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## **Economic Commission for Europe**

### **Conference of European Statisticians**

#### **Joint Eurostat/UNECE Work Session on Demographic Projections**

Geneva, 18-20 April 2016

Item 4 of the provisional agenda

#### **Assumptions on fertility**

## **Projecting Future Fertility in Russia: using cohort approach together with the idea of the Second Demographic Transition**

**Note by the Federal State Statistics Service, Russian Federation**

### *Summary*

This document presents tables and figures related to Working paper 12.

**Table 1. Timetable of the onset of the SDT by the criterion of cohort fertility minimum in age 30+**

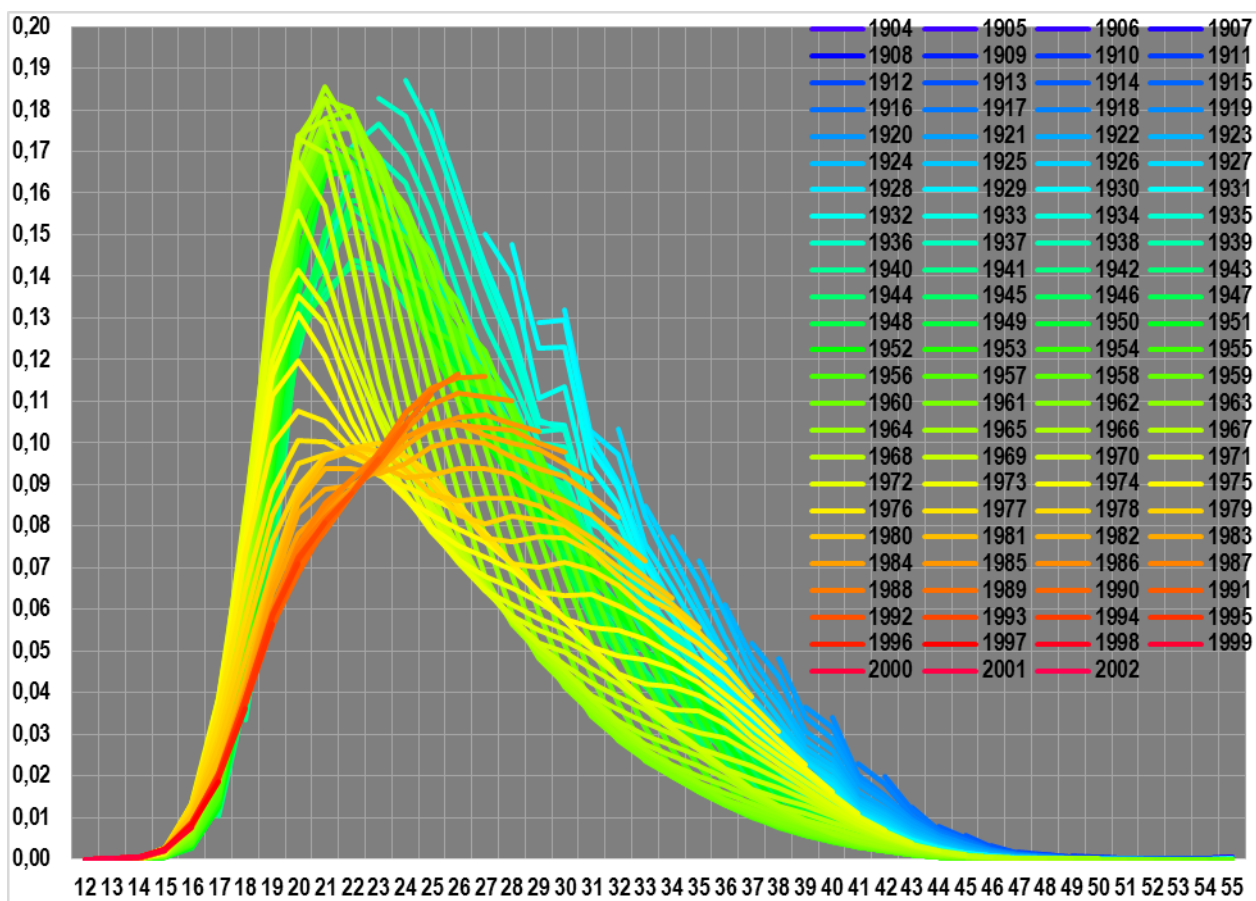
Year of birth	English-speaking countries	Northern Europe	German-speaking countries	Western Europe	Southern Europe	Eastern Europe	Eastern Asia	Latin America
1940		Finland						
1941	England, Canada USA Australia Scotland, New Zealand			Luxembourg				
1942								
1943		Sweden	Switzerland					
1944			Western Germany	Netherlands				
1945		Norway		France, Belgium			Japan, Singapore	
1946		Denmark, Iceland						
1947			Austria					
1948					Italy			
1949						Hungary		
1950								
1951								
1952								
1953						Czech Republic, Montenegro, Croatia	South Korea, Taiwan	
1954					Greece			
1955					Spain, Portugal			
1956								
1957	Northern Ireland, Ireland					Slovenia		
1958						Macedonia		
1959								
1960						Eastern Germany		
1961						Bulgaria, Estonia		
1962						RUSSIA, Lithuania, Romania		
1963						Slovakia, Latvia		
1964						Ukraine, Belarus		
1965					Cyprus	Moldova		
1966							Hong Kong	
1967						Poland, Serbia		
1968						Bosnia, Armenia		
1969					Malta			Chile
1970								
1971								Brazil
1972								
1973								
1974								
1975								
1976						Albania?		

**Table 2. Weights calculation for average model in the LOW scenario.**

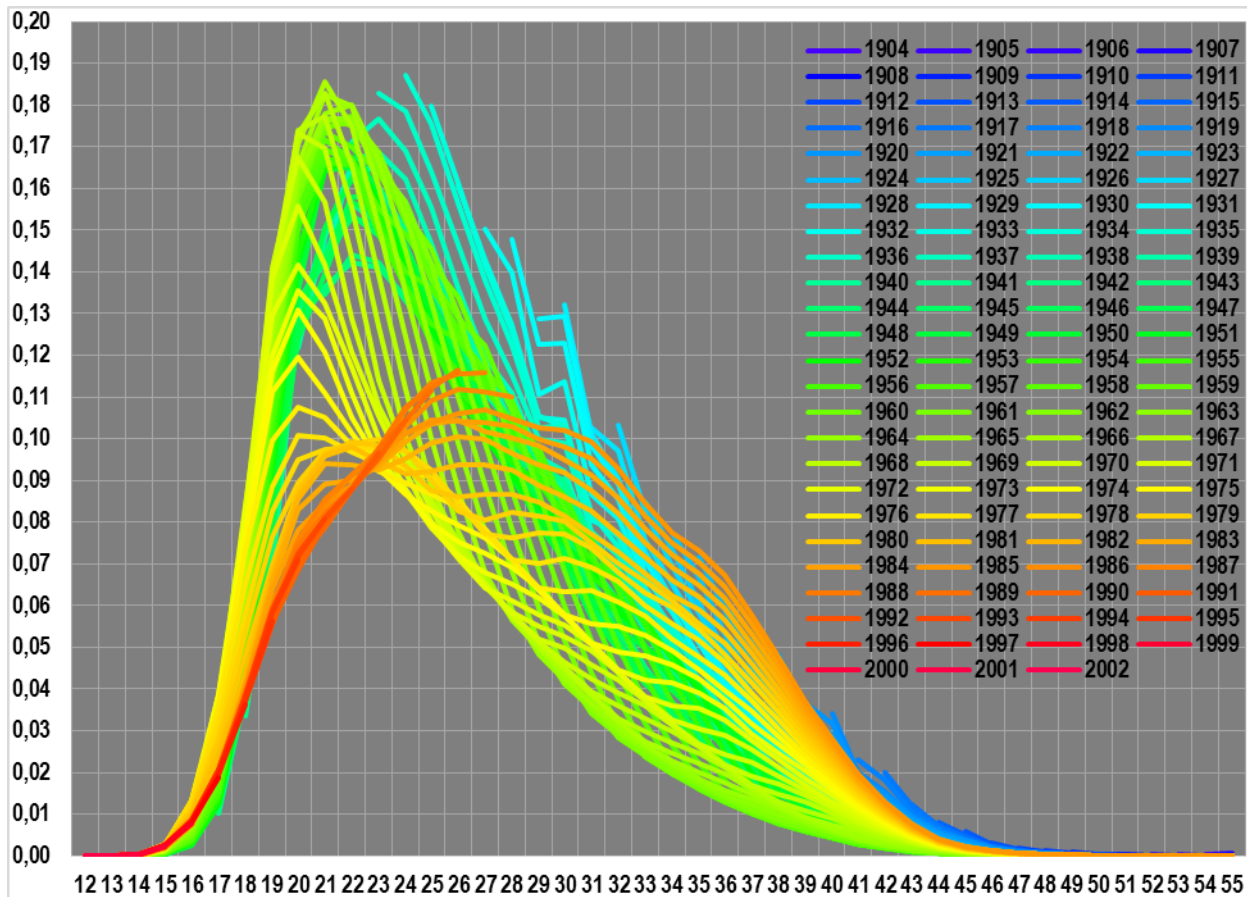
Country	TFR-29-	TFR30+	MAB	ExKurt	TFR	Change TFR-30	TFR dev.	MAB dev.	ExKurt dev.	Change TFR-30 dev.	Dist.	W.	rank
USA	1,064	0,793	28,81	-1,52	1,857	-18,36%	2,54%	9,84%	-5,31%	-46,66%	0,480	4,33	
Canada	0,738	0,884	30,49	-0,82	1,622	-11,54%	-1,45%	29,69%	12,05%	-35,08%	0,475	4,43	
Australia	0,844	1,073	30,60	-1,00	1,916	-3,19%	3,54%	31,04%	7,63%	-20,91%	0,384	6,79	
New Zealand	0,946	1,007	30,01	-1,43	1,953	-6,55%	4,16%	23,98%	-3,19%	-26,62%	0,362	7,63	
England & Wales	0,915	0,932	29,94	-1,41	1,847	-4,74%	2,37%	23,20%	-2,55%	-23,54%	0,332	9,06	10
Scotland	0,781	0,832	29,98	-1,28	1,613	-9,38%	-1,60%	23,67%	0,71%	-31,42%	0,394	6,45	
Northern Ireland	0,907	1,042	30,22	-0,89	1,949	-5,05%	4,10%	26,56%	10,31%	-24,06%	0,375	7,10	
Ireland	0,713	1,226	31,60	-1,01	1,939	-11,80%	3,92%	42,77%	7,36%	-35,52%	0,562	3,16	
Iceland	0,935	0,998	30,37	-1,24	1,933	-15,53%	3,82%	28,27%	1,51%	-41,85%	0,507	3,90	
Norway	0,837	0,945	30,46	-0,82	1,782	-12,32%	1,26%	29,30%	11,94%	-36,40%	0,482	4,30	
Sweden	0,818	1,072	30,90	-0,88	1,890	-1,45%	3,10%	34,51%	10,46%	-17,97%	0,404	6,12	
Finland	0,817	0,931	30,45	-0,95	1,747	-10,70%	0,67%	29,23%	8,73%	-33,66%	0,454	4,84	
Denmark	0,729	0,940	30,84	-0,44	1,669	-17,19%	-0,66%	33,82%	21,36%	-44,67%	0,600	2,78	
Netherlands	0,706	0,968	30,93	-0,45	1,674	-10,30%	-0,57%	34,84%	21,11%	-32,98%	0,524	3,64	
Western Germany	0,608	0,843	30,93	-1,05	1,451	-17,91%	-4,35%	34,84%	6,33%	-45,89%	0,581	2,96	
Eastern Germany	0,760	0,740	29,73	-0,96	1,500	-7,33%	-3,52%	20,69%	8,65%	-27,94%	0,360	7,72	
Austria	0,684	0,753	30,27	-1,03	1,436	-16,87%	-4,61%	27,11%	6,83%	-44,12%	0,524	3,64	
Switzerland	0,566	0,949	31,59	-0,81	1,515	-14,25%	-3,27%	42,63%	12,31%	-39,68%	0,596	2,81	
Luxembourg	0,627	0,922	31,30	-0,93	1,549	-24,39%	-2,69%	39,31%	9,31%	-56,87%	0,698	2,05	
Belgium	0,886	0,872	30,08	-0,54	1,757	-8,97%	0,84%	24,90%	18,85%	-30,71%	0,438	5,21	
France	0,971	1,008	30,25	-0,86	1,978	-5,69%	4,59%	26,87%	11,09%	-25,15%	0,387	6,67	
Portugal	0,551	0,663	30,39	-0,91	1,214	-31,12%	-8,38%	28,49%	9,82%	-68,29%	0,751	1,77	
Spain	0,452	0,835	31,71	-0,73	1,287	-12,23%	-7,14%	44,04%	14,16%	-36,25%	0,592	2,85	
Italy	0,548	0,841	31,36	-1,07	1,390	-1,08%	-5,40%	39,99%	5,71%	-17,34%	0,443	5,10	
Malta	0,623	0,792	30,48	-0,43	1,415	-31,14%	-4,96%	29,61%	21,64%	-68,33%	0,777	1,66	
Greece	0,552	0,738	30,87	-0,80	1,290	-19,34%	-7,09%	34,19%	12,58%	-48,31%	0,609	2,69	
Cyprus	0,572	0,702	30,78	-0,68	1,274	-34,80%	-7,36%	33,17%	15,57%	-74,54%	0,834	1,44	
Albania	1,274	0,534	27,47	-0,70	1,807	-10,04%	1,69%	-5,91%	15,08%	-32,53%	0,364	7,55	
Macedonia	0,932	0,554	28,32	-0,99	1,486	-29,90%	-3,77%	4,09%	7,92%	-66,23%	0,669	2,23	
Montenegro	1,009	0,708	29,05	-1,08	1,717	-15,26%	0,16%	12,66%	5,52%	-41,40%	0,436	5,25	
Bosnia & Hercegovina	0,827	0,503	28,63	-0,72	1,331	-5,48%	-6,40%	7,69%	14,55%	-24,80%	0,304	10,79	9
Serbia	0,845	0,585	28,67	-1,20	1,429	-24,74%	-4,72%	8,16%	2,53%	-57,47%	0,583	2,94	
Croatia	0,765	0,712	29,74	-0,91	1,478	-17,65%	-3,90%	20,79%	9,88%	-45,45%	0,511	3,83	
Slovenia	0,780	0,775	30,09	-0,65	1,555	8,10%	-2,60%	25,01%	16,20%	-1,76%	0,300	11,14	6
Hungary	0,684	0,661	29,54	-0,93	1,344	-17,23%	-6,16%	18,50%	9,23%	-44,74%	0,497	4,05	
Czech Republic	0,724	0,732	29,85	-0,43	1,456	-10,16%	-4,27%	22,17%	21,81%	-32,75%	0,454	4,86	
Slovakia	0,762	0,579	28,77	-1,04	1,340	-10,28%	-6,24%	9,44%	6,52%	-32,94%	0,354	7,96	
Poland	0,733	0,523	28,95	-0,84	1,256	-11,78%	-7,66%	11,51%	11,52%	-35,49%	0,398	6,31	
Lithuania	0,915	0,672	29,15	-0,52	1,587	0,32%	-2,05%	13,85%	19,47%	-14,97%	0,283	12,52	5
Latvia	0,866	0,649	29,07	-1,18	1,515	-6,58%	-3,26%	12,99%	3,15%	-26,66%	0,300	11,11	7
Estonia	0,819	0,703	29,53	-1,21	1,521	-11,03%	-3,17%	18,34%	2,34%	-34,22%	0,390	6,57	
Bulgaria	0,997	0,487	27,11	-1,49	1,484	1,69%	-3,80%	-10,25%	-4,67%	-12,64%	0,173	33,22	4
Romania	1,016	0,499	27,27	-1,39	1,515	1,51%	-3,27%	-8,30%	-2,02%	-12,95%	0,159	39,79	3
Moldova	0,878	0,345	26,94	-1,06	1,223	-5,86%	-8,23%	-12,27%	6,18%	-25,44%	0,301	11,07	8
Ukraine	1,037	0,468	27,34	-1,23	1,506	10,45%	-3,43%	-7,50%	1,85%	2,22%	0,087	130,92	1
Belarus	1,117	0,551	27,79	-1,06	1,668	14,78%	-0,68%	-2,20%	6,17%	9,57%	0,116	74,12	2
RUSSIA	1,107	0,601	27,97	-1,30	1,708	9,14%	0,00%	0,00%	0,00%	0,00%	0,000		
Japan	0,607	0,819	30,96	-0,78	1,427	-8,11%	-4,77%	35,30%	12,98%	-29,25%	0,479	4,36	
South Korea	0,409	0,778	31,44	0,73	1,187	-40,58%	-8,84%	40,92%	50,59%	-84,34%	1,069	0,88	
Taiwan	0,430	0,635	31,03	-0,43	1,065	-44,17%	-10,91%	36,09%	21,71%	-90,43%	1,004	0,99	
Hong Kong	0,380	0,743	31,94	-0,61	1,123	-15,89%	-9,91%	46,78%	17,28%	-42,46%	0,662	2,28	
Singapore	0,471	0,716	31,36	-0,48	1,187	-22,28%	-8,83%	39,98%	20,55%	-53,30%	0,703	2,02	

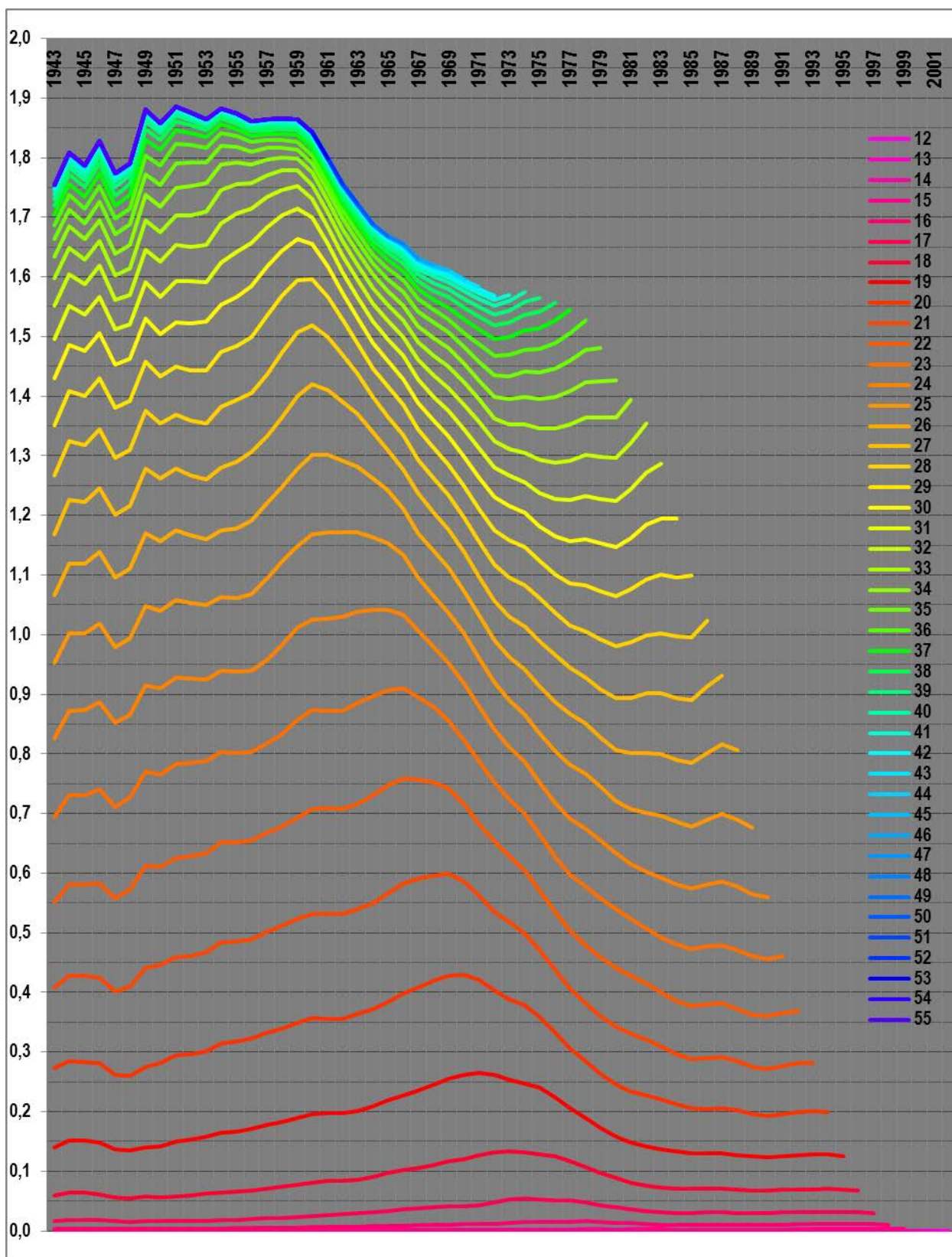
**Table 3. 3 fertility scenarios for Russia**

	Indicator	TFR			MAB		
	Variant	LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
Fact	1990	1.89			25.2		
	1995	1.34			24.8		
	2000	1.20			25.8		
	2005	1.29			26.6		
	2010	1.57			27.6		
	2015	1.78			28.3		
Projection	2020	1.65	1.74	1.77	28.5	28.9	28.8
	2025	1.58	1.71	1.79	28.8	29.7	29.3
	2030	1.55	1.72	1.82	29.1	30.3	29.8
	2035	1.56	1.76	1.88	29.2	30.7	30.1
	2040	1.57	1.80	1.94	29.3	31.0	30.4
	2045	1.57	1.84	1.99	29.4	31.4	30.7
	2050	1.58	1.88	2.05	29.5	31.7	30.9



Figures 1(above) and 2 (below). Fact and linear projection of female cohort ASFR in Russia.





**Fig 3. Completed female cohort fertility, children per woman, by age in Russia**



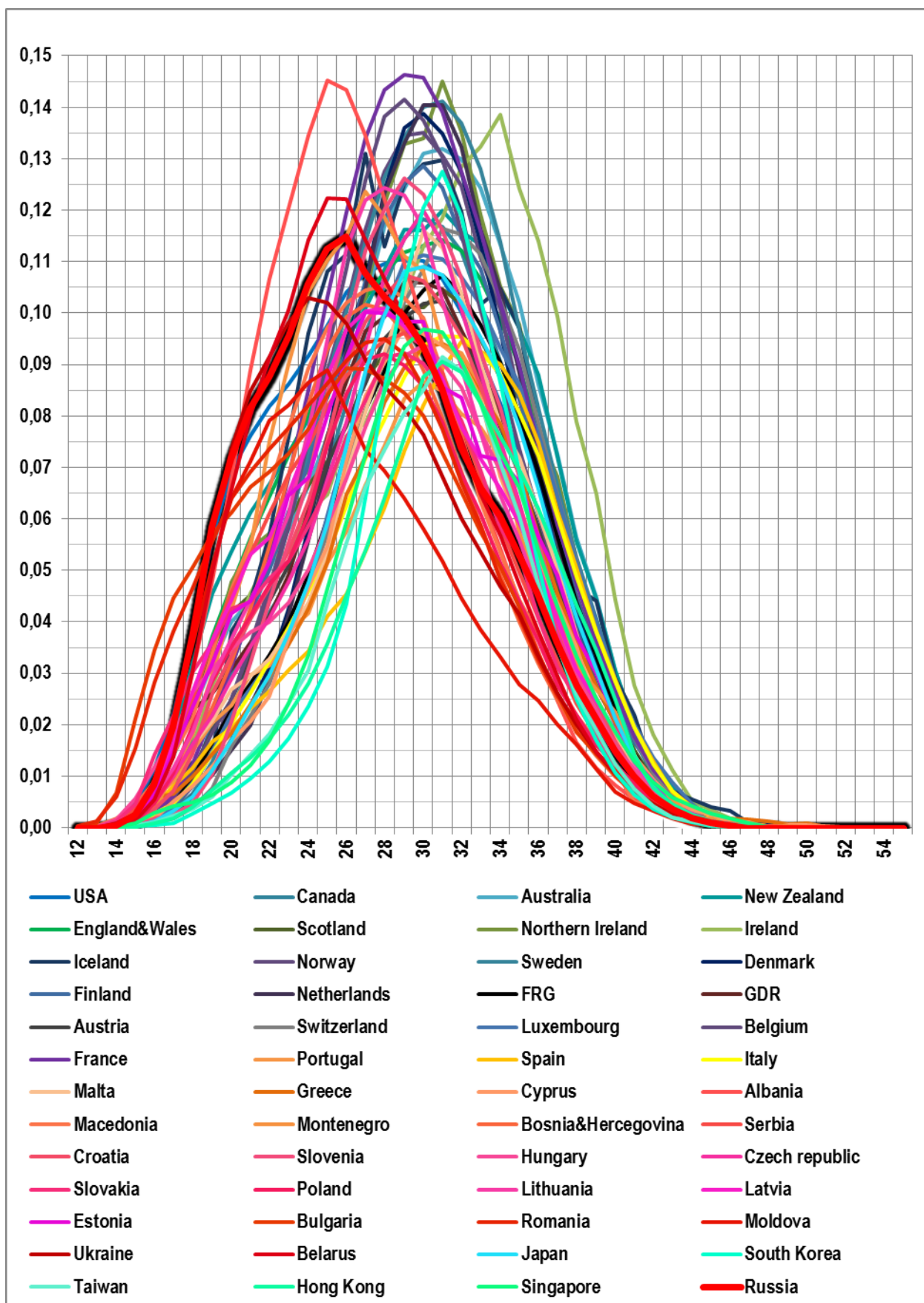


Fig. 4 Age-fertility function for females in developed countries (all birth orders).

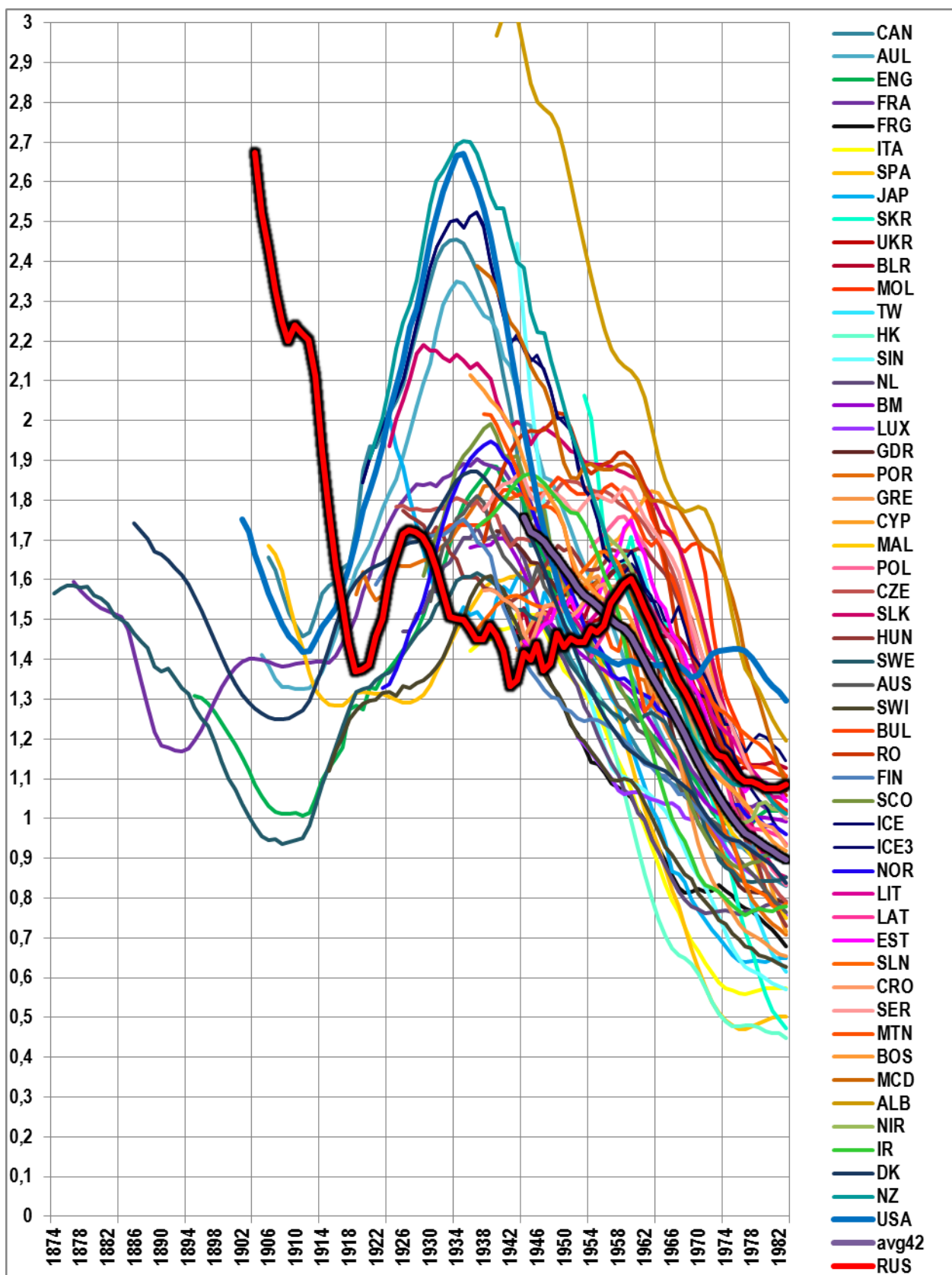


Fig. 5 Completed fertility, children per woman, of female cohorts by age 30 in developed countries.



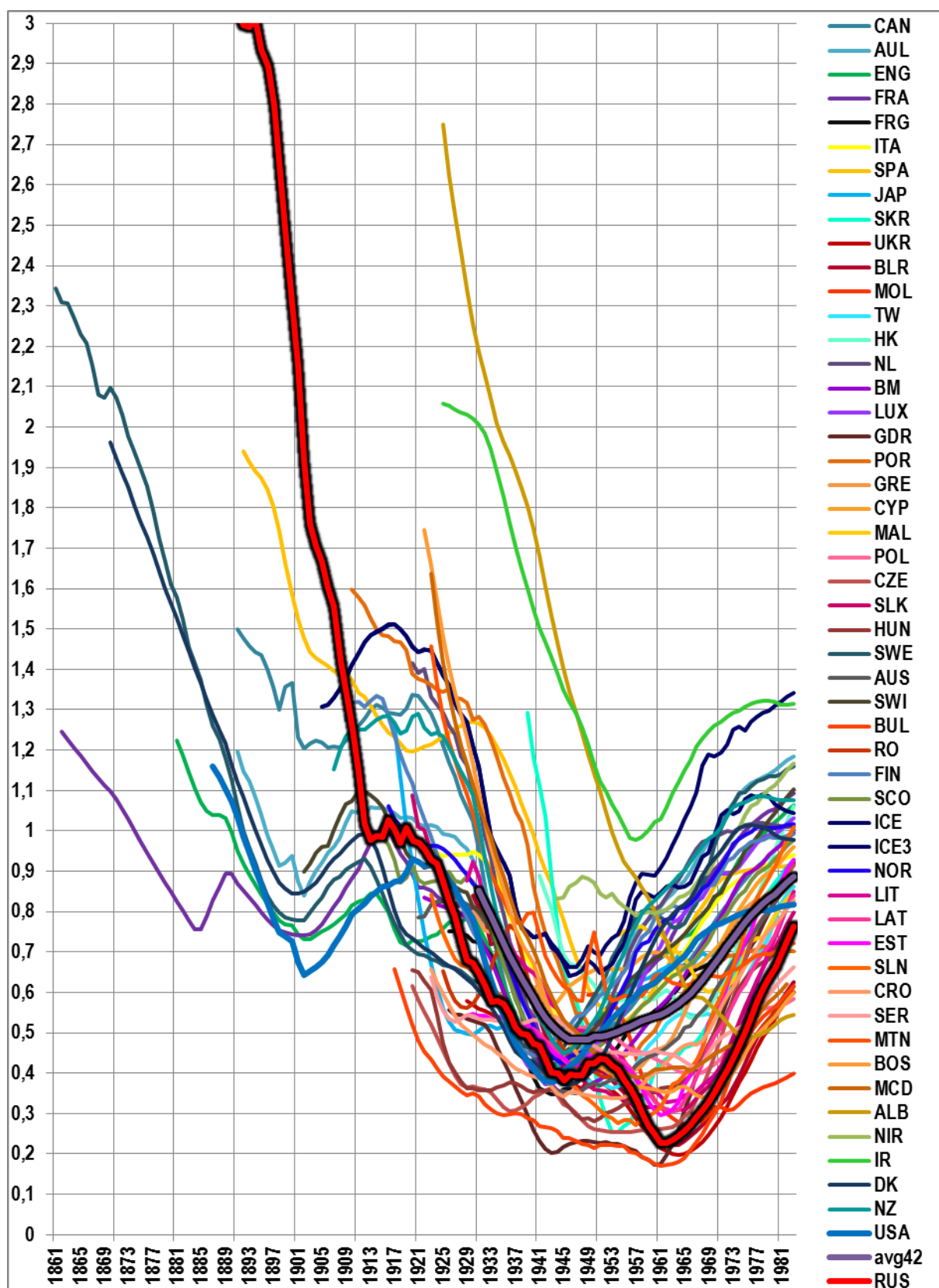
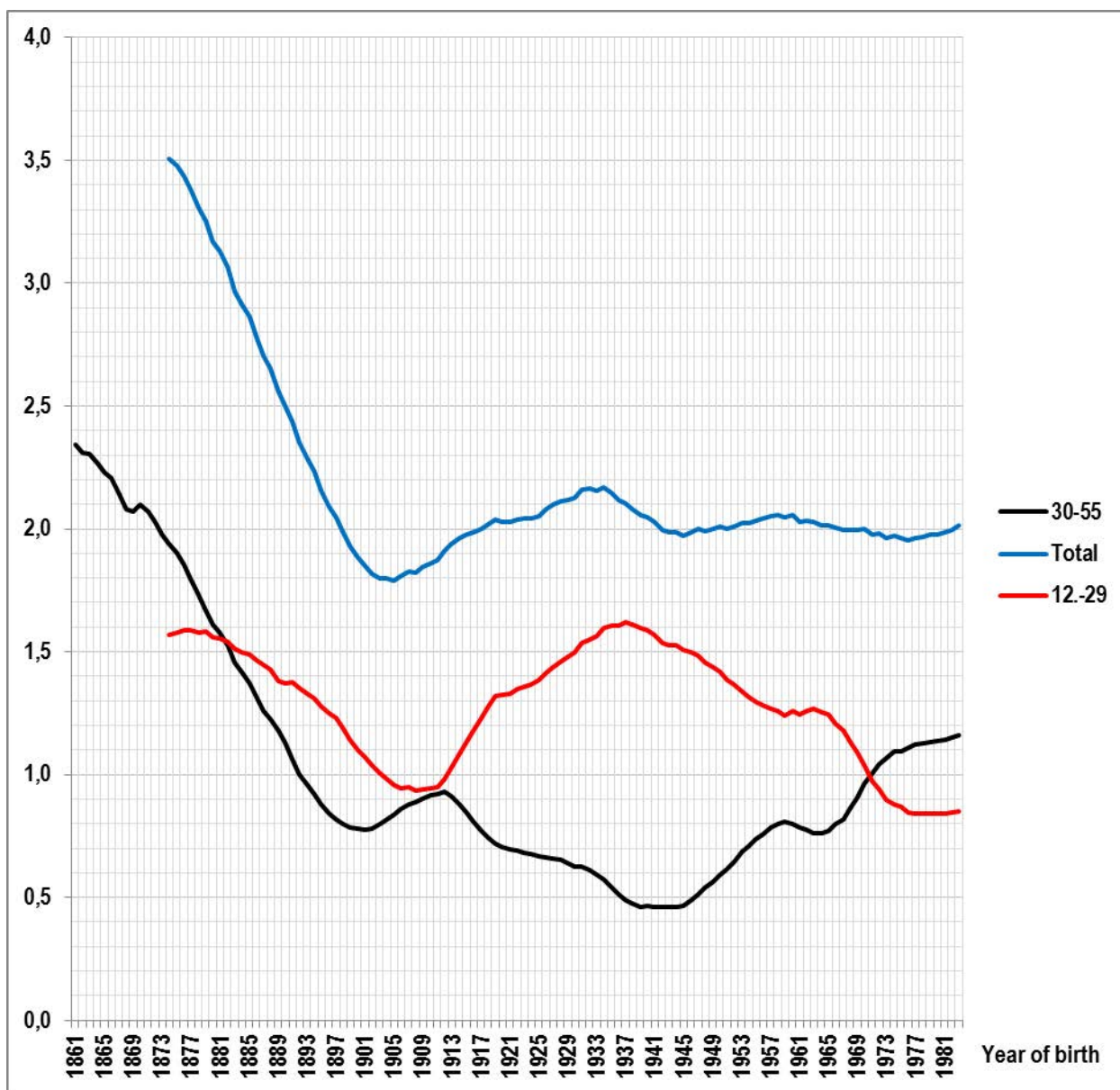
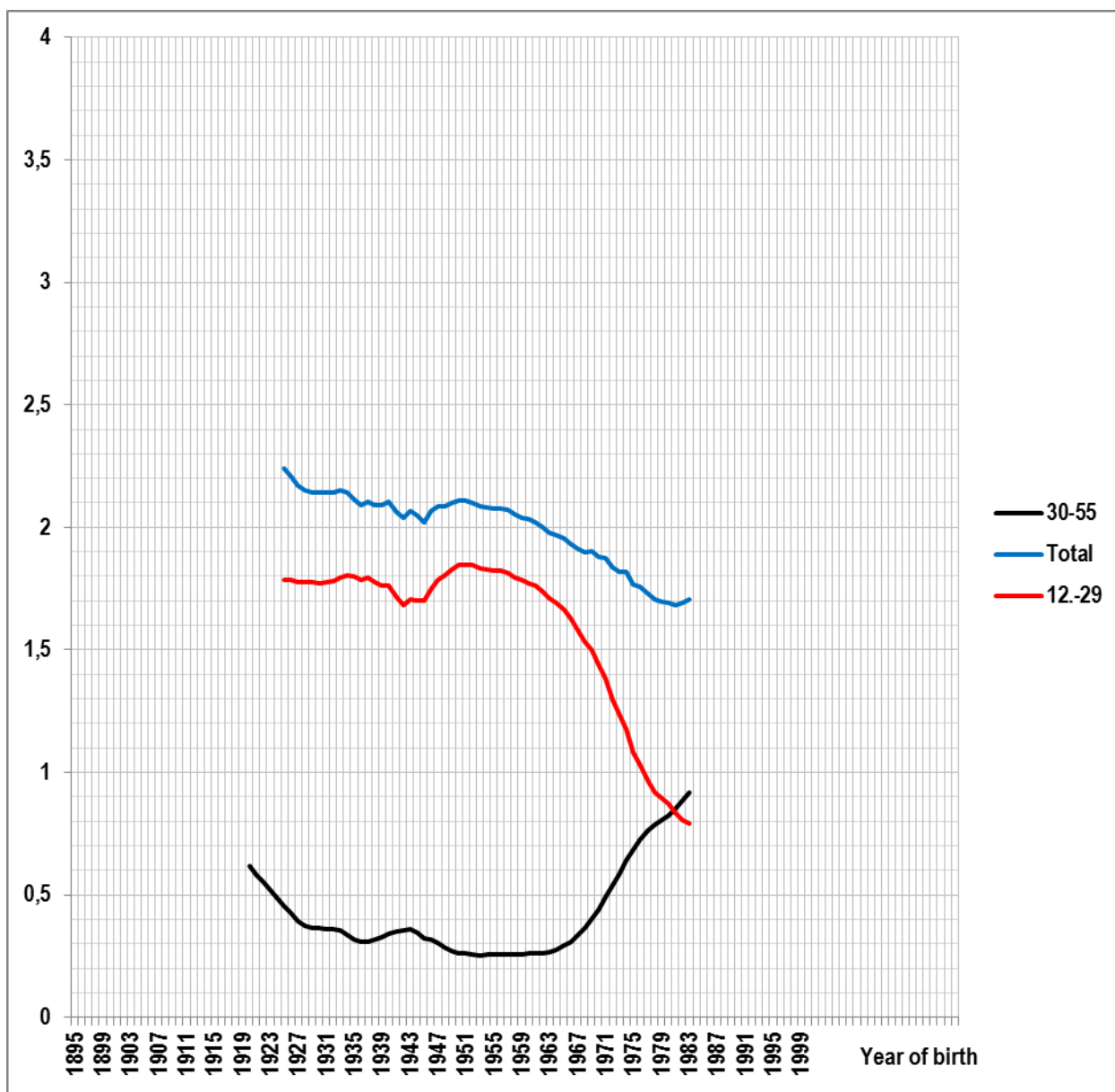


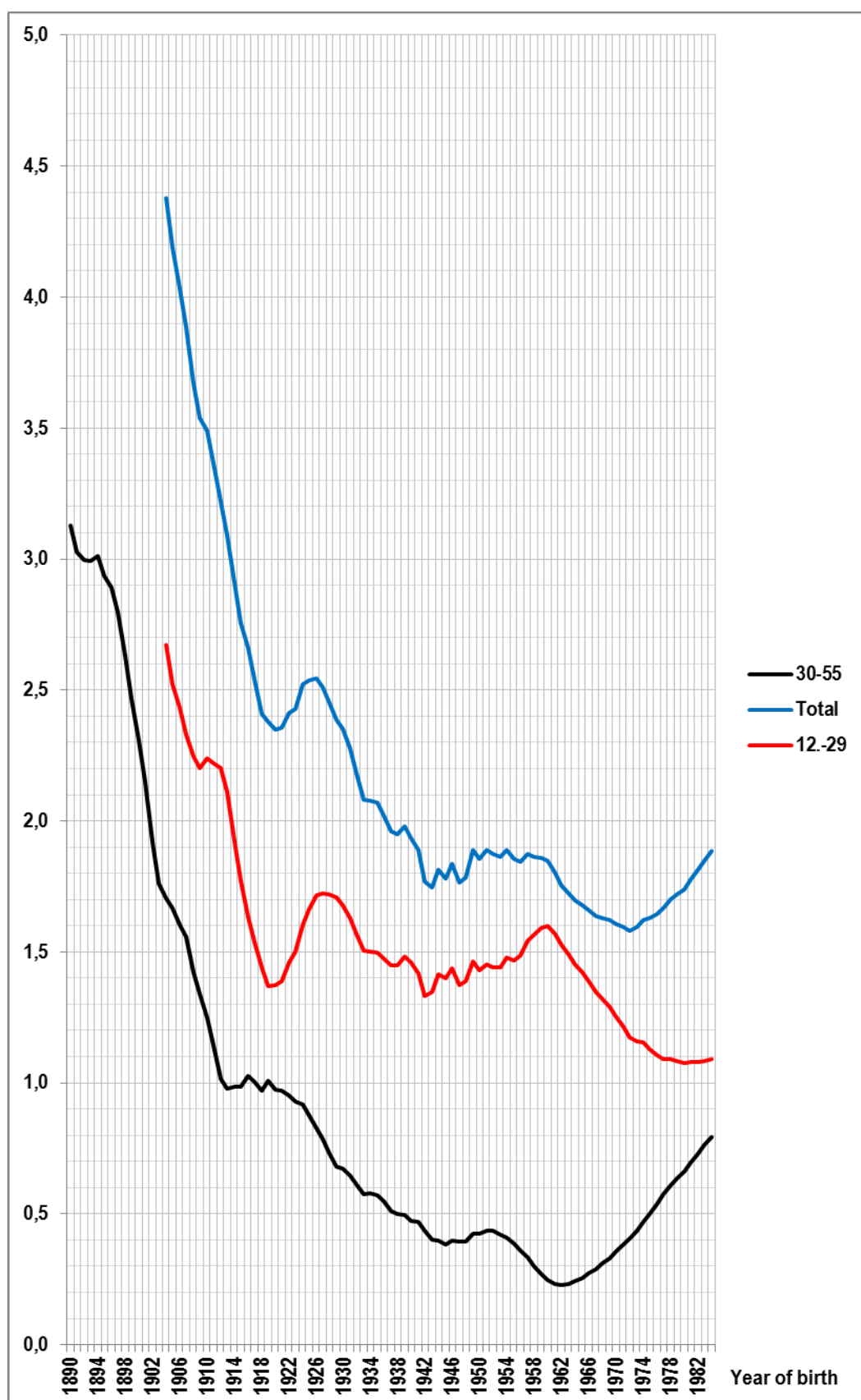
Fig. 6 Completed fertility, children per woman, of female cohorts after age 30 in developed countries. Values for cohorts born in the 2<sup>nd</sup> half of 70's are projected by author.



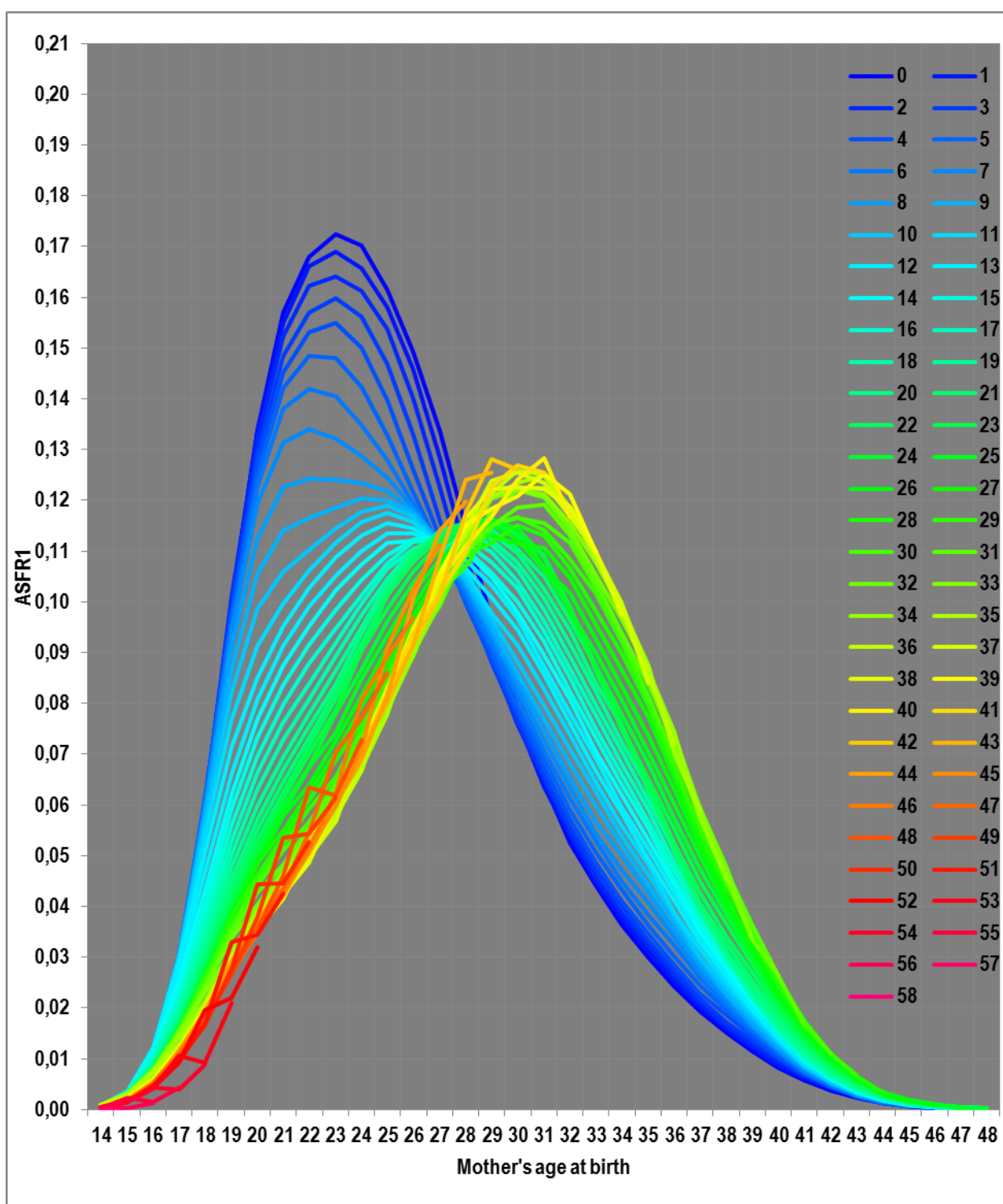
**Fig. 7 Completed fertility of female cohorts before and after age 30 in Sweden. Values for older fertility of cohorts born in the 2<sup>nd</sup> half of 70's are projected by author.**



**Fig. 8. Completed fertility, children per woman, of female cohorts, before and after age 30 in Czech Republic. Values for older fertility of cohorts born in the 2<sup>nd</sup> half of 70's are projected by author.**

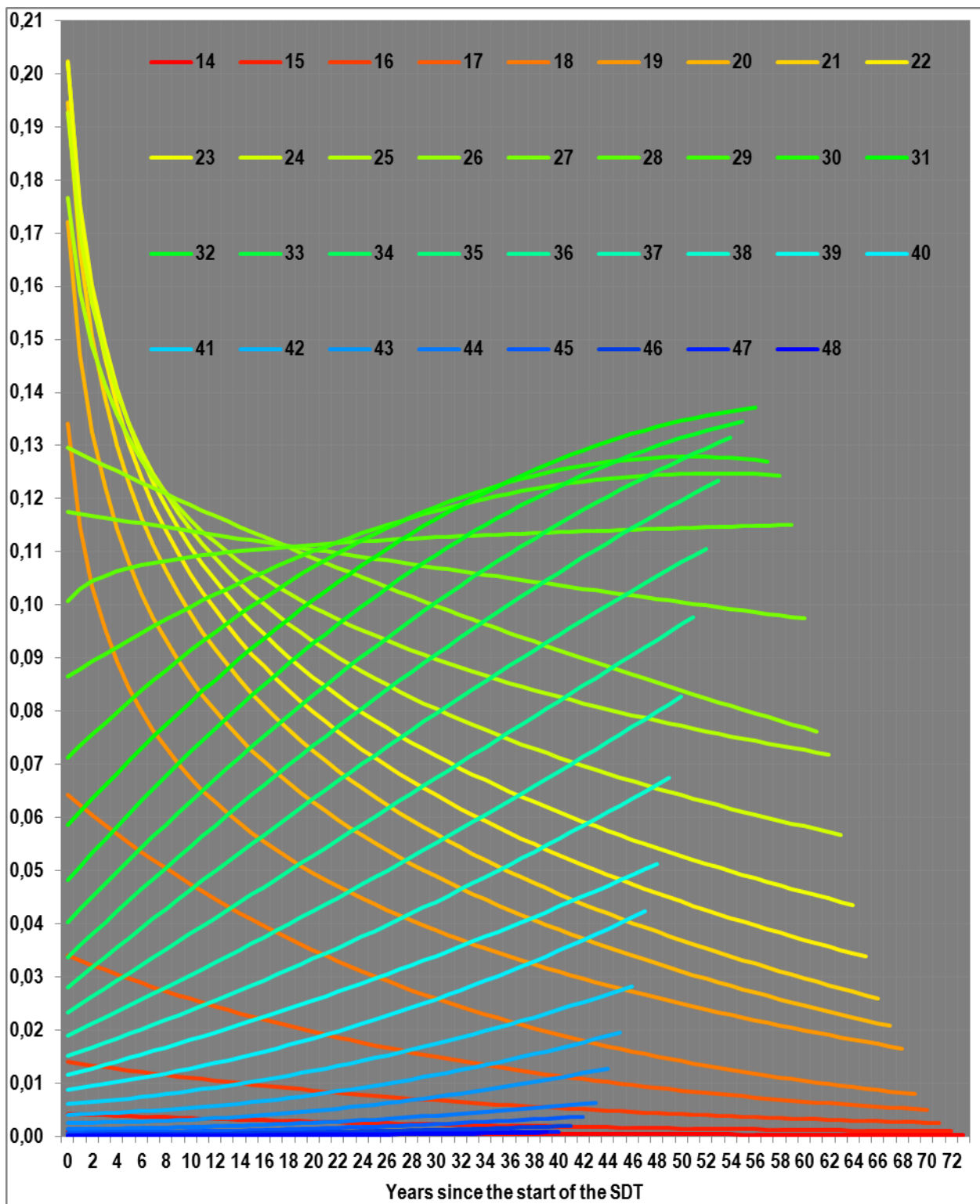


**Fig. 9. Completed fertility, children per woman, of female cohorts before and after age 30 in Russia. Values for older fertility of cohorts born in the 1<sup>st</sup> half of 80's projected by author.**

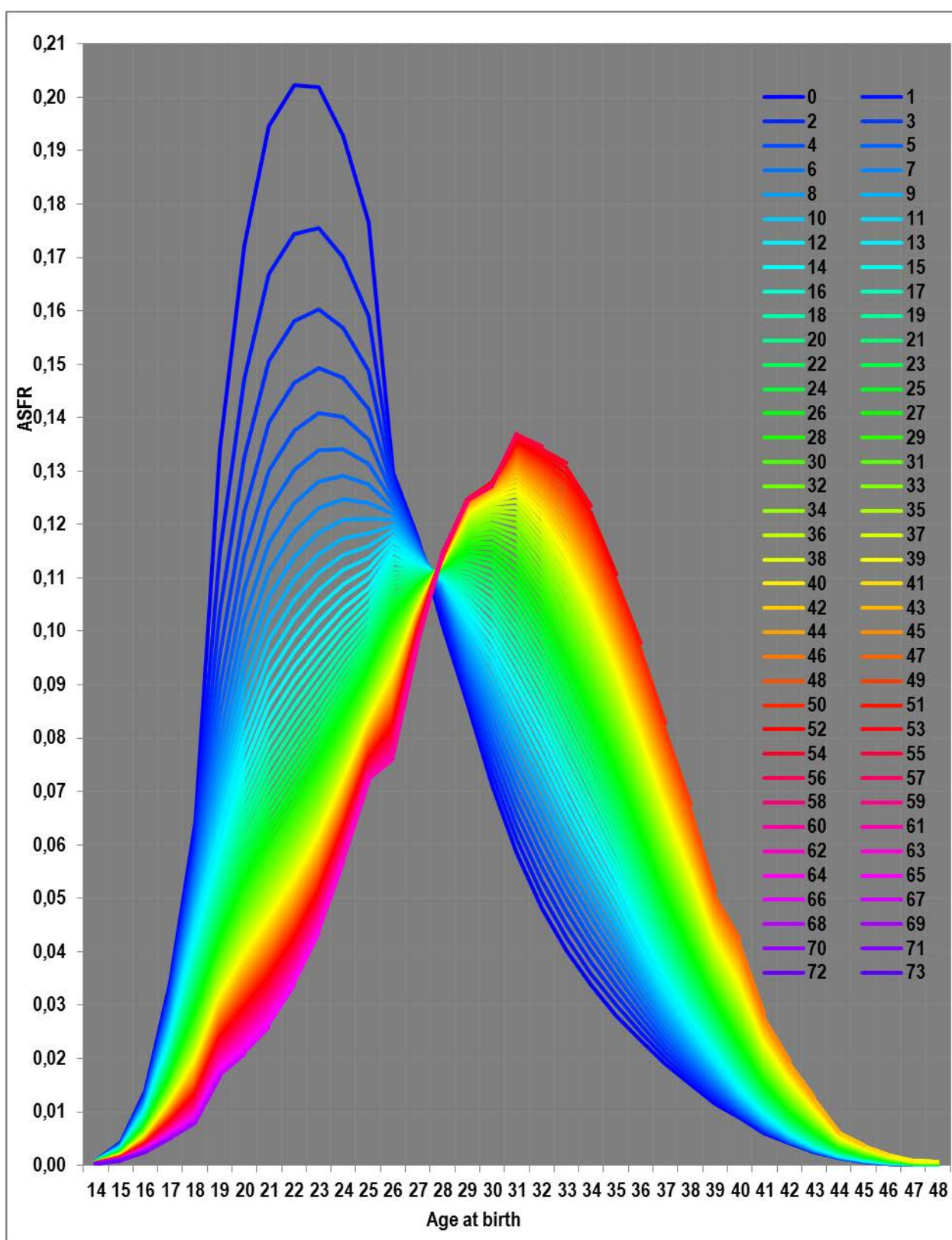


**Fig. 10.** Evolution of the average unweighted age-fertility function of female cohorts for all developed countries, where line numbers are years count since the onset of the SDT.





**Fig. 11. Evolution of the modeled age-specific fertility for every single year of age for female cohorts for all developed countries, where line numbers are age of mother at birth.**



**Fig. 12.** Evolution of the modeled age-specific fertility for every single female cohort for all developed countries, where line numbers are the number of female cohort since the start of the SDT.

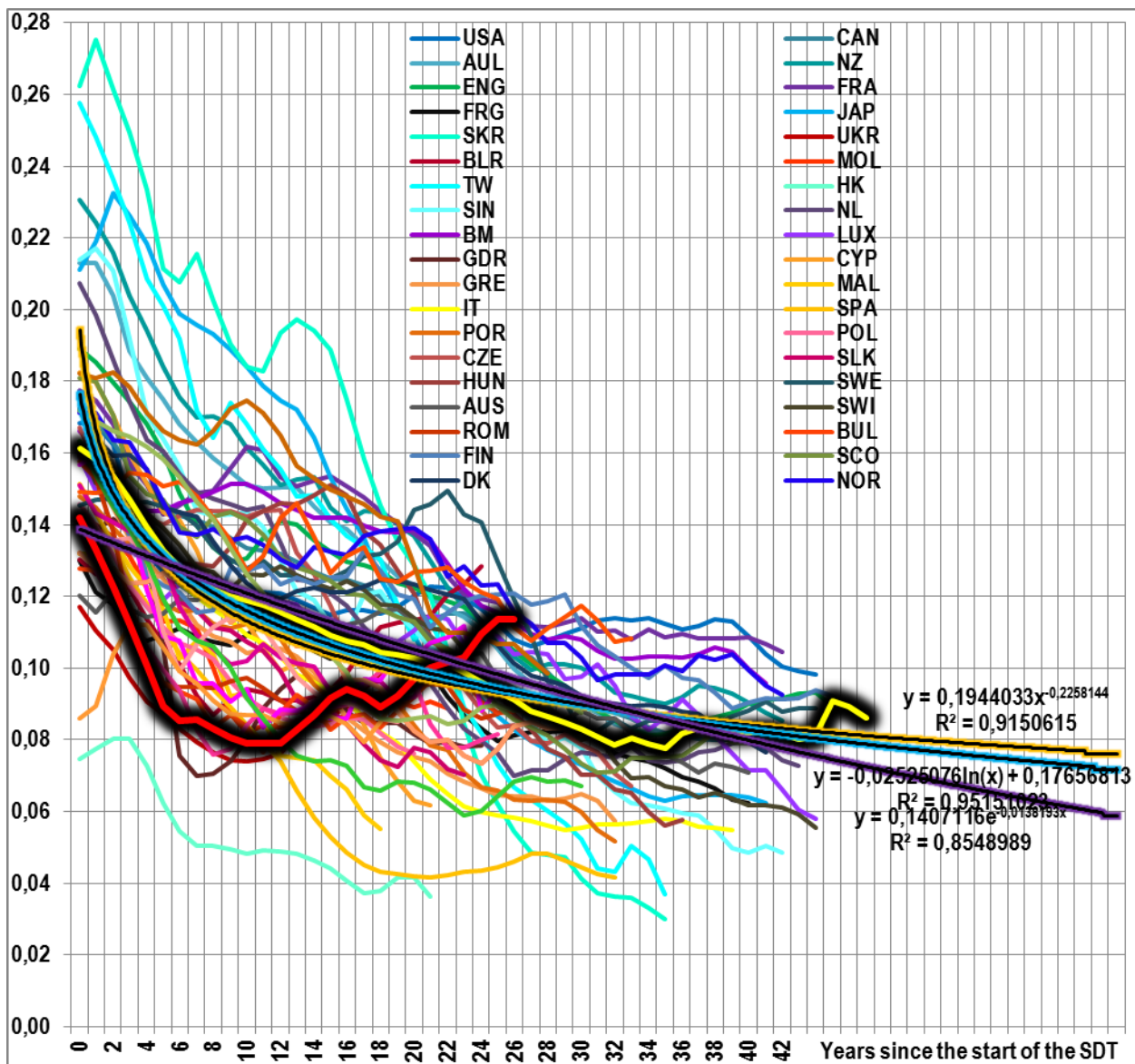
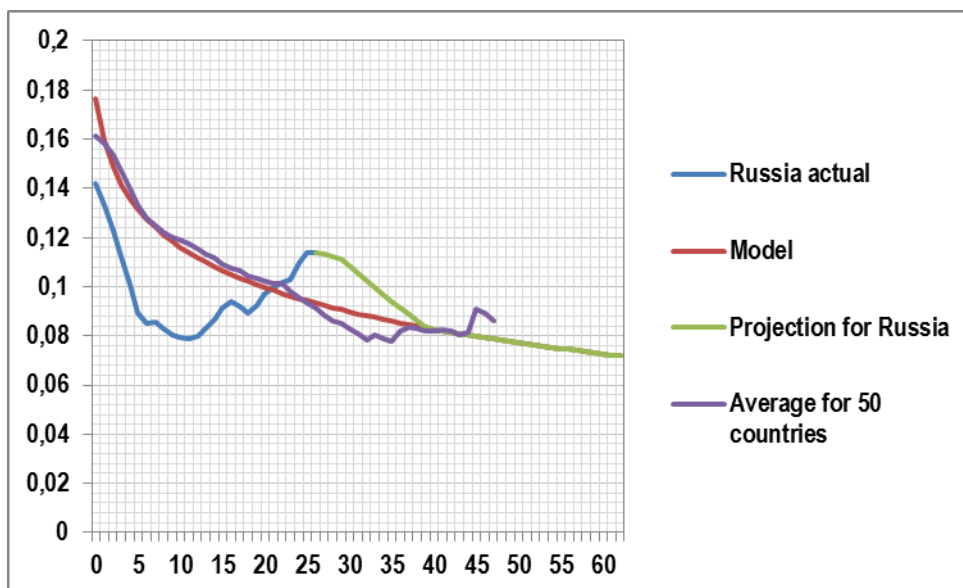


Fig 13 and 13a. Projection of fertility level at age 25 for Russia



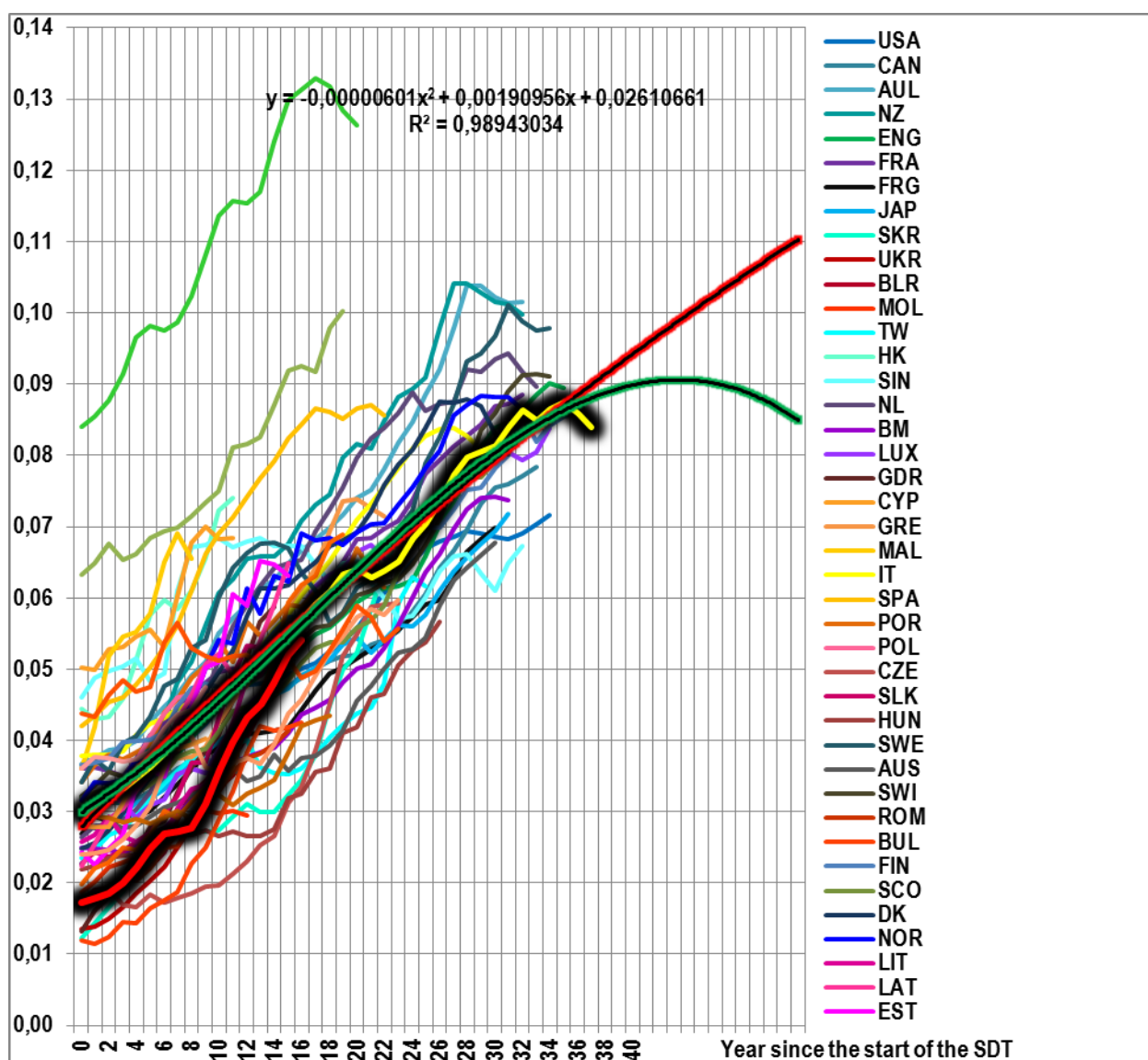
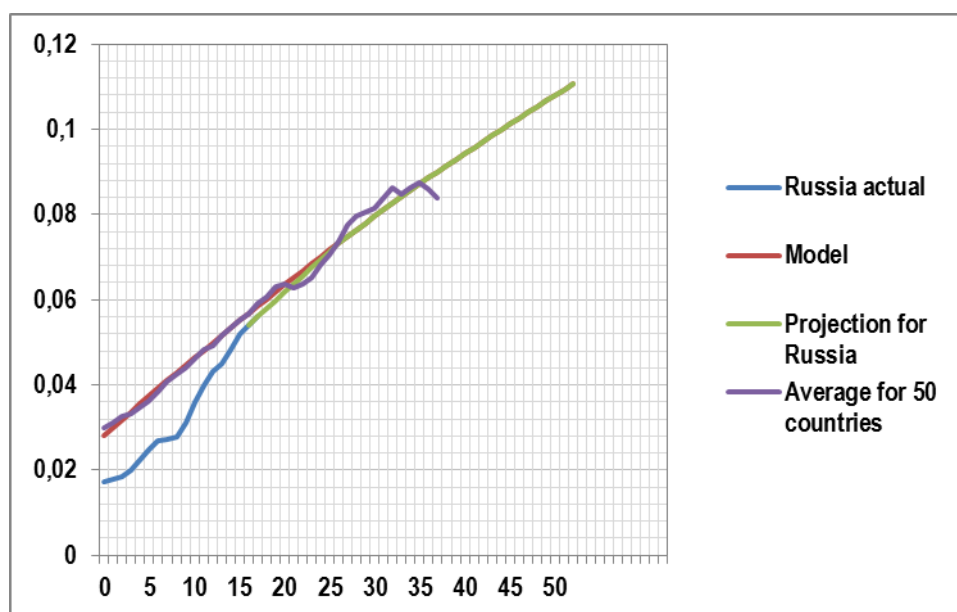
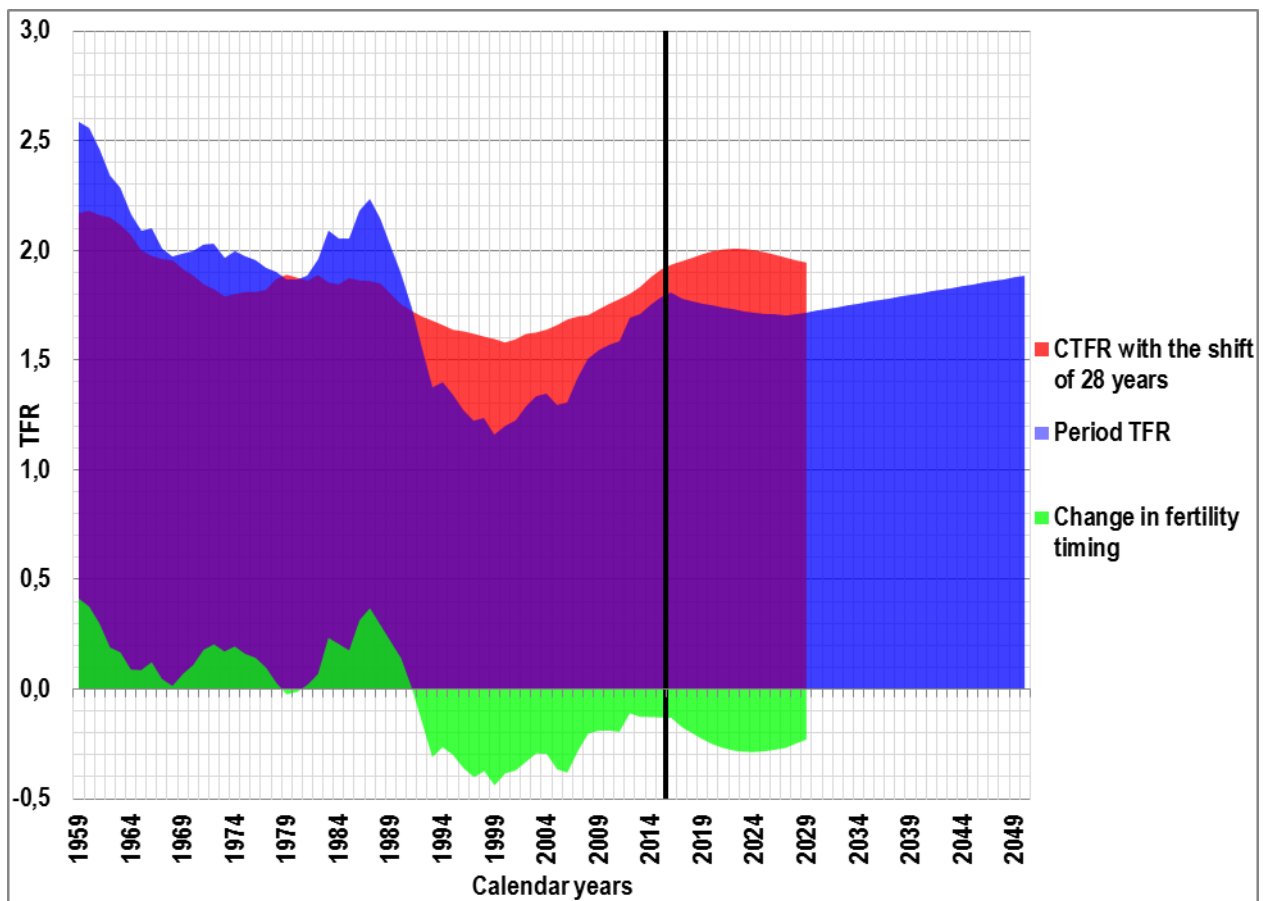


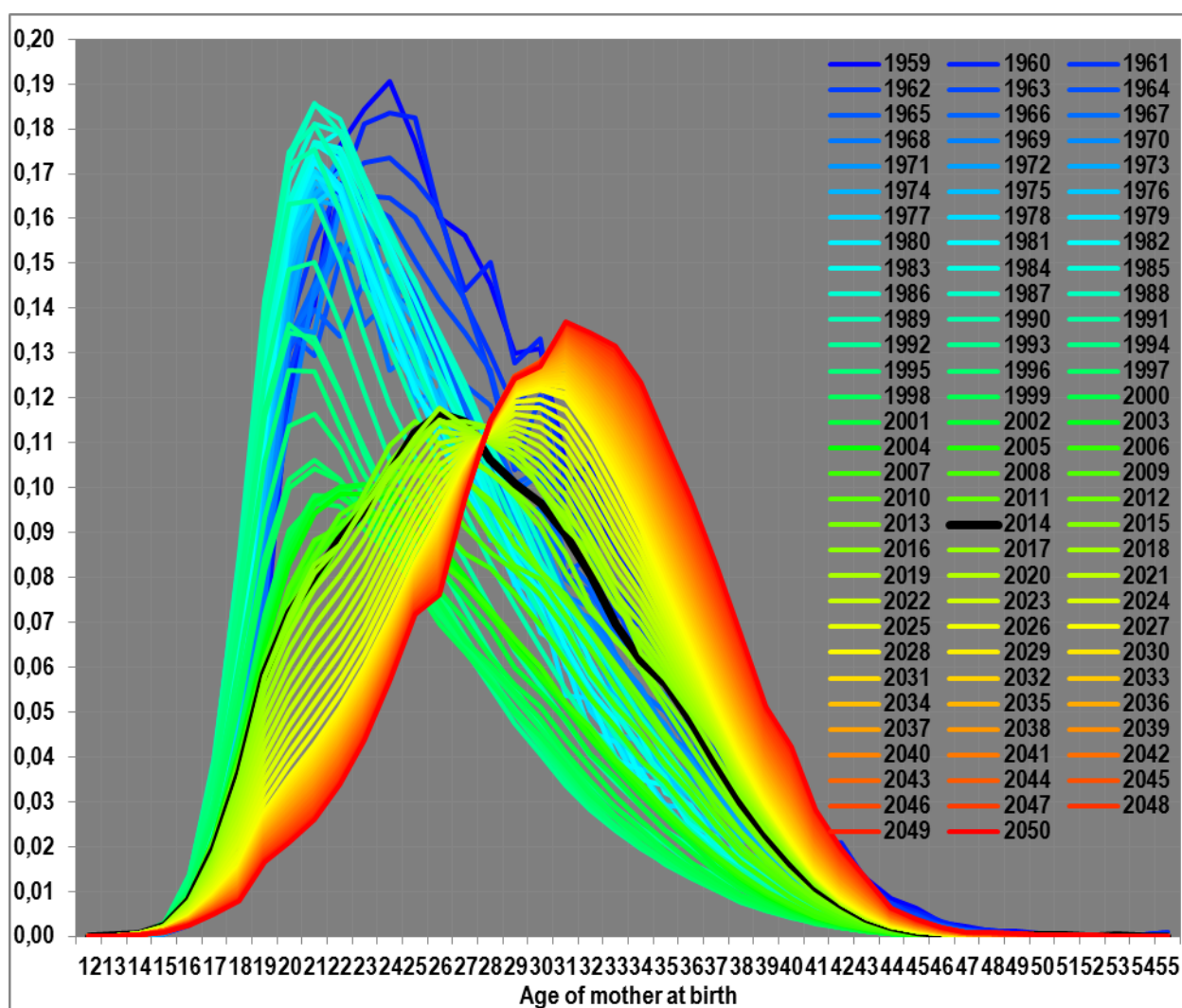
Fig 14 and 14a. Projection of fertility level at age 35 for Russia





**Fig 15. Projection of fertility level in Russia according to MEDIUM scenario with RAPID fertility aging**





**Fig 16. Projection of age-fertility function in Russia according to MEDIUM scenario with RAPID fertility aging**