Entrepreneurship in an Age of Uncertainty

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Challenges

1. *Declining standards of discourse*: business buzz-words, political slogans
2. *Competitive forces in academia*: fads and fashions, professional silos, hyped-up results
3. *Intellectual confusion* : Loss of key insights, proliferation of concepts and theories, over-reliance on a small number of data sources;
4. *Marginalisation of basic research*: decline of the 'intellectual'; imitation of business/political discourse; 'relevance' more important than 'rigour'; 'value for money' of research is questioned
5. Entrepreneurship theory is not immune to this!

Responses

- We can’1 do much about 1 and 2 except resist them. We can address 3 and that may help solve 4
- ‘Back to basics’. Economic fundamentals were last examined 1930-60. We need to pick up where that generation left off
- Their achievements:
  - ‘systems view’ of the economy
  - monopoly theory and competitive equilibrium
  - Pareto efficiency
- Their limitations:
  - Walrasian theory assumes away many real-world issues
  - ‘Black box’ approach to the firm; equating the firm to a production plant
  - Their unit of study was national, not global

Aim

- Build on earlier achievements to address current limitations:
  1. Clarify the relationships between entrepreneurship, firms and markets
  2. Develop a ‘global systems approach’ to entrepreneurship
  3. Explore new sources of evidence – especially historical
  4. Clarify policy implications
- This presentation focuses on 1 and 2. Four parts:
  1. Basic concepts
  2. Pilot model
  3. Discussion and extensions
  4. Conclusions

Basic concepts: coordination

- Coordination is a key concept, used by Hayek and Richardson, but not much used today
- Coordination is a process of moving from inefficiency to efficiency by eliminating waste
- In a private enterprise economy coordination is typically a two-stage process
  - *Economic efficiency-seeking*: the ownership of resources is optimised so that each resource is owned by the party (person or institution) that will put it to the best possible use
  - *Technical efficiency-seeking*: each owner uses their resources in the best possible way
- Pareto efficiency: Given individual preferences, technology and existing resources:
  - There is no new contract that could be made from which all parties would benefit.
  - There is no scope for any party to improve the allocation of the resources that they own.
  - There is no therefore further scope for voluntary action. It is an equilibrium

The entrepreneur as specialised coordinator

- Coordination is a specialised role. In a private enterprise economy *the coordination of business activities is the responsibility of the entrepreneur*
- The entrepreneur discovers *opportunities* for coordination. These may have both economic and technical aspects. Economic aspects are the focus here
- In principle an entrepreneur could effect coordination through a single multi-lateral contract. In practice a set of bilateral contracts is normally used. The entrepreneur is involved in all these contracts. The entrepreneur is an *intermediator*
- To appropriate reward for themselves the entrepreneur will
  - Keep their opportunities secret, as far as possible
  - Keep different types of party (e.g. customers, workers) apart from each other
  - Negotiate separately with the parties, offering different contracts to each
  - Induce each party to reveal their reservation prices through competitive auctions or by quoting trial prices to them
  - Contract sequentially where appropriate (this exposes the entrepreneur to credit risk, especially at start-up)

The firm

- To simplify contracting the entrepreneur will establish a *firm.* The firm:
  - can out-live the entrepreneur
  - provide transparency for tax purposes
  - take the initiative seeking out potential parties (e.g. through advertising, retail premises, websites, etc.)
  - acquire a corporate reputation that underpins guarantees to customers and assurances to workers.
  - allow shareholders to pool their investments whilst diversifying their individual risks
  - provide a profit appropriation mechanism for the entrepreneur, who can take profits as dividends and/or salary (or capital gains)

Typology of coordination

- The concept of coordination is versatile: it can be applied in many contexts, e.g:
  1. Market-making: simple exchange
  2. Market making: product innovation
  3. Modularisation of production systems
  4. Commercialisation of knowledge (e.g. technology)
  5. Combinations of these
- Application 1 can be analysed using a simple Edgeworth Box. Application 2 is the focus here: it applies simple logic to a realistic context

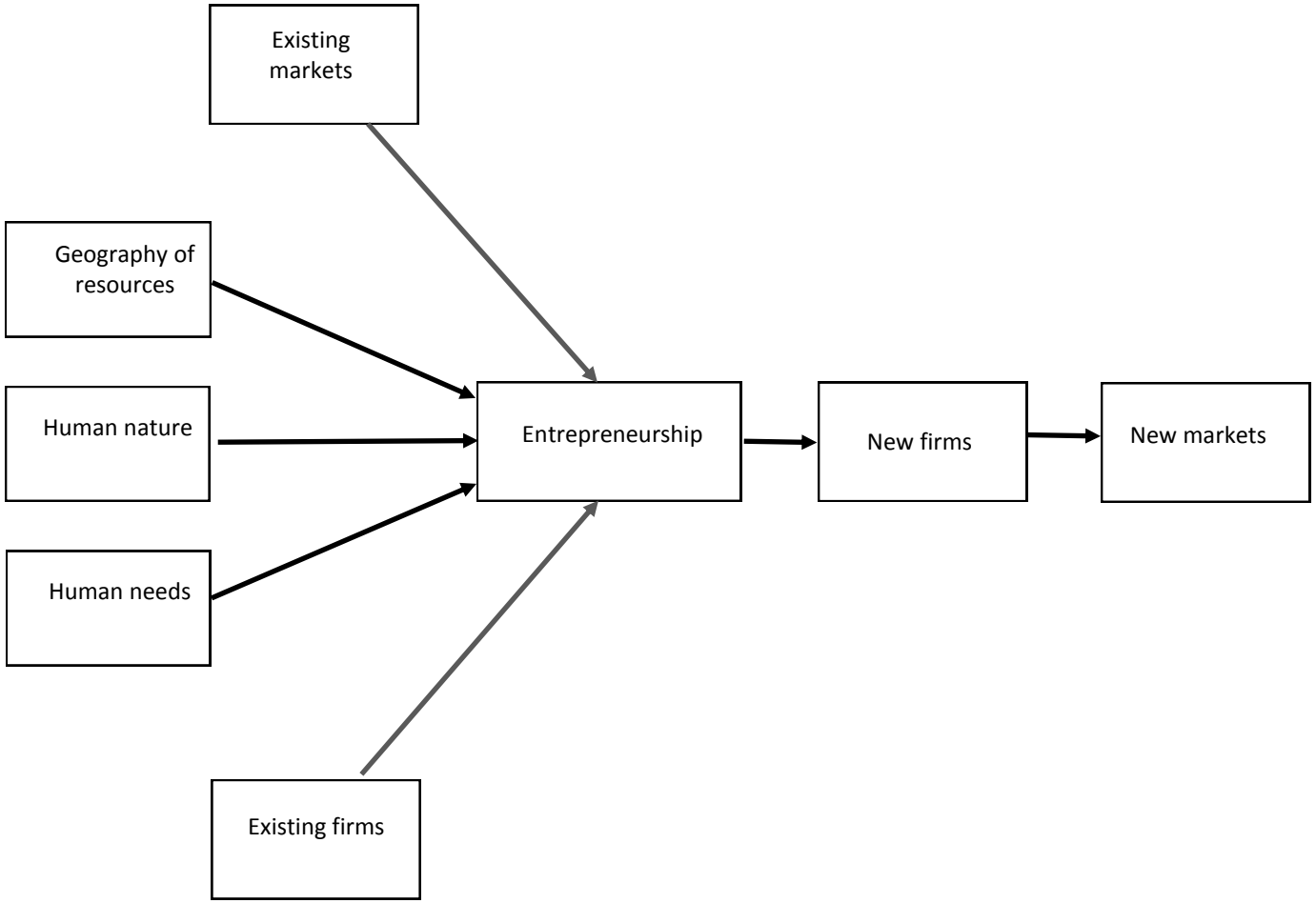
Key points

- Entrepreneurs create markets:
  - *Discovery*: they identify opportunities for new products
  - *Implementation*: They develop projects to exploit these opportunities
- Entrepreneurs establish firms to facilitate implementation by
  - Intermediating between suppliers of inputs and buyers of outputs
  - Acting as a nexus of contracts
  - Providing an appropriation mechanism to reward the entrepreneur
- New markets stimulate further entrepreneurship [spin-off]:
  - Directly, through further opportunities for product improvement [e.g. cumulative changes driving economic growth]
  - Indirectly: outputs may be used as inputs by other entrepreneurs [e.g. professional services]

Implications for modelling

- To fully understand the market economy the starting point must be the entrepreneur
  - The set of firms is endogenous
  - The set of markets is endogenous.
  - The geography of resources is given, human needs are given, and so too are the innate motivations and cognitive abilities of entrepreneurs.
- From the 1930s to the 2017:
  - Classical economists analysed resources [e.g. comparative advantage]
  - Neoclassical economists analysed human wants [e.g. utility theory].
- Entrepreneurship theory must focus on motivation and cognition
  - *Motivation*: social as well as individual
  - *Cognition*: Information is costly; some people have lower information costs than others; synthesis of different types of information is key; entrepreneurs are generalists rather than specialists
- Entrepreneurship studies is not just 'applied economics'!
  - Baumol: 'a gap in economic theory'
  - Kirzner: competition is a process and not just an outcome
  - More than just a 'critique' of conventional economics

Causation


Existing markets
Geography of resources
Human nature
Human needs
Existing firms
Entrepreneurship
New firms
New markets

Pilot model – Context

- Consider a self-contained economy of *N*+2 people. *N* people *work* and *consume*. Two are *entrepreneurs*. [In the long run the number of entrepreneurs will be endogenous]
- There are two products: a *standard* product and a *novel* product.
- Conservative consumers do not consume the novel product, but progressive consumers do; a proportion *m* are progressive
- Each worker can generate *w* units of standard product per period, which they can consume themselves.
- A worker is willing to pay *a* units of standard product for one [indivisible] unit of new product, which will satiate their wants [generalises readily to linear demand schedule] Demand for the standard product is insatiable.

Pilot model – Entrepreneurship

- Every time a change occurs a different type of novel product is required.
- Only entrepreneurs have the cognitive abilities to identify when a change occurs and what *specific type* of novel product is required. [Specificity requires a synthesis of detailed information]
- Entrepreneurs hire workers: part-time or full-time, employees or subcontractors [depending on the type of contract offered]
- Production of the novel product requires worker time $h < 1$, giving a real opportunity cost for the novel product hw
- Product innovation is a project; sunk cost per unit output is fw
- Entrepreneurs are specialists: they do not work. At any given time one entrepreneur (the 'manager' or 'incumbent') supplies the novel product and the other (the 'discoverer' or 'entrant') is waiting to replace them when conditions change.
- Entrepreneurs maximise the lifetime present value of profit. Profit is spent exclusively on consumption of the standard product [they do not supply the novel product to themselves]. The discount rate is zero

Pilot model – Opportunity recognition

- For simplicity the model uses a ‘certainty equivalent’ rather than a ‘probability’ approach.
- *Volatility*. Exogenous change occurs every *t* periods.
- *Role of discovery*. The incumbent entrepreneur is too busy managing production to recognise the change. Only the discoverer can do this.
- *Imperfect alertness*. The discoverer recognises change with delay *d* [a temporary Type II error]. At this point the discoverer becomes the manager and the manager become the next discoverer ($0 \leq d < t$)
- *Over-optimism*. Before each successful innovation the discoverer makes *j* false identifications [temporary Type I errors]. This reflects over-optimism . Each failed innovation incurs a sunk cost
- *Imitation*. Actual change becomes public knowledge after *k* periods ($d < k \leq t$). Anyone can then compete with the entrepreneur. Later entrants do not incur fixed costs. At this stage the managing entrepreneur returns to ordinary work
- *Opportunity cost of the entrepreneurs’ time*. Each entrepreneur could produce *z* units of standard product per period. [This figure can be adjusted to reflect the value of ‘independence’, social status and the cost of income variability].

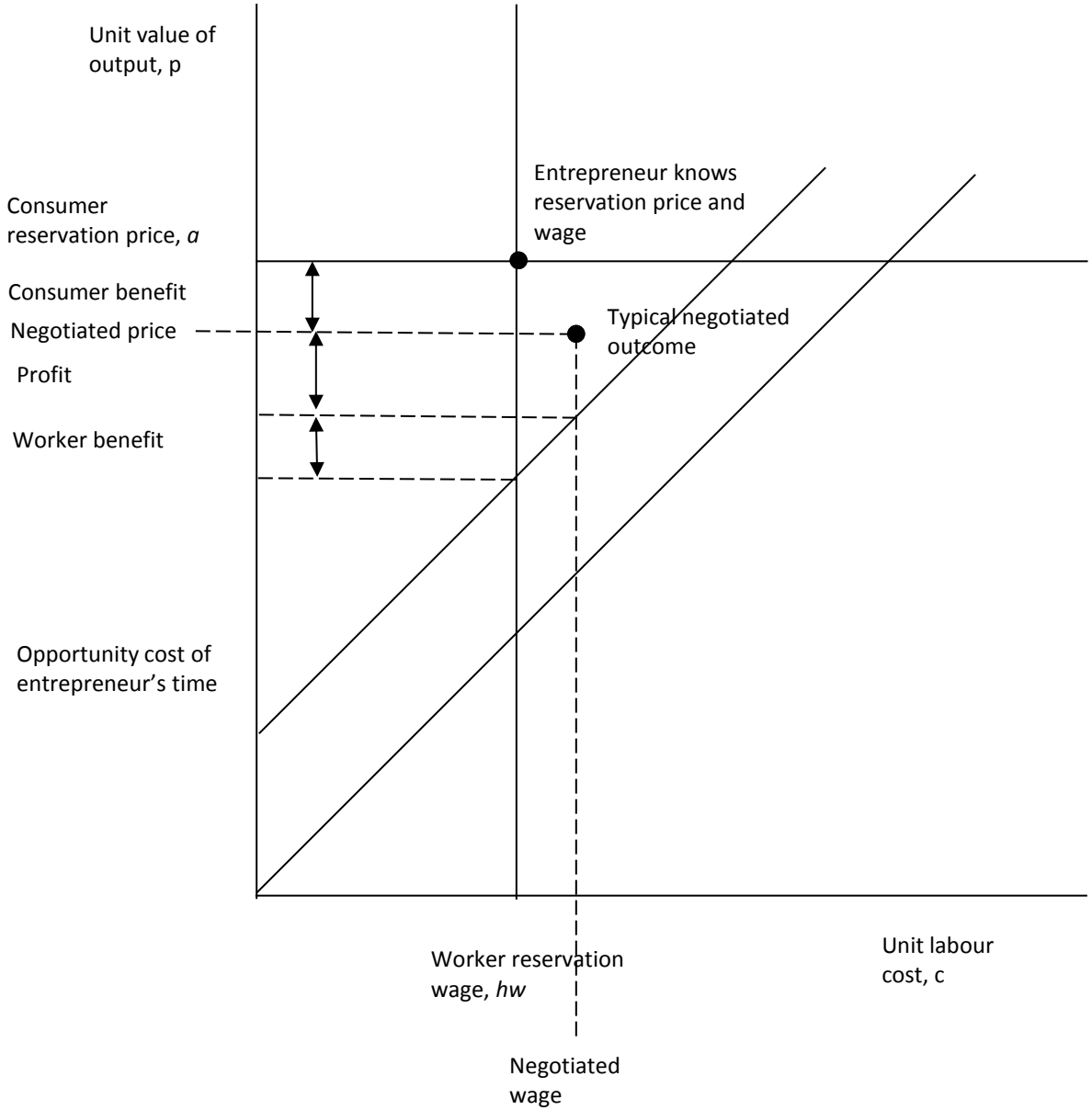
Solution of full model

- Assume competition reveals a, w. Profit-max implies $p = a$, $c = hw$
- With zero discount rate PV is sum over time
- Present value of net profit for a successful innovation evaluated at the start of discovery has three components:
  - Operating profit $(p - c)mN(k - d) = (a - hw)mN(k - d)$
  - Cost of failures: $(1 + j)fwmN$
  - Opportunity cost of entrepreneur's time: $z(t + k)$
- PV profit per consumer $\pi = (a - hw)m(k - d) - (1 + j)fwm - (t + k)z/N$
- $\pi > 0$ for innovation
- The break-even condition generates a trade-off between ten key parameters. Holding any eight parameters constant generates 10x9/4 = 45 pairwise trade-offs.
- For given interval of change, t, successful innovation is most likely with
  - Good judgement
    - Alertness (low d)
    - Realism (low j)
  - Large population (large N)
  - Progressive preferences (high m)
  - Slow imitation (high k)
  - Low fixed costs of innovation (low f)
  - Willingness to pay a premium on novel product (high a)
  - Low opportunity earnings of entrepreneurs (low z)
  - Low opportunity cost of labour (low h, w)

Simple version

- Three person economy. Exogenous change every period. No delay, no imitation, no fixed costs
- The entrepreneur 1 identifies an opportunity to intermediate between a progressive consumer 2 and a traditional worker 3.
- The entrepreneur may not know the reservation wage w and the reservation price a.
- Discovery takes one period, management one period
- $\pi = p - c - 2z$ where $p \leq a$, $c \geq hw$, $z \geq 0$
- If reservation price and wage are revealed then $\pi = a - hw - 2z$.
- Innovation proceeds if $\pi > 0$

Diagrammatic solution



Discussion: comments on the literature

- Critique of Kirzner:
  - Arbitrage theory assumes that markets already exist
  - Volatility does not imply a permanent state of disequilibrium [disequilibrium period = d; equilibrium period = $t - d$]
  - Temporary monopoly [For period $k - d$] provides incentives for the competitive process
  - No theory of the firm
- Critique of Baumol:
  - Innovation is not always the right decision [$m > 0$]
  - Technological innovation is a special case of opportunity-exploitation. Solving customer problems more efficiently is the general case
  - Productive entrepreneurship is reduced by distorted incentives:
    - imitation (gains transferred to consumers),
    - uniform pricing with linear demand curves (the same plus deadwight loss due to under-supply of novel product).
- Joint critique
  - Special psychology (alertness to monetary profit, Schumpeterian 'will to dominate') is not essential to the theory.

Extensions:
Application 3: Coordinating production

- Division of labour within a production system creates a set of intermediate product flows linking distinct but related activities. These activities are complementary: production requires that each activity is performed in the appropriate sequence in fixed proportions.
- If several units perform the same activity then each of these units is a potential substitute for the others. Where each downstream unit can be sourced from alternative upstream units there is potential for supplier competition in the intermediate product 'market', and conversely for buyer competition. Competition can then be used as an incentive mechanism.
- In the absence of competition hierarchical control may be used instead.
- Coordinating production systems provides ample opportunities for entrepreneurs. Some theories of entrepreneurship focus on this area [e.g. Alchian and Demsetz explicity, Knight implicitly]

Entrepreneurship in production

- Production entrepreneurs can:
  - Modularise: differentiate complex activities into a set of simpler complementary tasks undertaken by specialised people (or equipment)
  - Coordinate teams by devising new routines for timetabling and synchronising individual actions, or by improvising solutions in response to unexpected problems
  - Co-locate inter-related activities into plants, where they share common facilities
  - Optimise plant locations with respect to local resources, market access and networks of transport and communication
  - Optimise the contractual arrangements used to coordinate intra-plant and inter-plant activities (e.g. planning, transfer pricing, performance-related pay)

Application 4: Knowledge commercialisation

- Scientific knowledge is an intermediate product embodied in sophisticated products
- It flows from R&D to production. There is also a reverse flow of experience
- There is also two-flow between R&D and market-making
- Knowledge is
  - Intangible
  - Easy to share (a 'public good': cheaper to share than to replicate)
  - Access is difficult to control (e.g. secrecy)
  - Property rights difficult to enforce (inventing round patents, counterfeiting brands)
- Creates incentive to internalise production and R&D.
- 'Triangulation': internalising R&D with production and production with marketing also internalises marketing and R&D (and *vice versa*)
- Leads to distinctive types of enterprise: multinationals, strategic alliances and joint ventures, network/flagship/hollow firms

Spatial dimension: global systems view of the knowledge economy

- Entrepreneurship theory can inform current debates on
  - off-shore production, out-sourcing versus in-sourcing, global value chains
  - the pull of the 'market' and the 'science base' on location of R&D
- Other issues include:
  - Oligopolistic rivalry between entrepreneurial firms headquartered in different locations
  - Impact of geography, politics and local culture on ownership and location of production
  - International portfolio capital, location of international financial centres, ownership of global banks
- [Source: Casson, Mark (2016) *The Theory of International Business: Economic Models and Methods*, Palgrave Macmillan, Casson, Mark and Nigel Wadeson (2016) Internalisation Theory: An Unfinished Agenda, *International Business Review*,]

Spatial dimension: Market-making spill-overs

- By establishing a contact-making hub a new firm stimulates rivals to co-locate, thereby promoting competition, market expansion, and agglomeration
- Physical (as opposed to virtual) co-location stimulates demand for ancilliary services: cafes, hotels, entertainments, and housing for workers
- Local residents increase demand in the local market, stimulating greater division of labour in production
- Neighbouring market centres become rivals. They compete to enhance the visitor experience. Spatial competition rewards local collaboration: competitors must co-operate
- Entrepreneurship theory can explain patterns of urbanisation

The Age of Uncertainty

- ‘Quality of judgement’ really is key! Use theory to demonstrate it
- Dispense with slogans:
  - ‘Entrepreneurs are wealth creators’ – so are parents and teachers!
  - ‘Entrepreneurs are artists of the business world’ - they have imagination but often poor taste. They are generalists; artists are specialists
- Entrepreneurs are doers rather than thinkers. Most of them believe one big thing: that their product is useful to customers. Intellectuals need to do the thinking on wider policy issues.
- Entrepreneurs worry about competition. They are instinctively ‘mercantilist’. They favour export access and import protection. What is claimed to be good for business is often *not* good for the economy.
- The economy is a very complex system. Big firms run complex systems that require professional control. Small firms operate simple systems and take simple decisions– ‘Will it make a profit?’ Small business owners tend to see politics in the same terms, namely one big issue: ‘What is best for small business?’ Economists have always taken a wider view and must continue to do so.

Conclusion

- Economists have failed to convince the public that they understand the economy. They understand it better than business does, but is that good enough?
- The economic theory of entrepreneurship is not a branch of applied economics but a set of general economic principles linking entrepreneurship to firms and markets, and through that to global business systems. It is a *simple theory* that recognises *real-world complexity*
- In terms of fundamentals the average economist probably understood the economy better in the thirties that they do today
- Policy debate would be enhanced if entrepreneurship theory were better known – to academics, policy-makers and to entrepreneurs themselves.
- It is not necessary to start from scratch. Entrepreneurship theory can build on the legacy of the 1930s. But it must be more than a critique; it must be explained in modern terms and its logic must be clear
- This sets an intellectual agenda for the future: to develop the theory, and make it more accessible without dumbing it down.