Active Monetary or Fiscal Policy and Stock-Bond Correlation

Erica X.N. Li  
CKGSB

Tao Zha  
Emory & Atlanta Fed

Ji Zhang  
Tsinghua PBCSF

Hao Zhou  
Tsinghua PBCSF
Beta of 5-Year Treasury Bond
Campbell, Sunderam, and Viceira (2016)
Question

What determines the sign of the correlation between stock and bond returns?
Our Explanation

What we propose

▶ switch of monetary-fiscal activeness (regimes)
  ▶ different shocks are amplified/mitigated by policies in different regimes
  ▶ ⇒ different shocks dominate in different regimes
  ▶ different dominant shocks generate different return correlations

▶ coherent explanation for stock-bond correlation from 1950’s until now
Our Explanation

- The permanent technology (PT) shocks, which dominate in the AMPF regime, lead to **positive** stock-bond correlation
  - AMPF: active monetary and passive fiscal policy regime

- The marginal efficiency of investment (MEI) shocks, which dominate in the PMAF regime, lead to **negative** stock-bond correlation
  - PMAF: passive monetary and active fiscal policy regime

- The permanent technology (PT) and monetary policy (MP) shocks dominate marginal efficiency of investment (MEI) shocks in the PMPF regime, lead to **slightly positive** stock-bond correlation
  - PMPF: passive monetary and passive fiscal policy regime
Outline

1. Policy Regimes

2. Model

3. Results for Regime Switching Model

4. Robustness Checks
1. Policy Regimes
2. Model
3. Results for Regime Switching Model
4. Robustness Checks
## Monetary Policy Regimes
Leeper (1991)

\[ i_t - i = \phi_{\pi} (\pi_t - \pi^*) + \phi_y (\Delta y_t - \Delta y) \]

- **Active monetary policies:** $\phi_{\pi} > 1$
  - 1980s and 1990s, stabilize price

- **Passive monetary policies:** $0 \leq \phi_{\pi} < 1$
  - 2000s, ZLB without UMP
Fiscal Policy Regimes
Leeper (1991)

\[ \tau_t - \tau = \varsigma_b (b_{t-1}^{\infty} - b^\infty) + \varsigma_g (g_{yt} - g_y) + \varsigma_y (y_t - y), \]

- Passive fiscal policies: \( \varsigma_b > 0 \)
  normal times, stabilize government bond

- Active fiscal policies: \( \varsigma_b = 0 \)
  wars or big recessions (Korean War, Vietnam War), stabilize price
Fiscal Regimes

LADIES AND GENTLEMEN!
YOU WILL NOTICE THAT THERE IS
NO VISIBLE MEANS OF SUPPORT!
I AM UPHOLDING IT BY THE SHEER
POWER OF MY WILL!

The Amazing TRUMPO

© WOLVERTON
Government budget constraint

\[ G_t - T_t = \frac{\tilde{B}_t - \underbrace{R^B_t \tilde{B}_{t-1}}_{\text{existing nominal liability}}}{P_t} \]

real deficit
Government budget constraint

\[ G_t - T_t = \left( \tilde{B}_t - \frac{R^B_t \tilde{B}_{t-1}}{P_t} \right) \]

real deficit

\[ \Rightarrow g_t - \tau_t = \frac{\tilde{b}_t}{Y_t} - \frac{R^B_t \tilde{b}_{t-1}}{\Pi_t Y_{t-1}} \frac{Y_{t-1}}{Y_t} \]
Government budget constraint

\[
G_t - T_t = \underbrace{\hat{B}_t - R_t^B \hat{B}_{t-1}}_{\text{existing nominal liability}} \frac{P_t}{Y_t}
\]

\[
g_t - \tau_t = \frac{\hat{b}_t}{Y_t} - \frac{R_t^B \hat{b}_{t-1}}{\Pi_t} \frac{Y_{t-1}}{Y_t}
\]

- Passive fiscal policy: \(\frac{\hat{b}_{t-1}}{Y_{t-1}} \uparrow \iff \tau_t \uparrow \Rightarrow \) BC balances again, nothing else changes.
Government budget constraint

\[ G_t - T_t = \tilde{B}_t - \frac{R_t^B \tilde{B}_{t-1}}{P_t} \]

real deficit

\[ \Rightarrow g_t - \tau_t = \frac{\tilde{b}_t}{Y_t} - \frac{R_t^B \tilde{b}_{t-1}}{\Pi_t Y_{t-1}} \frac{Y_{t-1}}{Y_t} \]

Passive fiscal policy: \( \frac{\tilde{b}_{t-1}}{Y_{t-1}} \uparrow \Rightarrow \tau_t \uparrow \Rightarrow \text{BC balances again, nothing else changes} \)

Active fiscal policy: \( \frac{\tilde{b}_{t-1}}{Y_{t-1}} \uparrow \Rightarrow \tau_t \) does not change \( \Rightarrow \Pi_t \) has to \( \uparrow \) to offset the increase in liability \( \Rightarrow \text{BC balances again due to inflation} \)
Beta of 5-Year Treasury Bond

Graph showing the beta of 5-year Treasury Bond from 1947 to 2017. The graph includes the CAPM 5-year Treasury Bond Beta and regimes marked as AMPF, PMAF, and PMPF.
Outline

1. Policy Regimes

2. Model

3. Results for Regime Switching Model

4. Robustness Checks
Main Features of the Model

A medium scale DSGE model with

- nominal rigidities
- recursive preferences
- monetary-fiscal policy regime switch
- 4 exogenous structural shocks
  - permanent technology shock (PT)
  - marginal efficiency of investment shock (MEI)
  - monetary policy shock (MP)
  - fiscal policy shock (FP)
Outline

1. Policy Regimes

2. Model

3. Results for Regime Switching Model

4. Robustness Checks
## Variance Decomposition

**Table: Variance Decomposition (Business Cycle Frequency, in %)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>PT</th>
<th>MEI</th>
<th>MP</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_s^c$</td>
<td>60.66</td>
<td>4.92</td>
<td>34.42</td>
<td>0.00</td>
</tr>
<tr>
<td>$R_b^s$</td>
<td>53.40</td>
<td>0.61</td>
<td>43.44</td>
<td>2.55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AMPF/PMAF/PMPF</th>
<th>PT</th>
<th>MEI</th>
<th>MP</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29.48</td>
<td>61.13</td>
<td>9.16</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>40.40</td>
<td>33.76</td>
<td>25.01</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>3.87</td>
<td>60.13</td>
<td>35.68</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>22.90</td>
<td>26.90</td>
<td>47.09</td>
<td>3.10</td>
</tr>
</tbody>
</table>
Positive PT Shock

technology $\uparrow \rightarrow$

- consumption and output $\uparrow \uparrow$
Positive PT Shock

technology $\uparrow \rightarrow$

▶ consumption and output $\uparrow \uparrow$

▶ ▶ AMPF regime

$\rightarrow$ marginal cost of production $\downarrow \rightarrow$ inflation $\downarrow$ $\overset{AM, \phi_\pi > 1}{\rightarrow}$ nominal interest rate $\downarrow \downarrow \rightarrow$ real interest rate $\downarrow \rightarrow$ consumption and output $\uparrow$

$\Rightarrow$ consumption and output $\uparrow \uparrow \uparrow \uparrow$
Positive PT Shock

technology $\uparrow \rightarrow$

- consumption and output $\uparrow \uparrow$

- AMPF regime
  $\rightarrow$ marginal cost of production $\downarrow \rightarrow$ inflation $\downarrow \overset{\text{AM, } \phi, \pi > 1}{\rightarrow}$ nominal interest rate $\downarrow \downarrow \rightarrow$ real interest rate $\downarrow \rightarrow$ consumption and output $\uparrow$

  $\Rightarrow$ consumption and output $\uparrow \uparrow \uparrow$

- PMAF regime
  $\rightarrow$ marginal cost of production $\downarrow \rightarrow$ inflation $\downarrow \overset{\text{PM, } \phi, \pi < 1}{\rightarrow}$ nominal interest rate $\downarrow \rightarrow$ real interest rate $\uparrow \rightarrow$ consumption and output $\downarrow$

  $\Rightarrow$ consumption and output $\uparrow$
Positive PT Shock

technology $\uparrow \rightarrow$

- consumption and output $\uparrow \uparrow$

- **AMPF regime**
  - $\rightarrow$ marginal cost of production $\downarrow \rightarrow$ inflation $\downarrow$ $\frac{AM, \phi_\pi > 1}{\quad}$ nominal interest rate $\downarrow \downarrow \rightarrow$ real interest rate $\downarrow \rightarrow$ consumption and output $\uparrow$
  - $\Rightarrow$ consumption and output $\uparrow \uparrow \uparrow$

- **PMAF regime**
  - $\rightarrow$ marginal cost of production $\downarrow \rightarrow$ inflation $\downarrow$ $\frac{PM, \phi_\pi < 1}{\quad}$ nominal interest rate $\downarrow \rightarrow$ real interest rate $\uparrow \rightarrow$ consumption and output $\downarrow$
  - $\Rightarrow$ consumption and output $\uparrow$

- **PMPF regime**
  - $\rightarrow$ lies between the **AMPF** and **PMAF** regimes
Positive PT Shock

Graphs showing the model results for different policy regimes: AMPF, PMAF, and PMPF. The graphs represent variables such as interest rates, inflation, credit, and output gap over time.
Positive MEI Shock

- **AMPF regime**

  marginal efficiency of investment $\uparrow \rightarrow$ investment (demand) $\uparrow$ output $\uparrow \rightarrow$ labor, wage $\uparrow$ inflation $\uparrow$ AM, $\phi_\pi > 1$ $\rightarrow$ nominal interest rate $\uparrow \uparrow$ $\rightarrow$ long-term bond return $\downarrow$
Positive MEI Shock

- **AMPF regime**
  - marginal efficiency of investment $\uparrow \rightarrow$ investment (demand) $\uparrow$ output
  - $\uparrow \rightarrow$ labor, wage $\uparrow$ inflation $\uparrow \xrightarrow{\text{AM}, \phi_\pi > 1}$ nominal interest rate $\uparrow\uparrow \rightarrow$ long-term bond return $\downarrow$

- **PMAF regime**
  - marginal efficiency of investment $\uparrow \rightarrow$ investment (demand) $\uparrow$ output
  - $\uparrow \xrightarrow{\text{AF}}$ taxes $\uparrow \rightarrow$ inflation, nominal interest rate $\downarrow \text{over longer horizon} \rightarrow$ long-term bond return $\uparrow$
Positive MEI Shock

- **AMPF regime**
  
  marginal efficiency of investment $\uparrow \rightarrow$ investment (demand) $\uparrow$ output $\uparrow \rightarrow$ labor, wage $\uparrow$ inflation $\uparrow$ nominal interest rate $\uparrow\uparrow \rightarrow$ long-term bond return $\downarrow$

- **PMAF regime**
  
  marginal efficiency of investment $\uparrow \rightarrow$ investment (demand) $\uparrow$ output $\uparrow \rightarrow$ taxes $\uparrow \rightarrow$ inflation, nominal interest rate $\downarrow$ over longer horizon $\rightarrow$ long-term bond return $\uparrow$
Positive MEI Shock

correlation matrix
Positive MP Shock

Under **ALL** three regimes, policy rate $\uparrow \rightarrow$ depresses the economy $\rightarrow$

\[
\begin{align*}
\text{consumption} & \downarrow \rightarrow \text{stock return} \downarrow \\
\text{long-term interest rate} & \uparrow \rightarrow \text{long-term bond return} \downarrow
\end{align*}
\]

More impulse responses
Correlation Matrix

**Table: Bond-Stock Return Correlation — All Shocks**

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R^c_s$</th>
<th>$R^g_b$</th>
<th>$R^c_b$</th>
<th>$\pi$</th>
<th>$\Delta C$</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^c_s$</td>
<td>1.00</td>
<td>0.82 / -0.32 / 0.05</td>
<td>0.64 / 0.51 / 0.69</td>
<td>-0.39 / -0.05 / 0.07</td>
<td>0.55 / 0.51 / 0.51</td>
<td>-0.71 / -0.54 / -0.42</td>
</tr>
<tr>
<td>$R^g_b$</td>
<td>1.00</td>
<td>0.42 / -0.47 / -0.22</td>
<td>-0.36 / -0.15 / -0.18</td>
<td>0.47 / -0.16 / 0.00</td>
<td>-0.71 / -0.19 / -0.40</td>
<td></td>
</tr>
<tr>
<td>$R^c_b$</td>
<td>1.00</td>
<td>0.06 / 0.30 / 0.37</td>
<td>0.34 / 0.24 / 0.30</td>
<td>0.08 / 0.45 / 0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\pi$</td>
<td></td>
<td>1.00</td>
<td>-0.69 / -0.29 / -0.17</td>
<td>0.57 / 0.37 / 0.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta C$</td>
<td></td>
<td></td>
<td>1.00</td>
<td>-0.40 / -0.30 / -0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Correlation Matrix

**Table: Bond-Stock Return Correlation without the PT Shock**

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R_s^\xi$</th>
<th>$R_b^\xi$</th>
<th>$R_b^\delta$</th>
<th>$\pi$</th>
<th>$\Delta C$</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_s^\xi$</td>
<td>1.00</td>
<td>0.65 / -0.51 / -0.20</td>
<td>0.99 / 1.00 / 0.99</td>
<td>0.05 / 0.19 / 0.28</td>
<td>0.62 / 0.61 / 0.64</td>
<td>-0.89 / -0.90 / -0.91</td>
</tr>
<tr>
<td>$R_b^\xi$</td>
<td>1.00</td>
<td>0.69 / -0.44 / -0.14</td>
<td>0.19 / -0.10 / -0.07</td>
<td>0.42 / -0.31 / -0.12</td>
<td>-0.64 / 0.37 / 0.07</td>
<td></td>
</tr>
<tr>
<td>$R_b^\delta$</td>
<td>1.00</td>
<td>0.05 / 0.18 / 0.27</td>
<td>0.62 / 0.61 / 0.64</td>
<td>-0.92 / -0.92 / -0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\pi$</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td>-0.09 / 0.11 / 0.32</td>
<td>0.12 / 0.14 / 0.00</td>
<td></td>
</tr>
<tr>
<td>$\Delta C$</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>-0.50 / -0.49 / -0.52</td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>
## Correlation Matrix

**Table:** Bond-Stock Return Correlation without the MEI Shock

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R^c_s$</th>
<th>$R^c_b$</th>
<th>$R^c_p$</th>
<th>$\pi$</th>
<th>$\Delta C$</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^c_s$</td>
<td>1.00</td>
<td>0.97 / 0.70 / 0.77</td>
<td>0.52 / -0.33 / 0.21</td>
<td>-0.42 / -0.49 / -0.20</td>
<td>0.56 / 0.44 / 0.42</td>
<td>-0.79 / -0.86 / -0.67</td>
</tr>
<tr>
<td>$R^c_b$</td>
<td>1.00</td>
<td>0.55 / 0.32 / 0.19</td>
<td>-0.39 / -0.15 / -0.23</td>
<td>0.55 / 0.29 / 0.31</td>
<td>-0.73 / -0.32 / -0.53</td>
<td></td>
</tr>
<tr>
<td>$R^c_p$</td>
<td>1.00</td>
<td>0.16 / 0.48 / 0.49</td>
<td>0.29 / -0.15 / -0.02</td>
<td>0.12 / 0.76 / 0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\pi$</td>
<td>1.00</td>
<td>1.00</td>
<td>-0.73 / -0.73 / -0.59</td>
<td>0.61 / 0.59 / 0.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta C$</td>
<td>1.00</td>
<td>1.00</td>
<td>-0.44 / -0.38 / -0.37</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outline

1. Policy Regimes
2. Model
3. Results for Regime Switching Model
4. Robustness Checks
Robustness

Our results hold for

- Effective lower bound regime:
  \[ \phi_\pi, \phi_y \to 0 \]

- Constant relative risk aversion (CRRA) preference
  \[ M_{t,t+1} = \beta_t \frac{U'(C_{t+1})}{U'(C_t)} \]

- No habit formation
  \[ C_{h,t} = C_t - b\bar{C}_{t-1}, \quad b = 0 \]
Conclusion

▶ Monetary-fiscal policy regime matters:

▶ PT shock dominates in determining the return dynamics under AMPF, and leads to positive $\beta$ for nominal long-term Treasury bonds

▶ MEI shock dominates in determining the return dynamics under PMAF, and leads to negative $\beta$ for nominal long-term Treasury bonds

▶ PT and MP shocks dominate the MEI shock in determining the return dynamics under PMPF, and leads to slightly positive $\beta$ for nominal long-term Treasury bonds
Policies

- Monetary policy:

\[ R_t = R_{t-1}^{\phi_{R,s}} \left[ R \left( \frac{\Pi_t}{\Pi_t^*} \right)^{\phi_{\pi,s}} \left( \frac{Y_t}{Y_{t-1} \exp(\mu^{z^*})} \right)^{\phi_{y,s}} \right]^{1-\phi_{R,s}} \epsilon_{R,t} \sigma_{R,t} \]

- Fiscal policy:

\[ \tilde{\tau}_t = \phi_{\tau,s} \tilde{\tau}_{t-1} + (1 - \phi_{\tau,s}) \left[ \varsigma_{b,s} \tilde{b}_{t-1}^\infty + \varsigma_{g,s} \tilde{g}_y t + \varsigma_{y,s} \hat{y}_t \right] + \sigma_{\tau} e_{\tau,t} \]

where \( \tilde{\tau}_t \equiv T_t / Y_t - T / Y \)

- constant government-spending-to-GDP ratio

- Government budget constraint:

\[ \frac{Q_t^\infty B_t^\infty}{P_t} = R_t^B \frac{Q_{t-1}^\infty B_{t-1}^\infty}{P_t} + G_t - T_t \]
Monetary/Fiscal Policy Mix

- **AMPF regime:** $\phi_\pi > 1$ and $\varsigma_b > \beta^{-1} - 1$
- **PMAF regime:** $\phi_\pi < 1$ and $\varsigma_b < \beta^{-1} - 1$
- **PMPF regime:** $\phi_\pi < 1$ and $\varsigma_b > \beta^{-1} - 1$
Stock Returns

- Stock price: \( S_t^c = P_t C_t^\lambda + \mathbb{E}_t \left[ M_{t,t+1}^S S_{t+1}^c \right] \)

- Excess stock return: \( R_{s,t}^c = \frac{S_t^c}{S_{t-1}^c - P_{t-1} C_{t-1}^\lambda} - R_{t-1} \)
Long-term Government Bond

\[ Q_t^\infty = \mathbb{E}_t \left[ \sum_{s=1}^{\infty} M_{t,t+s}^\$ \rho^{s-1} \right] = \mathbb{E}_t \left[ M_{t,t+1}^\$ \left( 1 + \rho Q_t^\infty \right) \right] \]

\[ R_t^B = \frac{1 + \rho Q_t^\infty}{Q_t^{\infty-1}} \]

- \( B_t^\infty \): amount issued at \( t \), infinity coupon payments, starting from \( t + 1 \) with $1 and decaying every period at rate \( \rho \)

- yield: \( \frac{1}{Q_t^\infty} - (1 - \rho) \)

- effective duration (5 years): \( \frac{1}{1 - \rho/(1+y_d)} \)
Positive MP Shock

Erica Li, Tao Zha, Ji Zhang and Hao Zhou
Positive PT Shock — CRRA
Positive MEI Shock — CRRA

Erica Li, Tao Zha, Ji Zhang and Hao Zhou
# Correlation Matrix

## Table: Bond-Stock Return Correlation — CRRA

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R_s^c$</th>
<th>$R_b^s$</th>
<th>$R_b^c$</th>
<th>$\pi$</th>
<th>$\Delta C$</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_s^c$</td>
<td>1.00</td>
<td>0.82 / -0.32 / 0.07</td>
<td>0.63 / 0.50 / 0.67</td>
<td>-0.40 / -0.06 / 0.06</td>
<td>0.55 / 0.51 / 0.51</td>
<td>-0.71 / -0.54 / -0.44</td>
</tr>
<tr>
<td>$R_b^s$</td>
<td>1.00</td>
<td>0.42 / -0.47 / -0.21</td>
<td>-0.36 / -0.15 / -0.17</td>
<td>0.47 / -0.15 / 0.02</td>
<td>-0.71 / -0.19 / -0.41</td>
<td></td>
</tr>
<tr>
<td>$R_b^c$</td>
<td>1.00</td>
<td>0.06 / 0.30 / 0.37</td>
<td>0.35 / 0.24 / 0.30</td>
<td>0.09 / 0.46 / 0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\pi$</td>
<td></td>
<td>1.00</td>
<td></td>
<td>-0.69 / -0.30 / -0.18</td>
<td>0.57 / 0.37 / 0.38</td>
<td></td>
</tr>
<tr>
<td>$\Delta C$</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>-0.39 / -0.29 / -0.29</td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>
Positive PT Shock — No Habit

Erica Li, Tao Zha, Ji Zhang and Hao Zhou
Positive MEI Shock — No Habit
Table: **Bond-Stock Return Correlation — No Habit**

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R^c_s$</th>
<th>$R^s_b$</th>
<th>$R^c_b$</th>
<th>$\pi$</th>
<th>$\Delta C$</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^c_s$</td>
<td>1.00</td>
<td>0.82 / -0.32 / 0.05</td>
<td>0.63 / 0.50 / 0.68</td>
<td>-0.40 / -0.06 / 0.07</td>
<td>0.55 / 0.51 / 0.52</td>
<td>-0.71 / -0.54 / -0.43</td>
</tr>
<tr>
<td>$R^s_b$</td>
<td>1.00</td>
<td>0.42 / -0.47 / -0.22</td>
<td>-0.37 / -0.15 / -0.18</td>
<td>0.47 / -0.15 / 0.01</td>
<td>-0.71 / -0.19 / -0.41</td>
<td></td>
</tr>
<tr>
<td>$R^c_b$</td>
<td>1.00</td>
<td>0.06 / 0.30 / 0.37</td>
<td>0.35 / 0.24 / 0.30</td>
<td>0.09 / 0.45 / 0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\pi$</td>
<td>1.00</td>
<td>1.00</td>
<td>-0.69 / -0.29 / -0.17</td>
<td>0.57 / 0.37 / 0.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta C$</td>
<td></td>
<td></td>
<td>1.00</td>
<td>-0.39 / -0.29 / -0.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AMPF/PMAF/PMPF