

Problem_15_3

November 7, 2021

```
[ ]: using LinearAlgebra
      using MLJ

      include("price_elasticity.jl")
```

```
[ ]: (m1, n1) = size(Prices)
      price_delta = zeros(m1, n1)
      for i in 1:m1
          for j in 1:n1
              price_delta[i, j] = (Prices[i, j] - p_nom[i]) / p_nom[i]
          end
      end
      price_delta
```

```
[ ]: 5×75 Matrix{Float64}:
      -0.051424  -0.0149436  0.0775703  ...  0.0600145  0.0563037  0.0215862
      -0.0302302  0.0561652  -0.0433173  ...  0.0374761  0.101276  0.0625757
      -0.0367657  -0.0428182  0.0515471  ...  0.0523813  0.0664217  -0.0339845
      -0.0937301  -0.0564496  0.0294006  ...  0.0243497  -0.0180422  0.0195462
      -0.00227484 -0.0485082  -0.0809683  ...  0.0638806  -0.00242106 -0.051104
```

```
[ ]: (m2, n2) = size(Demands)
      demand_delta = zeros(m2, n2)
      for i in 1:m2
          for j in 1:n2
              demand_delta[i, j] = (Demands[i, j] - d_nom[i]) / d_nom[i]
          end
      end
      demand_delta
```

```
[ ]: 5×75 Matrix{Float64}:
      0.160915  0.041291  0.153608  ...  0.00740388  -0.22383  0.322254
      0.655052  -0.145873  0.0712007  ...  0.130662  0.0647327  0.0368358
      -0.322118 -0.248818 -0.180494  ... -0.11351  -0.144461 -0.162057
      0.260561  0.0780381 -0.250927  ... -0.170021  0.0930676  0.438625
      0.108005  -0.0951855  0.117042  ... -0.14356  -0.16178  0.159025
```

```
[ ]: E = zeros(m1,m2);
      for i in 1:m1
          E[i,:] = demand_delta[i,:] \ price_delta'
      end
      E
```

```
[ ]: 5x5 Matrix{Float64}:
      -0.0804511    0.0103458   -0.0839659   -0.0261969   -0.0148971
      0.00838631  -0.0347895   -0.00642602  -0.0475389   -0.0474
      -0.0458354    0.0148483   -0.0303634   -0.0174009   -0.0422333
      -0.0058114    0.00113364  -0.00169382  -0.0734906    0.036418
      0.0284484   -0.0687943   -0.0731857    0.0254066   -0.076902
```

```
[ ]: delta_phat = E*(E\price_delta)
```

```
[ ]: 5x75 Matrix{Float64}:
      -0.051424   -0.0149436   0.0775703   ...   0.0600145   0.0563037   0.0215862
      -0.0302302   0.0561652  -0.0433173   0.0374761   0.101276   0.0625757
      -0.0367657  -0.0428182   0.0515471   0.0523813   0.0664217  -0.0339845
      -0.0937301  -0.0564496   0.0294006   0.0243497  -0.0180422   0.0195462
      -0.00227484 -0.0485082  -0.0809683   0.0638806  -0.00242106 -0.051104
```

```
[ ]: rms(delta_phat,price_delta)
```

```
[ ]: 3.4828535264082376e-17
```