Section A

Institution: University of St Andrews

Unit of Assessment: UoA 16: Economics and Econometrics

Title of case study: Macroeconomic Policy Advocacy and Normalization of US Interest Rate Policy Following the Great Recession

Period when the underpinning research was undertaken: 2008 - 2018

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
George W. Evans	Professor	15 October 2007 – 31 March 2016 and 01 January 2017 – present

Period when the claimed impact occurred: 2016 - 2019

Is this case study continued from a case study submitted in 2014? N

Section B

1. Summary of the impact

Research by George Evans on adaptive learning rules in Macroeconomics has informed and contributed to the policy debate on how central banks should respond to the low inflation and low, stagnant growth seen in the aftermath of the Great Recession of 2007-2009. Between 2016 and early 2020, the main monetary policy issue in the US was over when and how fast to normalize interest rates. Evans and co-workers have provided academic support and advocacy in a debate which directly engages senior monetary policymakers in the US. Evans's work argues for the policy of interest rate rises being gradual and data dependent and argues against the main alternative that interest rates should have been immediately increased to the long-run equilibrium level consistent with the US Federal Reserve Open Market Committee's inflation target.

2. Underpinning research

Two complementary lines of research form the basis for the Impact. In both cases, the research relies on the adaptive learning approach in the context of economic models with multiple equilibrium solutions and draws out the policy implications. This research replaces rational expectations (RE) with the assumption that agents (i.e. households and firms) forecast future output and inflation using simple statistical adaptive learning rules. Such learning rules are boundedly rational, but they are arguably a more realistic way than RE to model expectations, and the policy implications are sometimes very different.

The first line of research (by Evans and co-authors: Benhabib, Guse, Honkapohja and McGough) focuses on the importance of aggressive expansionary monetary and fiscal policy when there is a large pessimistic expectations shock [R1-R3]. These demonstrate that aggressive monetary policy and fiscal policy is necessary when the economy has been hit by a large pessimistic shock, in order to avoid a stagnation trap. [R1, 2008] underpins all of Evans's work on policy advocacy since the Great Recession.

The second line of research (by Evans and McGough) focuses on instability created by an interest rate peg when expectations are formed through adaptive learning. [R4] provides key formal analytical results for the underpinning research, and [R5] provides a theoretical critique of the so-called neo-Fisherian policy position. The neo-Fisherian view is the proposition that, when an economy is trapped in a low-inflation low-growth equilibrium, the policy interest rate should be immediately increased and pegged to the long-run equilibrium level consistent with the central bank's inflation target. This contrasts with the standard policy proposition which is that the policy interest rate should be kept low in order to stimulate and support recovery – and only raised as output returns to normal and inflation rises to the target level. [R5] argues that the so-called neo-Fisherian view is mistaken. Instead, it is shown that interest rate increases should be gradual and dependent on the pace of economic recovery. In [R5] models are formulated to provide a context in which to examine and discuss the negative consequences for the economy arising from an immediate rise in the interest rate as advocated by the neo-Fisherian view. The analysis is conducted under the assumption of the bounded rationality of agents following adaptive learning rules. The adaptive learning approach contrasts with the rational expectations approach which is a standard benchmark assumption in many macro models – including those used to support the neo-Fisherian policy prescription.

3. References to the research (indicative maximum of six references)

R1, R2, R4-R5 are peer-reviewed publication published in leading international journals. R3 is a monograph.

R1.**George W. Evans**, E. Guse & Seppo Honkapohja, "Liquidity Traps, Learning and Stagnation," *European Economic Review*, 2008, 52,1438–1463. DOI: 10.1016/j.euroecorev.2008.05.003.

R2.Jess Benhabib, **George W. Evans** and Seppo Honkapohja, "Liquidity Traps and Expectation Dynamics: Fiscal Stimulus or Fiscal Austerity?" *Journal of Economic Dynamics and Control* 2014, 45, 220-238. DOI: 10.1016/j.jedc.2014.05.021.

R3.**George W. Evans**, "The Stagnation Regime of the New Keynesian Model and Recent US Policy," Ch. 3 in *Macroeconomics at the Service of Public Policy*, T.J. Sargent & J. Vilmunen (eds), Oxford University Press, 2013, 36-61. DOI: 10.1093/acprof:oso/9780199666126.003.0004.

R4.**George W. Evans** & Bruce McGough, "Equilibrium Selection, Observability and Backward-stable Solutions," *Journal of Monetary Economics*, 2018, 98, 1-10. DOI: 10.1016/j.jmoneco.2018.04.004.

R5.**George W. Evans** & Bruce McGough, "Interest Rate Pegs in New Keynesian Models," *Journal of Money, Credit and Banking*, 2018, 50, 939–965. DOI: 10.1111/jmcb.12523.

4. Details of the impact

The influence of the work of Evans and co-authors has occurred both at a general level and at a more focused and direct level.

At the general level, [R1], [R2], [R3] and [R4] have generated considerable interest within central banks in the adaptive learning approach to expectations and its resultant policy implications following large negative shocks. For example, two regional Fed Presidents (of the St Louis Fed and the NY Fed) have done important policy research using the adaptive learning approach, have supported Fed workshops and conferences on its implications for policy, and have been keynote speakers at these conferences. The President of the St Louis Fed summarises and assesses this research in the following terms *"…this is a line of research which is technically at the research frontier, but which also brings meaningful and tangible policy recommendations to the table that have had an important impact on actual policymaking*." [S1, p. 2]

The impact of [R1], [R2], [R3] and [R4] at the general level provides the context for the impact of [R5] at a much more focused and direct level, which derives from the influence of the underpinning research on neo-Fisherianism on policy discourse, notably in discussions with senior policymakers at the St Louis Fed. These discussions centred on the path of interest rate normalization in the light of the low inflation and the low growth seen in the aftermath of the Great Recession of 2007-2009. The policies of the Federal Open Market Committee in the US from 2008 kept the policy interest rate near zero until December 2015. In 2016, the FOMC began a process of increasing the policy interest rate towards normal levels (i.e. interest rate normalization) and a policy controversy ensued on how this be best achieved, given that inflation was still below the target level. This is the central issue addressed in [R5].

The direct influence of [R5] on the debate about neo-Fisherian policy is evident in interactions, described below, between Evans and McGough and senior officials at the St Louis Fed in the period between 2015 and 2017.

- The neo-Fisherian view was prominently propounded in articles and blog posts by a Vice-President at the St Louis Fed. The VP's views on neo-Fisherian policy are set out in the St Louis Fed Annual Report in 2015 [S2, pp. 8-21] and an article in the Regional Economist (St Louis Fed, July 2016) where he states, for instance, that "*Neo-Fisherian denial will tend to produce inflation lower than central banks' inflation targets and nominal interest rates that are at central banks' effective lower bounds—the low-inflation policy trap*." [S3, p. 9]
- The President of the St Louis Fed (at that time a voting member of the FOMC) was also supportive of some aspects of the neo-Fisherian view. For instance, this is implicit in his article in the *St Louis Fed Review* (Sept/Oct 2010) [S4, pp. 339-352] - where he warns of the danger that active interest rate policy creates an equilibrium with near zero interest rates and inflation - and is explicit in conference presentations at the University of Oregon (13 August 2015) where he states that "*Neo-Fisherianism may… …prove to be an important consideration for monetary policy in the medium and longer term*" [S5, p. 3] and the ECB (18 March 2016) – where he describes how a policy of sharply increasing the interest rate and holding it at a higher level can shock the economy into a normal equilibrium and he states that "*Neo-Fisherian ideas may have an important impact on our thinking about monetary policy in the future*." [S6, p. 36]
- In a blog post on Economist's View, 30 December 2015, 'The Neo-Fisherian View and the Macro Learning Approach' [S7, pp. 1-3], Evans and McGough argued forcefully against the neo-Fisherian view, as propounded by the VP at the St Louis Fed. They argued that the neo-Fisherian view relied strongly on rational expectations generating a rapid adjustment of inflationary expectations. They showed that when inflationary expectations are determined by a process of adaptive learning, a sharp increase in the interest rate would, in contrast to the neo-Fisherian view, generate a deep recession before inflationary expectations had time to adjust.
- The VP at the St Louis Fed responded with a rejoinder to these arguments in a 18 July 2016 blog post titled "More Neo-Fisher" [S8, pp. 1-5], where he disputed the theoretical and empirical relevance of Evans and McGough's approach. Evans and McGough then summarised and extended the analysis relevant to this debate in "Interest Rate Pegs in New Keynesian Models," eventually published in JMCB in 2018 [R5], which included sections that specifically rebutted the VP's rejoinder. Their research was summarized in an invited talk given by Evans at a September 2016 conference attended by the President of the St Louis Fed. The JMCB paper also includes a discussion of US policy over 2015-2016, and in particular supports the arguments of St Louis Fed President in his 17 February

2016 presentation where he argues (in contradiction to the neo-Fisherian view) that the pace of interest rate normalization should be slowed following evidence that inflationary expectations had declined and "*Monetary policy needs to be more clearly data dependent…*" [S9, p. 4] (i.e. interest rate rises should respond to the observed pace of expansion of the economy).

- The President of the St Louis Fed, by virtue of holding this position attends FOMC meetings, participates in discussions and contributes to FOMC assessment of the economy and policy options. He provides the following direct summary and assessment of the importance of [R5]. *"The paper "Interest Rate Pegs in New Keynesian Models" provides a state-of-the-art analysis of a key issue in contemporary discussions of monetary policy. In recent years, inflation has been below stated goal levels in the U.S., Japan, and the Euro Area. Central banks have responded to this situation by lowering policy interest rates more and more in an attempt to raise inflation toward target. So much of this has gone on that today short-term nominal interest rates are actually negative in Japan and the Euro Area, and near zero in the U.S. This sort of situation has not been observed since the 1930s, and many observers have begun to wonder whether central bank policy has actually been counter-productive in the sense that the lower and lower nominal policy rates have encouraged inflation expectations to move lower and lower in tandem with the policy rates, and that this has caused actual inflation to fall as well, leaving these economies in an equilibrium where interest rates, inflation rates, and expected inflation are all very low. This idea is often referred to as "Neo-Fisherian", referring to the famous economist Irving Fisher. One implication may be that central banks would observe higher inflation if nominal policy rates were raised and kept higher for some time. The point of the Evans-McGough paper is to argue that such an argument places too much emphasis on the rationality of economic actors. Evans and McGough relax the rationality of the economic actors in the New Keynesian model using a standard methodology. They then show that the proposed Neo-Fisherian equilibrium with higher nominal policy interest rates, higher inflation, and higher inflation expectations is unstable—the economy would diverge away from this outcome instead of moving toward it. This is a potent argument against the Neo-Fisherian view..."* and, furthermore he includes the paper in "*…a line of research which is technically at the research frontier, but which also brings meaningful and tangible policy recommendations to the table that have had an important impact on actual policymaking*." [S1, pp. 1-2]

While the FOMC had many reasons for their collective policy choice, the actual policy followed from 2015 through to 2019 has been a gradual increase in the policy interest rate that followed evidence of gradual strengthening of the economy. For instance, in January 2016 FOMC minutes contained the following statement "*The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data*". [S10, p. 2] This statement (or very similar formulations) continued to appear in FOMC minutes until 2018. Thus, the actual stated policy of the FOMC was consistent with the arguments of Evans and McGough and is contrary to the neo-Fisherian policy prescription. The exchanges between Evans/McGough and the VP at the St Louis Fed are direct evidence (supported by a statement from the President of the St Louis Fed) of how Evans's research entered and shaped a high-level policy debate with very senior Fed officials.

5. Sources to corroborate the impact

S1. Letter from President and CEO of the Federal Reserve Bank of St. Louis

S2. St Louis Fed Annual Report (2015) https://www.stlouisfed.org/~/media/Publications/Annual-Reports/2015/PDFs/AR_2015_web_sm.pdf

S3. Williamson, S (2016) "Neo-Fisherism: A Radical Idea, or the Most Obvious Solution to the Low-Inflation Problem?" St Louis Fed *Regional Economist* https://www.stlouisfed.org/publications/regional-economist/july-2016/neo-fisherism-a-radical-idea-or-the-most-obvious-solution-to-the-low-inflation-problem

S4. Bullard, J (2010) "Seven Faces of 'The Peril'" *The Federal Reserve Bank of St Louis Review*, 339-352. https://files.stlouisfed.org/files/htdocs/publications/review/10/09/Bullard.pdf

S5. Presentation entitled "neo-Fisherianism" by James Bullard at conference on "Expectations and Dynamic Macroeconomics" at the University of Oregon, August 2015. https://www.stlouisfed.org/~/media/Files/PDFs/Bullard/remarks/Bullard-Expectations-in-Dynamic-Macroeconomic-Models-08-13-2015.pdf?la=en

S6. Presentation entitled "Permazero in Europe?" by James Bullard at International Research Forum on Monetary Policy at the European Central Bank, March 2016. https://www.stlouisfed.org/~/media/Files/PDFs/Bullard/remarks/Bullard-9th-IRFMP-Frankfurt-18-March-2016.pdf?la=en

S7. Blog post by Evans and McGough on Economist's View, Dec 30, 2015, 'The Neo-Fisherian View and the Macro Learning Approach'. https://economistsview.typepad.com/economistsview/2015/12/the-neo-fisherian-view-and-the-macro-learning-approach.html. Evans and McGough critique Williamson's arguments.

S8. Williamson, S (2016) "More Neo-Fisher" blog post http://newmonetarism.blogspot.com/2016/07/more-neo-fisher.html

S9. Bullard, J (2016) February "Changing Imperatives for U.S. Monetary Policy Normalization"

https://www.stlouisfed.org/~/media/Files/PDFs/Bullard/remarks/Bullard-CFA-StLouis-17Feb2016.pdf?la=en

S10. FOMC Minutes January 2016. https://www.federalreserve.gov/newsevents/pressreleases/monetary20160127a.htm