

Problem ID	Dataset	Topic	Course connections	Problem description (research question)	Students' group
P.01.R01	Dataset_01	Failed companies	Financial Management	Find a suitable equation to predict the risk of bankruptcy of a company (z-score) in the year t as a function of financial indices in the years t-1 and t-2. Which indices among ROI, ROE, ROS, CFonSALES, CFonDEBT, DSO, DPO, LEVERAGE, ROD, RevenueGrowth are relevant in predicting the risk (z-score)?	RADU PARFENE (147358) GIACOMO PORCU (148305) KRISTIAN BONINI (125956) 15/07/2019
P.01.C01	Dataset_01	Failed companies	Financial Management	Determine at least 4 homogeneous groups of failed companies with respect to the financial indices ROI, ROE, ROS, CFonSALES, CFonDEBT, DSO, DPO, LEVERAGE, ROD, RevenueGrowth in the year t of bankruptcy. Label these groups with respect to the mentioned financial variables and characterize them with respect to the risk of bankruptcy (z-score) in the years t-1 and t-2	DANA CALAMELLI (151401) SAM. MARANZANA (147351) VIKTORIA MELICKA (121609)
P.01.F01	Dataset_01	Failed companies	Financial Management	Consider the ten observed financial variables ROI, ROE, ROS, CFonSALES, CFonDEBT, DSO, DPO, LEVERAGE, ROD, RevenueGrowth in the year t and find new q latent variables that "explain" the financial performance of the companies with q<5. Repeat the analysis with the variables in the year t-1 and t-2 and compare the three outputs.	LOR. GIACOMELLA (149732) MATTEO PIEROBON (151103) PAOLO TORMEN (147995)
P.01.I01	Dataset_01	Failed companies	Financial Management	Determine one composite index of financial performance which sums up the information of the variables ROI, ROE, ROS, CFonSALES, CFonDEBT, DSO, DPO, LEVERAGE, ROD, RevenueGrowth in the year t, t-1 and t-2. Study the relationship between the index values and the z-score in the year t, in the year t-1 and in the year t-2.	FAUSTA ROMANELLI (150615) ROMARIO BUJARJA (159062) MATTIA CASTAGNA (121723)
P.02.R01	Dataset_02	Cash Conversion Cycle	Financial Management	Find a suitable equation for the manufacturing sector, to predict the commercial performance of a company (Net Operating Income) in the year 2010 as a function of CCC, CCC_SQ, Employees, Leverage, Size, Growth and Net Operating Income of the previous year. Which explanatory variables are relevant in predicting the performance?	GIACOMO BORIANI (150734) RICC. SCAGLIARINI (147360)
P.02.C01	Dataset_02	Cash Conversion Cycle	Financial Management	Determine at least 3 homogeneous groups of small and medium enterprises in the Agricultural sector in 2017 with respect to the variables GOI, NOI, CCC, LEVERAGE and GROWTH. Label these groups with respect to the mentioned variables and characterize them with respect to Employees and SIZE. Perform again the analysis for the Manufacturing sector and compare this output with the one of the Agricultural Sector.	VALENTINA PICCOLI (127210) HAMZA NAJI (121539) NICOLA RODELLA (128264)
P.02.F01	Dataset_02	Cash Conversion Cycle	Financial Management	Consider the observed variables CCC, NOI, GOI, LEVERAGE, GROWTH in the years 2015, 2016 and 2017 (15 informative variables) and find new q latent variables that "explain" the performance of the companies in the Wholesale sector with q<6. Repeat the analysis with the years 2012, 2013 and 2014 and compare the three outputs.	ROB. M. DESTEFANO (121987) ELISABETTA SAVOIA (141759) FRANCESCA DEMETRI (120220)
P.02.I01	Dataset_02	Cash Conversion Cycle	Financial Management	Determine one composite index of performance (NPC methodology) which sums up the information of the variables CCC, NOI, GOI, LEVERAGE, GROWTH in the years from 2009 to 2017 in the Agricultural sector. Study the behavior of the yearly values of the index over time.	ANDREA ROSSON VIRGINIA MARIA ROLLO

P.02.R02	Dataset_02	Cash Conversion Cycle	Financial Management	Find a suitable equation for the manufacturing sector, to predict the commercial performance of a company (Gross Operating Income) in the year 2011 as a function of CCC, CCC_SQ, Employees, LEVERAGE, SIZE, GROWTH and Net Operating Income of the previous year. Which explanatory variables are relevant in predicting the performance?	VALENTINA CRISTEA RABIA ASHGAR
P.02.C02	Dataset_02	Cash Conversion Cycle	Financial Management	Determine at least 3 homogeneous groups of small and medium enterprises in the Transport sector in 2017 with respect to the variables GOI, NOI, CCC, LEVERAGE and GROWTH. Label these groups with respect to the mentioned variables and characterize them with respect to Employees and SIZE. Perform again the analysis for the sector of Services and compare this output with the one of the Transport Sector.	MURATBEK TOLOKOV RAIDA TOLOKOVA ANASTASIA SIRA
P.02.F02	Dataset_02	Cash Conversion Cycle	Financial Management	Consider the observed variables CCC, NOI, GOI, LEVERAGE, GROWTH in the years 2015, 2016 and 2017 (15 informative variables) and find new q latent variables that “explain” the performance of the companies in the Retail sector with $q < 6$. Repeat the analysis with the years 2012, 2013 and 2014 and compare the three outputs.	FEDERICO LIO CLARISSA CAIMOL FILIPPO RUZZA
P.02.I02	Dataset_02	Cash Conversion Cycle	Financial Management	Determine one composite index of performance (NPC methodology) which sums up the information of the variables CCC, NOI, GOI, LEVERAGE, GROWTH in the years from 2009 to 2017 in the Manufacturing sector. Study the behavior of the yearly values of the index over time.	
P.03.R01	Dataset_03	Italian listed companies	Financial Management	Find a suitable equation for the transport sector (ATECO category 8), to predict the commercial performance of a company (sales %variation) in the year 2010 as a function of Dividend payout, Investment, Past Investment, Cash Flow, Capital Stock, Past Capital Stock, Investment Capital Ratio, Past Investment Capital Ratio, Investment Opportunity Capital Ratio, Cash Flow Capital ratio. Which explanatory variables are relevant in predicting the performance?	FRANCESCA DAMIN (124243) LAURA FERRAZZA (124882) ELEONORA GHELLI (124650) 14/06/2019
P.03.C01	Dataset_03	Italian listed companies	Financial Management	Determine no more than 5 homogeneous groups of listed companies in the Manufacturing sector in 2011 with respect to the variables Dividend payout, Investment, Past Investment, Cash Flow, Capital Stock, Past Capital Stock, Investment Capital Ratio, Past Investment Capital Ratio, Investment Opportunity Capital Ratio, Cash Flow Capital ratio. Label these groups with respect to the mentioned variables and characterize them with respect to Size 1, Size 2, Age and Subsector (first two digits of ATECO code)	FRANCESCA FRAU (147339) DAO NGUYEN NGOC (150053)
P.03.F01	Dataset_03	Italian listed companies	Financial Management	Consider the observed variables Sales %variation, Dividend payout, Investment, Past Investment, Cash Flow, Capital Stock, Past Capital Stock, Investment Capital Ratio, Past Investment Capital Ratio, Investment Opportunity Capital Ratio, Cash Flow Capital ratio (informative variables) in 2012 and find new $q < 5$ latent variables that “explain” financial and economic situation of the companies in the Manufacturing sector. Repeat the analysis for the Wholesale and Retail sector (ATECO category 7) in the same year and compare the two results.	

P.03.I01	Dataset_03	Italian listed companies	Financial Management	Determine one composite index (NPC methodology) which represents the financial situation of the companies in the Accommodation and Catering sector (ATECO Category 9) in the years 2010, 2011, 2012 and 2013 (one index value for each year). Comment on the evolution over time. Repeat the analysis separately for the two subsectors Accommodation (ATECO code 55.xx.xx) and Catering (ATECO code 56.xx.xx) and compare the two subsectors in every year from 2010 to 2013.	
P.04.R01	Dataset_04	Environmental data		Perform a regression analysis in order to predict percapita GDP in 2015 as a function of the variables which represent Climate and Energy, Air Pollution, Water Resources and Sustainable Agriculture observed in the last year for which data are available. See also "EPI technical appendix". Ignore countries with missing data. Comment on the relationship between economic performance and environmental vitality.	TITAH H. ICHWANI (150221) SOFIA TRESORO (150999) E. KONTSOUNGUEPU (148278)
P.04.C01	Dataset_04	Environmental data		Determine homogeneous clusters of world countries according to yearly average CO2 emissions in the period 1997-2014 (variables CDI, DCI, CEH, TIP). See also "EPI technical appendix". Ignore years and countries with missing data. Characterize the clusters in terms of economic performance (average annual GDP growth rate in the period 1997-2015). Comment on the relationship between economic performance and environmental pollution.	FRANCES. COBIANCO (125068) LUCA MARIANI (147355) SIMONA VETTORE (120860) 14/06/2019
P.04.F01	Dataset_04	Environmental data		Consider the data concerning environmental health and ecosystem vitality of world countries in the last year for which data are available. See also "EPI technical appendix". Ignore countries with missing data. Perform a Factor Analysis in order to reduce the dimensionality of the multivariate dataset, by finding out new $q < 6$ variables which represent Environmental Performance.	CORRADO COSTA (150213) CORAZZINA SIMONE (149676)
P.04.I01	Dataset_04	Environmental data		Determine one composite index (NPC methodology) which represents the environmental health of world countries in the years 2010-2016 (one index value for each year), according to the variables HAD, PME, PMW, UWD, USD and PBD. See also "EPI technical appendix". Ignore years and countries with missing data. For each country and each variable consider the average value for the available years (annual average). Repeat the analysis 4 times, by considering 4 different combining functions (Fisher, Tippett, Liptak and Additive) and compare the results with respect to the 4 combination rules.	INGENITO FABIO (151270) DAN. CONVERSANO (150764)
P.04.I02	Dataset_04	Environmental data		Determine one composite index (NPC methodology) which represents the performance of world countries in terms of biodiversity in the years 2000-2014 (one index value for each year), according to the variables MPA, TBN, TBG, SPI, PAR, SHI. See also "EPI technical appendix". Ignore years and countries with missing data. Repeat the analysis 4 times, by considering 4 different combining functions (Fisher, Tippett, Logistic and Additive) and compare the time series of the four composite indices of biodiversity.	ILARIA GETTO (150219) SAMANTH COCCOLO (148275)
