Care Provision
An Experimental Investigation

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Funded by the Russell Sage Foundation and NSF SES-1062027

Why study the care sector?

- Care sector is growing in importance
  - Aging population means a growing demand for care for elderly or disabled
  - Predicted shortages in supply of care workers
- Quality of care work is difficult to monitor:
  - Provider must 'trust' the care worker
  - Quality care work depends on intrinsic motivation
- "Sandwich" generation must care for children and aging parents at the same time
  - Unappealing choices for low-income families:
  - Parent moves in or means-tested Medicaid nursing home

Employment in the Care Sector

- By "care work," we refer to the provision of services, such as child care, health care, and education, particularly of the very young, elderly, ill or disabled

- Family members need to decide how to manage the care of a needy relative
  - Provide the care themselves, but they don't have specialized training and it diverts time/resources away from work
  - Hire skilled care workers, but this is a trust relationship: the provider must trust the care worker to care for the elderly, ill or disabled person

What we do

- We construct an experimental "model" of this situation in its simplest form:
  - Three-player game
  - Manager, care worker, recipient
- Provide subsidies to the care manager (family) to help take care of elderly family members
  - E.g. Consumer-directed care with a personal budget
  - Versions implemented in US, UK, Netherlands, Germany, etc.
- Vary the effectiveness of care workers
  - Training, technology, support, etc.
- Our setting requires intrinsic motivation for *any* care to be provided

Three players, each has E=10 tokens

E=10

A

E=10

C

E=10

B

A “bad event” occurs and C loses endowment. A is “responsible” to care for C, and may receive a care budget

E=10 + Care Budget

A

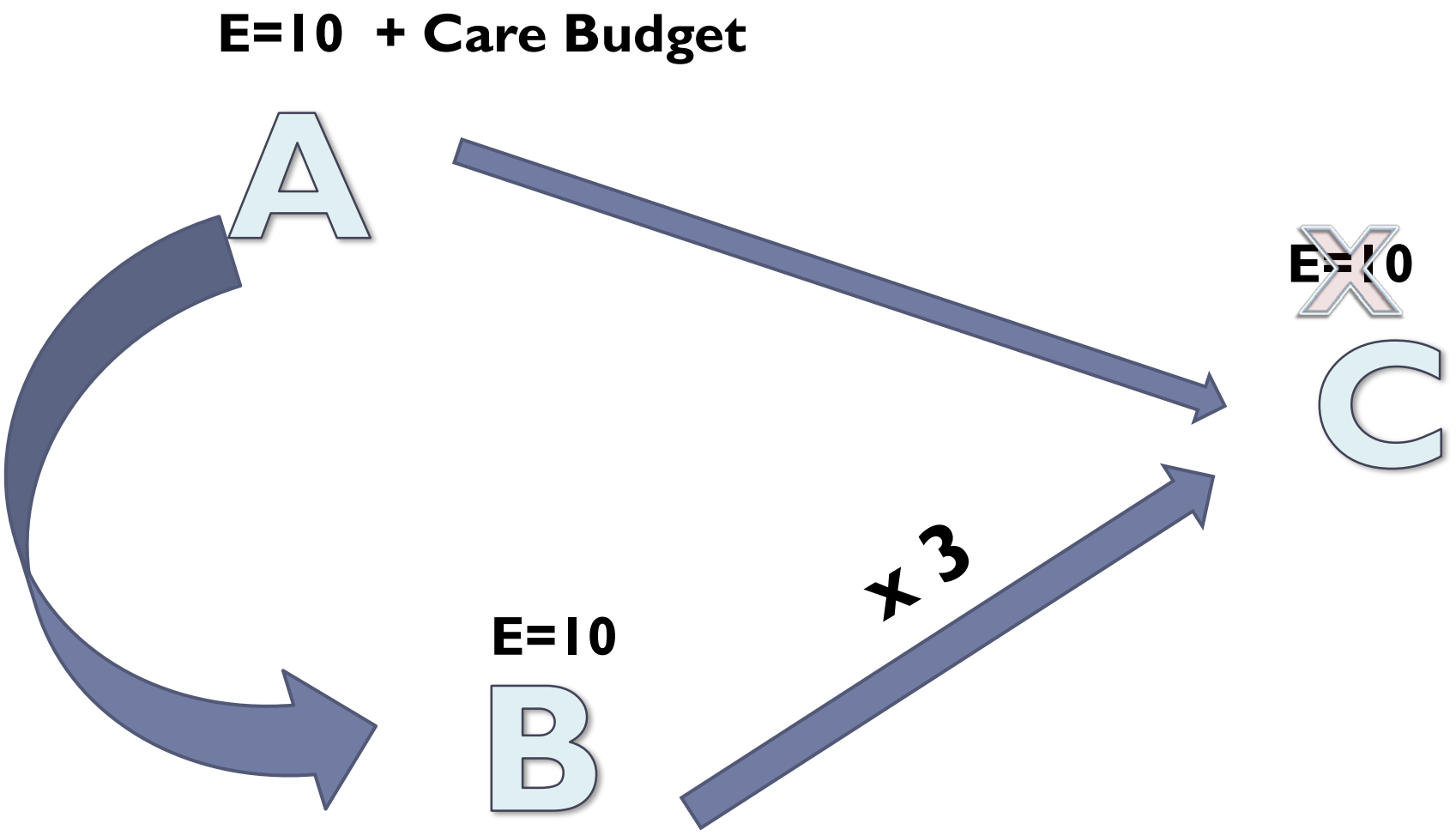
~~E=10~~

C

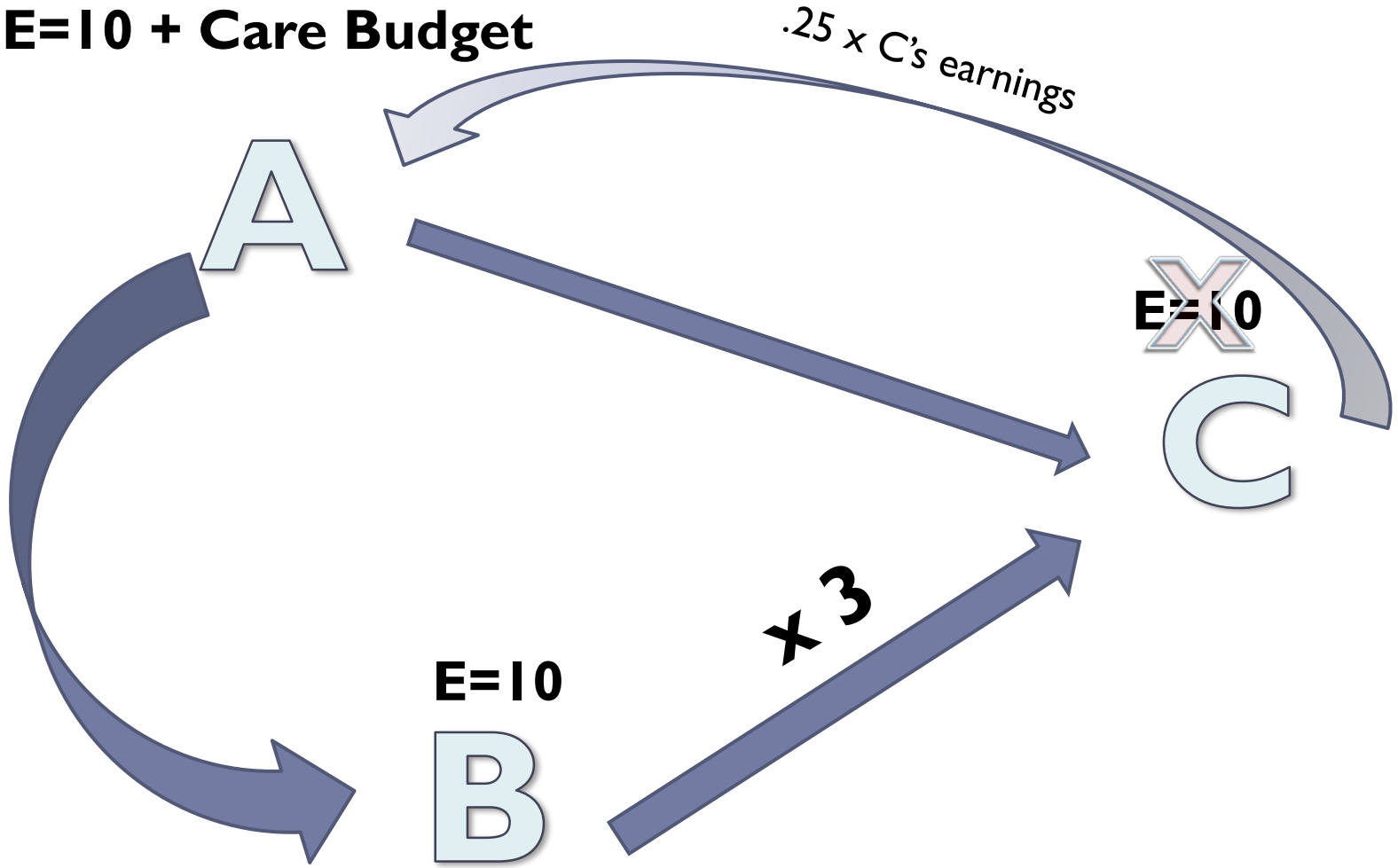
E=10

B

A may have an additional care budget, and can send to C directly or to B. B is more effective at providing care to C.



A has a small vested interest in C's wellbeing.



Summary of instructions:

- A, B, and C start with E=10. C loses E, A gets budget to care for C.
- Decisions proceed in this order:

1. A decides how much to send to C directly, and how much to send to B.
2. B decides how much to send to C. Any tokens sent are **multiplied by 3** on the way.
3. C receives tokens from A and B (**x3**).
4. A receives an extra payment based on C's earnings (.25 x C's earnings)

Note: In some treatments, the multiplier changes.

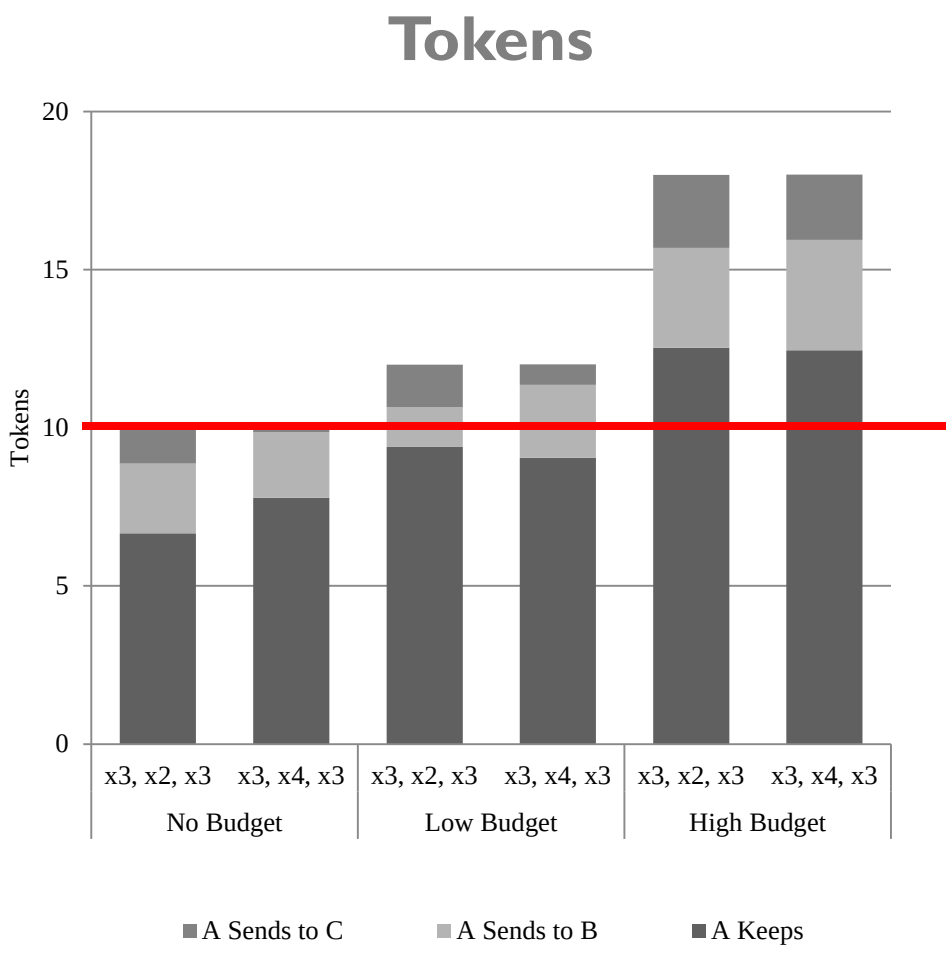
Design & Implementation

- Computerized, anonymous, stable groups
- Three blocks of 10 rounds each
- Vary multiplier (care worker effectiveness):
  - x3, x2, x3
  - x3, x4, x3
- Vary care budget subsidy (0, 2, 8 additional tokens to A)
- 3x2 design, between subjects
- Sessions conducted April-October 2010 & Fall 2011, in CBEES lab UT Dallas
- Earned $16.32 on average for 90 minute session

Multiplier	No Budget	Care Budget = 2	Care Budget=8
x3, x2, x3	11 groups	12 groups	12 groups
x3, x4, x3	11 groups	11 groups	12 groups

Care Manager Behavior (Player A)

A's Allocation decision



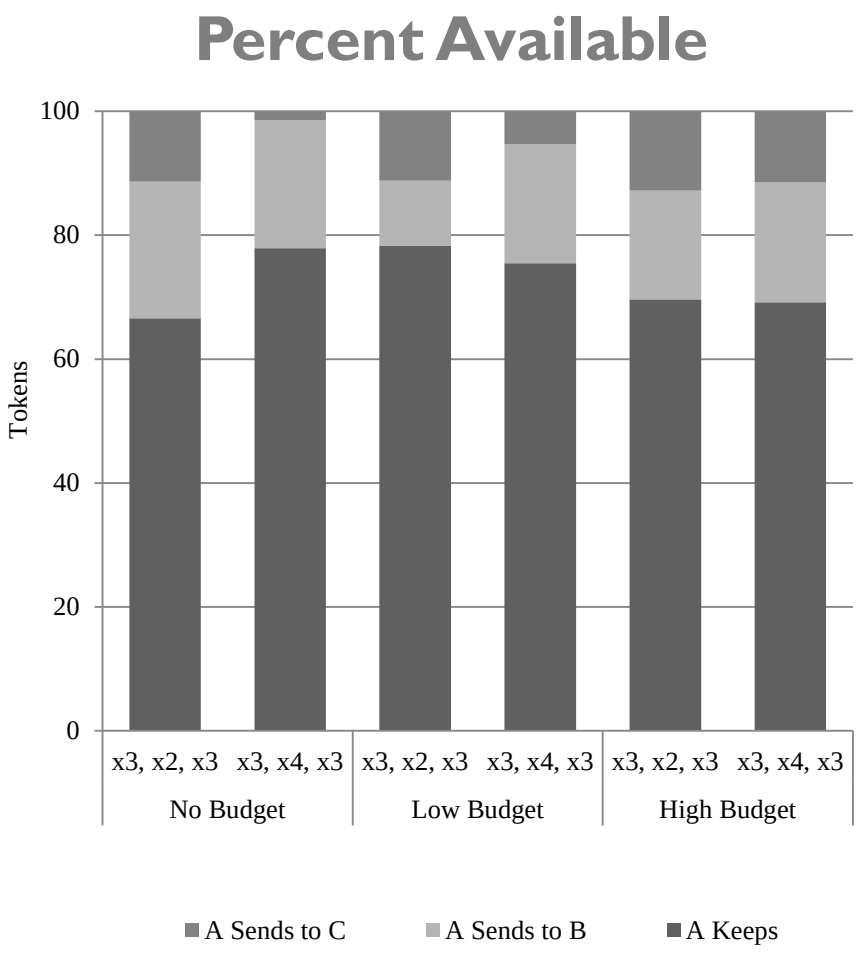


Table 2. A's Transfers to B

Variable	(1) Design	(2) Situation	(3) Demographics
Low Budget (2)	-0.275 (0.582)	-0.126 (0.366)	0.197 (0.388)
High Budget (8)	1.589 (0.579)**	1.447 (0.365)***	1.951 (0.416)***
Less Effective (M=2)	-0.232 (0.146)	0.396 (0.219)	0.410 (0.218)
More Effective (M=4)	0.282 (0.149)	0.974 (0.221)***	0.960 (0.220)***
A's Transfer to C	-0.283 (0.034)***	-0.237 (0.030)***	-0.244 (0.030)***
Period	-0.024 (0.006)***	-0.072 (0.016)***	-0.072 (0.016)***
Last Block: M=3 after M=2		1.200 (0.356)***	1.214 (0.354)***
Last Block: M=3 after M=4		1.335 (0.357)***	1.322 (0.356)***
B to C, lagged actual		0.425 (0.021)***	0.420 (0.021)***
Female			0.208 (0.311)
Age			0.138 (0.064)*
White			0.775 (0.318)*
Working			0.703 (0.339)*
Constant	2.653 (0.430)***	1.872 (0.294)***	-1.819 (1.411)
R^2 - within	0.0442	0.2043	0.2046
R^2 - between	0.1256	0.4649	0.5586
R^2 - overall	0.0804	0.3154	0.3625
Wald χ^2 (Prob > χ^2)	98.09 (0.00)	566.24 (0.00)	595.64 (0.00)

- Random Effects Panel GLS Regression $^{*}\ p \leq 0.05,\ ^{**}\ p \leq 0.01,\ ^{***}\ p \leq 0.001$

Notes: 2001 observations, 69 groups, 29 observations per group. Marginal effects shown, standard errors in parentheses

Table 3. A's Transfers to C

Variable	(1) Design	(2) Situation	(3) Demographics
Low Budget (2)	0.306 (0.539)	0.312 (0.522)	0.188 (0.559)
High Budget (8)	1.650 (0.534)**	1.656 (0.517)***	1.527 (0.598)*
Less Effective (M=2)	0.058 (0.094)	-0.006 (0.154)	-0.003 (0.154)
More Effective (M=4)	-0.024 (0.095)	-0.091 (0.156)	-0.091 (0.156)
A's Transfer to B	-0.120 (0.014)***	-0.129 (0.016)***	-0.130 (0.016)***
Period	-0.015 (0.004)***	-0.009 (0.011)	-0.009 (0.011)
Last Block: M=3 after M=2		-0.134 (0.249)	-0.130 (0.249)
Last Block: M=3 after M=4		-0.144 (0.250)	-0.144 (0.250)
B to C, lagged actual		0.026 (0.016)	0.026 (0.016)
Female			0.710 (0.446)
Age			0.056 (0.093)
White			0.777 (0.457)
Working			-0.226 (0.488)
Constant	1.124 (0.393)**	1.056 (0.385)**	-0.476 (2.023)
R^2 - within	0.0411	0.0427	0.0427
R^2 - between	0.1392	0.1340	0.02064
R^2 - overall	0.1040	0.1012	0.1476
Wald χ^2 (Prob > χ^2)	93.15 (0.00)	96.56 (0.00)	102.82 (0.00)

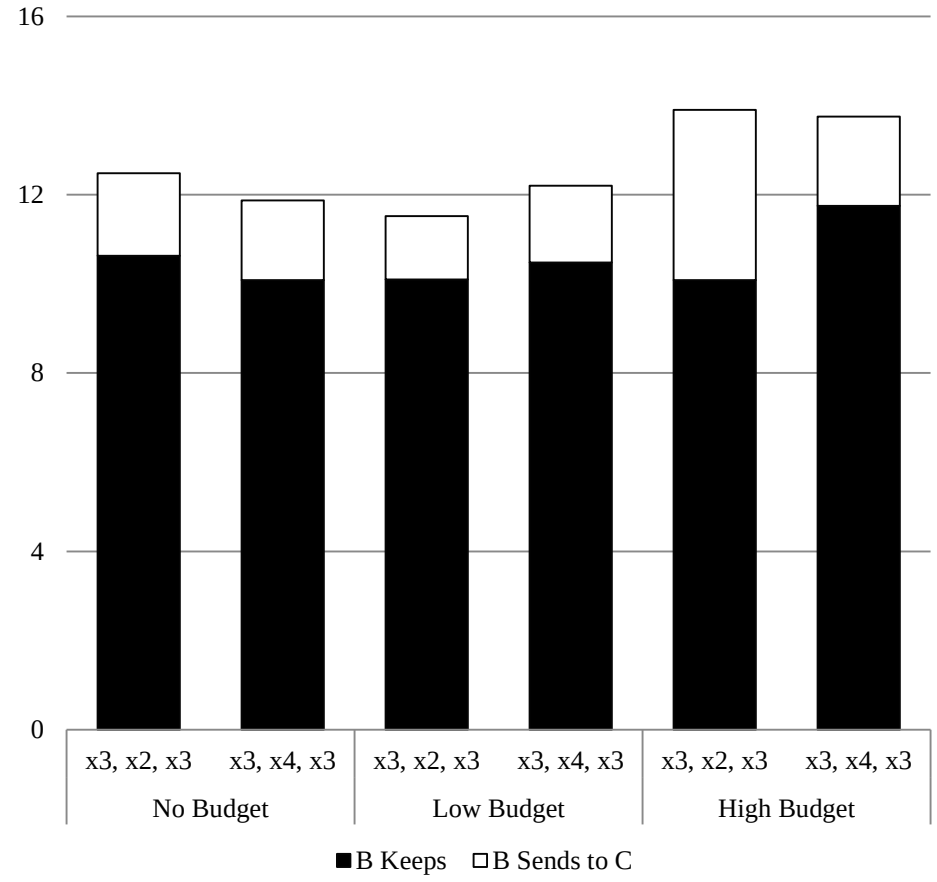
Random Effects Panel GLS Regression * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Notes: 2001 observations, 69 groups, 29 observations per group. Marginal effects shown, standard errors in parentheses.

Care Worker Behavior (Player B)

B's Allocation Decision

Number of tokens



Percent Available

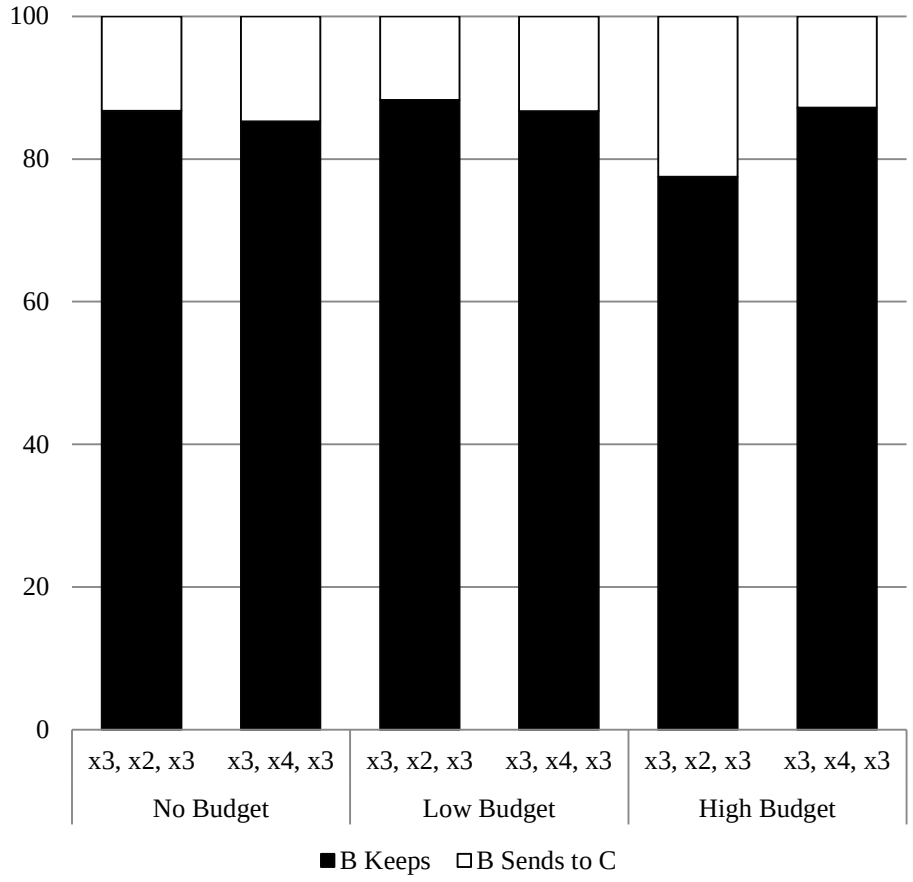


Table 4. B's Transfers to C

Variable	B's care for C Linear	B's care for C Non-Linear
Low Budget (2)	-0.057 (0.280)	-0.103 (0.278)
High Budget (8)	-0.440 (0.288)	-0.479 (0.286)
Less Effective (M=2)	-0.171 (0.182)	-0.037 (0.178)
More Effective (M=4)	-0.321 (0.184)	-0.042 (0.182)
A's Transfer to B	0.613 (0.016)***	0.310 (0.035)***
A's Transfer to B, squared	…	0.025 (0.003)***
Period	0.020 (0.016)	-0.003 (0.013)
Last Block: M=3 after M=2	-0.714 (0.293)*	-0.322 (0.288)
Last Block: M=3 after M=4	-0.393 (0.294)	0.069 (0.291)
Female	-0.264 (0.219)	-0.214 (0.217)
Age	0.054 (0.040)	0.059 (0.039)
White	0.532 (0.224)*	0.638 (0.222)**
Working	-0.422 (0.259)	-0.458 (0.257)
Constant	-0.490 (0.889)	-0.098 (0.882)
R^2 - within	0.4110	0.4372
R^2 - between	0.6500	0.6672
R^2 - overall	0.4783	0.5026
Wald χ^2 (Prob > χ^2)	1506.75 (0.00)	1671.37 (0.00)

Random Effects Panel GLS Regression * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Notes: 2070 observations, 69 groups, 30 observations per group. Marginal effects shown, standard errors in parentheses.

Appendix C. B's care for C in period 30, OLS regression

Variable	(1)	(2)
Low Budget (2)	-0.174 (0.724)	-0.510 (0.670)
High Budget (8)	-0.939 (0.717)	-0.1520 (0.676)*
A's transfer to B	0.694 (0.107)***	-0.184 (0.259)
A's transfer to B, squared	…	0.096 (0.026)***
Constant	0.620 (0.550)	1.409 (0.548)*
R^2	0.4071	0.5096

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$
Marginal effects shown, standard errors in parentheses.

Care Recipient Welfare (Player C)

C's Welfare

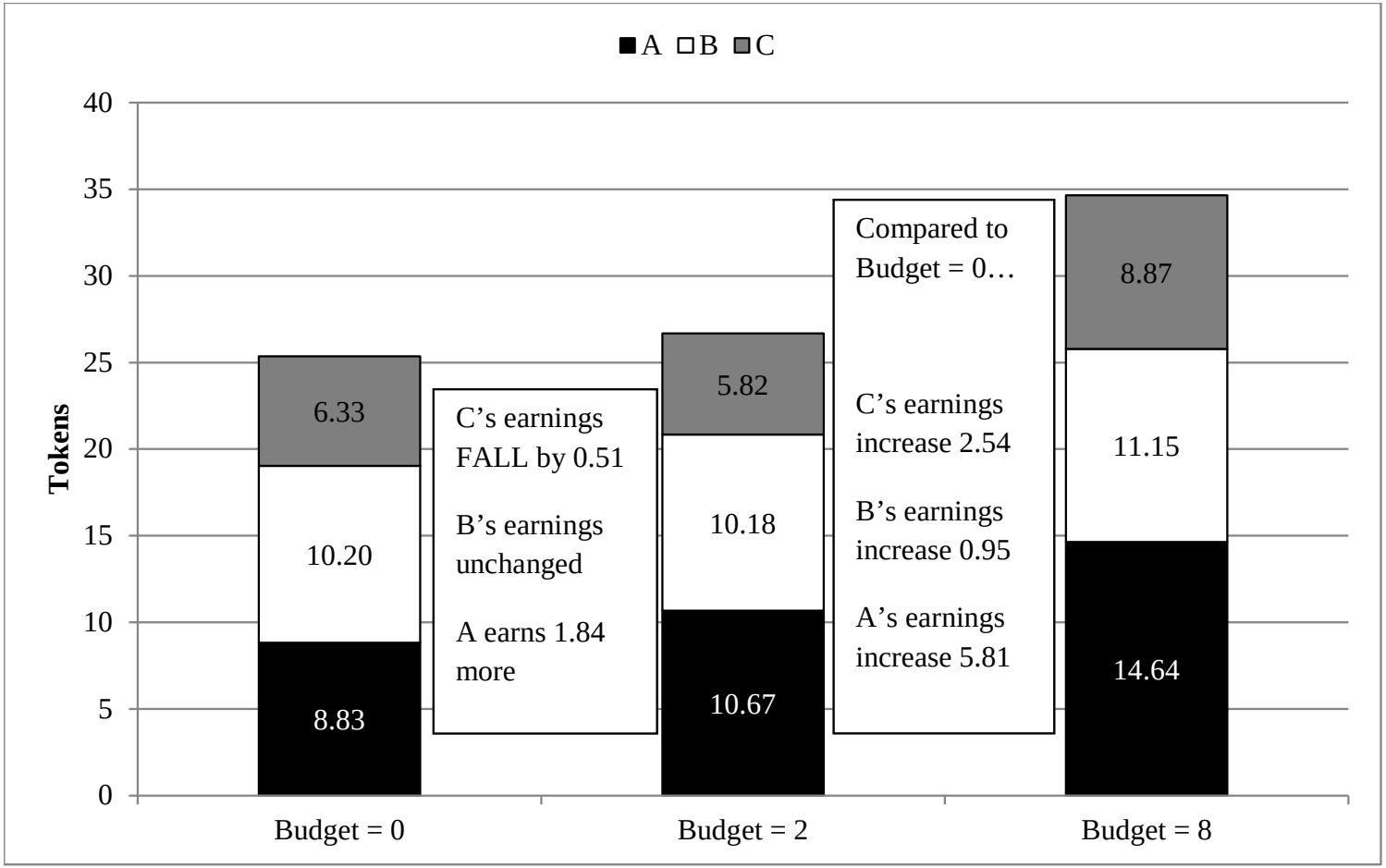
Variable	Impact of Treatments
Low Budget (2)	-0.653 (1.218)
High Budget (8)	1.840 (1.206)
Less Effective (M=2)	-1.301 (0.679)*
More Effective (M=4)	3.505 (0.684)***
Period	-0.187 (0.049)***
Last Block: M=3 after M=2	1.316 (1.086)
Last Block: M=3 after M=4	3.135 (1.089)**
Constant	8.405 (0.933)***
R^2 – within	0.0444
R^2 – between	0.0445
R^2 – overall	0.0403
Wald χ^2 (Prob > χ^2)	93.52 (0.00)

Random Effects Panel GLS Regression * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Notes: 2070 observations, 69 groups, 30 observations per group. Marginal effects shown, standard errors in parentheses.

Summary: Impact of Budget on Average Welfare/Earnings

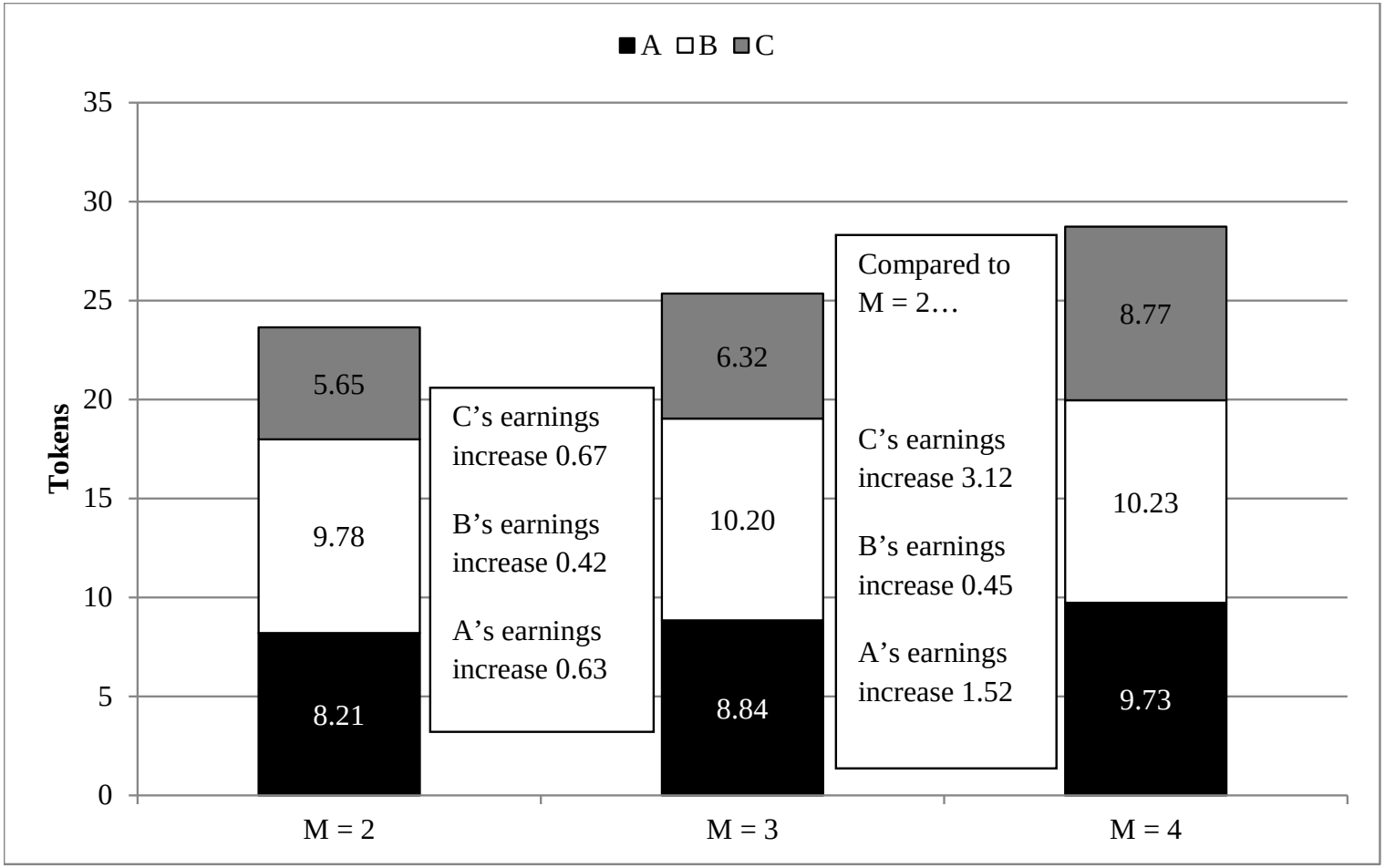
Pooling across all rounds where M=3, in tokens



Note: Mean earnings are for the decisions, not including bonuses payments for correct expectations.

Summary: Impact of Multiplier on Average Earnings/Welfare

Pooling across all rounds for the No Budget treatment, in tokens



Note: Mean earnings are for the decisions, not including bonuses payments for correct expectations.

Summary

- Develop and explore a new 3-person care game
- Intrinsic Motivation
  - Both players A & B show significant intrinsic motivation: Care is provided even though it is not in either player's self-interest
- Consumer Directed Budget Subsidies
  - Low budget crowds out intrinsic motivation: Neither A's behavior nor C's welfare is affected
  - A sends (a little) more to both B and C, but C's welfare is not significantly higher once other factors are controlled for.
  - Higher budgets may still increase overall family welfare
- Care worker effectiveness
  - Care workers exhibit constant effort, as a percent of A's transfer
  - But C is significantly better off through both the direct effect of the multiplier being higher and the indirect effect of A's higher transfers to B
- Recipient's welfare is most significantly affected by worker effectiveness

Thank you!

Are there any questions?

Reference Material

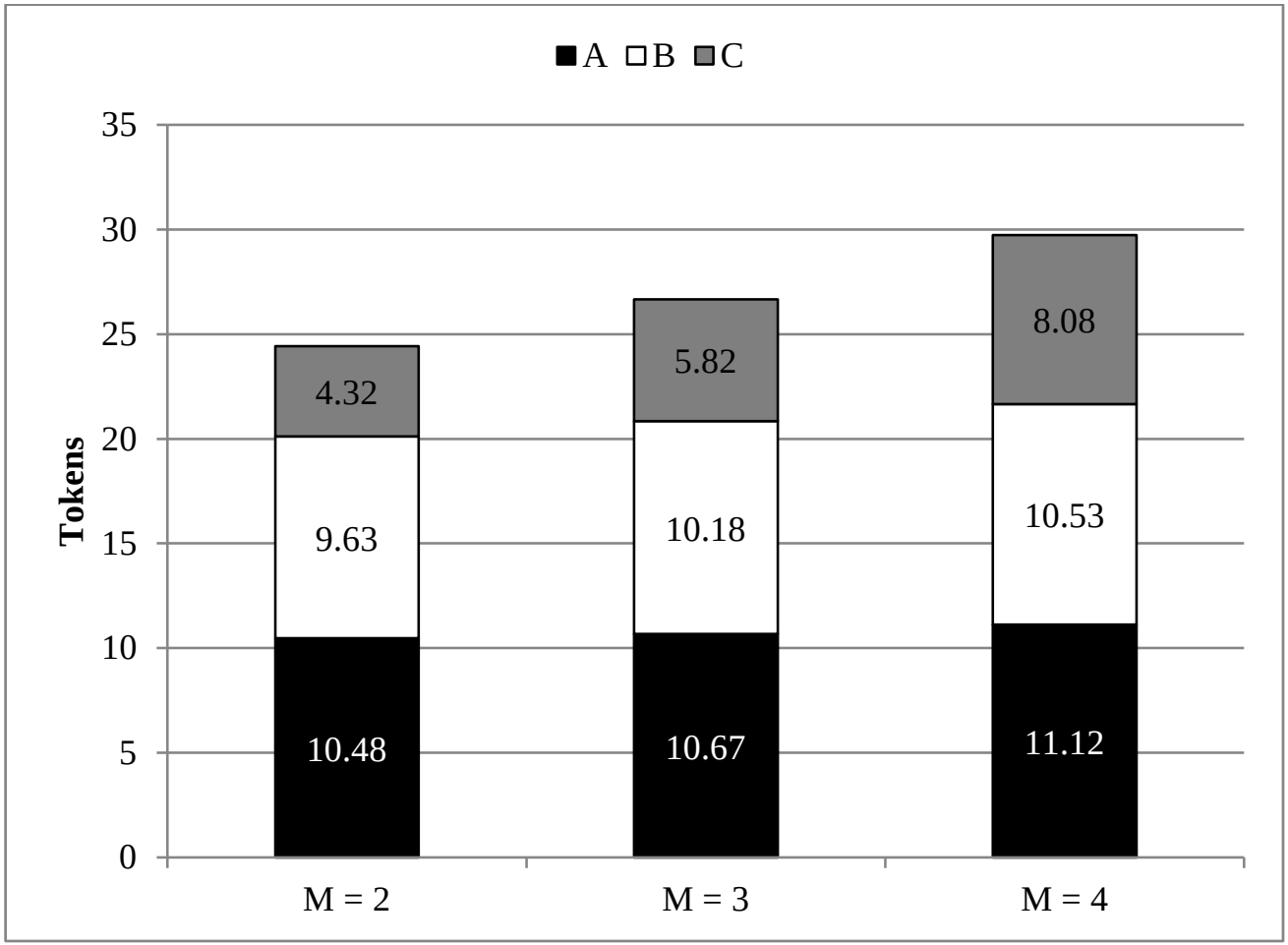
Table R1. A's Transfers to B omitting A's transfer to C

Variable	Without A to C or B to C, lagged	Without A to C
Low Budget (2)	0.129 (0.592)	0.156 (0.385)
High Budget (8)	1.888 (0.633)**	1.629 (0.412)***
Less Effective (M=2)	0.469 (0.242)	0.409 (0.222)
More Effective (M=4)	1.185 (0.244)***	1.029 (0.224)***
Period	-0.095 (0.018)***	-0.073 (0.017)***
Last Block M=3 after M=2	1.472 (0.391)***	1.270 (0.360)***
Last Block: M=3 after M=4	1.807 (0.392)***	1.416 (0.362)***
B to C, lagged actual	…	0.430 (0.021)***
Female	-0.079 (0.473)	0.039 (0.308)
Age	0.142 (0.098)	0.129 (0.064)*
White	0.711 (0.484)	0.600 (0.315)
Working	1.169 (0.517)*	0.778 (0.337)*
Constant	-1.200 (2.149)	-1.771 (1.402)
R^2 - within	0.0203	0.1766
R^2 - between	0.2741	0.5894
R^2 - overall	0.1351	0.3554
Wald χ^2 (Prob > χ^2)	62.94 (0.00)	516.96 (0.00)

Random Effects Panel GLS Regression $^{*}\ p \leq 0.05, ^{**}\ p \leq 0.01, ^{***}\ p \leq 0.001$

Notes: 2001 observations, 69 groups, 29 observations per group. Marginal effects shown, standard errors in parentheses.

Pooling across all rounds for the Budget = 2 treatment, in tokens



Pooling across all rounds for the Budget = 8 treatment, in tokens