Appendix: Model calibration

This appendix compares the structure of production, employment and demand in the models for the United States, the euro area and China prior to the Covid crisis. They are calibrated to match values in the input-output tables for each economy, where available. In the model simulations, the Covid crisis is modelled as a sequence of structural changes which will alter these patterns.

Production

Table 1 shows the share of each industry in aggregate GDP.

Industry GDP shares — Table 1

Industry	US	Euro area	China
Agriculture	0.9	1.5	9.9
Mining	2.0	1.3	5.7
Utilities	2.0	2.7	2.1
Construction	4.2	5.0	5.2
Manufacturing	13.4	13.9	26.2
Wholesale trade	5.2	5.8	7.5
Retail trade	4.8	4.2	1.6
Transportation and warehousing	3.1	4.5	4.3
Information and communications	3.8	4.3	2.5
Finance, insurance and real estate	20.1	17.4	18.2
Professional and business services	14.7	12.9	–
Public administration, education and healthcare services	18.7	19.5	11.3
Arts, entertainment, recreation and accommodation	4.4	4.6	2.3
Other services	2.6	2.3	3.1

Shares may not sum to 100 due to rounding. Professional and business services not listed separately for China.

Source: Rees (2020).

Employment

Table 2 shows the share of each industry in aggregate employment.

Industry employment shares — Table 2

Industry	US	Euro area	China
Agriculture	2.3	3.1	24.7
Mining	0.6	0.2	0.3
Utilities	0.4	1.5	0.6
Construction	7.2	7.2	7.0
Manufacturing	10.6	17.1	20.2
Wholesale trade	4.6	7.6	7.3
Retail trade	10.4	7.6	7.3
Transportation and warehousing	4.5	5.7	2.4
Information and communications	2.1	0.4	2.4
Finance, insurance and real estate	0.7	0.4	4.7
Professional and business services	16.0	11.4	–
Public administration, education and healthcare services	23.0	20.8	12.7
Arts, entertainment, recreation and accommodation	8.9	7.6	5.6
Other services	3.0	2.8	4.7

Shares may not sum to 100 due to rounding. Professional & business services not listed separately for China.

Source: Rees (2020).

Demand

Table 3 shows the share of consumption, investment and government expenditure in aggregate GDP.

Expenditure shares of GDP — Table 3

Industry	US	Euro area	China
Consumption	64.8	55.8	50.8
Investment	17.9	20.6	34.3
Government expenditure	17.3	23.6	14.9

Shares may not sum to 100 due to rounding.

Source: Rees (2020).

Common parameters

In addition to the production, employment and demand patterns, which are country-specific, the model features a number of "structural" parameters, which govern the behaviour of households and firms in the model. I set these parameters to the same values in each economy (Table 4). Rees (2020) explains the role of these parameters in the model.

Common parameter values — Table 4

Parameter	Value
Degree of habits in consumption	0.70
Investment adjustment cost parameter	3.00
"Calvo" wage stickiness parameter	0.65
"Calvo" price stickiness parameter for semi-sticky prices	0.70
"Calvo" price stickiness parameter for sticky prices	0.50
Elasticity of substitution between labour and capital in production	0.95
Elasticity of substitutability between different intermediate inputs in production	0.50
Elasticity of substitution between primary factors and intermediates in production	0.60
Aggregate labour supply elasticity	2.00
Quarterly capital depreciation rate	0.02
Elasticity of substitution between industries in demand	0.90
Elasticity of substitution between industries in labour supply	2.00
Share of "rule of thumb" households	0.25
Quarterly household discount rate	0.995

The prices of agricultural and mining products are fully flexible. Industries with semi-sticky prices include manufacturing and retail trade. All other industries have sticky prices.

Source: Rees (2020).

Reference

Rees, D (2020): "What comes next?", *BIS Working Papers*, no 898, November.