

CASS Forum 2019: “Belt and Road” International Investment Forum
Achievements and Experience in “Belt and Road” international investment

*Trends in FDI and its role in Development
and Convergence*

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Introduction

- The empirical study is based on **138 countries** (and territories) for which there are available comparable data regarding **FDI** at **UNCTAD**, FDI/MNE database (www.unctad.org/fdistatistics) for **2000-2017**. In order to analyse the **relations between FDI and GDP per capita** and the so-called **Real Convergence**, usually evaluated only based on expressing GDP per capita in international dollars **PPP** (Purchasing Power Parity), data for the **global economy** (represented by the group of 138 countries and territories, as **W138**), are for the period **2000-2018** from **World Bank**, and for the period up to **2024** from **IMF forecast** (IMF Report, April 2019).
- As indicator to evaluate a **convergence/divergence** process we used the **Variation Coefficient** (as **cv**). Thus, when the **trajectory of variation coefficient is descending** it means **Convergence** and when **trajectory of variation coefficient is ascending** it means **Divergence**.
- In this study the global economy represented by the **sample W138** is divided in three groups: a) **BRICS** (as **B5**), b) **European Union** (as **EU28**), and the c) **remaining group of 105 countries** (as **G105**). Some territories were not included in W138 due to their **abnormal volume of FDI inward**, like British Virgin Islands and Cayman Islands (registering 662 and respectively 374 billions dollars in 2017).
- At its turn, countries in **EU** were classified in the following three groups: 1) **EU11NW North-Western** states (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Sweden, and United Kingdom); 2) **EU6S Southern** countries (Cyprus, Greece, Italy, Malta, Portugal and Spain); and 3) **EU11E Eastern** states (Bulgaria, Czechia, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia).

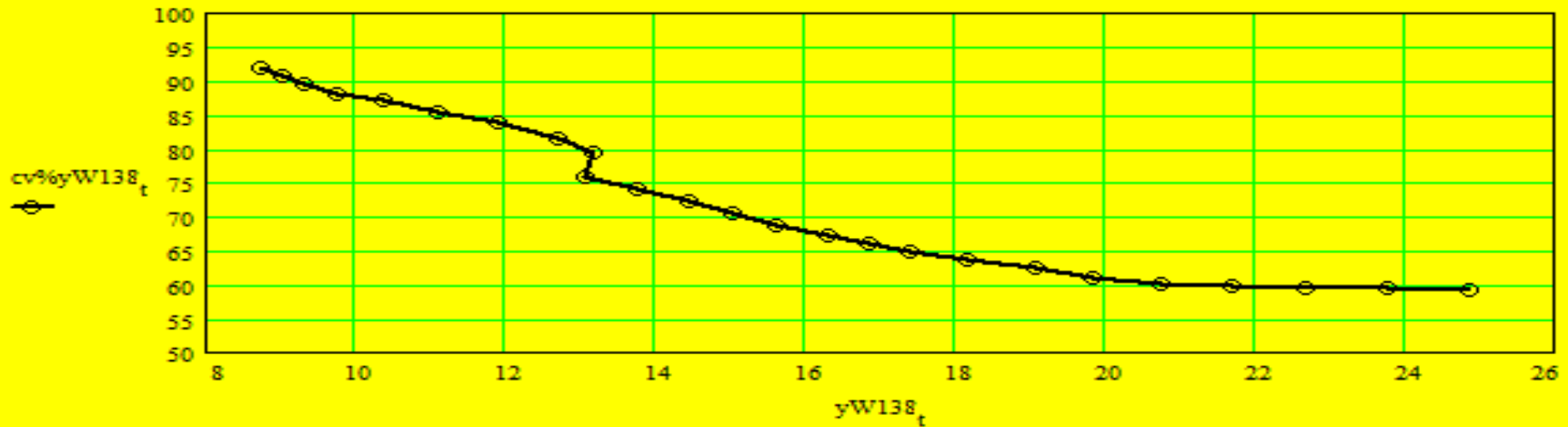
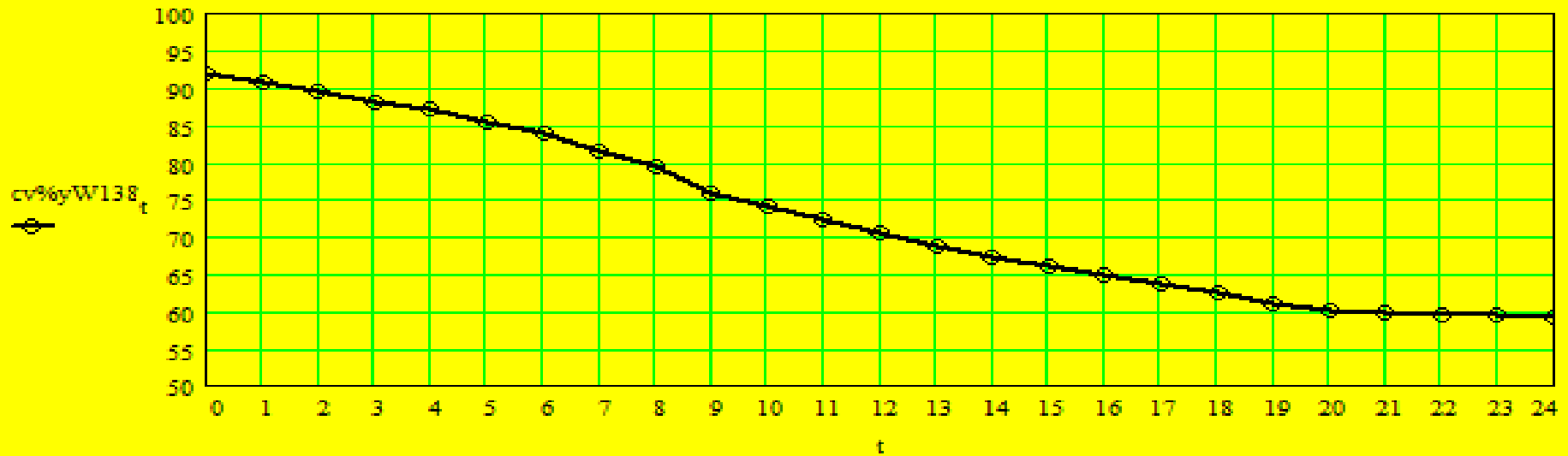
Real convergence at the global level

- Data used to analyse the convergence process at the level of global economy (sample **W138**) are shown in **Table 1** and its graphical representation in **Figure 1 at the top** (where on vertical axis variation coefficient is as %).
- On horizontal axis there are years for the period 2000-2024, as t from 0 to 24).
- On the **bottom side of Figure 1** on the horizontal axis the time (t) was replaced by GDP per capita in PPP (**yW138**).
- The average level of **GDP per capita** (as international dollars **PPP**), **yW138**, increased from only **8.7 in 2000** to **19.1 in 2018**, and to **24.9 thousands in 2024** (estimated by us according to data from IMF forecast).
- In the same period, on the background of a **high heterogeneity** in global economy (proved by big values of variation coefficient), however in the considered period the value of **variation coefficient (cv%y)** decreased from **91.8% in 2000** to **62.4% in 2018**, and to **59.1% in 2024** (estimated by us according to data from IMF forecast).
- The **positive impact of the general economic development on the convergence process** is also illustrated by the strong **negative correlation between yW138 and cv%yW138** (the value of the correlation coefficient being **-0.957** for the whole period **2000-2024**).

Table 1. GDP per capita, in thousands of international dollars PPP, 2000-2024

	W138yM of which:							cvW138 of which:						
		B5yM	G105	EU28yM	of which:				cvB5	cvG105	cvEU28	of which:		
					EU11NW	EU6S	EU11E					cv11NW	cv6S	cv11E
2000	8.727	3.519	11.268	24.327	29.171	25.661	11.370	91.839	48.768	88.217	25.334	5.239	11.324	19.537
2001	9.016	3.757	11.475	25.400	30.318	26.837	12.037	90.675	47.141	87.939	24.758	5.127	10.639	18.165
2002	9.314	4.005	11.759	26.119	31.027	27.463	12.729	89.473	45.789	87.188	23.899	4.662	9.991	17.918
2003	9.747	4.340	12.234	26.902	31.780	28.152	13.592	88.182	43.719	86.695	22.885	3.838	9.074	17.610
2004	10.386	4.779	12.958	28.237	33.223	29.330	14.772	87.080	42.553	86.143	21.914	3.800	8.430	16.725
2005	11.086	5.302	13.715	29.650	34.782	30.486	16.021	85.525	40.277	85.677	21.124	4.006	7.813	17.263
2006	11.889	5.940	14.498	31.521	36.844	32.095	17.638	83.849	38.173	85.197	20.258	4.394	7.185	16.952
2007	12.718	6.708	15.221	33.306	38.831	33.472	19.314	81.528	37.660	84.346	19.486	5.177	6.700	16.232
2008	13.172	7.245	15.536	34.071	39.579	33.737	20.604	79.509	39.322	83.071	18.487	5.818	5.970	13.993
2009	13.062	7.592	15.177	32.762	38.017	32.240	20.101	75.766	38.339	81.702	17.947	5.422	4.966	11.051
2010	13.758	8.308	15.817	33.723	39.348	32.657	20.695	73.963	38.313	81.388	18.525	6.406	6.036	12.634
2011	14.447	9.039	16.377	34.959	41.005	32.936	21.914	72.374	39.074	81.317	18.879	7.128	7.403	12.697
2012	15.030	9.683	16.928	35.425	41.823	32.434	22.577	70.591	39.696	80.775	19.342	7.052	7.609	12.333
2013	15.627	10.365	17.438	36.076	42.717	32.402	23.351	68.833	39.957	80.553	19.761	6.872	7.123	11.753
2014	16.301	11.066	18.000	37.344	44.155	33.238	24.584	67.343	39.621	80.469	19.640	7.146	6.501	11.911
2015	16.842	11.632	18.422	38.514	45.295	34.274	25.844	66.159	38.700	80.740	19.034	7.555	6.666	11.840
2016	17.389	12.274	18.796	39.643	46.351	35.364	27.042	64.868	37.823	80.240	18.375	7.791	6.808	11.069
2017	18.183	13.112	19.411	41.394	48.115	36.863	28.953	63.709	37.567	80.077	17.686	8.063	6.783	10.335
2018	19.060	14.060	20.099	43.148	49.856	38.361	30.956	62.363	37.497	79.764	16.983	8.314	6.635	10.344
2019	19.825	15.000	20.624	44.468	51.167	39.369	32.622	60.889	37.399	79.553	16.485	8.417	6.205	10.445
2020	20.737	16.064	21.300	46.082	52.834	40.725	34.340	60.109	37.213	79.186	16.065	8.664	5.965	10.401
2021	21.698	17.204	22.007	47.735	54.585	42.038	36.078	59.900	36.902	78.787	15.764	8.880	5.746	10.286
2022	22.698	18.406	22.733	49.435	56.394	43.361	37.879	59.634	36.531	78.348	15.493	9.061	5.560	10.156
2023	23.761	19.704	23.496	51.187	58.247	44.731	39.766	59.393	36.460	77.918	15.207	9.179	5.371	10.032
2024	24.878	21.093	24.283	53.007	60.159	46.165	41.745	59.141	36.491	77.499	14.905	9.256	5.199	9.894

Figure 1. Real convergence in World Economy (W138), 2000-2024



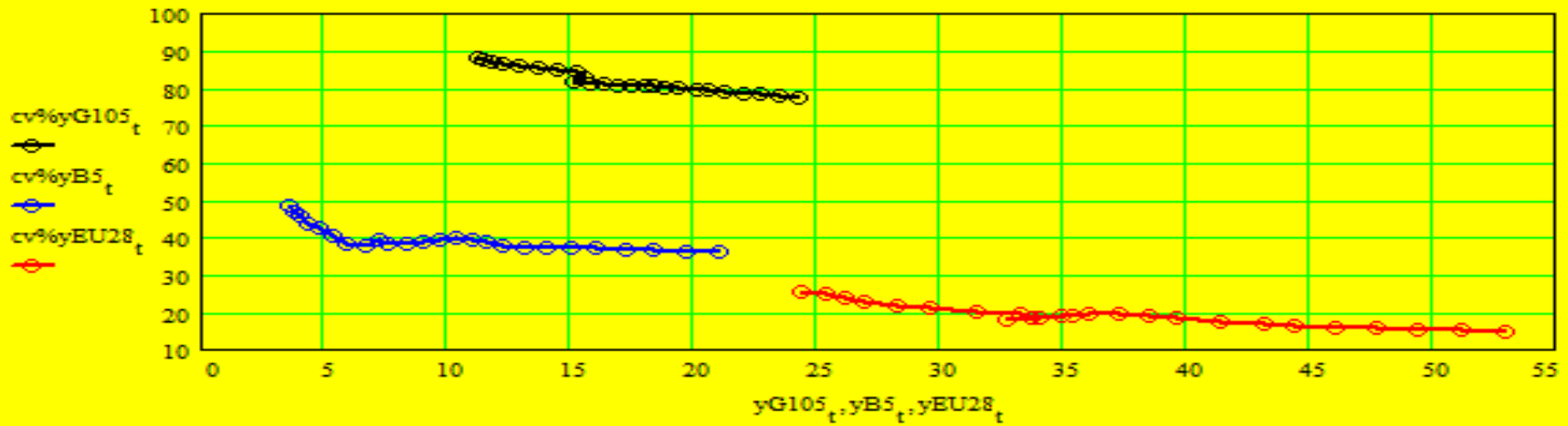
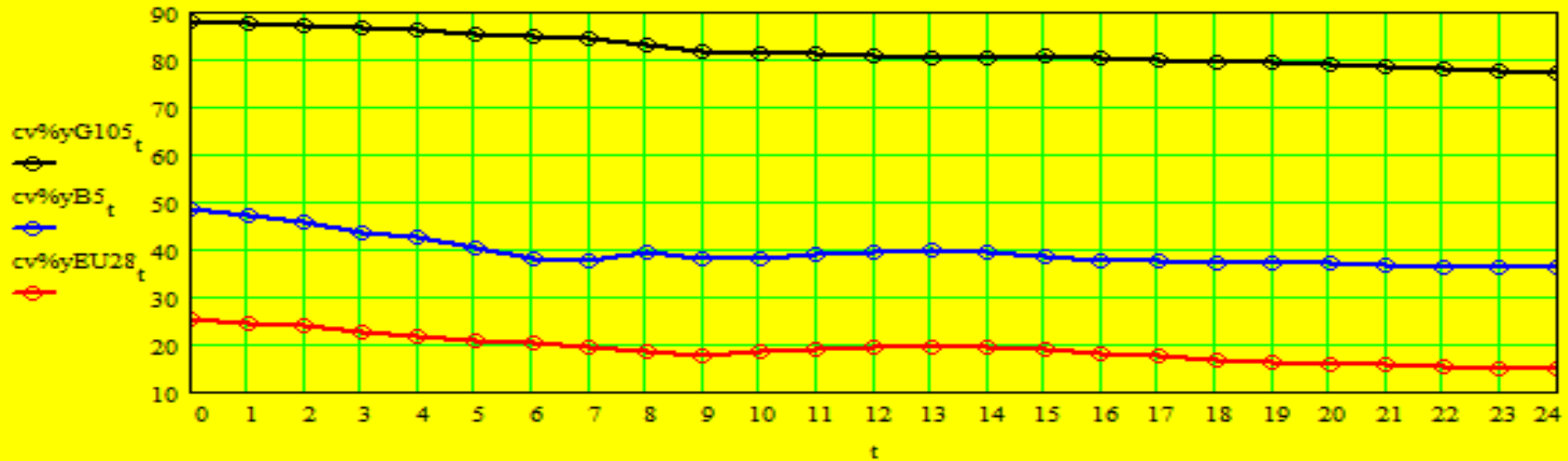
Real convergence inside of global economy

- Using the same database (see **Table 1**) and the same methodology, the **convergence** process inside of each group of the global economy (**W138**) is shown in **Figure 2**, where trajectories are **black for W105**, **blue for B5**, and **red for EU28**.
- The average level of **GDP per capita** (in thousands dollars **PPP**) increased in the selected groups, as follows:

W105	11.3 in 2000	20.1 in 2018	24.3 in 2024
B5	3.5 in 2000	14.1 in 2018	21.1 in 2024
EU28	24.3 in 2000	43.1 in 2018	53.0 in 2024

- On the background of a **high heterogeneity** in **W105** (proved by big values of variation coefficient), a **heterogeneity** in **B5**, and a **homogeneity** in **EU28**, in the considered period it is demonstrated a trend of **convergence** inside of all groups.
- The **positive impact of the general economic development on real convergence** is illustrated by the strong **negative correlation between y and $cv\%y$** (the value of the correlation coefficient being **-0.952** for W105, **-0.751** for B5, and **-0.934** for EU28, in whole period 2000-2024).

Figure 2. Real convergence in B5, EU28, and W105, 2000-2024



China in global economy

- Related to the global economy (sample W138), China increased its position:

GDP (in billions international dollars)

China 1215 in 2000 (poz. 6); 13407 in 2018 (poz. 2); 21310 in 2024 (poz. 2)
HKSAR 172 in 2000 (poz. 27); 363 in 2018 (poz. 35); 490 in 2024 (poz. 36)

GDP (in billions international dollars PPP)

China 3713 in 2000 (poz. 2); 25270 in 2018 (poz. 1); 40148 in 2024 (poz. 1)
HKSAR 180 in 2000 (poz. 43); 480 in 2018 (poz. 43); 645 in 2024 (poz. 44)

GDP per capita (in thousand international dollars)

China 1 in 2000 (poz. 99); 10 in 2018 (poz. 61); 15 in 2024 (poz. 56)
HKSAR 26 in 2000 (poz. 15); 49 in 2018 (poz. 15); 63 in 2024 (poz. 13)

GDP per capita (in thousand international dollars PPP)

China 3 in 2000 (poz. 101); 18 in 2018 (poz. 67); 28 in 2024 (poz. 59)
HKSAR 27 in 2000 (poz. 27); 64 in 2018 (poz. 10); 83 in 2024 (poz. 7)

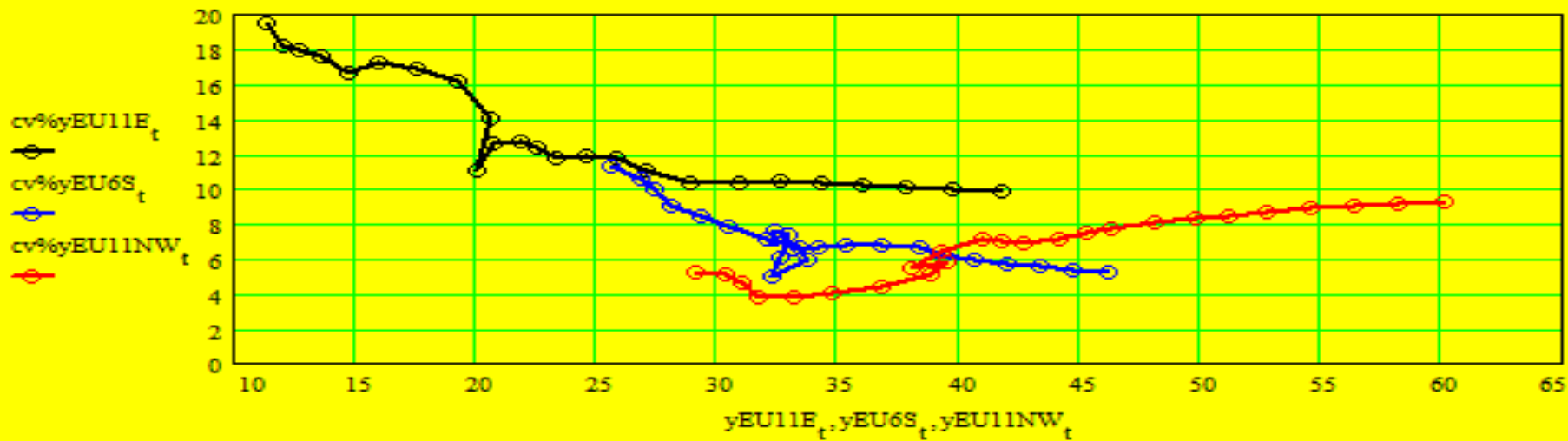
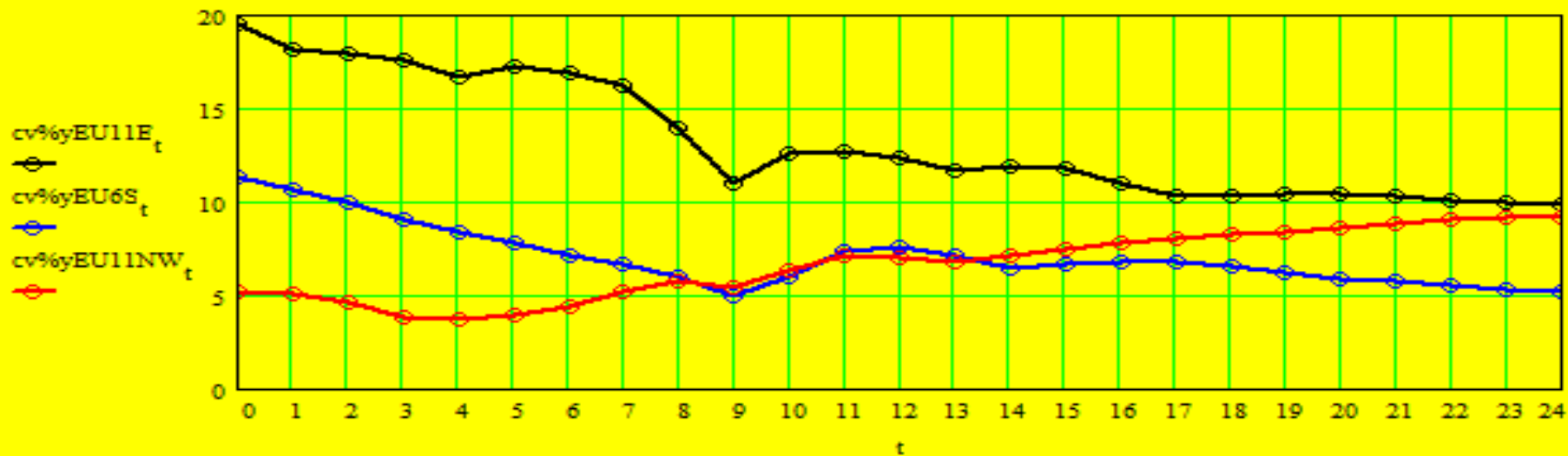
Real convergence/divergence inside of EU

- Using the same database (see **Table 1**) and the same methodology, the **convergence** process inside of each group of EU (**EU28**) is shown in **Figure 3**, where trajectories are **black for EU11E**, **blue for EU6S**, and **red for EU11NW**.
- The average level of **GDP per capita** (in thousands dollars **PPP**) increased in the selected groups, as follows:

EU11E	11.4 in 2000	31.0 in 2018	41.7 in 2024
EU6S	25.7 in 2000	38.4 in 2018	46.2 in 2024
EU11NW	29.2 in 2000	49.9 in 2018	60.2 in 2024

- On the background of an **initial heterogeneity** in **EU11E** (proved by relative high values of variation coefficient), a **small homogeneity** in **EU6S**, and a relative high **homogeneity** in **EU11NW**, in the considered period it is demonstrated a trend of **convergence** inside of **EU11E** and **EU6S**, and a trend of **divergence** inside of **EU11NW**.
- The **positive impact of the general economic development on real convergence** is illustrated by a **strong negative correlation between y and $cv\%y$** in case of **EU11E** and **EU6S** (the value of the correlation coefficient being **-0.884** for **EU11E** and respectively **-0.794** for **EU6S**, in whole period 2000-2024).
- In case of very high level of GDP per capita, could register a **divergence** as is the case of **EU11NW** (the value of the correlation coefficient being **+0.794**).

Figure 3. Real convergence/divergence in EU11E, EU6S, and EU11NW, 2000-2024



Convergence in matter of FDI at the global level

- Data used to analyse the convergence in matter of FDI at the level of global economy (sample **W138**) are shown in **Tables 2, 3, and 4** and its graphical representation in **Figure 4 at the top** (where on vertical axis variation coefficient is as %). On horizontal axis there are years for the period **2000-2017**, as t from 0 to 17). On the **bottom side of Figure 4** on the horizontal axis the time (t) was replaced by GDP per capita in PPP (**yW138**).
- In **Figure 4**, the **black trajectory** means the **variation coefficient for FDI inward stock in dollars** (as $cv\%fi$) and **blue trajectory FDI outward stock in dollars** (as $cv\%fo$).
- The average level of **FDI inward stock per capita** (as dollars), **W138fiM**, increased from only **1.4** in **2000** to **4.6** in **2017**, and that of **FDI outward stock per capita** (as dollars), **W138foM** from **1.4** in **2000** to **4.5 thousand** in **2017**.
- In the same period, on the background of a very **high heterogeneity** in global economy (proved by very big values of variation coefficient), however in the considered period the value of **variation coefficient for FDI inward** ($cv\%fi$) decreased from **143.2%** in **2000** to **126.5%** in **2017**, and for **FDI outward** ($cv\%fo$) from **162.1%** in **2000** to **144.7%** in **2017**.

Table 2. FDI inward stock and outward stock per capita, in thousands of dollars, 2000-2017

	W138fiM of which:							W138foM of which:						
		B5fiM	G105fiM	EU28fiM	of which:				B5foM	G105foM	EU28foM	of which:		
					EU11NW	EU6S	EU11E					EU11NW	EU6S	EU11E
2000	1.363	0.152	0.490	5.245	8.192	2.778	0.981	1.383	0.047	1.783	6.665	11.292	2.720	0.045
2001	1.340	0.160	0.494	5.430	8.372	2.919	1.186	1.335	0.054	1.622	6.940	11.723	2.841	0.060
2002	1.327	0.165	0.499	6.449	9.697	3.821	1.555	1.355	0.065	1.502	7.782	13.183	3.020	0.087
2003	1.620	0.199	0.514	8.050	11.883	5.127	2.050	1.664	0.076	1.891	9.375	15.749	3.875	0.129
2004	1.835	0.233	0.541	9.046	12.922	6.214	2.824	1.917	0.095	2.266	10.344	17.129	4.756	0.187
2005	1.898	0.276	0.561	8.856	12.505	6.153	3.022	1.991	0.113	2.431	10.267	16.808	5.071	0.218
2006	2.313	0.338	0.586	11.181	15.594	7.820	4.204	2.481	0.173	2.989	12.873	20.769	6.889	0.356
2007	2.917	0.478	0.605	14.409	19.970	10.000	5.798	3.048	0.253	3.612	15.964	25.368	9.214	0.557
2008	2.469	0.378	0.604	13.318	17.688	10.621	5.587	2.590	0.226	2.633	16.001	24.649	10.697	0.660
2009	2.901	0.534	0.586	14.974	20.173	11.411	6.177	3.061	0.293	3.320	17.665	27.402	11.352	0.748
2010	3.175	0.723	0.603	14.688	19.738	11.102	6.237	3.310	0.350	3.723	18.241	28.266	11.668	0.786
2011	3.248	0.738	0.618	15.301	20.958	11.114	5.949	3.341	0.390	3.674	18.764	29.110	11.769	0.835
2012	3.496	0.802	0.633	15.737	21.024	11.900	6.827	3.512	0.458	4.090	18.172	27.773	11.934	1.081
2013	3.739	0.842	0.637	16.316	21.854	11.931	7.356	3.803	0.530	4.529	18.933	29.406	11.292	1.177
2014	3.789	0.822	0.641	15.697	21.289	11.132	6.716	3.787	0.601	4.571	18.119	28.317	10.302	1.106
2015	3.788	0.804	0.640	15.641	21.544	10.740	6.129	3.803	0.653	4.501	18.490	29.036	10.090	1.049
2016	4.038	0.941	0.638	15.785	21.655	10.906	6.187	3.954	0.762	4.710	18.599	29.050	10.333	0.978
2017	4.552	1.041	0.646	17.906	24.095	12.854	7.559	4.494	0.851	5.425	20.865	32.485	11.624	1.131

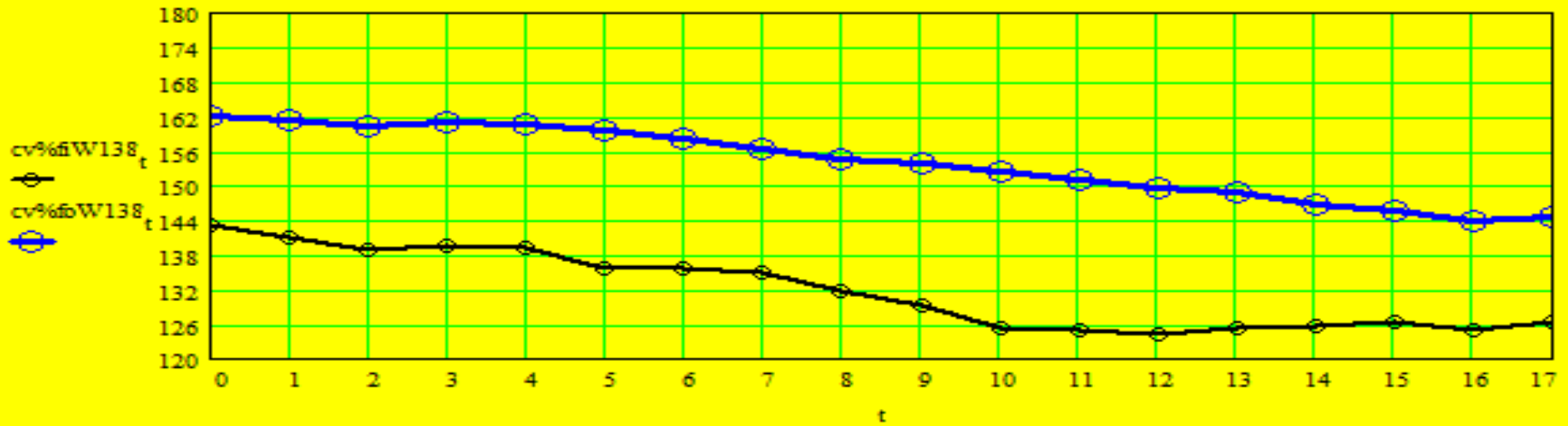
Table 3. FDI inward stock as % of GDP and its variation coefficients, 2000-2017

	W138fi%	of which:						cvW138fi	of which:					
		B5fi%	G105fi%	EU28fi%	of which:				cvB5fi	cvG105fi	cvEU28fi	of which:		
					EU11NW	EU6S	EU11E					cv11NW	cv6S	cv11E
2000	15.622	4.321	4.345	21.561	28.082	10.826	8.628	143.204	69.276	135.206	70.418	56.020	30.952	52.264
2001	14.858	4.253	4.306	21.378	27.614	10.877	9.851	140.934	69.044	135.261	69.492	57.930	39.482	52.670
2002	14.245	4.113	4.245	24.690	31.254	13.913	12.217	138.773	66.784	135.106	62.551	56.845	47.257	60.335
2003	16.616	4.575	4.198	29.924	37.392	18.213	15.080	139.773	77.227	135.179	58.155	54.338	44.367	63.043
2004	17.671	4.869	4.175	32.035	38.897	21.187	19.115	139.180	85.151	135.375	54.202	51.179	43.375	54.654
2005	17.122	5.200	4.089	29.868	35.951	20.184	18.864	135.678	91.442	134.865	56.565	48.273	41.338	50.984
2006	19.457	5.687	4.043	35.471	42.325	24.367	23.838	135.609	97.090	134.646	55.156	46.871	38.431	46.298
2007	22.938	7.121	3.975	43.264	51.429	29.877	30.020	134.851	109.752	133.970	57.693	52.937	42.055	42.538
2008	18.742	5.214	3.885	39.089	44.690	31.481	27.114	131.830	80.794	133.094	60.003	58.384	56.729	41.160
2009	22.209	7.034	3.860	45.706	53.064	35.395	30.728	129.278	90.338	133.026	58.934	57.131	54.582	41.080
2010	23.080	8.706	3.809	43.556	50.164	33.994	30.137	125.328	98.593	132.707	59.060	54.801	59.346	36.617
2011	22.484	8.167	3.776	43.768	51.110	33.745	27.145	125.030	89.358	132.652	60.365	54.836	58.216	37.848
2012	23.260	8.280	3.742	44.425	50.270	36.690	30.240	124.377	85.071	132.754	57.980	46.418	59.388	36.520
2013	23.928	8.122	3.653	45.226	51.160	36.821	31.502	125.373	80.135	132.084	60.800	50.379	59.695	32.510
2014	23.243	7.427	3.559	42.033	48.214	33.492	27.320	125.851	66.304	131.479	64.820	54.583	58.695	32.136
2015	22.490	6.916	3.472	40.611	47.564	31.337	23.714	126.416	60.895	131.063	70.320	60.099	58.143	32.470
2016	23.224	7.668	3.392	39.819	46.719	30.840	22.879	125.000	62.283	130.500	69.825	59.990	57.586	32.109
2017	25.034	7.943	3.330	43.257	50.078	34.869	26.106	126.520	61.282	130.179	65.029	56.071	56.715	31.436

Table 4. FDI outward stock as % of GDP and its variation coefficients, 2000-2017

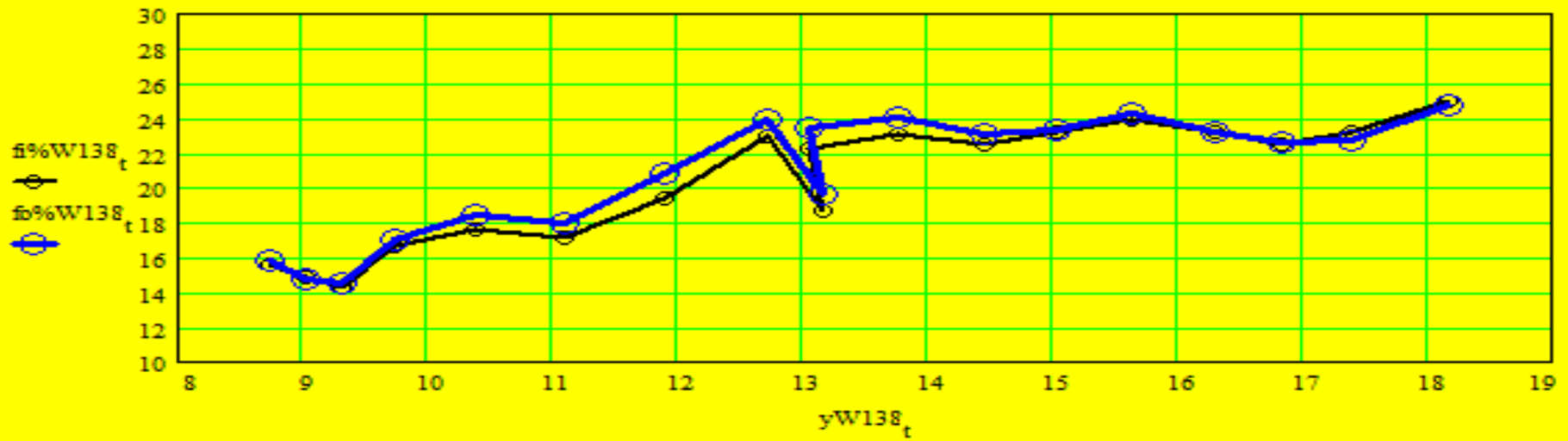
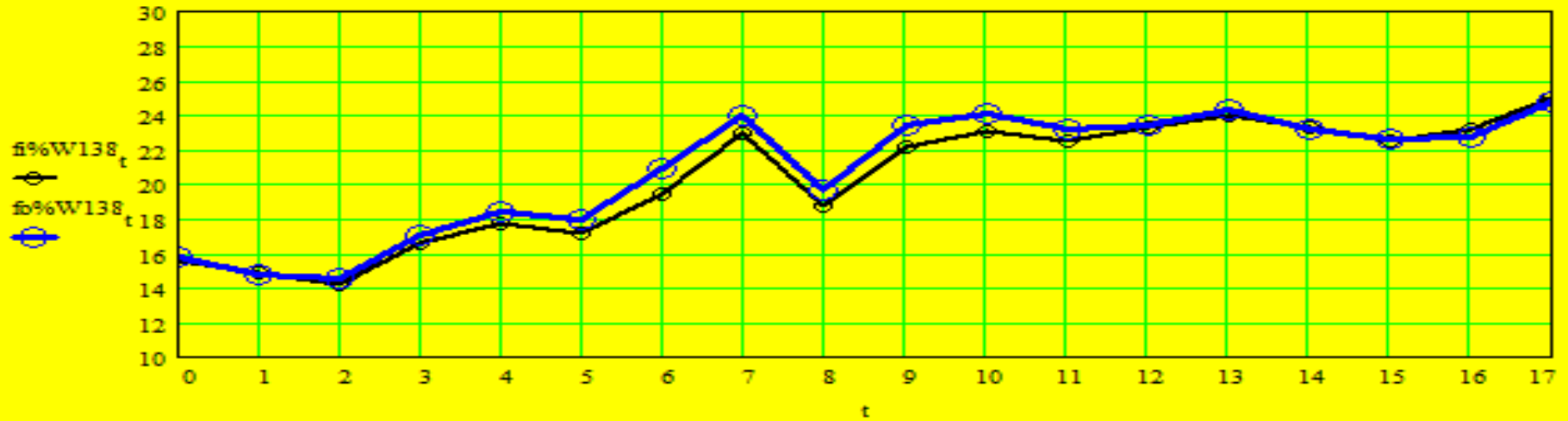
	W138fo% of which:							cvW138fo of which:						
		B5fo%	G105fo%	EU28fo%	of which:				cvB5fo	cvG105fo	cvEU28fo	of which:		
					EU11NW	EU6S	EU11E					cv11NW	cv6S	cv11E
2000	15.842	1.342	15.824	27.396	38.710	10.601	0.396	162.057	125.643	153.030	80.633	56.636	20.884	116.607
2001	14.805	1.430	14.138	27.323	38.666	10.585	0.500	161.290	121.253	152.426	75.838	50.894	19.453	121.457
2002	14.544	1.622	12.774	29.794	42.490	10.997	0.683	160.209	126.102	151.270	76.303	50.224	21.095	121.908
2003	17.067	1.746	15.458	34.850	49.557	13.764	0.948	160.937	135.155	152.631	75.388	50.305	24.355	124.746
2004	18.462	1.978	17.489	36.634	51.557	16.216	1.267	160.744	132.953	153.336	72.951	49.582	29.639	119.030
2005	17.957	2.132	17.724	34.626	48.323	16.633	1.364	159.540	130.821	152.684	70.615	47.306	33.106	113.933
2006	20.870	2.918	20.619	40.840	56.371	21.466	2.018	158.136	131.550	152.569	68.030	45.431	37.606	100.531
2007	23.968	3.776	23.732	47.932	65.329	27.528	2.884	156.595	128.449	152.149	65.121	43.508	37.910	99.607
2008	19.662	3.125	16.948	46.965	62.279	31.708	3.204	154.721	97.469	148.133	67.001	45.031	46.863	97.424
2009	23.436	3.865	21.877	53.920	72.078	35.212	3.722	154.012	96.771	148.947	65.786	44.196	44.124	93.704
2010	24.061	4.210	23.540	54.089	71.836	35.727	3.800	152.638	92.661	148.321	65.936	44.041	46.918	80.506
2011	23.130	4.316	22.437	53.674	70.992	35.732	3.811	151.231	80.859	147.138	64.990	42.967	43.246	76.779
2012	23.368	4.729	24.163	51.298	66.405	36.796	4.786	149.497	78.362	146.795	62.279	33.398	44.850	76.471
2013	24.335	5.117	25.974	52.481	68.838	34.849	5.042	148.791	75.778	147.279	65.224	38.516	39.901	73.580
2014	23.233	5.435	25.394	48.518	64.131	30.993	4.499	146.928	69.067	146.951	66.924	42.102	40.513	81.310
2015	22.578	5.613	24.433	48.007	64.104	29.439	4.061	145.729	69.939	146.626	70.405	51.847	42.430	78.014
2016	22.736	6.209	25.058	46.916	62.675	29.220	3.616	143.778	71.956	146.627	70.186	54.029	44.335	67.798
2017	24.717	6.487	27.949	50.406	67.514	31.533	3.906	144.740	72.842	147.753	67.788	53.849	44.251	71.606

Figure 4. Convergence in matter of FDI in World Economy (W138), 2000-2017



- The **positive impact of the general economic development on the convergence in matter of FDI** is also illustrated by the strong **negative correlation between y_{W138} and $cv\%fi_{W138}$** (the value of the correlation coefficient being **-0.919**), and respectively between **y_{W138} and $cv\%fo_{W138}$** (the value of the correlation coefficient being **-0.986**).
- More interesting is to evaluate the convergence in matter of the **ratio (as %) between FDI and GDP**, as is shown for the global economy (W138) in **Figure 5**, where **$fi\%_{W138}$** and **$fo\%_{W138}$** are the ratios in case of **FDI inward stock**, and respectively **FDI outward stock**.
- The **positive impact of economic growth** is illustrated by the value of **correlation coefficient** between the **proportion of FDI in GDP ($fi\%$ and $fo\%$)** and **GDP per capita (as PPP, y)**.
- At the level of **W138**, the values of such ratios are highly positive: **+0.912** in case of **FDI inward** and respectively **+0.860** in that of **FDI outward**.

Figure 5. Convergence in matter of FDI in World Economy (W138), 2000-2017



Convergence in matter of FDI inside of global economy and inside of EU

- Using the same database (see **Tables 2-4**) and the same methodology, the **convergence** process in matter of FDI, related to the **GDP per capita** (in **PPP**), is shown inside of each group of the global economy (**W138**) for **FDI inward** at the **top of Figure 6** and for **FDI outward** at the **bottom of Figure 6**.
- Trajectories are **black for W105**, **blue for B5**, and **red for EU28**.
- In **Figure 7** is illustrated the **convergence process in matter of FDI** inside of **EU (EU28)**. This time, trajectories are **black for EU11E**, **blue for EU6S**, and **red for EU11NW**.

Figure 6. Convergence in matter of FDI inside of World Economy (W138), 2000-2017

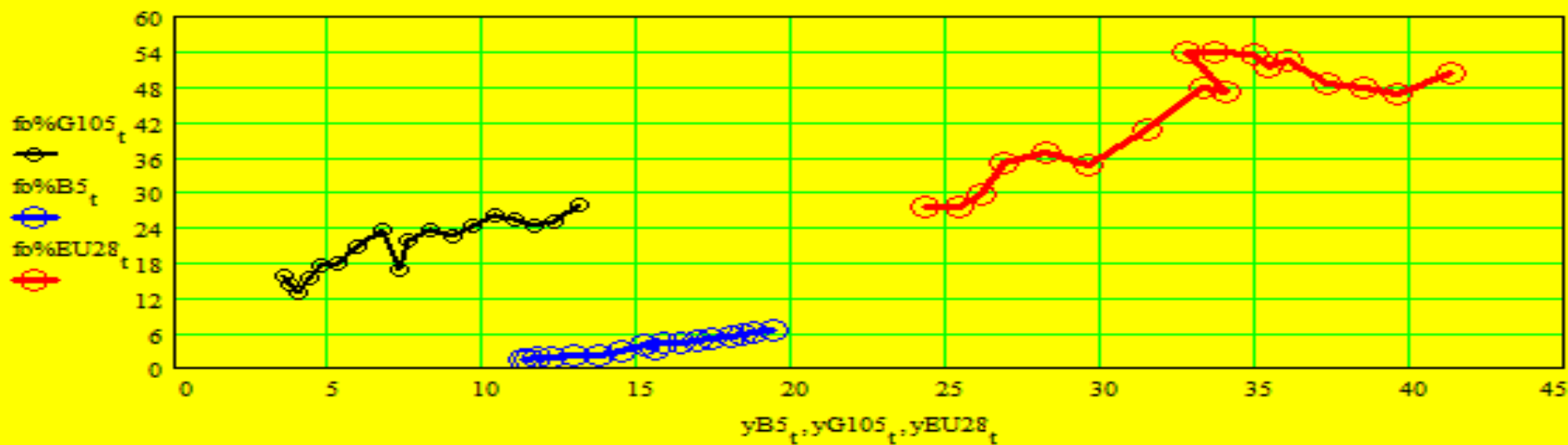
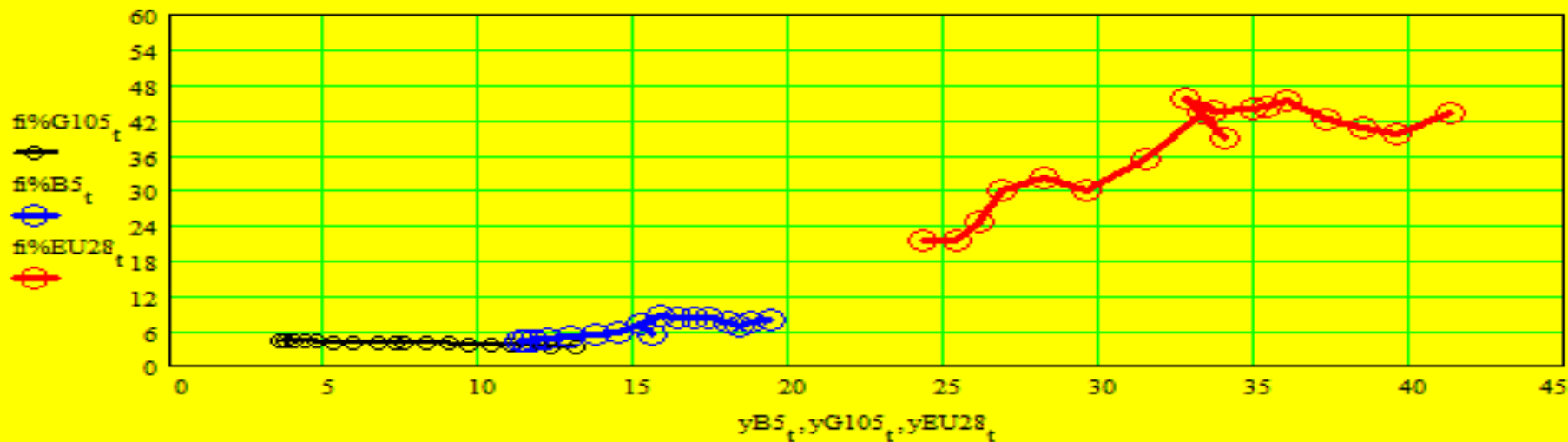


Figure 6. Convergence in matter of FDI inside of European Union (EU288), 2000-2017

