Progress report

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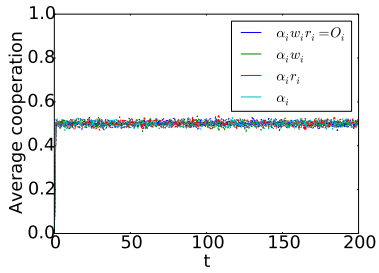
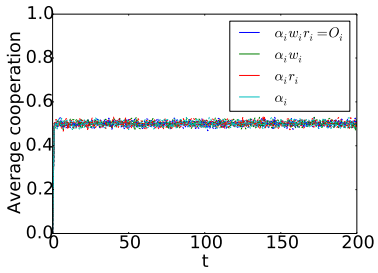
September 10, 2015

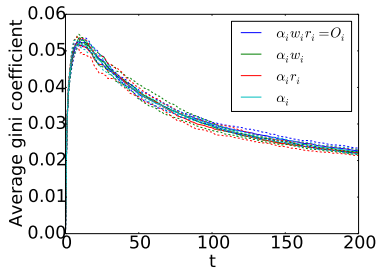
This the updated version of the report I showed on Friday 31. July. I changed the text size on the plots, so that the axis values would be readable. Last time we met a we noted an interesting point: the total wealth seemed to follow a similar line both for the Nash eq. simulations and for the learning schema simulations. I had to check if the numeric values we the same as well, which they more or less are, as can be seen on the plots.



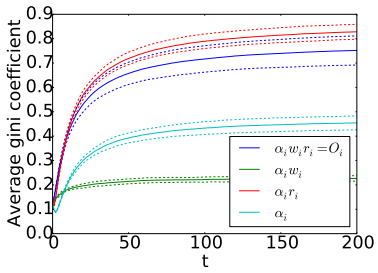
(a) Cooperation (Nash eq. UU)



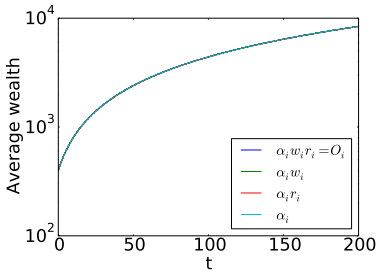
(b) Cooperation (Nash eq. DD)



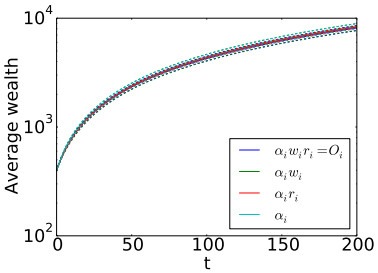
(c) Gini (Nash eq. UU)



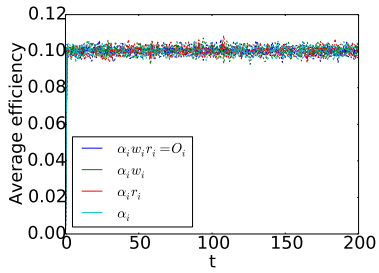
(d) Gini ((Nash eq. DD)



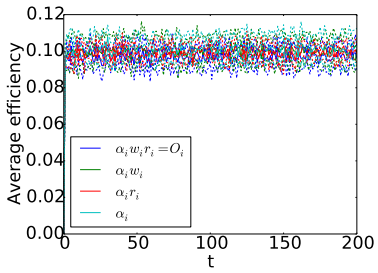
(e) Total wealth (Nash eq. UU)



(f) Total wealth (Nash eq. DD)

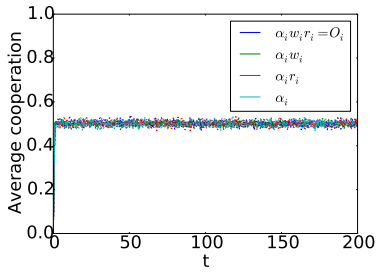


(g) Efficiency (Nash eq. UU)

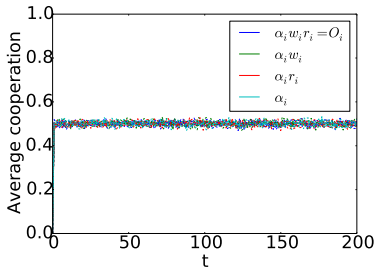


(h) Efficiency (Nash eq. DD)

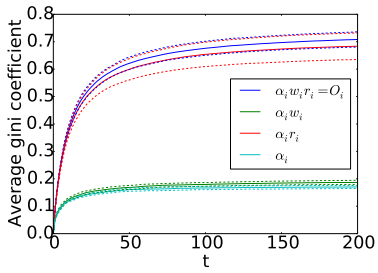
Figure 1: Comparison of Nash eq. simulations for uniformly distributed investment talent and investment cap (UU) and Gaussian distributed investment talent and cap (DD). Number of agents $N = 400$, size of ensemble $NE = 5$, simulation duration $T = 200$, beta $\beta = 0.05$.



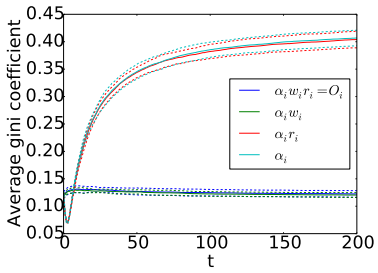
(a) Cooperation (Nash eq. DU)



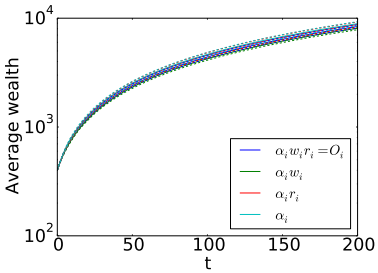
(b) Cooperation (Nash eq. UD)



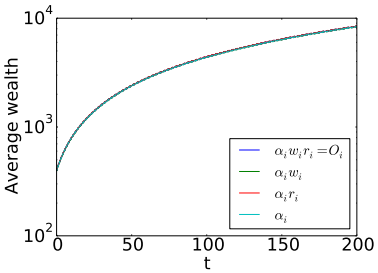
(c) Gini (Nash eq. DU)



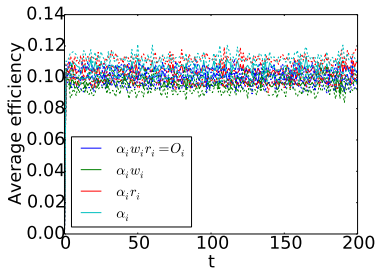
(d) Gini ((Nash eq. UD)



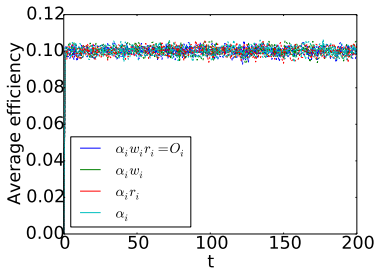
(e) Total wealth (Nash eq. DU)



(f) Total wealth (Nash eq. UD)

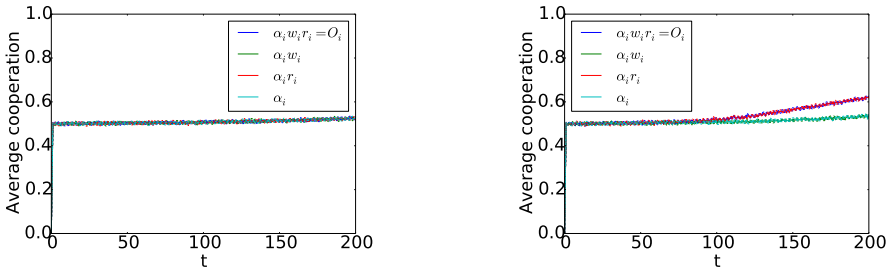


(g) Efficiency (Nash eq. DU)



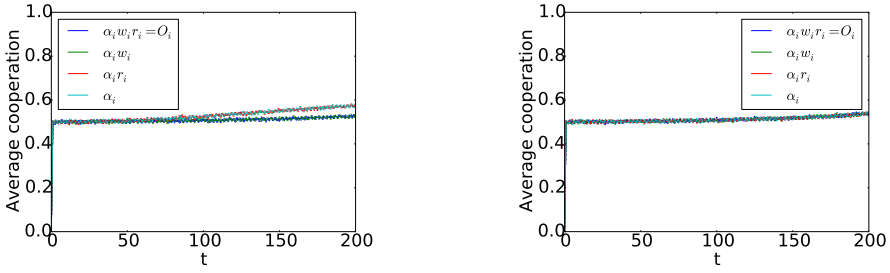
(h) Efficiency (Nash eq. UD)

Figure 2: Comparison of Nash eq. simulations for uniformly distributed investment talent and Gaussian distributed investment cap (UD) and Gaussian distributed investment talent and uniformly distributed investment cap (DU). Number of agents $N = 400$, size of ensemble $NE = 5$, simulation duration $T = 200$, beta $\beta = 0.05$.



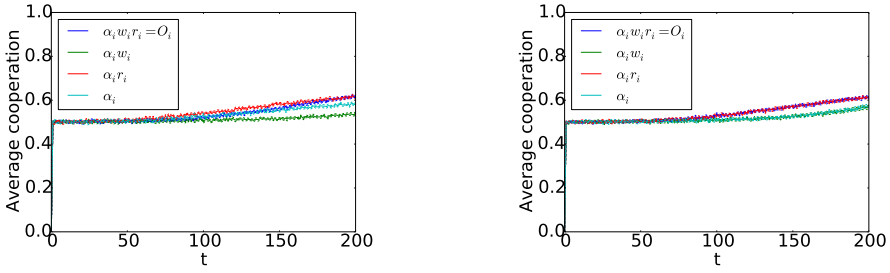
(a) SML UUU

(b) SML DUU



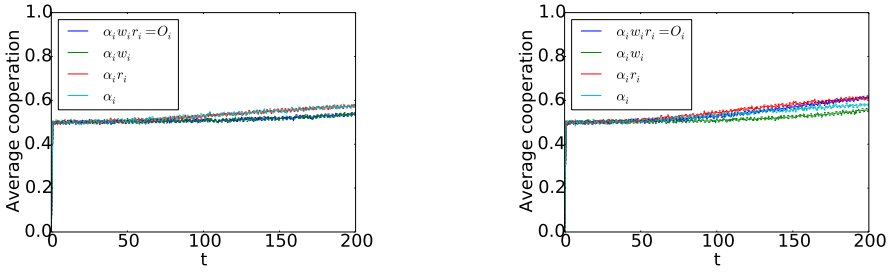
(c) SML UDU

(d) SML UUD



(e) SML DDU

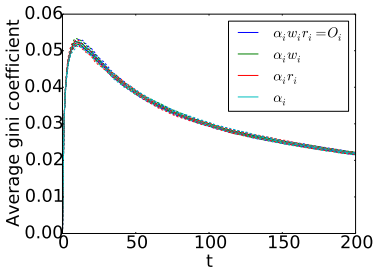
(f) SML DUD



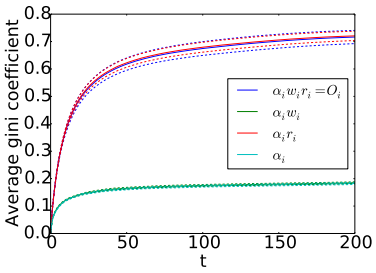
(g) SML UDD

(h) SML DDD

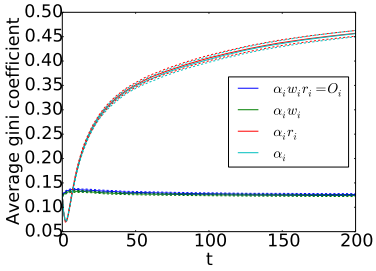
Figure 3: Comparison of Simple Memory Learning (SML) schema cooperation for different distribution (code: Invest.Talent - Invest.Cap - Learning Talent): U - uniform, D - Gaussian. Number of agents $N = 400$, size of ensemble $NE = 25$, simulation duration $T = 200$, beta $\beta = 0.05$.



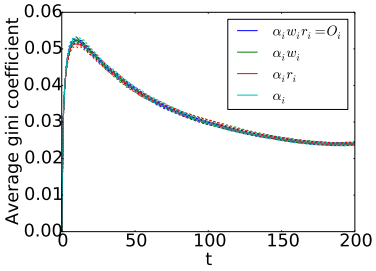
(a) SML UUU



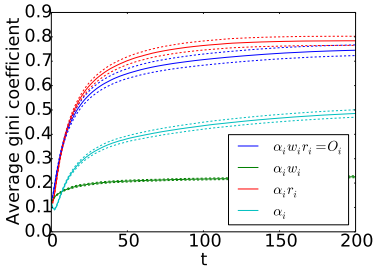
(b) SML DUU



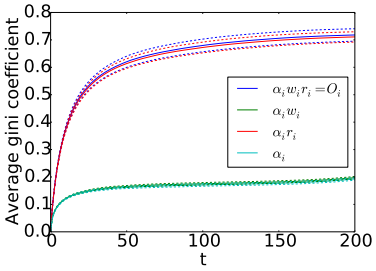
(c) SML UDU



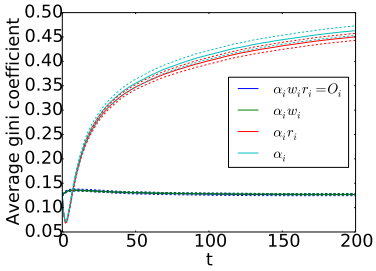
(d) SML UUD



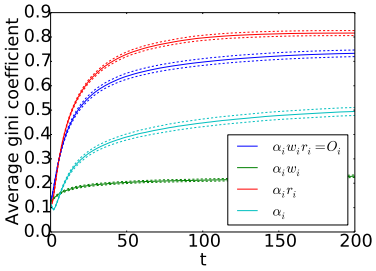
(e) SML DDU



(f) SML DUD

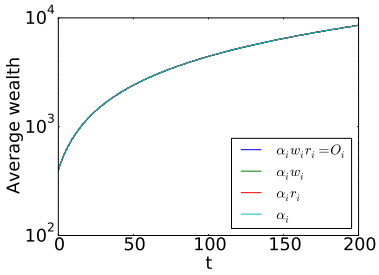


(g) SML UDD

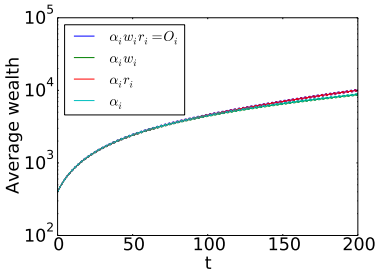


(h) SML DDD

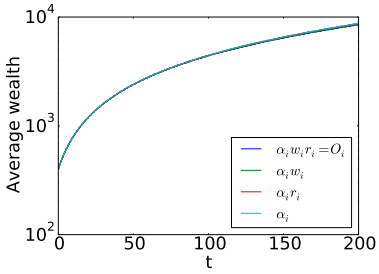
Figure 4: Comparison of Simple Memory Learning (SML) schema gini for different distribution (code: Invest.Talent - Invest.Cap - Learning Talent): U - uniform, D - Gaussian. Number of agents $N = 400$, size of ensemble $NE = 25$, simulation duration $T = 200$, beta $\beta = 0.05$.



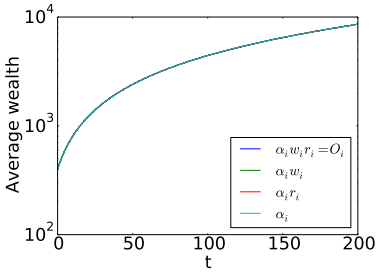
(a) SML UUU



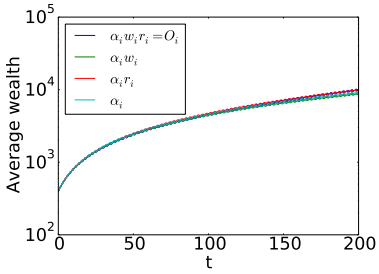
(b) SML DUU



(c) SML UDU



(d) SML UUD



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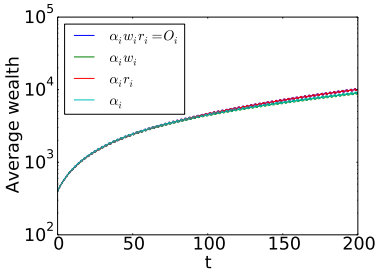
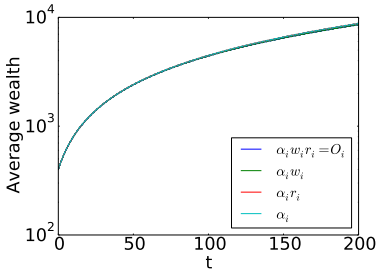


(f) SML DUD



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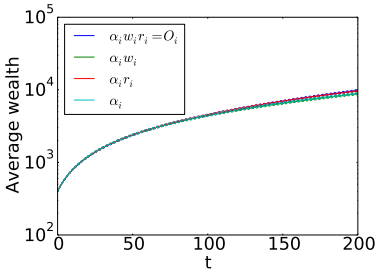
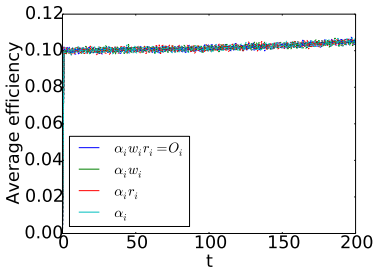
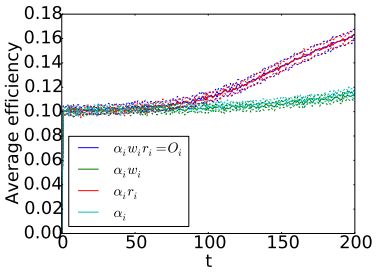


(h) SML DDD

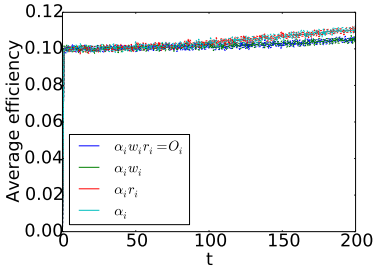
Figure 5: Comparison of Simple Memory Learning (SML) schema wealth for different distribution (code: Invest.Talent - Invest.Cap - Learning Talent): U - uniform, D - Gaussian. Number of agents $N = 400$, size of ensemble $NE = 25$, simulation duration $T = 200$, beta $\beta = 0.05$.



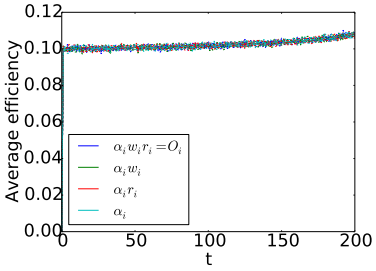
(a) SML UUU



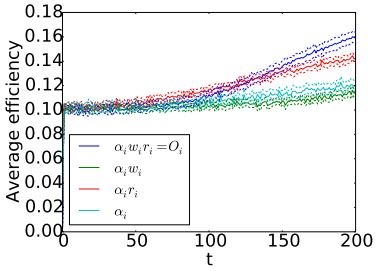
(b) SML DUU



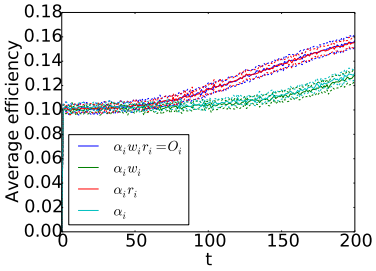
(c) SML UDU



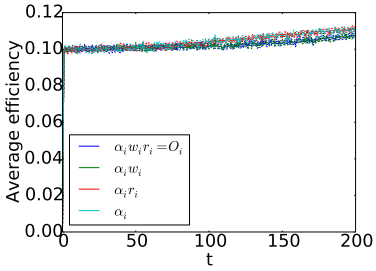
(d) SML UUD



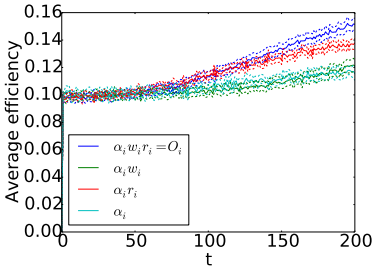
(e) SML DDU



(f) SML DUD



(g) SML UDD



(h) SML DDD

Figure 6: Comparison of Simple Memory Learning (SML) schema efficiency for different distribution (code: Invest.Talent - Invest.Cap - Learning Talent): U - uniform, D - Gaussian. Number of agents $N = 400$, size of ensemble $NE = 25$, simulation duration $T = 200$, beta $\beta = 0.05$.