Assignment
Simultaneous Equations Model

Export-Import Equations System

$$\ln Ex_t = \beta_{10} + \beta_{11} \ln Im_t + \beta_{12} \ln P_{Ext} + \beta_{13} \ln Fx_t + \beta_{14} \ln GDP_{wt} + \varepsilon_{1t} \quad (1)$$

$$\ln Im_t = \beta_{20} + \beta_{21} \ln Ex_t + \beta_{22} \ln Fx_t + \beta_{23} \ln Inf_t + \varepsilon_{2t} \quad (2)$$

where: $\ln Ex_t$ = Natural log of export at time *t*
$\ln Im_t$ = Natural log of Import at time *t*
$\ln P_{Ext}$ = Natural log of Export price at time *t*
$\ln Fx_t$ = Natural log of Exchange rate at time *t*
$\ln GDP_{wt}$ = Natural log of World GDP at time *t*
$\ln Inf_t$ = Natural log of Inflation at time *t*

Endogenous variables in this system include $\ln Ex_t$ and $\ln Im_t$
Exogenous variables in this system include $\ln P_{Ext}$, $\ln Fx_t$, $\ln GDP_{wt}$, and $\ln Inf_t$

1. State reduce form model of these system models.
2. Estimate reduce form model using OLS and prediction of the endogenous variables.
3. Estimate structural form using predicted endogenous variables as independent variables in the structural form model.
4. Estimate the structural models of these system equations using OLS, 2SLS, 3SLS, and I3SLS. Concerning on the asymptotic property, which model is the most appropriated model? Why?