Writing the restrictions in the form (9.1.13), we get

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mathsf{a}_{11} \\ \mathsf{a}_{21} \\ \mathsf{a}_{31} \\ \mathsf{a}_{12} \\ \mathsf{a}_{22} \\ \mathsf{a}_{32} \\ \mathsf{a}_{13} \\ \mathsf{a}_{23} \\ \mathsf{a}_{33} \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

and

$$\begin{bmatrix} 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} \mathsf{b}_{11} \\ \mathsf{b}_{21} \\ \mathsf{b}_{31} \\ \mathsf{b}_{12} \\ \mathsf{b}_{22} \\ \mathsf{b}_{32} \\ \mathsf{b}_{13} \\ \mathsf{b}_{23} \\ \mathsf{b}_{33} \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}.$$

Thus, the necessary condition for local identification is satisfied. The necessary and sufficient condition from Proposition 9.3 can be checked by selecting randomly drawn matrices A and B from the restricted parameter space and determining the rank of the corresponding matrix in (9.1.14).

9.1.4 Long-Run Restrictions à la Blanchard-Quah

Clearly, it is not always easy to find suitable and generally acceptable restrictions for the matrices A and B. Imposing the restrictions directly on these matrices is in fact not necessary to identify the structural innovations and impulse responses. Another type of restrictions was discussed by Blanchard & Quah (1989). They considered the accumulated effects of shocks to the system. In terms of the structural impulse responses in (9.1.5) they focussed on the *total impact matrix*,

$$\Xi_\infty = \sum_{i=0}^{\infty} \Theta_i = (I_K - A_1 - \cdots - A_p)^{-1}\mathsf{A}^{-1}\mathsf{B}, \tag{9.1.15}$$

and they identified the structural innovations by placing zero restrictions on this matrix. In other words, they assumed that some shocks do not have any total long-run effects. In particular, they considered a bivariate system consisting of output growth q_t and an unemployment rate ur_t (i.e., $y_t =$