

Review Article

Development of the Shadow Economy of 36 OECD Countries over 2003 - 2021: Due to the Corona Pandemic a Strong Increase in 2020 and a Modest Decline in 2021

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Considering the development of the shadow economy of all 36 OECD countries over 2003 to 2021 and the effect of the Corona pandemic on 2020 and 2021 the average size of the shadow economy of all 36 OECD Countries strongly increased from 14.98 percentage points in 2019 to 16.48 percentage points in 2020 a rise of 1.5 percentage points or 11%. Due to an expected forecasted economic recovery the shadow economy will slightly decrease in 2021 to 16.07 percentage points (average of all 36 countries); a modest reduction of 0.42 percentage points. The most important policy conclusion is the decline of the shadow economy will only be a blessing for the whole economy, if incentive orientated policy measures will be applied.

Key words: *Shadow economy of 36 OECC countries, effect of the corona pandemic, latest shadow economy results for 2020 and 2021. JEL Codes: C39, C51, C82, H11, H26, U17.*

INTRODUCTION

The Corona-Pandemic caused a severe recession in almost all OECD countries in 2020 and 2021. The result was a strong rise in unemployment and a sharp decline of GDP and national income, and this had the effect of a strong increase in the shadow economies of these 36 countries. In tables 1 to 3 the size and development of 31 European and of five non-European shadow economies are presented over the period 2003-2021 (James et al., 2013). Let me first consider the results of the average size of the shadow economy of the 28 European Union countries over a more long-term perspective and before the corona pandemic occurred. In table 1 I realize that the shadow economy in the year 2003 was 22.6% (of official GDP), which decreased to 19.6% in 2008 and increased to 20.1% in 2009 and then decreased again to 16.28 in 2019. Hence we had in general a negative trend of the size of the shadow economies in almost all OECD-countries. The main reason was the strong increase of the GDP and a equally strong rise of the national income. The results were much less engagement in shadow economy activities (Abdih et al., 2013).

APPLIED EMPIRICAL PAPER

The strongest increase (3.13 percentage points) took place in Croatia from 26.43% of official GDP (2019) to 29.56% (2020); the next strongest increase (2.81%) was in Bulgaria from 30.12% (2019) to 32.93% (2020). The weakest increase (0.77) was in Finland from 10.59% to 11.36% (of GDP); the second one (0.92) in Denmark from 8.92% to 9.84% (of GDP).

With the help of projections I made first calculations (September 2021) of the development of the shadow economies for 2021 (Lars P et al., 2010). These are preliminary values which might change under different economic developments. In 2021 I expect “only” a small decrease of the of the shadow economy to 17.42% of GDP (average value for the EU-Countries); hence the average decline of the shadow economy of the EU countries will be 0.47 percentage points or 2.52%. The causes of this decline are massive public spending in the infrastructure and subsidies to enter-prises and individuals which hopefully will lead to a sizeable GDP growth combined with a modest decline of unemployment. These economic and shadow economy predictions are made in January 2021 where it is still open when the pandemic will be over and when the recovery of the economy can begin (Medina et al., 2018; Lenardo et al., 2021)

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Table 1. Size of the shadow economy of the 27 EU-Countries+United Kingdom (up to 2020) over 2003 – 2021 (in % of off. GDP)

Country/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Austria	10.8	11.0	10.3	9.7	9.4	8.1	8.5	8.2	7.9	7.6	7.5	7.8	8.2	7.8	7.1	6.72	6.10	7.23	6.9
Belgium	21.4	20.7	20.1	19.2	18.3	17.5	17.8	17.4	17.1	16.8	16.4	16.1	16.2	16.1	15.6	15.42	15.09	16.2	16.01
Bulgaria	35.9	35.3	34.4	34.0	32.7	32.1	32.5	32.6	32.3	31.9	31.2	31.0	30.6	30.2	29.6	30.84	30.12	32.93	32.41
Croatia	32.3	32.3	31.5	31.2	30.4	29.6	30.1	29.8	29.5	29.0	28.4	28.0	27.7	27.1	26.5	27.43	26.43	29.56	29.01
Czech Republic	19.5	19.1	18.5	18.1	17.0	16.6	16.9	16.7	16.4	16.0	15.5	15.3	15.1	14.9	14.1	13.61	13.07	14.22	13.92
Denmark	17.4	17.1	16.5	15.4	14.8	13.9	14.3	14.0	13.8	13.4	13.0	12.8	12.0	11.6	10.9	9.32	8.92	9.84	9.62
Estonia	30.7	30.8	30.2	29.6	29.5	29.0	29.6	29.3	28.6	28.2	27.6	27.1	26.2	25.4	24.6	23.21	22.06	23.59	23.06
Finland	17.6	17.2	16.6	15.3	14.5	13.8	14.2	14.0	13.7	13.3	13.0	12.9	12.4	12.0	11.5	11.02	10.59	11.36	10.94
France	14.7	14.3	13.8	12.4	11.8	11.1	11.6	11.3	11.0	10.8	9.9	10.8	12.3	12.6	12.8	12.52	12.37	13.59	13.12
Germany	16.7	15.7	15.0	14.5	13.9	13.5	14.3	13.5	12.7	12.5	12.1	11.6	11.2	10.8	10.4	9.74	8.54	10.42	10.03
Greece	28.2	28.1	27.6	26.2	25.1	24.3	25.0	25.4	24.3	24.0	23.6	23.3	22.4	22.0	21.5	20.81	19.23	20.94	20.31
Hungary	25.0	24.7	24.5	24.4	23.7	23.0	23.5	23.3	22.8	22.5	22.1	21.6	21.9	22.2	22.4	22.70	23.22	25.96	25.01
Ireland	15.4	15.2	14.8	13.4	12.7	12.2	13.1	13.0	12.8	12.7	12.2	11.8	11.3	10.8	10.4	9.70	8.91	9.86	9.40
Italy	26.1	25.2	24.4	23.2	22.3	21.4	22.0	21.8	21.2	21.6	21.1	20.8	20.6	20.2	19.8	19.51	18.66	20.42	20.15
Latvia	30.4	30.0	29.5	29.0	27.5	26.5	27.1	27.3	26.5	26.1	25.5	24.7	23.6	22.9	21.3	20.24	19.84	20.91	20.22
Lithuania	32.0	31.7	31.1	30.6	29.7	29.1	29.6	29.7	29.0	28.5	28.0	27.1	25.8	24.9	23.8	22.96	21.92	23.09	22.90
Luxembourg (Grand-Duché)	9.8	9.8	9.9	10.0	9.4	8.5	8.8	8.4	8.2	8.2	8.0	8.1	8.3	8.4	8.2	7.94	7.36	8.56	8.40
Malta	26.7	26.7	26.9	27.2	26.4	25.8	25.9	26.0	25.8	25.3	24.3	24.0	24.3	24.0	23.6	23.21	22.03	23.54	23.09
Netherlands	12.7	12.5	12.0	10.9	10.1	9.6	10.2	10.0	9.8	9.5	9.1	9.2	9.0	8.8	8.4	7.51	7.04	8.14	7.79
Poland	27.7	27.4	27.1	26.8	26.0	25.3	25.9	25.4	25.0	24.4	23.8	23.5	23.3	23.0	22.2	21.74	20.65	22.45	22.02
Portugal	22.2	21.7	21.2	20.1	19.2	18.7	19.5	19.2	19.4	19.4	19.0	18.7	17.6	17.2	16.6	16.13	15.38	17.01	16.50
Romania	33.6	32.5	32.2	31.4	30.2	29.4	29.4	29.8	29.6	29.1	28.4	28.1	28.0	27.6	26.3	26.66	26.90	29.33	28.89
Slovenia	26.7	26.5	26.0	25.8	24.7	24.0	24.6	24.3	24.1	23.6	23.1	23.5	23.3	23.1	22.4	22.16	21.54	23.07	22.49
South-Cyprus	28.7	28.3	28.1	27.9	26.5	26.0	26.5	26.2	26.0	25.6	25.2	25.7	24.8	24.2	23.6	23.21	22.08	24.32	23.65
Spain	22.2	21.9	21.3	20.2	19.3	18.4	19.5	19.4	19.2	19.2	18.6	18.5	18.2	17.9	17.2	16.61	15.36	17.39	16.90
Slovakia	18.4	18.2	17.6	17.3	16.8	16.0	16.8	16.4	16.0	15.5	15.0	14.6	14.1	13.7	13.0	12.83	12.15	14.01	13.66
Sweden	18.6	18.1	17.5	16.2	15.6	14.9	15.4	15.0	14.7	14.3	13.9	13.6	13.2	12.6	12.1	11.63	10.73	11.69	11.04
United Kingdom	12.2	12.3	12.0	11.1	10.6	10.1	10.9	10.7	10.5	10.1	9.7	9.6	9.4	9.0	9.4	9.80	9.56	10.67	10.19
28 EU-Countries/Average (unweighted)	22.6	22.3	21.8	21.1	20.3	19.6	20.1	19.9	19.6	19.3	18.8	18.6	18.3	17.9	17.3	16.8	16.28	17.87	17.42

Source: Own Calculations, March 2021. Remarks: The values for some countries in 2020 and for all in 2021 are projections. The United Kingdom left the EU December 31, 2020.

Table 2. Size of the shadow economy of 3 European OECD-Countries (Non EU-Members) over 2003 – 2021 (in % of off. GDP)

Country/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Norway	18.6	18.2	17.6	16.1	15.4	14.7	15.3	15.1	14.8	14.2	13.6	13.1	13.0	12.6	12.2	11.8	10.8	11.62	11.05
Switzerland	9.5	9.4	9.0	8.5	8.2	7.9	8.3	8.1	7.8	7.6	7.1	6.9	6.5	6.2	6.0	5.8	5.5	6.07	5.82
Turkey	32.2	31.5	30.7	30.4	29.1	28.4	28.9	28.3	27.7	27.2	26.5	27.2	27.0	26.8	27.2	28.3	29.4	32.54	32.01
3 Non EU-Countries/Average	20.1	19.7	19.1	18.3	17.6	17.0	17.5	17.2	16.8	16.3	15.7	15.7	15.5	15.2	15.1	15.3	15.2	16.74	16.29
Unweighted Average of all	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
31 European Countries	22.4	22.1	21.6	20.9	20.1	19.4	19.9	19.7	19.3	19.0	18.5	18.3	17.9	17.7	17.1	16.7	16.2	17.76	17.31

Source: Own Calculations, March 2021; values for some countries in 2020 and 2021 are projections on the basis of preliminary values.

Table 3. Size of the shadow economy of 5 Highly Developed Non- European OECD-Countries over 2003 – 2021 (in % of off. GDP)

Country/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Australia	13.7	13.2	12.6	11.4	11.7	10.6	10.9	10.3	10.1	9.8	9.4	10.2	10.3	9.8	9.4	9.2	8.9	9.71	9.52
Canada	15.3	15.1	14.3	13.2	12.6	12.0	12.6	12.2	11.9	11.5	10.8	10.4	10.3	10.0	9.8	9.6	9.4	10.32	9.74
Japan	11.0	10.7	10.3	9.4	9.0	8.8	9.5	9.2	9.0	8.8	8.1	8.2	8.4	8.5	8.6	8.5	8.2	9.10	8.84
New Zealand	12.3	12.2	11.7	10.4	9.8	9.4	9.9	9.6	9.3	8.8	8.0	7.8	8.0	7.8	7.4	6.9	6.8	7.86	7.25
United States USA	8.5	8.4	8.2	7.5	7.2	7.0	7.6	7.2	7.0	7.0	6.6	6.3	5.9	5.6	5.4	5.1	4.8	6.11	6.56
Other OECD Countries/	22.4	22.1	21.6	20.9	20.1	19.4	19.9	19.7	19.3	19.0	18.5	18.3	17.9	17.7	17.1	16.7	16.2	17.76	17.31
Unweighted Average	12.2	11.9	11.4	10.4	10.1	9.6	10.1	9.7	9.5	9.2	8.6	8.6	8.6	8.3	8.1	7.9	7.6	8.6	8.4

Source: Own Calculations, March 2021; values for some countries in 2020 and 2021 are projections on the basis of preliminary values.

The calculation of the size and development of the shadow economy is done with the MIMIC (Multiple Indicators and Multiple Causes) estimation procedure. Using the MIMIC estimation procedure one gets only relative values and one needs other methods like the currency demand approach or the income discrepancy method, to calibrate the MIMIC values into absolute ones. For a detailed explanation of these calculation methods see Friedrich Schneider, editor, Handbook on the Shadow Economy, Cheltenham (UK): Edward Elgar Publishing Company, 2011, and Schneider and Williams, 2013, and Williams and Schneider 2016, as well as Medina and Schneider 2018, 2021 (Friedrich et al., 2011; Friedrich et al., 2013; Colin C et al., 2016)

Turning to the development of the shadow economy to three Non-EU members but OECD countries the results are shown from 2003 to 2021 in Table 2. As for the EU countries the shadow economy sharply increased from 2019 to 2020 in Norway from 10.8 to 11.62 % (of GDP), in Switzerland from 5.5 to 6.07%, and in Turkey from 29.40 to 32.54%. The strongest increase with 3,14 percentage points or 10.4% occurred in Turkey. Due to a most likely economic recovery in 2021, I predict a small decrease of the shadow economy roughly by half a percentage point in these three countries. If we add these three countries to the EU countries the average size of the shadow economy of the now 31 European countries, in 2003 was 22.4%, which decreased to 19.4% in 2008, then increased to 19.9% in 2009, again decreased to 16,20% in 2019 and sharply increased to 17.76 in 2020 and will rise to 17.31 in 2021 (see Table 2 but also compare figures 1 (values for 2020) and 2 (values for 2021)).

Next I turn to the development of the shadow economy of the highly developed Non-European OECD countries Australia, Canada, Japan, New Zealand and the USA over 2003 to 2021; the results are presented in table 3. Like for the 31 European countries I calculate a strong increase of the shadow economy of these 5 countries from 7.6 percentage points average value of 2019 to 8.6 percentage points in 2020; a rise of 1.0 percentage point or 13% (for more details see table 3). In 2021 I forecast a modest decline of the shadow economies of these 5 countries by 0.3 percentage points, because an economic upswing is expected in all five countries.

DISCUSSION

Finally, I consider the development of the shadow economy of all 36 OECD countries over 2003 to 2021; the various averages are shown in table 4. Again the average size of the shadow economy of all 36 OECD Countries strongly increase from 14.98 percentage points in 2019 to 16.48 percentage points in 2020 a rise of 1.5 percentage points or 11%! Due to an expected forecasted economic recovery the shadow economy will slightly decrease in 2021 to 16.07 percentage points (average of all 36 countries). As I argued already the most important reason for this decrease is that, if the official economy is recovering or booming, people have fewer incentives to undertake additional activities in the shadow economy and to earn extra "black" money. The decrease is stronger in those countries, where corruption is low or good governance is in place. In 2020 the worldwide corona-pandemic occurred

and caused a severe recession in almost all countries. One consequence was a strong rise in the average size of shadow economy to 17.87 % (of the GDP) of the 28 EU countries. Compared to 2019 this average increase is remarkable high with 1.59 percentage points or with 9.8%, and is the highest in the last 20 Years! In such a recession, a shrinking GDP and a strong increase of the unemployment are the key drivers of such a sharply rising shadow economy, because people try to compensate their income loss with increased shadow economy activities.

CONCLUSION

To summarize: There are four different developments with respect to the development of the shadow economy of these 36 OECD countries up to 2021:

In 2020 I observe a strong increase of the shadow economy from 14.98(2019) to 16.48 (2020) percentage points; i.e. 1.5 percentage points or 10% - strongest since the last 20 for an average figure 1 The main reason is the world-wide corona pandemic and the severe re-cession. In 2021 I forecast a modest decline of the shadow economy by roughly 0.50 percentage points. The main reason is a forecasted recovery of the official economy.

The eastern or central and southern European countries, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" western European Union countries, like Austria, Belgium, Germany and Italy. Hence, we have an increase of the size of the shadow economy from west to east.

In addition, we observe an increase in the size and development of the shadow economy from north to south. On average, the southern European countries have considerably higher shadow economies than those of Central and Western Europe. Figures 1 and 2 also demonstrate both movements.

The five non-European highly developed OECD countries (Australia, Canada, Japan, New Zealand and the United States) have lower shadow economies with an average size of about 8.60 % of GDP in 2020 and predicted 8.4% in 2021 than most European countries.

Since 2020 and in every country all government face the difficult challenge to undertake poli-cy measures to stimulate the official economy with a strong GDP growth and a reduction of unemployment in order to reduce a shadow economy. The better they succeed, the stronger the shadow economy declines!

However, the crucial question is: "Is this a reduction of the shadow economy a blessing or a curse?"

If one assumes, that roughly 50% of all shadow economy activities complement those of the official sector (i.e. those goods would not be produced in the official sector) the development of the total (official + shadow economy) GSP is always higher than the "pure" official one.

A decline of the shadow economy will only increase the total welfare in a country if the policy maker succeeds in transferring a shadow economic activity into the official economy.

Table 4. Size of the shadow economy of 36 OECD Countries of various unweighted averages over 2003 – 2021 (in % of off. GDP)

Country/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
28 EU-Countries/Average (unweighted)	22.6	22.3	21.8	21.1	20.3	19.6	20.1	19.9	19.6	19.3	18.8	18.6	18.3	17.9	17.3	16.8	16.28	17.87	17.42
3 Non EU-Countries/Average (unweighted)	20.1	19.7	19.1	18.3	17.6	17.0	17.5	17.2	16.8	16.3	15.7	15.7	15.8	16.0	15.1	15.3	15.20	16.74	16.29
5 Other OECD Countries/ Average	12.2	11.9	11.4	10.4	10.1	9.6	10.1	9.7	9.5	9.18	8.6	8.6	8.6	8.3	8.1	7.9	7.61	8.6	8.4
(unweighted)																			
All 36 Countries/Average (unweighted)	21.0	20.7	20.2	19.4	18.7	18.0	18.5	18.3	18.0	17.6	17.1	17.0	16.7	16.4	15.8	15.4	14.98	16.48	16.07

Source: Own Calculations, March 2021; values for some countries in 2020 and 2021 are projections on the basis of preliminary values

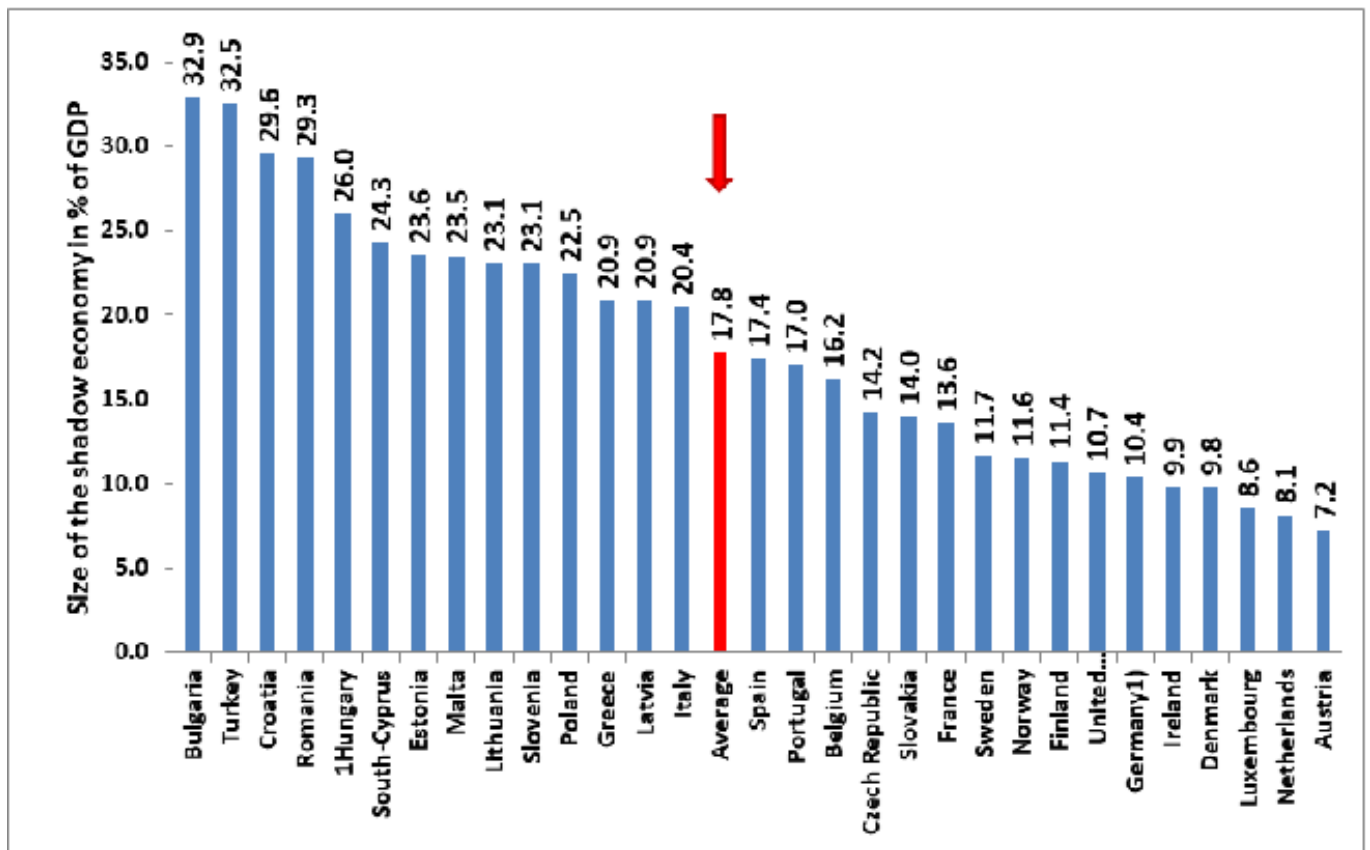


Figure 1. Size of the shadow economy of 31 european countries in 2020 (in % of off. GDP)
Source: Own Calculations, March 2021.

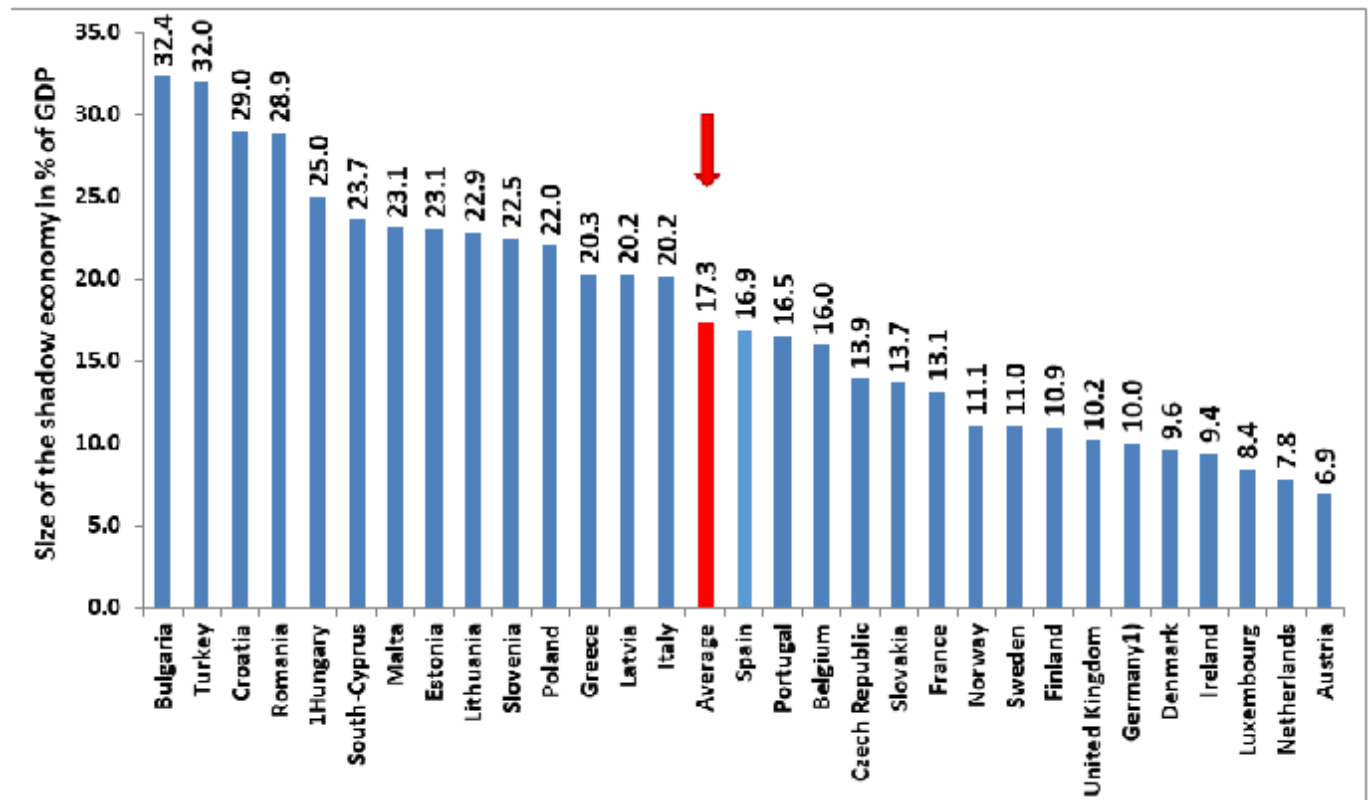


Figure 2. Size of the shadow economy of 31 european countries in 2021 (in % of off. GDP)
Source: Own Calculations, March 2021, values for 2021 are projections.

Therefore, a policy maker has to favour and choose such policy measures, that strongly increase the incentives to transfer the production from the shadow (black) to the official sector.

Hence the consequence of these answers is: The decline of the shadow economy will only be a blessing for the whole economy, if incentive orientated policy measures will be applied, which I strongly favour.

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