**Table 1: Percent of EMV Articles in Each Category, 1985-2017**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Panel A. General Economic Categories** | **Percent of EMV Articles** | | |  |
| Macroeconomic News and Outlook | | 71.8 |  | |
| Broad Quantity Indicators | | 26.8 |  | |
| Inflation | | 28.7 |  | |
| Interest Rates | | 30.7 |  | |
| Other Financial Indicators | | 3.5 |  | |
| Labor Markets | | 22.9 |  | |
| Real Estate Markets | | 30.7 |  | |
| Trade | | 2.4 |  | |
| Business Investment and Sentiment | | 1.8 |  | |
| Consumer Spending and Sentiment | | 9.2 |  | |
| Commodity Markets | | 43.7 |  | |
| Financial Crises | | 8.1 |  | |
| Exchange Rates | | 2.0 |  | |
| Healthcare Matters | | 6.4 |  | |
| Litigation Matters | | 4.7 |  | |
| Competition Matters | | 3.8 |  | |
| Labor Disputes | | 4.0 |  | |
| Intellectual Property Matters | | 3.3 |  | |
| **Panel B. Policy-Related Categories** | | **Percent of EMV Articles** | **Percent of EPU Articles** | |
| Fiscal Policy: | | 34.7 | 44.6 | |
| Taxes | | 29.8 | 36.1 | |
| Government Spending, Deficits, and Debt | | 6.1 | 15.3 | |
| Entitlement and Welfare Programs | | 7.1 | 12.0 | |
| Monetary Policy | | 29.5 | 34.9 | |
| Regulation (generic regulation + 4 big regulation categories) | | 24.9 | 27.1 | |
| Financial Regulation | | 14.7 | 6.3 | |
| Competition Policy | | 2.4 | 1.1 | |
| Intellectual Property Policy | | 0.1 | 0.3 | |
| Labor Regulations | | 2.0 | 3.3 | |
| Immigration | | 0.2 | 1.5 | |
| Energy and Environmental Regulation | | 1.3 | 5.5 | |
| Lawsuit and Tort Reform, Supreme Court Decisions | | 1.4 | 4.2 | |
| Housing and Land Management | | 1.2 | 1.5 | |
| Other Regulation: Education, Communications, Consumer Product Safety, and more | | 1.0 | 1.7 | |
| National Security Policy | | 13.1 | 28.6 | |
| Government-Sponsored Enterprises (e.g., Fannie Mae) | | 4.9 | 2.7 | |
| Trade Policy | | 2.8 | 6.0 | |
| Healthcare Policy | | 3.6 | 8.5 | |
| Food and Drug Policy | | 1.3 | 1.0 | |
| Transportation, Infrastructure, and Public Utilities | | 1.3 | 2.6 | |
| Elections and Political Governance | | 3.0 | 8.2 | |
| Agricultural Policy | | 0.2 | 0.6 | |
|  | |  |  | |

**Appendix B. Category-Specific Term Sets**

Our term sets for the Policy-Related Categories build on Baker, Bloom and Davis (2016) and Davis (2017). We developed terms sets for the General Economic Categories for this paper. We group related terms into topics within categories, as indicated by { }. These topical groupings play no role in counting methods or analysis, but we find them helpful in conceptualizing the boundaries of each category. In defining our **Regulation** term set, we hit a ceiling on the number of terms per search query. Given this constraint, we limit our (overall) **Regulation** term set to the union of terms in the most common regulation categories plus a few generic terms indicative of government regulation.

**General Economic Categories**

* **Macroeconomic News and Outlook – the union of the following subcategories:**
* **Broad Quantity Indicators:** {gdp, economic growth}, {depression, recession, economic crisis}, {macroeconomic indicators, macroeconomic news, macroeconomic outlook}, {industrial production, ism report, manufacturing index}, {rail loadings, railroad loadings}
* **Inflation:** {cpi, inflation, consumer prices, ppi, producer prices}, {gold, silver}
* **Interest Rates:** {interest rates, yield curve, fed funds rate, overnight rate, repo rate, T-bill rate, bond rate, bond yield}
* **Other Financial Indicators:** {bank loans, mortgage loans}, {credit spread}, {household credit, household savings, household debt, household borrowing, consumer credit}, {business credit, business borrowing, business debt}
* **Labor Markets:** {labor force, workforce, unemployment, employment, unemployment insurance, ui claims, jobs report, jobless claims, payroll, underemployment, quits, hires, weekly hours, labor strike}, {wages, labor income, labor earnings}
* **Real Estate Markets:** {housing prices, home prices, homebuilding, homebuilders, housing starts, home sales, building permits, residential sales, mortgages, residential construction, commercial construction, commercial real estate, real estate}
* **Trade:** {trade news, trade surplus, trade deficit, national exports, national imports}
* **Business Investment and Sentiment: {**business investment, business inventories}, {business sentiment, business confidence}
* **Consumer Spending and Sentiment:** {consumer spending, retail sales, consumer purchases}, {consumer confidence, consumer sentiment}
* **Commodity Markets:** {wheat, corn, soy, sugar, cotton, beef, pork}, {petroleum, oil, coal, natural gas}, {biofuel, ethanol}, {steel, copper, zinc, tin, platinum, rare earth metals, gold, metal, silver, aluminum, lead}, {cme, commodity exchange, cbot, nymex, lme, London metal exchange, mercantile exchange, intercontinental exchange, board of trade}, {keystone pipeline, Alaska pipeline, gas pipeline}
* **Financial Crises:** {financial crisis, financial crises}, {Northern Rock failure, Lehman failure, Lehman Brothers failure, AIG Takeover}, {euro crisis, Eurozone crisis, Greek crisis}
* **Exchange Rate**: {exchange rate}, {currency crisis}, {currency devaluation, currency depreciation}, {currency revaluation, currency appreciation}, {crawling peg, managed float}, {currency manipulation, currency intervention}
* **Healthcare Matters**: {healthcare}, {health insurance}, {Medicaid}, {Medicare}, {Affordable care act, Obamacare}, {medical liability, medical malpractice}, {prescription drug}, {drug policy}, {food and drug administration, fda}, {VA hospital, VA healthcare, Veterans Affairs hospital, Veterans Affairs healthcare, Veterans Health Administration}, {National Institutes of Health}
* **Litigation Matters: {**lawsuit, litigation, class action, tort}, {punitive damages}, {patent infringement, trademark infringement, copyright infringement}, {medical malpractice}, {Supreme Court}
* **Competition Matters:** {antitrust, competition policy, competition law}, {federal trade commission, ftc}, {unfair business practice}, {monopoly, monopolization}, {cartel}, {price fixing, price conspiracy}, {Sherman Act}, {Robinson Patman Act}, {Clayton Act}, {Hart-Scott-Rodino}, {European Commission}
* **Labor Disputes:** {labor dispute, labor unrest, strike}, {labor litigation, employee discrimination, wage and hour litigation, labor class action}
* **Intellectual Property Matters:** {patent}, {trademark}, {copyright}, {Patent and Trademark Office}, {International Trade Commission}, {federal trade commission, ftc}, {intellectual property}, {Hatch-Waxman}, {new drug application}

**Policy-Related Categories**

* **Fiscal Policy**: **Taxes**  **Government Spending, Deficits and Debt Entitlement and Welfare Programs**
  + **Taxes:** {taxes, tax, taxation, taxed}, {income tax, tax on individuals, personal tax}, {capital gains tax, tax on capital gains}, {dividend tax}, {mortgage interest deduction, deduction for mortgage interest}, {IRA account, Roth IRA, traditional IRA, 401-k}, {state and local tax deduction, deductibility of state and local tax}, {payroll tax, social security tax, social security contributions, Medicare taxes, FICA, unemployment tax, FUTA}, {sales tax, excise tax, value added tax, vat, goods and services tax, gross receipts tax}, {carbon tax, energy tax}, {corporate tax, business tax, profit tax}, {investment tax credit, accelerated depreciation}, {R&D tax credit, research and development tax credit}, {tax credit for low-income housing, low-income housing credit}, {black liquor tax credit, black liquor credit}, {ethanol credit, ethanol credit, ethanol tax rebate}, {biofuel tax credit, biofuel producer tax credit, fuel excise tax rebate, fuel tax credit, alcohol fuel credit}, {property tax}, {fiscal cliff}, {Internal Revenue Service}
  + **Government Spending, Deficits and Debt:** {government spending, government outlays, government appropriations, government purchases}, {defense spending, military spending, defense purchases, military purchases, defense appropriations}, {entitlement spending}, {government subsidy}, {fiscal stimulus}, {government deficit}, {federal budget, government budget}, {Gramm Rudman, balanced budget, balance the budget, budget battle, debt ceiling}, {fiscal cliff, government sequester, budget sequestration, government shutdown}, {sovereign debt}
  + **Entitlement and Welfare Programs:** {entitlement program, entitlement spending, government entitlements}, {social security, Supplemental Security Income, ssi, disability insurance}, {Medicaid}, {Medicare}, {supplemental nutrition assistance program, food stamps, wic program}, {unemployment insurance, unemployment benefits, TAA program}, {welfare reform, aid to families with dependent children, afdc, temporary assistance for needy families, tanf, public assistance}, {earned income tax credit, eitc}, {head start program, early childhood development program}, {affordable housing, section 8, housing assistance, government subsidized housing}
* **Government-Sponsored Enterprises and Related Agencies:** {Federal Home Loan Mortgage Association, Freddie Mac}, {Fannie Mae, Federal National Mortgage Association}, {Federal Housing Finance Agency}, {Federal Housing Agency}, {Sallie Mae, Student Loan Marketing Association}, {Government National Mortgage Association, Ginnie Mae}, {Federal Home Loan Bank}, {Federal Farm Credit Bank, Federal Agricultural Mortgage Corporation, Farmer Mac}, {Resolution Funding Corporation, REFCORP}
* **Monetary Policy**: {monetary policy}, {money supply, open market operations}, {fed funds rate}, {discount window}, {quantitative easing}, {forward guidance}, {interest on reserves}, {taper tantrum}, {Fed chair, Greenspan, Bernanke, Volker, Yellen, Draghi, Kuroda, Jerome Powell}, {lender of last resort}, {central bank}, {federal reserve, the fed}, {European Central Bank, ecb}, {Bank of England}, {bank of japan}, {people’s bank of china, pboc, pbc, central bank of china}, {Bank of Italy}, {Bundesbank}
* **Regulation**: {regulation, regulatory, regulate} **Financial Regulation**  **Competition Policy Labor Regulations**  **Lawsuit And Tort Reform, Supreme Court Decisions**
  + **Financial Regulation:** {bank supervision}, {thrift supervision}, {financial reform}, {truth in lending}, {firrea}, {Glass-Steagall}, {Sarbanes-Oxley}, {Dodd-frank}, {tarp, Troubled Asset Relief Program}, {Volcker rule}, {Basel}, {capital requirement}, {stress test}, {deposit insurance, fdic}, {federal savings and loan insurance corporation, fslic}, {office of thrift supervision, ots}, {comptroller of the currency, occ}, {commodity futures trading commission, cftc}, {Financial Stability Oversight Council}, {house financial services committee}, {securities and exchange commission, sec}, {Bureau of Consumer Financial Protection, Consumer Financial Protection Bureau, CFPB}, {SBA loan program}
  + **Competition Policy:** {antitrust policy, competition policy, competition law}, {federal trade commission, ftc}, {Sherman Act}, {Robinson Patman Act}, {Clayton Act}, {Hart-Scott-Rodino}, {European Commission}
  + **Intellectual Property Policy:** {patent policy, patent law}, {trademark policy, trademark law}, {copyright law}, {Patent and Trademark Office}, {International Trade Commission}
  + **Labor Regulations:** {Department of Labor}, {national labor relations board, nlrb}, {union rights, card check, right to work, closed shop}, {wages and hours, overtime requirements}, {minimum wage, living wage}, {workers’ compensation}, {Occupational Safety and Health Administration, osha, Mine Safety and Health Administration}, {employment at will, advance notice requirement, at-will employment}, {affirmative action, equal employment opportunity, eeoc}, {trade adjustment assistance}, {Davis-Bacon}, {ERISA}, {Pension Benefit Guaranty Corporation, PBGC}
  + **Immigration:** {immigration policy, immigration reform, migration reform}, {Immigration and Customs Enforcement, immigration and naturalization service}, {immigrant workers, immigrant labor}, {farm worker jobs program, farm worker program farm worker program, farmworker program, guest worker program, guestworker program, H-2A program, H-2B program}, {H-1B program, H-1B visa}, {refugee crisis}, {Schengen}
  + **Energy and Environmental Regulation:** {energy policy}, {energy tax, carbon tax}, {cap and trade}, {cap and tax}, {drilling restrictions}, {offshore drilling}, {pollution controls, environmental restrictions, clean air act, clean water act}, {environmental protection agency, epa}, {wetlands protection}, {Federal Energy Regulatory Commission, FERC}, {ethanol subsidy, ethanol tax credit, ethanol credit, ethanol tax rebate, ethanol mandate, biofuel tax credit, biofuel producer tax credit}, {corporate average fuel economy, CAFE standard}, {endangered species}, {Keystone pipeline}, {Alaska oil pipeline, Trans-Alaska pipeline}, {greenhouse gas regulation, climate change regulation}, {Nuclear Regulatory Commission}, {Pipeline and Hazardous Materials Safety Administration}
  + **Lawsuit and Tort Reform, Supreme Court Decisions:** {tort reform}, {class action reform}, {punitive damages reform}, {medical malpractice reform}, {lawsuit reform}, {Supreme Court}
  + **Housing and Land Management:** {Federal HousingAdministration}, {Federal Housing Finance Agency}, {Department of Housing and Urban Development, HUD}, {Section 8 Housing}, {Office of Fair Housing and Equal Opportunity, FHEO}, {Bureau of Land Management}, {Department of Interior}, {zoning regulations, zoning laws}, {endangered species}, {US Forest Service, United States Forest Service}
  + **Other Regulation:** {Consumer Product Safety Commission}, {Department of Education}, {Small Business Administration}, {Federal Communications Commission, FCC}, {Fish and Wildlife Service}
* **National Security**: {national security}, {war, military conflict, military action}, {terrorism, terror, 9/11}, {defense spending, defense policy, military spending}, {Department of Defense}, {Department of Homeland Security}, {Defense Advanced Research Projects Agency, DARPA}, {armed forces}, {base closure}, {military procurement}, {no-fly zone}, {Syrian war}, {Iraq war}, {Libyan war}, {Ukraine conflict, Ukraine invasion, Crimean invasion, Crimean annexation}, {South China Sea conflict}, {naval blockade, military embargo}
* **Trade Policy**: {trade policy}, {tariff, import duty}, {import barrier, import restriction}, {trade quota}, {dumping}, {export tax, export duty}, {trade treaty, trade agreement, trade act}, {wto, world trade organization, Doha round, Uruguay round, gatt}, {export restriction}, {investment restriction}, {Nafta, North American Free Trade Agreement}, {Trans-Pacific Partnership, TransPacific Partnership}, {Federal Maritime Commission}, {International Trade Commission}, {Jones Act}, {trade adjustment assistance}
* **Healthcare Policy**: {healthcare policy}, {health insurance}, {Medicaid}, {Medicare}, {Affordable care act, Obamacare}, {malpractice tort reform, malpractice reform}, {VA hospital, VA healthcare, Veterans Affairs hospital, Veterans Affairs healthcare, Veterans Health Administration}, {National Institutes of Health}
* **Food and Drug Policy:** {prescription drug act}, {drug policy}, {food and drug administration, fda}
* **Transportation, Infrastructure and Public Utilities:** {Department of Transportation}, {Federal Highway Administration}, {federal highway fund}, {National Highway Traffic Safety Administration}, {U.S. Surface Transportation Board}, {Amtrak, National Railroad Passenger Corporation}, {Bonneville Power Administration, Tennessee Valley Authority, Southeastern Power Administration, New York Public Power Authority, Santee Cooper, South Carolina Public Service Authority, Salt River Project, Los Angeles Department of Water and Power}, {Corps of Engineers}, {Federal Aviation Administration, FAA}, {Federal Maritime Commission}, {National Aeronautics and Space Administration, NASA}, {Pipeline and Hazardous Materials Safety Administration}
* **Elections and Political Governance**: {presidential election}, {Congressional election}, {parliamentary election}, {presidential impeachment}, {Brexit}, {Scottish referendum}, {Grexit, Greek exit}, {Eurozone exit, Eurozone breakup}, {military takeover, coup}, {civil war}
* **Agricultural Policy:** {Department of Agriculture, USDA}, {ethanol subsidy, ethanol tax credit, ethanol credit, ethanol tax rebate, ethanol mandate, biofuel tax credit, biofuel producer tax credit}

**Appendix C. Computing the Realized Volatility of Equity Returns**

Let *t* index trading days, and let index the firm (i.e., it’s equity security). We compute percent daily equity returns as follows:

Where PRCCD represents unadjusted closing equity prices, AJEXDI is a cumulative index accounting for stock splits, reverse stock splits and stock dividend payments implemented by companies over time, and TRF is a cumulative index accounting for cash dividend payments and other cash equivalent distributions. Many firms (38.77 percent) have missing TRFD for the entire period. In such cases, we impute TRFD=1 (i.e., we assume these companies did not implement stock splits or stock dividend payments during the considered period). We drop observations with daily return, as measured above, outside the range of -100 to 100.

Let be the number of trading days for firm in month Given the previous calculation for daily firm-level stock returns, we calculated firm-level monthly realized stock volatility as follows:

252 is just a constant representing the approximate number of trading days in a year that we use for the annualization factor. This formula is just the standard deviation of daily returns in the month for a zero-mean return and expressed on an annualized basis. The zero mean return assumption is common in practice since daily mean returns are usually very small.

We use the same formula for calculating the monthly market level realized volatility based off S&P 500 returns. The only difference is that we simplify the daily returns calculation so that we instead use:

.

**Appendix C. Additional Analysis and Results**

Figures C.1 and C.2 display the time series of residuals for the regressions reported in Table 2, Columns (1) and (3), respectively.

Table C.1 expands on the VIX regressions in Table 2 by using NVIX as an explanatory variable instead of, or in addition to, our EMV tracker. There are two main results in Table C.1: First, columns (1) to (4) show that EMV outperforms NVIX in tracking the VIX. Second, columns (5) and (6) show that EMV and NVIX have independent explanatory power in the sense that neither knocks out the statistical significance of the other. Moreover, including both explanatory variables substantially improves the goodness of fit.

**Table C.1: Regressions of VIX on EMV and NVIX, January 1985 to March 2016**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| EMVt | 0.75  (0.06) |  | 0.43  (0.07) |  | 0.55  (0.07) | 0.36  (0.06) |
| NVIXt |  | 1.12  (0.12) |  | 0.53  (0.11) | 0.61  (0.12) | 0.32  (0.07) |
| VIXt-1 |  |  | 0.58  (0.08) | 0.65  (0.05) |  | 0.50  (0.07) |
| R2 | 0.61 | 0.48 | 0.83 | 0.77 | 0.71 | 0.85 |
| Observations | 374 | 374 | 372 | 372 | 374 | 372 |

**Notes:** Each column reports a regression of VIX on the indicated row variables, using monthly data from January 1985 to March 2016. VIX is the monthly average of daily closing values on the CBOE 30-day implied volatility index from January 1990 onwards, appended to data from Berger et al. (2019) in earlier years EMV is Equity Market Volatility tracker developed in Section 2.1. NVIX is the news-based volatility measure developed in Manela and Moreira (2017) using front-page abstracts and headlines in the *Wall Street Journal.*

Table C.2 explores the sensitivity to alternative newspaper weightings in regressions of VIX on EMV. Column (1) replicates our baseline specification reported in Column (1) of Table 2. The remaining rows adopt the same regression specification but double the weight on each newspaper, one at a time, in constructing the EMV tracker (Panel A), drop each newspaper one at a time (Panel B), or use a single newspaper in constructing EMV (Panel C).

Figures C.3. displays a time series for the fraction of EMV articles that contain one or more of the “Policy” terms that Baker, Bloom and Davis (2016) use in constructing their newspaper-based Economic Policy Uncertainty Index for the United States. Figures C.4 to C.7 display additional category-specific EMV trackers.

**Table C.2: Fit Sensitivity to Alternative Newspaper Weightings in Regressions of VIX on EMV, 1985-2017**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1)  Baseline | (2)  Dallas MN | (3)  Houston Chronicle | | (4)  Miami Herald | (5)  SF Chronicle | (6)  USA Today | (7)  Boston Globe | (8)  Chicago Tribune | (9)  WSJ | (10)  NYT | (11)  LAT | (12)  Wash. Post |
| **Panel A: Doubling the weight on the indicated newspaper** | | | | | | | | | | | | | |
|  |  |  |  |  | |  |  |  |  |  |  |  |  |
| EMVt | 0.76  (0.06) | 0.76  (0.06) | 0.74  (0.06) | 0.75  (0.06) | | 0.74  (0.06) | 0.75  (0.06) | 0.75  (0.06) | 0.77  (0.06) | 0.78  (0.06) | 0.78  (0.06) | 0.75  (0.06) | 0.76  (0.06) |
| R2 | 0.611 | 0.607 | 0.604 | 0.615 | | 0.611 | 0.606 | 0.609 | 0.604 | 0.613 | 0.607 | 0.600 | 0.608 |
| **Panel B: Dropping the indicated newspaper** | | | | | | | | | | | | | |
|  |  |  |  |  | |  |  |  |  |  |  |  |  |
| EMVt | 0.76  (0.06) | 0.75  (0.06) | 0.78  (0.06) | 0.76  (0.06) | | 0.77  (0.06) | 0.76  (0.06) | 0.76  (0.06) | 0.74  (0.06) | 0.73  (0.06) | 0.72  (0.06) | 0.77  (0.06) | 0.76  (0.06) |
| R2 | 0.611 | 0.603 | 0.613 | 0.598 | | 0.603 | 0.607 | 0.605 | 0.611 | 0.598 | 0.603 | 0.618 | 0.610 |
| Obs. | 396 | 396 | 396 | 396 | | 396 | 396 | 396 | 396 | 396 | 396 | 396 | 396 |
| **Panel C: Using only the indicated newspaper** | | | | | | | | | | | | | |
| EMVt | 0.76  (0.06) | 0.29  (0.04) | 0.39  (0.05) | 0.39  (0.05) | | 0.35  (0.04) | 0.36  (0.05) | 0.40  (0.05) | 0.53  (0.04) | 0.52  (0.09) | 0.45  (0.09) | 0.45  (0.06) | 0.59  (0.06) |
| R2 | 0.611 | 0.226 | 0.393 | 0.406 | | 0.378 | 0.329 | 0.349 | 0.344 | 0.346 | 0.237 | 0.353 | 0.468 |
| Obs. | 396 | 396 | 396 | 396 | | 396 | 396 | 396 | 396 | 396 | 396 | 396 | 396 |

**Notes**: All series are at the monthly level. EMV is the Equity Markets Volatility Index. The dependent variable is always the VIX where VIX refers to the monthly average of daily close of the VIX implied volatility index on the S&P500. Columns (2)-(12) of Panel A correspond to a different version of our EMV Index as the independent variable where the version is constructed such that the column title newspaper has twice the weight as the other newspapers. Columns (2)-(12) of Panel B correspond to a different version of our EMV Index as the independent variable where the version is constructed such that the column title newspaper has been removed from the index. Robust standard errors in parentheses. The slope coefficient is statistically significant at the 1% level in all regressions.