	0.767	0.774	0.775	0.780	0.768	0.780	0.780	0.764	0.779	0.762

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Exclusion of :	AT	BE	CA	CZ	DE	DK	ES	FI	FR	IT	NL	SE	SK	UK
VARIABLES	LP ext (log)													
NMR_{up}^{new} (lag)	-0.261***	-0.398***	-0.369***	-0.433***	-0.350***	-0.374***	-0.425***	-0.419***	-0.310***	-0.193**	-0.267***	-0.216**	-0.351***	-0.231***
	(0.099)	(0.099)	(0.096)	(0.093)	(0.097)	(0.097)	(0.105)	(0.097)	(0.098)	(0.109)	(0.098)	(0.098)	(0.094)	(0.088)
EPL^{d} (lag)	-0.066	-0.121	-0.087	-0.059	-0.039	-0.080	-0.002	-0.081	-0.091	-0.204	-0.046	-0.080	-0.087	-0.175**
	(0.081)	(0.082)	(0.081)	(0.079)	(0.087)	(0.083)	(0.084)	(0.082)	(0.084)	(0.126)	(0.082)	(0.082)	(0.080)	(0.075)
Constant	-2.603***	-2.143***	-2.233***	-2.183***	-2.217***	-2.166***	-2.134***	-2.131***	-2.196***	-2.268***	-2.294***	-2.271***	-2.187***	-2.232***
	(0.067)	(0.094)	(0.093)	(0.090)	(0.095)	(0.094)	(0.099)	(0.094)	(0.096)	(0.096)	(0.095)	(0.095)	(0.091)	(0.085)
Observations	5,661	5,718	5,775	5,794	5,661	5,661	5,739	5,661	5,661	5,672	5,661	5,687	5,984	5,680
R-squared	0.998	0.998	0.960	0.998	0.998	0.998	0.998	0.998	0.997	0.997	0.998	0.998	0.998	0.998

Source: Estimated by the authors.

Table A11. Sensitivity to Sector Exclusion

Panel A: Total Factor Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Exclusion of :	C10_C12	C13_C15	C16_C18	C20	C22_C23	C24_C25	C26	C27	C28	C29_C30
VARIABLES	TFP all intangibles (log)									
NMR_{up}^{new} (lag)	-0.454***	-0.590***	-0.494***	-0.317***	-0.356***	-0.399***	-0.151*	-0.370***	-0.473***	-0.439***
	(0.100)	(0.100)	(0.099)	(0.096)	(0.100)	(0.098)	(0.089)	(0.096)	(0.097)	(0.097)
EPL^{d} (lag)	-0.398***	-0.368***	-0.315***	-0.215**	-0.357***	-0.366***	-0.466***	-0.331***	-0.317***	-0.366***
	(0.091)	(0.081)	(0.084)	(0.086)	(0.085)	(0.084)	(0.078)	(0.081)	(0.083)	(0.086)
Constant	4.852***	5.045***	4.970***	4.820***	4.872***	4.906***	4.722***	4.888***	4.957***	4.940***
	(0.113)	(0.088)	(0.088)	(0.086)	(0.089)	(0.087)	(0.079)	(0.086)	(0.087)	(0.087)
Observations	5,826	5,826	5,826	5,878	5,826	5,826	5,852	5,852	5,826	5,826
R-squared	0.778	0.773	0.771	0.770	0.775	0.777	0.748	0.780	0.778	0.776

1996-2021	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Exclusion of :	C31_C33	D_E	F	G	H	I	J	K	M_N
VARIABLES	TFP all intangibles (log)								
NMR_{up}^{new} (lag)	-0.366***	-0.424***	-0.427***	-0.435***	-0.465***	-0.497***	-0.403***	-0.420***	-0.537***
	(0.099)	(0.098)	(0.097)	(0.105)	(0.098)	(0.100)	(0.100)	(0.099)	(0.107)
EPL^{d} (lag)	-0.334***	-0.340***	-0.360***	-0.302***	-0.302***	-0.291***	-0.344***	-0.329***	-0.247***
	(0.084)	(0.084)	(0.088)	(0.083)	(0.083)	(0.084)	(0.082)	(0.081)	(0.096)
Constant	4.883***	4.930***	4.931***	4.924***	4.952***	4.968***	4.898***	4.932***	4.993***
	(0.088)	(0.087)	(0.087)	(0.092)	(0.087)	(0.089)	(0.089)	(0.087)	(0.093)
Observations	5,826	5,825	5,825	5,825	5,825	5,825	5,825	5,825	5,825
R-squared	0.776	0.767	0.774	0.777	0.779	0.776	0.766	0.785	0.773

Panel B: Labour Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Exclusion of :	C10_C12	C13_C15	C16_C18	C20	C22_C23	C24_C25	C26	C27	C28	C29_
VARIABLES	LP all intangibles (log)									
NMR_{up}^{new} (lag)	-0.341***	-0.459***	-0.390***	-0.238**	-0.268***	-0.294***	-0.037	-0.312***	-0.379***	-0.345
	(0.097)	(0.097)	(0.096)	(0.093)	(0.097)	(0.095)	(0.087)	(0.093)	(0.094)	(0.095
EPL^{d} (lag)	-0.101	-0.105	-0.081	0.042	-0.114	-0.121	-0.254***	-0.079	-0.065	-0.126
	(0.089)	(0.078)	(0.082)	(0.084)	(0.082)	(0.081)	(0.076)	(0.079)	(0.080)	(0.084
Constant	-2.755***	-2.123***	-2.144***	-2.309***	-2.236***	-2.231***	-2.309***	-2.236***	-2.178***	-2.178
	(0.119)	(0.092)	(0.093)	(0.091)	(0.093)	(0.092)	(0.085)	(0.090)	(0.091)	(0.092
Observations	5,826	5,826	5,826	5,878	5,826	5,826	5,852	5,852	5,826	5,826
R-squared	0.997	0.998	0.997	0.997	0.997	0.997	0.998	0.997	0.997	0.997

1996-2021	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Exclusion of :	C31_C33	D_E	F	G	H	I	J	K	M_N
VARIABLES	LP all intangibles (log)								
NMR_{up}^{new} (lag)	-0.263***	-0.371***	-0.309***	-0.325***	-0.365***	-0.444***	-0.298***	-0.297***	-0.399***
	(0.096)	(0.094)	(0.095)	(0.102)	(0.095)	(0.097)	(0.096)	(0.097)	(0.105)
EPL^{d} (lag)	-0.077	-0.106	-0.052	-0.055	-0.050	-0.044	-0.089	-0.098	-0.045
	(0.081)	(0.082)	(0.086)	(0.081)	(0.081)	(0.081)	(0.080)	(0.080)	(0.093)
Constant	-2.262***	-2.189***	-2.238***	-2.210***	-2.184***	-2.141***	-2.270***	-2.167***	-2.166***
	(0.093)	(0.091)	(0.093)	(0.096)	(0.092)	(0.093)	(0.093)	(0.093)	(0.098)
Observations	5,826	5,825	5,825	5,825	5,825	5,825	5,825	5,825	5,825
R-squared	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997

Source: Estimated by the authors.

Table A12. Sensitivity to Sector Exclusion Version with Break in NMR

Panel A: Total Factor Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Exclusion of :	C10_C12	C13_C15	C16_C18	C20	C22_C23	C24_C25	C26	C27	C28	C29_C30
VARIABLES	TFP all intangibles (log)									
$NMR_{uprc} \times (1 - \text{d2016})$ (lag)	-0.358***	-0.291***	-0.351***	-0.293***	-0.350***	-0.327***	-0.309***	-0.343***	-0.364***	-0.380***
	(0.052)	(0.053)	(0.051)	(0.049)	(0.052)	(0.051)	(0.046)	(0.050)	(0.050)	(0.050)
$NMR_{uprc} \times$ (d2016) (lag)	-0.565***	-0.431***	-0.542***	-0.538***	-0.526***	-0.501***	-0.451***	-0.517***	-0.557***	-0.528***
	(0.083)	(0.083)	(0.082)	(0.080)	(0.083)	(0.082)	(0.074)	(0.080)	(0.081)	(0.081)
Constant	4.750***	4.917***	5.004***	4.946***	4.994***	4.968***	4.916***	4.996***	5.022***	5.031***
	(0.081)	(0.074)	(0.074)	(0.072)	(0.075)	(0.074)	(0.067)	(0.072)	(0.073)	(0.073)
Observations	5,826	5,826	5,826	5,878	5,826	5,826	5,852	5,852	5,826	5,826
R-squared	0.779	0.773	0.773	0.772	0.777	0.778	0.749	0.782	0.779	0.778

1996-2021	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Exclusion of :	C31_C33	D_E	F	G	H	I	J	K	M_N
VARIABLES	TFP all intangibles (log)								
$NMR_{uprc} \times (1 - \text{d2016})$ (lag)	-0.296***	-0.325***	-0.351***	-0.290***	-0.350***	-0.347***	-0.356***	-0.319***	-0.369***
	(0.051)	(0.051)	(0.050)	(0.055)	(0.051)	(0.051)	(0.052)	(0.052)	(0.055)
$NMR_{uprc} \times$ (d2016) (lag)	-0.529***	-0.503***	-0.550***	-0.529***	-0.517***	-0.610***	-0.485***	-0.483***	-0.458***
	(0.082)	(0.081)	(0.081)	(0.089)	(0.082)	(0.084)	(0.083)	(0.082)	(0.094)
Constant	4.949***	4.975***	5.006***	4.939***	5.002***	5.014***	4.985***	4.972***	5.006***
	(0.074)	(0.073)	(0.073)	(0.078)	(0.074)	(0.074)	(0.074)	(0.074)	(0.077)
Observations	5,826	5,825	5,825	5,825	5,825	5,825	5,825	5,825	5,825
R-squared	0.777	0.768	0.776	0.778	0.780	0.778	0.768	0.786	0.774

Panel B: Labour Productivity

(All fixed effects are included but not presented in the table)

1996-2021	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Exclusion of :	C10_C12	C13_C15	C16_C18	C20	C22_C23	C24_C25	C26	C27	C28	C29_C30
VARIABLES	LP all intangibles (log)									
$NMR_{uprc} \times (1 - \text{d2016})$ (lag)	-0.313***	-0.253***	-0.314***	-0.270***	-0.310***	-0.290***	-0.255***	-0.325***	-0.332***	-0.341***
	(0.051)	(0.051)	(0.050)	(0.048)	(0.050)	(0.049)	(0.045)	(0.048)	(0.049)	(0.049)
$NMR_{uprc} \times$ (d2016) (lag)	-0.455***	-0.308***	-0.437***	-0.446***	-0.431***	-0.391***	-0.332***	-0.428***	-0.454***	-0.421***
	(0.081)	(0.080)	(0.080)	(0.077)	(0.080)	(0.079)	(0.072)	(0.078)	(0.079)	(0.079)
Constant	-2.661***	-2.174***	-2.053***	-2.118***	-2.067***	-2.112***	-2.080***	-2.080***	-2.055***	-2.039***
	(0.088)	(0.079)	(0.079)	(0.077)	(0.080)	(0.078)	(0.073)	(0.077)	(0.078)	(0.079)
Observations	5,826	5,826	5,826	5,878	5,826	5,826	5,852	5,852	5,826	5,826
R-squared	0.997	0.998	0.997	0.998	0.997	0.997	0.998	0.997	0.997	0.997

1996-2021	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Exclusion of :	C31_C33	D_E	F	G	H	I	J	K	M_N
VARIABLES	LP all intangibles (log)								
$NMR_{uprc} \times (1 - \text{d2016})$ (lag)	-0.258***	-0.304***	-0.314***	-0.252***	-0.306***	-0.324***	-0.314***	-0.300***	-0.332***
	(0.050)	(0.049)	(0.049)	(0.054)	(0.049)	(0.050)	(0.050)	(0.051)	(0.053)
$NMR_{uprc} \times$ (d2016) (lag)	-0.422***	-0.395***	-0.441***	-0.432***	-0.412***	-0.528***	-0.351***	-0.398***	-0.398***
	(0.080)	(0.078)	(0.079)	(0.086)	(0.079)	(0.081)	(0.080)	(0.080)	(0.091)
Constant	-2.132***	-2.109***	-2.081***	-2.127***	-2.080***	-2.052***	-2.135***	-2.037***	-2.068***
	(0.079)	(0.077)	(0.079)	(0.083)	(0.078)	(0.078)	(0.079)	(0.080)	(0.082)
Observations	5,826	5,825	5,825	5,825	5,825	5,825	5,825	5,825	5,825
R-squared	0.997	0.998	0.997	0.997	0.997	0.997	0.997	0.997	0.997

Source: Estimated by the authors.

Table A13. Results from 1996 to 2018 (avoiding the COVID-19 crisis)

1996–2018	(1)	(2)	(3)	(4)
VARIABLES	TFP all intangibles (log)	TFP NA intangibles (log)	LP all intangibles (log)	LP NA intangibles (log)
Capital Intensity (log-lag)			0.239***	0.166***
			(0.016)	(0.016)
NMR_{up}^{new} (lag)	-0.467***	-0.625***	-0.425***	-0.572***
	(0.105)	(0.116)	(0.102)	(0.113)
EPL^{d} (lag)	-0.293***	-0.243***	-0.051	-0.011
	(0.084)	(0.092)	(0.082)	(0.090)
Constant	4.931***	5.029***	-2.152***	-2.278***
	(0.091)	(0.100)	(0.096)	(0.105)
Observations	5,437	5,437	5,437	5,437
R-squared	0.805	0.793	0.998	0.997
Country*year	YES	YES	YES	YES
Country*industry	YES	YES	YES	YES
Industry*year	YES	YES	YES	YES

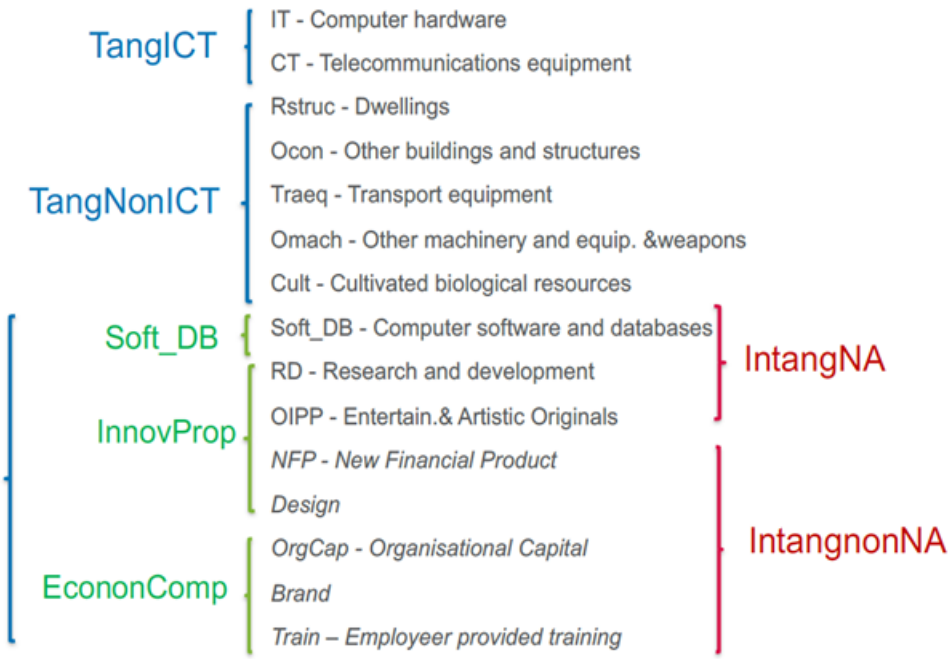
Source: Estimated by the authors.

Table A14. Regression Separating out the Effects of Retail Regulation from Those of Other Non-manufacturing Regulations

	1996–2021	1996–2021	1996–2021	1996–2021
	(1)	(2)	(3)	(4)
VARIABLES	TFP all intangibles (log)	TFP all intangibles (log)	LP all intangibles (log)	LP all intangibles (log)
Capital Intensity (log-lag)			0.237***	0.237***
			(0.014)	(0.014)
NMR_{up}^{new} (lag) excluding retail	-0.686***	-0.724***	-0.390***	-0.444***
	(0.121)	(0.125)	(0.118)	(0.121)
Retail Regulation^{new} (lag)		-0.153		-0.215*
		(0.119)		(0.116)
EPL^{d} (lag)	-0.289***	-0.300***	-0.056	-0.072
	(0.082)	(0.082)	(0.080)	(0.080)
Constant	4.851***	4.924***	-2.307***	-2.206***
	(0.064)	(0.085)	(0.072)	(0.090)
Observations	6,155	6,155	6,155	6,155
R-squared	0.774	0.774	0.997	0.997

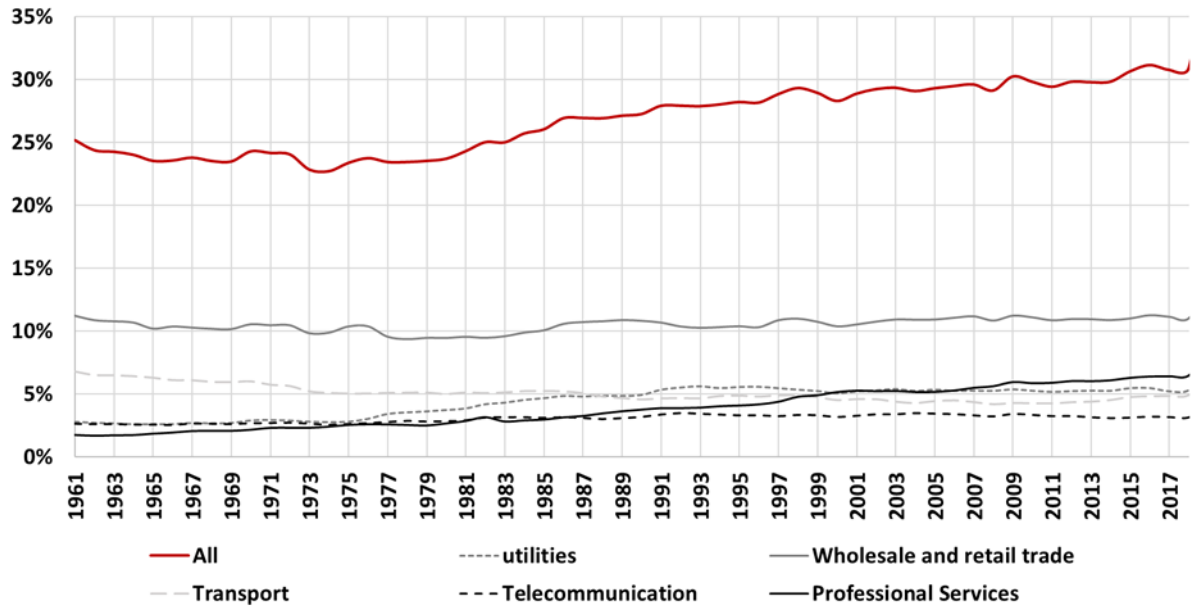
Source: Estimated by the authors.

Figure A1: Classification of Tangibles and Intangibles Assets



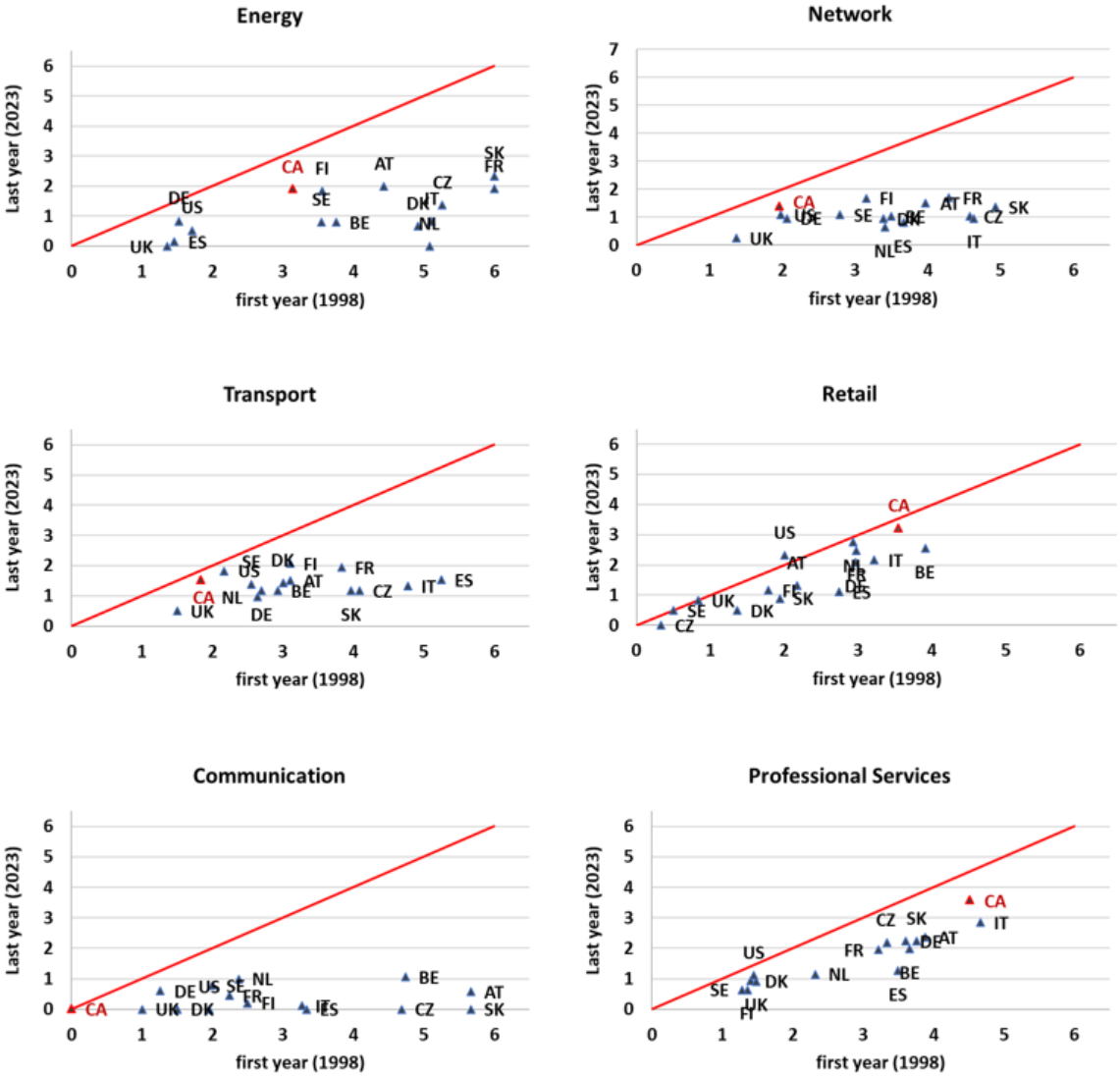
Source: EUKLEMS-IntanProd version 2025 documentation

Chart A1: Shares of Non-manufacturing Sectors Covered by the OECD NMR Indicators in Canadian GDP



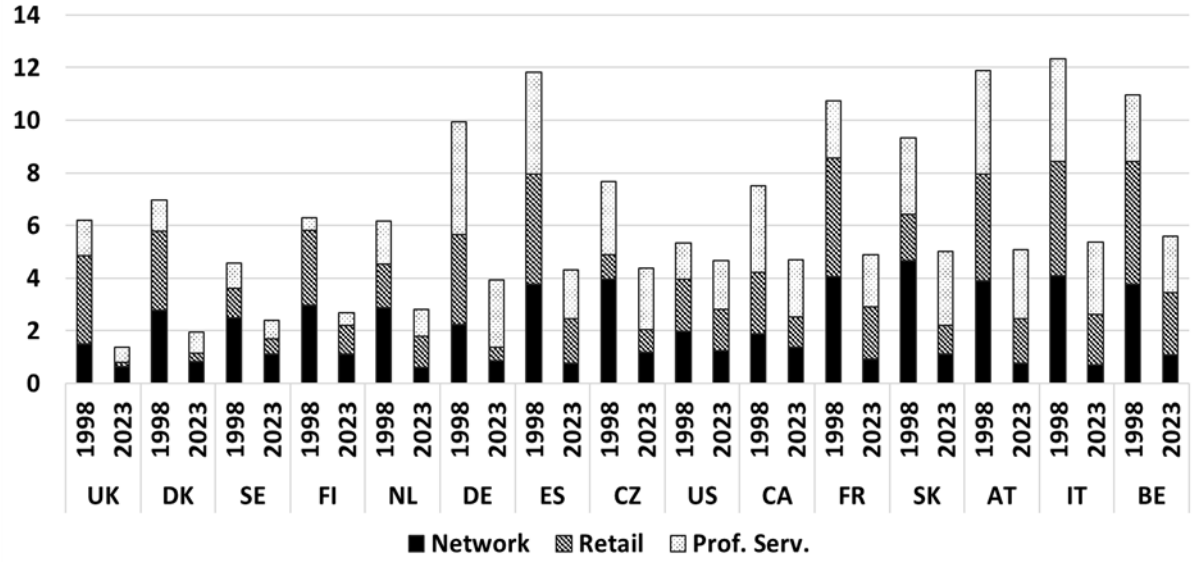
Source: calculated by the authors based on StatCan data

Chart A2: Evolution of Anticompetitive Regulations in the Non-manufacturing Industries by Country and Sector, 1998-2023



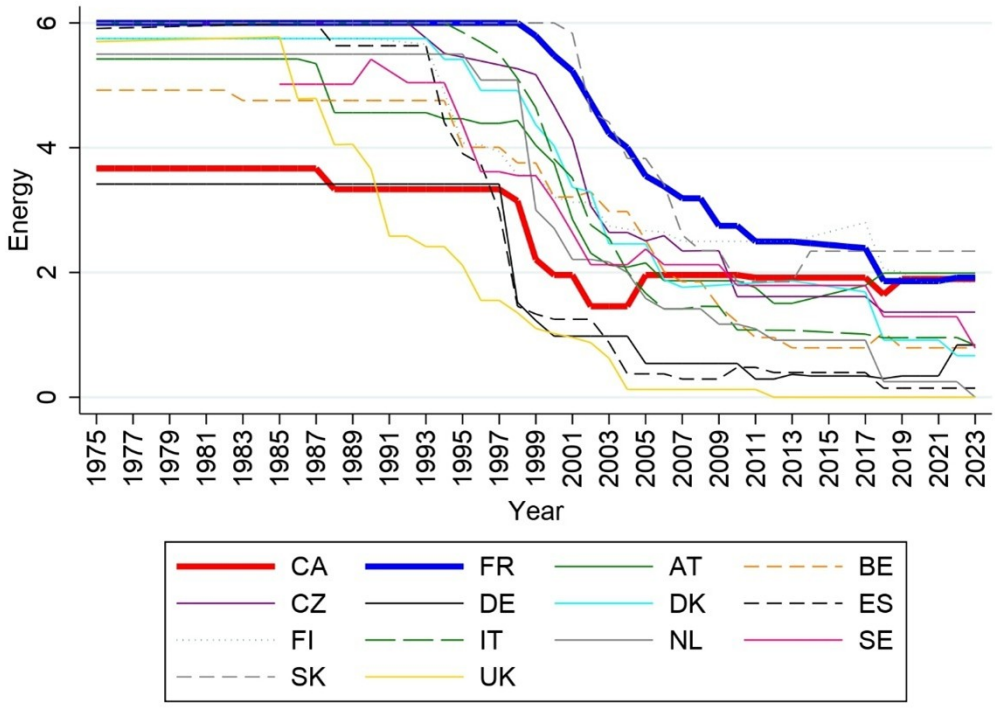
Source: Calculated by the authors based on OECD data

Chart A3: Evolution of Non-Manufacturing Regulation (Version with Break) Calculated on our Database



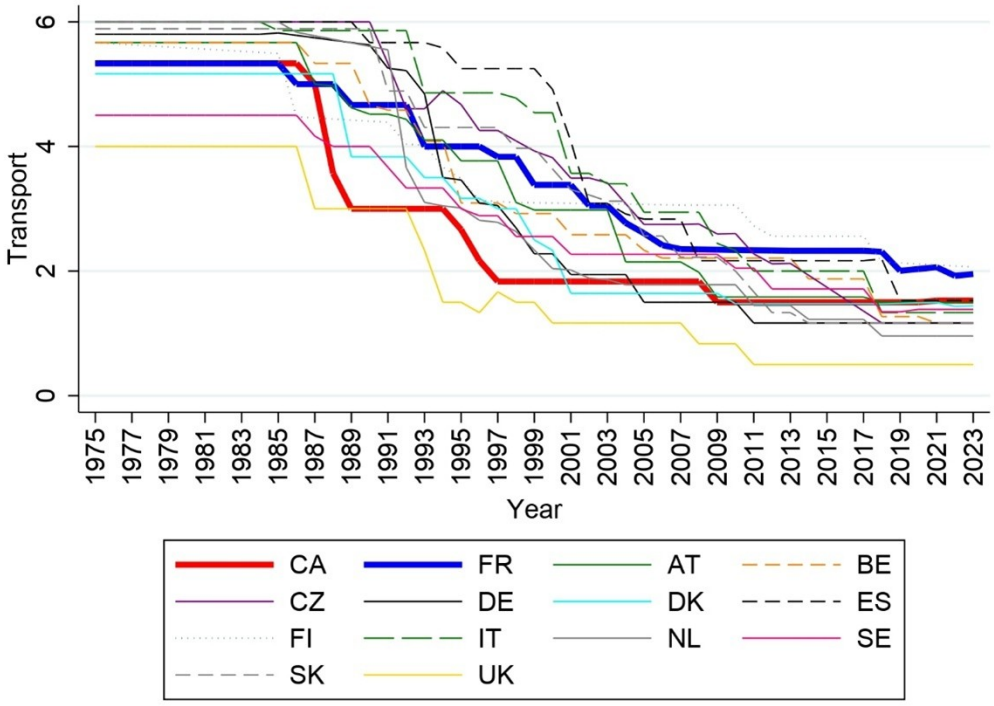
Source: OECD

Chart A4: Evolution of Energy Regulation Calculated on our Database



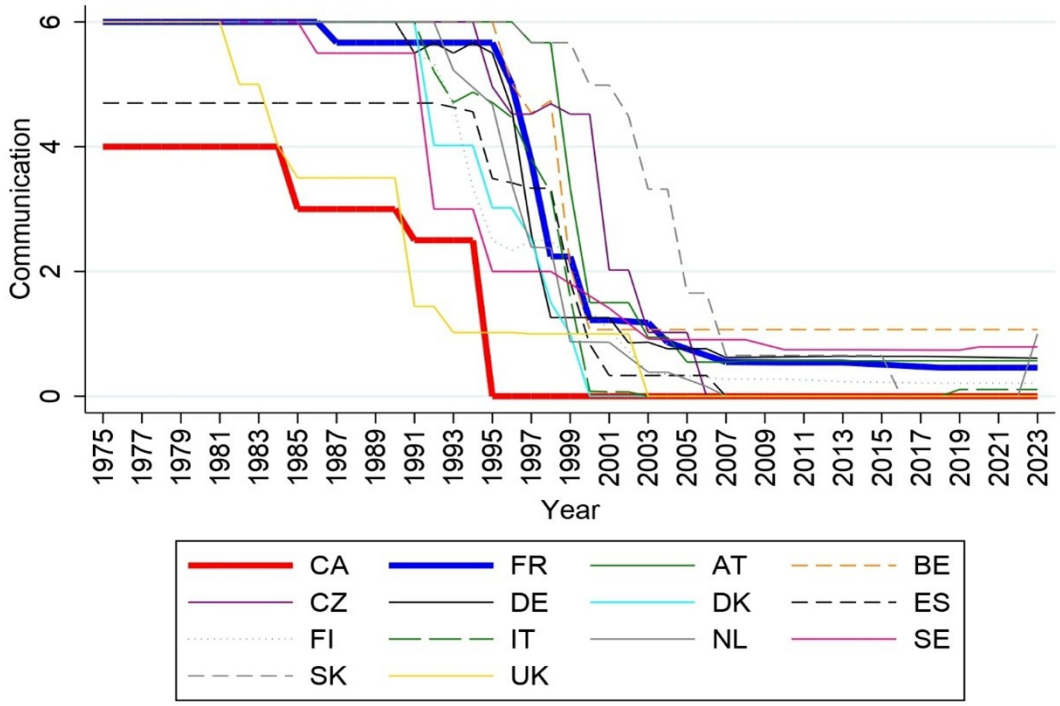
Source: OECD

Chart A5: Evolution of Transport Regulation Calculated on our Database



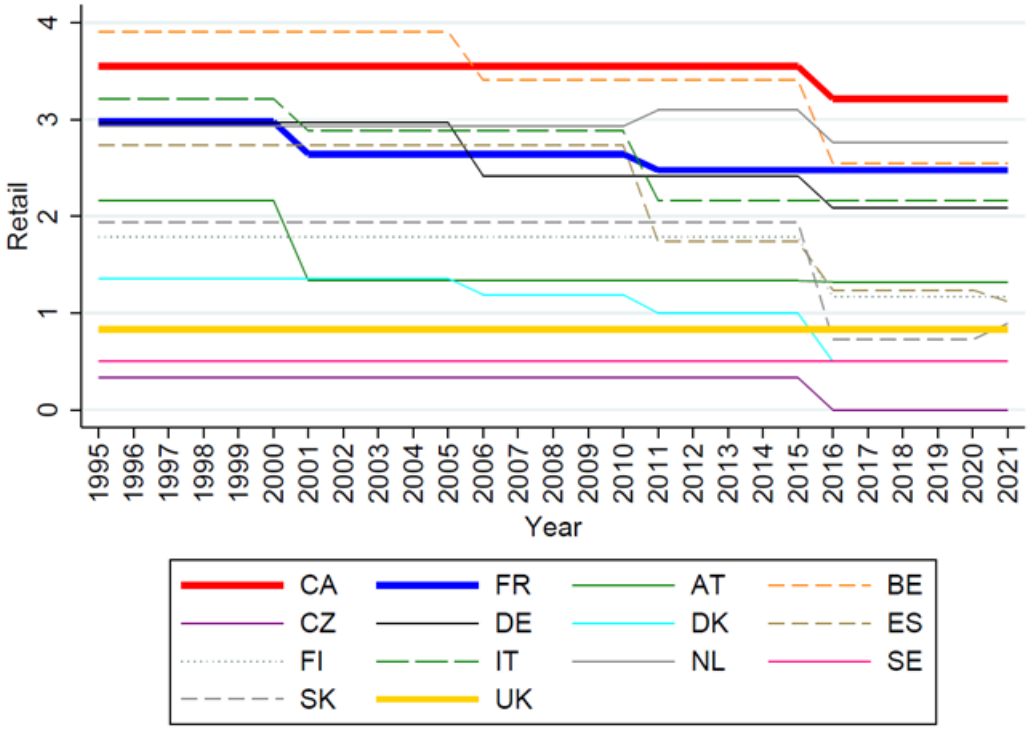
Source: OECD

Chart A6: Evolution of Communication Regulation Calculated on our Database



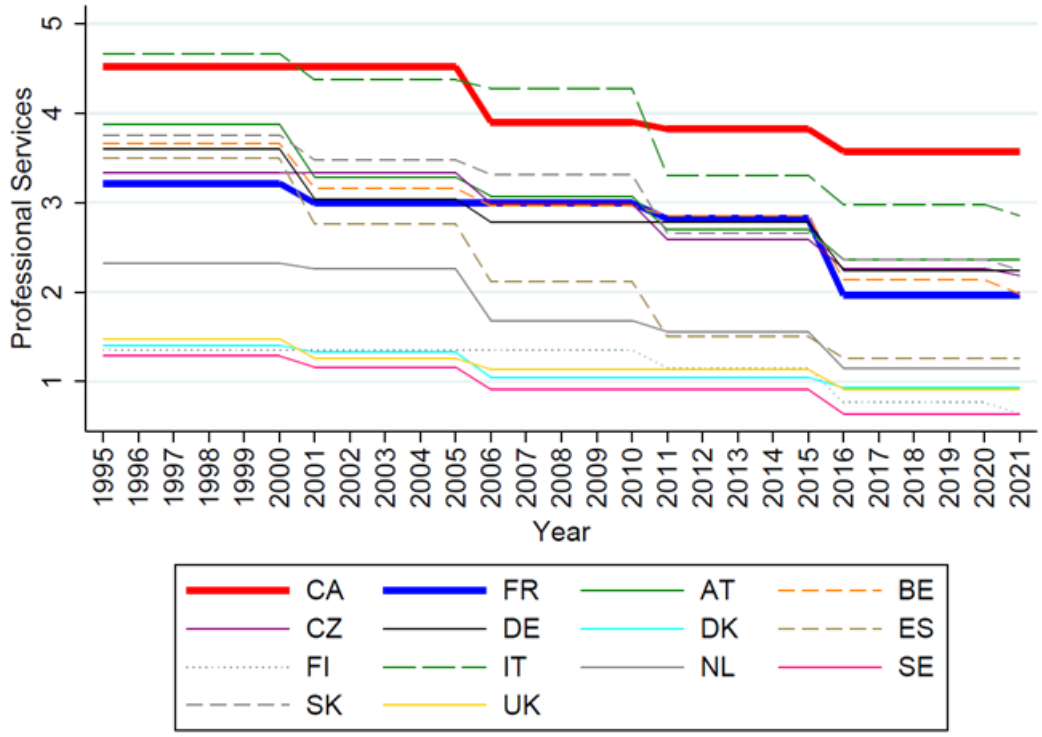
Source: OECD

Chart A7: Evolution of Retail Distribution Regulation Calculated on our Database



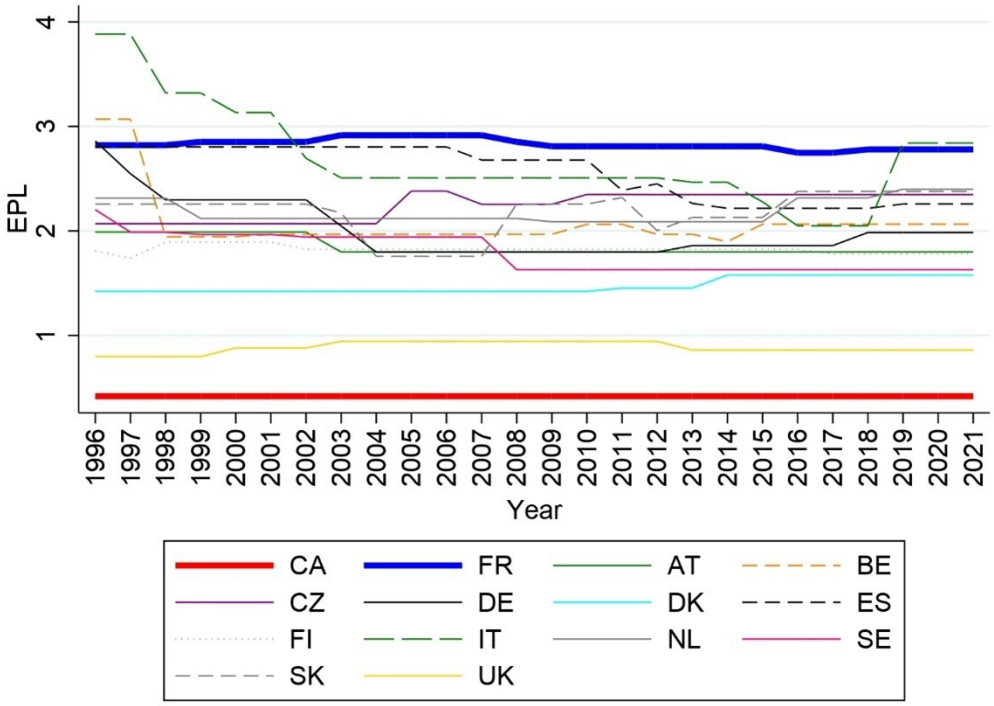
Source: OECD

Chart A8: Evolution of Pofessional Serices Regulation Calculated on our Database



Source: OECD

Chart A9: Evolution of Employment Protection Legislation (EPL) Calculated on our Database (Individual and collective dismissals and temporary contracts)



Source: OECD

Chart A10: Labour Productivity vs Non-manufacturing Regulations After Filtering out Country-time, Industry-time and Country-Industry Fixed Effects from the Original Variables

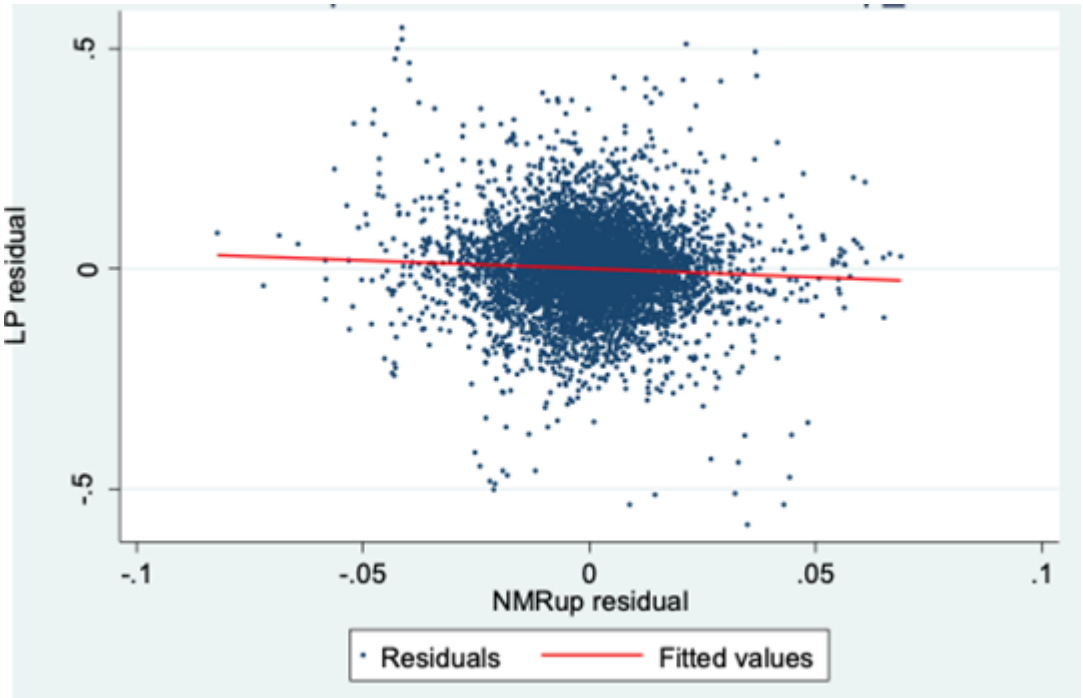


Figure A12. Labour Productivity vs Non-manufacturing Regulations After Filtering out Country-time, Industry-time and Country-Industry Fixed Effects from the Original Variables (means over sectors, selected country examples)

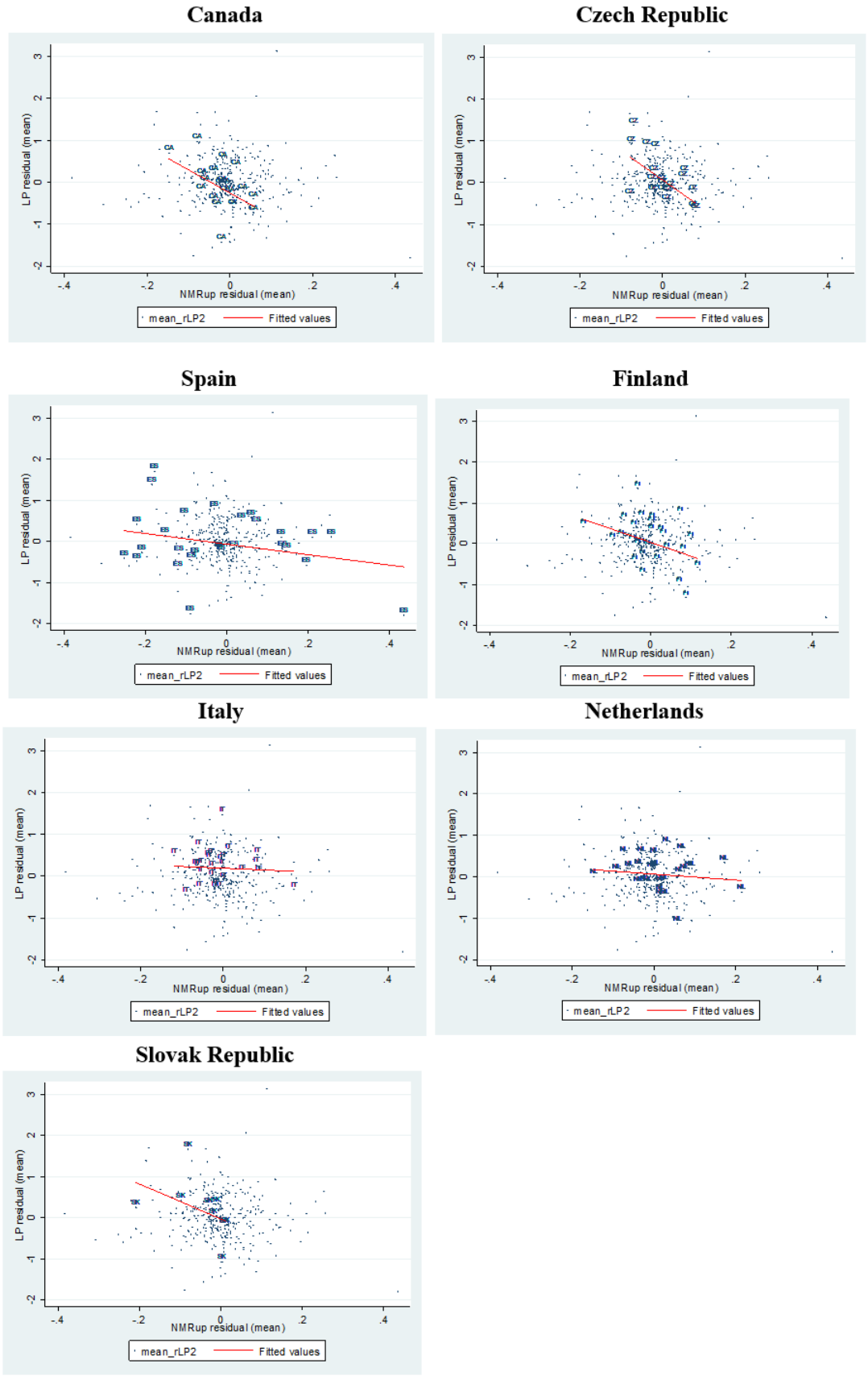


Figure A13: Simulation of the GDP per Capita Impact of Aligning 2023 Non-Manufacturing Regulations in Each Country on 2023 Best Practices, Assuming That Retail Regulation Has No Effect on Productivity

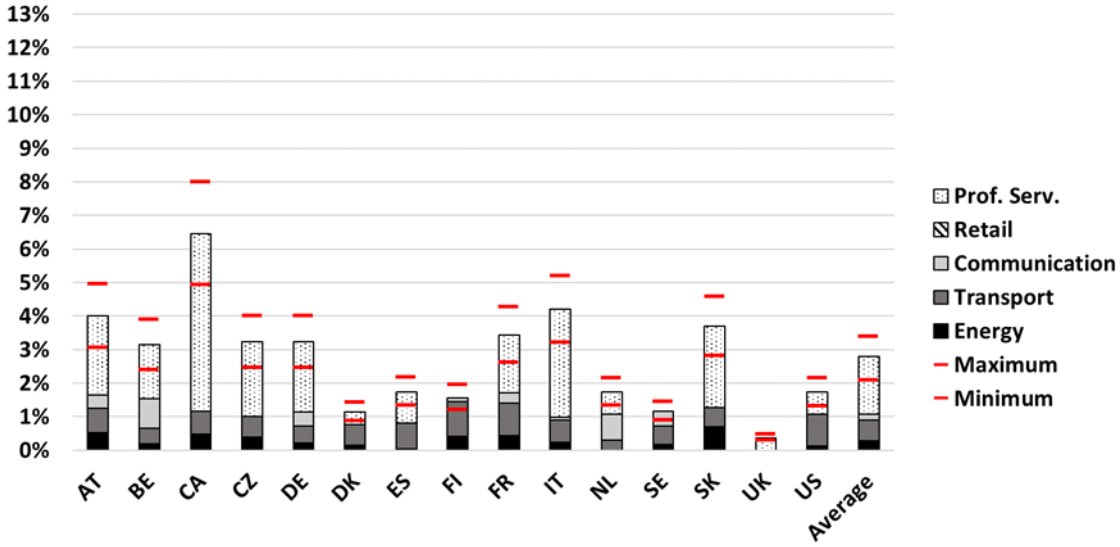
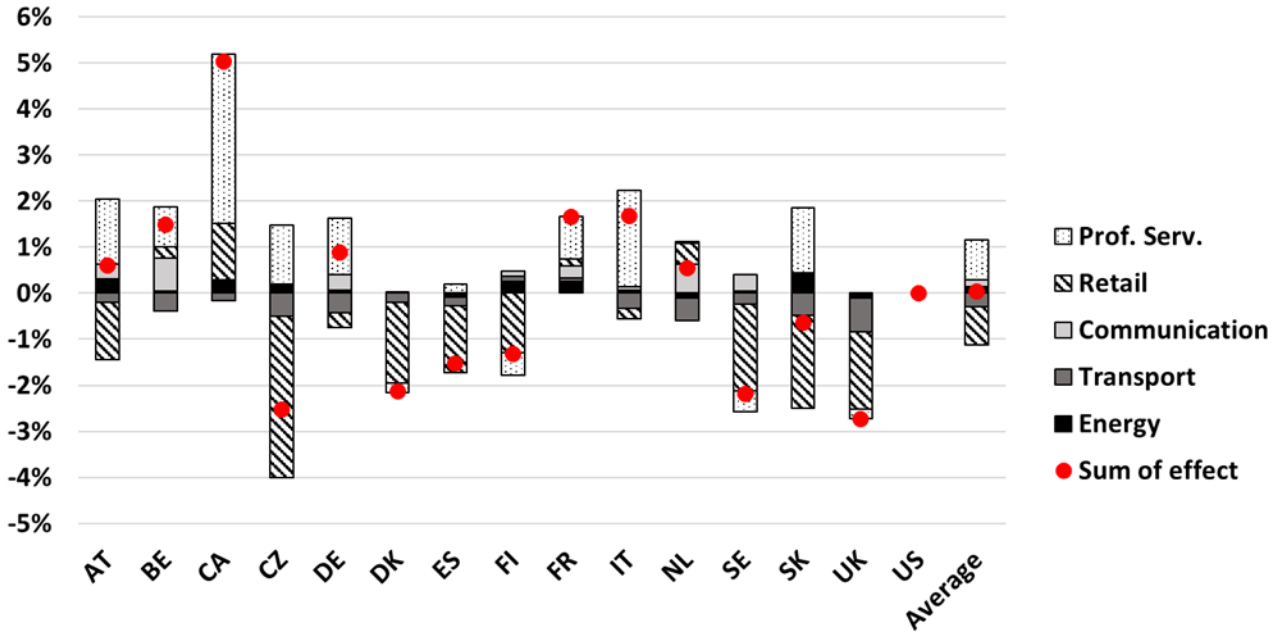



Figure A14: Simulation of the GDP per Capita Impact of Aligning Non-Manufacturing Regulation in Each Country to US 2023 Regulatory Practices