Príloha - ČASŤ A

Podľa zákona č. 530/1990 Zb. o dlhopisoch sú stanovené pre podmienky Slovenskej republiky možnosti výnosu z dlhopisov nasledujúcimi spôsobmi:

- pevnou úrokovou sadzbou,
- pevnou úrokovou sadzbou a podielom na zisku,
- rozdielom medzi menovitou hodnotou dlhopisu a jeho nižším emisným kurzom,
- pohyblivou úrokovou sadzbou, prípadne vývojom devízových kurzov v závislosti od pohybu úrokových sadzieb alebo kurzov na finančnom trhu,
- kombináciou uvedených spôsobov,
- iným dodatočne určeným spôsobom.

Na zahraničných finančných trhoch sa môžeme pri obligáciách najčastejšie stretnúť s nasledujúcimi typmi výnosov (Thau, 2010; O´Malley, 2015):

- obligácie s pevnou percentuálnou mierou výnosu, označované aj ako *vanilla,*
- obligácie s nulovým kupónom (*angl. zero coupon*),
- vyzlečené obligácie, rozdelené obligácie na dve časti – menovitá hodnota a kupón,
- obligácie s pohyblivým výnosom z kupónov, označované ako FRN (*angl. floating rate notes*),
- hybridné obligácie – kombinácia pevnej a pohyblivej miery výnosu,
- obligácie s čiastočným úpisom,
- naturálne obligácie,

obligácie s výberom platby

Tabuľka Ratingové ohodnotenie a lineárna transformácia na riziko

<table>
<tr><th>S&P</th><th>Riziko</th><th>Moody’s</th><th>Riziko</th><th>Fitch</th><th>Riziko</th><th>Kategória</th></tr>
<tr><td>AAA</td><td>1</td><td>Aaa</td><td>1</td><td>AAA</td><td>1</td><td rowspan="10">Kvalitné dlhopisy
Investičný stupeň</td></tr>
<tr><td>AA+</td><td>2</td><td>Aa1</td><td>2</td><td>AA+</td><td>2</td></tr>
<tr><td>AA</td><td>3</td><td>Aa2</td><td>3</td><td>AA</td><td>3</td></tr>
<tr><td>AA-</td><td>4</td><td>Aa3</td><td>4</td><td>AA-</td><td>4</td></tr>
<tr><td>A+</td><td>5</td><td>A1</td><td>5</td><td>A+</td><td>5</td></tr>
<tr><td>A</td><td>6</td><td>A2</td><td>6</td><td>A</td><td>6</td></tr>
<tr><td>A-</td><td>7</td><td>A3</td><td>7</td><td>A-</td><td>7</td></tr>
<tr><td>BBB+</td><td>8</td><td>Baa1</td><td>8</td><td>BBB+</td><td>8</td></tr>
<tr><td>BBB</td><td>9</td><td>Baa2</td><td>9</td><td>BBB</td><td>9</td></tr>
<tr><td>BBB-</td><td>10</td><td>Baa3</td><td>10</td><td>BBB-</td><td>10</td></tr>
<tr><td>BB+</td><td>11</td><td>Ba1</td><td>11</td><td>BB+</td><td>11</td><td rowspan="14">Dlhopisy s vysokým úrokom
Špekulatívny stupeň</td></tr>
<tr><td>BB</td><td>12</td><td>Ba2</td><td>12</td><td>BB</td><td>12</td></tr>
<tr><td>BB-</td><td>13</td><td>Ba3</td><td>13</td><td>BB-</td><td>13</td></tr>
<tr><td>B+</td><td>14</td><td>B1</td><td>14</td><td>B+</td><td>14</td></tr>
<tr><td>B</td><td>15</td><td>B2</td><td>15</td><td>B</td><td>15</td></tr>
<tr><td>B-</td><td>16</td><td>B3</td><td>16</td><td>B-</td><td>16</td></tr>
<tr><td>CCC+</td><td>17</td><td>Caa1</td><td>17</td><td>CCC+</td><td>17</td></tr>
<tr><td>CCC</td><td>18</td><td>Caa2</td><td>18</td><td>CCC</td><td>18</td></tr>
<tr><td>CCC-</td><td>19</td><td>Caa3</td><td>19</td><td>CCC-</td><td>19</td></tr>
<tr><td>CC</td><td>20</td><td>Ca</td><td>20</td><td>CC</td><td rowspan="2">20</td></tr>
<tr><td>SD</td><td rowspan="4">21</td><td rowspan="4">C</td><td rowspan="4">21</td><td>C</td></tr>
<tr><td rowspan="3">D</td><td>DDD</td><td rowspan="3">21</td></tr>
<tr><td>DD</td></tr>
<tr><td>D</td></tr>
</table>

Zdroj: Vlastné spracovanie autora podľa Thakur (2020) a Moody’s (2021)

Príloha - ČASŤ B

Tabuľka Hodnota mediánu hrubého spreadu pre jednotlivé ratingové ohodnotenia agentúry Moodys

rok	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
2012	1.07	1.47	1.8	2.18	2	1.98	2.4	3.2	3.8	5.17
2013	1.35	1.24	1.2	1.45	1.89	1.78	1.92	2.98	3.35	4.03
2014	0.85	0.97	1.25	1.59	1.73	1.65	1.8	2.36	2.65	3.4
2015	1.5	1.34	1.6	1.86	2.05	1.9	2.3	2.74	3.5	3.75
2016	1.5	1.675	1.66	1.6	1.4	1.8	2.1	2.48	3	3.8
2017	1.45	1.135	1.6	1.5	1.45	1.58	1.915	2.1	2.4	3.26
2018	1.8	0.43	1.69	1.36	1.5	1.7	2.15	2.5	2.75	3.25
2019	1.5	1.395	1.7	1.43	1.85	1.98	2.33	2.58	3.1	4
2020	2.21	2	2.3	2.2	2.55	3.15	2.9	3.3	4.33	4.72
2021	1.15	1.32	1.48	1.415	1.5	1.55	1.68	1.97	2.21	2.7
2022	2.115	1.17	1.985	1.925	1.95	2.25	2.65	2.95	3.35	4.23

Zdroj: Vlastné spracovanie.

Tabuľka Hodnota mediánu hrubého spreadu podľa regiónov emisie

rok	Ázia (okrem Jap.)	CEEMEA	Jap/Aus/NZ	Lat. Amerika	Sev. Amerika	Záp. Európa
2012	5.38	7.67	2.75	5.50	4.60	3.67
2013	3.93	5.98	2.01	5.25	3.99	3.10
2014	3.55	4.50	1.64	4.55	2.55	2.35
2015	3.30	4.00	2.20	5.25	3.25	2.80
2016	2.90	5.00	1.67	5.55	3.10	2.20
2017	2.85	6.24	1.80	5.63	2.68	2.21
2018	3.24	4.09	1.50	7.00	2.58	1.90
2019	3.05	7.49	1.97	5.88	3.00	2.80
2020	4.00	6.70	2.85	6.21	4.72	3.60
2021	2.77	5.62	1.58	4.53	2.75	2.30
2022	2.80	4.35	2.33	5.94	3.25	2.58

Zdroj: Vlastné spracovanie.

Tabuľka Upisovatelia na trhu podnikových dlhopisov – TOP20 podľa emitovaného objemu, v mld. USD

2012		2013		2014		2015	
JP_MORGAN	552	JP_MORGAN	473	JP_MORGAN	505	JP_MORGAN	657
BANK_OF_AMERICA	433	BANK_OF_AMERICA	395	BANK_OF_AMERICA	404	BANK_OF_AMERICA	610
CITIGROUP	419	CITIGROUP	359	CITIGROUP	377	CITIGROUP	510
BARCLAYS	347	BARCLAYS	333	DEUTSCHE_BANK	371	DEUTSCHE_BANK	459
DEUTSCHE_BANK	344	DEUTSCHE_BANK	319	BARCLAYS	331	BARCLAYS	448
MORGAN_STANLEY	287	MORGAN_STANLEY	274	GOLDMAN_SACHS	282	GOLDMAN_SACHS	431
NATWEST_MARKETS	287	NATWEST_MARKETS	264	MORGAN_STANLEY	261	MORGAN_STANLEY	404
GOLDMAN_SACHS	267	HSBC	226	HSBC	251	WELLS_FARGO	301
HSBC	241	GOLDMAN_SACHS	223	BNP_PARIBAS	245	HSBC	293
CREDIT_SUISSE	207	CREDIT_SUISSE	202	NATWEST_MARKETS	233	CREDIT_SUISSE	266
BNP_PARIBAS	203	BNP_PARIBAS	187	CREDIT_SUISSE	215	BNP_PARIBAS	226
WELLS_FARGO	180	WELLS_FARGO	184	WELLS_FARGO	180	MIZUHO	181
UBS	143	RBC	118	MUFG	130	RBC	163
SOCIETE_GENERALE	129	MUFG	116	CREDIT_AGRICOLE	116	MUFG	158
CREDIT_AGRICOLE	115	SOCIETE_GENERALE	101	RBC	115	SOCIETE_GENERALE	134
MUFG	106	MIZUHO	96	SOCIETE_GENERALE	113	UBS	123
RBC	104	UBS	93	UBS	91	CREDIT_AGRICOLE	114
SANTANDER	90	CREDIT_AGRICOLE	90	MIZUHO	81	NATWEST_MARKETS	103
MIZUHO	74	UNICREDIT	69	SANTANDER	76	SUNTRUST	65
UNICREDIT	71	SANTANDER	53	UNICREDIT	68	UNICREDIT	63
2016		**2017**		**2018**		**2019**	
BANK_OF_AMERICA	665	JP_MORGAN	646	BANK_OF_AMERICA	501	JP_MORGAN	728
JP_MORGAN	626	BANK_OF_AMERICA	580	JP_MORGAN	482	BANK_OF_AMERICA	664
CITIGROUP	599	CITIGROUP	551	CITIGROUP	382	CITIGROUP	640
BARCLAYS	545	BARCLAYS	451	BARCLAYS	359	BARCLAYS	538
DEUTSCHE_BANK	434	GOLDMAN_SACHS	432	GOLDMAN_SACHS	288	GOLDMAN_SACHS	484
GOLDMAN_SACHS	388	DEUTSCHE_BANK	377	HSBC	281	BNP_PARIBAS	412
HSBC	357	HSBC	307	BNP_PARIBAS	275	MORGAN_STANLEY	386
BNP_PARIBAS	348	BNP_PARIBAS	301	MIZUHO	253	DEUTSCHE_BANK	362
WELLS_FARGO	329	MORGAN_STANLEY	284	MORGAN_STANLEY	241	WELLS_FARGO	325
MORGAN_STANLEY	325	MIZUHO	253	WELLS_FARGO	237	HSBC	306
MIZUHO	285	WELLS_FARGO	244	DEUTSCHE_BANK	219	MIZUHO	285
MUFG	230	CREDIT_SUISSE	226	MUFG	216	MUFG	259
CREDIT_SUISSE	215	MUFG	215	CREDIT_SUISSE	189	CREDIT_SUISSE	235
RBC	198	SOCIETE_GENERALE	172	RBC	164	CREDIT_AGRICOLE	206
SOCIETE_GENERALE	195	RBC	155	SMBC_NIKKO	141	RBC	204
ING	157	CREDIT_AGRICOLE	137	SOCIETE_GENERALE	139	SOCIETE_GENERALE	183
SMBC_NIKKO	155	SANTANDER	125	CREDIT_AGRICOLE	126	SMBC_NIKKO	150
CREDIT_AGRICOLE	140	UNICREDIT	100	ING	91	SANTANDER	123
SANTANDER	140	UBS	98	SANTANDER	78	COMMERZBANK	115
NATWEST_MARKETS	133	NATWEST_MARKETS	96	UNICREDIT	72	UNICREDIT	112
2020		**2021**		**2022**			
JP_MORGAN	1184	JP_MORGAN	941	BANK_OF_AMERICA	495		
BANK_OF_AMERICA	1075	CITIGROUP	781	JP_MORGAN	474		
CITIGROUP	996	BANK_OF_AMERICA	773	CITIGROUP	408		
GOLDMAN_SACHS	747	GOLDMAN_SACHS	568	GOLDMAN_SACHS	326		
BARCLAYS	667	MORGAN_STANLEY	510	BARCLAYS	295		
DEUTSCHE_BANK	568	BARCLAYS	507	BNP_PARIBAS	266		
MORGAN_STANLEY	563	BNP_PARIBAS	498	MORGAN_STANLEY	238		
WELLS_FARGO	539	DEUTSCHE_BANK	462	DEUTSCHE_BANK	226		
BNP_PARIBAS	505	WELLS_FARGO	399	HSBC	217		
HSBC	453	MIZUHO	360	MIZUHO	203		
MIZUHO	397	HSBC	348	WELLS_FARGO	197		
MUFG	317	CREDIT_SUISSE	332	MUFG	143		
CREDIT_SUISSE	284	MUFG	299	RBC	139		
RBC	273	RBC	271	SOCIETE_GENERALE	130		
SOCIETE_GENERALE	268	CREDIT_AGRICOLE	233	SMBC_NIKKO	120		
CREDIT_AGRICOLE	242	SMBC_NIKKO	223	CREDIT_SUISSE	116		
SMBC_NIKKO	223	SOCIETE_GENERALE	207	CREDIT_AGRICOLE	116		
SANTANDER	180	SANTANDER	183	SANTANDER	102		
UNICREDIT	157	ING	181	ING	88		
US_BANKING_CORP	152	TRUIST_SECURITIES	145	UNICREDIT	76		

Zdroj: Vlastné spracovanie.

Príloha - ČASŤ C

Tabuľka Výsledky neparametrického testu - Kruskal Wallis – základné parametre

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké vo **všetkých kategóriách** premennej:	K-W	p-hod.	Párové porovnanie	Rozhodnutie o H0
H1	Mena emisie	593	.000	Graf 6 + Príloha C	zamietame
H2	Spread benchmark	566	.000	Príloha C	zamietame
H3	Región emisie	932	.000	Graf 7 + Príloha C	zamietame
H4	Rok emisie	951	.000	Príloha C	zamietame
H5	Rating: Moodys	2851	.000	Graf 8 + Príloha C	zamietame
H6	Rating: St. and Poors	3119	.000	Príloha C	zamietame
H7	Rating: Fitch	3693	.000		zamietame

Zdroj: Vlastné spracovanie

Tabuľka Post-hoc analýza pre vybrané menové páry: USD, GBP, EUR

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké pre menové páry	Št. KW-Test	upravená p-hodnota	Rozhodnutie o H0
H1.1	USD-GBP	7.281	.000	zamietame
H1.2	USD-EUR	-20.357	.000	zamietame
H1.3	GBP-EUR	-15.498	.000	zamietame

Zdroj: Vlastné spracovanie.

Tabuľka Post hoc analýza spread benchmark

Skupina 1 – Skupina 2	Štatistika	Významnosť	Upravená p-hodnota
Ostatné-Americké štátne dlhopisy	4.95545	7.22E-07	.000
Ostatné-Britské štátne dlhopisy	7.437082	1.03E-13	.000
Ostatné-Nemecké štátne dlhopisy	5.131926	2.87E-07	.000
Mid-Swap-Americké štátne dlhopisy	20.67147	0	.000
Mid-Swap-Britské štátne dlhopisy	-15.4575	0	.000
Mid-Swap-Nemecké štátne dlhopisy	-5.02779	4.96E-07	.000
Americké štátne dlhopisy-Britské štátne dlhopisy	-7.22277	5.09E-13	.000
Americké štátne dlhopisy-Nemecké štátne dlhopisy	-3.31603	0.000913	0.013

Zdroj: Vlastné spracovanie.

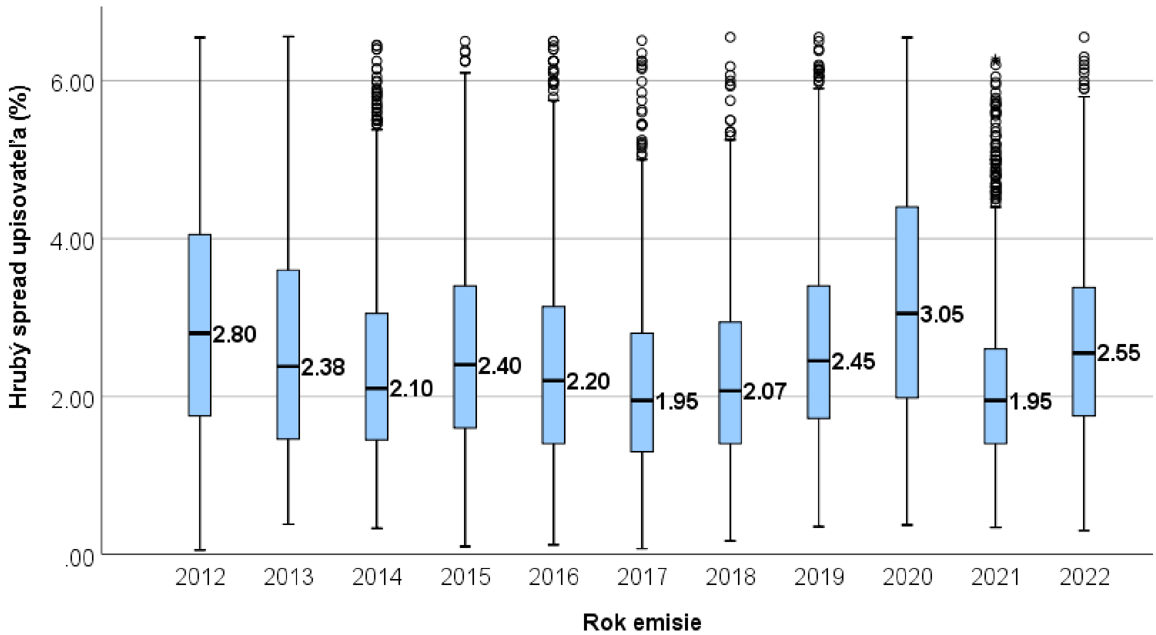
Tabuľka Post hoc analýza pre región emisie

Skupina 1 – Skupina 2	Štatistika	Významnosť	Upravená p-hodnota
Japan/Australia/New_Zealand-Western_Europe	-5.14991	2.61E-07	.000
Japan/Australia/New_Zealand-North_America	-9.25569	0	.000
Japan/Australia/New_Zealand-ASIA_(non-Japan)	18.1788	0	.000
Japan/Australia/New_Zealand-CEEMEA	15.57093	0	.000
Japan/Australia/New_Zealand-Latam	-16.5677	0	.000
Western_Europe-North_America	9.659225	0	.000

Western_Europe-ASIA_(non-Japan)	22.30324	0	.000
Western_Europe-CEEMEA	14.75944	0	.000
Western_Europe-Latam	15.75719	0	.000
North_America-ASIA_(non-Japan)	17.08109	0	.000
North_America-CEEMEA	12.08777	0	.000
North_America-Latam	13.37	0	.000
ASIA_(non-Japan)-CEEMEA	-3.81276	0.000137	.002
ASIA_(non-Japan)-Latam	-5.89355	3.78E-09	.000
CEEMEA-Latam	-1.96217	0.049743	.746

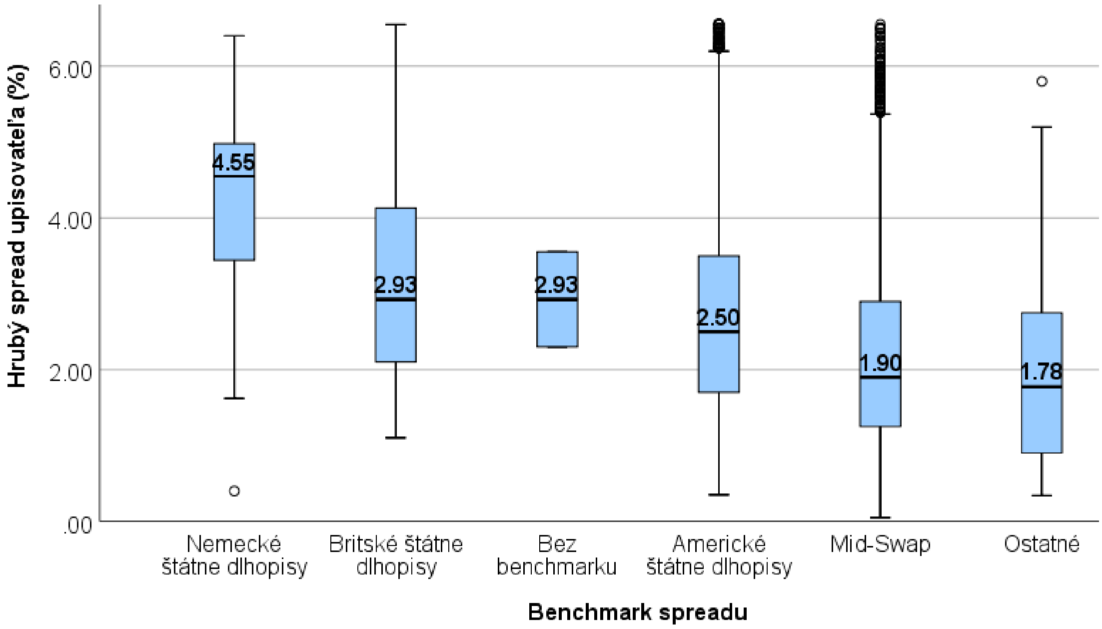
Zdroj: Vlastné spracovanie.

Graf Box plot analýza roku emisie a hrubého spreadu



Zdroj: Vlastné spracovanie.

Graf Box plot analýza hrubého spreadu a benchmark sadzieb



Zdroj: Vlastné spracovanie.

Tabuľka Post hoc analýza hrubého spreadu a ratingu Moodys

Skupina 1 – Skupina 2	Štatistika	Významnosť	Upravená p-hodnota
2-1	0.15	0.878	1
2-4	-2.64	0.008	0.745
2-3	-3.45	0.001	0.051
1-4	-1.65	0.099	1
1-3	-2.25	0.024	1
1-5	-3.16	0.002	0.142
1-6	-3.36	0.001	0.072
4-3	1.16	0.245	1
4-13	-3.2	0.001	0.126
3-5	-1.55	0.12	1

3-6	-1.95	0.052	1
3-13	-3.07	0.002	0.194
5-6	-0.54	0.588	1
5-13	-2.93	0.003	0.304
6-14	-3.45	0.001	0.051
6-13	-2.9	0.004	0.339
7-14	-2.86	0.004	0.382
7-13	-2.42	0.016	1
8-14	-2.34	0.019	1
8-13	-1.99	0.046	1
9-14	-1.73	0.084	1
9-13	-1.49	0.135	1
10-12	-2.22	0.026	1
10-14	-1.16	0.245	1
10-13	-1.03	0.303	1
11-12	-0.2	0.841	1
11-14	-0.56	0.573	1
11-13	-0.54	0.588	1
12-14	-0.48	0.628	1
12-13	-0.48	0.632	1
14-13	0.06	0.95	1

Tabuľka Post hoc analýza hrubého spreadu a ratingu Standard and Poors

Skupina 1 – Skupina 2	Štatistika	Významnosť	Upravená p-hodnota
1-3	-1.60997	0.107405	1.000
1-4	-2.1613	0.030672	1.000
1-2	-2.3379	0.019393	1.000
1-5	-3.31944	0.000902	0.082
1-14	-2.51323	0.011963	1.000
3-4	-1.07805	0.281013	1.000
3-2	1.408006	0.159129	1.000
3-14	-2.2885	0.022108	1.000
4-2	0.772646	0.439732	1.000
4-5	-2.92827	0.003409	0.310
4-14	-2.21313	0.026888	1.000
2-5	-0.74518	0.456161	1.000
2-6	-1.82053	0.068678	1.000
2-13	-3.34743	0.000816	0.074
2-14	-2.11971	0.03403	1.000
5-6	-2.52306	0.011634	1.000
5-13	-3.25523	0.001133	0.103
5-14	-2.05016	0.040349	1.000
6-13	-3.06531	0.002174	0.198
6-14	-1.93975	0.05241	1.000
7-13	-2.53092	0.011376	1.000

7-14	-1.63088	0.102916	1.000
8-12	-2.70389	0.006853	0.624
8-13	-1.96586	0.049315	1.000
8-14	-1.30426	0.192144	1.000
9-12	-1.53049	0.125895	1.000
9-13	-1.40026	0.161434	1.000
9-14	-0.97744	0.328351	1.000
12-10	0.046571	0.962855	1.000
12-11	0.881114	0.378256	1.000
12-13	-0.59842	0.54956	1.000
12-14	-0.5319	0.594794	1.000
10-11	-2.56418	0.010342	0.941
10-13	-0.64069	0.521722	1.000
10-14	-0.5388	0.590024	1.000
11-13	-0.2156	0.829301	1.000
11-14	-0.29349	0.76915	1.000
13-14	-0.14609	0.883854	1.000

Zdroj: Vlastné spracovanie.

Tabuľka Výsledky korelácie hrubý spread a základné parametre emisie

Hrubý spread upisovateľa		Objem emisie (mil. USD)	Splatnosť dlhopisu	Reoffer cena
	Spearmanov koef. Korel.	-.096**	.199**	-.083**
	p-hodnota	.000	.000	.000
	N	11198		

Tabuľka Post-hoc analýza pre hrubý spread a kategórie reoffer ceny

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké pre kategórie reoffer ceny	Št. KW-Test	upravená p-hodnota	Rozhodnutie o H0
H8.1	Reoffer > hodnota emisie X Reoffer = hodnota emisie	11.918	.000	zamietame
H8.2	Reoffer > hodnota emisie X Reoffer < hodnota emisie	9.959	.000	zamietame
H8.3	Reoffer = hodnota emisie X Reoffer < hodnota emisie	-6.664	.000	zamietame

Zdroj: Vlastné spracovanie.

Tabuľka Post hoc analýza hrubého spreadu a najlepšie postaveného upisovateľa

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké pre syndikáty s upisovateľom z:	Št. KW-Test	upravená p-hodnota	Rozhodnutie o H0:
H13.1	16 – 20 vs 11 – 15	1.213	1.000	nemožno zamietnuť
H13.2	16 – 20 vs 6 – 10	2.588	.096	nemožno zamietnuť
H13.3	16 – 20 vs 1 – 5	4.939	.000	zamietame
H13.4	16 – 20 vs mimo TOP 20	-6.036	.000	zamietame
H13.5	11 – 15 vs 6 – 10	1.697	.897	nemožno zamietnuť
H13.6	11 – 15 vs 1 – 5	5.088	.000	zamietame
H13.7	11 – 15 vs mimo TOP 20	-6.332	.000	zamietame

H13.8	6 – 10 vs 1 – 5	5.226	.000	zamietame
H13.9	6 – 10 vs mimo TOP 20	-6.400	.000	zamietame
H13.10	1 – 5 vs mimo TOP 20	-3.055	.023	zamietame

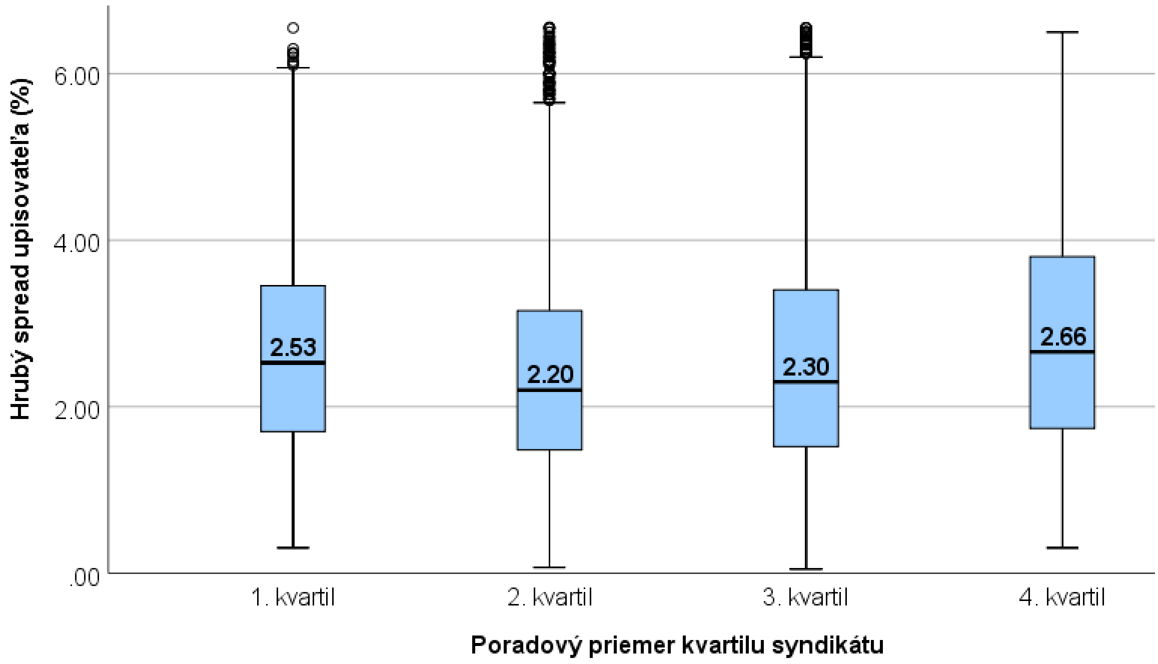
Zdroj: Vlastné spracovanie.

Tabuľka Post hoc analýza hrubého spreadu a poradového priemeru syndikátu triedeného do kvartilov

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké pre syndikát upisovateľov z:	Št. KW-Test	upravená p-hodnota	Rozhodnutie o H0:
H14.1	2. kvartil a 3. kvartil	-4.181	0.000	zamietame
H14.2	2. kvartil a 1. kvartil	6.246	0.000	zamietame
H14.3	2. kvartil a 4. kvartil	-8.393	0.000	zamietame
H14.4	3. kvartil a 1. kvartil	3.619	0.002	zamietame
H14.5	3. kvartil a 4. kvartil	-6.040	0.000	zamietame
H14.6	1. kvartil a 4. kvartil	-2.267	0.140	nemožno zamietnuť

Zdroj: Vlastné spracovanie.

Graf Box plot analýza hrubého spreadu a poradového priemeru kvartilu syndikátu



Zdroj: Vlastné spracovanie.

Tabuľka Výsledky korelácie hrubý spread a parametre súvisiace s upisovateľom

<table>
<tr><td rowspan="4">Hrubý spread upisovateľa</td><td></td><td>os</td><td>n upis.</td><td>TP synd.</td><td>dopyt</td><td>emitent – upis. vzťah</td></tr>
<tr><td>Spearmanov koef. korel.</td><td>.105**</td><td>.055**</td><td>.021*</td><td>.168**</td><td>-.116**</td></tr>
<tr><td>p-hodnota</td><td>.000</td><td>.000</td><td>.029</td><td>.000</td><td>.000</td></tr>
<tr><td>N</td><td colspan="3">11198</td><td>700</td><td>11198</td></tr>
</table>

Zdroj: Vlastné spracovanie.

Tabuľka Spearmanov korelačný koeficient – Hrubý spread a prítomnosť upisovateľa z TOP 5, 10, 15, 20 a mimo TOP 20 (podľa upísaného objemu)

Hrubý spread upisovateľa		TOP5	TOP10	TOP15	TOP20	mimo TOP 20
	Spearmanov korel. koef.	0.005	-.042**	-.063**	-.085**	+.181**
	p-hodnota	.570	.000	.000	.000	.000
	N	11194				

Zdroj: Vlastné spracovanie.

Tabuľka Spearmanov korelačný koeficient – vzťah Hrubý spread a postavenie upisovateľa

Hrubý spread upisovateľa		Poradový priemer syndikátu	Poradový priemer kvartilu syndikátu	Najlepšie postavený upisovateľ v syndikáte
	Spearmanov korel. koef.	.076**	.035**	-.001
	p-hodnota	.000	.000	.906
	N	11194		

Zdroj: Vlastné spracovanie.

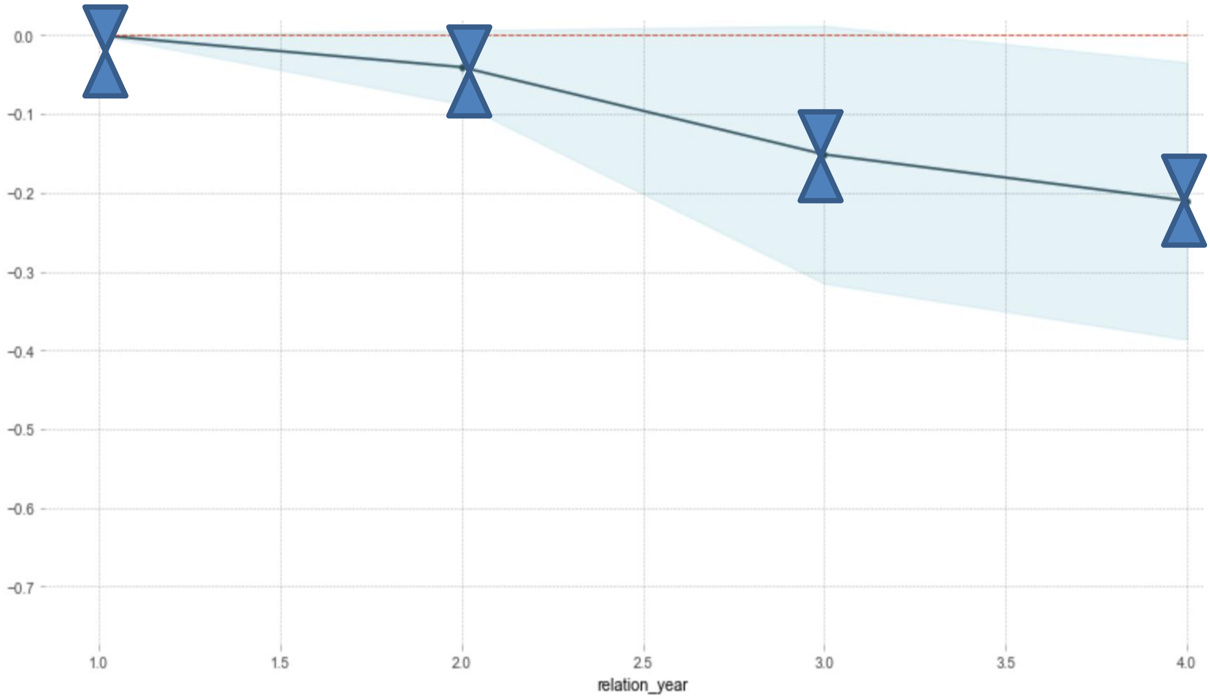
Tabuľka Post hoc analýza hrubého spreadu a medziročnej zmeny postavenia syndikátu upisovateľov vo vzťahu k upísanému objemu.

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké ak syndikát má v porovnaní s minulým rokom:	Št. Test. štatistika	upravená p-hodnota	Rozhodnutie o H0:
H20.1	rovnaké postavenie-zhoršenie postavenia	2.923	.010	zamietame
H20.2	rovnaké postavenie-zlepšenie postavenia	-7.415	.000	zamietame
H20.3	zhoršenie postavenia-zlepšenie postavenia	-3.867	.000	zamietame

Zdroj: Vlastné spracovanie.

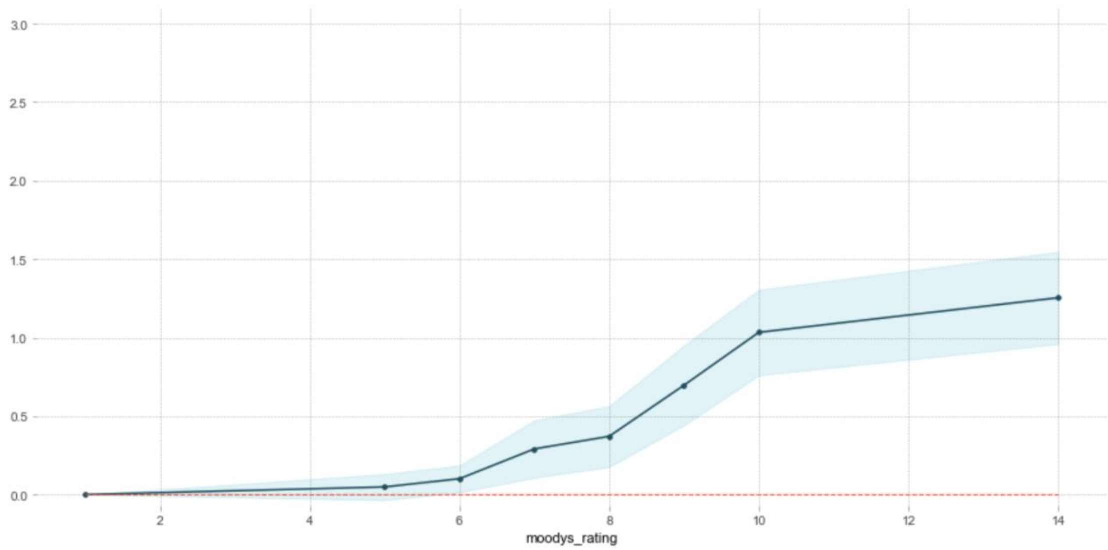
Príloha - ČASŤ D

Graf Izolovaný vplyv parametra: počet emisií v priebehu roka na hrubý spread



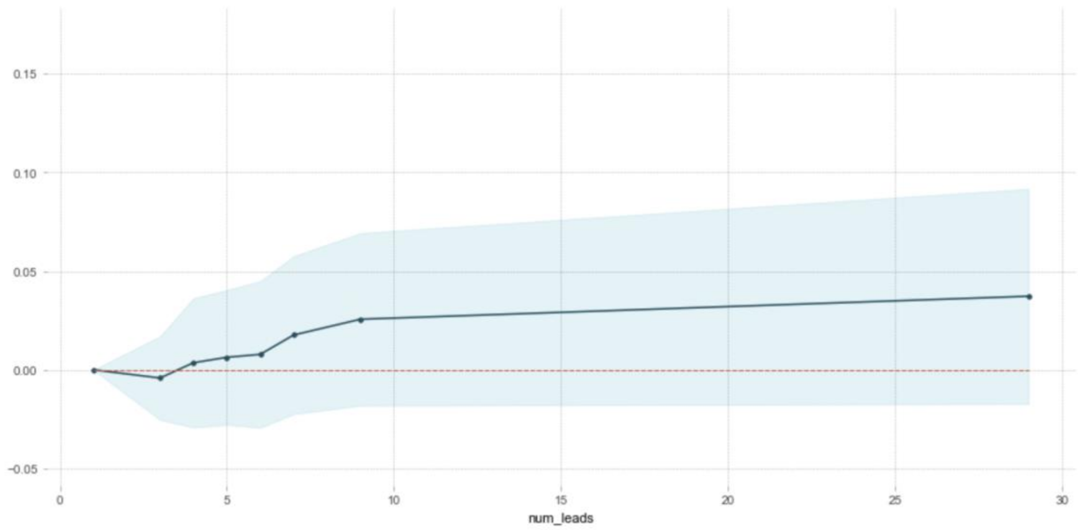
Zdroj: Vlastné spracovanie.

Graf Izolovaný vplyv parametra: rating moodys na hrubý spread



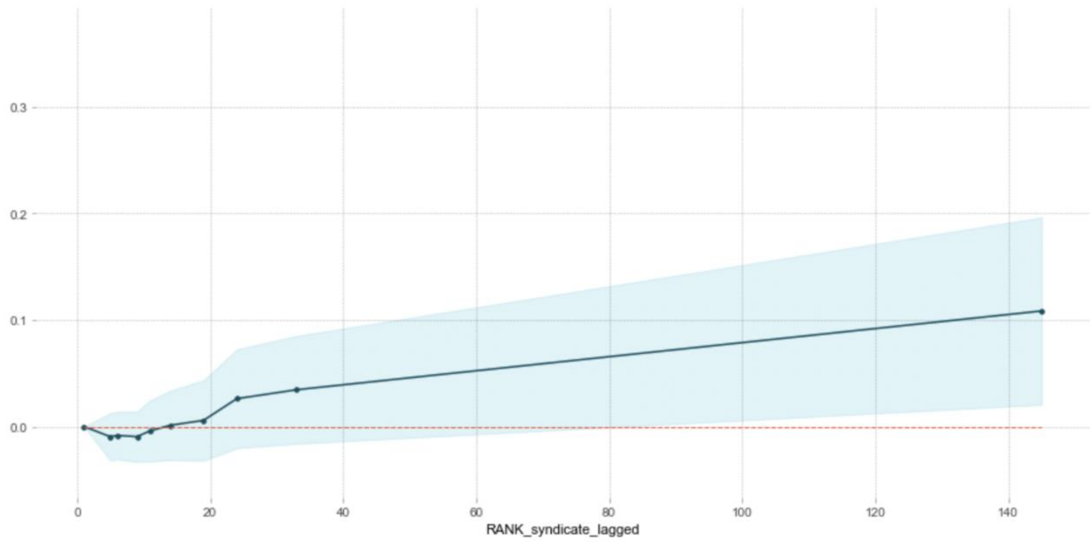
Zdroj: Vlastné spracovanie.

Graf Izolovaný vplyv parametra: počet upisovateľov emisie na hrubý spread



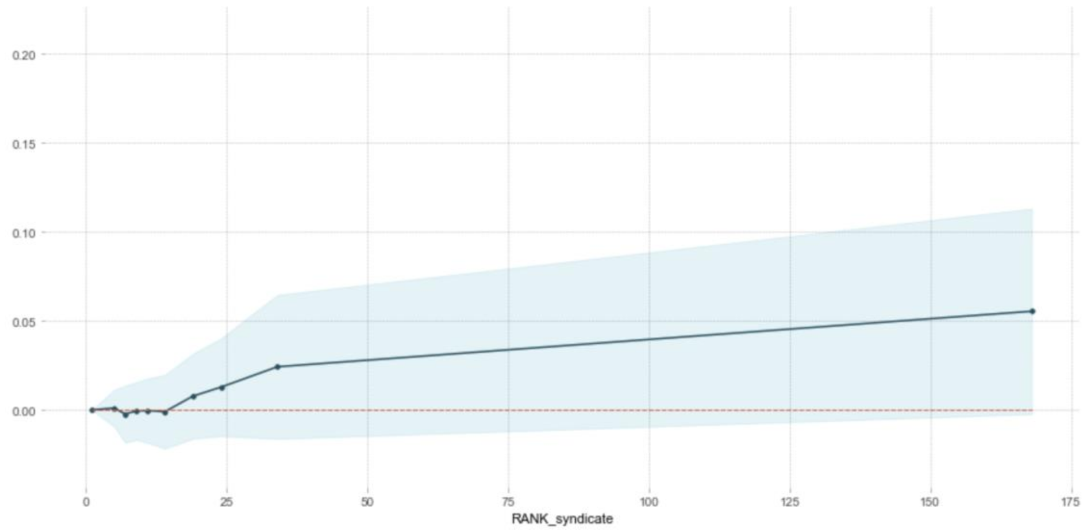
Zdroj: Vlastné spracovanie.

Graf Izolovaný vplyv parametra: rank syndikátu rok pred emisiou na hrubý spread



Zdroj: Vlastné spracovanie.

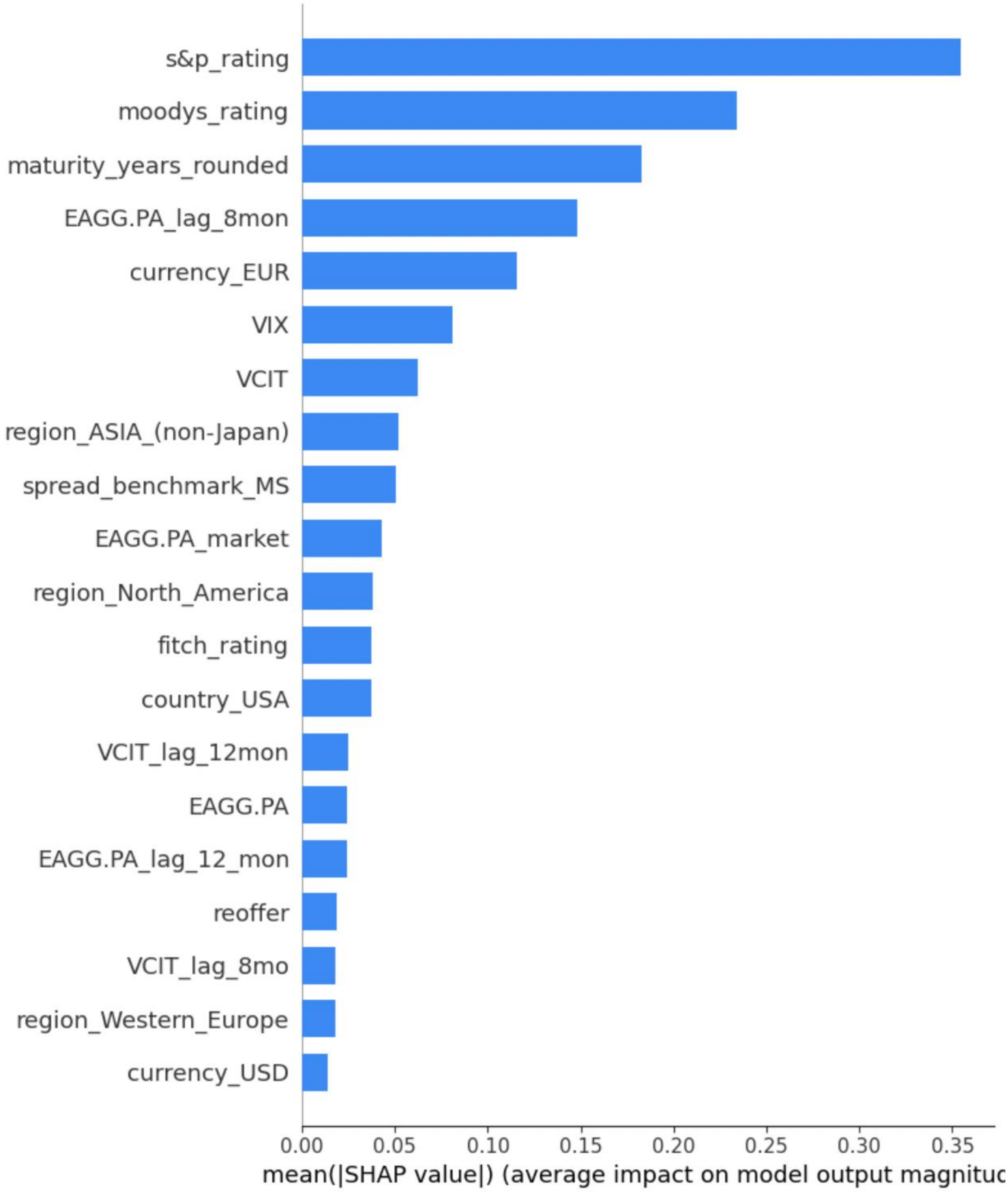
Graf Izolovaný vplyv parametra: rank syndikátu na hrubý spread



Zdroj: Vlastné spracovanie.

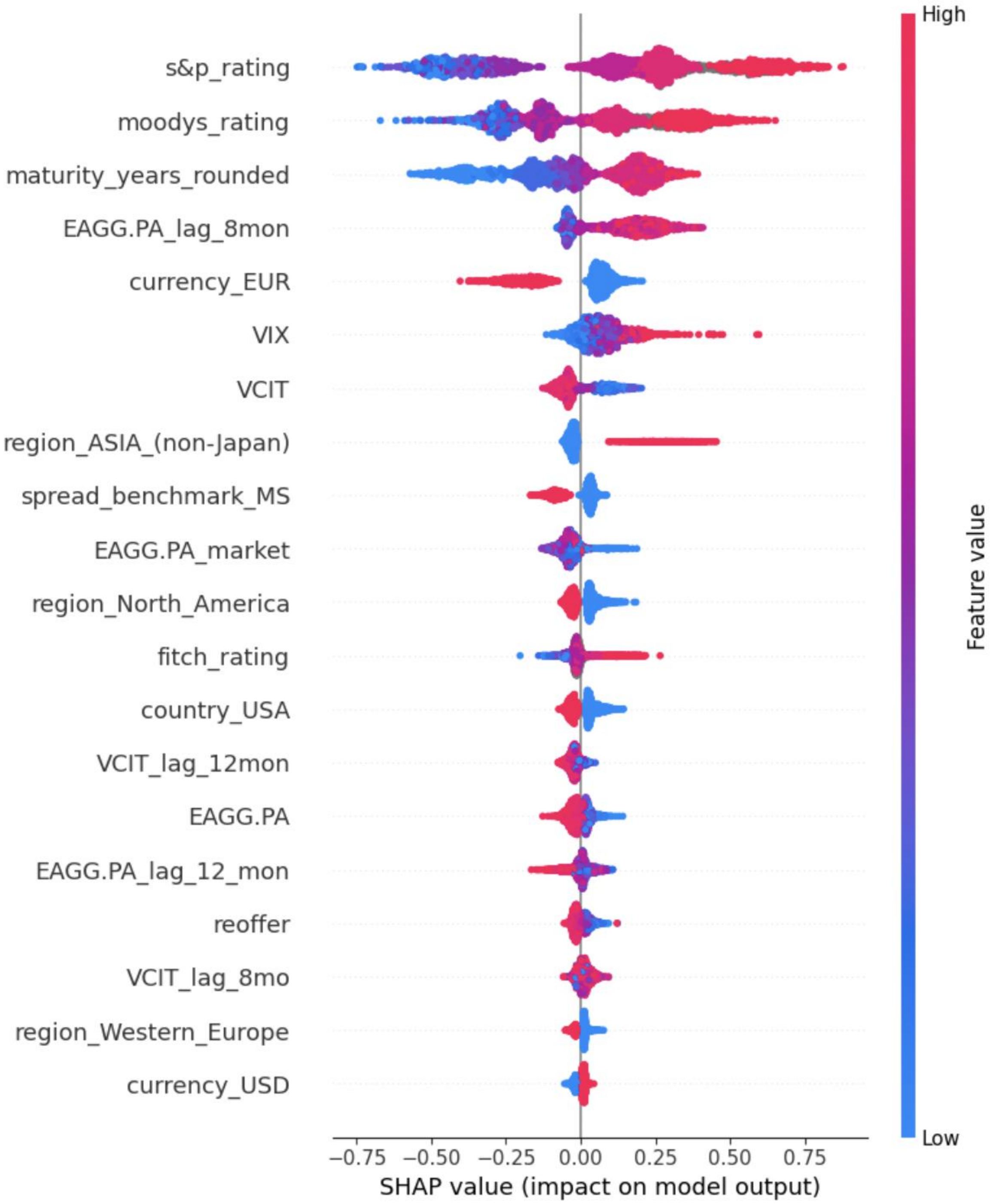
Príloha - ČASŤ E

Graf Priemerná absolútna hodnota kombinovaných parametrov v regresnom strome



Zdroj: Vlastné spracovanie.

Graf SHAP hodnoty kombinovaných parametrov emisie



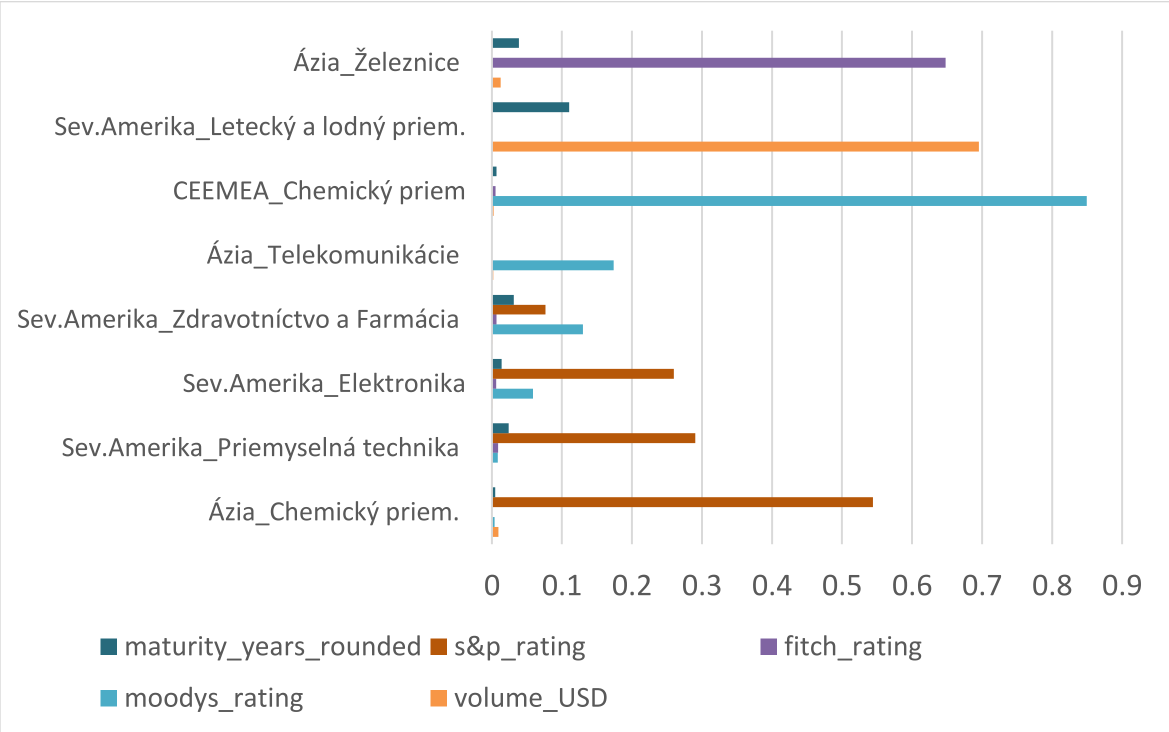
Zdroj: Vlastné spracovanie.

Tabuľka Početnosť a percentuálne zastúpenie jednotlivých parametrov pri predikcii hrubého spreadu na vzorkách s definovanými externými faktormi

volume_USD	174	52.73	QUARTILE_syndicate	69	20.91	accounts	42	12.73
issuer_appear	146	44.24	os_rate	66	20.00	num_uw	39	11.82
maturity_years_rounded	134	40.61	VCIT_market_status_improoving	64	19.39	CUC	39	11.82
rel_issuer_uw	120	36.36	COC	64	19.39	MORGAN_STANLEY	38	11.52
RANK_syndicate	118	35.76	VCIT_market_status_worsening	62	18.79	CREDIT_AGRICOLE	33	10.00
moodys_rating	116	35.15	VCIT_market_status_neutral	59	17.88	CREDIT_SUISSE	31	9.39
EAGG.PA_lag_8mon	108	32.73	VIX_market_status_improoving	58	17.58	passive_uw	30	9.09
s&p_rating	107	32.42	EAGG.PA_market_status_improoving	57	17.27	NATWEST_MARKETS	30	9.09
number_br	106	32.12	VIX_market_status_neutral	56	16.97	MIZUHO	30	9.09
VIX_lag_8mon	105	31.82	os	55	16.67	WELLS_FARGO	29	8.79
VCIT_lag_8mo	104	31.52	BANK_OF_AMERICA	54	16.36	MUFG	29	8.79
fitch_rating	98	29.70	currency_EUR	54	16.36	SOCIETE_GENERALE	26	7.88
BestRank_syndicate	97	29.39	CITIGROUP	53	16.06	RBC	25	7.58
QUARTILE_syndicate_lagged	94	28.48	BARCLAYS	51	15.45	currency_GBP	24	7.27
UW_top5_syndicate	91	27.58	BNP_PARIBAS	50	15.15	currency_USD	23	6.97
RANK_syndicate_lagged	89	26.97	VIX_market_status_worsening	49	14.85	SMBC_NIKKO	22	6.67
UW_top10_syndicate	82	24.85	HSBC	48	14.55	ING	22	6.67
UW_top15_syndicate	79	23.94	DEUTSCHE_BANK	46	13.94	JP_MORGAN	21	6.36
syndicate_count	78	23.64	EAGG.PA_market_status_neutral	43	13.03	EAGG.PA_market_status_worsening	20	6.06
UW_top20_syndicate	73	22.12	GOLDMAN_SACHS	43	13.03	spread_benchmark_MS	20	6.06

Zdroj: Vlastné spracovanie.

Graf Komparácia vplyvu vybraných základných parametrov v sledovaných vzorkách s $\boldsymbol{R^2 \geq 0.75}$



Zdroj: Vlastné spracovanie.

Tabuľka Najvýznamnejšie parametre v modeloch s $R^2 \geq 0.75$ (pokračovanie)[1]

VZORKA	parameter 4		parameter 5		parameter 6	
ASIA_(non-Japan)_Infrastructure_Railways/Subways/N	reoffer	0.02	volume_USD	0.01		
North_America_Media_&_Telecoms_Broadband/ISPs	currency_EUR	0.12	syndicate_4	0.09	VCIT_lag_8mo	0.06
North_America_Technology_Electronics	VIX_lag_8mon	0.06	moodys_rating	0.06	RBC	0.06
North_America_Manufacturing_Aircraft_&_Ships	VCIT_market_status_improoving	0.05	QUARTILE_syndicate	0.05	rel_issuer_uw	0.02
ASIA_(non-Japan)_Media_&_Telecoms_Telco	syndicate_count	0.09	VIX_lag_8mon	0.05	BestRank_syndicate	0.05
ASIA_(non-Japan)_Basic_Materials_Chemicals	os	0.03	RANK_syndicate	0.03	syndicate_6	0.02
ASIA_(non-Japan)_Manufacturing_Materials	currency_EUR	0.06	os_rate	0.03	issuer_appear	0.01
North_America_Industrials_Engineering	syndicate_3	0.08	syndicate_5	0.03	QUARTILE_syndicate_	0.03
CEEMEA_Basic_Materials_Chemicals	fitch_rating	0.01	volume_USD	0.00	rel_issuer_uw	0.00
North_America_Consumer_Goods_&_Services_Health	EAGG.PA_market_status_neutral	0.07	CREDIT_AGRICOLE	0.06	syndicate_7	0.05
North_America_Technology_Aerospace_&_Defence	JP_MORGAN	0.06	UW_top10_syndicate	0.03	UW_top15_syndicate	0.02

Zdroj: Vlastné spracovanie.

Tabuľka Najvýznamnejšie parametre v modeloch s $R^2 \geq 0.75$ (pokračovanie)[2]

VZORKA	parameter 7		parameter 8		parameter 9		parameter 10	
North_America_Media_&_Telecoms_Broadband/ISPs	UW_top20_syndicate	0.026	TORONTO_DOMINION	0.014	BestRank_syndicate	0.010	syndicate_count	0.009
North_America_Technology_Electronics	syndicate_8	0.052	SMBC_NIKKO	0.052	currency_EUR	0.047	BARCLAYS	0.037
North_America_Manufacturing_Aircraft_&_Ships	VCIT_lag_8mo	0.007	number_br	0.004	MIZUHO	0.003	RANK_syndicate	0.003
ASIA_(non-Japan)_Media_&_Telecoms_Telco	EAGG.PA_lag_8mon	0.022	VIX_neutral	0.018	syndicate_9	0.007	UW_top15_syndicate	0.006
ASIA_(non-Japan)_Basic_Materials_Chemicals	UW_top5_syndicate	0.019	EAGG.PA_lag_8mon	0.014	accounts	0.012	UW_top20_syndicate	0.010
ASIA_(non-Japan)_Manufacturing_Materials	VIX_lag_8mon	0.013	s&p_rating	0.005	reoffer	0.005	RANK_syndicate_lag	0.002
North_America_Industrials_Engineering	maturity_years_rounded	0.024	VCIT_lag_8mo	0.023	syndicate_10	0.021	EAGG.PA_improoving	0.018
CEEMEA_Basic_Materials_Chemicals	issuer_appear	6E-04	reoffer	2E-04	s&p_rating	0.000	COC	0.000
North_America_Consumer_Goods_&_Services_Health	US_BANKING_CORPORATION	0.04	MUFG	0.033	maturity	0.031	syndicate_11	0.031
North_America_Technology_Aerospace_&_Defence	syndicate_count	0.016	moodys_rating	0.016	maturity	0.011	s&p_rating	0.010

Zdroj: Vlastné spracovanie.

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[1]syndicate_3_BANK_OF_AMERICA_BARCLAYS_BNP_PARIBAS_CITIGROUP_DEUTSCHE_BANK_HSBC_JP_MORGAN_WELLS_FARGO
syndicate_4_BARCLAYS_CITIGROUP_GOLDMAN_SACHS_JP_MORGAN_MIZUHO_SMBC_NIKKO
syndicate_5_BANK_OF_AMERICA_BNP_PARIBAS_COMMERZBANK_DEUTSCHE_BANK_HSBC_JP_MORGAN_LLOYDS_BANK
syndicate_6_BANK_OF_AMERICA_BANK_OF_CHINA_BARCLAYS_BNP_PARIBAS_CITIC_CREDIT_SUISSE_GOLDMAN_SACHS_NATIXIS_RABOBANK_UBS
syndicate_7_ BARCLAYS_CITIGROUP_GOLDMAN_SACHS_MORGAN_STANLEY

[2] syndicate_8_ BANK_OF_AMERICA_GOLDMAN_SACHS_JP_MORGAN
syndicate_9_ CITIGROUP_HSBC_MIZUHO_MORGAN_STANLEY
syndicate_10_ CITIGROUP_CREDIT_SUISSE_GOLDMAN_SACHS_JP_MORGAN_MUFG
syndicate_11_ CITIGROUP_CREDIT_SUISSE_MORGAN_STANLEY

Príloha – ČASŤ F

Tabuľka Rozsah a početnosť vytvorených tried pre klasifikáciu hrubého spreadu

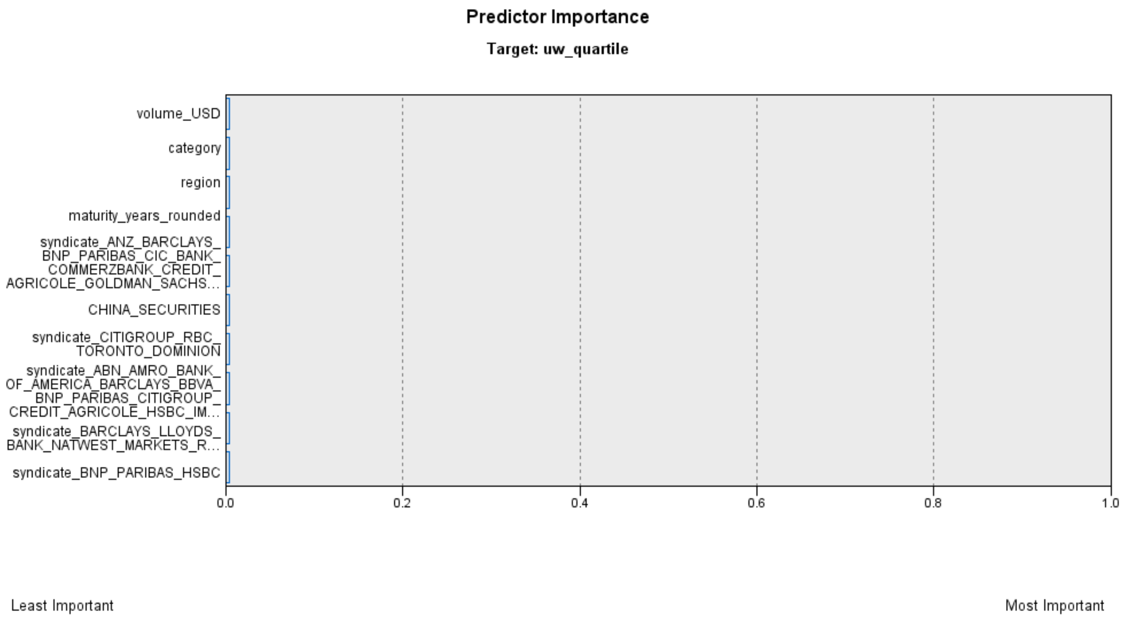
vzorka: kvartil		
trieda	rozsah	n
1	0.05 – 2.15	5034
2	2.16 – 3.1	2776
3	3.11 – 4.3	1994
4	4.31 – 6.55	1393
vzorka: kvantil		
1	0.05 – 1.95	4333
2	1.96 – 2.7	2482
3	2.71 – 3.5	1870
4	3.51 – 4.58	1443
5	4.6 – 6.55	1069
vzorka decil		
1	0.05 – 1.5	2669
2	1.51 – 1.95	1664
3	1.95 - 2.34	1341
4	2.35 – 2.7	1141
5	2.71 - 3.1	995
6	3.11 - 3.5	875
7	3.51 – 3.98	771
8	3.99 – 4.58	672
9	4.6 – 5.35	581
10	5.36 – 6.55	489

Zdroj: Vlastné spracovanie.

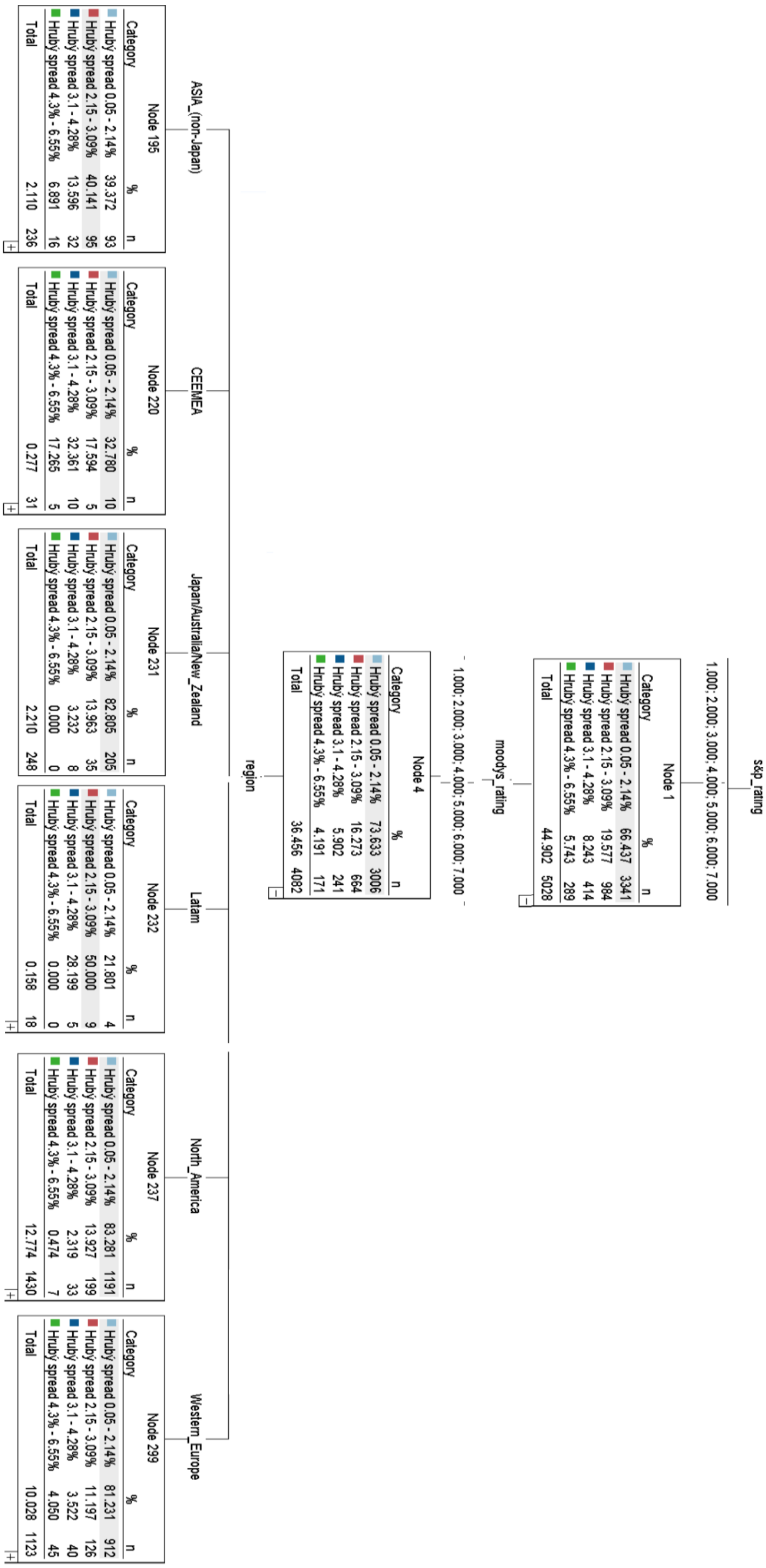
vzorka: group 1		
trieda	rozsah	n
1	0.6 – 1.99	204
2	2 – 2.99	411
3	3 – 3.99	320
4	4 – 4.99	226
5	5 – 5.99	164
6	6 – 6.99	112
7	7 – 7.99	79
8	8 – 8.99	57
9	9 – 9.99	30
10	10 – 24.86	96
vzorka: group 2		
1	0.6 – 1.99	204
2	2 – 2.99	411
3	3 – 3.99	320
4	4 – 5.99	390
5	6 – 24.86	374

Zdroj: Vlastné spracovanie.

Graf Desať najvýznamnejších parametrov pri klasifikácii hrubého spreadu

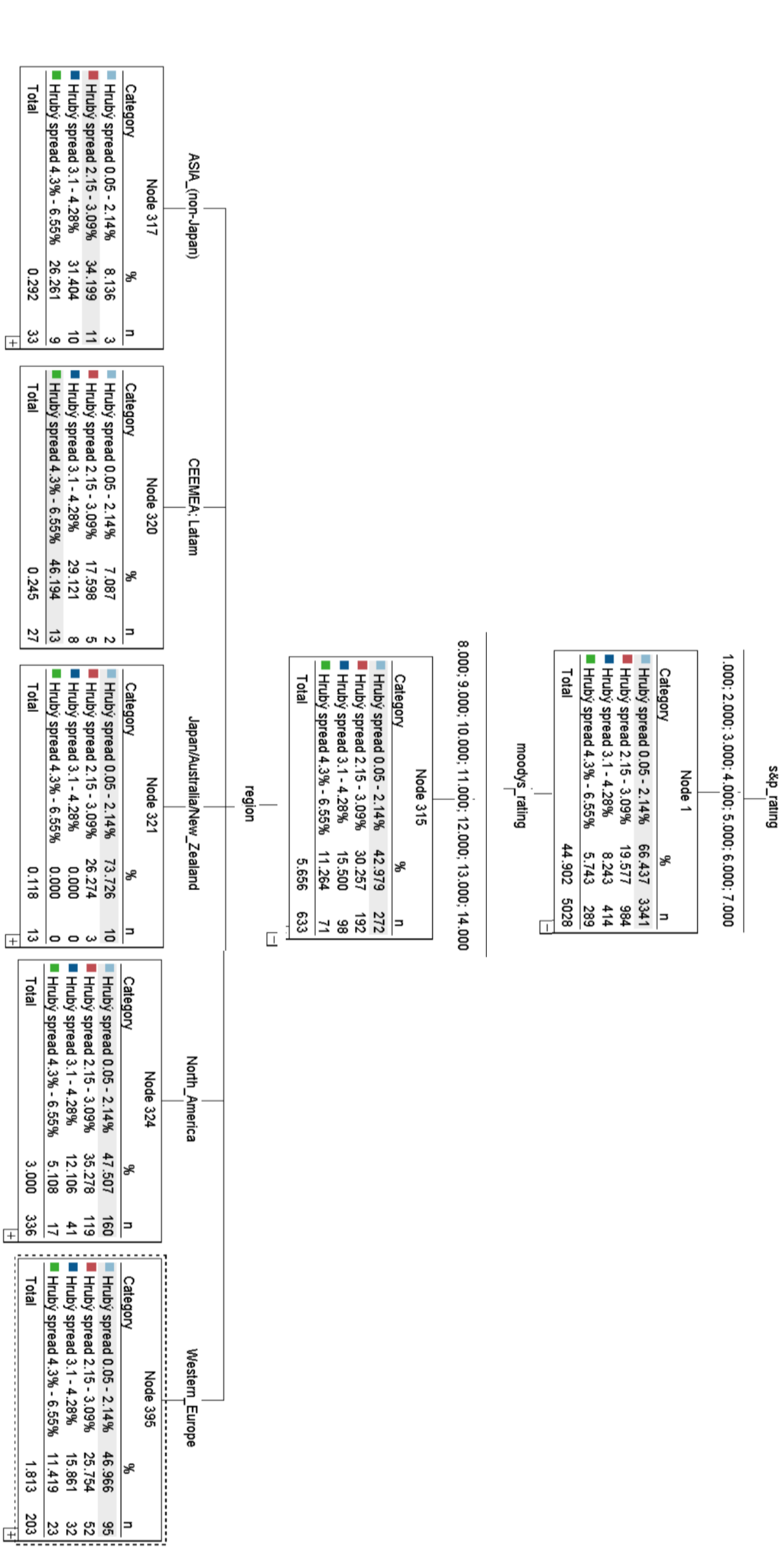


Zdroj: Vlastné spracovanie.



Obrázok Klasifikácia hrubého spreadu – zhodné hodnotenia Moodys a Standard and Poors

Zdroj: Vlastné spracovanie.



Obrázok Klasifikácia hrubého spreadu – rozdielne hodnotenia Moodys a Standard and Poors

Zdroj: Vlastné spracovanie.

Pravidlá pre klasifikáciu hrubého spreadu do kvartilov
Ruleset 1: 164 rule(s), estimated accuracy 87.1 % [boosting: 90.13%]
Rules for 0 - contains 46 rule(s)
Rule 1 for 0.0 (53; 0.945)
if maturity_years_rounded <= 9
and moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and syndicate_MIZUHO_MUFG_TORONTO_DOMINION <= 0
and BANK_OF_AMERICA <= 0
then 0.000
Rule 2 for 0.0 (15; 0.941)
if maturity_years_rounded <= 9
and s&p_rating in [8.000 9.000]
and region = North_America
and category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and BestRank_syndicate > 3
then 0.000
Rule 3 for 0.0 (13; 0.933)
if issuer_appear <= 2
and maturity_years_rounded <= 9
and region = North_America
and EAGG.PA_market_status = neutral
and COMMERZBANK > 0
then 0.000
Rule 4 for 0.0 (11; 0.923)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and category = Consumer_Goods_&_Services,_Leisure_&_Entertainment
then 0.000
Rule 5 for 0.0 (291; 0.911)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and category = Manufacturing,_General
and syndicate_count <= 26
and NATIXIS <= 0
then 0.000
Rule 6 for 0.0 (426; 0.911)
if maturity_years_rounded <= 6
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and JP_MORGAN <= 0
and STANDARD_CHARTERED <= 0
then 0.000
Rule 7 for 0.0 (62; 0.906)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and region = North_America
and category = Technology,_Electronics
and number_br <= 5
and EAGG.PA_market_status = neutral
then 0.000
Rule 8 for 0.0 (1,380; 0.904)
if maturity_years_rounded <= 7
and moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and os_rate <= 2.220
and EAGG.PA_market_status = neutral
and BANK_OF_CHINA <= 0
then 0.000
Rule 9 for 0.0 (69; 0.901)

if category = Manufacturing,_General
and UW_top10_syndicate > 77.780
and EAGG.PA_market_status = neutral
and CITIGROUP > 0
then 0.000

Rule 10 for 0.0 (8; 0.9)
if maturity_years_rounded <= 9
and syndicate_BANK_OF_AMERICA_GOLDMAN_SACHS_WELLS_FARGO > 0
then 0.000

Rule 11 for 0.0 (1,002; 0.898)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and num_uw <= 7
and EAGG.PA_market_status = neutral
and syndicate_BANK_OF_AMERICA_BNP_PARIBAS_CITIGROUP_JP_MORGAN <= 0
then 0.000

Rule 12 for 0.0 (54; 0.893)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and VIX_market_status = neutral
and EAGG.PA_market_status = neutral
and BANK_OF_AMERICA <= 0
and US_BANKING_CORPORATION > 0
then 0.000

Rule 13 for 0.0 (611; 0.884)
if moodys_rating in [1.000 2.000 3.000 4.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and EAGG.PA_market_status = neutral
and syndicate_BANK_OF_AMERICA_CITIGROUP_JP_MORGAN_KOREA_DEVELOPMENT_BANK_(KDB)_UBS <= 0
and BANK_OF_CHINA <= 0
then 0.000

Rule 14 for 0.0 (96; 0.878)
if maturity_years_rounded <= 9
and category = Technology,_Electronics
and rel_issuer_uw > 31
and EAGG.PA_market_status = neutral
and SHANGHAI_PUDONG <= 0
then 0.000

Rule 15 for 0.0 (34; 0.861)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and region = North_America
and EAGG.PA_market_status = improoving
and NATWEST_MARKETS > 0
then 0.000

Rule 16 for 0.0 (993; 0.86)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000]
and region = North_America
and rel_issuer_uw > 27
and syndicate_count <= 26
and UNICREDIT <= 0
and US_BANKING_CORPORATION <= 0
and BBVA <= 0
then 0.000

Rule 17 for 0.0 (68; 0.843)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]

and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and EAGG.PA_market_status = improoving
and VCIT_market_status = neutral
and BANK_OF_CHINA <= 0
then 0.000
Rule 18 for 0.0 (35; 0.838)
if volume_USD > 618.430
and region = Western_Europe
and category = Transport_&_Logistics,_Airline_/_Railway_/_Ferries_/_Tramway_/_Public_Transport_/_Fleet
then 0.000
Rule 19 for 0.0 (4; 0.833)
if syndicate_BANK_OF_AMERICA_CITIGROUP_MIZUHO_US_BANKING_CORPORATION_WELLS_FARGO > 0
then 0.000
Rule 20 for 0.0 (622; 0.819)
if maturity_years_rounded <= 9
and fitch_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and region = North_America
and EAGG.PA_market_status = neutral
then 0.000
Rule 21 for 0.0 (42; 0.818)
if maturity_years_rounded <= 9
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
and VIX_market_status = neutral
and EAGG.PA_market_status = neutral
and VCIT_market_status = worsening
then 0.000
Rule 22 for 0.0 (36; 0.816)
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and category = Industrials,_Engineering
and BestRank_syndicate > 2
then 0.000
Rule 23 for 0.0 (298; 0.807)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = Japan/Australia/New_Zealand
and BestRank_syndicate <= 31
and STANDARD_CHARTERED <= 0
then 0.000
Rule 24 for 0.0 (3; 0.8)
if syndicate_BANK_OF_AMERICA_BNP_PARIBAS_CITIGROUP_DEUTSCHE_BANK_LBBW_SMBC_NIKKO > 0
then 0.000
Rule 25 for 0.0 (82; 0.798)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and category = Technology,_IT
and VCIT_market_status = improoving
and BANK_OF_CHINA <= 0
then 0.000
Rule 26 for 0.0 (42; 0.795)
if maturity_years_rounded <= 9
and category = Industrials,_Brewing_&_Distilling
and VCIT_market_status = improoving
then 0.000
Rule 27 for 0.0 (46; 0.792)
if maturity_years_rounded <= 9
and category = Transport_&_Logistics,_Distribution&Storage
and BANK_OF_CHINA <= 0

then 0.000
Rule 28 for 0.0 (1,494; 0.79)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = Western_Europe
then 0.000
Rule 29 for 0.0 (55; 0.789)
if maturity_years_rounded <= 9
and s&p_rating in [8.000 9.000]
and region = North_America
and moreUW > 0
then 0.000
Rule 30 for 0.0 (1,486; 0.752)
if maturity_years_rounded <= 4
and os_rate <= 7.170
and UW_syndicate_the_highest_ranked_UW_TOP20 > 0
and ANZ <= 0
and SHANGHAI_PUDONG <= 0
and BANK_OF_CHINA <= 0
then 0.000
Rule 31 for 0.0 (73; 0.747)
if maturity_years_rounded <= 9
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
and VIX_market_status = improoving
and CREDIT_SUISSE <= 0
then 0.000
Rule 32 for 0.0 (90; 0.739)
if DZ_BANK > 0
then 0.000
Rule 33 for 0.0 (143; 0.738)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and passive_uw > 0
then 0.000
Rule 34 for 0.0 (93; 0.726)
if maturity_years_rounded <= 9
and region = North_America
and category = Technology,_IT
and EAGG.PA_market_status = neutral
and MORGAN_STANLEY <= 0
then 0.000
Rule 35 for 0.0 (30; 0.719)
if category = Industrials,_Brewing_&_Distilling
and VCIT_market_status = worsening
then 0.000
Rule 36 for 0.0 (1,519; 0.715)
if maturity_years_rounded <= 9
and moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000 9.000]
and region = Western_Europe
and os_rate <= 7.170
and BANK_OF_CHINA <= 0
then 0.000
Rule 37 for 0.0 (162; 0.707)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and LLOYDS_BANK > 0
then 0.000
Rule 38 for 0.0 (168; 0.682)
if maturity_years_rounded > 9
and maturity_years_rounded <= 15
and region = Western_Europe
and category = Utilities_&_Power,_Electricity_&_Gas
and UW_top5_syndicate <= 44.440

and CREDIT_SUISSE <= 0
and DANSKE_BANK <= 0
then 0.000
Rule 39 for 0.0 (70; 0.681)
if region = Western_Europe
and category = Basic_Materials,_Chemicals
then 0.000
Rule 40 for 0.0 (68; 0.671)
if region = North_America
and category = Industrials,_Engineering
and JP_MORGAN <= 0
then 0.000
Rule 41 for 0.0 (192; 0.649)
if category = Manufacturing,_Auto
and UW_syndicate_the_highest_ranked_UW_TOP5 <= 0
then 0.000
Rule 42 for 0.0 (198; 0.63)
if maturity_years_rounded <= 9
and s&p_rating in [8.000 9.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and RANK_syndicate in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000 9.000 10.000 11.000 12.000 13.000 14.000 15.000 16.000 17.000 18.000 19.000]
then 0.000
Rule 43 for 0.0 (306; 0.617)
if maturity_years_rounded <= 9
and s&p_rating = 8.000
and region = Western_Europe
and EAGG.PA_market_status = neutral
and GOLDMAN_SACHS <= 0
then 0.000
Rule 44 for 0.0 (210; 0.608)
if maturity_years_rounded <= 15
and region = Western_Europe
and category = Media_&_Telecoms,_Telco
and MEDIOBANCA <= 0
then 0.000
Rule 45 for 0.0 (633; 0.605)
if moodys_rating = 7.000
and region = North_America
then 0.000
Rule 46 for 0.0 (215; 0.599)
if maturity_years_rounded > 9
and UNICREDIT > 0
and SMBC_NIKKO <= 0
then 0.000
Rules for 1 - contains 18 rule(s)
Rule 1 for 1.0 (13; 0.867)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and category = Transport_&_Logistics,_Airline_/_Railway_/_Ferries_/_Tramway_/_Public_Transport_/_Fleet
and rel_issuer_uw > 30
and EAGG.PA_market_status = neutral
and BANK_OF_CHINA > 0
then 1.000
Rule 2 for 1.0 (4; 0.833)
if syndicate_CITIGROUP_CREDIT_AGRICOLE_GOLDMAN_SACHS_JP_MORGAN_RBC_SMBC_NIKKO > 0
then 1.000
Rule 3 for 1.0 (8; 0.8)

if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Industrials,_Real_Estate_&_REITs
and NORDEA > 0
then 1.000
Rule 4 for 1.0 (3; 0.8)
if
syndicate_BARCLAYS_BNP_PARIBAS_DEUTSCHE_BANK_GOLDMAN_SACHS_HSBC_MORGAN_STANLEY_SANTANDER_STANDARD_CHARTERED > 0
then 1.000
Rule 5 for 1.0 (2; 0.75)
if
syndicate_BARCLAYS_CREDIT_AGRICOLE_GOLDMAN_SACHS_JP_MORGAN_RBC > 0
then 1.000
Rule 6 for 1.0 (43; 0.733)
if moodys_rating in [5.000 6.000 7.000]
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = ASIA_(non-Japan)
and os_rate <= 2.220
and EAGG.PA_market_status = neutral
and syndicate_count <= 2
and ING <= 0
then 1.000
Rule 7 for 1.0 (16; 0.722)
if maturity_years_rounded > 11
and s&p_rating in [8.000 9.000]
and region = North_America
and passive_uw > 0
then 1.000
Rule 8 for 1.0 (25; 0.63)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and LLOYDS_BANK <= 0
and BANK_OF_CHINA > 0
then 1.000
Rule 9 for 1.0 (33; 0.629)
if issuer_appear <= 2
and s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and category = Industrials,_Real_Estate_&_REITs
and EAGG.PA_market_status = neutral
then 1.000
Rule 10 for 1.0 (75; 0.597)
if maturity_years_rounded > 9
and moodys_rating in [7.000 8.000]
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = North_America
and category = Utilities_&_Power,_Electricity_&_Gas
and EAGG.PA_market_status = neutral
then 1.000
Rule 11 for 1.0 (61; 0.587)
if issuer_first_appearance <= 0
and maturity_years_rounded > 4
and s&p_rating in [8.000 9.000]
and category = Consumer_Goods_&_Services,_Retail
and passive_uw <= 0
then 1.000
Rule 12 for 1.0 (42; 0.568)
if maturity_years_rounded > 9
and moodys_rating = 7.000
and EAGG.PA_market_status = neutral

and US_BANKING_CORPORATION > 0
then 1.000
Rule 13 for 1.0 (23; 0.56)
if category = Consumer_Goods_&_Services,_Non-Financial_Services
and VIX_market_status = improoving
then 1.000
Rule 14 for 1.0 (52; 0.537)
if category = Media_&_Telecoms,_Cable_TV/Network_TV/Wireless
and UW_top15_syndicate <= 90
and EAGG.PA_market_status = neutral
and CREDIT_SUISSE <= 0
then 1.000
Rule 15 for 1.0 (56; 0.534)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000]
and category = Industrials,_Engineering
then 1.000
Rule 16 for 1.0 (187; 0.381)
if UW_top5_syndicate > 40
and US_BANKING_CORPORATION > 0
then 1.000
Rule 17 for 1.0 (4,110; 0.315)
if s&p_rating in [8.000 9.000]
then 1.000
Rule 18 for 1.0 (10,694; 0.246)
if moreUW <= 0
then 1.000
Rules for 2 - contains 44 rule(s)
Rule 1 for 2.0 (8; 0.9)
if maturity_years_rounded > 13
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and MORGAN_STANLEY > 0
then 2.000
Rule 2 for 2.0 (5; 0.857)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000]
and VIX_market_status = neutral
and EAGG.PA_market_status = improoving
and syndicate_BANK_OF_AMERICA_CITIGROUP_JP_MORGAN > 0
then 2.000
Rule 3 for 2.0 (4; 0.833)
if category = Basic_Materials
and BANK_OF_CHINA > 0
then 2.000
Rule 4 for 2.0 (19; 0.81)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [8.000 9.000]
and region = North_America
and category = Basic_Materials,_Oil_&_Gas
and passive_uw <= 0
and PNC_FINANCIAL_SERVICES_GROUP <= 0
and NATWEST_MARKETS <= 0
and BANK_OF_AMERICA > 0
then 2.000
Rule 5 for 2.0 (3; 0.8)
if category = Technology,_Electronics
and
syndicate_BANK_OF_AMERICA_GOLDMAN_SACHS_JP_MORGAN_MORGAN_STANLEY > 0
then 2.000

Rule 6 for 2.0 (8; 0.8)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Basic_Materials,_Oil_&_Gas
and UBS > 0
then 2.000
Rule 7 for 2.0 (17; 0.789)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [8.000 9.000]
and category = Industrials,_Real_Estate_&_REITs
and number_br > 4
and EAGG.PA_market_status = neutral
then 2.000
Rule 8 for 2.0 (21; 0.783)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating = 9.000
and region = North_America
and category = Utilities_&_Power,_Electricity_&_Gas
and passive_uw <= 0
and UW_syndicate_the_highest_ranked_UW_TOP5 > 0
and EAGG.PA_market_status = neutral
and BARCLAYS <= 0
and BNP_PARIBAS <= 0
then 2.000
Rule 9 for 2.0 (16; 0.778)
if maturity_years_rounded > 9
and maturity_years_rounded <= 10
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [8.000 9.000]
and JEFFERIES > 0
then 2.000
Rule 10 for 2.0 (2; 0.75)
if syndicate_BARCLAYS_BNP_PARIBAS_JP_MORGAN_WELLS_FARGO >
0
then 2.000
Rule 11 for 2.0 (18; 0.7)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000]
and region = Japan/Australia/New_Zealand
and UW_top5_syndicate > 40
and BNP_PARIBAS <= 0
then 2.000
Rule 12 for 2.0 (11; 0.692)
if s&p_rating in [8.000 9.000]
and region = CEEMEA
and VCIT_market_status = worsening
then 2.000
Rule 13 for 2.0 (4; 0.667)
if syndicate_CITIGROUP_JP_MORGAN_MIZUHO_MUFG_SMBC_NIKKO >
0
then 2.000
Rule 14 for 2.0 (33; 0.657)
if maturity_years_rounded > 9
and moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and VIX_market_status = worsening
and EAGG.PA_market_status = improoving
and CREDIT_SUISSE <= 0
and UBS <= 0

then 2.000
Rule 15 for 2.0 (6; 0.625)
if category = Infrastructure,_Public_Buildings
then 2.000
Rule 16 for 2.0 (22; 0.583)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Manufacturing,_General
then 2.000
Rule 17 for 2.0 (22; 0.583)
if moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and category = Media_&_Telecoms,_Telco
and UW_top10_syndicate > 70
then 2.000
Rule 18 for 2.0 (14; 0.562)
if s&p_rating in [8.000 9.000]
and SHANGHAI_PUDONG > 0
then 2.000
Rule 19 for 2.0 (34; 0.556)
if maturity_years_rounded > 9
and moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000 8.000]
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Basic_Materials,_Oil_&_Gas
then 2.000
Rule 20 for 2.0 (28; 0.533)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and VIX_market_status = improoving
then 2.000
Rule 21 for 2.0 (31; 0.515)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and category = Basic_Materials,_Chemicals
then 2.000
Rule 22 for 2.0 (35; 0.514)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000]
and region = ASIA_(non-Japan)
and ANZ <= 0
and SHANGHAI_PUDONG <= 0
then 2.000
Rule 23 for 2.0 (37; 0.513)
if issuer_first_appearance <= 0
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = North_America
and category = Manufacturing,_General
and EAGG.PA_market_status = neutral
then 2.000
Rule 24 for 2.0 (129; 0.504)
if maturity_years_rounded > 9
and moodys_rating in [10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [8.000 9.000]
and region = North_America
and passive_uw <= 0
and EAGG.PA_market_status = neutral
then 2.000
Rule 25 for 2.0 (93; 0.484)
if volume_USD <= 683.010
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Industrials,_Real_Estate_&_REITs

and UW_top5_syndicate > 44.440
and BANK_OF_AMERICA > 0
then 2.000
Rule 26 for 2.0 (144; 0.473)
if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = ASIA_(non-Japan)
and CITIGROUP <= 0
then 2.000
Rule 27 for 2.0 (48; 0.46)
if os_rate <= 4.250
and EAGG.PA_market_status = improoving
and UNICREDIT <= 0
and NATIXIS > 0
then 2.000
Rule 28 for 2.0 (71; 0.425)
if maturity_years_rounded > 9
and category = Consumer_Goods_&_Services,_Leisure_&_Entertainment
then 2.000
Rule 29 for 2.0 (31; 0.424)
if os_rate > 7.170
and UNICREDIT > 0
then 2.000
Rule 30 for 2.0 (46; 0.417)
if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Industrials,_Agribusiness
then 2.000
Rule 31 for 2.0 (52; 0.407)
if category = Media_&_Telecoms,_Cable_TV/Network_TV/Wireless
and number_br <= 4
then 2.000
Rule 32 for 2.0 (30; 0.406)
if category = Transport_&_Logistics,_Shipping
then 2.000
Rule 33 for 2.0 (84; 0.372)
if category = Industrials,_Real_Estate_&_REITs
and EAGG.PA_market_status = improoving
and CREDIT_SUISSE <= 0
then 2.000
Rule 34 for 2.0 (121; 0.366)
if issuer_appear <= 3
and category = Basic_Materials,_Mining
and CREDIT_AGRICOLE <= 0
then 2.000
Rule 35 for 2.0 (113; 0.365)
if maturity_years_rounded > 4
and maturity_years_rounded <= 9
and region = Western_Europe
and category = Industrials,_Real_Estate_&_REITs
and SOCIETE_GENERALE <= 0
then 2.000
Rule 36 for 2.0 (70; 0.361)
if UW_syndicate_the_highest_ranked_UW_TOP20 <= 0
and syndicate_count > 1
then 2.000
Rule 37 for 2.0 (105; 0.355)
if maturity_years_rounded <= 9
and UW_syndicate_the_highest_ranked_UW_TOP20 <= 0
then 2.000
Rule 38 for 2.0 (1,383; 0.352)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]

and UNICREDIT <= 0
then 2.000
Rule 39 for 2.0 (79; 0.346)
if EAGG.PA_market_status = improoving
and RBC <= 0
and US_BANKING_CORPORATION > 0
then 2.000
Rule 40 for 2.0 (163; 0.315)
if category = Basic_Materials,_Mining
then 2.000
Rule 41 for 2.0 (150; 0.309)
if moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Technology,_IT
then 2.000
Rule 42 for 2.0 (204; 0.301)
if maturity_years_rounded > 5
and BANK_OF_CHINA > 0
then 2.000
Rule 43 for 2.0 (195; 0.299)
if region = CEEMEA
then 2.000
Rule 44 for 2.0 (2,322; 0.271)
if s&p_rating = 9.000
then 2.000
Rules for 3 - contains 56 rule(s)
Rule 1 for 3.0 (8; 0.9)
if maturity_years_rounded <= 9
and s&p_rating in [8.000 9.000]
and region = North_America
and BestRank_syndicate <= 9
and EAGG.PA_market_status = improoving
and VCIT_market_status = improoving
and syndicate_count <= 2
and CREDIT_SUISSE > 0
then 3.000
Rule 2 for 3.0 (7; 0.889)
if category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and
syndicate_BANK_OF_AMERICA_CITIGROUP_JP_MORGAN_WELLS_FARGO > 0
then 3.000
Rule 3 for 3.0 (7; 0.889)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Technology,_Electronics
and EAGG.PA_market_status = improoving
and syndicate_BANK_OF_AMERICA_JP_MORGAN_WELLS_FARGO <= 0
then 3.000
Rule 4 for 3.0 (6; 0.875)
if moodys_rating in [10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [8.000 9.000]
and region = ASIA_(non-Japan)
and os_rate <= 7.170
then 3.000
Rule 5 for 3.0 (6; 0.875)
if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Consumer_Goods_&_Services,_Retail
and syndicate_BANK_OF_AMERICA_JP_MORGAN_WELLS_FARGO > 0
then 3.000
Rule 6 for 3.0 (14; 0.875)
if maturity_years_rounded <= 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]

and category = Industrials,_Real_Estate_&_REITs
and UBS > 0
then 3.000
Rule 7 for 3.0 (5; 0.857)
if category = Industrials
and BANK_OF_CHINA > 0
then 3.000
Rule 8 for 3.0 (5; 0.857)
if volume_USD > 1271.080
and region = North_America
and category = Manufacturing,_Auto
and JP_MORGAN > 0
then 3.000
Rule 9 for 3.0 (5; 0.857)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Manufacturing,_Packaging
and BestRank_syndicate <= 1
and UW_top20_syndicate <= 58.330
then 3.000
Rule 10 for 3.0 (5; 0.857)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Consumer_Goods_&_Services,_Housing
then 3.000
Rule 11 for 3.0 (11; 0.846)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and category = Basic_Materials,_Mining
and RBC > 0
then 3.000
Rule 12 for 3.0 (4; 0.833)
if region = Western_Europe
and
syndicate_BANK_OF_AMERICA_CITIGROUP_DEUTSCHE_BANK_GOLDMAN_SACHS_MORGAN_STANLEY > 0
then 3.000
Rule 13 for 3.0 (4; 0.833)
if category = Media_&_Telecoms,_Broadband/ISPs
and RANK_syndicate in [1.000 2.000 3.000 4.000 5.000]
and EAGG.PA_market_status = improoving
then 3.000
Rule 14 for 3.0 (4; 0.833)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and region = Japan/Australia/New_Zealand
then 3.000
Rule 15 for 3.0 (9; 0.818)
if s&p_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
and region = North_America
and UW_top5_syndicate > 83.330
and VIX_market_status = improoving
and EAGG.PA_market_status = improoving
and VCIT_market_status = improoving
then 3.000
Rule 16 for 3.0 (3; 0.8)
if
syndicate_BANK_OF_AMERICA_MIZUHO_MUFG_RBC_SCOTIABANK_TORONTO_DOMINION > 0
then 3.000
Rule 17 for 3.0 (3; 0.8)
if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]

and syndicate_CITIGROUP_JP_MORGAN_MIZUHO_MORGAN_STANLEY > 0
then 3.000
Rule 18 for 3.0 (2; 0.75)
if syndicate_BNP_PARIBAS_CITIGROUP_FIRST_ABU_DHABI_BANK_FIRST_GULF_BANK_HSBC_SOCIETE_GENERALE > 0
then 3.000
Rule 19 for 3.0 (2; 0.75)
if syndicate_BANK_OF_CHINA_BARCLAYS_CITIGROUP_GOLDMAN_SACHS_HSBC_JP_MORGAN_MIZUHO_UBS > 0
then 3.000
Rule 20 for 3.0 (6; 0.75)
if s&p_rating in [8.000 9.000]
and category = Manufacturing,_Packaging
and EAGG.PA_market_status = improoving
then 3.000
Rule 21 for 3.0 (6; 0.75)
if maturity_years_rounded <= 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Consumer_Goods_&_Services,_Equipment_&_Vehicle_Hire
then 3.000
Rule 22 for 3.0 (14; 0.75)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Industrials,_Real_Estate_&_REITs
and VIX_market_status = worsening
and BANK_OF_AMERICA > 0
then 3.000
Rule 23 for 3.0 (20; 0.727)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Basic_Materials,_Oil_&_Gas
and VIX_market_status = worsening
then 3.000
Rule 24 for 3.0 (5; 0.714)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and syndicate_MORGAN_STANLEY > 0
then 3.000
Rule 25 for 3.0 (8; 0.7)
if moodys_rating in [11.000 12.000 13.000 14.000]
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
then 3.000
Rule 26 for 3.0 (26; 0.679)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = CEEMEA
and UNICREDIT <= 0
then 3.000
Rule 27 for 3.0 (88; 0.667)
if moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = Latam
then 3.000
Rule 28 for 3.0 (7; 0.667)
if category = Basic_Materials,_Petrochemicals
and EAGG.PA_market_status = improoving
then 3.000
Rule 29 for 3.0 (47; 0.653)

if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and region = CEEMEA
then 3.000
Rule 30 for 3.0 (15; 0.647)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = North_America
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
and EAGG.PA_market_status = improoving
then 3.000
Rule 31 for 3.0 (29; 0.645)
if maturity_years_rounded > 9
and moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and region = ASIA_(non-Japan)
then 3.000
Rule 32 for 3.0 (20; 0.636)
if maturity_years_rounded > 9
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = North_America
and EAGG.PA_market_status = improoving
and VCIT_market_status = improoving
and HSBC > 0
then 3.000
Rule 33 for 3.0 (9; 0.636)
if issuer_first_appearance <= 0
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Manufacturing,_Aircraft_&_Ships
then 3.000
Rule 34 for 3.0 (9; 0.636)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Transport_&_Logistics,_Distribution&Storage
and WELLS_FARGO <= 0
then 3.000
Rule 35 for 3.0 (80; 0.622)
if s&p_rating in [8.000 9.000]
and region = Latam
then 3.000
Rule 36 for 3.0 (11; 0.615)
if maturity_years_rounded <= 9
and s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Infrastructure,_Air_&_Sea-Ports
then 3.000
Rule 37 for 3.0 (25; 0.556)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and RBC <= 0
and CREDIT_SUISSE > 0
then 3.000
Rule 38 for 3.0 (25; 0.556)
if maturity_years_rounded > 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and region = Western_Europe
and VIX_market_status = worsening
then 3.000
Rule 39 for 3.0 (105; 0.533)
if moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and region = CEEMEA
and BestRank_syndicate <= 31
and STANDARD_CHARTERED <= 0

then 3.000
Rule 40 for 3.0 (48; 0.5)
if region = ASIA_(non-Japan)
and BestRank_syndicate <= 6
and UW_syndicate_the_highest_ranked_UW_TOP5 <= 0
then 3.000
Rule 41 for 3.0 (107; 0.468)
if maturity_years_rounded > 10
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
then 3.000
Rule 42 for 3.0 (46; 0.438)
if maturity_years_rounded <= 9
and s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and EAGG.PA_market_status = worsening
then 3.000
Rule 43 for 3.0 (43; 0.4)
if VIX_market_status = neutral
and EAGG.PA_market_status = improoving
and syndicate_count > 26
then 3.000
Rule 44 for 3.0 (45; 0.383)
if moodys_rating in [9.000 10.000 11.000 12.000 13.000 14.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and EAGG.PA_market_status = improoving
and WELLS_FARGO <= 0
then 3.000
Rule 45 for 3.0 (58; 0.383)
if EAGG.PA_market_status = improoving
and CITIGROUP <= 0
and BBVA > 0
then 3.000
Rule 46 for 3.0 (62; 0.359)
if volume_USD <= 523.060
and region = Western_Europe
and EAGG.PA_market_status = neutral
and UNICREDIT > 0
and BANK_OF_CHINA <= 0
then 3.000
Rule 47 for 3.0 (41; 0.349)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Transport_&_Logistics,_Airline_/_Railway_/_Ferries_/_Tramway_/_Public_Transport_/_Fleet
then 3.000
Rule 48 for 3.0 (113; 0.348)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and category = Utilities_&_Power,_Electricity_&_Gas
and DEUTSCHE_BANK <= 0
and SUNTRUST_ROBINSON_HUMPHREY <= 0
and US_BANKING_CORPORATION <= 0
then 3.000
Rule 49 for 3.0 (355; 0.336)
if s&p_rating in [10.000 11.000 12.000 13.000 14.000]
and region = Western_Europe
then 3.000
Rule 50 for 3.0 (196; 0.313)
if moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and STANDARD_CHARTERED > 0
then 3.000
Rule 51 for 3.0 (835; 0.293)
if s&p_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]

and EAGG.PA_market_status = improoving
then 3.000
Rule 52 for 3.0 (502; 0.268)
if moodys_rating in [8.000 9.000 10.000 11.000 12.000 13.000 14.000]
and category = Industrials,_Real_Estate_&_REITs
then 3.000
Rule 53 for 3.0 (163; 0.267)
if category = Basic_Materials,_Mining
then 3.000
Rule 54 for 3.0 (154; 0.263)
if EAGG.PA_market_status = improoving
and UNICREDIT > 0
then 3.000
Rule 55 for 3.0 (512; 0.232)
if BANK_OF_CHINA > 0
then 3.000
Rule 56 for 3.0 (1,066; 0.161)
if number_br <= 2
then 3.000

Príloha – ČASŤ G

Tabuľka Rozsah a početnosť vytvorených tried pre klasifikáciu miery preupísanosti

vzorka: kvartil		
trieda	rozsah	n
1	0.6 – 3.49	810
2	3.5 – 4.99	351
3	5 – 7.99	355
4	8 – 24.86	183
vzorka: kvantil		
1	0.6 – 1.99	268
2	2 – 2.99	347
3	3 – 4.2	409
4	4.25 – 5.99	301
5	6 – 24.86	374
vzorka decil		
1	0.6 – 2.49	429
2	2.5 - 3	229
3	3.01 – 3.69	221
4	3.7 – 4.49	190
5	4.5 – 5	138
6	5.01 – 6	146
7	6.01 – 7	103
8	7.01 – 8.99	117
9	9 – 10.99	59
10	11 – 24.86	67

vzorka: group 1		
trieda	rozsah	n
1	0.6 – 1.99	204
2	2 – 2.99	411
3	3 – 3.99	320
4	4 – 4.99	226
5	5 – 5.99	164
6	6 – 6.99	112
7	7 – 7.99	79
8	8 – 8.99	57
9	9 – 9.99	30
10	10 – 24.86	96
vzorka: group 2		
1	0.6 – 1.99	204
2	2 – 2.99	411
3	3 – 3.99	320
4	4 – 5.99	390
5	6 – 24.86	374

Zdroj: Vlastné spracovanie.

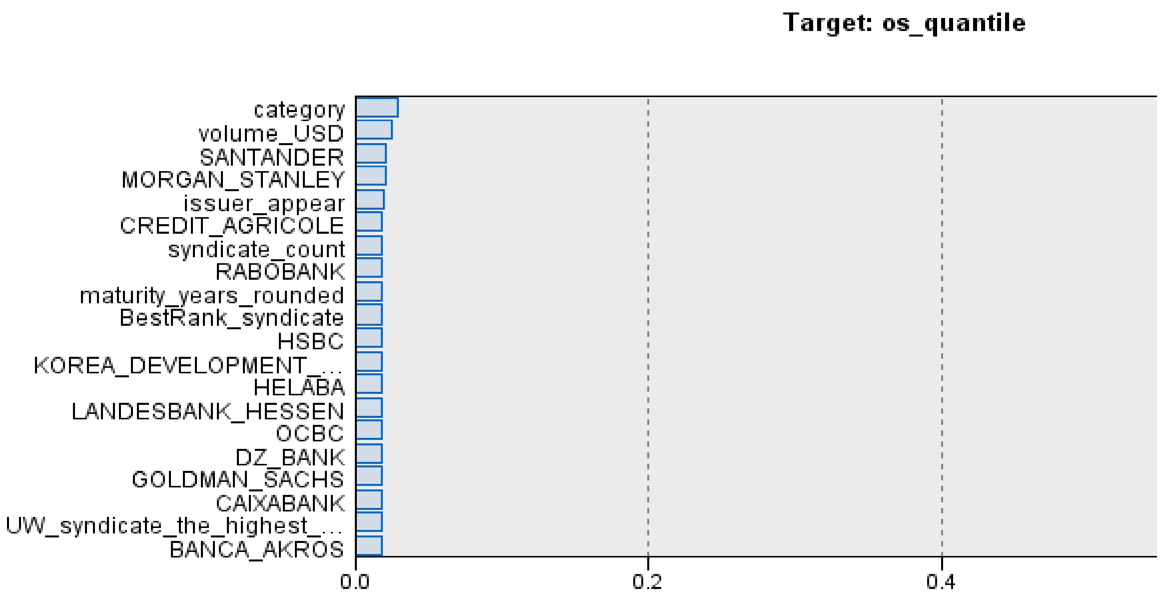
Tabuľka 1 Post hoc analýza hrubého spreadu a miery preupísanosti

Hypotéza	Nulová hypotéza: Rozdelenie Hrubého spreadu je rovnaké pre kategórie miery preupísanosti v podvzorke:	KW-Test	p-hodnota	Rozhodnutie o H0
H15	os_quartile	71.15	.000	zamietame
H16	os_decile	74.35	.000	zamietame
H17	os_group1	79.06	.000	zamietame
H18	os_group2	73.21	.000	zamietame
H19	os_quantile	73.54	.000	zamietame

Zdroj: Vlastné spracovanie.

Príloha – ČASŤ H

Graf Klasifikačný strom C5.0 pre preupísanosť: Dôležitosť parametrov



Zdroj: Vlastné spracovanie.

Pravidlá pre klasifikáciu miery preupísanosti do kvantilov

Ruleset 1: 93 rule(s), estimated accuracy 83.86%

Rules for 0 - contains 18 rule(s)

Rule 1 for 0.0
if issuer_appear in [1.000 2.000]
and UW_spread(%) <= 1.380
and category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and CUC <= 0
and NATWEST_MARKETS <= 0
then 0.000

Rule 2 for 0.0
if issuer_appear in [1.000 2.000]
and category = Infrastructure,_Air_&_Sea-Ports
and VIX_market_status = worsening
and VCIT_market_status in ["neutral" "worsening"]
and DBS_BANK <= 0
and BARCLAYS > 0
then 0.000

Rule 3 for 0.0
if category = Infrastructure,_Roads/Bridges/Tunnels
and COC > 0
and CREDIT_AGRICOLE <= 0
then 0.000

Rule 4 for 0.0
if issuer_appear in [3.000 4.000]
and UW_spread(%) <= 0.660
and category = Manufacturing,_Auto
and RABOBANK = 0.000
then 0.000

Rule 5 for 0.0
if category = Basic_Materials,_Mining
and VCIT_market_status = worsening
then 0.000

Rule 6 for 0.0
if issuer_appear = 1.000
and category = Media_&_Telecoms,_Broadcasting
and VIX_market_status = neutral
then 0.000

Rule 7 for 0.0
if issuer_appear = 2.000
and category = Utilities_&_Power,_Water/Sewage/Waste
then 0.000

Rule 8 for 0.0
if category = Basic_Materials,_Oil_&_Gas
and VCIT_market_status = worsening
and BANK_OF_COMMUNICATIONS > 0
then 0.000

Rule 9 for 0.0
if issuer_appear in [3.000 4.000]
and region = Western_Europe
and category = Transport_&_Logistics,_Airline_/_Railway_/_Ferries_/_Tramway_/_Public_Transport_/_Fleet
then 0.000

Rule 10 for 0.0
if category = Consumer_Goods_&_Services,_Equipment_&_Vehicle_Hire
and UW_syndicate_the_highest_ranked_UW_TOP15 = 1.000
then 0.000

Rule 11 for 0.0
if UW_spread(%) <= 1.580
and category = Utilities_&_Power,_Water/Sewage/Waste

and COC <= 0
then 0.000
Rule 12 for 0.0
if COC <= 0
and BestRank_syndicate in [9.000 10.000 11.000 12.000 13.000 14.000 15.000]
and UW_syndicate_the_highest_ranked_UW_TOP15 = 1.000
and NATIXIS <= 0
and COMMERZBANK <= 0
and DBS_BANK <= 0
and BAYERNLB <= 0
and NATWEST_MARKETS <= 0
and BANK_OF_CHINA <= 0
and CREDIT_AGRICOLE <= 0
and RABOBANK = 0.000
then 0.000
Rule 13 for 0.0
if region = Western_Europe
and category = Manufacturing,_Auto
and RANK_syndicate_lagged <= 12
then 0.000
Rule 14 for 0.0
if volume_USD > 675.140
and category = Industrials,_Conglomerate
then 0.000
Rule 15 for 0.0
if issuer_appear in [3.000 4.000]
and HSBC <= 0
and BARCLAYS > 0
then 0.000
Rule 16 for 0.0
if issuer_appear in [3.000 4.000]
and syndicate_count > 2
then 0.000
Rule 17 for 0.0
if moodys_rating in [1.000 2.000 3.000 4.000 5.000 6.000 7.000]
then 0.000
Rule 18 for 0.0
if SOCIETE_GENERALE = 1.000
then 0.000
Rules for 1 - contains 19 rule(s)
Rule 1 for 1.0
if maturity_years_rounded > 6
and region = Western_Europe
and category = Media_&_Telecoms,_Telco
and VIX_market_status = worsening
and CREDIT_AGRICOLE <= 0
and SANTANDER <= 0
then 1.000
Rule 2 for 1.0
if category = Industrials,_Brewing_&_Distilling
and rel_issuer_uw > 68
then 1.000
Rule 3 for 1.0
if category = Industrials,_Real_Estate_&_REITs
and ING <= 0
and BARCLAYS > 0
and JP_MORGAN <= 0
then 1.000
Rule 4 for 1.0
if issuer_appear = 3.000

and maturity_years_rounded > 5
and category = Basic_Materials,_Mining
and NATWEST_MARKETS <= 0
then 1.000
Rule 5 for 1.0
if issuer_appear in [3.000 4.000]
and volume_USD <= 675.140
and UW_spread(%) <= 5.050
and category = Industrials,_Conglomerate
then 1.000
Rule 6 for 1.0
if issuer_appear in [1.000 2.000]
and category = Basic_Materials,_Oil_&_Gas
and CUC > 0
and UW_syndicate_the_highest_ranked_UW_TOP5 = 1.000
then 1.000
Rule 7 for 1.0
if category = Media_&_Telecoms,_Telco
and COC <= 0
and SMBC_NIKKO <= 0
and IMI-_INTESA_SANPAOLO > 0
then 1.000
Rule 8 for 1.0
if issuer_appear in [3.000 4.000]
and volume_USD > 775.740
and category = Utilities_&_Power,_Electricity_&_Gas
and EAGG.PA_market_status = neutral
and syndicate_count <= 2
then 1.000
Rule 9 for 1.0
if category = Industrials,_Real_Estate_&_REITs
and CHINA_EVERBRIGHT_GROUP > 0
then 1.000
Rule 10 for 1.0
if issuer_appear in [1.000 2.000]
and category = Media_&_Telecoms,_Media
and JP_MORGAN <= 0
then 1.000
Rule 11 for 1.0
if issuer_appear = 1.000
and category = Utilities_&_Power,_Water/Sewage/Waste
and NATIXIS <= 0
and SOCIETE_GENERALE = 1.000
then 1.000
Rule 12 for 1.0
if issuer_appear in [3.000 4.000]
and category = Basic_Materials,_Oil_&_Gas
and rel_issuer_uw > 55
and VCIT_market_status in ["improoving" "worsening"]
and BARCLAYS <= 0
and UBS <= 0
then 1.000
Rule 13 for 1.0
if category = Manufacturing,_Auto
and MORGAN_STANLEY > 0
then 1.000
Rule 14 for 1.0
if category = Basic_Materials,_Oil_&_Gas
and SMBC_NIKKO > 0
then 1.000

Rule 15 for 1.0
if issuer_appear in [3.000 4.000]
and UW_spread(%) > 0.660
and region = Western_Europe
and category = Manufacturing,_Auto
and num_uw > 3
and EAGG.PA_market_status = neutral
and BAYERNLB <= 0
and ING <= 0
and BARCLAYS <= 0
and CITIGROUP <= 0
then 1.000
Rule 16 for 1.0
if category = Basic_Materials,_Oil_&_Gas
and CREDIT_AGRICOLE > 0
then 1.000
Rule 17 for 1.0
if maturity_years_rounded > 6
and COMMERZBANK > 0
then 1.000
Rule 18 for 1.0
if MORGAN_STANLEY > 0
then 1.000
Rule 19 for 1.0
if region = Western_Europe
then 1.000
Rules for 2 - contains 18 rule(s)
Rule 1 for 2.0
if issuer_appear in [1.000 2.000]
and maturity_years_rounded <= 6
and category = Utilities_&_Power,_Electricity_&_Gas
and syndicate_count <= 7
and CHINA_CONSTRUCTION_BANK_(CCB) <= 0
and MIZUHO > 0
and CREDIT_AGRICOLE <= 0
then 2.000
Rule 2 for 2.0
if issuer_appear in [3.000 4.000]
and region in ["CEEMEA" "Western_Europe"]
and category = Media_&_Telecoms,_Telco
and num_uw <= 7
and VCIT_market_status in ["neutral" "worsening"]
and COMMERZBANK <= 0
then 2.000
Rule 3 for 2.0
if issuer_appear in [3.000 4.000]
and moodys_rating in [8.000 9.000 10.000]
and category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and MIZUHO <= 0
then 2.000
Rule 4 for 2.0
if issuer_appear = 1.000
and category = Industrials,_Conglomerate
and DBS_BANK > 0
then 2.000
Rule 5 for 2.0
if s&p_rating = 9.000
and category = Consumer_Goods_&_Services,_Non-Financial_Services
and RANK_syndicate <= 32
and NATWEST_MARKETS <= 0

and SOCIETE_GENERALE = 1.000
then 2.000
Rule 6 for 2.0
if volume_USD <= 596.270
and region = ASIA_(non-Japan)
and category = Utilities_&_Power,_Nuclear
and NATWEST_MARKETS <= 0
and CHINA_MERCHANTS_BANK_(CMB) = 0.000
then 2.000
Rule 7 for 2.0
if issuer_appear in [3.000 4.000]
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
and num_uw > 3
and VIX_market_status in ["improoving" "neutral"]
then 2.000
Rule 8 for 2.0
if issuer_appear in [1.000 2.000]
and category = Basic_Materials,_Chemicals
and BANK_OF_CHINA > 0
then 2.000
Rule 9 for 2.0
if category = Manufacturing,_General
and UNICREDIT <= 0
and SOCIETE_GENERALE = 0.000
then 2.000
Rule 10 for 2.0
if category = Basic_Materials,_Chemicals
and BARCLAYS > 0
then 2.000
Rule 11 for 2.0
if issuer_appear in [1.000 2.000]
and BANCA_AKROS > 0
then 2.000
Rule 12 for 2.0
if category = Manufacturing,_Aircraft_&_Ships
and CHINA_MERCHANTS_BANK_(CMB) = 0.000
then 2.000
Rule 13 for 2.0
if CUC > 0
and UW_syndicate_the_highest_ranked_UW_TOP10 = 0.000
then 2.000
Rule 14 for 2.0
if CAIXABANK > 0
and IMI-_INTESA_SANPAOLO <= 0
then 2.000
Rule 15 for 2.0
if RABOBANK = 1.000
then 2.000
Rule 16 for 2.0
if region = CEEMEA
then 2.000
Rule 17 for 2.0
if SANTANDER > 0
then 2.000
Rule 18 for 2.0
if CHINA_MERCHANTS_BANK_(CMB) = 0.000
then 2.000
Rules for 3 - contains 19 rule(s)
Rule 1 for 3.0
if category = Utilities_&_Power,_Electricity_&_Gas

and BestRank_syndicate in [2.000 4.000]
and VIX_market_status = neutral
and COMMERZBANK <= 0
and NATWEST_MARKETS > 0
and MIZUHO <= 0
and CREDIT_AGRICOLE <= 0
and SANTANDER <= 0
then 3.000
Rule 2 for 3.0
if maturity_years_rounded > 5
and category = Basic_Materials,_Mining
and NATWEST_MARKETS > 0
then 3.000
Rule 3 for 3.0
if volume_USD > 559.490
and maturity_years_rounded <= 8
and category = Media_&_Telecoms,_Printing_&_Publishing
then 3.000
Rule 4 for 3.0
if maturity_years_rounded > 6
and category = Consumer_Goods_&_Services,_Leisure_&_Entertainment
and num_uw > 4
and HSBC > 0
then 3.000
Rule 5 for 3.0
if issuer_appear in [1.000 2.000]
and category = Industrials,_Building/Construction/Civil_Engineering
and VIX_market_status = neutral
and HSBC <= 0
then 3.000
Rule 6 for 3.0
if rel_issuer_uw <= 451
and SOCIETE_GENERALE = 1.000
and CHINA_MERCHANTS_BANK_(CMB) = 1.000
then 3.000
Rule 7 for 3.0
if category = Utilities_&_Power
and HSBC > 0
then 3.000
Rule 8 for 3.0
if category = Basic_Materials,_Petrochemicals
and NATWEST_MARKETS > 0
then 3.000
Rule 9 for 3.0
if issuer_appear in [1.000 2.000]
and volume_USD > 318.290
and category = Basic_Materials,_Chemicals
and RANK_syndicate <= 27
and EAGG.PA_market_status = neutral
and BARCLAYS <= 0
and BANK_OF_CHINA <= 0
and UBS <= 0
then 3.000
Rule 10 for 3.0
if issuer_appear in [1.000 2.000]
and UW_spread(%) <= 3.170
and category = Industrials,_Real_Estate_&_REITs
and CUC <= 0
and NATWEST_MARKETS <= 0
and CREDIT_AGRICOLE > 0

then 3.000
Rule 11 for 3.0
if volume_USD <= 496.240
and category = Industrials,_Building/Construction/Civil_Engineering
and syndicate_count <= 1
then 3.000
Rule 12 for 3.0
if category = Infrastructure
and GOLDMAN_SACHS <= 0
then 3.000
Rule 13 for 3.0
if VIX_market_status = improoving
and CITIGROUP <= 0
and CHINA_MERCHANTS_BANK_(CMB) = 1.000
then 3.000
Rule 14 for 3.0
if category = Manufacturing,_Materials
and UW_syndicate_the_highest_ranked_UW_TOP15 = 1.000
and DBS_BANK <= 0
and UNICREDIT <= 0
and DZ_BANK <= 0
and SANTANDER <= 0
then 3.000
Rule 15 for 3.0
if issuer_appear in [1.000 2.000]
and category = Media_&_Telecoms,_Telco
and CREDIT_AGRICOLE > 0
and IMI-_INTESA_SANPAOLO <= 0
then 3.000
Rule 16 for 3.0
if OCBC = 1.000
then 3.000
Rule 17 for 3.0
if issuer_appear in [1.000 2.000]
and category = Media_&_Telecoms,_Telco
and COC > 0
then 3.000
Rule 18 for 3.0
if RABOBANK = 1.000
then 3.000
Rule 19 for 3.0
if CUC <= 0
then 3.000
Rules for 4 - contains 19 rule(s)
Rule 1 for 4.0
if issuer_appear in [1.000 2.000]
and UW_spread(%) > 3.170
and category = Industrials,_Real_Estate_&_REITs
and UW_syndicate_the_highest_ranked_UW_TOP15 = 1.000
and rel_issuer_uw > 25
and VIX_market_status in ["neutral" "worsening"]
and DBS_BANK <= 0
and BARCLAYS <= 0
and UBS <= 0
then 4.000
Rule 2 for 4.0
if CITIGROUP > 0
and SOCIETE_GENERALE = 0.000
and CHINA_MERCHANTS_BANK_(CMB) = 1.000
then 4.000

Rule 3 for 4.0
if issuer_appear in [1.000 2.000]
and category = Industrials,_Brewing_&_Distilling
and rel_issuer_uw <= 68
and GOLDMAN_SACHS <= 0
and RABOBANK = 0.000
then 4.000
Rule 4 for 4.0
if issuer_appear = 1.000
and category = Manufacturing,_General
and VCIT_market_status in ["improoving" "neutral"]
and syndicate_count <= 1
and SOCIETE_GENERALE = 1.000
then 4.000
Rule 5 for 4.0
if volume_USD <= 724.670
and category = Technology,_IT
and VIX_market_status = worsening
then 4.000
Rule 6 for 4.0
if issuer_appear in [1.000 2.000]
and category = Consumer_Goods_&_Services,_Healthcare_&_Pharmaceuticals
and VIX_market_status in ["improoving" "worsening"]
and HSBC <= 0
then 4.000
Rule 7 for 4.0
if category = Utilities_&_Power,_Electricity_&_Gas
and syndicate_count > 7
then 4.000
Rule 8 for 4.0
if category = Manufacturing,_General
and syndicate_count > 1
and UNICREDIT > 0
then 4.000
Rule 9 for 4.0
if category = Technology,_IT
and num_uw > 5
then 4.000
Rule 10 for 4.0
if maturity_years_rounded > 7
and category = Infrastructure,_Railways/Subways/Metros
then 4.000
Rule 11 for 4.0
if issuer_appear in [3.000 4.000]
and category = Basic_Materials,_Oil_&_Gas
and CUC <= 0
and VCIT_market_status = neutral
then 4.000
Rule 12 for 4.0
if issuer_appear in [1.000 2.000]
and volume_USD <= 963
and UW_spread(%) > 3.020
and category = Consumer_Goods_&_Services,_Foodstuffs/Drink/Tobacco
and UW_syndicate_the_highest_ranked_UW_TOP10 = 1.000
and RABOBANK = 0.000
then 4.000
Rule 13 for 4.0
if LANDESBANK_HESSEN > 0
then 4.000
Rule 14 for 4.0

if issuer_appear in [1.000 2.000]
and category = Industrials,_Engineering
and EAGG.PA_market_status in ["neutral" "worsening"]
and COMMERZBANK <= 0
and GOLDMAN_SACHS <= 0
and HELABA <= 0
then 4.000
Rule 15 for 4.0
if maturity_years_rounded <= 12
and category = Basic_Materials,_Oil_&_Gas
and UW_syndicate_the_highest_ranked_UW_TOP5 = 1.000
and VCIT_market_status in ["neutral" "worsening"]
and CHINA_CONSTRUCTION_BANK_(CCB) <= 0
and UNICREDIT <= 0
and SMBC_NIKKO <= 0
and UBS <= 0
and CREDIT_AGRICOLE <= 0
and KOREA_DEVELOPMENT_BANK_(KDB) <= 0
then 4.000
Rule 16 for 4.0
if category in ["Consumer_Goods_&_Services,_Education" "Industrials" "Manufacturing,_Packaging" "Media_&_Telecoms"]
then 4.000
Rule 17 for 4.0
if category = Transport_&_Logistics,_Airline_/_Railway_/_Ferries_/_Tramway_/_Public_Transport_/_Fleet
and MORGAN_STANLEY <= 0
and BAYERNLB <= 0
and CREDIT_AGRICOLE <= 0
and CHINA_MERCHANTS_BANK_(CMB) = 0.000
then 4.000
Rule 18 for 4.0
if region = ASIA_(non-Japan)
and EAGG.PA_market_status = improoving
then 4.000
Rule 19 for 4.0
if issuer_appear in [1.000 2.000]
and volume_USD <= 546.030
then 4.000