Political Instability as Financial Information: Terrorism, Unrest, and Capital Markets in Tsarist Russia
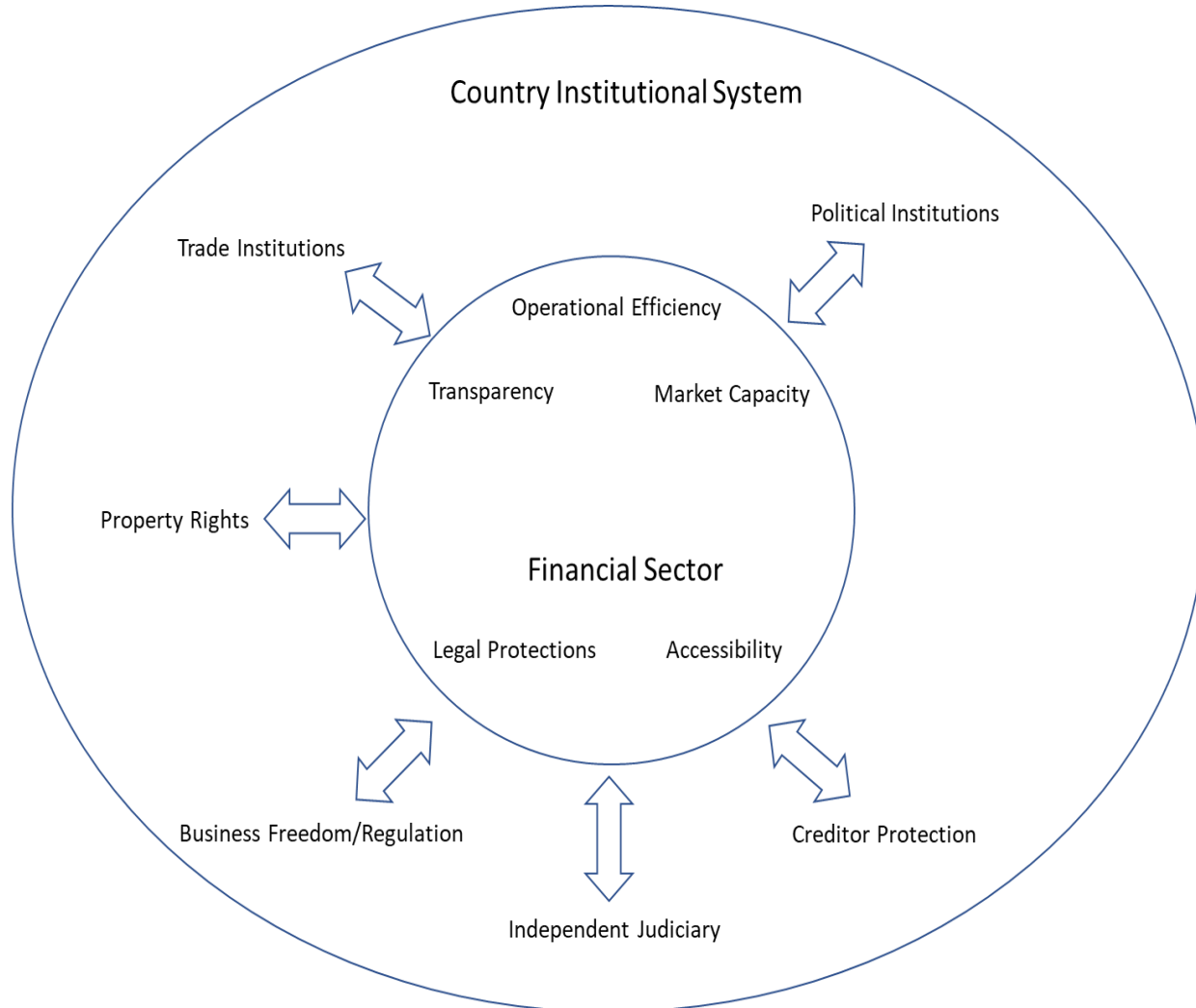
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Country Institutional System

Political Institutions

Trade Institutions

Operational Efficiency

Transparency

Market Capacity

Property Rights

Financial Sector

Legal Protections

Accessibility

Business Freedom/Regulation

Creditor Protection

Independent Judiciary

- **Law and finance literature shows that institutions are important for financial sector development and functioning**

- **Key attribute of financial markets: ability to process and disseminate information**
  - Institutions assist in this process as well

- **Less of a focus on institutions within the center ring, i.e. within the financial sector**
  - Can information be processed within the sector even without the supporting institutions on the outside?
  - Research (Morck *et al.* 2000, Jin and Myers 2006) says property rights help here too

What is the informational content of terrorism?

- **Financial markets respond to events which affect present value of discounted future cash flows or environment in which cash flows are earned**
  - Firm-specific, macroeconomic environment, or policy/institutional changes

- **Responses to political instability can be rational or irrational in the short-term**
  - Rational: Industry- or sector-specific characteristics (Drakos 2004), Geographic/spatial aspects of the attack, Methods used
  - Irrational: Swing from underestimation to overestimation, bias in judging future risk, perceptions colored by point on the business cycle

- **Terrorism and other forms of political instability offers information about the long run, and in particular the environment in which firms are operating**
  - Specifically, terrorism or instability can offer information on *institutions themselves*
  - "Political institutions determine the distribution of de jure political power, which in turn affects the choice of economic institutions" (Acemoglu *et al.* 2005:391).
  - Political instability thus offers clues about the future composition of political institutions and, in turn, economic ones
  - Financial markets in different political environments should receive the information of instability differently

A Test Case: Political Instability in Tsarist Russia

- **Imperial Russia, on the surface, a bastion of calm, shattered only by revolutions in 1905 and 1917**
  - Uneducated, scattered, and quiescent populace (serfdom until 1861)
  - A stable autocracy with sufficient power
  - Ruling elite collecting patronage from their offices
  - No formal rule of law as understood today

- **Reality was very different:**
  - A weak institutional structure given unlimited power but encapsulated in the personality of the Tsar
  - Decades of peasant unrest and rebellion related to serfdom, 1789 through 1861
  - Transition to modern-day forms of terrorism in the late 19th century (starting in 1866!), including political assassinations, bombings, and secret cells
  - Weak property rights, no judicial independence, legislation in word but not in deed

Historical Background: Political Instability in Tsarist Russia (II)

- **Assassination of Tsar Alexander II and rise of *Народная воля* ("The People's Will") ushers in an era of reaction and recrimination**

- **High-profile assassinations continue from the 1880s through to the revolutionary era**

THE ASSASSINATION OF THE LATE CZAR OF RUSSIA—THE EXPLOSION OF THE SECOND BOMB.

Russian political and economic institutions may have been weak, but financial ones were relatively strong

- Ukhov (2003): "Russia[n government] was a leader in using public capital markets and especially foreign markets and foreign intermediaries to finance her ambitions and development."

- 1805-1807: Tsar allows for creation of limited liability corporations and sets three forms of corporate governance (full/limited partnerships and corporations)

- Government begins issuing domestic bonds in 1809-1810 to finance foreign wars

- First stocks traded on the St. Petersburg Stock Exchange in the 1830s

- Corporate law of 1836: "The goal of the law was to encourage corporate capitalism in the style of Western Europe while maintaining bureaucratic control in the traditional Russian style," including outlawing futures (Goetzmann and Huang 2018).

- Law of 1893 removes this prohibition on futures, encourages speculation but also adds to financial depth
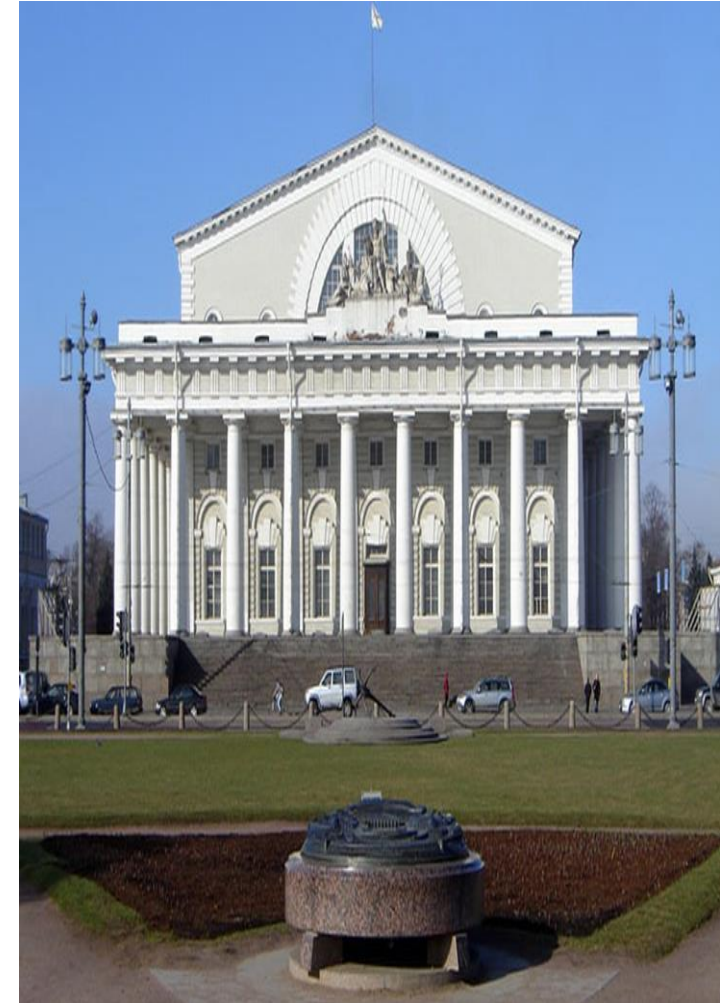
The Research Questions

- **How did political violence, a manifestation of the weak Russian political structure, affect the relatively strong financial sector?**

  - Could Russian markets process information efficiently in the absence of supporting institutions?
  - Were terrorism and political instability forms of information about political institutions?

- **How did the various types of political instability feed through to various financial institutions in Tsarist Russia?**

  - Put another way, did institutional volatility manifest itself in financial volatility? How long and how much?
  - Did it matter what type of political instability/mode of attack it was?
  - Did it matter where it took place?
  - Did markets discriminate?

How did various types of political instability feed through to various financial institutions in Tsarist Russia?

- Uprisings and terrorism could have been seen as an existential threat in a weak institutional environment, and thus could have affected both short- and long-term volatility

- But markets could still have been efficient in processing the information offered by terrorism and political instability, leading to rapid absorption and re-pricing

- Efficient markets like Tsarist-era financial ones could thus be discriminating in their perception of terrorism and instability

**New and unique monthly dataset on financial markets and terrorism in 19th-century Russia**

Proxies for Financial Returns and Volatility

- Long-term bond yields (1789-1914, including bonds sold on the Amsterdam market)

- Spread on Russia/UK sovereign bonds (1789-1914)

- St. Petersburg Stock Exchange Returns (1865-1914)

Example of Financial Data: Bond Spreads

Bond spreads over the UK, by Tsar
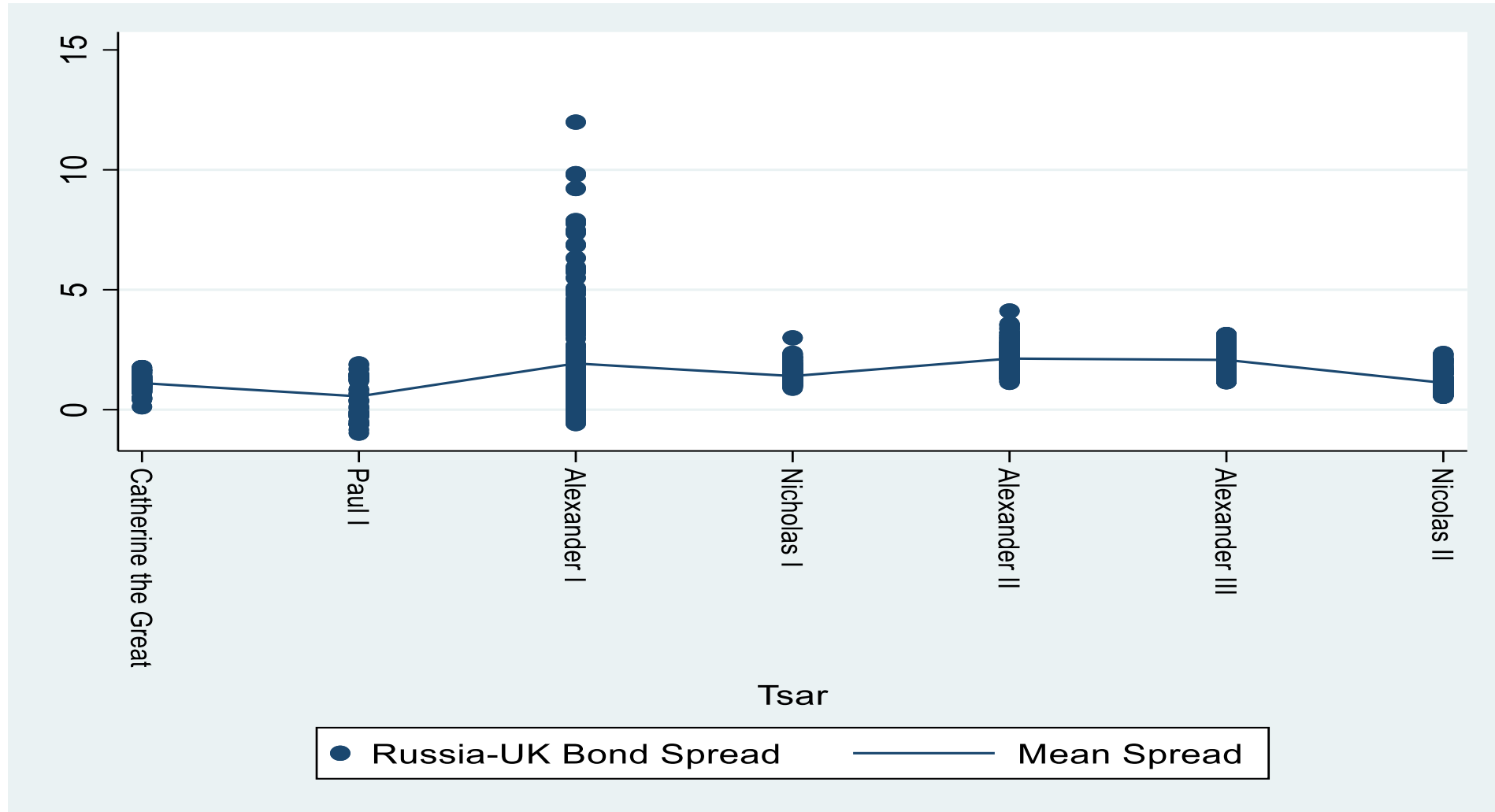
Data (II): Types of Instability

- **Hand-coded episodes of political instability and terrorism monthly from 1788 to 1914 based on several English- and Russian-language sources**
- **Use both individual events and cumulative (12 month rolling total) numbers**

type of volatility	definition
Attempted assassinations Russia	An attack (bombing, mass shooting) which resulted in fatalities but was unsuccessful in assassinating the main target (Russian territory only, excluding the Caucasus, Poland, Ukraine, and Central Asia)
Attempted assassinations Empire	An attack (bombing, mass shooting) which resulted in fatalities but was unsuccessful in assassinating the main target (Russian Empire only, including the Caucasus, Poland, Ukraine, and Central Asia)
Assassinations Russia	A major public figure was assassinated on the territory of Russia; if shot in one month and died in another, month is coded 1 from the attack itself
Assassinations Empire	A major public figure was assassinated on the territory of the Russian Empire, including the Caucasus, Poland, Ukraine, and Central Asia. Same coding as above
Unrest Russia	Strikes, peasant uprisings, or other mass movements which resulted in fatalities or the use of state force to suppress; territory of Russia only
Unrest Empire	Same as unrest but only in Caucasus, Poland, Ukraine, and Central Asia
External Conflict	Russia's involvement in external conflict, wars, or interventions abroad

- Asymmetric Component GARCH-in-Mean (ACGARCH-M)
  - Helps to understand long and short-term effects of terrorism
  - Permanent and transitory components in the conditional variance
  - Contains a threshold term to also make effects asymmetric
  - Base model:
    $$Y_t = \mu + \pi x_t + \rho M'_{t-1} + \boxed{\delta \sigma_t^2} + \varepsilon_t$$
  - LT Volatility:
    $$q_t = \omega + \alpha(q_{t-1} - \omega) + \gamma(\varepsilon_{t-1}^2 - \sigma_{t-1}^2) + \theta_1 Z_{1t}$$
  - ST Volatility:
    $$\sigma_t^2 - q_t = \beta_0(\varepsilon_{t-1}^2 - q_{t-1}) + \beta_1(\varepsilon_{t-1}^2 - q_{t-1})d_{t-1} + \beta_2(\sigma_{t-1}^2 - q_{t-1}) + \theta_2 Z_{2t}$$

Unfortunate paucity of controls (the *M* and *Z* vectors)

- **Monthly data from 19th century Russia is difficult to find**
  - ACGARCH models also have problems with convergence with too many parameters

- **As of right now, only three plausible controls used:**
  - World price of gold (proxy for global economic conditions)
  - Ruble/Dutch guilder exchange rate (proxy for Russian economic conditions)
  - A dummy for formal political transitions (i.e. when the Tsar changed over, realistically a Tsar death dummy)

Heatmap Summary of Results, Terrorism v. Financial Markets

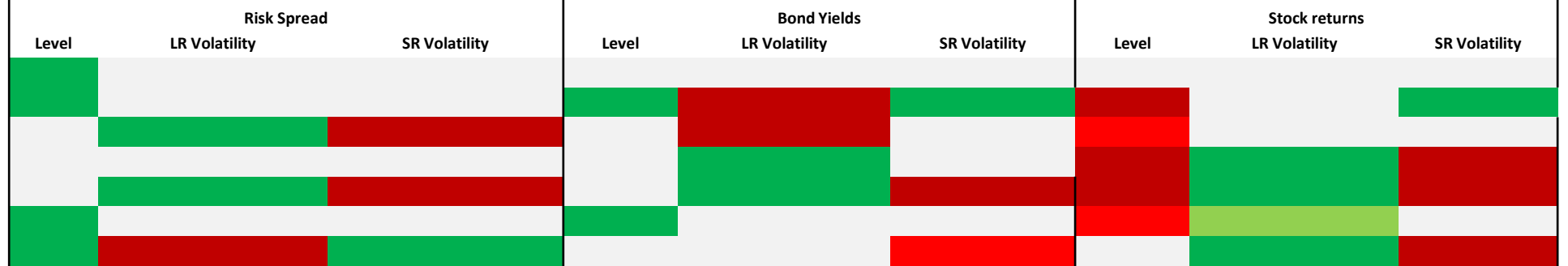| base model	Risk Spread			Bond Yields			Stock returns		
	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility
Attempted Assassination, Russia									
Attempted Assassination, Empire									
Successful Assassination, Russia									
Successful Assassination, Empire									
Unrest, Russia									
Unrest, Empire									
External Conflict									

with xrates	Risk Spread			Bond Yields			Stock returns		
	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility
Attempted Assassination, Russia									
Attempted Assassination, Empire									
Successful Assassination, Russia									
Successful Assassination, Empire									
Unrest, Russia									
Unrest, Empire									
External Conflict									

| with xrates and tsar transition	Risk Spread			Bond Yields			Stock returns		
	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility
Attempted Assassination, Russia									
Attempted Assassination, Empire									
Successful Assassination, Russia									
Successful Assassination, Empire									
Unrest, Russia									
Unrest, Empire									
External Conflict									

negative and significant (5% level)
negative and significant (10% level)
positive and significant (5% level)
positive and significant (10% level)
insignificant

Terrorism v. Bond Spreads, full model (unrest)
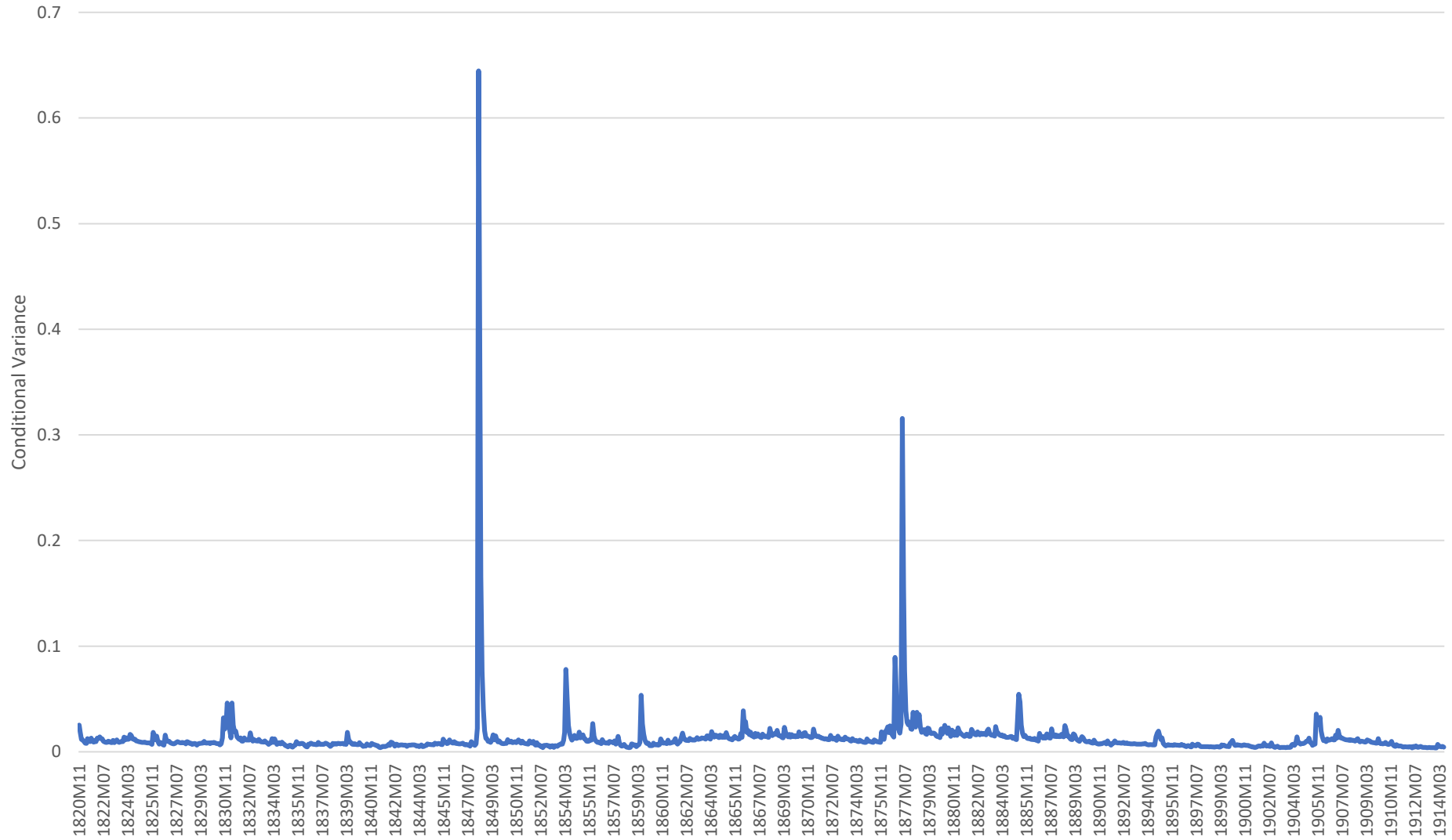
Delving into Daily Data – the Assassination of the Tsar, 1881

- Looking at volatility in bond markets a month before and after the sovereign was assassinated, volatility comes down very quickly
  - They BLEW UP THE TSAR! And markets flinched but didn't crumble – but they WERE skittish.
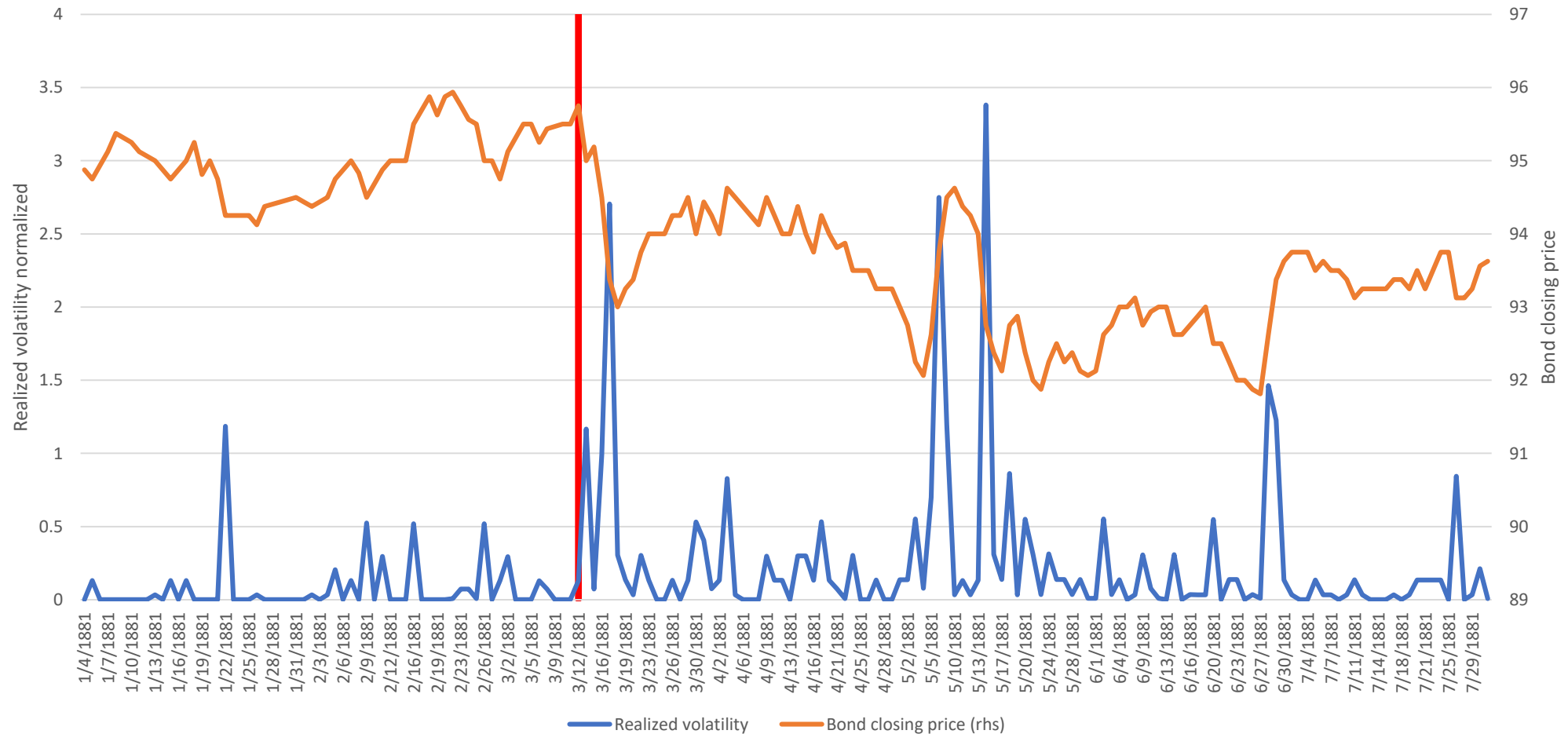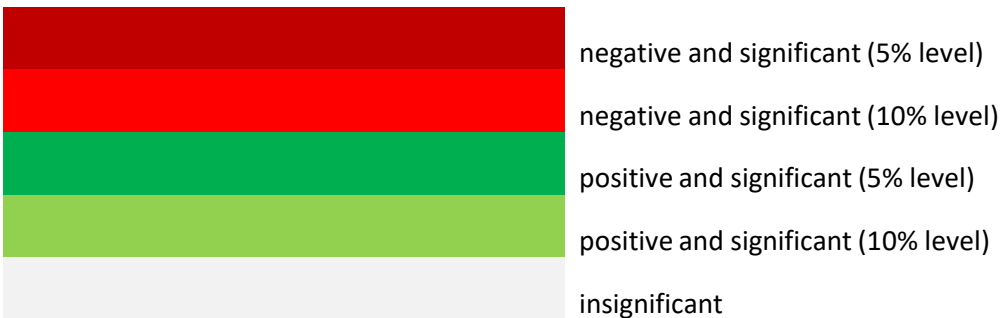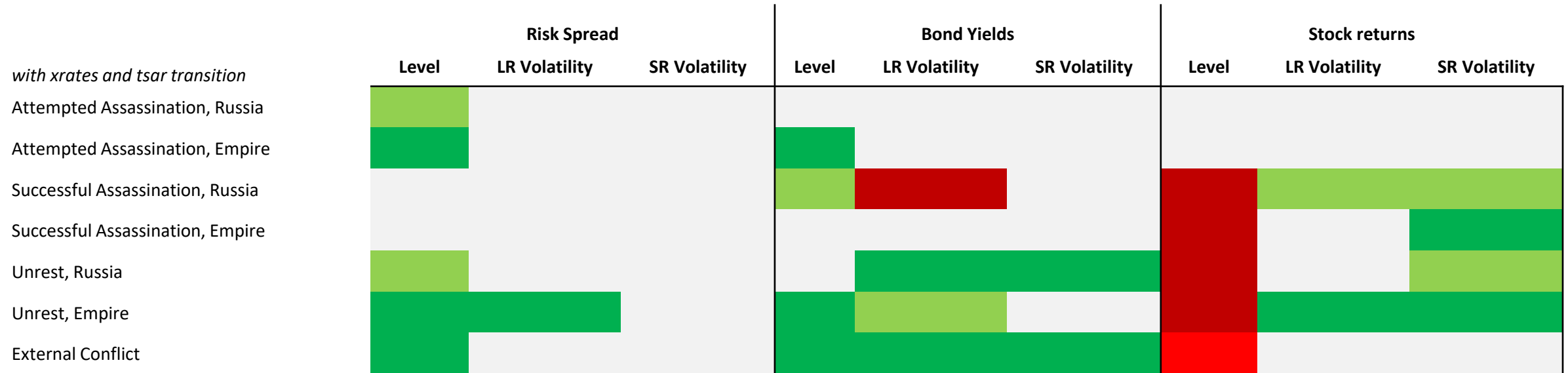
Delving into Daily Data – the Assassination of the Tsar, 1881

- Event study confirms the visuals, although the volatility does indeed persist after the Tsar's assassination

	[-1,1]		[-3,3]		[-5,5]		[-10,10]
			historical average window closed at t=-30				
Returns on Bonds (%)	-0.52		-0.99		-2.39		-0.79
p-value	*0.07***		*0.06***		*0.0009****		*0.4806*
Volatility	0.001		0.002		0.0049		0.0053
p-value	*0.0001****		*0.0002****		*0.000****		*0.0000****
Brownian intraday volatility	0.19		0.31		0.20		0.49
p-value	*0.017***		*0.0323***		*0.3182*		*0.1095*
			historical average window closed at t=-20				
Returns on Bonds (%)	-0.57		-1.11		-2.59		-1.20
p-value	*0.07***		*0.0521***		*0.0007****		*0.3072*
Volatility	0.001		0.002		0.0047		0.0050
p-value	*0.0001****		*0.0004****		*0.000****		*0.0000****
Brownian intraday volatility	0.20		0.34		0.24		0.59
p-value	*0.009****		*0.0143***		*0.1921*		*0.0411***

Heatmap Summary of Results, Cumulative Terrorism v. Financial Markets

with xrates and tsar transition	Risk Spread			Bond Yields			Stock returns		
	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility	Level	LR Volatility	SR Volatility
Attempted Assassination, Russia	positive (10%)								
Attempted Assassination, Empire	positive (5%)			positive (5%)					
Successful Assassination, Russia				positive (10%)	negative (5%)		negative (5%)	positive (10%)	positive (10%)
Successful Assassination, Empire							negative (5%)		positive (5%)
Unrest, Russia	positive (10%)				positive (5%)	positive (5%)	negative (5%)		positive (10%)
Unrest, Empire	positive (5%)	positive (5%)		positive (5%)	positive (10%)			positive (5%)	positive (5%)
External Conflict	positive (5%)			positive (5%)	positive (5%)	positive (5%)	negative (10%)		

Legend:

- negative and significant (5% level)
- negative and significant (10% level)
- positive and significant (5% level)
- positive and significant (10% level)
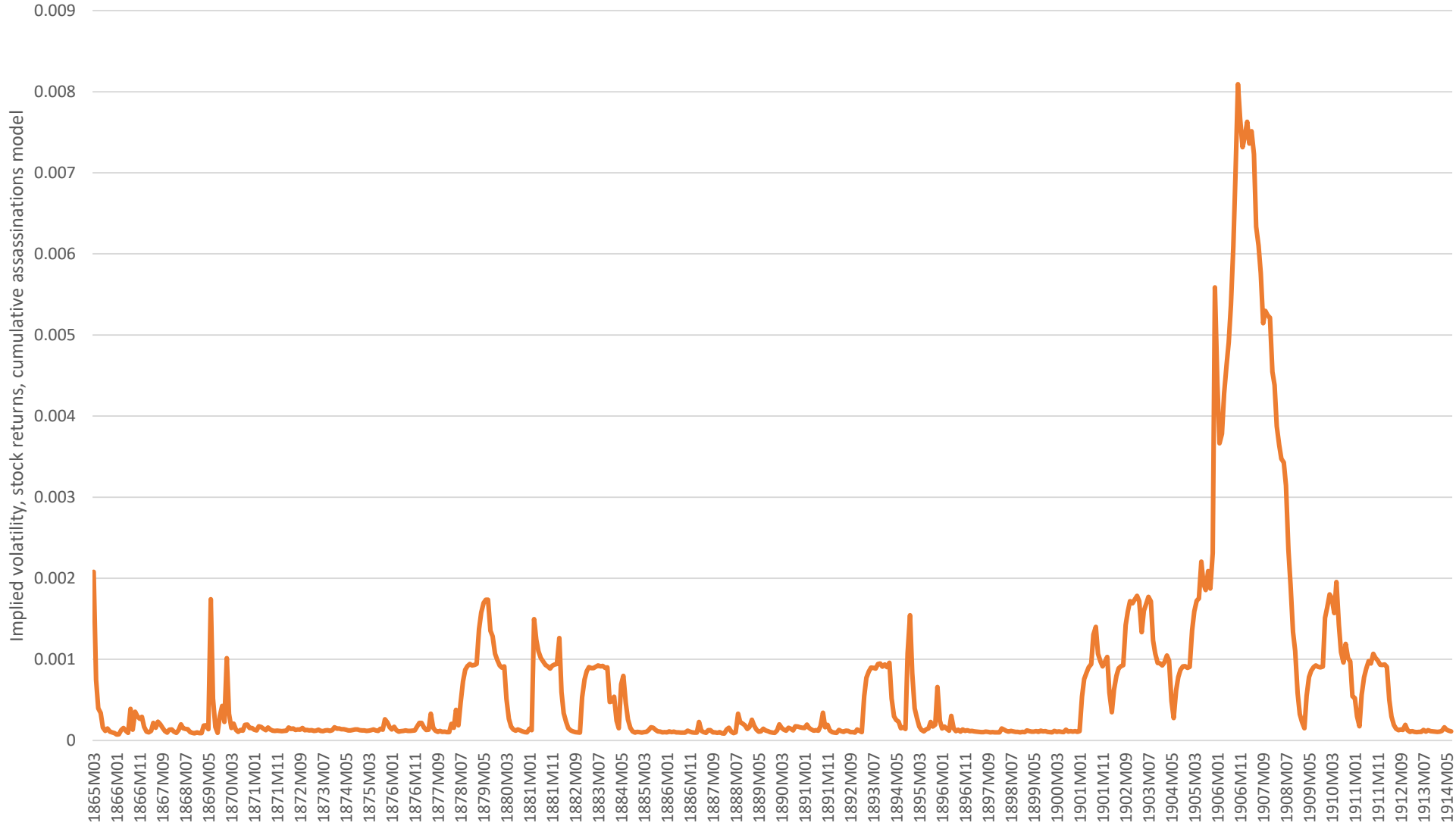- insignificant

Effects of Cumulative Terrorism on Bond Volatility

Short-term Conditional variance, LT Bond Yields, Cumulative Assassinations
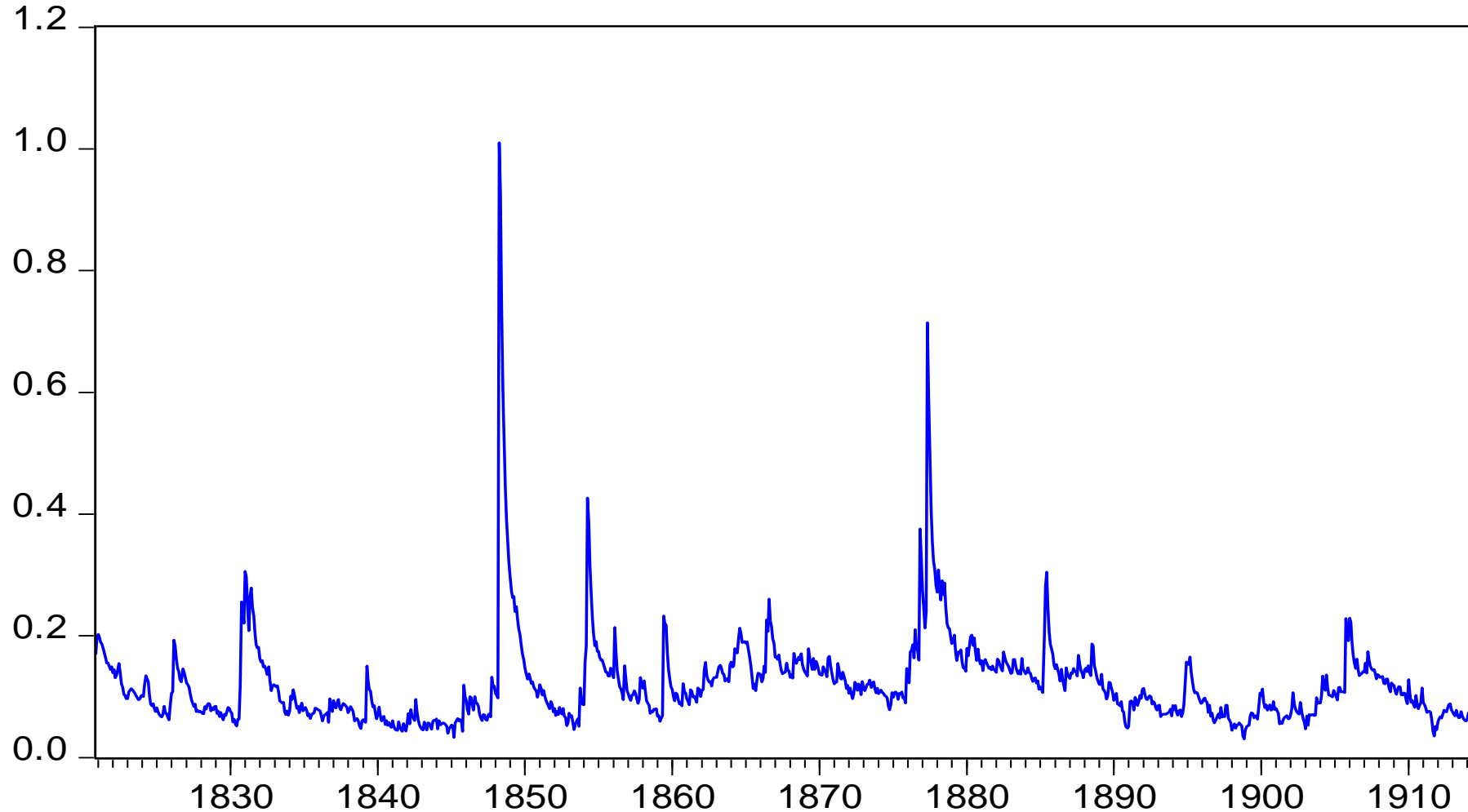
Long-term Effects of Cumulative Terrorism (Assassinations) on Stock Markets

Conclusions and where to from here?

- **It appears that financial markets in Tsarist Russia were efficient in their assessment of the effects of informal political volatility**
  - Able to separate political violence from threats to underlying economic fundamentals
  - Differentiation by financial instrument, as to be expected – some acts of political violence threaten the business environment, others threaten the state

- **However, persistent and cumulative terrorism may have created more doubts about the regime's viability and increased longer-term volatility**
  - …but without necessarily threatening the basis for profitability of firms.

- **In this sense, perhaps the Tsarist political institutional matrix was not as weak as is commonly perceived – nor was it perceived as such by the markets!**

<u>Comments welcome!</u>

Thank you!

Большое спасибо!