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 $\sigma[\gamma\_TSDO] := \text{Keys } @@ \gamma;$ 
TSD0[ $\lambda\_j$ ] := Lookup[ $\lambda, j, \text{UU}@a[1, j, \text{hoo}]$ ];
UU[ $u\_$ ] //  $\gamma\_TSDO := \text{CF}[u /. \lambda\_a \Rightarrow \gamma@ \lambda];$ 
TSD0 /: ( $\gamma\_TSDO$ )-1 := Module[{S =  $\sigma@ \gamma, m$ },
  m = Table[Coefficient[ $\gamma_i, a[j, \text{hoo}]$ ], {i, S}, {j, S}] //
  Inverse;
TSD0@<|Table[S[[ $\alpha$ ]]  $\rightarrow$ 
  CF@UU@Sum[a[m[[ $\alpha, \beta$ ]], S[[ $\beta$ ]],  $\text{hoo}$ ], { $\beta, \text{Length}@S$ }],
  { $\alpha, \text{Length}@S$ }]> ];
a[f_, j_, k_] //  $\gamma\_TSDO := \text{Module}\{\{S = \text{Keys } @@ \gamma, \gamma_i\},$ 
  Switch[{MemberQ[S, j], MemberQ[S, k]},
    {False, False}, UU@a[f, j, k],
    {True, False},  $\gamma_j /. a[g_, i_, \text{hoo}] \Rightarrow a[f g, i, k],$ 
    {False, True}, ( $\gamma_i = \gamma^{-1}$ ;
  CF@Sum[
     $\gamma[\text{bb}[S \cup \{j\}][\gamma_i, \text{UU}@a[f, j, k]] /.$ 
       $_{\delta}b | _{\delta}a | _{\delta}aa \rightarrow 0]$  /. {
      a[_, i,  $\text{hoo}$ ]  $\Rightarrow 0, a[g_, l_, \text{hoo}] \Rightarrow a[g/b_i, l, i]$ },
    {i, S}]),
  {True, True}, ct[ $\text{hoo}, \text{too}$ ][ $\gamma@a[f, j, \text{hoo}]$ ,
     $\gamma@a[1, \text{too}, k]$ ] ]];

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