# Interesting/useful papers - summaries

# VAR PAPERS

## [Risk, uncertainty and monetary policy (Bekaert, Hoerova & Lo Duca, 2013)](https://www.sciencedirect.com/science/article/pii/S0304393213000871?casa_token=1U-cMBCkmtEAAAAA:W9CLPyP-OE_spfoBzu6QTyeKkzgknqWZmGDuoKQKanGAjlMk5RfInp-FePGMj1ce7zPExs2o0Bc)

Abstract: The VIX, the stock market option-based implied volatility, strongly co-moves with measures of the monetary policy stance. When decomposing the VIX into two components, a proxy for risk aversion and expected stock market volatility (“uncertainty”), we find that a lax monetary policy decreases both risk aversion and uncertainty, with the former effect being stronger. The result holds in a structural vector autoregressive framework, controlling for business cycle movements and using a variety of identification schemes for the vector autoregression in general and monetary policy shocks in particular. The effect of monetary policy on risk aversion is also apparent in regressions using high frequency data.

* Basically conduct a VAR study that shows close relationship between policy rate and measured risks given by the VIX index
* Show that a cut in Fed Funds rate is followed by a dampening of the CIX index
  + In particular, they show that a loosening of monetary policy reduces the volatility risk premium in stocks after about three quarters with a persistent effect lasting for more than two years

## [Capital flows and the risk-taking channel of monetary policy (Bruno & Shin, 2015)](https://www.sciencedirect.com/science/article/pii/S0304393214001688?casa_token=bAo_HhfCRiwAAAAA:989rlydQmAcAcOkrtppTiiSyxAIJWMC_isa9FAPzRTWojYQvkBWj6GcEibN7bYZhP5lsSfOoRcw)

Abstract: Adjustments in bank leverage act as the linchpin in the monetary transmission mechanism that works through fluctuations in risk-taking. In the international context, we find evidence of monetary policy spillovers on cross-border bank capital flows and the US dollar exchange rate through the banking sector. A contractionary shock to US monetary policy leads to a decrease in cross-border banking capital flows and a decline in the leverage of international banks. Such a decrease in bank capital flows is associated with an appreciation of the US dollar.

* Conducts a VAR examining the dynamic relationship between the VIX index of implied volatility on the S&P index options, the real Fed Funds target rate and a proxy for the leverage of global banks
  + Want to study how monetary policy interacts with measured risks and the risk-taking behaviour of banks

## [Monetary Policy & Risk taking (Angeloni, Faia & Lo Duca, 2015)](https://www.sciencedirect.com/science/article/pii/S0165188914003261?casa_token=wYqLk8a8lHAAAAAA:lx-uJocsUUeADZGhOZ4Gk6zdSn1sNnRhmCst0ZVHIGCA7Lv2dJn_vF3h03PRzGL8ePZXtBWJjJI)

Abstract: We assess the effects of monetary policy on bank risk to verify the existence of a risk-taking channel – monetary expansions inducing banks to assume more risk. We first present VAR evidence confirming that this channel exists and is particularly significant on the bank funding side. Then, to rationalize this evidence we build a macroeconomic model where banks subject to runs endogenously choose their funding structure (deposits vs. capital) and risk level. A monetary expansion increases bank leverage and risk. In turn, higher bank risk in steady state increases asset price volatility and reduces equilibrium output.

* Conduct a VAR, expanding Christiano et al. (1999) and expand it using Funding risk (using measures of non-core bank liabilities), lending risk (difficult to find variable, they use soundness of bank borrowers via households and corporations) and total bank risk (using the realised volatility of the datastream us bank equity index, the volatility is the average daily absolute return of the index over each quarter)
* Connect it to the macro literature & set up a macro model with fundamental bank runs

## [Changes in bank lending standards and the macroeconomy (Bassett et al., 2014)](#_Hlk61428077" \s "1,10904,10981,2,,Changes in bank lending standard)

Abstract: Identifying macroeconomic effects of credit shocks is difficult because many of the same factors that influence the supply of loans also affect the demand for credit. Using bank-level responses to the Federal Reserve's Loan Officer Opinion Survey, we construct a new credit supply indicator: changes in lending standards, adjusted for the macroeconomic and bank-specific factors that also affect loan demand. Tightening shocks to this credit supply indicator lead to a substantial decline in output and the capacity of businesses and households to borrow from banks, as well as to a widening of credit spreads and an easing of monetary policy.

## [In search for yield? Survey-based evidence on bank risk taking (Buch, Eickmeier & Prieto, 2014)](https://www.sciencedirect.com/science/article/pii/S0165188914000281?casa_token=BzHjzi6YFCAAAAAA:vERD2FDekMfgc77-KC9ZHRU1YFtXW8ztC5lbzVsPE8_KCCvGbXGhTiakVnTSe9F4IbdJMwDtD1g)

Abstract: Monetary policy can have an impact on economic and financial stability through the risk taking of banks. Falling interest rates might induce investment into risky activities. This paper provides evidence on the link between monetary policy and bank risk taking. We use a factor-augmented vector autoregressive model (FAVAR) for the US for the period 1997–2008. Besides standard macroeconomic indicators, we include factors summarizing information provided in the Federal Reserve’s Survey of Terms of Business Lending (STBL). These data provide information on banks׳ new loans as well as interest rates for different loan risk categories and different banking groups. We identify a risk-taking channel of monetary policy by distinguishing responses to monetary policy shocks across different types of banks and different loan risk categories. Following an expansionary monetary policy shock, small domestic banks increase their exposure to risk. Large domestic banks do not change their risk exposure. Foreign banks take on more risk only in the mid-2000s, when interest rates were ‘too low for too long’.

# Non-VAR papers (only for Lit review)

## [Monetary Policy, Risk-taking and Pricing: Evidence from a Quasi-Natural Experiment (Ioannidou, Ongena & Peydró, 2015)](https://www.researchgate.net/publication/314913028_Monetary_Policy_Risk-Taking_and_Pricing_Evidence_from_a_Quasi-Natural_Experiment)

Abstract: We study the risk-taking channel of monetary policy in **Bolivia**, a dollarized country where monetary changes are transmitted exogenously from the USA. We find that a lower policy rate spurs the granting of riskier loans, to borrowers with worse credit histories, lower ex-ante internal ratings, and weaker ex-post performance (acutely so when the rate subsequently increases). Effects are stronger for small firms borrowing from multiple banks. To uniquely identify risk-taking, we assess collateral coverage, expected returns, and risk premia of the newly granted riskier loans, finding that their returns and premia are actually lower, especially at banks suffering from agency problems.

* Set up a ‘duration model’, will most likely not be important for us

## [Bank Leverage and Monetary Policy’s Risk-Taking Channel: Evidence from the United States (Dell’Arriccia, Laeven & Suarez, 2016)](https://onlinelibrary.wiley.com/doi/full/10.1111/jofi.12467?casa_token=abbPzk2dfp4AAAAA%3A129QH9amvm3rc6I1h0aV5PiXUWsRijEcd4D9JskkSlmutueoKNiCk0y4OohVsaWjugEOcpeb5M5IiFdt)

Abstract: We present evidence of a risk‐taking channel of monetary policy for the U.S. banking system. We use confidential data on banks’ internal ratings on loans to businesses over the period 1997 to 2011 from the Federal Reserve's Survey of Terms of Business Lending. We find that ex ante risk‐taking by banks (measured by the risk rating of new loans) is negatively associated with increases in short‐term interest rates. This relationship is more pronounced in regions that are less in sync with the nationwide business cycle, and less pronounced for banks with relatively low capital or during periods of financial distress.

* Panel regression analysis, most likely not super useful for us (just for lit review)
* Presents evidence not only for risk-taking channel, but also for ‘risk-shifting’ channel – inverse relationship between interest rates and bank risk-taking is increasing in bank capital

## Real interest rates, leverage and bank risk-taking (Dell’Ariccia, Laeven & Marquez, 2014)

Abstract: Do low interest rate environments lead to greater bank risk-taking? We show that, when banks can adjust their capital structures, reductions in real interest rates lead to greater leverage and higher risk for any downward sloping loan demand function. However, if the capital structure is fixed, the effect depends on the degree of leverage: following a decrease in interest rates, well capitalized banks increase risk, while highly levered banks may decrease it if loan demand is linear or concave. Further, the capitalization cutoff depends on the degree of bank competition. This effect therefore should vary across countries and over time.

* Set up a simple equilibrium model for bank risk taking, most likely not useful for us (just for lit review)

## [Monetary policy and bank risk-taking: Evidence from the corporate loan market (Paligorova & Santos, 2017)](https://www.sciencedirect.com/science/article/pii/S1042957316300626?casa_token=H_I0paHiQPsAAAAA:lN9kNaXME-jFK0Nc4aQa1bWRDcN-bEFoXPtOX5g6LArNAYMSm_BenxvWzofIt0XKUF9X8B6KF-c#bbib0004)

Abstract: Our study of the corporate loan pricing policies of U.S. banks over the past two decades shows that loan spreads for riskier firms become relatively lower during periods of monetary policy easing compared to tightening. This effect is driven by banks with greater risk appetite, measured from individual banks’ answers to the Senior Loan Officers Opinion Survey. Our results hold with different fixed effects that account for time-varying observed and unobserved heterogeneity of credit demand and bank lending conditions that are not directly related to monetary policy. Together with our survey-based measure of bank risk appetite, we provide compelling evidence of the presence of a bank risk-taking channel of monetary policy in the U.S.

* Using fixed effects to identify risk-taking channel and then apply a PROBIT, most likely not useful for us (just for lit review)

## Capital regulation, risk-taking & monetary policy: A missing link in the transmission mechanism? (Borio & Zhu, 2012)

* Monetary transmission mechanisms are studied in depth
  + This paper investigates interaction of capital regulation, business cycle and transmission mechanism
  + Insufficient attention has been paid to link between monetary policy & perception and pricing of risk = “risk-taking channel”
  + Finding: changes in financial system & prudential regulation may have increased the importance of risk-taking channel; prevailing concepts are not fit to capture effects
* **Introduction**
  + Brief outline of history of current state of transmission mechanisms
  + 3 general observations:
    - **First**, influence of capital regulation on financial system & business cycle has been increasing
      * Higher risk-sensitivity of minimum capital threshold & more pervasive impact on how firms measure, manage & price risks
      * Suggests that role of prudential constraints might be growing
    - **Second**, so far insufficient attention has been paid to link between monetary policy and perception and pricing of risk by economic agents (= “risk-taking channel”)
      * Argue that notions of liquidity become more significant (akin to a multiplier effect)
    - **Third**, if risk-taking channel is neglected, important aspects of overall transmission might be omitted
      * Endogenous interaction between reaction function and cumulative strength and shape of the transmission chain
      * Most times, risk-taking channel can be expected to be ‘persistence-enhancing’. However, if risk is underestimated, the self-stabilising properties of the economy my not guarantee a fully benign increase in persistence
* **Minimum capital standards and the transmission mechanism**
  + Capital standards, bank behaviour & the business cycle
    - A minimal capital standard can affect bank behaviour in 2 ways
      * **Capital threshold effect** examines how banks adjust their portfolios in response to changes in capital regulation, given their attitude towards risk and their assessment of risk
        + Arises because breaching the minimum threshold is extremely expensive for a bank – breaching is likely to trigger restrictive supervisory actions & can result in serious reputational costs and adverse market reactions
      * **Capital framework effect** refers to the impact of the new prudential arrangements on banks’ risk management framework, and hence also on their attitude towards risk and risk measurement technology
    - evolution of minimal capital regulation
      * Basel (1980s) – increase of capital requirement; 2006 – more risk-sensitivity
      * Increased influence of prudential regulation and supervision on bank behaviour
    - Minimum threshold behaves procyclical for a given portfolio
      * It would, however, be wrong to assume that higher risk sensitivity in the minimum threshold necessarily implies increased procyclicality
  + Capital standards and the transmission mechanism
    - Previous Literature has focused on bank capital channel of monetary policy here (changes in policy rates influence the wedge between bank capital and the threshold which, in turn, influences the banks’ business choices)
    - Points that have been broadly confirmed by empirical evidence:
      * First, impact of changes in interest rates on the capital cushion is multifaceted (direct and indirect channel)
      * Second, impact of changes in the interest rates on the capital cushion and on behaviour is likely to vary substantially with background macroeconomic and financial conditions as well as with characteristics on the banks’ balance sheets.
      * Third, the impact of changes in interest rates my be asymmetric as between increases and decreases, partly depending on background conditions
      * Fourth, for given balance sheet conditions, the size of the effect may vary depending on the extent to which banks may themselves be sensitive to external financing constraints
* **Risk-taking, liquidity and the transmission mechanism**
  + A “risk-taking” channel of monetary policy?
    - ‘economics’ and ‘finance’ have different perceptions of risk – monetary transmission would benefit from a combination of the two notions
      * **Risk in finance:** measurement & pricing of risk is central (e.g. value at risk, stress testing
      * **Risk in economics:** risk is less central, despite large literature (e.g. asymmetric information, risk attitudes of agents, …), models restrict the ways risk can enter the system/behaviour – often exogenous
    - **“risk taking channel” =** impact of changes in policy rates on either risk perceptions or risk-tolerance and hence on the degree of risk in the portfolios. Channel operates in 3 ways:
      * Through the impact of interest rates on valuations, incomes and cash flows
      * Through the relationship between market rates and target rates of return
      * Through the communication policies and reaction function of the central bank
  + The role of “liquidity” (= the ease with which perceptions of value can be turned into purchasing power)
    - Risk taking and liquidity are interconnected and can reinforce each other
      * Weaker constraints increase effective risk tolerance
      * This link can add to the strength of monetary policy transmission in a sort of ‘liquidity multiplier’
  + Evolution of the financial system, capital regulation & accounting – 3 observations:
    - First, risk taking channel has always been present, the evolution of the financial system has been adding to its prominence
    - Second, since the framework of capital standards is becoming more important with regards to risk, it should be expected to have growing influence on the transmission mechanism
    - Third, the risk-taking channel underscores the importance of how valuations are measured and of their link to the measurement of risk
* **The monetary policy regime and the transmission mechanism**
  + so far, we know that minimum capital standards & the risk taking channel could become more important
    - so far only brief reference to the monetary policy regime in place
      * risk taking channel is completely benign if risk perceptions are correct and incentives align. If that is not the case, the channel will still be benign as long as the confluence of background economic conditions is stable
      * if this is not the case, higher risk-taking could lead to excessive risk-taking, that does not find sufficient resistance in institutional characteristics of the financial systems (e.g. prudential policy)
        + can lead to overextension of balance sheets & build-up of financial imbalances that at some point unwind
  + From local to global effects
    - Overextension in risk-taking and balance sheets can contribute to occasional boom-bust cycles in the macro-economy – these can also take place in absence of overt inflationary pressure
      * These types of fluctuations seem to be becoming more common
    - “if the reaction function of the monetary authorities does not restrain risk-taking and the corresponding expansion of financial imbalances even if near-term inflation remains low and stable, it can sometimes unwittingly accommodate the build-up of the imbalances”
  + Current benchmark DSGE models are not suited to capture that
* **Conclusion**