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Ideology, Human Capital, and Growth: A Positive Theory of Religion and Scientific Knowledge

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Abstract

We develop an endogenous growth model in which technological progress raises the efficiency of time allocated to education and knowledge and ideology play complementary roles in determining individuals' efficiency units of labor input. A higher supply of aggregate units of efficiency labor generates incentives to invent new technologies because it raises the monopoly rents from the introduction of such technologies. We show that economies with initally more "fact-consistent" ideologies are likely to invest more in education and as a result experience faster technological progress and growth. Somewhat paradoxically, we also demonstrate that those economies that start out with relatively more fact-consistent ideologies are the ones likely to experience a weakening support for their ideologies. Support for flexible ideologies that evolve over time remains high even in the long run. When there exists a

\There are no truths, only interpretations."

1. Introduction

pis
wo ji -0.06 Tc (r) 0 TD 0.75 0 TD 0 Tj 6.75 0 s 0
si ss ihv ep1168 Tc Tb 0 TD.06 Tcl wt
m TD -0.066 Tc 1xj

$$w_t \quad -\left(\frac{M_t}{L_t}\right)^{\alpha}$$

3.2. Individuals

Ichai tann nal
M (i) Tj 3.7514Tj 9.75 -8.25 TD /F7 12 Tf 6 0 TD 0.234

h_i

Remark 1: (i) $\forall\ h_{t+1} \geq$; higher I_h^k; implies that the mapping I^k : is more "e±cient" at that level of $h_{t+1}$and that the ideological inference, $\tilde{A}_{t+1}^k$ is more accurate: (ii) Higher human capital elasticity of ideological inference, $I_h^k\ h{=}I^k$; implies that ideology k is more "°exible."

t I_{t+1} h_{t+1}

I_{t+1}

$$I_{t+1} \begin{cases} I\ h_{t+1};\ \tilde{A}_{t+1}^k & k; \\ h_{t+1}^0 \equiv \tilde{A}\ e\ \acute{A}_t; \end{cases}$$

I : I ; $\tilde{A}_{t+1}^k$
$I\ h_{t+1};\quad \geq\ ; I\ \infty; \tilde{A}_{t+1}^k \quad I\ h_{t+1}; \infty\ \leq \infty\ I_h; I_{\tilde{A}} >\ ; I_{hh}; I_{\tilde{A}\tilde{A}} \leq \quad I_{h\tilde{A}}\ I_{\tilde{A}h} \geq$:

Remark 2: (i) When $\tilde{A}_{t+1}^k > h_{t+1}\ I\ h_{t+1}; \tilde{A}_{t+1}^k \quad h_{t+1} I\ ; a\ > h_{t+1}^0$ where a $\tilde{A}_{t+1}^k{=}h_{t+1} >$ (ii) When $\tilde{A}_{t+1}^k \leq h_{t+1}\ I\ h_{t+1}; \tilde{A}_{t+1}^k \quad h_{t+1} I\ ; a \lessgtr h_{t+1}^0$; where a $\tilde{A}_{t+1}^k{=}h_{t+1} \leq$:

Proof: I :

$e_{\tilde{A}}; I_h; I_{\tilde{A}} >\ ; I_{hh}; I_{\tilde{A}\tilde{A}} \leq \quad I_{h\tilde{A}}\ I_{\tilde{A}h} \geq$: □

k

h_{t+1}

Proposition 1: If ideologies are in°exible so that their human capital elasticity of ideological inference, $I_h^k\ h=I^k$, is less than unity, then $\exists$ Á $\leq$ Á $\leq \infty$; such that, $\forall$ $Á_t \leq$ Á individuals subscribe to ideology k; and $\forall$ $Á_t >$ Á; individuals subscribe to no ideology k; k $\in$; ·

Proof: $Á_t$ ∞; e ∞; $\tilde{A}^k_{max}$ $\Rightarrow h_{t+1}$ $\tilde{A}$

Á

$\tilde{A}^{k}_{t+1}$

[22]

t q_t

t t

M_t;

$$M_t \quad \frac{\acute{A}_t \; q_t}{\circledR^{\bar{}}_{\alpha}}:$$

$\acute{A}_t$

$\acute{A}_t \quad g\acute{A}_{t\,i\,1} \qquad g > \quad$ [23]

3.4. The Adoption of New Technologies

$j;\ j \in \quad ; \quad ;$

$$\underset{\acute{A}^{j}_{t};\ q^{j}_{t};\ L^{j}_{t}}{\max} \; \frac{1}{4}^{j}_{t} \qquad M^{j}_{t}{}^{\circledR} \; L^{j}_{t}{}^{\,1\,i\,\circledR} \; - \; p_t q^{j}_{t} \; - \; w_t L^{j}_{t};$$

p_t ;

$\forall\, j \in \quad ; \quad ;$

$$q^{j}_{t} \quad \frac{\left[\acute{A}^{j}_{t}{}^{\alpha} \; L^{j}_{t}{}^{\,1\,i\,\circledR}\right]^{\frac{}{i\,\alpha}}}{p_t}:$$

[22]

$Á_t$: t

c:[24]

c=®;

p_t=c =®

Lemma 1:

$\frac{p_t}{c}$ μ ¶ —; gc > :
®

Proof:

$Á_{t\ i\ 1}$ c:

$Á_t$ p_t: p_t=$Á_t$ c=$Á_{t\ i\ 1}$

$p_t \leq$ gc:

p_t=c =® gc > =® ; p_t=c g gc $\leq$ =® :

□

[24]

$!_t^n = !_t;\quad n \qquad ;\ ;\ ;::::;N$

t

n

$!_t^n = !_t$

c

Proof:

□

$!_t;\ !_t$

$N\ !_t^n$ [27]

Proposition 3: $\forall n \quad ;\ ;\ ;:::;N;$

$$\frac{@\,!_t^n}{@¼_t}\ !_t^n \quad !_t^n \ > \ :$$

Proof:

4. The Dynamics

$Á_t$

$$Á_t \begin{cases} gÁ_{t\,i\,1} & ,t \\ Á_{t\,i\,1} & -\ ,t; \end{cases}$$

[27] ω_t λ_t

Proposition 4: $\forall t \geq 0$ the set of available ideologies, $;\cdot$ a®ects the evolution of the state variable $Á_t$; which in turn determines the stochastic dynamic evolution of the economy.

Proof: $l_{\cdot} >$

$l^k :$ L_t

$@¼_t=@L_t >$ $@\,!_t^n=@¼_t \;|!_t^n \quad !_t^n > :$ $\forall\, h_t \geq$

$l^k :$

$,_t \quad , N!_t^n :$ □

5. Implications and Further Discussion

I) Technological advances will lead to lower (higher) support for ideologies that impede (enable) their followers from adjusting their ideological inferences accordingly.

II) In°exibilities in ideological interpretations will lead to depressed worker productivity, slower economic growth and development.

V) Widespread adoption of new ideologies is more f

7. Appendix

- 7.1. Proof of Proposition 2:

n n ; ; ;:::N;

$!_t$

$$!_t \in ;\infty \quad \begin{cases} ,_t\frac{1}{4}_t < B!_t \\ ,_t\frac{1}{4}_t \quad B!_t \\ ,_t\frac{1}{4}_t > B!_t \end{cases} ;$$

$!_t$ $!_t$

$!_t \in ;\infty$ $!_t$ N $!_t^n$; $!_t \in ;\infty$

□

- 7.2. Proof of Proposition 3:

$$\frac{@!_t^n}{@\frac{1}{4}_t} \quad !_t^n \quad !_t^n \qquad \frac{}{N} \frac{,_t}{B - ,^0\frac{1}{4}_t};$$

$,_t\frac{1}{4}_t - B!_t$:

$,^0 > ; ,^{00} \leq$ $B - ,^0\frac{1}{4}_t$

□

8. References

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hPolit[illegible]

Bec8e- iCc8 e- c 9 2 3 4 T 3 0 . 3 0 6 T c (r) T j 5 . 2 5 0

Galor, O. and O. Moav.

Quarterly Journal of Economics,

Galor, O. and O. Moav.

Galor. O. and D. N. Weil.

Figure 1.a

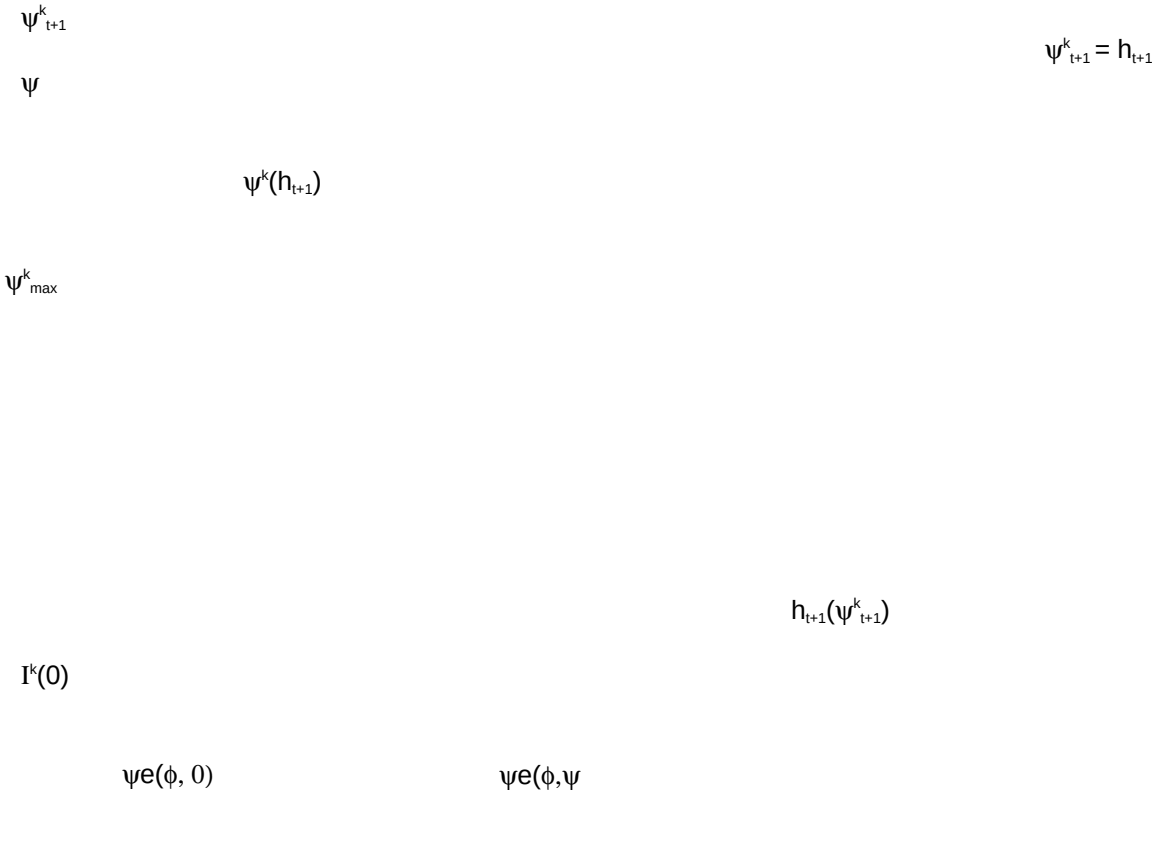
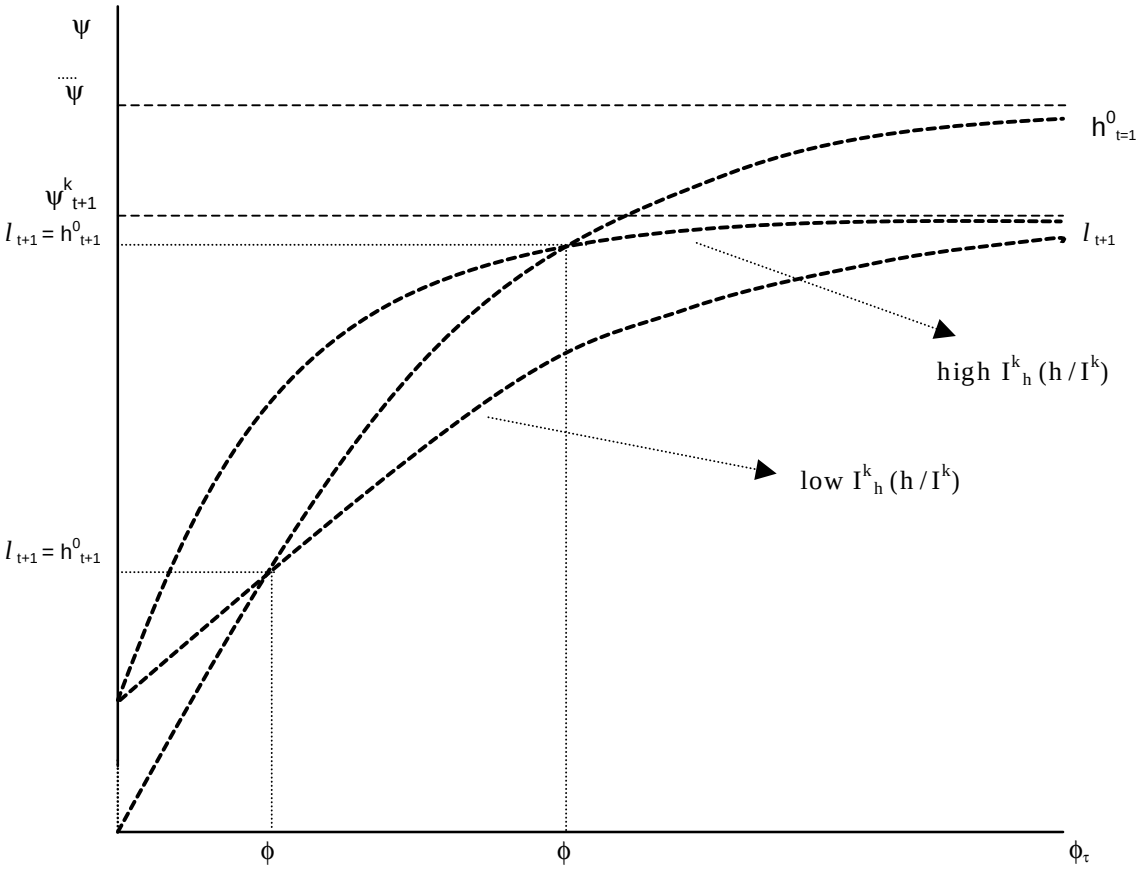

ψ^k_{t+1}
$\psi^k_{t+1} = h_{t+1}$
ψ
$\psi^k(h_{t+1})$
ψ^k_{max}
$h_{t+1}(\psi^k_{t+1})$
$I^k(0)$
$\psi e(\phi, 0)$
$\psi e(\phi,\psi$

Figure 2:


ψ
ψ̄
ψ^k_{t+1}
l_{t+1} = h^0_{t+1}
l_{t+1} = h^0_{t+1}
h^0_{t=1}
l_{t+1}
high I^k_h (h / I^k)
low I^k_h (h / I^k)
φ
φ
φ_τ