Make a Choice (MAC) Tests: An Engaging, Easy Way to Build and Assess Economic Reasoning

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Rubric 1: Based on the *Economic Way of Thinking*, incorporating elements from Kourilsky and Graff (1985) and Schug & Birkey (1985).

Economics Incentives Rubric	
1. Explain your goal. (i.e. the problem)	3. Weigh the possible benefits and costs (risks) of your options
2. Describe the incentives of everyone in the scenario	4. Make a choice in line with goals, benefits, and costs

You are studying the remains of an ancient person This person lived in a group of hunter-gatherers in “the land between the two great rivers.” The tribe followed herds of deer, boar, and cattle for hunting, and gathered wild grains that grew along the way. From studying this individual’s bones, you can tell that there was usually plenty to eat, but there were also problems: every winter food was scarce, and about every ten years bad weather brought famine. Sometimes other tribes probably tried to take their food. Those were the hardest times.

This person had an idea: what if the tribe saved food for later? They thought about building small caves out of mud bricks to store food. This could help the tribe survive winters and famines. But it meant some people would have to stay in one place, give up hunting and gathering, and start building and farming. The rest of the tribe would have to share food with them, which meant everyone would eat a little less than they were used to.

You run a business in which you renovate old houses for resale. You love the work and are hoping to keep getting new projects. Your main business contacts are real estate agents. The agents work hard to sell houses to homebuyers, and they get paid when they sell houses. The agents are telling you that homebuyers want comfortable inside living spaces, and they are willing to pay for it.

You are planning to add an extra bathroom to a house. But one day you happen to meet an old friend who tells you about his new construction business. He builds decks (porches) in the back of homes – and each deck comes with a space for a hot tub and grill! A deck will make houses more interesting and allow owners to have better parties. He shows you information about how the deck increases the value of the house. A deck increases the value of a house by 10% -- more than the cost of building the deck. To you this seems like a much more exciting plan, but you know that there is only room in your budget for one more improvement to the house. What should you choose?

1. My goal is to renovate old houses for sale. I need to stay up to date on trends and let my passion for creativity and renovation shine through to potential buyers. I need to maintain positive business relationships with the agents.
2. My incentive: potentially gain more projects and increase revenue
   Agents inventive: Sell more houses after I make them look good
   Buyer inventive: Get a beautiful home
   Old friend: install desks. --> make more revenue
3. Cost: Gambling on a decision, maybe some people don't care for a deck
   Benefit: Potential buyers could LOVE a deck and people drive the demand for homes with porches.
4. I would take the leap and add the deck for only one home. I would gain feedback from the agents on what potential buyers said about the deck and then go from there. This gives me time to see how the "old friend" does business as well.

Rubric 2 is the *Marginal Reasoning* rubric, based on a practice question in N. Greg Mankiw's *Principles of Economics* textbook.

Marginal Thinking Rubric	
1. Correctly identified what trade-offs are required to reach the goal	3. Used marginal thinking correctly (i.e. identified the optimal quantity; knew when to say "enough")
2. Used relevant data accurately (e.g. avoided the sunk cost fallacy)	

Situation: You currently work for the city government, helping plan how public property is used. A friend from school calls with an exciting plan: start a business together using the skills you developed as children. It would start as a side-hustle – you would keep your job and work on the business at night. You know the business will add extra stress and there's a chance it doesn't work out, but you are excited to take on the challenge and to work with your friend.

Your friend has already spent $20,000 making the business plan and finding a small workspace. However, new competitors have entered the market, and expected profits have dropped. You think that your cut of the new business would be about $15,000 in revenue this year. To start, you'd need to invest an additional $5,000 for tools and marketing.

Instructions:

1) Identify what trade-offs are necessary to reach your goal.
2) Explain which data you will use to solve the problem. Ignore data that doesn't matter.
3) Answer these questions:
   a. Would the extra investment be worth it? Why or why not?
   b. What is the most you should be willing to invest this year? Why?

Data

- MAC pre-tests requiring written responses to real-world policy scenarios
- Post-test grades (pending, as students are completing them this week)
- Five multiple-choice questions in personal finance
- Five multiple-choice questions in economics
- Students' first test grade in the college *Principles of Economics* course
- Survey asking
    - If the students took the W!se personal finance ("FinLit") standardized test in high school. This has been shown to be associated with economics grades (Day et al., 2023).

Phase 2

Statistical analysis

Validity studied:

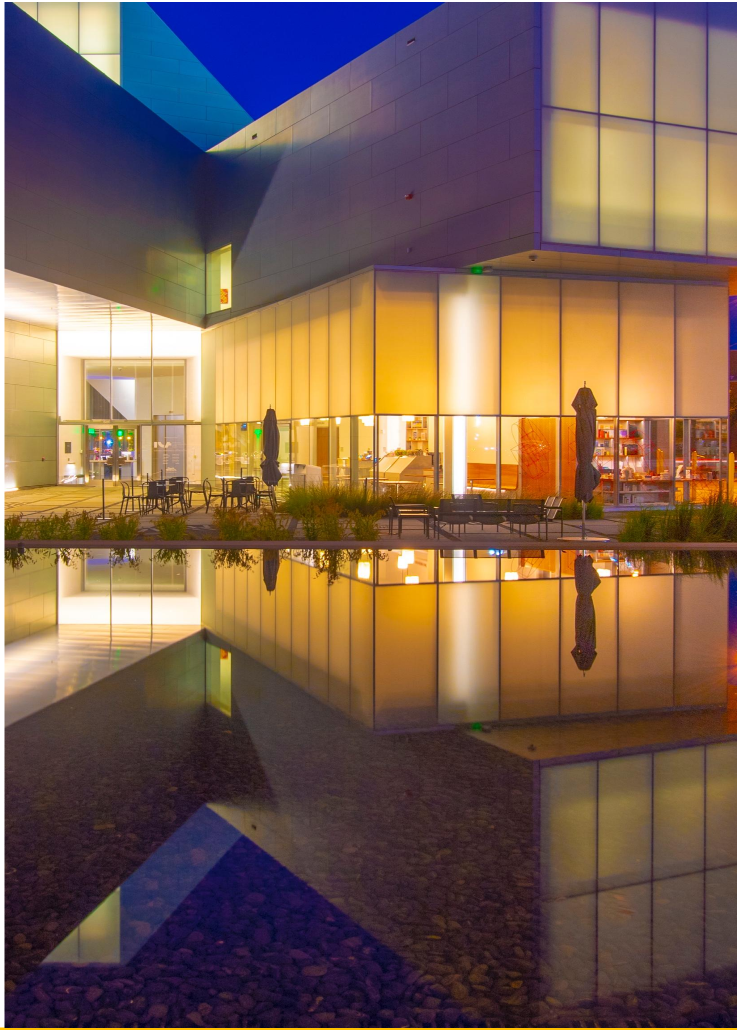
- Generalizability
- External
- Substantive

Phase 2

Statistical analysis

35 undergraduates in Principles of Economics (demographic variables pending data collection)

60 teachers in training workshop (not included in this analysis)



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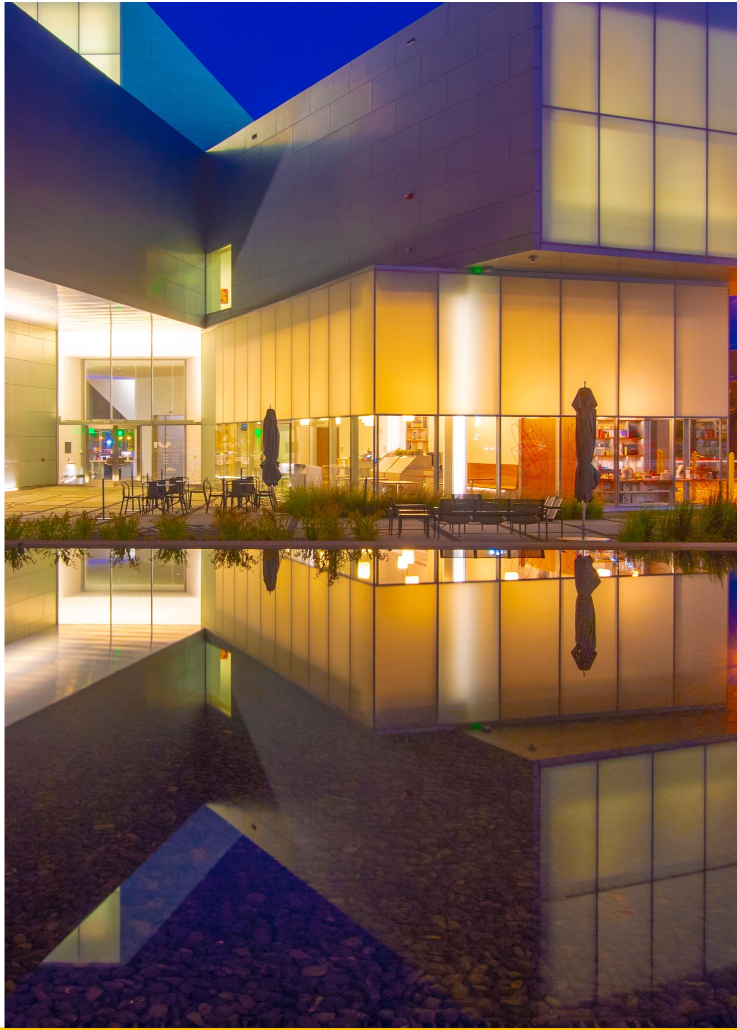
VARIABLES	(1) Incentives Test (/16)	(2) Marginal Reasoning (/12)
Incentives Test (/16)	–	0.337 (0.184)
Marginal Reasoning Test (/12)	0.381* (0.188)	–
Assigned FinLit Test in HS (/1)	-3.019** (1.225)	-1.929 (1.204)
Personal Finance Pretest (/5)	0.886** (0.398)	-0.244 (0.346)
Economics Pretest (/5)	-0.407 (0.608)	0.242 (0.734)
First Econ Test	-0.093 (0.133)	0.100 (0.150)
Constant	11.69*** (4.057)	-0.787 (5.266)
Observations	26	26
R-squared	0.429	0.197

Phase 3

Analysis at Site 2

123 undergraduates in Principles of Economics

92 students completed both pre- and post-tests plus surveys



Sample of student work (excerpt)

B. Describe the incentives of everyone in the scenario.

Building the houses to be more comfortable and more enticing to homebuyers. The incentives for the old friend would be the opportunity to make money by being the one to build the decks while you benefit for the price of the house rising, the agent would also benefit from the increase in value. If the bathrooms where to be installed there would be no benefit for the old friend, only the agent and me.

Sample of student work (excerpt)

C. Weigh the possible costs and benefits of your options.

The benefit of me building the decks would be that I would *know how much* the value increase would be and there would be a definite increase in cash flow my way. However, this also means that I will be paying for more with the renovations which could be an optional personal cost for the home buyers. While if I were to install the bathrooms then there is *more unknowns*. The agent said that homebuyers want comfortable living spaces, which could mean the living room or bedrooms. There is no definite that people are willing to pay more for an extra bathroom. Unless that's exactly what they want, if so I would make more money and would not have to pay for as much as building an entire deck and new crew.

Sample of student work (excerpt)

D. Describe your choice.

My choice would be the one with the highest benefit and the lowest cost. Both of my options have them, however there is limited information when it comes to building an additional bathroom my homes. While there is more information about building the decks and more definite benefits.

MAC Scores out of 28

N	MAC Pre	MAC Post	Gain
92	83.5%	90.6%	7.1***
	23.39 (3.47)	25.37 (2.64)	1.98 (4.15)

$t = 4.58$, $p < 0.0001$

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