



FEDERAL RESERVE BANK
OF SAN FRANCISCO

R*

Bank of Canada Annual Conference “Unconventional Monetary Policies: A Small Open Economy Perspective”

November 4, 2016

John Williams

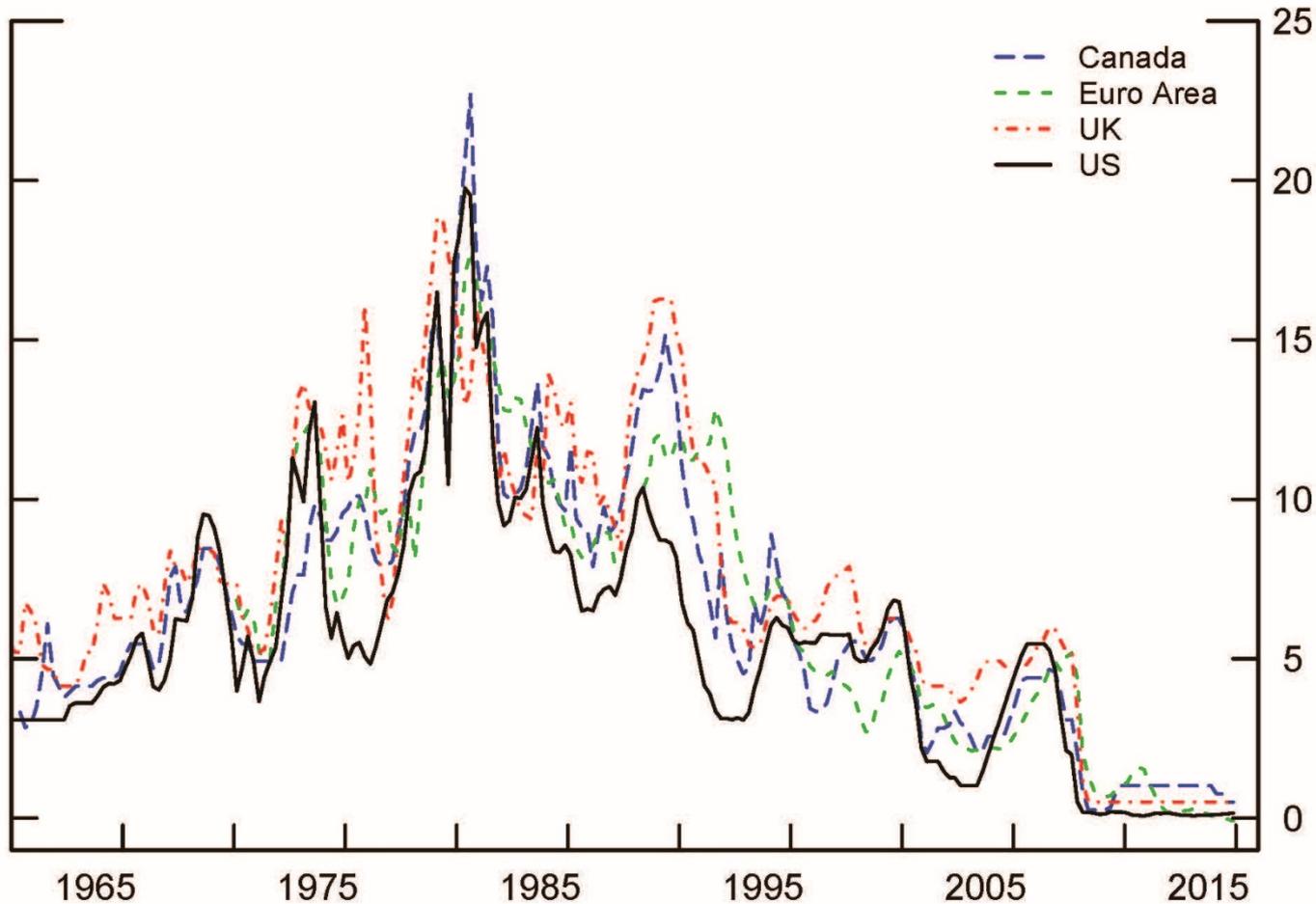
President and Chief Executive Officer

Federal Reserve Bank of San Francisco

The views expressed here are those of the author and do not necessarily reflect those of anyone else in the Federal Reserve System.

Historically Low Interest Rates

Nominal short-term interest rates



R* Arithmetic

$$i^* = r^* + \pi^* \quad (1)$$

$$r^* = g^* + z \quad (2)$$

π^* : inflation target

r^* : neutral real interest rate

g^* : trend growth rate

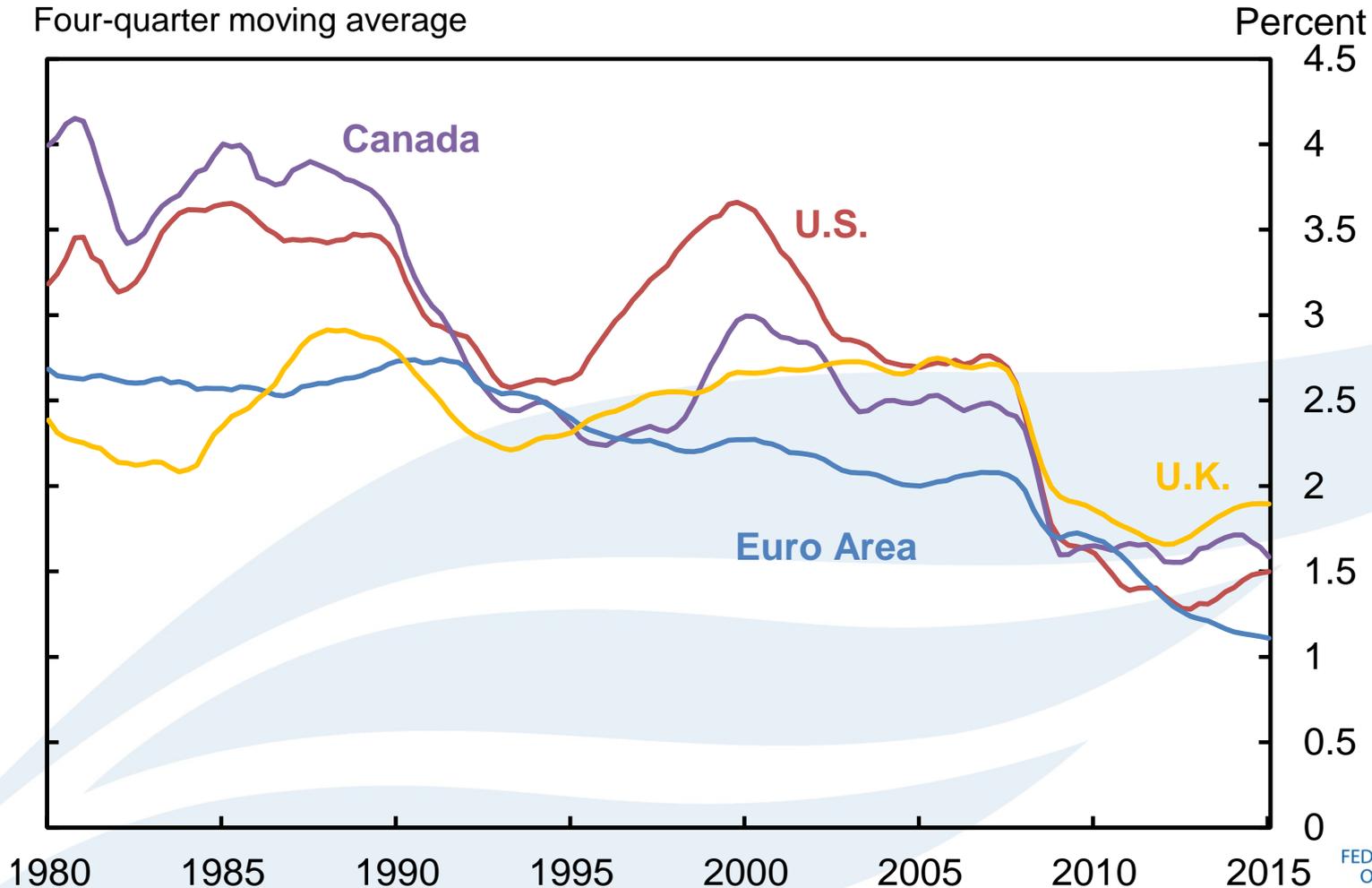
z : other stuff



Declining Trend Growth

Trend Real GDP growth

Four-quarter moving average



Source: Holston, Laubach, and Williams (2016)

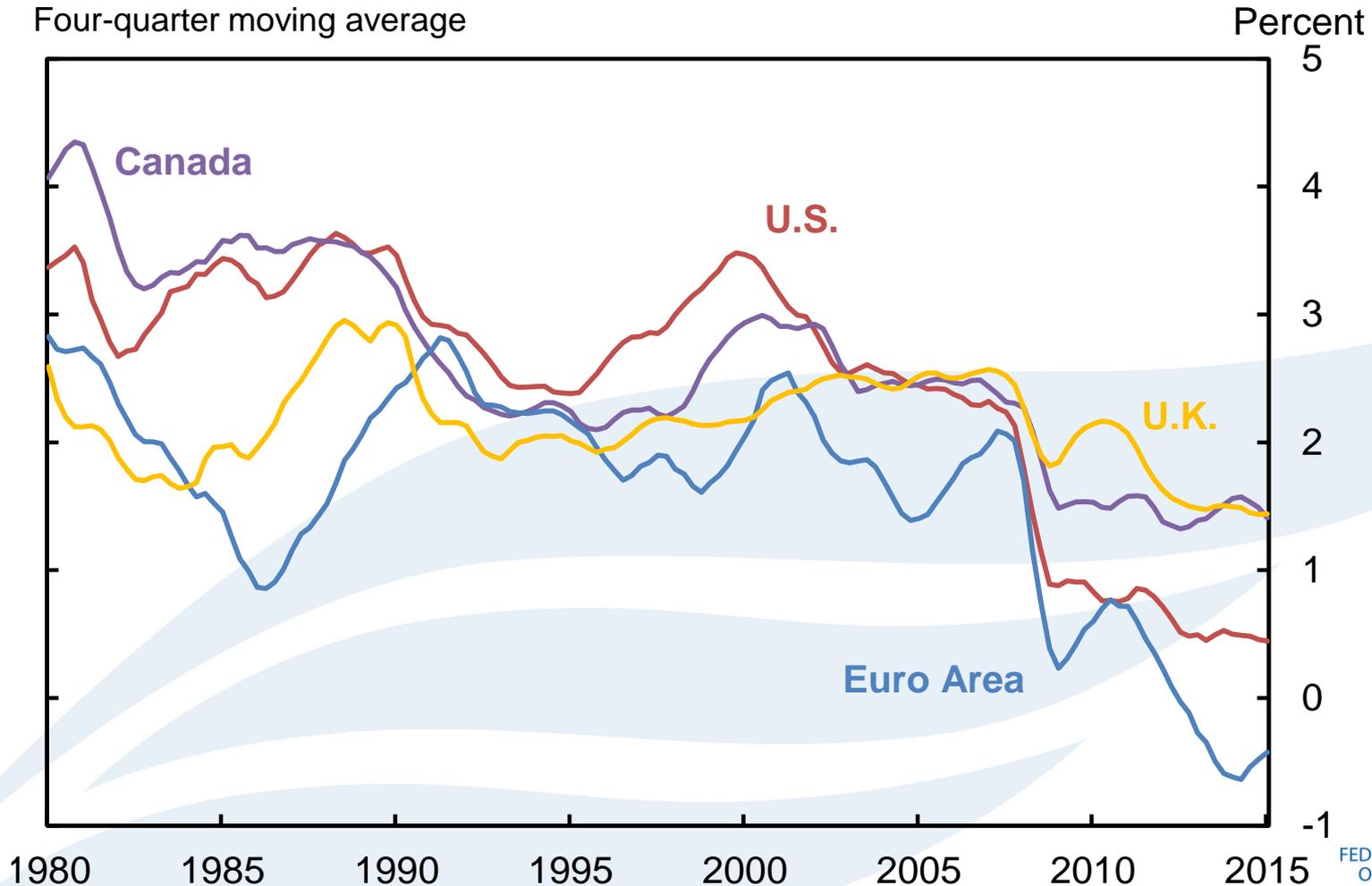


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Historically Low R*

Estimated natural rate of interest

Four-quarter moving average



Source: Holston, Laubach, and Williams (2016)