



The Nexus between Financial fragility Conditions, Banking Sector Profitability and the Macroeconomic Environment in Jamaica

*40th Annual Monetary Studies Conference
Caribbean Centre for Money and Finance
2-4 October 2013*

Research Questions

- i) what is, if any, the relationship between banking sector fragility and economic growth considerations

- i) what is, if any, the relationship between banking sector profitability, economic growth and financial stability considerations.

The Role of ERM and proper risk management within Bank

Macroeconomic Models tend not to include the notion of default

- “Once one tries to include the potentiality for default into a macro model, such modeling becomes much harder. Partly as a result, default is assumed away in the standard Walrasian models, from which the dynamic stochastic general equilibrium (DSGE) model is directly descended. In the technical jargon, the transversality condition implies that all debtors repay all their due debts in full by the terminal date of the model. But this assumption requires two conditions to hold, both of which are patently false. The first is that no debtor fails to repay, even when it is in his own self-interest so to do, (i.e., no strategic defaults)...The second is that, whatever happens in the future, the debtor will still be able to repay. This must logically require complete financial markets...”

(Goodhart & Tsomocos, 2011).

Financial Data Used

Financial Sector Data

December 2004 and June 2011

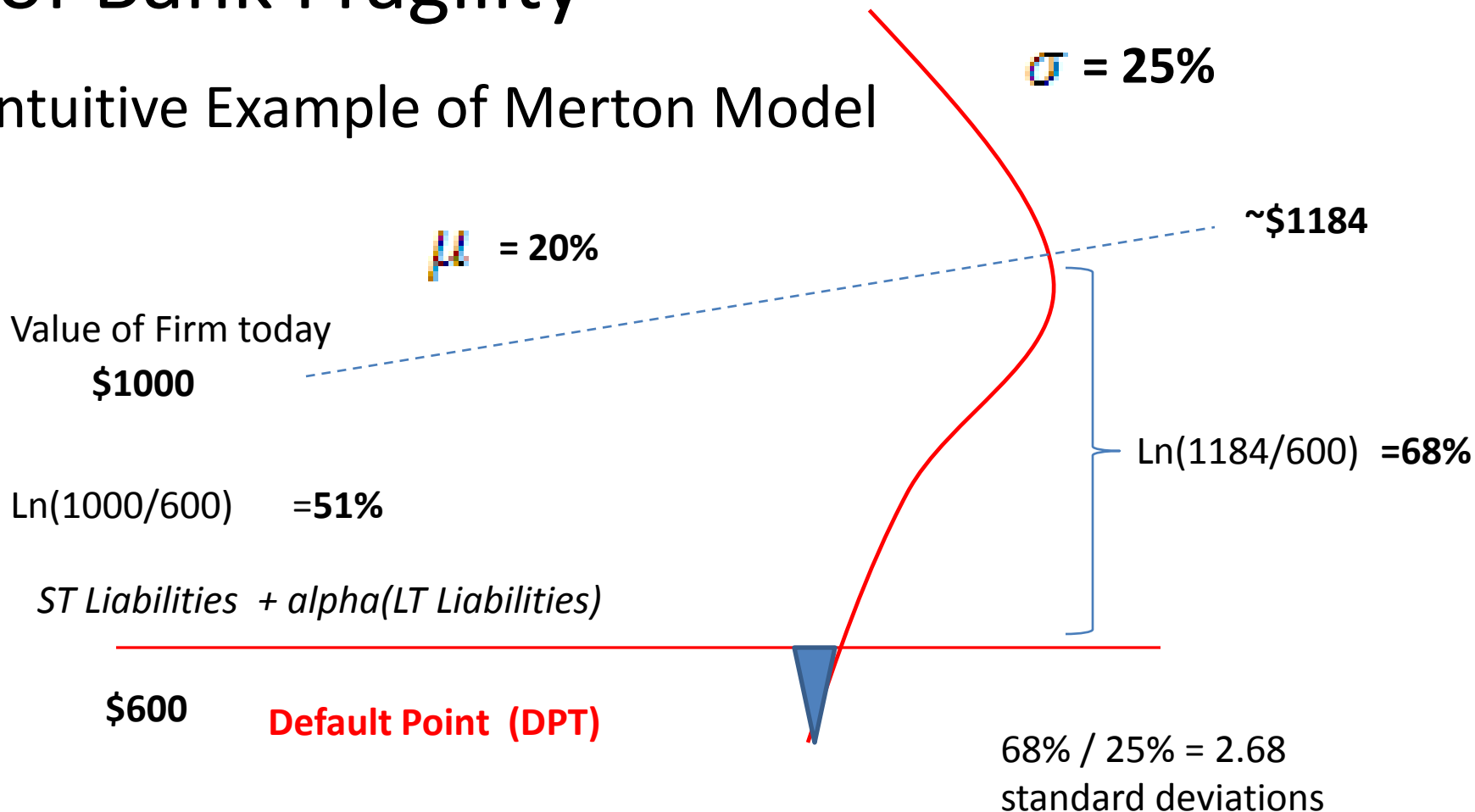
- Daily stock price data (JSE)
- Monthly data on the shares outstanding (JSE)
- Quarterly balance sheet information for DTIs (BOJ)
 - current liabilities and long-term liabilities
- Equity Valuation of Publicly Listed Banks

Macroeconomic Data Used

- Gross domestic product (GDP) - STATIN
- The consumer price index (CPI) - STATIN
- Short-term interest rates (STINT) - STATIN
- 180-day Treasury Bill - BOJ
- Quarterly in frequency between December 2004 and June 2011.

Methodology Part 1: Deriving an index of Bank Fragility

Intuitive Example of Merton Model



One can convert standard deviations into probabilities using the standard normal curve

Computing Probability of Insolvency

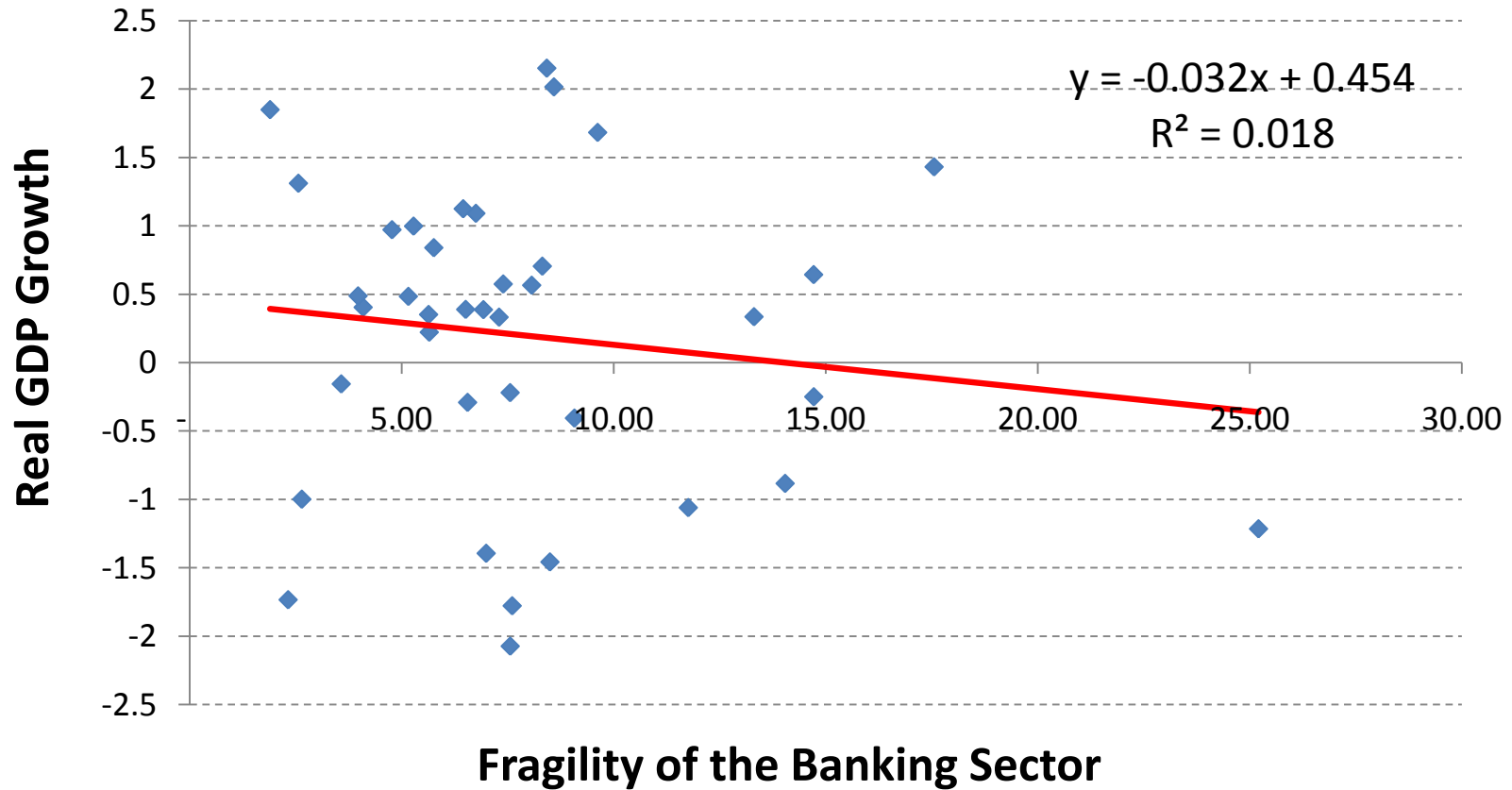
$$d_2^* = \frac{LN\left(\frac{V_0}{DB}\right) + \left(\mu - \frac{\sigma_v^2}{2}\right)T}{\sigma\sqrt{T}} \quad (1)$$

$$\text{Probability of Insolvency} = N\left(-\frac{LN\left(\frac{V_0}{DB}\right) + \left(\mu - \frac{\sigma_v^2}{2}\right)T}{\sigma\sqrt{T}}\right) \quad (2)$$

- Closed form solution to compute P(Insolvency)
- However, the marked-to-market value of the firm is unobservable (at desired frequency) and so is the volatility of the firm's assets

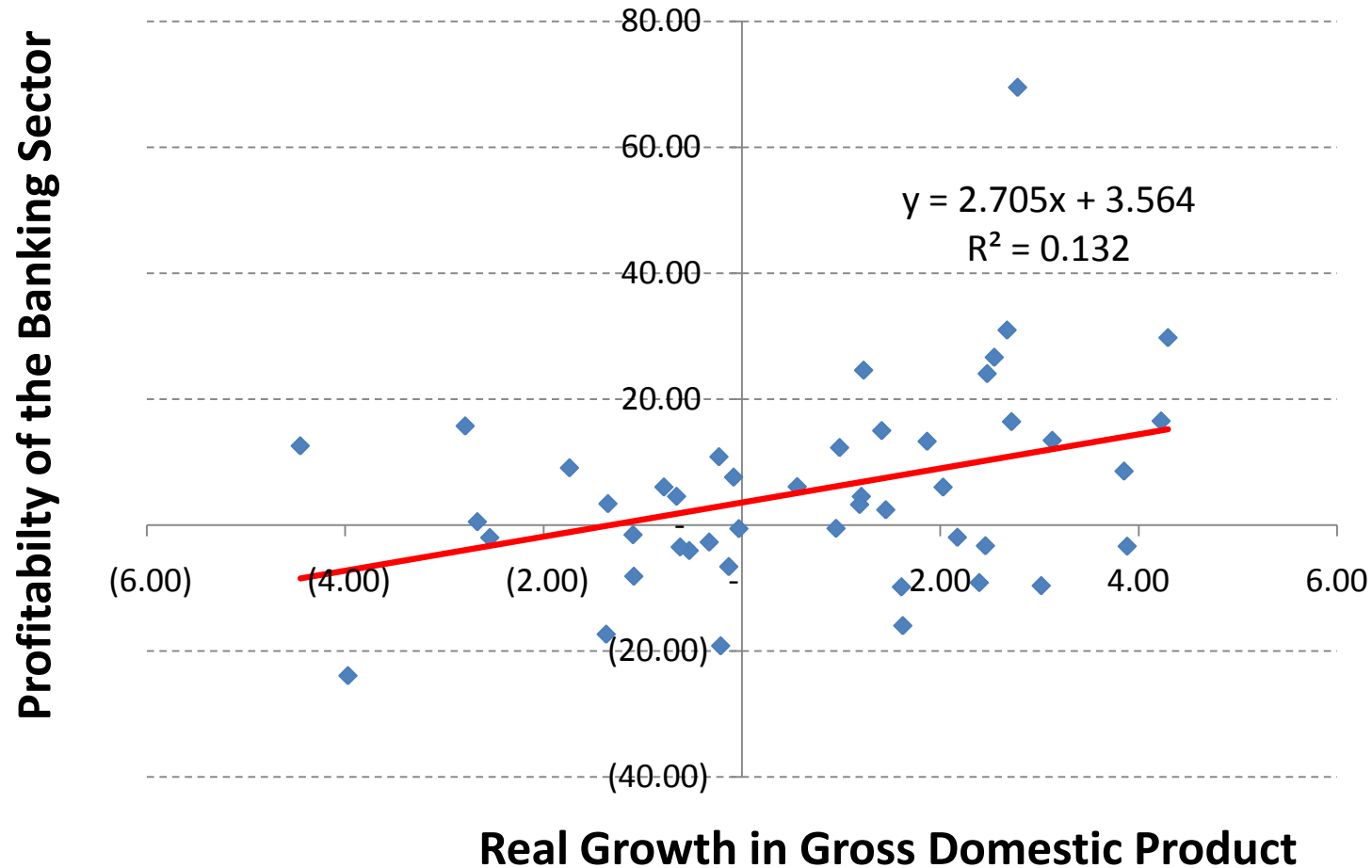
Relationship between Bank Fragility and GDP Growth

Preliminary: Relationship between Bank Fragility and GDP Growth



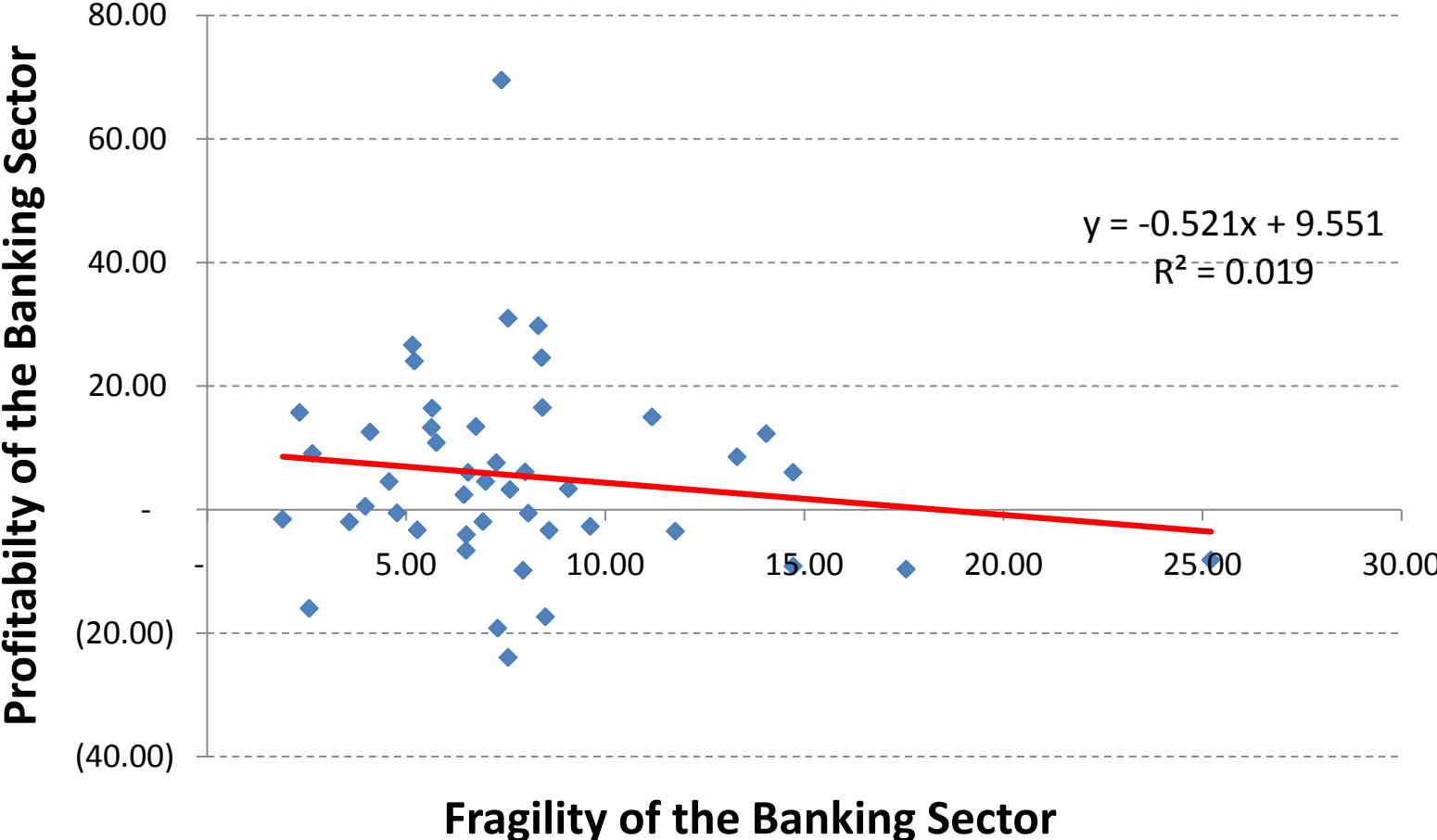
Relationship between Bank Profitability and Real GDP Growth

Preliminary: Relationship between Real GDP growth and Bank Profitability



Relationship between Bank Fragility and Bank Profitability

Preliminary: Relationship between Bank Fragility and Profitability



Methodology: Part 2 – Compute VAR

- The VAR is computed using the macro variables, where the macro variables are given by equation below

$$X_t = c + B(L)X_t + v_t$$

$$X_t \equiv (PoD_t, GDP_t, Eq_t, Infl_t, Stint)$$

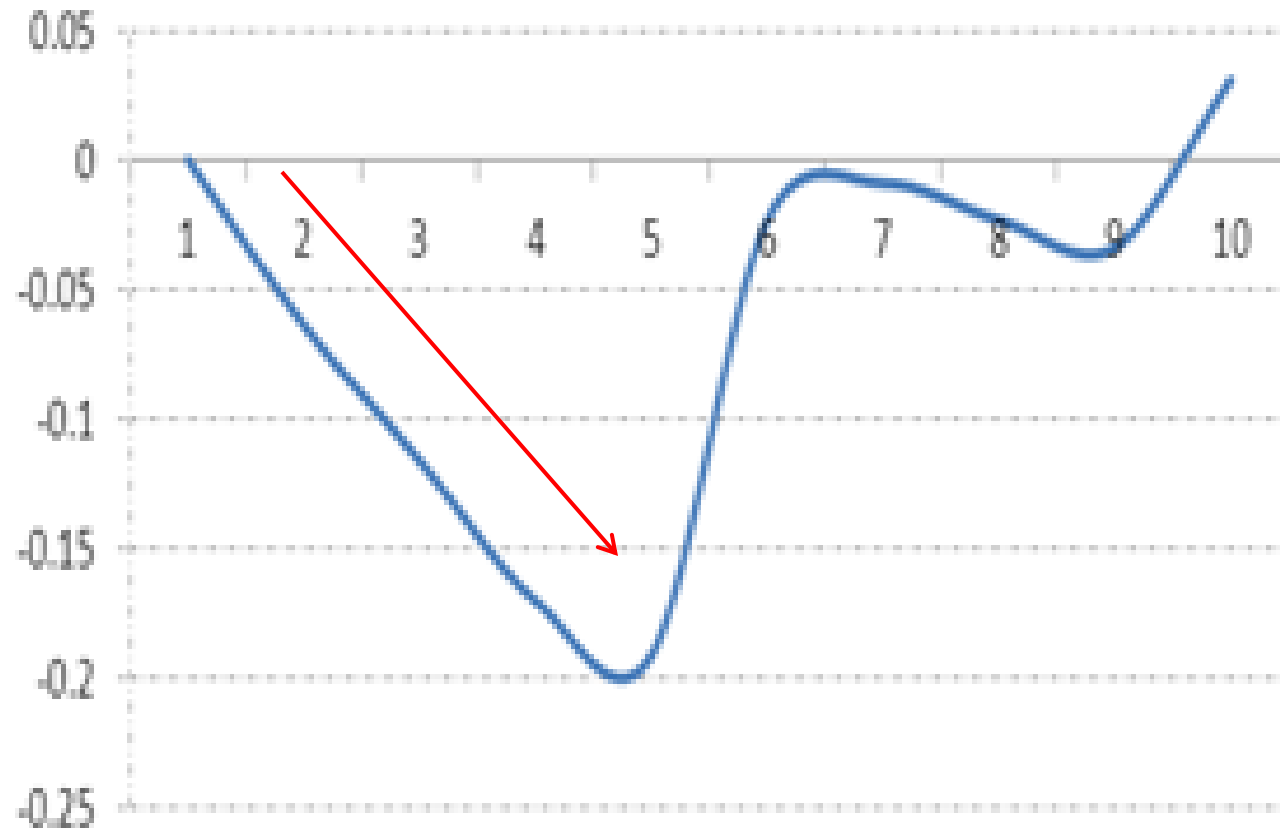
$$v_t \sim N(0, \Omega)$$

- where PoD represents the metric for financial instability, GDP -the real quarterly growth rate of GDP, Eq- annual change in banking sector equity, Infl - the quarterly inflation rate and Stint- short-term interest rates, respectively.



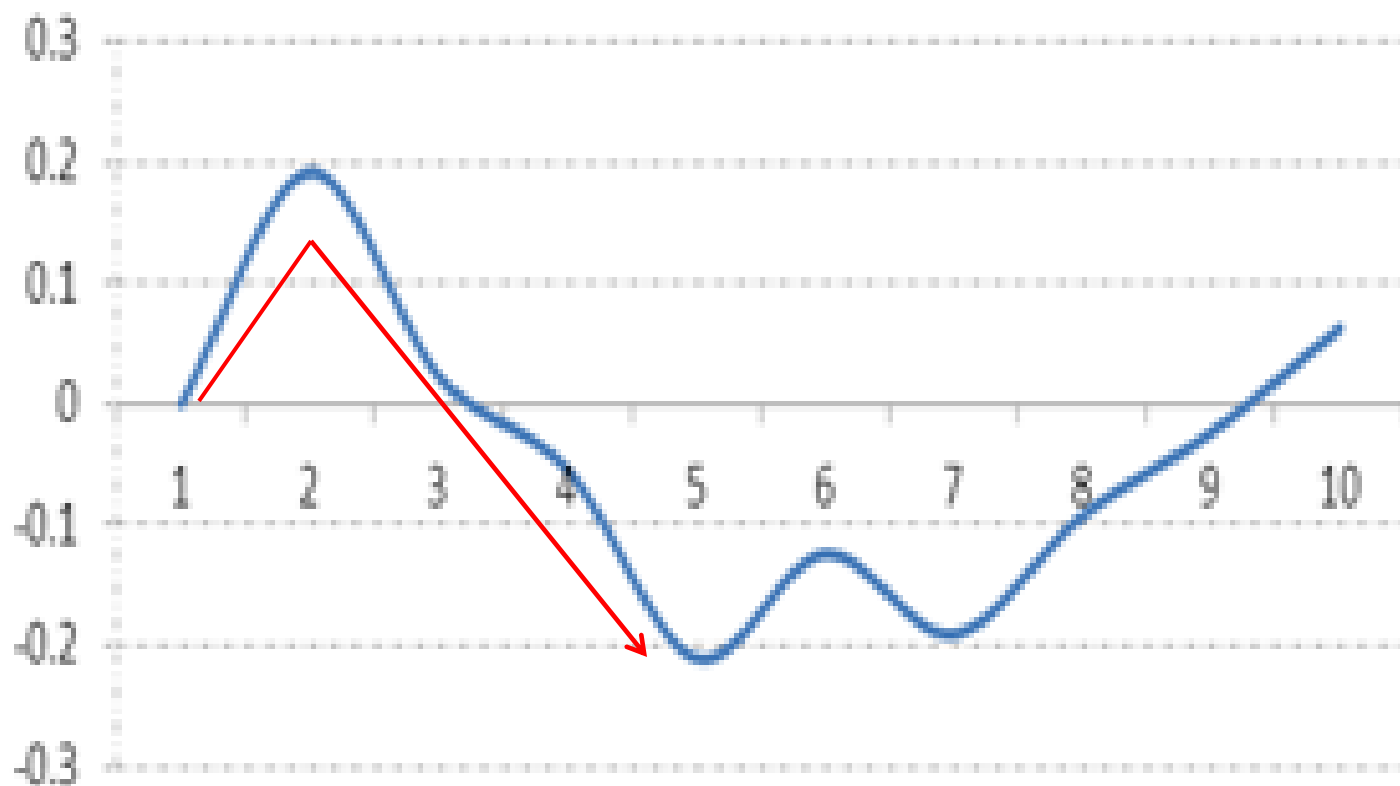
Insight...

Impulse Responses: Response of GDP to a positive shock to Bank Fragility



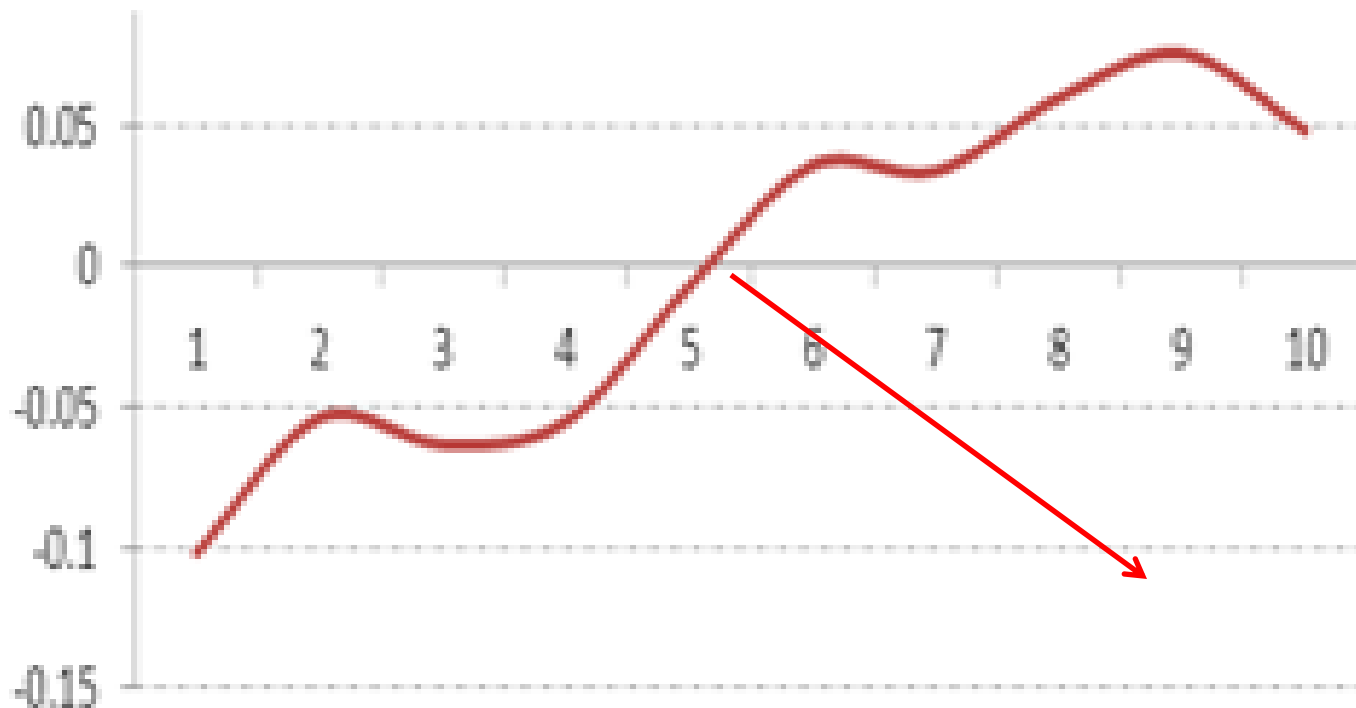
The expected losses arising from the non-GDP growth that is significantly negative and persists for 6 quarters.

Impulse Responses: Response of Bank Profitability to an increase in Bank Fragility



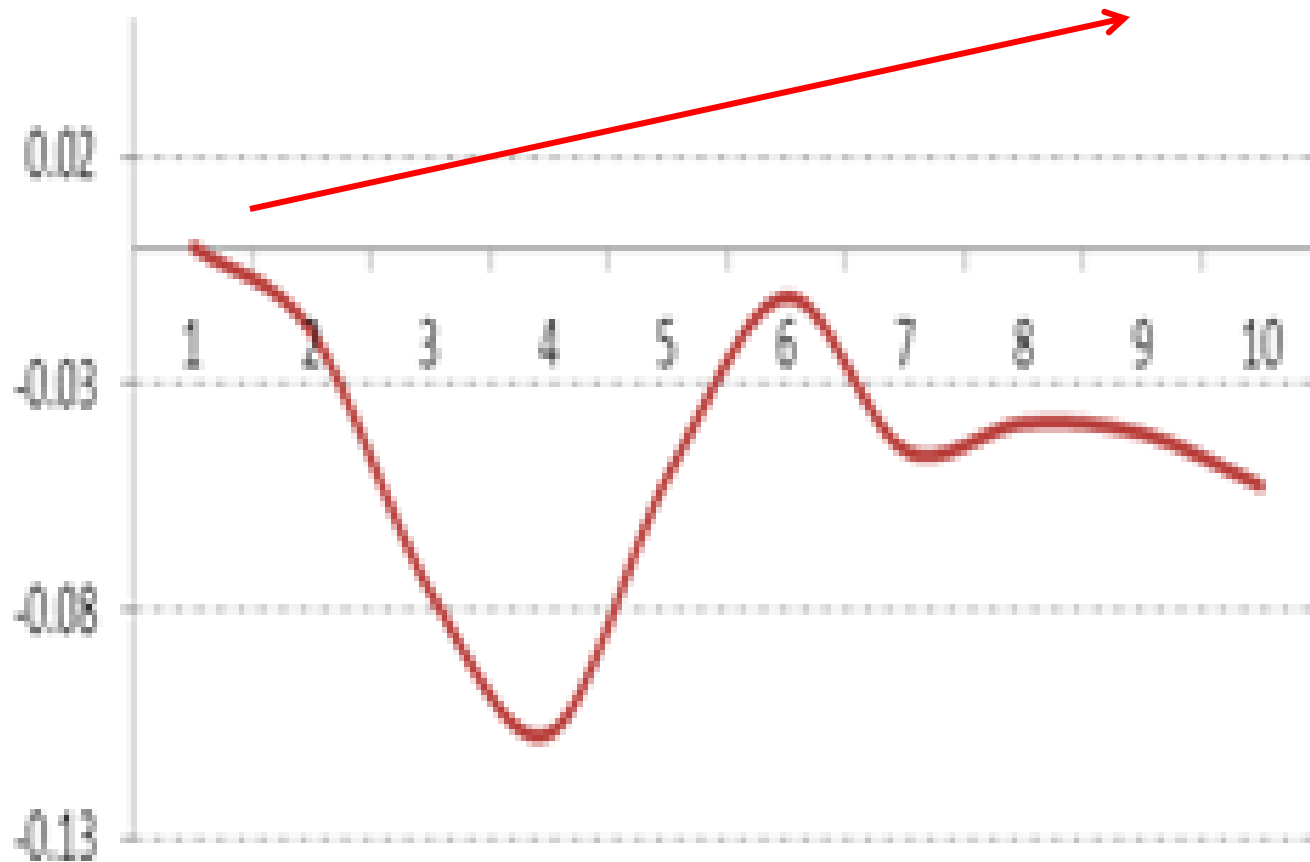
It is not just risk taking that contributes to temporary profits but also **NOT** sustainable returns and leads to persistent losses

Response of Bank Fragility to an increase in Bank Profitability



Impulse response function of bank fragility to an increase in bank profitability at first leads to a reduction in bank fragility but after 5 quarters excessive risk taking occurs

Response of GDP Growth to an increase in Bank Profitability



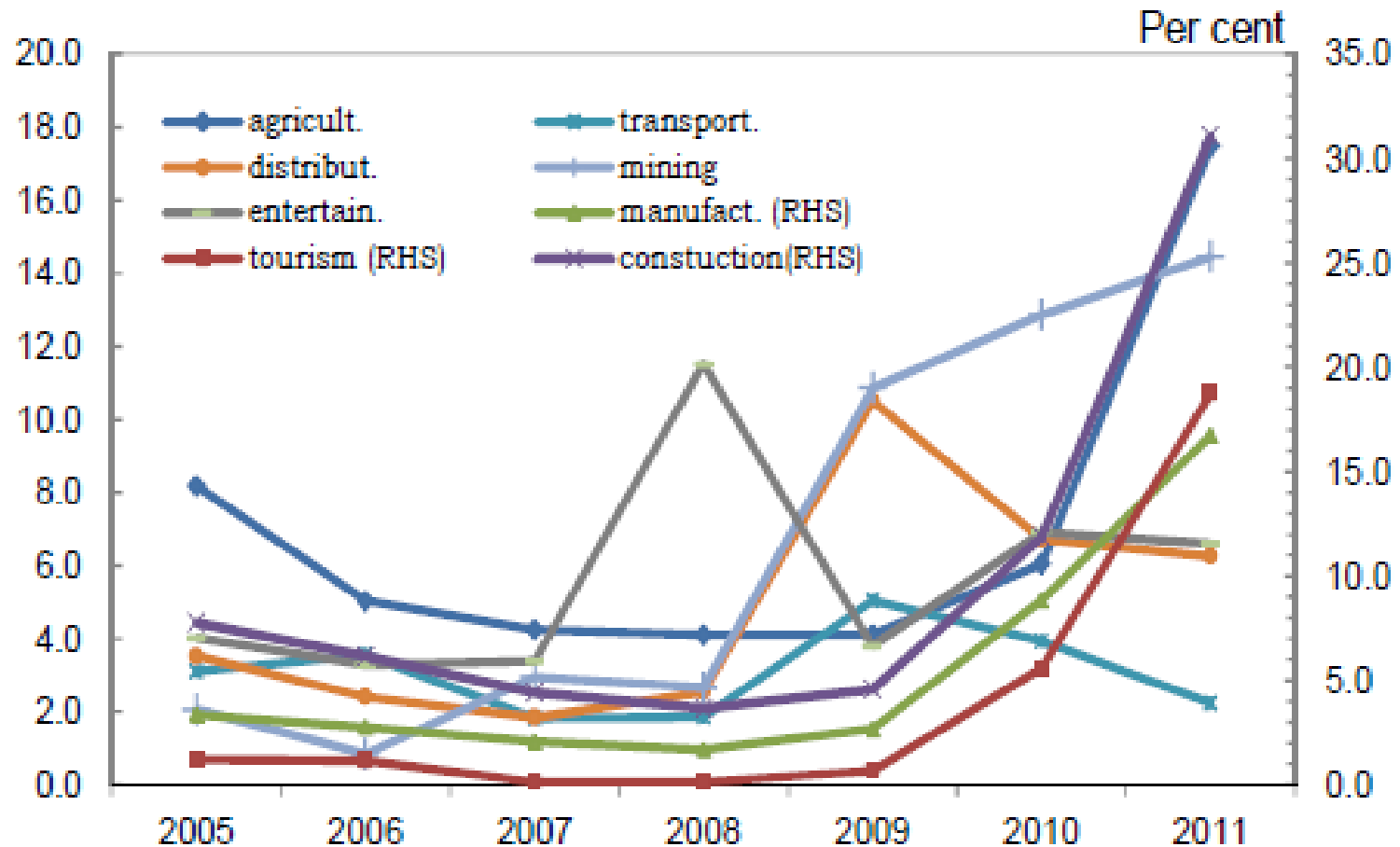
An increase in bank profitability, paradoxically, leads to lower GDP growth **Where is the bank lending channel???**

Paradox 1: Why Doesn't Increasing
Bank Profitability Induce Economic
Growth?

Challenges to the Efficient Operation of Credit Markets

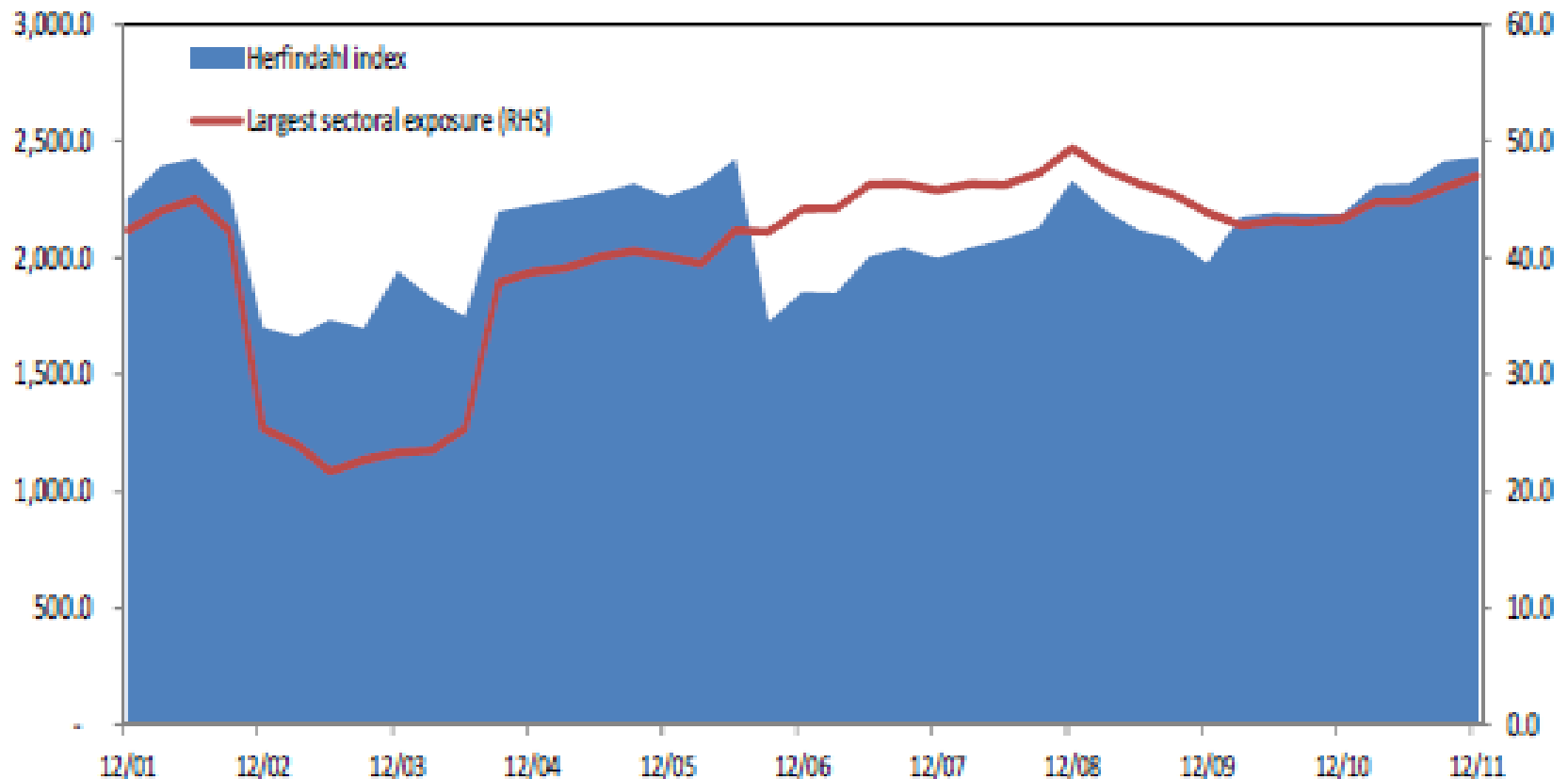
- **Asymmetric information:** that is, borrowers know more about their status, both their capacity to repay and their ability to repay, than potential lenders do.
- **Adverse selection:** high risk borrowers have more of an incentive to withhold negative information when seeking to access credit.
- The **moral hazard-problem**, the possibility that borrowers may try to avoid repaying the loan or debt obligations by taking actions that will increase the risk of the investment project

Ratio of Corporate Sector NPL to Corporate Sector Loans – Banking System



Concentration of DTIs Loan Portfolio (as a % of Total Loans)

(Hh index 0-10,000: share of five largest clients, %)



The Credit Bureau

- A credit bureau is an entity which maintains consumer credit data files and provides credit information to prospective lenders for a fee.
- Credit reporting systems are becoming increasingly important throughout the world, fuelled by demand from banks, other financial intermediaries, private firms and retailers for the data they contain.
- Jamaica has enacted legislation that will facilitate the sharing of credit information between lenders in line with international best practice standards.

Paradox 2: Why Does Increasing Bank Profitability Induce Increased Risk Taking?

Potential Role of Internal Audit in ERM Activities

- Developing RM strategy for board approval
- Championing establishment of ERM
- Coordinating ERM activities
- Coaching management in responding to risks
- Facilitating the identification & evaluation of risks

Role of Chief Risk Officer & Department

- Setting risk appetite
- Imposing risk management processes
- Management assurance on risks
- Taking decision on risk responses
- Implementing risk responses on management's behalf
- Accountability for risk management
- Maintaining and Development the ERM framework

Key Tenets of an Effective ERM programme

1. Enterprise-wide
- 2. Includes all risks**
- 3. Focuses on key risks**
4. Integrates across risk types
- 5. Aggregates metrics**
6. Includes decision making
7. Balances risk and return management
- 8. Makes appropriate risk disclosures**
9. Measures value impacts
- 10. Focuses on primary stakeholders**

Conclusion

- ERM and Risk management initiatives are critical given the high fiscal and social costs associated with the failure of banks and the spill-off consequences of losses on welfare (as measured by persistent declines in real GDP).
- But secondly, banks within the Caribbean region operate within economies which face significant exposures to exogenous macro-financial shocks as the last decade has shown. So the *probability* of downside risks is *higher* for financial institutions operating within the Caribbean when compared to their counterparts in more developed economies.

Conclusion

- The study finds that whereas an innovation to profitability initially results in a reduction financial fragility after four quarters the increase in profitability results in excess risk taking leading to an increase in banking fragility as measured by the PoD. One can infer the absence of a strong risk management function within the banking system to curb the tendency towards excessive risk taking after periods of 'super-normal' profits.

Thank you!

Questions....

Key References

- Aspachs, O., Goodhart, C., Segoviano, M., Tsomocos, D., & Zicchino, L. (2006). Searching for a Metric for Financial Stability. *Work in Progress at the Financial Markets Group, LSE.*
- Gray, Dale F, Robert C Merton, and Zvi Bodie. *A New Framework for Analyzing and Managing Macrofinancial Risks of an Economy.* 2003. <http://www.moodys-mfrisk.com> (accessed 9 16, 2010).
- Goodhart, A. E., & Tsomocos, P. D. (2011). The Role of Default in Macroeconomics. *IMES Discussion Paper No. 2011-E-23.*
- Lewis, Jide. 2006. “A Contingent Claims Approach to Measuring Insolvency Risk: An empirical assessment of the impact of the global financial crisis on Jamaica and its financial sector.” (Bank of Jamaica Working Paper).