Online Appendix for Human Capital Acquisition and Occupational Choice: Implications for Economic Development

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Contents

A Further Discussion on the Mechanics of the Model

A.1 Aggregate Representation of Final Output Production

Perfect Credit Benchmark In an environment without borrowing constraints, there exists an aggregate representation of the production function. The result follows from the fact that capital labor ratios are equalized across all firms, which allows for aggregation. Total output is

$$\begin{aligned} Y &= \int_{o(z)=\{\text{Modern, Subsistence}\}} y(a,z) d\mathcal{F}(a,z) \qquad (1) \\ &= \left(\int_{o(z)=\{\text{Subsistence}\}} (\theta_n^p(a,z))^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) + \int_{o(z)=\{\text{Modern}\}} (A_m \theta_m^p(a,z))^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) \right) \left(\frac{\alpha}{R}\right)^{\frac{\alpha}{\psi}} \left(\frac{\gamma}{w}\right)^{\frac{\alpha}{\psi}} \end{aligned}$$

where $\psi = 1 - \alpha - \gamma$. This expression can be simplified to

$$\left(\int_{o(a,z)=\{\text{Subsistence}\}} (\theta_n^p(a,z))^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) + \int_{o(a,z)=\{\text{Modern}\}} (A_m \theta_m^p(a,z))^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) \right)^{\psi} K^{\alpha} L^{\gamma} \tag{2}$$

where L denotes aggregate effective units of labor and K denotes aggregate units of capital used in production (i.e., excluding all fixed cost payments). The expression for net output, which subtracts the total fixed cost is

$$\begin{aligned} Y^{\text{net}} &= \int_{o(z)=\{\text{Modern, Subsistence}\}} y(a,z) d\mathcal{F}(a,z) - R\bar{k} \int_{o(z)=\{\text{Modern}\}} d\mathcal{F}(a,z) \\ &= \left(\int_{o(z)=\{\text{Subs.}\}} (\theta_n^p)^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) + \int_{o(z)=\{\text{Mod.}\}} (A_m \theta_m^p)^{\frac{1}{\psi}} \, d\mathcal{F}(a,z) \right) \left(\frac{\alpha}{R} \right)^{\frac{\alpha}{\psi}} \left(\frac{\gamma}{w} \right)^{\frac{\alpha}{\psi}} - R\mathcal{M}\bar{k} \end{aligned} \tag{3}$$

where $\mathcal{M}$ denotes the mass of modern entrepreneurs in equilibrium.

Aggregate Production and TFP with Borrowing Constraints Finally, we discuss the aggregate implications of the presence of borrowing constraints. To this end it is useful to write down the problem of the household as if there existed idiosyncratic distortions or wedges. In particular let $\rho(a,z) \geq 1$ denote an idiosyncratic distortion on the price of capital that a household of type (a,z) would face in the event that it would operate a firm. We abuse notation and abstract from using the super-index to indicate the time in the life-cycle of the agent. We define $\rho(a,z)$ to be such that it satisfies the following two conditions. First, it generates the same equilibrium input allocation as in the stationary competitive equilibrium for households that operate businesses in equilibrium.[1] The second condition is that it verifies that the allocation of operational capital within a firm is such that $\rho(a,z)Rk(a,z) = \alpha y(a,z)$, where to ease notation we have omitted the super-index that denotes a generation.

We also define the wedge vector $(\upsilon_m(a,z), \upsilon_n(a,z))$ such that the product of the stationary equilibrium effective capital of $(\theta_m^p(a,z), \theta_n^p(a,z))$ is equal to $(\theta_m^p(a,z), \theta_n^p(a,z)) = (\upsilon_m(a,z)\tilde{\theta}_m^p(z), \upsilon_n(z)\tilde{\theta}_m^p(a,z))$, where $(\tilde{\theta}_m^p(z), \tilde{\theta}_n^p(z))$ denote the effective human capital that agents of type z would have with perfect markets (holding equilibrium prices constant). Thus, υ's inform us on the wedge in human capital investments due to market incompleteness.

[1] For the rest of households, assume very high value for ρ that ensures that it is not optimal for them to become entrepreneurs.

Total output $Y = \int_{o(a,z)=\{\text{Modern, Subsistence}\}} y(a,z)d\mathcal{F}(a,z)$ can be expressed as

$$\left(\int_{o(a,z)=\{\text{Subs.}\}} \left(\frac{\upsilon_n(a,z)}{\rho(a,z)^\alpha}\tilde{\theta}_n^p(z)\right)^{\frac{1}{\psi}} d\mathcal{F}(a,z) + \int_{o(a,z)=\{\text{Mod.}\}} \left(A_m\frac{\upsilon_m(a,z)}{\rho(a,z)^\alpha}\tilde{\theta}_m^p(z)\right)^{\frac{1}{\psi}} d\mathcal{F}(a,z)\right)\left(\frac{\alpha}{R}\right)^{\frac{\alpha}{\psi}}\left(\frac{\gamma}{w}\right)^{\frac{\alpha}{\psi}} \tag{4}$$

where $\psi = 1-\alpha-\gamma$. Albeit involved, comparing this expression to the no-borrowing-constraints benchmark, (1), illustrates the key aggregate distortions that financial constraints generate in our model. First, there are distortions along the extensive margin, i.e., selection into entrepreneurship and into different types of entrepreneurship need not coincide in an economy with an without borrowing constraints. This is captured by the indicator variable $o(a,z)$ in equation (4), which defines the set of agents choosing to become entrepreneurs. It is clear that this function differs in general from its perfect markets analog, $o(z)$, (1). Mechanically, we can see that the latter only depends on talent while the former also depends on assets.

Second, we have distortions along the intensive margin. These are measured from the compound term $\frac{\upsilon_i(a,z)}{\rho^\alpha(a,z)} \leq 1$ with $i = \{m,n\}$. This term only captures the two investments distortions that borrowing constraints generate in our model. The term $\upsilon_i(a,z)$ measures how much investment in human capital is depressed in equilibrium for types (a,z). This expression also makes clear how under-investment in human capital translates into lower output through a decrease in the productivity of entrepreneurs as measured by $\upsilon_i(a,z)$. The term $\rho(a,z)^\alpha$ measures how much distortions in the allocation of operating capital translate into total output (hence the power α). This formula makes clear that distortions are relatively more important the more negative the correlation between $\frac{\upsilon_i(a,z)}{\rho^\alpha(a,z)} \leq 1$ and $\tilde{\theta}(z)$ (as it is the product of the two that enters into aggregate production). This makes clear that distortions at the right-tail of the distribution (i.e., high $\tilde{\theta}(z)$) have higher impact on aggregate output.

Finally the third term comprises the general equilibrium effects that operate through equilibrium prices w and R. While the mathematical expression of these terms is identical in the unconstrained expression for aggregate output, (1), and borrowing-constrained economy (4), the equilibrium prices generically differ. The presence of borrowing constraints, by distorting investments decisions, distorts relative supply and demand and, ultimately, prices. Note also that distortions in the supply of effective human capital for agents that choose to be workers is captured indirectly here through equilibrium market prices.

A.2 Further Discussion

Occupational and Schooling Choices with Perfect Markets Maintaining the simplifying assumption of a binary choice for education within the period, the optimal choice for an agent is given

by

$$s(\theta) = \arg\max \left\{ \mathcal{V}^{\text{worker}}\left(s^{\text{worker}}\right), \mathcal{V}^{\text{modern}}\left(s^{\text{modern}}\right), \mathcal{V}^{\text{subsistence}}\left(s^{\text{subsistence}}\right) \right\}, \quad \text{with} \tag{5}$$

$$\mathcal{V}^{\text{worker}} = \max_{s\in\{0,1,\cdots,\bar{s}\}} \sum_{t=s+1}^{2\mathcal{T}} \frac{(1+s)^{\zeta_w}\theta w}{(1+r)^t} - \sum_{t=0}^{s} \frac{p_s}{(1+r)^t}, \tag{6}$$

$$\mathcal{V}^{i} = \max_{s\in\{0,1,\cdots,\bar{s}\}} \sum_{t=s+1}^{2\mathcal{T}} \frac{(1+s)^{\zeta_i}\theta \pi^i}{(1+r)^t} - \sum_{t=0}^{s} \frac{p_s}{(1+r)^t}, \qquad i = \{\text{Modern, Subsistence}\}. \tag{7}$$

These equations imply that the occupational and educational choices would be made jointly, as there would exist an educational choice that is optimal for each occupation given the talent of a kid θ. Note that the fact that agents do not switch occupations is an endogenous outcome, given that prices are constant and that we have shut down the experience channel.

As in the discussion for the schooling choices with perfect credit markets in the main text, optimal choices are only determined by equilibrium prices and technological parameters. Note that the discussion on occupational choice with perfect credit markets holds here too. Parents with lower levels of talent choose to become workers in this model as long as $\zeta_m, \zeta_n \geq \zeta_w$. As we have shown that the optimal educational level $s(\theta)$ is increasing in θ, under the assumption that $\zeta_m, \zeta_n \geq \zeta_w$, the model implies that entrepreneurs have higher levels of education than workers. This is consistent with the evidence presented in Table 4 (in the main text) for modern entrepreneurs in the MxFLS.

Occupational and Schooling Choices with Perfect Markets An interesting nuance that appears in this environment is that modern technologies can be operated in equilibrium even if $A_m < 1$. The reason is that if returns to education are higher in the modern sector than in the subsistence, $\zeta_m > \zeta_n$, (as we documented in Section 2), it can be the case that $A_m(1+s)^{\zeta_m} > (1+s)^{\zeta_s}$ for some s. Denoting by $\tilde{s}$ the level of education that verifies $A_m(1+\tilde{s})^{\zeta_m} = (1+\tilde{s})^{\zeta_s}$ –where we have omitted the subscript time and generation superscript, we have that all agents with a level of education $s > \tilde{s}$ are more productive at operating the modern technology, while the opposite is true for agents with education $s < \tilde{s}$. Thus, in the range where $s > \tilde{s}$, generically, there exists a talent level $\tilde{\theta}$ above which agents choose to operate a modern sector. In contrast, for agents with $s < \tilde{s}$, all of them prefer to operate the subsistence technology (regardless of their innate talent). Similarly, if education enhances more human capital as a worker than as a subsistence entrepreneur, $\zeta_w > \zeta_n$, (as we also documented in Section 2), the simple single-crossing argument in terms of innate talent that drove the choice between worker and subsistence entrepreneur discussed for the case without endogenous human capital, can be overturned in some regions of the parameter space. For example, if parents with high talent tend to have higher levels of education.Comparing earnings in both occupations, agent chooses to become a

worker if

$$(1+s)^{\zeta_w-\zeta_n}\theta^{-\frac{\alpha+\gamma}{1-\alpha-\gamma}} > \frac{w}{(1-\alpha-\gamma)\left(\left[\frac{\gamma}{w}\right]^{\gamma}\left[\frac{\alpha}{R}\right]^{\alpha}\right)^{\frac{1}{1-\alpha-\gamma}}}. \tag{8}$$

An analogous argument holds for comparing workers and modern entrepreneurs. Overall, the main message is that sorting across occupations depends on both talent and education and their interaction. Ultimately, in this perfect market case, the education level depends uniquely on talent, $s(\theta)$, and there is no heterogeneity in educational or occupational choices conditional on talent. This is not the case in the economy with financial frictions.

B Construction of Variables and Tables from the MxFLS

In this appendix we describe how we construct the variables used from the MxFLS. We also report on how different books are aggregated to construct some of the tables and values reported.

Assets We use book II, question AH04 that asks household the price or selling price or the buying price of an equivalent asset. We include all possible assets (questions from A to N).[2]

Debt We use book II. Question CRH03 asks whether the household has any debt. If so, we use CRH04 to know the level of debt. We impute the average of the range given for those that do not recall the precise number (for the upper bracket, we record the miniumum of 10000 pesos).

Years of Education We use book IIIa and complement it with book C for missing observations in the previous book. We record no schooling if the individual has never attended school (ED05), the last level of education attended (EDO6) was without instruction, preschool or kindergarten, or unknown. If the last level of education attended was primary, secondary, or high school, we make use of question ED07, which asks for the last grade completed. Thus, if the last level attended was primary we take the reported grade for years of schooling. If the last level was secondary we compute years of schooling by assuming primary was completed (6 years) and add the reported grade in secondary education. However, if the reported grade is larger than the standard three years in Mexico we only add three years. Similarly, we compute years of schooling for those who attended high school. For those last attending open secondary, open high, normal basica, college or postgrad only information on graduation is available (ED08). If they graduated we take the years of mandatory previous schooling

[2]Assets are: household dwelling (including land), other dwellings, real state and construction, additional land, cattle, forestal land, bicycles, motorized vehicles (motorcycles, automobiles, etc.), electronic appliances (radio, TV, computer,etc.), durables (washing machine, dryer, stove, refrigerator, furniture), electrodomestic appliances (blender, iron, toaster, microwave, etc.), savings, financial assets, checking accounts, coins, tractors and other machinery equipment, cows or bulls, horses, mules, donkeys, pigs, lambs, sheep, goats, domestic fowl (chickens, hens, turkeys, etc.) and other assets.

(e.g. primary schooling to be able to attend open secondary) and add the usual years of schooling for that degree. If they did not graduate we only put the years of mandatory previous schooling. Finally, we also add technical or commercial courses if they were attended one year or longer (ED09 and ED10) and add the number of years these courses were attended. Book C is used in a similar manner using questions LS14 and LS15.

Entrepreneurship Definitions We base our definition of entrepreneur based on the last main occupation of an agent last week (question tb17 in Book 3a) conditional on being employed last week (question tb02). We classify an entrepreneur as "subsistence" if he/she responds to be a peasant on own plot or self-employed (questions tb17 and tb32). We classify an entrepreneur as "modern" if he/she responds to be a "Boss, employer, or business owner."

Income Our measure of income comes from aggregating the different questions in the survey. We use the question in Book 3a "How much did you earn last year/month" (tb35 and tb36). This measure includes formal and informal wage income, bonuses, extra hours, etc. We add the a and b questions which ask for the main source of income and secondary sources of income, respectively. We impute zero wage income if respondents report to be working without compensation (question tb32). We complement these responses with the net profit from entrepreneurial activities (question tb38). If net profit measures are missing but we have information on gross profit we use gross profit.[3]

Construction of Table 1 This table uses data from book 3a of the third wave of mxfls. It refers to individual household members of age 15 or above. The table reports the main reason for quitting school for those respondents, who stated that they have attended school but are currently not attending school. The responses are aggregated into thematic groups as follows. Graduation signifies that the individual graduated from school. Lack of skill or motivation includes individuals stating that they do not have studying abilities, they were not accepted to school or they did not want to go back to school. Work applies to those reporting that they worked or carried out an activity to help with the household expenses. Personal reasons refer to the respondent being sick or handicapped, entering into marriage or a domestic partnership, having children or changing their residence. Educational quality and availability aggregates the lack of teachers or a school nearby, or the closing or bad condition of a school. The total number of observations is 24850.

Computation of α_s The average share of education expenditure is calculated using data from the third wave of the mxfls. The expenditure on education is aggregated across all household members

[3]We note that there are data for household income accruing from the work of household memebrs of less than 15 years of age. We do not include these in our measure of income of the Mincer regression, as they do not pertain to the return to education of an adult household memember.

using books 3a and 5, depending on the age of the respondent. Questions are very detailed and cover enrollment, tuition, and exam fees, special courses, books and school supplies, uniforms and sports, festivities and celebrations, transportation, spending money, and any other expenditures related to education. To determine the total expenses of the household we rely on book 1, which reports all food and non-food items. To be as comprehensive as possible we add expenses on agricultural activities and repayments on loans from book 2, as well as rent and mortgage payments on the occupied dwelling from book c. Everything is normalized to monthly expenditure. To determine total income of the household we aggregate individual data whenever available. We take adults' labor income from book 3a, and kids' labor income from book 5. For the former we add all entrepreneurial and wage income from primary and secondary jobs. Nonlabor income is derived from book 3a and book 2, the latter is used if the individual respondent is also the respondent for the household questionnaure. Income from assets stems from book 2. The averages are calculated using weights from book c on the set of households with education expenditure and/or at least one household member attending school.

Construction of Table 3 This table combines informations of book 3a, 2 and c. While the former ollects information for each adult household member, i.e. age 15 or above, individually, the latter two are based on the unit of the household. We use book 3a to determine which households follow entrepreneurial activity and to further distinguish them into traditional and modern enterprises. Our initial set includes all individuals, who were economically active during the last week. We complement this with individuals, who were not active during the last week, but did have a job during the last 12 months. We use primary and secondary job descriptions to identify entrepreneurial status. Traditional entrepreneurs are either a peasant on their own plot or self-employed. Modern entrepreneurs are bosses, employers, or business owners. Additionally, we use book 3a to determine profits. Profits are net profits of the last month. If they are not available profits during the last year are used and adjusted to monthly units. In a first attempt to determine the number of workers in the business we use book 3a. The question we use is asking how many people, including themselves, worked during the past month in their workplace.

Book 2 provides information on the business activities of the household, which are reported by one individual for the whole household. Information is given on the use of a plot/land for sowing/farming/vegetable garden and on non-agricultural businesses. It is reported which household members helped in the business. If the respondent and/or the respondent's spouse assisted we add one for each to the total amount of household members helping. If sons/daughters, brothers/sisters (in law), parents (in law) or other household members are assisting we add two for each. Additionally, the amount of non-household members working in the business is reported. For sales from agricultural activity the three most important products of the last 12 months are reported for each plot/land, which

we add up for each household and adjust to monthly sales for comparability. For non-agricultural businesses we use how much money the business produced from its sales/operation during the last 12 months and also adjust it to monthly sales.

To determine the amount of household and non-household members working in the business as well as sales we combine book 3a, 2 and c. Weights are derived from book c, as there are no weights available for book 2. Households with at least one modern entrepreneur are classified as modern businesses and all their sales and workers are added up from all businesses in the household. Households with at least one traditional entrepreneur and no modern entrepreneur are classified as traditional businesses and all their sales and workers are added up from all businesses in the household. Households, who have at least one peasant on their own plot and no modern entrepreneur, are classified as peasant business and their sales and workers are added up from their agricultural businesses. Households, who have at least one self-employed member and no modern entrepreneur, are classified as self-employed and their sales and workers are added up from their non-agricultural businesses. For total number of workers and profits from book 3a, we add up all the workers and profits by type of entrepreneur within the household. We trim the top one percent of the amount of workers, as there seem to be outliers. We report the answer to the question of total employment question minus one as the answer includes the entrepreneur.

C Algorithm for the Computation of the Stationary Equilibrium

We build on the algorithm by Buera and Shin (2013), which is described in appendix B.1 of the working paper version from 2010. Their algorithm extended the nested fixed-point algorithm of Aiyagari (1994) to iterate over two market clearings in order to determine the equilibrium wage and interest rate. For the solution of our model, we are adding another loop for the optimal human capital choice in the value function iteration and apply the method of discretizing the density function following Heer and Maussner (2009) (instead of the Monte-Carlo simulations described in Buera and Shin, 2013) . We fix the clearing thresholds for capital and labor markets at 1%, i.e. we consider markets to be cleared if net supply is less than 1% of total supply.

The code is structured as follows:

1. Guess the interest rate r.
2. Guess the wage w.
3. For each state: Given the guesses, determine optimal occupational and consumption/savings choice for each feasible level of human capital. Then, choose optimal human capital level. Iterate until value function converges.

4. Using optimal policy functions iterate over density function until convergence.

5. Check the labor market clearing condition. If it does not clear update wage guess and repeat steps 3-4 until clearance. If it does clear proceed to next step.

6. Check the capital market clearing condition. If it does not clear update interest rate guess and repeat steps 3-6 until clearance.

References

Aiyagari, S. R. (1994): "Uninsured Idiosyncratic Risk and Aggregate Saving," *The Quarterly Journal of Economics*, 109, 659–84.

Buera, F. J. and Y. Shin (2013): "Financial Frictions and the Persistence of History: A Quantitative Exploration," *Journal of Political Economy*, 121, 221 – 272.

Busso, M., M. V. Fazio, and S. L. Algazi (2012): "(In)Formal and (Un)Productive: The Productivity Costs of Excessive Informality in Mexico," Research Department Publications 4789, Inter-American Development Bank, Research Department.

Heer, B. and A. Maussner (2009): *Dynamic General Equilibrium Modeling*, London: Springer, 2nd ed.

D Tables

Table D.1: Summary Variables from MxFLS

	mean	sd	p10	p50	p90	count
HH assets in millions	0.97	10.90	0.01	0.09	0.47	6312
HH debt in millions	0.01	0.03	0.00	0.00	0.01	6476
Parents' yrs of schooling	6.36	4.47	0.00	6.00	12.00	6727
Parent Raven Test Score	0.45	0.19	0.21	0.44	0.71	5949
Kid's yrs of schooling	10.23	3.61	6.00	10.00	16.00	4136
Kid's age	20.15	8.46	12.00	17.67	32.00	4143
Kid Raven Test Score	0.59	0.18	0.33	0.59	0.81	4052
Number of HH members	4.64	1.88	2.00	4.00	7.00	5149
Entrepreneur Dummy	0.35					6317
Modern Entrep. Dummy	0.06					5701
Subsistence Entrep. Dummy	0.30					6196

Table D.2: Summary Variables from MxFLS after Log transformation

	mean	sd	p10	p50	p90	count
Log(Assets)	0.18	0.44	0.01	0.08	0.38	6312
Log(Debt)	0.01	0.03	0.00	0.00	0.01	6476
Log(Parents Educ.)	1.74	0.81	0.00	1.95	2.56	6727
Log(Parents' Talent)	-0.90	0.49	-1.57	-0.78	-0.34	5933
Log(Education Kid)	2.36	0.38	1.95	2.40	2.83	4136
Log(Kid's Age)	2.99	0.35	2.56	2.93	3.50	4143
Log(Kid's Talent)	-0.59	0.38	-1.10	-0.52	-0.20	4049
Number of Household Members	1.68	0.32	1.10	1.61	2.08	5149

The log-transformation of variable x is done according to the formulat $\log(1+x)$. This allows to (1) preserve the sign of all variables, (2) do not exclude the zeros.

Table D.3: Education Policy Function By Asset Quartiles

	(1) First	(2) Second	(3) Third	(4) Forth
Log(Assets)	0.99	2.17*	-0.01	-0.01
	(4.02)	(0.93)	(0.36)	(0.01)
Log(Debt)	0.81	0.73	1.27	0.38
	(1.70)	(0.41)	(0.95)	(0.41)
Log(Parents Educ.)	0.16*	0.14*	0.13*	0.16*
	(0.03)	(0.02)	(0.02)	(0.02)
Log(Kid's Age)	0.02	-0.07	-0.12*	0.02
	(0.08)	(0.07)	(0.06)	(0.04)
Log(Kid's Talent)	0.18	0.40*	0.02	0.12
	(0.14)	(0.10)	(0.13)	(0.09)
Log(Parents' Talent)	-0.00	-0.05	-0.12	-0.01
	(0.07)	(0.06)	(0.07)	(0.05)
Log(Kid Tal.)x Log(Parent Tal.)	0.00	-0.04	-0.32*	-0.09
	(0.10)	(0.08)	(0.12)	(0.09)
Entrepreneur Dummy	-0.04	-0.03	-0.03	-0.01
	(0.04)	(0.03)	(0.03)	(0.02)
Number of Household Members	-0.12*	-0.12*	-0.12*	-0.10
	(0.06)	(0.06)	(0.05)	(0.05)
Observations	725	965	1003	1262

Table D.4: Logit Regression on Entrepreneur Dummy

	(1)	(2) HH Assets Below Median	(3) HH Assets Above Median
	Dependent Var. is Entrepreneur Dummy		
Log(Assets)	0.49*	6.56*	0.35*
	(0.13)	(2.83)	(0.12)
Log(Parents Educ.)	-0.29*	-0.31*	-0.32*
	(0.07)	(0.10)	(0.10)
Log(Parents' Talent)	0.07	0.02	0.06
	(0.10)	(0.14)	(0.14)
Log(Education Kid)	-0.10	0.01	-0.35
	(0.14)	(0.20)	(0.21)
Log(Kid's Talent)	-0.18	-0.42*	0.05
	(0.13)	(0.19)	(0.20)
Log(Kid's Age)	-0.11	-0.27	-0.18
	(0.15)	(0.24)	(0.21)
Number of HH members	0.01	-0.02	0.04
	(0.02)	(0.03)	(0.03)
Observations	2868	1260	1608

Standard errors in parenthesis. * denotes a p-value of 5%. The omitted category corresponds to being a worker.

Table D.5: Multinomial Logit on Entrepreneurial Type

	(1) Entrepreneur Type
Dependent Var. is Subsistence Entrep.	
Log(Assets)	0.32*
	(0.14)
Log(Parents Educ.)	-0.35*
	(0.07)
Log(Parents' Talent)	0.02
	(0.10)
Log(Education Kid)	-0.31*
	(0.15)
Log(Kid's Talent)	-0.16
	(0.14)
Log(Kid's Age)	-0.15
	(0.16)
Number of HH members	0.02
	(0.02)
Dependent Var. is Modern Entrep.	
Log(Assets)	0.72*
	(0.15)
Log(Parents Educ.)	0.02
	(0.15)
Log(Parents' Talent)	0.26
	(0.20)
Log(Education Kid)	1.17*
	(0.32)
Log(Kid's Talent)	-0.21
	(0.28)
Log(Kid's Age)	0.08
	(0.30)
Number of HH members	0.01
	(0.05)
Observations	2868

Standard errors in parenthesis. * denotes a p-value of 5%. The omitted category corresponds to being a worker.

Table D.6: Modern Firm Size Distribution. MxFLS and Econimc Census (INEGI)

Firm Size	Establishment Share	
(Employment)	Census	MxFLS
0-5	89.7%	89%
6-10	5.8%	5.16%
11-50	3.6%	4.45%
50+	0.9%	1.4%

MxFLS data for the third wave of the survey (2009-12). Economic census (INEGI) data corresponds to the 2008 census, as reported in Busso et al. (2012).

Table D.7: Firm Size Distribution (Hired Labor) by Household Age

	Subsistence		Modern	
Moment	Young	Old	Young	Old
25th Percentile	0	0	0	0
50th Percentile	0	0	0	0
75th Percentile	1	1	1	1
90th Percentile	2	3	4	4
95th Percentile	4	4	4	6
Average	.8	.7	1.0	1.3
	(.1)	(.1)	(.2)	(.3)

Young refers to the average age of adult household members being below the median level, Old, above the median level.

Figure D.1: Distribution of Human Capital Holdings in the Population

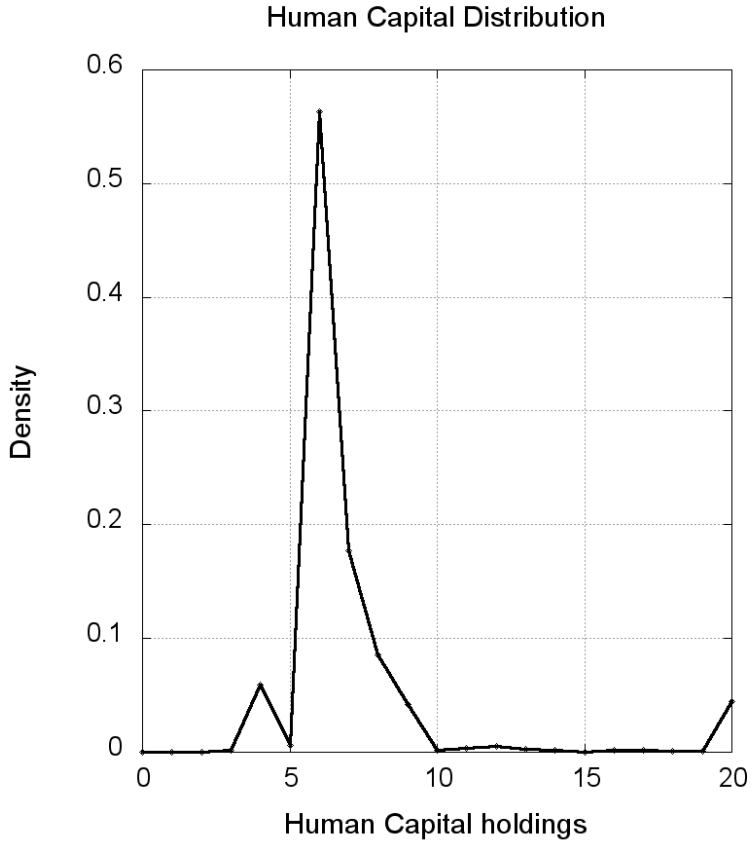


Figure D.2: Final Education Levels for Households with Mothers with no education and the lowest level of talent.

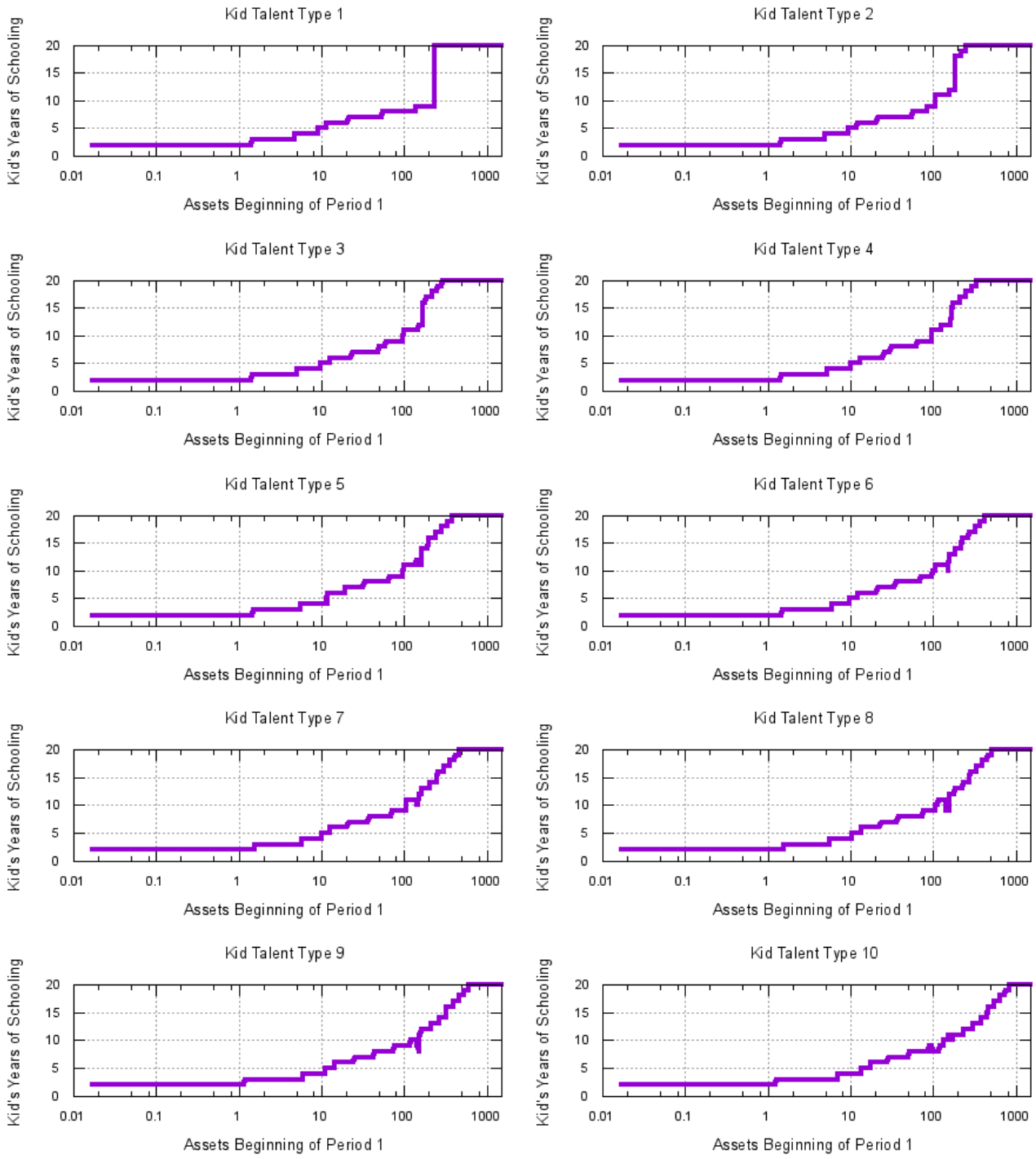


Figure D.3: Final Education Levels for Households with Mothers with medium level of education and medium level of talent.

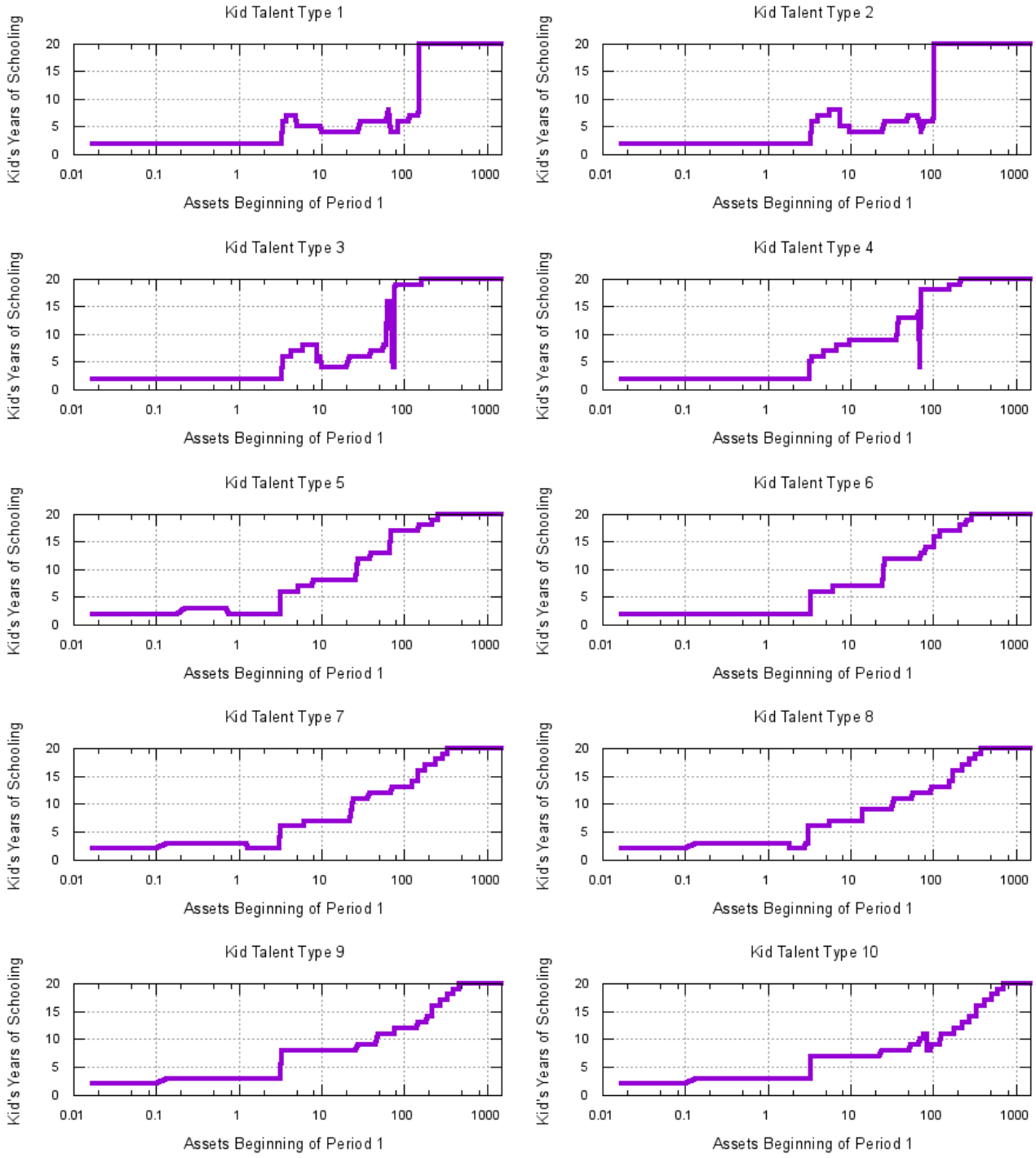


Figure D.4: Total Human Capital Investment as a function of initial assets for households with the lowest level of education.

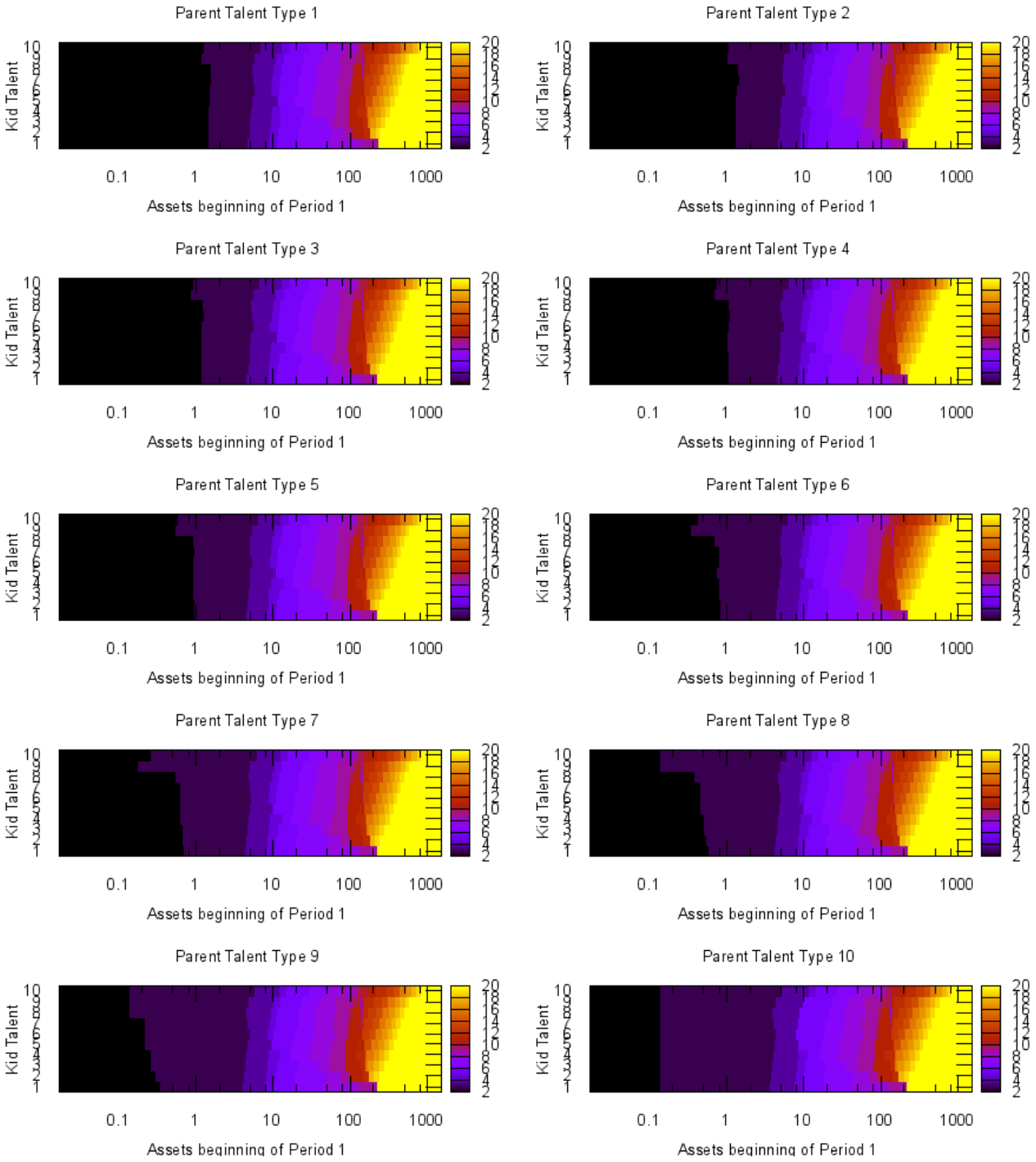


Figure D.5: Total Human Capital Investment as a function of initial assets for households with intermediate education

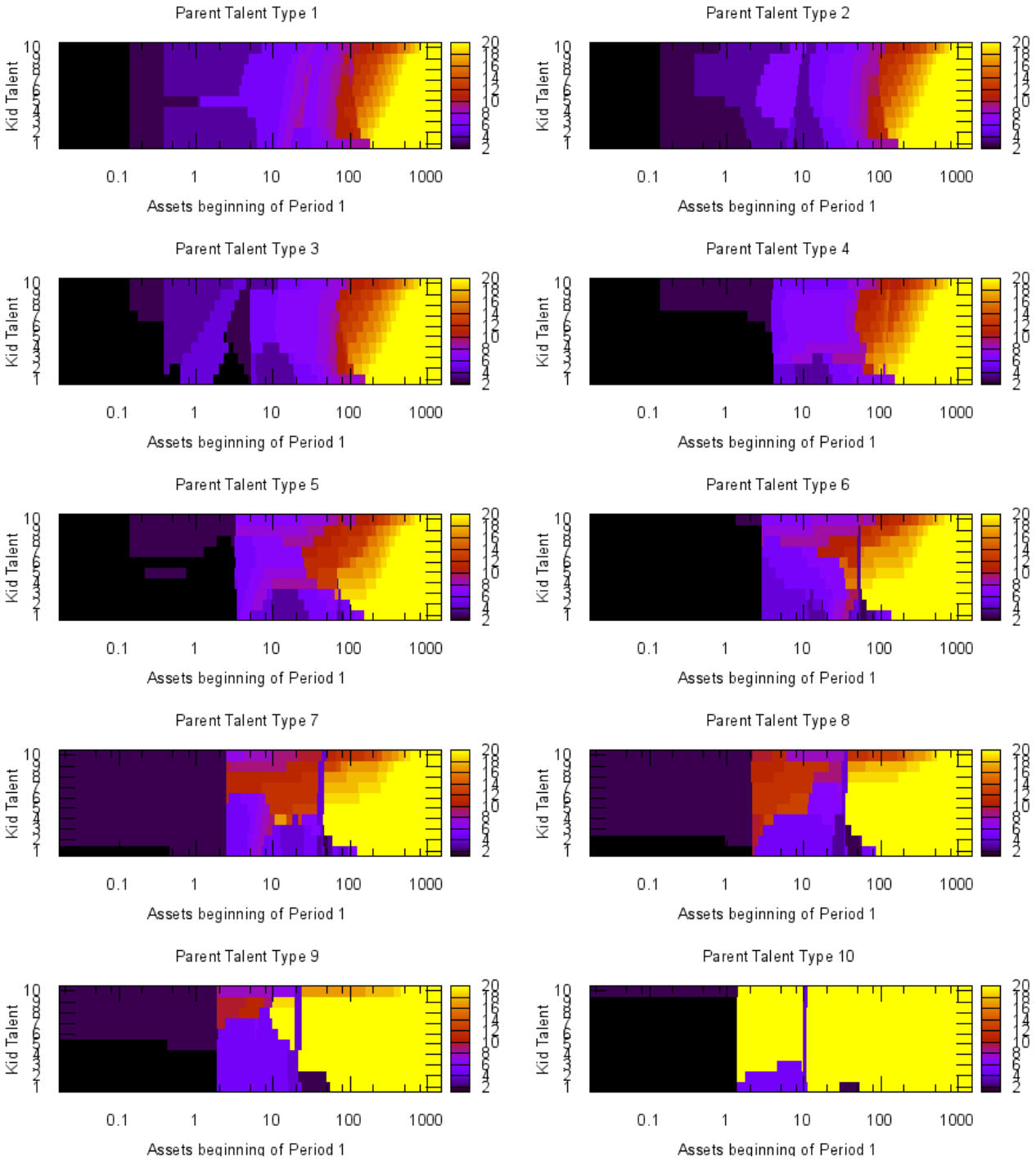


Figure D.6: Occupational Choice of Entrepreneurship Across Periods

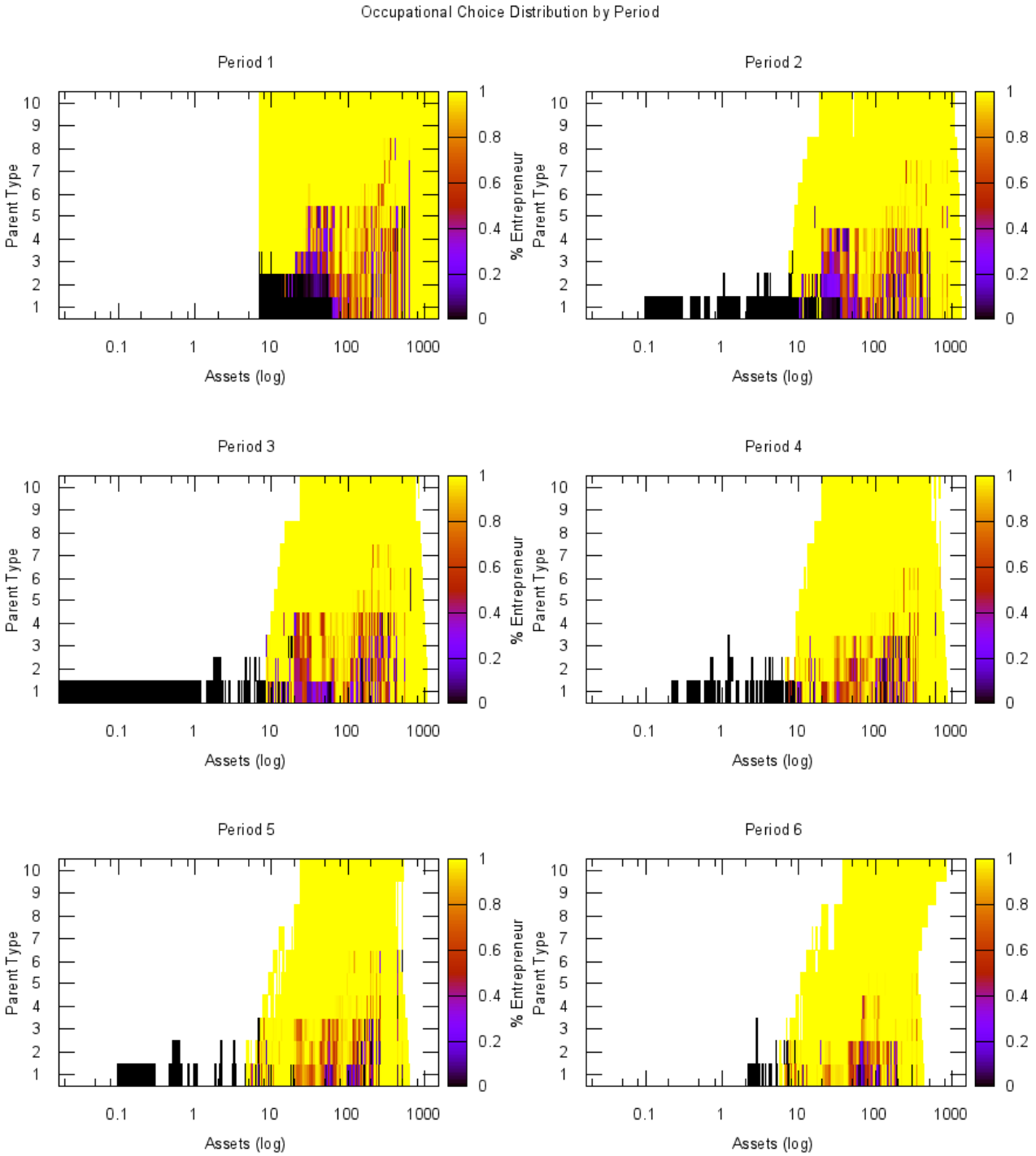


Figure D.7: Occupational Choice of Modern vs. Subsistence Entrepreneurs Across Periods

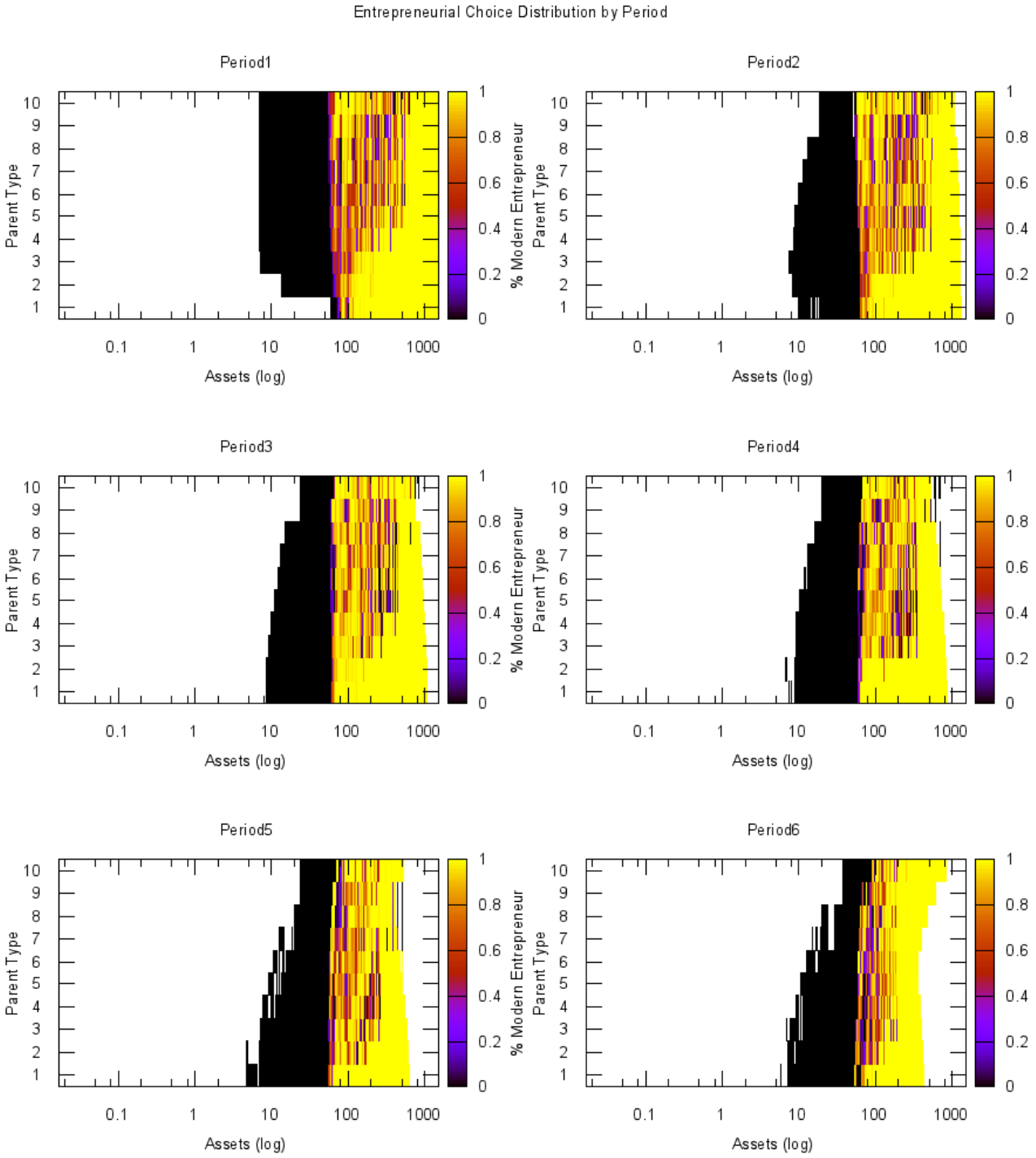


Figure D.8: Firm Profits over the Life Cycle

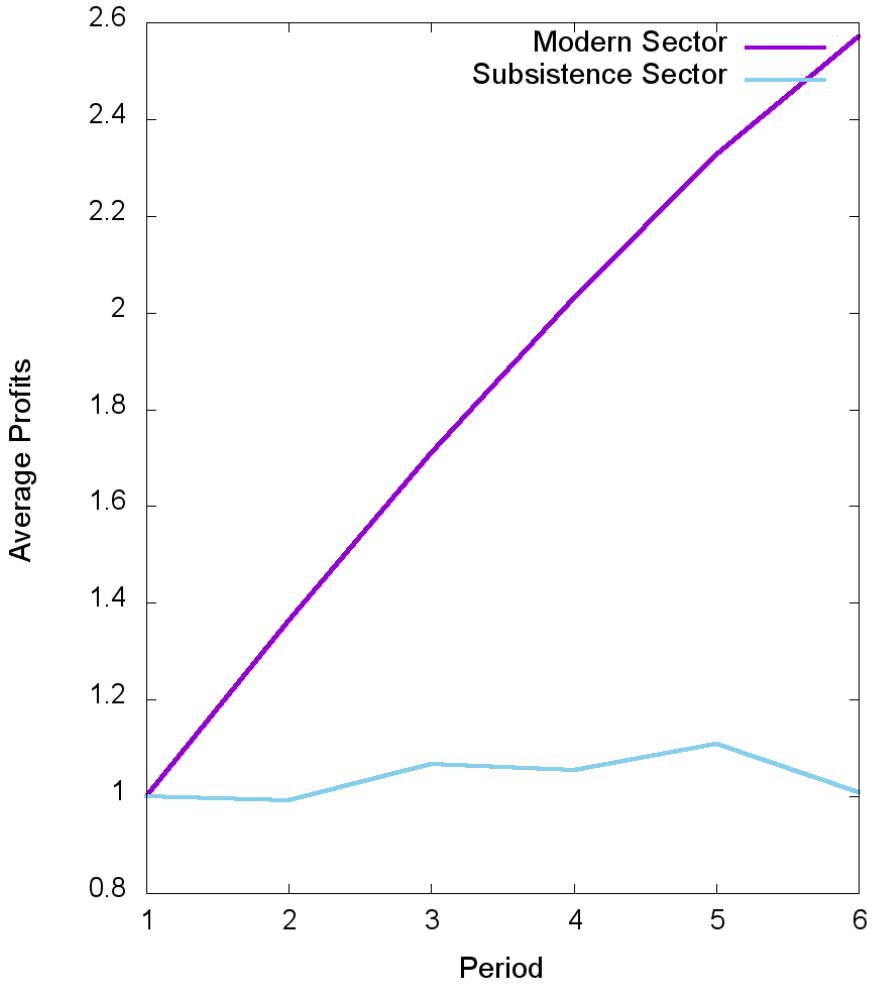


Figure D.9: Optimal Capital Investment in the Traditional Sector for parents with Intermediate Schooling and Talent Parents

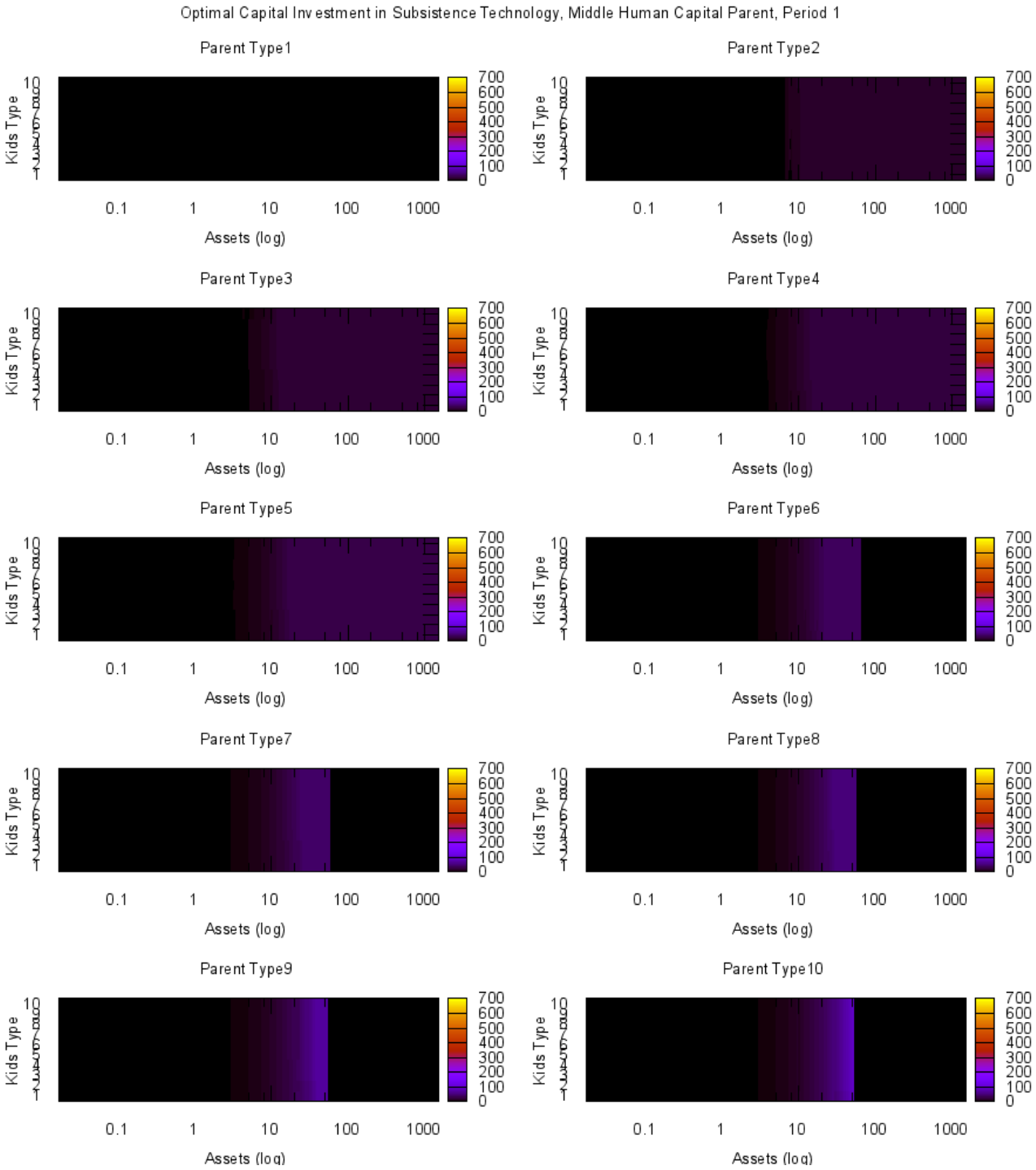


Figure D.10: Optimal Capital Investment in the Modern Sector for parents with Intermediate Schooling and Talent Parents

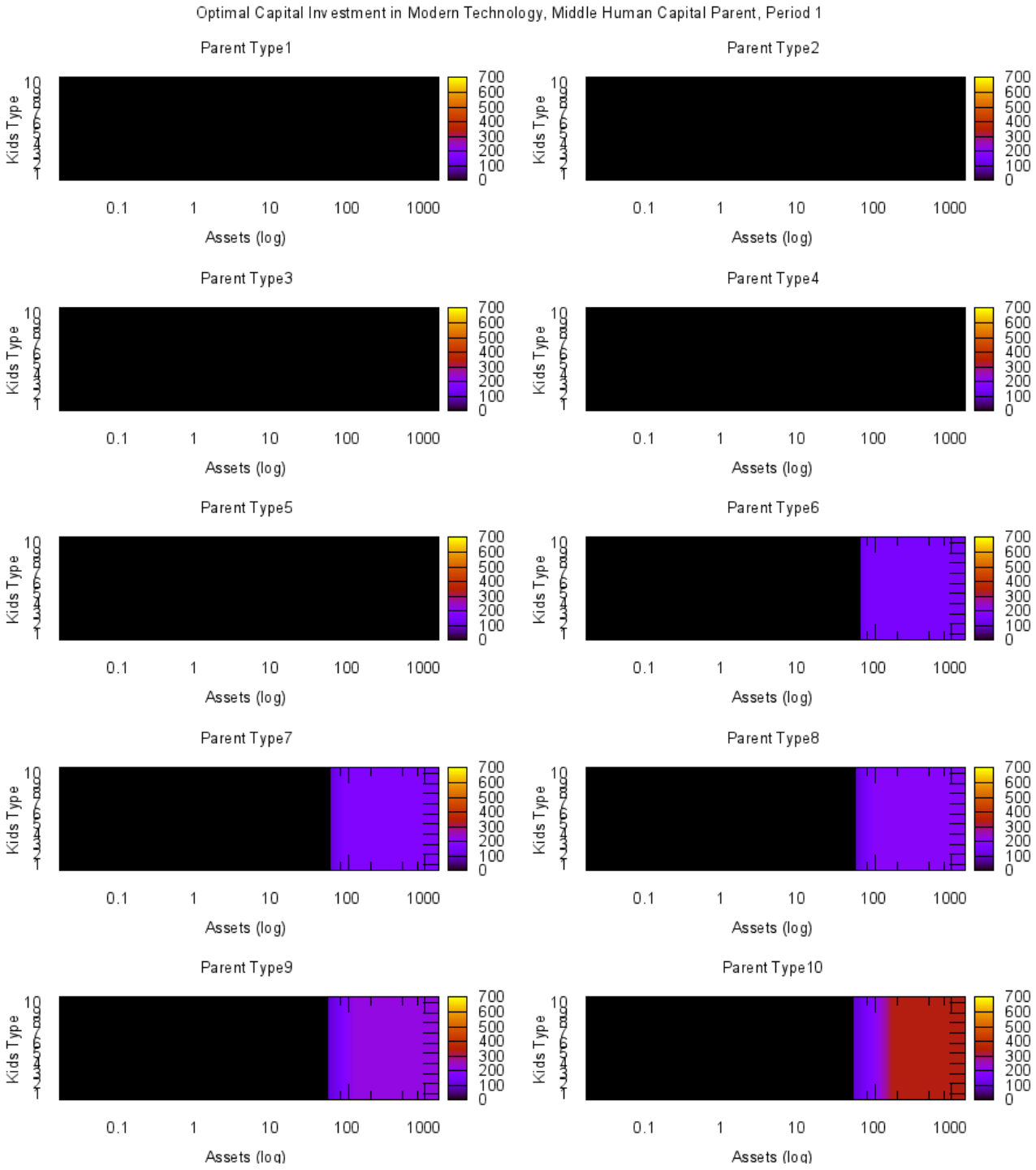


Figure D.11: Optimal Capital Investment in the Traditional Sector for parents with Highest Schooling and Talent Parents

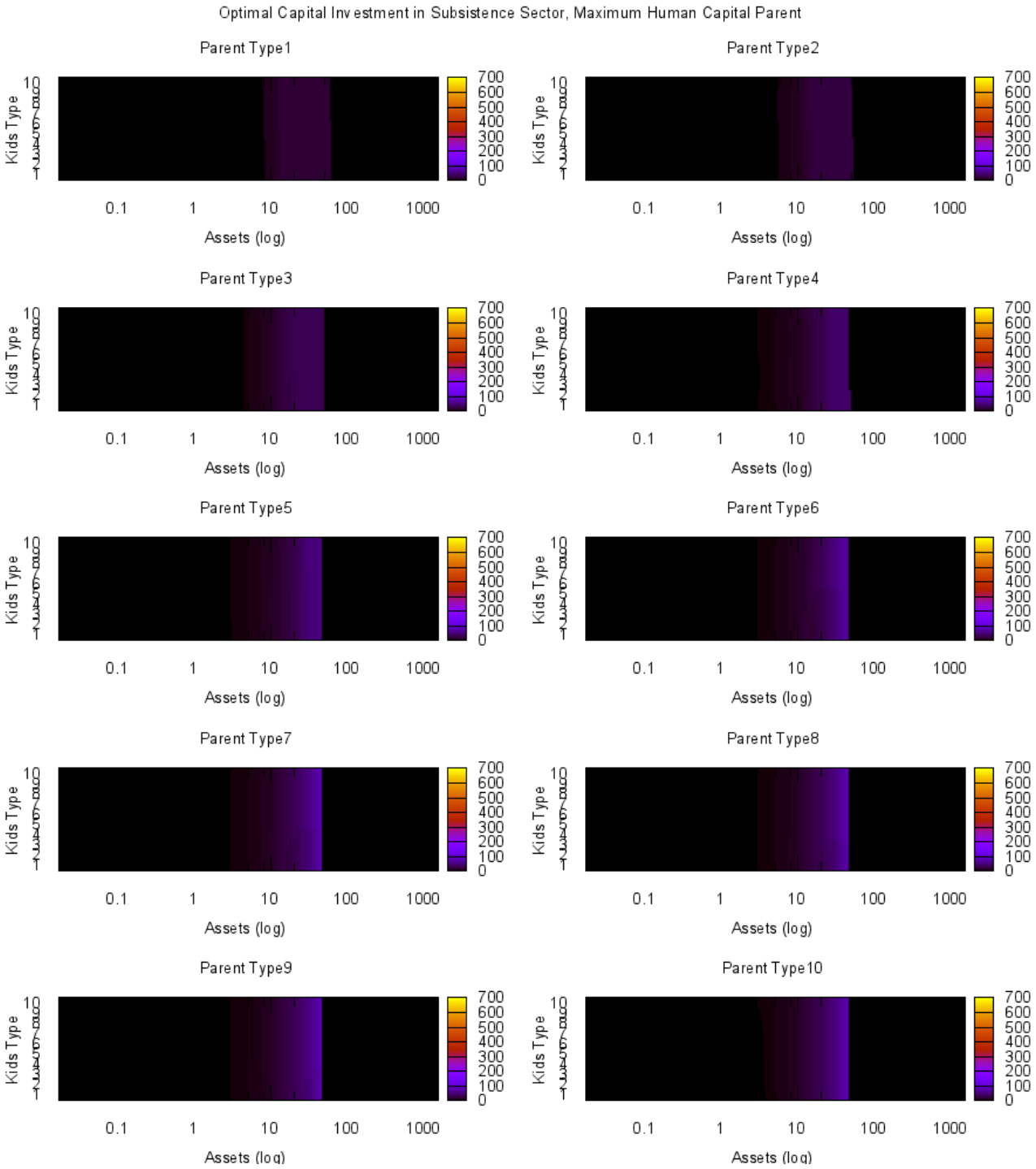


Figure D.12: Optimal Capital Investment in the Modern Sector for parents with Highest Schooling and Talent Parents

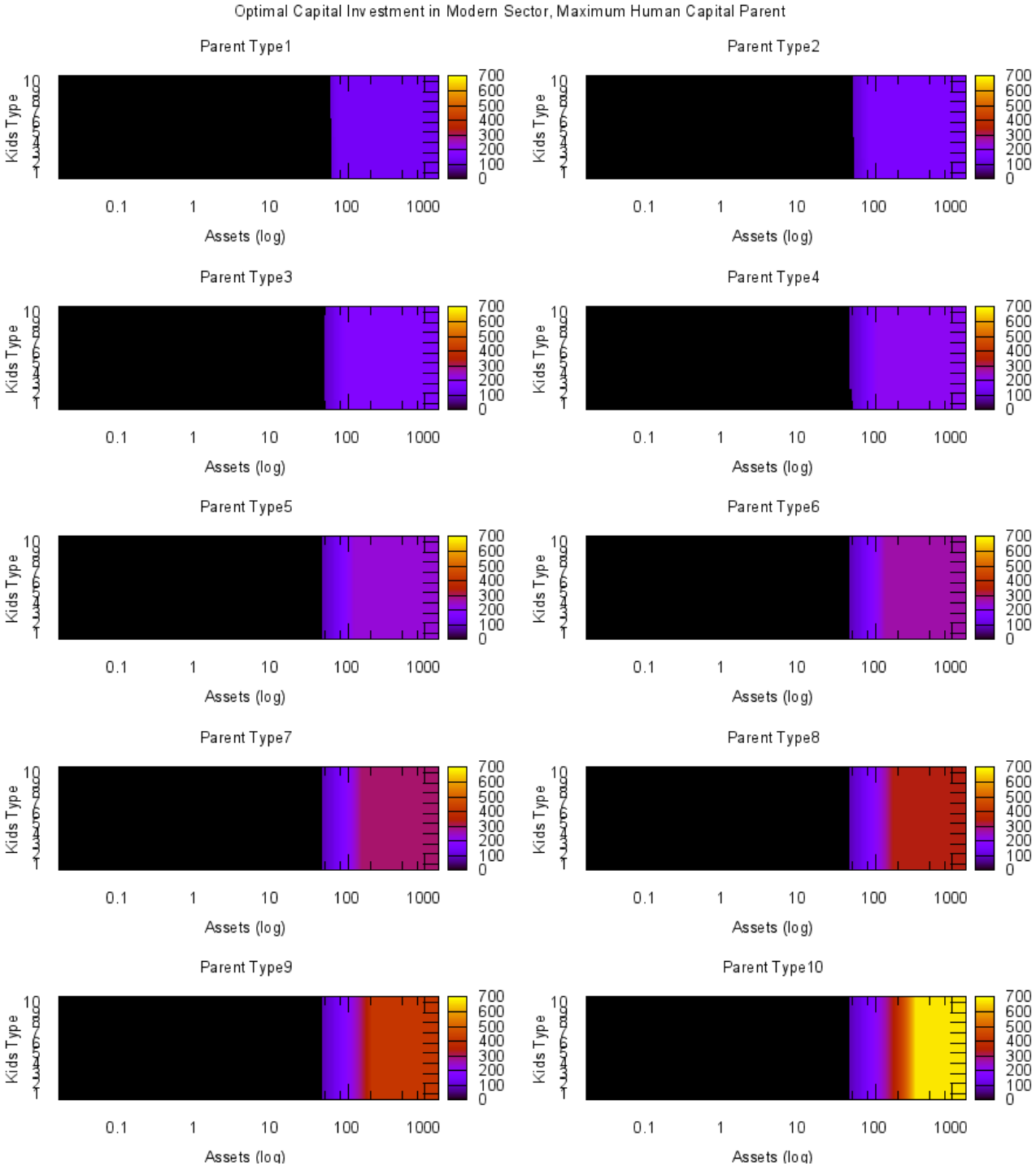
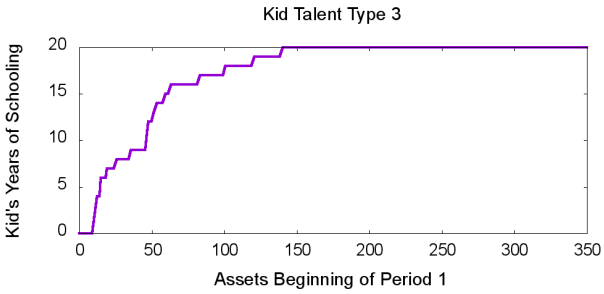
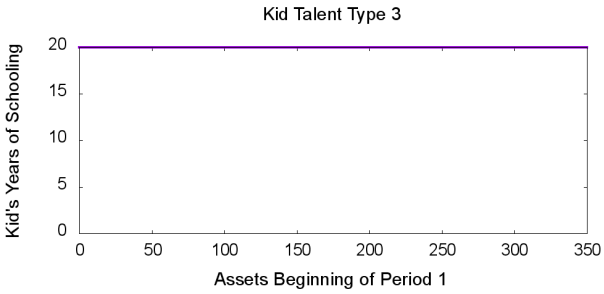


Figure D.13: Educational Policy Functions for Different Household Types without Financial Constraints Holding Calibrated Prices Constant

(a) Parent with Low Schooling and Innate Talent



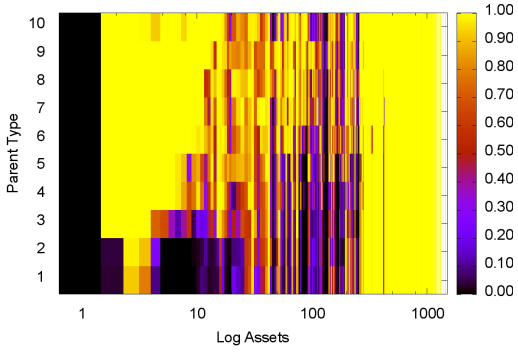
(b) Parent with Intermediate Schooling and Innate Talent



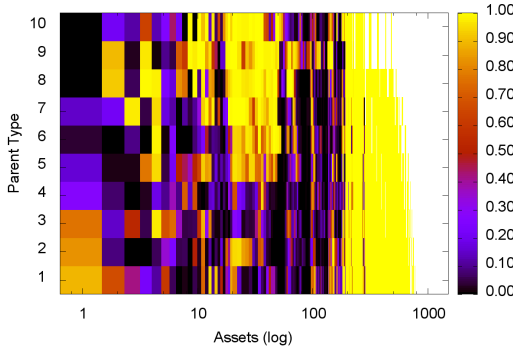
Note: Wealth levels above 350 are omitted from the plot.

Figure D.14: Fraction of Entrepreneurs as a Function of Wealth and Parents' Innate Talent without Financial Constraints Holding Prices at the Calibration Levels

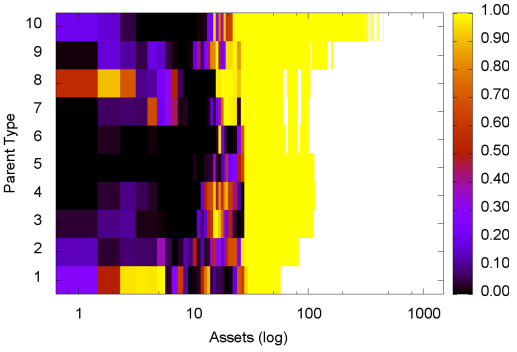
(a) Period 1



(b) Period 3



(c) Period 6



Notes: the white region indicates zero density of population at that point. The negative wealth region' is omitted.