```mathematica
(𝔼_{A1_→B1_}[ω1_, Q1_] // 𝔼_{A2_→B2_}[ω2_, Q2_]) /; (B1* === A2) :=
 Module[{i, j, E1, F1, G1, E2, F2, G2, I, M = Table},
  I = IdentityMatrix@Length@B1;
  E1 = M[∂_{i,j}Q1, {i, A1}, {j, B1}]; E2 = M[∂_{i,j}Q2, {i, A2}, {j, B2}];
  F1 = M[∂_{i,j}Q1, {i, A1}, {j, A1}]; F2 = M[∂_{i,j}Q2, {i, A2}, {j, A2}];
  G1 = M[∂_{i,j}Q1, {i, B1}, {j, B1}]; G2 = M[∂_{i,j}Q2, {i, B2}, {j, B2}];
  𝔼_{A1→B2}[CF[ω1 ω2 Det[I - F2.G1]^{1/2}], CF@Plus[
     If[A1 === {} ∨ B2 === {}, 0, A1.E1.Inverse[I - F2.G1].E2.B2],
     If[A1 === {}, 0, 1/2 A1.(F1 + E1.F2.Inverse[I - G1.F2].E1^⊤).A1],
     If[B2 === {}, 0, 1/2 B2.(G2 + E2^⊤.G1.Inverse[I - F2.G1].E2).B2]]]]
```