[Brexit: def\_class222, def\_class222b]

A supply chain consists of two manufacturers M1 and M2, two retailers R1 and R2 and two markets B1 and B2. M1, R1 and B1 are located in Country 1, whereas M2, R2 and B2 are located in Country 2.

* The manufacturers face production costs:
* and the (per-unit) transaction costs:
* For each unit of product purchased from the manufacturers, the retailers face handling costs of
* Transaction costs (per unit) are incurred between the retailers and markets:

The total cost perceived by the consumers in market consists of the retail price and transaction cost for going to the retailer and getting the goods there.

* To the consumers, they see the products from retailer 1 and the products from retailer 2 as identical. So the maximum willingness to pay in each market is jointly determined by the total quantity supplied by both retailers. The inverse demand curves are

where

Questions

1. Without any calculation, do you expect the profits of M1 or M2 to be larger? Why?

M1 had an advantage on production cost, as shown in the production cost functions.

1. Write down the problem as a VI and solve it. Fill in the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| 1.038 | 1.038 | 0.779 | 0.779 | 21.729 | 21.729 |  |  |
|  |  |  |  |  |  |  |  |
| 0.909 | 0.909 | 0.909 | 0.909 | 24.546 | 24.546 | 1.816 | 1.816 |
| Profit(M1) | Profit(M2) | Profit(R1) | Profit(R2) | CS(B1) | CS(B2) |  |  |
| 10.938 | 6.703 | 6.604 | 6.604 | 1.651 | 1.651 |  |  |

1. Previously Country 1 and Country 2 are in the same economic union in the sense that free trade are facilitated. Now suppose that Country 2 has decided to exit from the union. This has two consequences: first, a tariff of 2 euro is charged on the manufacturers when they sell a unit of goods to the retailers of the other country; second, the transaction costs of the customers buying the product from the retailer in the other country becomes double the original transaction costs due to exchange rates.

Write down these changes in the model.

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Profit(M1) | Profit(M2) | Profit(R1) | Profit(R2) | CS(B1) | CS(B2) |  |  |
|  |  |  |  |  |  |  |  |

1. What changes do you expect in the results?
2. Solve the VI problem again with these changes and fill in the table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| 1.017 | 0.881 | 0.780 | 0.644 | 20.851 | 21.220 |  |  |
|  |  |  |  |  |  |  |  |
| 1.362 | 0.436 | 0.339 | 1.187 | 24.575 | 24.594 | 1.7 | 1.624 |
| Profit(M1) | Profit(M2) | Profit(R1) | Profit(R2) | CS(B1) | CS(B2) |  |  |
| 8.831 | 5.128 | 6.477 | 4.671 | 1.447 | 1.318 |  |  |

1. Explain why Country 1 loses from Country 2’s exit from the economic union.