Discussion of Mello (2018)
“More COPS, Less Crime”

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Interesting, well executed paper!

1. **Policy relevant question:** What is the effect of additional police on local criminal activity?

2. **Nice variation:** ARRA police funding index increased COPS in some locations

3. **Compelling graphs:** Raw data and event studies look convincing

4. **Interesting Results:**
   - Average grant increased police by 0.7 per 10,000 residents (or 6% increase in police)
   - Each officer reduces 4.3 violent crimes and 15.4 property crimes
   - Benefit of $35 per resident vs $29 cost
I’d like the paper to help us think more about the following questions:

1. What is the value of a marginal police officer?
2. How many police officers should we hire?
3. How should they be allocated? Should police focus more on violent crime?
Local governments produce safety

\[ y = f(L) \]

- \( y \) are units of safety
- \( L \) is number of police officers

Local governments maximize:

\[
\max_L pf(L) - wL
\]

- \( p \) is the value of a unit of safety
- \( w \) is wage of police officers
Should we hire more police officers?

FOC

\[ pf'(L) = w \]

- \( pf'(L) \) is the marginal value of safety
- \( w \) is the marginal cost of safety

Estimates suggest that \( pf'(L) > w \)
- Estimate of marginal benefit from Table 2 is $35.2 per 10K residents
- Direct cost is roughly $29 per 10K residents

\[ \Rightarrow L < L^* \]

Keep hiring police until these are equal!
Economic framework with two types of crimes

Two types of safety $y$:

- safety from violent crime $y_1$
- safety from property crime $y_2$

Local governments maximize:

$$\max_{L_1, L_2} p_1 f(L_1) + p_2 g(L_2) - w(L_1 + L_2)$$

- $p_1$ is the value of a unit of safety from violent crime
- $p_2$ is the value of a unit of safety from property crime
- $L_1$ is number of police officers allocated to reducing violent crime
- $L_2$ is number of police officers allocated to reducing property crime
- Note main outcome in paper is approx $68,000 \times y_1 + $4,000 \times y_2$
Optimal policing of violent crime?

FOC for violent crimes:

\[ p_1 f'(L_1) = w \]

- \( p_1 \) is approx $68,000
- \( f'(L_1) = 4.3 \), i.e., hiring one more officer reduces the number of violent crimes by 4.3
- Marginal benefit is \( 4.3 \times 68,000 \approx 292,400 \)

If local governments are optimizing, then

\[ f'(L_1) \overset{\text{Marginal product}}{=} \frac{w}{\$68,000} \]
Optimal policing of property crime?

FOC for property crimes:

\[ p_2 g'(L_2) = w \]

- \( p_2 \) is approx $4,000
- \( f'(L_2) = 15.4 \), i.e., hiring one more officer reduces # of property crimes by 15.4
- Marginal benefit is \( 15.4 \times $4,000 \approx $61,600 \)

If local governments are optimizing, then

\[
\underbrace{g'(L_2)} = \frac{w}{\$4,000}
\]

Marginal product
Should police focus more on violent crime reduction?

FOCs for violent and property crimes:

\[ p_1 f'(L_1) = w \]
\[ p_2 g'(L_2) = w \]

But \( p_1 f'(L_1) = 292,000 > p_2 g'(L_1) = 62,000 \)

If local governments are optimizing, then

\[ \frac{\text{Value of output}}{\text{cost per marginal unit of output}} = \frac{w}{f'(L_1)} \]
\[ \frac{\text{Value of output}}{\text{cost per marginal unit of output}} = \frac{w}{g'(L_2)} \]

Seems like police should focus more on violent crime given \( p_1 \) and \( p_2 \)
Regional Variation
Should the per capita size of the police force vary across locations?

FOC

\[ p_c f'(L_c) = w_c \]

- \( p_c f'(L_c) \) is the marginal value of safety in location \( c \)
- \( w_c \) is the marginal cost of safety in location \( c \)

Would be interesting to analyze heterogeneity based on variation in
- Initial force size \( L_c \) varies (so can trace out \( f'(L_c) \))
- Local cost of safety \( w_c \)
- Local value for safety \( p_c \) can vary
Demand for safety
Where do the estimates of $p_1$ and $p_2$ come from?

Resident utility depends on level of safety and other consumption:

$$\max_{x,y} U(x, y) \; s.t. \; p_y y + p_x x = M$$

- $y$ is units of safety
- $x$ is a composite of other goods
- $M$ is income (and $\lambda$ is MU of income)

FOC: $\frac{\partial U}{\partial y} = \lambda p_y$ suggests that:

- Marginal utility of safety depends on level of safety (so level of $L$)
- Value of safety $\frac{\partial U}{\partial y} \lambda$ is increasing in income (since $\lambda$ is decreasing in $M$)
- Thus, $p_y$ should depend on level of $L$ and local incomes
Concluding comments

Estimates are interesting inputs for welfare analysis of an important non-traded good

1. **Welfare analysis** Could think about effective cost $w$ that includes overhead and MCPF that would rationalize current hiring levels

2. **Time allocation** Could weigh into debates about how police spend their time (violent crime vs property crime)

3. **Supply side** Could learn more about production function of safety $f(L)$ and $g(L)$

4. **Demand side** Could think more about value of unit of safety and the efficiency vs equity considerations of how police spending is allocated

5. **Evaluating current police spending** What social welfare function and/or cost of public funds are consistent with the level and allocation?