Lessons for QE Policy from Research

Evaluating the Monetary-Policy Toolkit: Lessons for the Future

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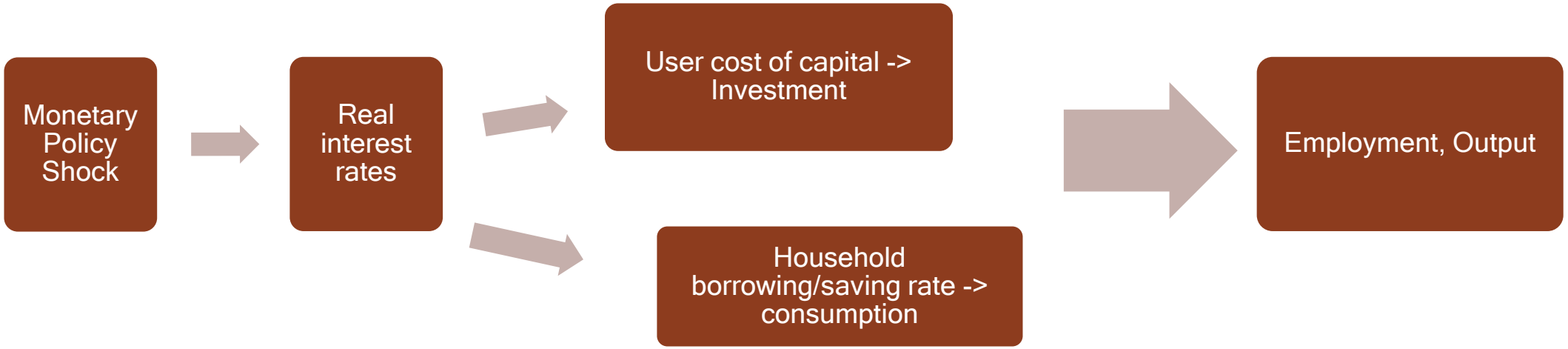
Transmission mechanism, conventional MP



QE transmission mechanism

- "$500 bn of QE lowers 10-year rates by 20 bps"

- … this statement needs to be qualified

1. Dependence on state (market conditions)
2. Dependence on targeted asset market
3. Dependence on agents affected by asset price change

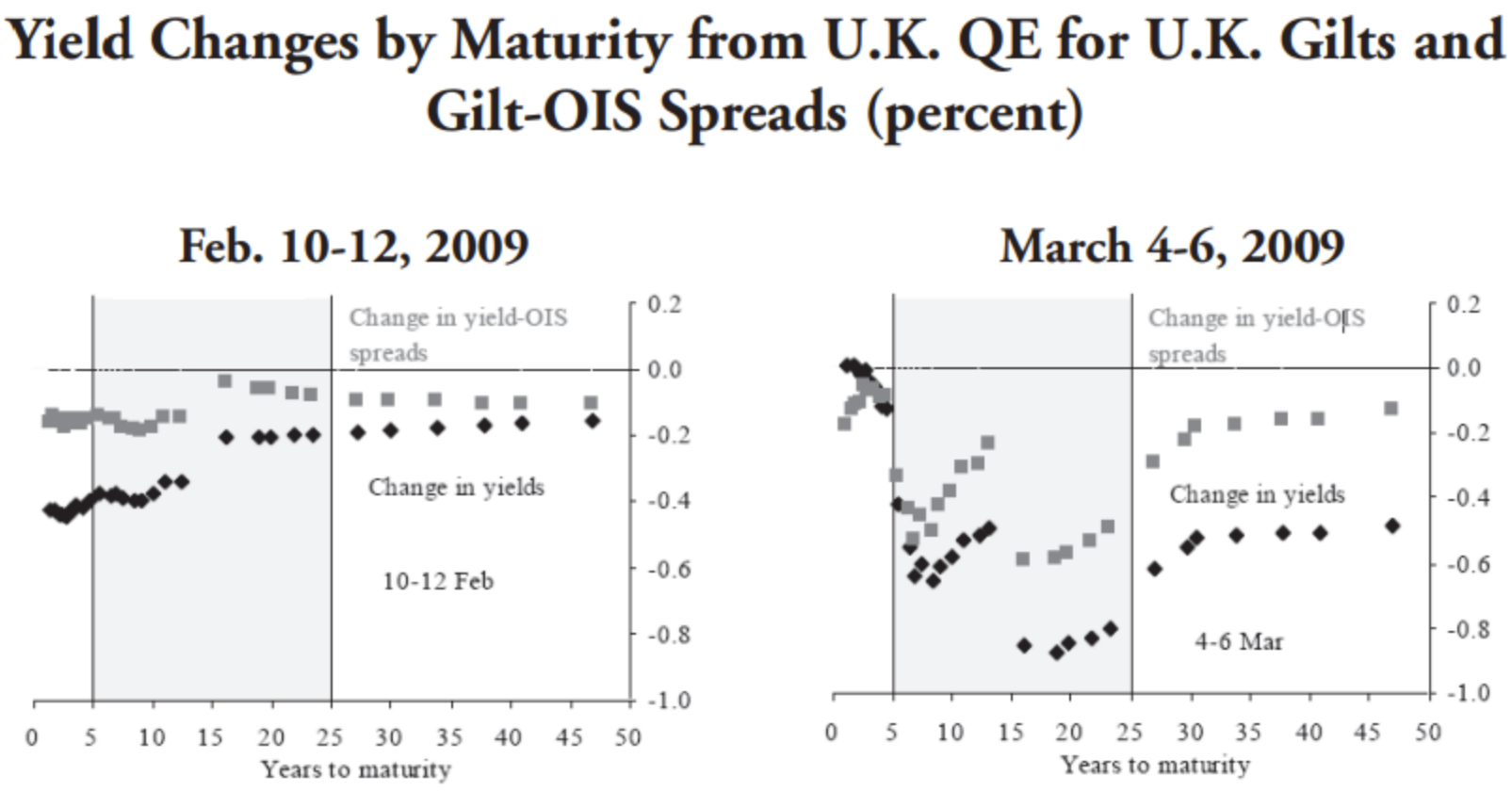
- Key point: QE works through "narrow" channels not broad channels (like conventional MP)

QE Channels: Broad vs. Narrow

- "Conventional" broad channels:
  - Signaling path of policy rate; signaling policy maker preferences

- "Unconventional" narrow channels:
  - Impacts on liquidity premia (QE increases reserve balances)
  - Impacts on risk premia (duration, credit, mortgage…)
  - Impacts on safety/scarcity premia (QE changes supply of safe assets)

Difference-in-Difference (OIS vs. Gilt yield)



Source: Joyce, Lasaosa, Stevens and Tong (2011)

More “narrow” channel evidence

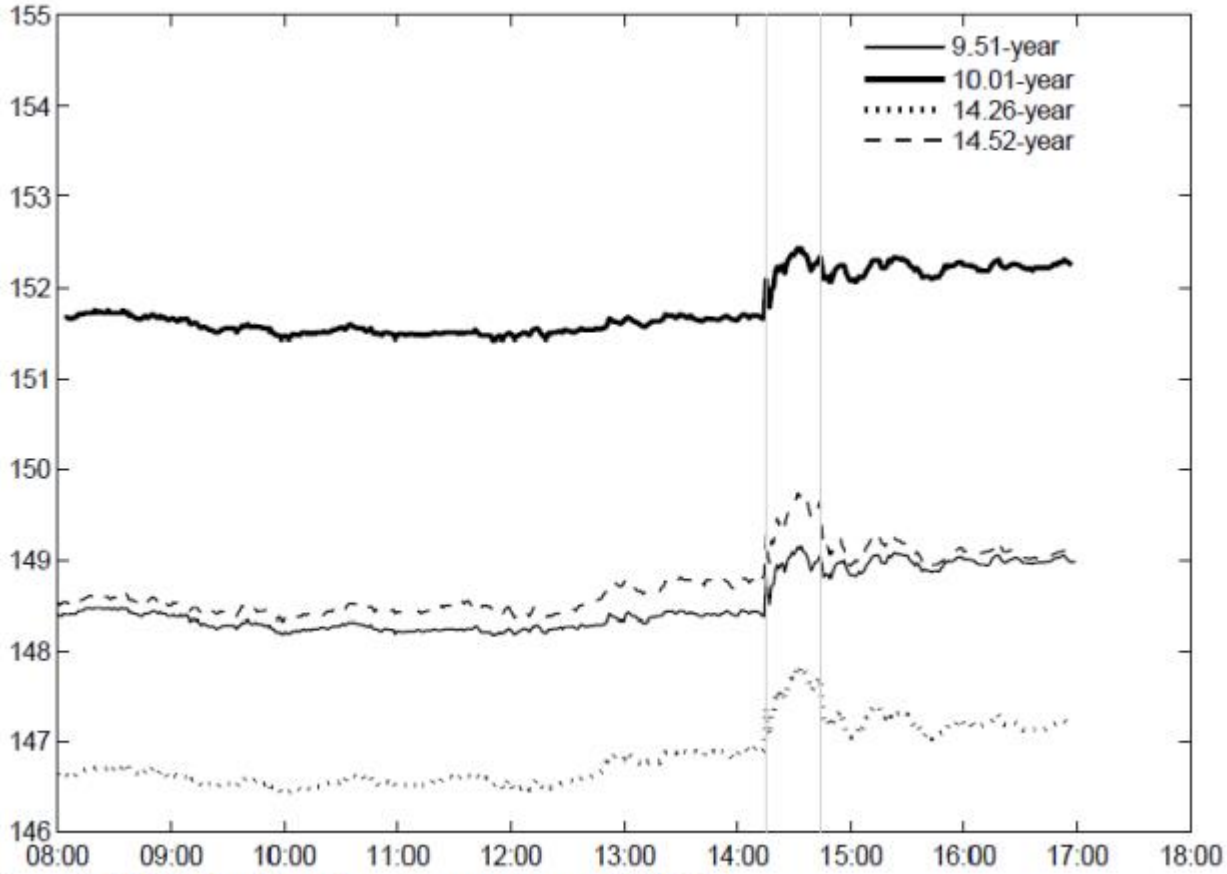


Figure 3: CUSIP-level intraday prices on August 10, 2010:

Source: D’Amico, English, Lopez-Salido and Nelson (2012)

Narrow channel theory

1. Impacts on safety/scarcity premia (QE changes supply of safe assets)

   - In the context of sovereign debt (U.S. Treasury, Bund, Gilt): Investors have mandates/special demands for safe bonds, sometimes of specific maturities

   - In the context of mortgage-backed securities: mortgage-specific funds have mandates to invest in the MBS market, track MBS index, etc.

2. Impacts on risk premia (duration, credit, mortgage…)

   - Investor pricing of risk (SDF) for a given risk is a function of the quantity of risk held by investor
   - For example,

$$\lambda^{risk} \propto \gamma\sigma_W, \qquad where, \qquad \sigma_w = f(quantity\ of\ risk)$$

   - The "spillover" question: what else does this SDF price?

Many more [unconventional] narrow-channel studies

- Krishnamurthy and Vissing-Jorgensen (2011, 2013): MBS purchases moved MBS yields on current-coupon MBS particularly

- Eser and Schwab (2016): SMP announcements by ECB lowered particularly the target countries' sovereign yields during stress periods
  - Altavilla, Giannone and Lenza (2014): OMT announcements by ECB particularly compressed spreads of GIIPS sovereigns to bunds
  - Similar evidence in Nagel, Krishnamurthy, and Vissing-Jorgensen (2018)

- Grosse-Rueschkamp, Steffen, and Streitz (2019), Todorov (2020): ECB CSPP lowered eligible bond yields

- Haddad, Muir and Moreira (2020): Fed IG Corporate bond purchase program and IG yields
  - Similar results in Gilchrist, Wei, Xu, Zakrajsek (2020) for corporate bonds and Moussawi (2022) for municipal bonds

MBS quantity evidence from DiMaggio, Kermani and Palmer (2015)

- If it is narrow channel mechanism, then MBS purchases should particularly spur conforming (not jumbo) mortgage originations, because Fed purchased conforming

TABLE 3

Effect of QE commencement on log refinance origination volumes by QE program

	(1)	(2)	(3)	(4)	(5)
Program	QE1	QE2	MEP	QE3	Tapering
Panel I. Without controls					
Program indicator	1.019***	0.597***	0.544***	0.122	−0.346**
	(0.279)	(0.164)	(0.075)	(0.080)	(0.139)
Jumbo indicator	−2.138***	−2.169***	−1.757***	−1.543***	−1.435***
	(0.156)	(0.188)	(0.116)	(0.098)	(0.036)
Program × Jumbo	−0.831**	0.067	−0.057	0.060	0.416**
	(0.289)	(0.208)	(0.143)	(0.114)	(0.146)
Observations	492	492	492	492	492
R-squared	0.637	0.560	0.466	0.355	0.292

Rodnyansky and Darmouni (2017): MBS QE and bank lending

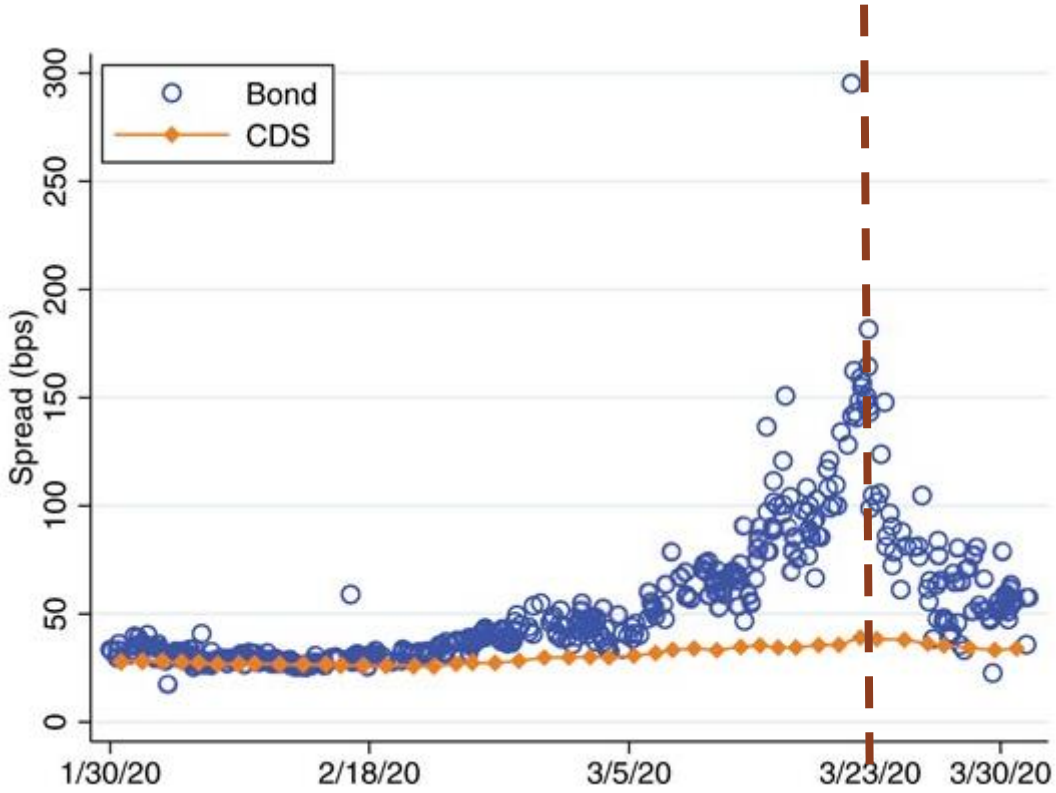
- <u>If it is narrow channel, then MBS not Treasury purchases should drive lending</u>
- Banks hold different amounts of MBS and Treasuries in 2008Q1 (pre-QE)

Table 6
Pooled QE regression

	$\log(Lending_{it})$		$\log(RE\ Lending_{it})$		$\log(CI\ Lending_{it})$	
	(1)	(2)	(3)	(4)	(5)	(6)
$Treat_{M,i} \cdot QE1_t$	0.034***		0.047***		0.004	
	[0.008]		[0.009]		[0.028]	
$Treat_{T,i} \cdot QE2_t$	0.028		−0.008		0.034	
	[0.018]		[0.014]		[0.037]	
$Treat_{M,i} \cdot QE3_t$	0.017**		0.021**		0.011	
	[0.008]		[0.010]		[0.039]	

- Spillovers to real estate lending, but less (none?) to C&I Lending

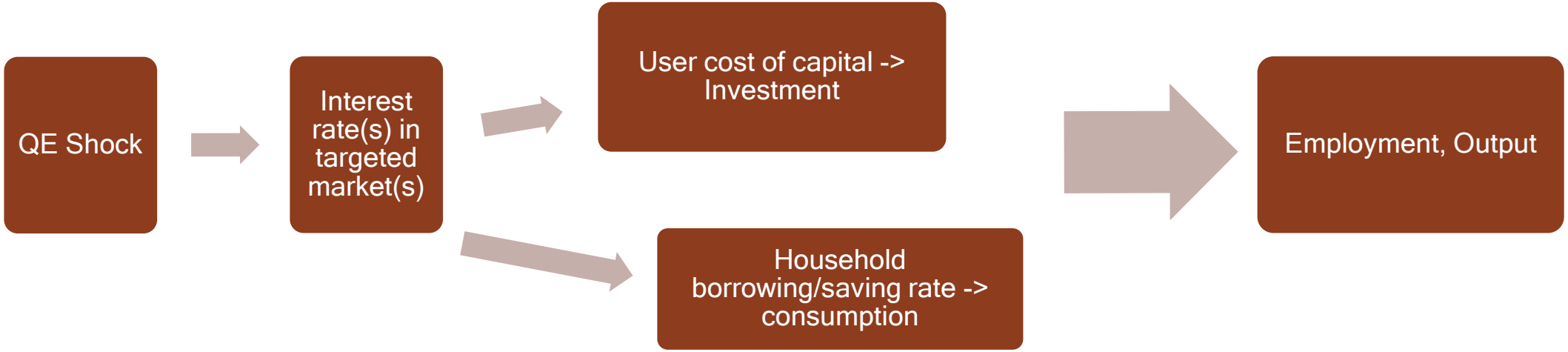
QE in distressed states of the world



Google Bond Yield and CDS;
Fed Bond Purchase Program Announced 3/23

Source: Haddad, Muir and Moreira (2020)

Macro effects of QE



Mortgage QE and households

- QE impacted MBS yields and passed through to household mortgage rates
  - Krishnamurthy and Vissing-Jorgensen (2011, 2013) and Di Maggio, Kermani, and Palmer (2015)

- Households refinanced at lower rates: boost to household consumption

- Households expanded real estate demand: boost to real estate prices

User cost of capital and firm investment

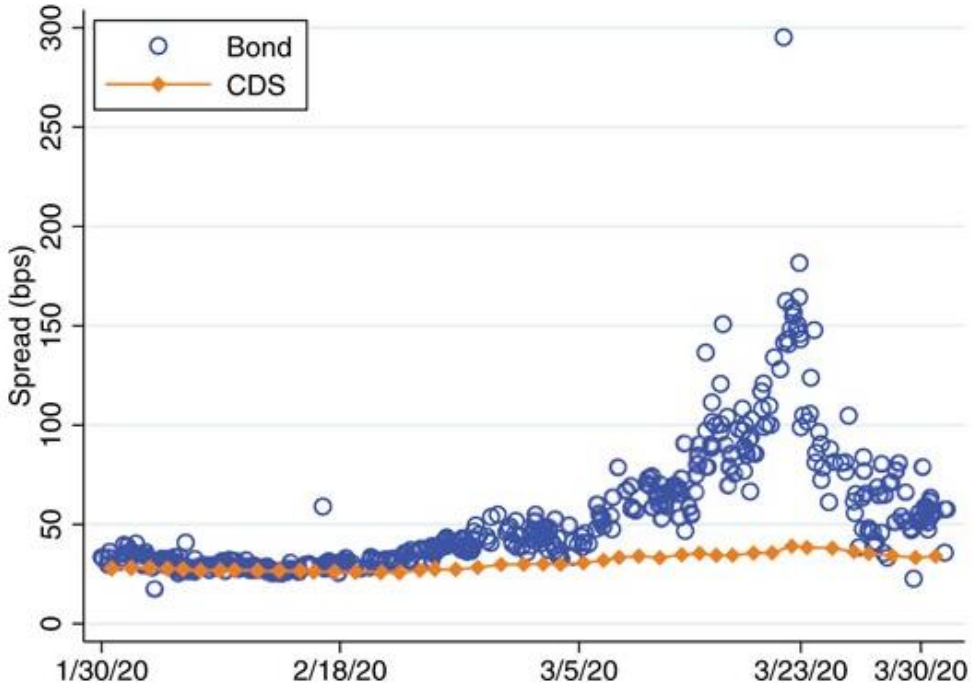
- Corporate expenditures will only respond to QE if QE affects the user cost of capital on the marginal unit of capital

- Suppose Google had two sources of capital
  - Cash (it has a lot…)
  - Corporate bond market

- The marginal source of capital is almost surely cash, where the user cost of capital is the nominal interest rate

- Corporate bond QE should be expected to have no effects on Google investment

- Evidence for the "no effect": Acharya and Steffen (2020), Darmouni and Siani (2022)



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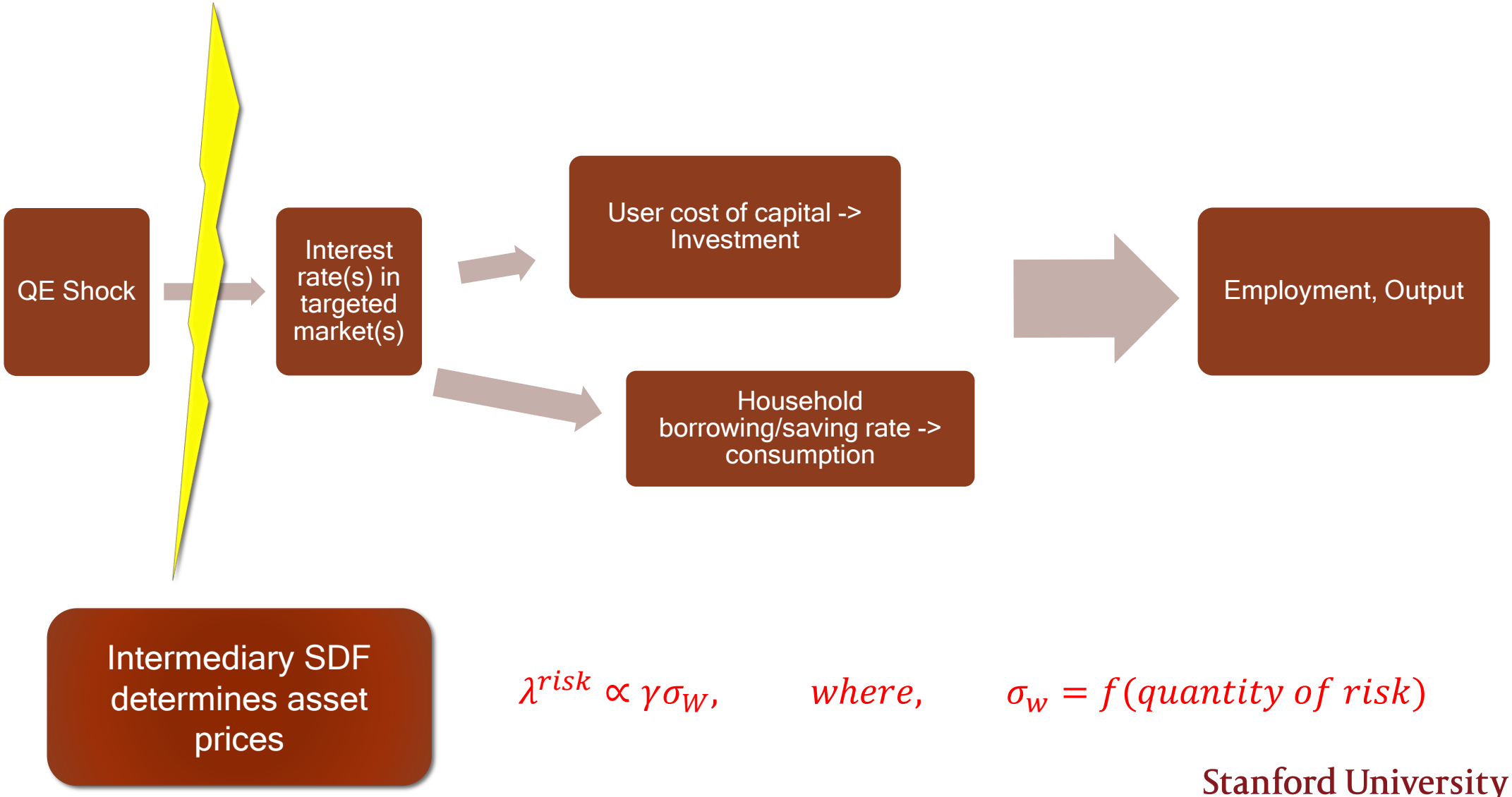
QE and corporate finance

- Evidence for a pure cash hoarding effect from Fed 2020 COVID intervention in Acharya and Steffen (2020), Darmouni and Siani (2022)

- Grosse-Rueschkamp, Steffen, and Streitz (2019):
  - CSPP lowered bond yields, but had limited impact on treated firms' investment
  - But banks that were more exposed to treated firms increased lending to other firms; a spillover through a bank lending channel

Macro effects via intermediation SDF



$$\lambda^{risk} \propto \gamma\sigma_W, \qquad where, \qquad \sigma_w = f(quantity\ of\ risk)$$

Intermediation Channel

- Suppose instead that we considered a financial intermediation channel
  - The macro analog of He and Krishnamurthy (2013) and Vayanos and Vila (2021)
  - The SDF of these intermediaries prices both the narrow assets as well as related credit assets such as loans
  - Macro financial intermediation models (Gertler and Kiyotaki, 2010, Gertler and Karadi, 2011, Brunnermeier and Sannikov, 2014, He and Krishnamurthy, 2019, Papousi, Piazzesi and Schneider, 2021) build on this observation

1. *In this model, QE should purchase the low-price ("fire-sold") assets, to shore up the balance sheet of the intermediary, lowering risk prices and increasing lending*
2. *In this model, QE is particularly effective when constraints on financial intermediation is tight (e.g., distressed periods)*

QE transmission mechanism

- "$500 bn of QE lowers 10-year rates by 20 bps"

- … this statement needs to be qualified

1. Dependence on state (market conditions)
   - Illiquidity conditions, financial constraints, risk aversion
2. Dependence on targeted asset market
   - Markets are segmented; spillovers a function of segmentation
3. Dependence on agents affected by asset price change
   - Intermediary vs. mortgage rate vs. corporate bond yield

From what we have learned to policy making

- Current policy implicitly uses a model that treats QE and conventional policy as similar
  - "Tying-together" rule
  - "$500 bn of QE lowers 10-year rates by 20 bps"
  - Sequencing: taper asset purchases and then raise policy rate

- Advantage: it is simple and communicable in terms of a policy instrument that is well understood

- But it is probably not optimal

Policy rules given what we have learned (1)

- Since QE impacts are higher in crisis/turmoil states than normal states
  - Compared to conventional policy

- It follows that central bank should use balance sheet policy more in crisis states than normal
  - Expand balance sheet in states worse than X
  - Shrink balance sheet in states better than X
  - X determined by cost of balance sheet and macro-benefit of policy

- In contrast, the tying-together rule favors delaying balance sheet reductions

Policy rules given what we have learned (2)

- Since QE impacts work through narrow channels of the asset market targeted
  - Compared to conventional policy

- It follows that central bank should use balance sheet policy considering the mechanics of the targeted asset market
  - Buy MBS if housing is central to macro dynamics
  - Buy corporate bonds if aiming to shore up intermediary balance sheets

- In contrast, the tying-together has probably led to some mistakes
  - Buying MBS in 2020/2021 to fuel a housing boom in the U.S.
  - Buying corporate bonds driving up corporate leverage

Conclusion

- QE works differently than conventional policy
  - Impacts are most potent during periods of financial distress, segmentation, illiquidity
  - Impacts are highest in the asset market targeted

- We are still a long way from integrating these points quantitatively into a macro framework useful for guiding policy

- But the insights, thus far, already suggest the type of policy rules that should govern QE