2009 Casualty Actuarial Society

Credit and Insurance Score Shifts

A Behind the Scene View and Forecast Implications

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Global Chief Scientist
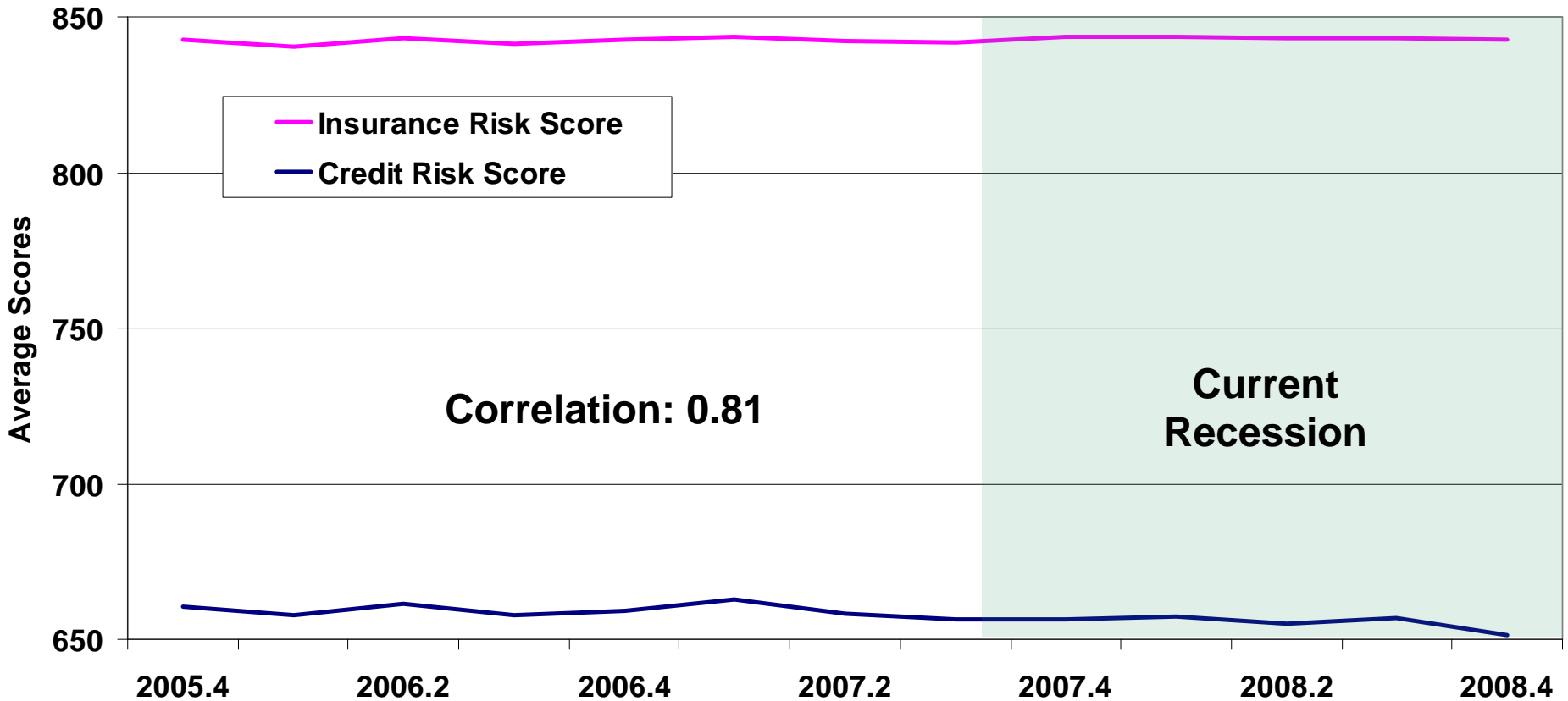
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Overview

- **Credit and Insurance Risk Score Shifts**
  - How are Insurance Risk Scores Trending vs. Credit Risk Scores?
  - How volatile are Credit Bureau Based Scoring Systems?

- **Putting Score Shifts into Context**
  - Is Monitoring Average Score Shifts the Best Approach?
  - Are there State and Regional Differences?

- **Underlying Credit Characteristics in Credit Bureau Based Models**
  - What are the Primary Credit Characteristics Influencing Movement?
  - How are the Actions Taken by Lenders Affecting Risk Profiles?

- **External Economic Factors Affecting Credit Bureau Information**
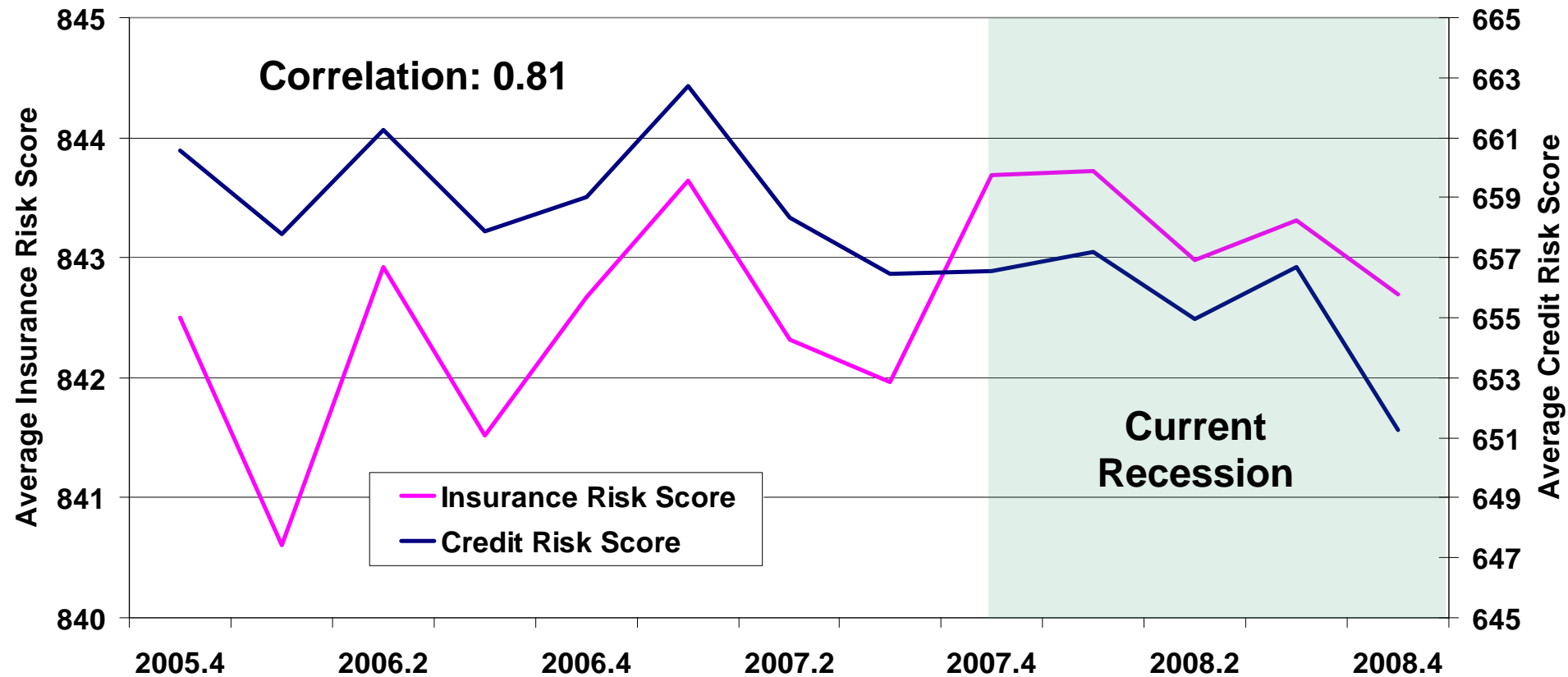 - Can Credit Bureau Characteristics and Risk Profiles be Forecasted?

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Average Credit Risk Score
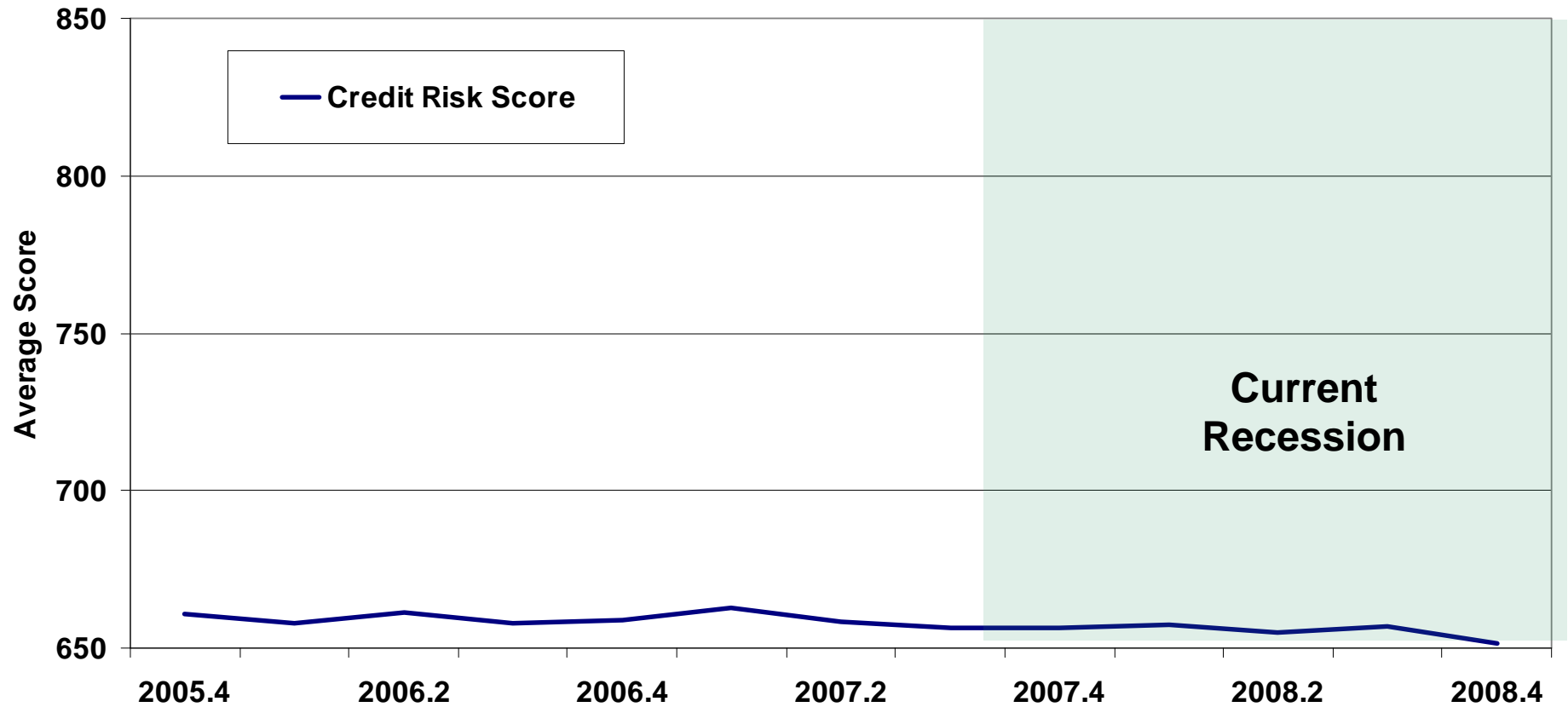
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Average Credit Risk and Insurance Risk Scores

Insurance Risk Score
Credit Risk Score

Correlation: 0.81

Current Recession

Average Scores

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Average Credit Risk and Insurance Risk Scores

Score Shifts Offer Directional Insight into Risk Changes

Monitoring average score shifts provide insight as to the general level of risk among a pool of consumers but the change in average score, by itself, may not be meaningful

Example:

- Assume that scores are divided into two bands.
  - Scores 701 and higher
  - Scores 700 and lower

- During the first year, half consumers score 790 and half score 615
  - resulting in an average score of 702.5

- During the second year, three fourths score 790 and one fourth score 615
  - resulting in an average score of 746.25

- Second year average score is 6.23% greater than first year
  - consumers are 6.23% less risky,
  - but, the magnitude of risk associated with the change in average score is deceptive

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Index calculations are more meaningful

The advantage of monitoring a risk index versus average score movement is that an index more accurately reflects the interaction associated with consumers migrating into different score bands which have widely different expected loss ratios

Example:

- Following the previous example, assume that there are two score bands with expected loss ratios of 25% and 50%

- In the first year, half of the consumers are in the first score band and half are in the second, resulting in an expected loss of

$$25\%\left(\frac{1}{2}\right) + 50\%\left(\frac{1}{2}\right) = 12.5\% + 25\% = 37.5\%$$

- In the second year, the score distribution shifts so that three fourths of consumers are in the first score band and one fourth are in the second score band, resulting in an expected loss of

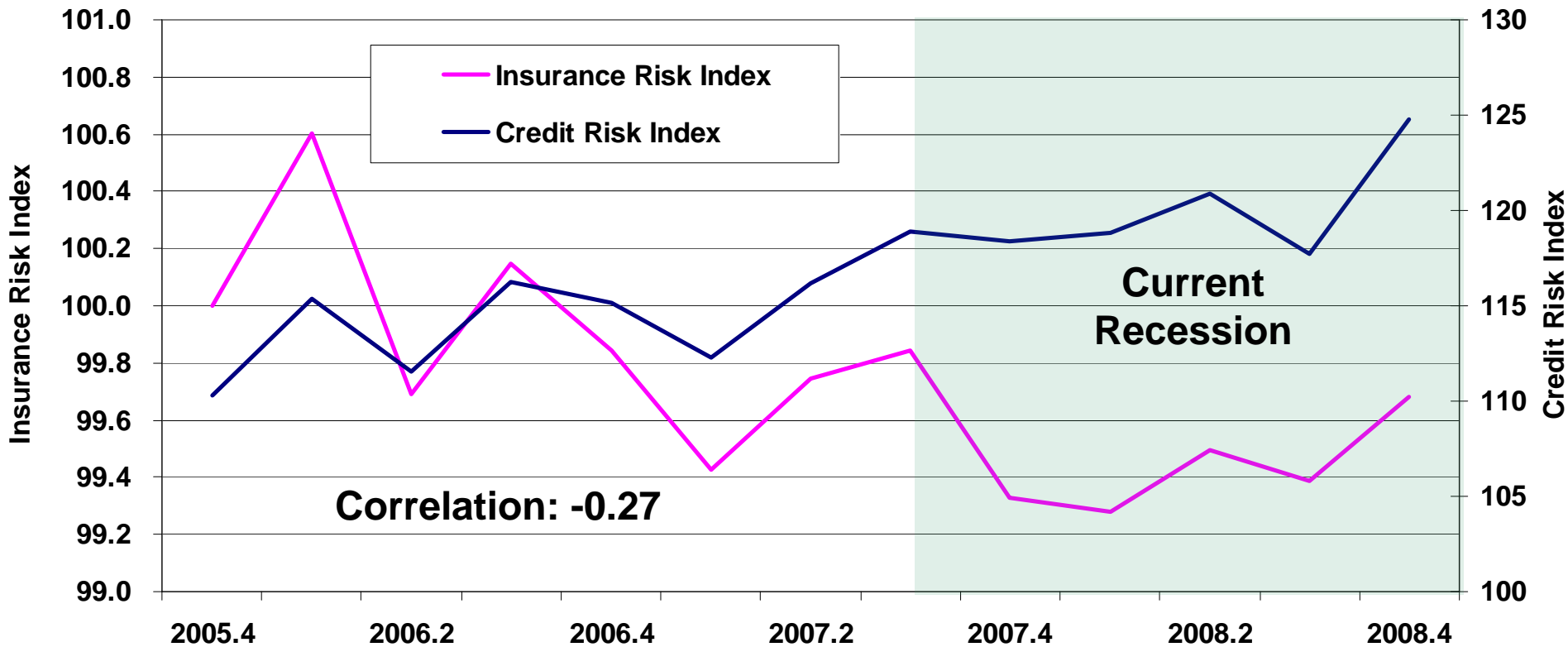$$25\%\left(\frac{3}{4}\right) + 50\%\left(\frac{1}{4}\right) = 18.75\% + 12.5\% = 31.25\%$$

- Using the expected loss in the base year as the denominator allows one to track relative change in risk over time. In our example the change in risk from year one to year two is
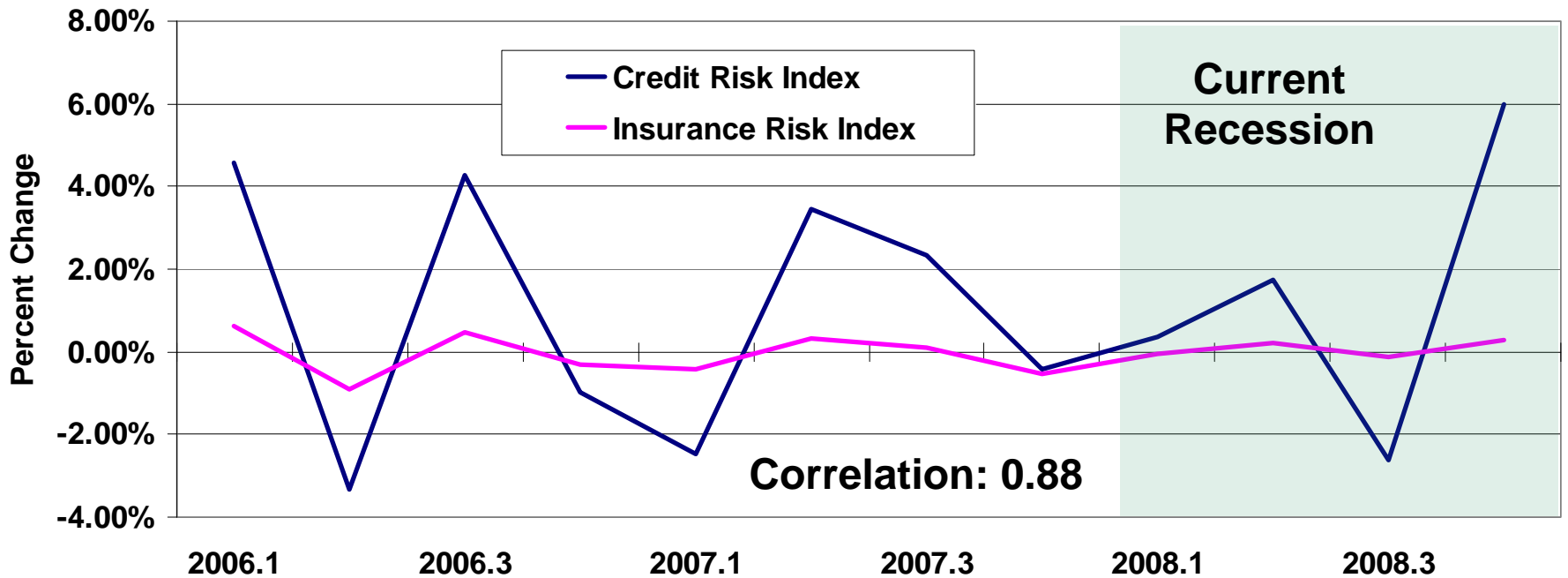
$$1 - \left(\frac{31.25\%}{37.5\%}\right) = 16.7\%$$

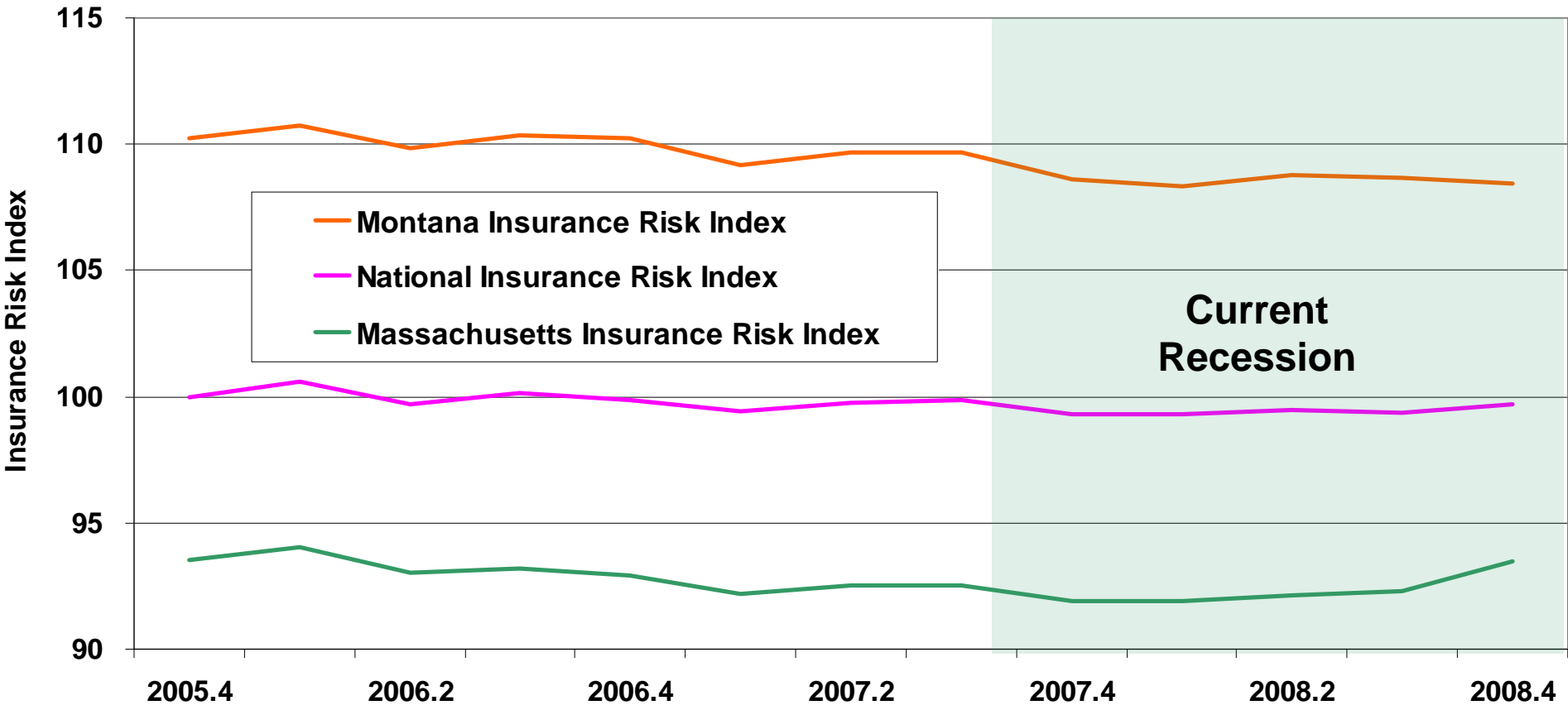TransUnion.

Insurance Risk Index and Credit Risk Index

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Insurance Risk Index and Credit Risk Index

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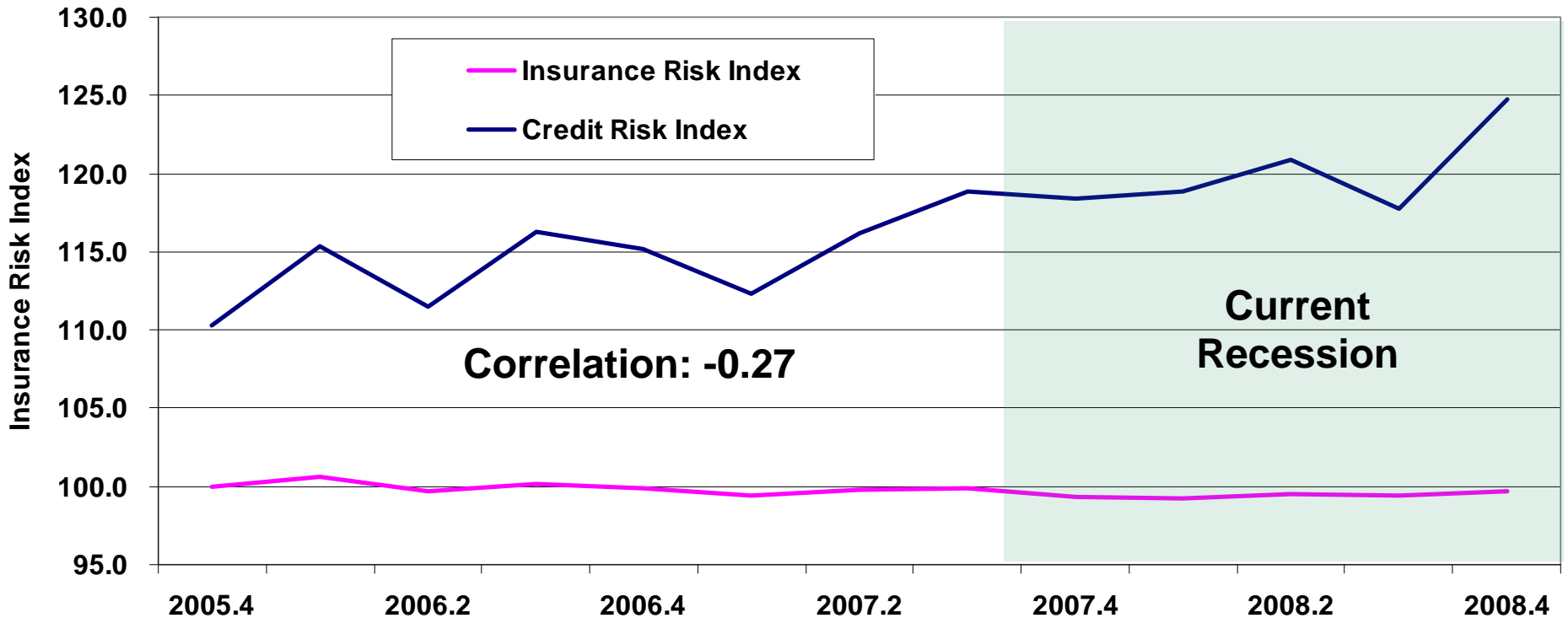
# Percent Change in Credit Risk Index and Insurance Risk Index

National and State Insurance Risk Indices

Primary Drivers of the Credit Risk Index

- **Total Installment Debt Per Installment Borrower**

- **Number Of New Trades Per Borrower**

- **Ratio Of Borrowers Currently 60 Days Or More Past Due**

- **Number Of Active Bank Auto Accounts Per Consumer**

- **Ratio Of Bankcard Borrowers Currently 60 Days Or More Past Due**

- **New Bank Revolving Debt To Total New Debt**

- **Ratio Of Captive Finance Auto Trades Currently 60 Days Or More Past Due To All Trades Currently 60 Days Or More Past Due**

- **Number Of Active Revolving Accounts Per Consumer**

Total Installment Debt is a Primary Driver of the Credit Risk Index
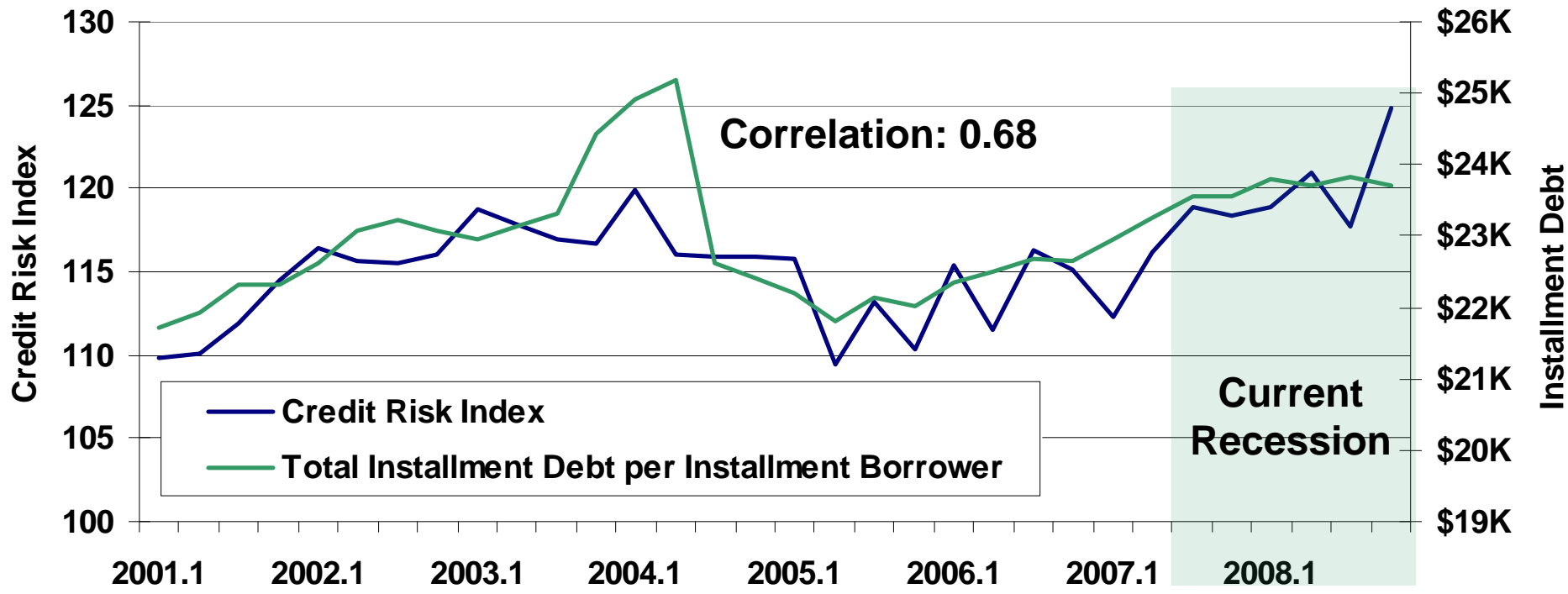
Drivers of the Insurance Risk Index

- **Number of Mortgages Per Mortgage Borrower**

- **Number of New Trades Per Borrower**

- **Average Balance of Bank Auto Trades Currently 60 Days or More Past Due**

Myths about Insurance Score Drivers

There are three categories of credit bureau information that are believed to be artificially driving down insurance scores (increasing insurance risk) but are in fact very poorly correlated with insurance scores

- Bankcard Utilization
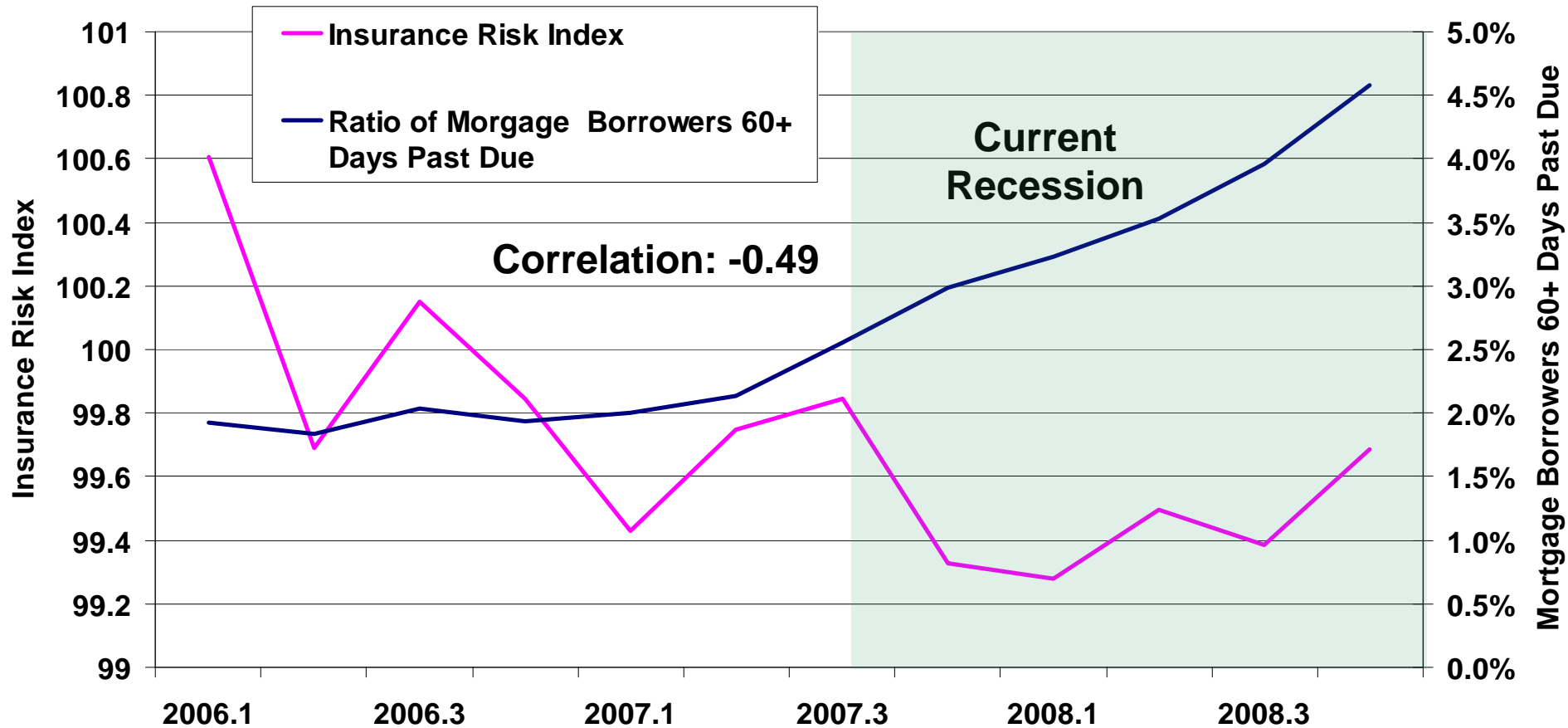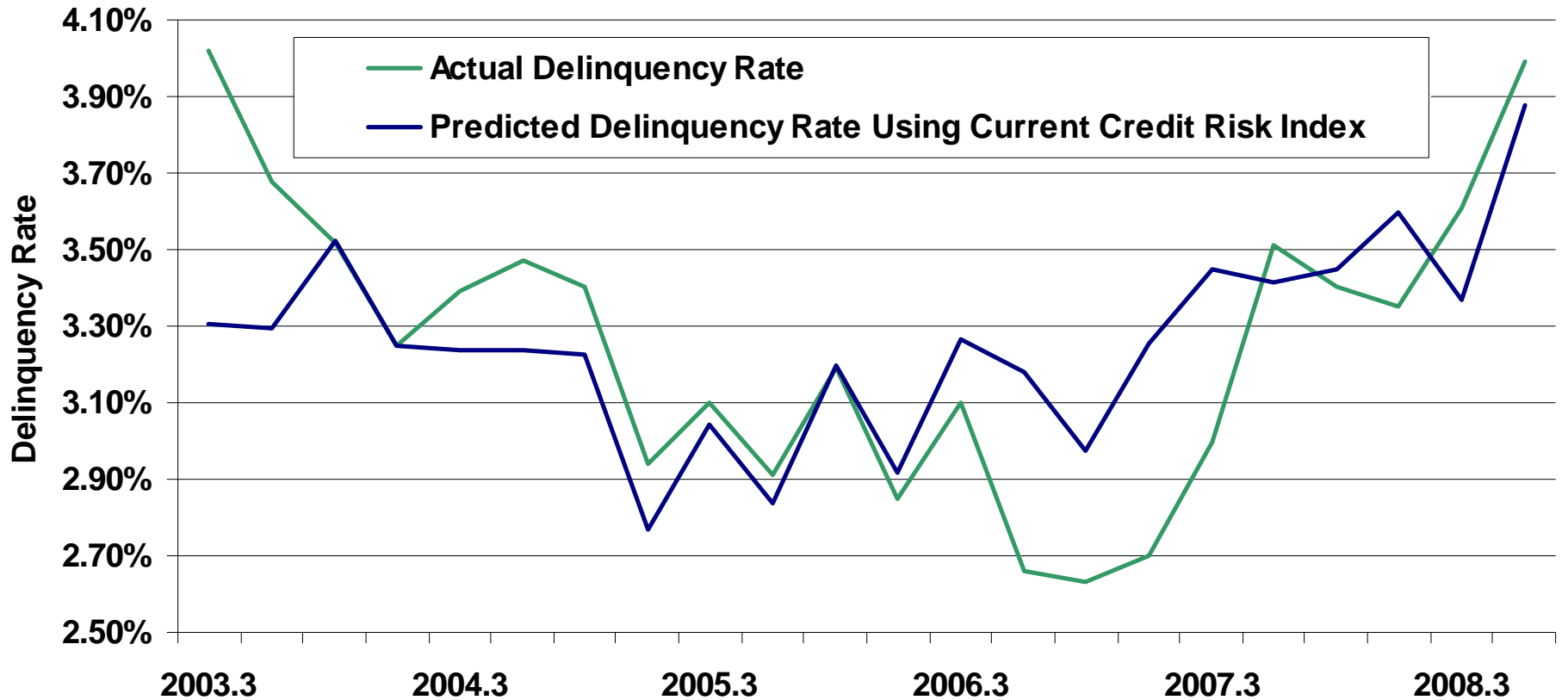- Number of Active Trades
- Mortgage Delinquency

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Bankcard Utilization

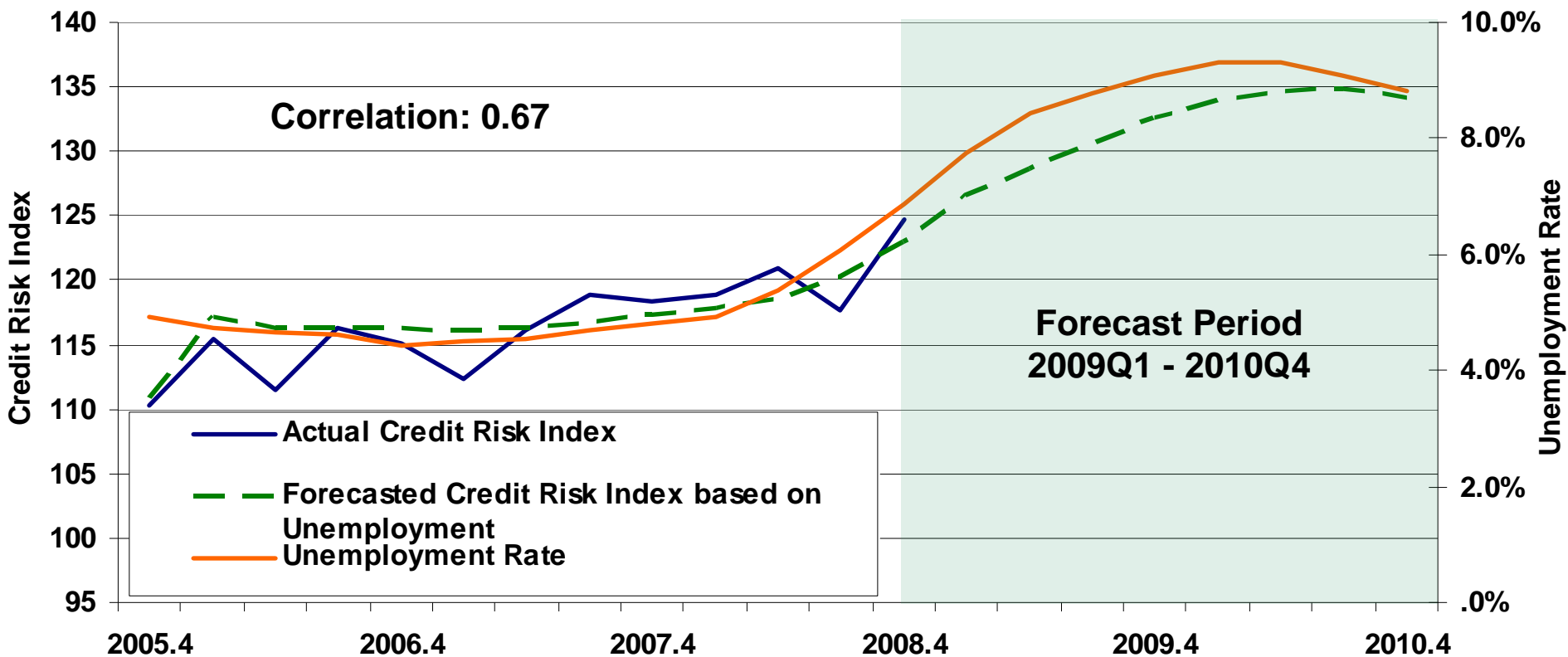# Number of Active Trades

Mortgage Delinquency

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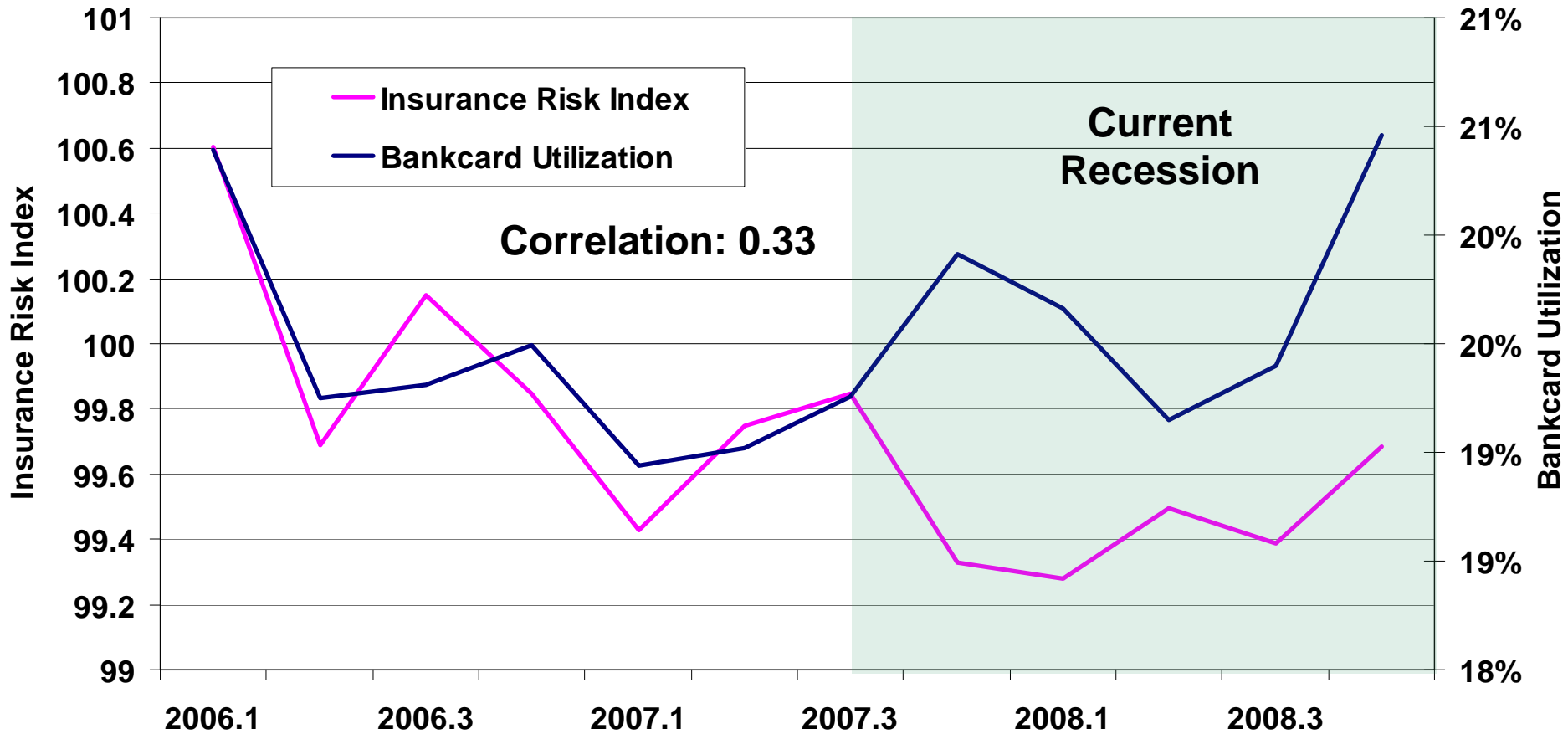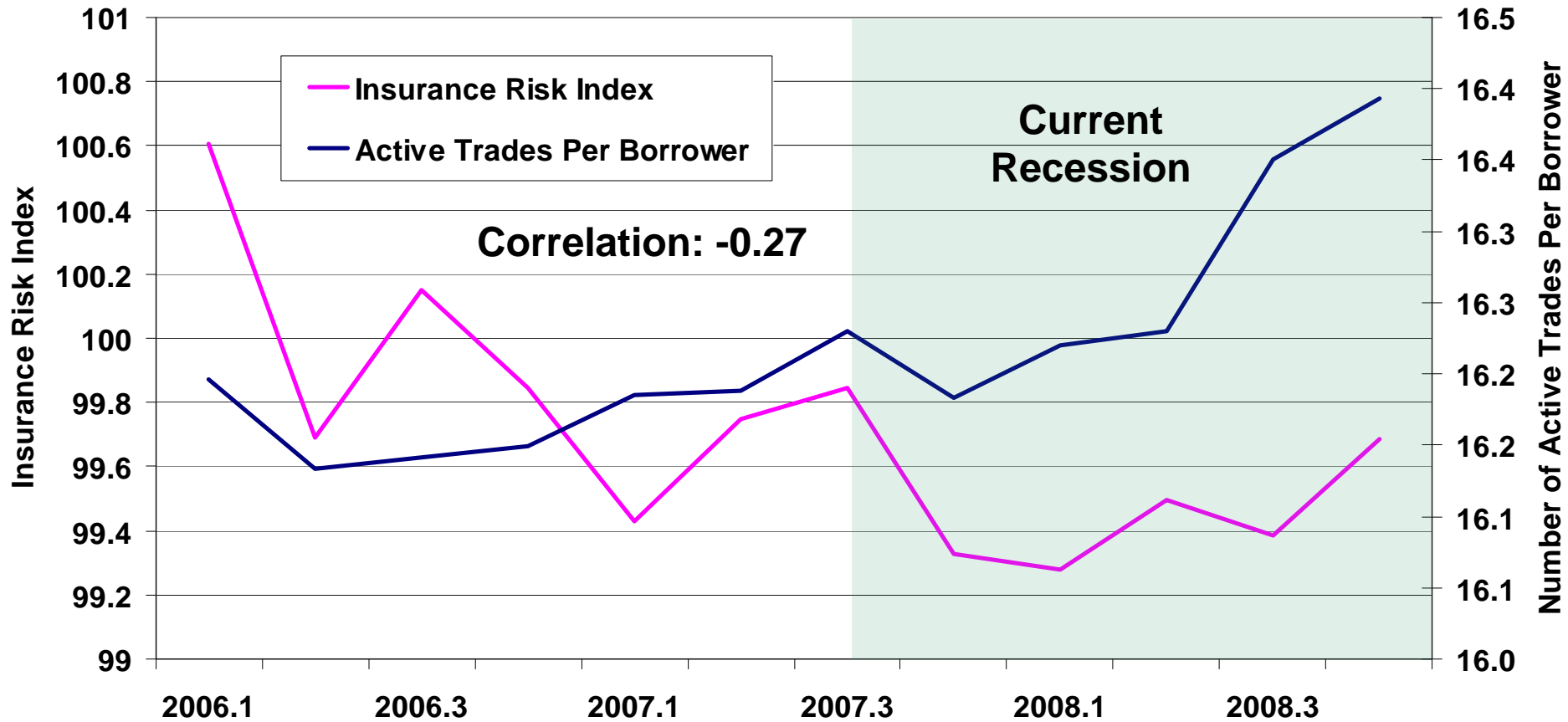
Predicting 90+ Delinquencies Using Credit Risk Index

Predicting Credit Risk Index Using Unemployment Rate

Correlation: 0.67

Forecast Period
2009Q1 - 2010Q4

Legend:
- Actual Credit Risk Index
- Forecasted Credit Risk Index based on Unemployment
- Unemployment Rate

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Unemployment Poor Predictor of Insurance Risk Index
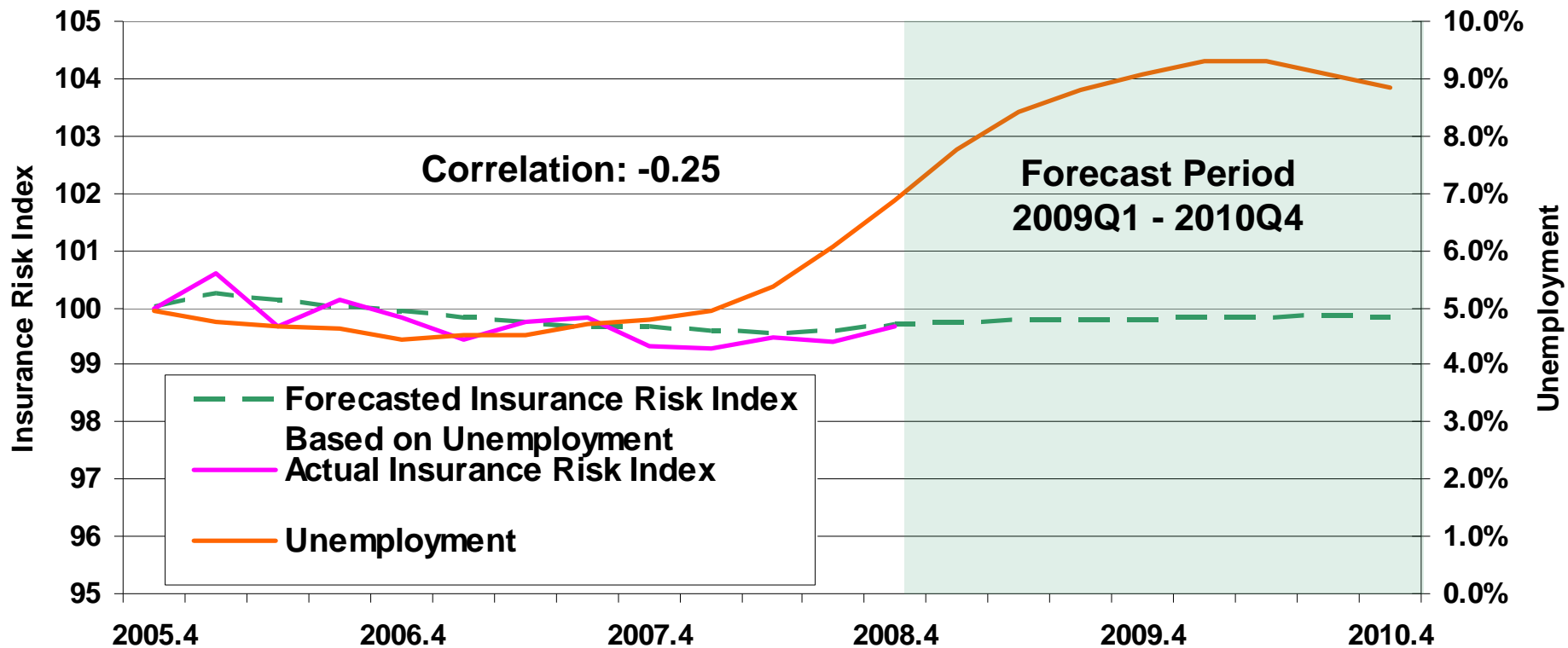
Credit Risk Index Forecast and Insurance Risk Index Forecast Based on Unemployment

Chart — Insurance Risk Index and Credit Risk Index (y-axis: 95 to 135) vs. years (x-axis: 2005.4 to 2010.4):
- Forecasted Credit Risk Index Based on Unemployment
- Forecasted Insurance Risk Index Based on Unemployment
- Forecast Period 2009Q1 - 2010Q4

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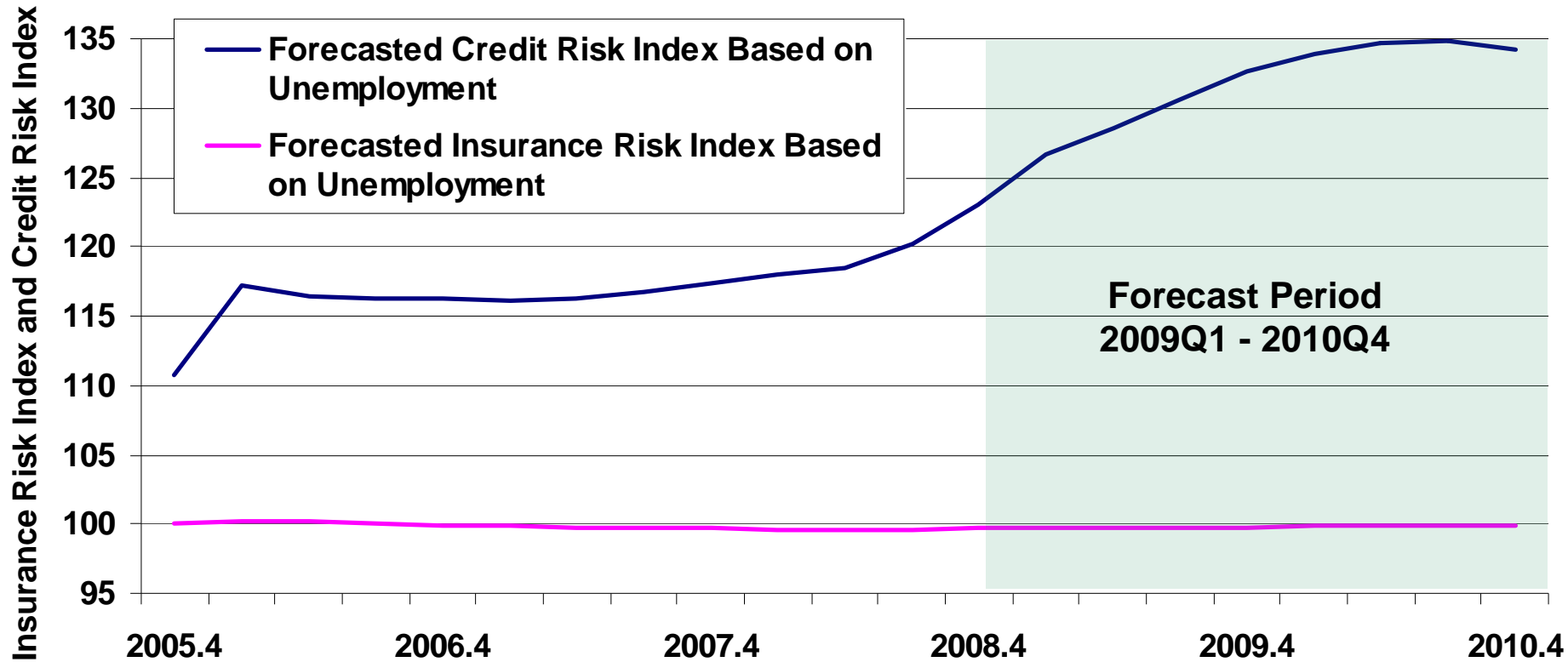
Summary

- **Credit and Insurance Risk Score Shifts are Taking Place**
  - **Credit Risk and Insurance Risk Scores are Highly Correlated**
  - **Credit Risk Scores are more Volatile than Insurance Risk Score**
  - **Average Score Shifts Provide Directional Information**

- **Risk Indices put Score Shifts into Context**
  - **Credit Risk and Insurance Risk Indices are not Highly Correlated**
  - **Credit Risk Indices are Relatively Volatile**
  - **Insurance Risk Indices are not Volatile**
  - **There are Substantial State Differences in Insurance Risk Indices**

- **Many more Credit Characteristics are Highly Correlated to Credit Risk Indices than Insurance Risk Indices**
  - **Actions Taken by Lenders Appear to have Minimal Impact on Insurance Risk Scores and Indices**

- **External Economic Factors have a Greater Affect on Credit Risk Scores and Indices**
  - **Relationships Between Insurance Risk Indices and Economic Factors Requires more Analysis**

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