**Macromodel Assessment Answer Sheet – Port of Rotterdam**

**Name:**

**Student Number:**

*Q1: At the bottom of the notebook you will find now a rather non-intuitive heatmap. Use the documentation of Seaborn (*<https://seaborn.pydata.org/generated/seaborn.heatmap.html>) to create a heatmap that is easy to interpret and pleasing to the eye.

**ADD FIGURE**

*Q2: Interpret the heatmap. What does it say? Which sectors are most related, which are absolutely not related to each other? Do you see any surprises for this part of the Netherlands?*

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*Q3: Now that you have some more experience with python and pandas. Create a good looking figure of the direct damages to each industrial sector.*

***ADD FIGURE***

*Q4 Explain the Leontief Inverse and why it is useful to use.*

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*Q5: What are the impacts of a 50% reduction in demand for food products. What is the impact to the food products sector itself, and what is the top 5 of affected sectors (and by how much)?*

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*Q6: What are the impacts of a 50% reduction in demand for financial services. What is the impact to the food products sector itself, and what is the top 5 of affected sectors (and by how much)? Is there particular difference to the cascading effects of the food industry?*

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*Q7 What are the impacts of the flood in the Port of Rotterdam, using the Leontief Inverse. Create a figure of the results. Which sectors are impacted most heavily directly? And which sectors indirectly?*

***ADD FIGURE***

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*Q8: What is the total loss to the port of Rotterdam for each reconstruction curve? And how much is it different from the losses in terms of Value Added that we calculated using the traditional input-output model? Can you explain the difference?*

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*Q9: And do you observe specific differences on a sectoral level between the traditional Input-Output model and the ARIO model?*

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*Q10: Create a figure of the outcome for three recovery paths. Briefly describe what the different paths mean for the economic recovery.*

***ADD FIGURE***

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*Q11: Change the recovery time to respectively 160 and 720 days. How much do the losses change for each of the recovery curves?*

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*Q12: And how much does the amount of inventory matters? What if you change it to 10 days, and 30 days. How much do the losses change?*

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