

系組：財務金融學系碩士班

節次：第 1 節

科目：統計學

一、假設目前有 A、B 兩間上市公司近 6 年股票報酬資料(如下表所示)。請分別計算 A、B 兩間企業的下列統計數：(1)算術平均數(4%)；(2)中位數(4%)；(3)眾數(4%)；(4)變異數(4%)；(5)變異係數(4%)；(6)並根據上述統計資料說明其意涵(5%)。

時間	2011	2012	2013	2014	2015	2016
A 公司	11%	16%	24%	23%	23%	27%
B 公司	13%	14%	22%	25%	20%	22%

註：請詳列計算過程。

二、若  $x$  為點二項分配： $f(x) = p^x(1-p)^{n-x}$ ，試推  $p$  的最大概似估計式(MLE) (15%)。

三、兩家投信公司旗下研究員的平均薪資水準如下表所示。

投信	研究員數	平均薪資	標準差
X 投信	30	50,080	5,000
Z 投信	35	48,800	3,000

在已知兩母體變異數相等，且顯著水準為 0.05 條件下，研究員的平均收入是否有所差異？(25%)。

四、下表為某上市公司於 2009 年至 2016 年間的股利發放資料：

時間(t)	股利(Y)
2009	0.2
2010	1.0
2011	1.2
2012	2.1
2013	2.2
2014	2.4
2015	1.8
2016	1.4

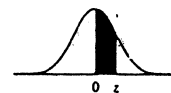
註：請詳列計算過程，數值求至小數點後 3 位。

1. 試以最小平方方法估計時間(t)與發放股利(Y)之長期趨勢直線方程式。(15%)
2. 依據上述方程式，2015 股利預測值與真實值差異為何？(10%)
3. 依據上述估計的迴歸方程式，預測 2017 年之股利。(10%)

TABLE D.1

Areas of a standard normal distribution

An entry in the table is the proportion under the entire curve that is between  $z = 0$  and a positive value of  $z$ . Areas for negative values of  $z$  are obtained by symmetry.



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990