



Hume's Influence on Economics: New Perspectives



Celebrating the 300th anniversary
of the birth of David Hume

Edinburgh
June 16th, 2011

- 11.30 Coffee and welcome
- 12.00 **Ken Binmore** (UCL and Bristol) "David Hume: Grandfather of Modern Economics?"
- 13.00 Lunch
- 14.00 **Carl Wennerlind** (Barnard) "Hume on Money, Trade, and the Science of Economics"
- 15.00 **Alan Kirman** (GREQAM, Marseille) "Hume empathy and economics."
- 16.00 Tea/Coffee
- 16.30 **Peter Sinclair** (Birmingham) "What would Hume make of our current theories and our current economic predicament?"
- 17.30 End

Venue

The conference will take place at the University of Edinburgh, Chrystal Macmillan Building, ground floor, seminar rooms 1 & 2.

Address: 15a, George Square, Edinburgh, EH8 9LD.

<http://www.ed.ac.uk/maps/buildings/chrystal-macmillan-building>

A copy of the map is at the back of this document

Information about the conference will be available on the website

www.sire.ac.uk

ABSTRACTS

Ken Binmore

David Hume: Grandfather of Modern Economics?

Adam Smith is universally acknowledged as the father of modern economics, but what of his friend and mentor, David Hume? This lecture examines the extent to which the foundational principles of neoclassical economics were anticipated by Hume in his philosophical works. Was he the first to come up with the idea of John Nash's notion of an equilibrium? Did he anticipate Tom Schelling's focal points? What of Roger Myerson and mechanism design? Or Robert Aumann and the folk theorem of repeated game theory? Affirmative answers to such questions would entitle Hume to a share in at least four Nobel prizes.

Peter Sinclair

"What would Hume make of our current theories and our current economic predicament?"

In his essay on public credit, Hume advances two arguments in favour of government borrowing and five against. It is interesting to cast his various arguments and claims in terms of modern models, or their variants, to see how they might be formalized - and thus potentially supported, or qualified, or contradicted. Some of Hume's observations seem somewhat mistaken in the light of later and recent experience, while others appear uncannily prescient.

Carl Wennerlind

Hume on Money, Trade, and the Science of Economics

(co-authored with Margaret Schabas)

In this talk, we begin with Hume's monetary economics, and then proceed to spell out his theory of economic development, noting his qualified enthusiasm for the modern commercial system. We end with an assessment of his views on the scientific standing of economics, specifically his counterintuitive argument that knowledge claims in economics could be more reliable than those in physics.

Delegates

Per G. L.	Ahlander	University of Edinburgh
Cristina Isabel Ibarra	Armenta	University of Glasgow
Ken	Binmore	UCL, Bristol
Campbell	Brown	University of Edinburgh
Owen	Cairns	
Atanas	Christev	Heriot-Watt University
Stephen	Cowley	Company Reporting Ltd
Rod	Cross	University of Strathclyde
Elaine	Donnell	
Nick	Feltovich	University of Aberdeen
Cai	Feng	Edinburgh Napier University
Martin	Fransman	University of Edinburgh
Don	Garrett	New York University
Natalie	Gold	University of Edinburgh
Ufuk	Gucbilmez	University of Edinburgh
Petal	Hackett	University of Edinburgh
Paul	Hare	Heriot-Watt University
Tim	Hayward	University of Edinburgh
Robert L.	Hodgart	University of Edinburgh
Ed	Hopkins	University of Edinburgh
Alan	Kirman	GREQAM, Marseille
Tatiana	Kornienko	University of Edinburgh
Sung Hee	Lew	University of Edinburgh
Euan	Limmack	University of Edinburgh
Hugh V.	McLachlan	Glasgow Caledonian University
Ronald	McQuaid	Edinburgh Napier University
John	Moore	University of Edinburgh
Charles	Nolan	University of Glasgow
Angela	Nolte	University of Edinburgh
Maria	Pakpahan	University of Edinburgh
Pauline	Phemister	University of Edinburgh
Dimitra	Politi	University of Edinburgh
Edgar	Prais	
Miriam	Prais	
Gina	Reddie	University of Edinburgh
Feng	Ruan	University of Edinburgh
Roger	Sandilands	University of Strathclyde
Stuart	Sayer	University of Edinburgh
Rainer	Schulz	University of Aberdeen, HERU
Thom	Scott-Phillips	University of Edinburgh
Peter	Sinclair	Bank of England, Birmingham
Kim	Swales	University of Strathclyde
Ashley	Taylor	University of Edinburgh
Dominique	Thronicker	University of Stirling
Katie	Trolan	Heriot-Watt University
Xuan	Wang	University of Dundee
Verity	Watson	University of Aberdeen, HERU
Mike	Watts	University of Edinburgh
Lina	Weber	Karl Jaspers Centre
Diarmid	Weir	
Carl	Wennerlind	Barnard
Yingbo	Zhang	University of Edinburgh
Fan	Zhang	Edinburgh Napier University
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David Hume: Grandfather of Modern Economics?

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David Hume: Grandfather of Modern Economics?¹

by Ken Binmore

1 Introduction

The father of modern economics is universally acknowledged to be Adam Smith. But Adam Smith's intellectual father was David Hume.² Smith's opinion of Hume is made very clear in a letter dated Kirkcaldy, 9 November, 1776, in which he writes to William Strachan about the manner of Hume's death. The letter concludes

I have always considered him, both in his lifetime and since his death, as approaching as nearly to the idea of a perfectly wise and virtuous man, as perhaps the nature of human frailty will permit.

Adam Smith [20, 21] is recognized as the father of modern economics because many of its fundamental principles made their first appearance in his pioneering work. To what extent can we trace these ideas back to Hume?

In his own lifetime, Hume [12] was recognized as one of a new breed of political economists. The essays he wrote commenting on contemporary economic debates on finance and international trade are surprisingly modern in character and it is easy to forget that the ideas they express were often being put forward for the very first time. Alan Peacock [15] has written an excellent assessment of this material which I do think can easily be bettered.³ So what I plan to do instead is to seek insights in Hume's [11, 10] philosophical works that can perhaps be seen as seeds whose final flowering appears in the work of recent winners of the Nobel Prize in Economics.

2 Rationality

Thomas Hobbes[9] said that one can characterize a man in terms of his strength of body, his passions, his experience, and his reason. In modern economics, Philo's strength of body becomes his feasible set—the set of actions it is possible for him to take.⁴ His passions become his preferences. His experience is summarized by his

¹I am grateful to the Arts and Humanities Research Council for funding this work through grant AH/F017502/.

²Although never formally acknowledged as such in Hume's lifetime because Hume believed that it would be bad for Smith's career if he were thought to have been mentored by an atheist. (Hume was certainly very skeptical indeed, but there seems to be no evidence that he was actually an atheist in the modern sense.)

³See also Schabas and Wennerlind [18].

⁴Philo and Cleanthes are protagonists in Hume's *Dialogues Concerning Natural Religion*.

beliefs. His reason becomes the set of rationality principles that guide his choice of an optimal action from his feasible set given his preferences over the possible consequences and his beliefs about matters over which he has no control.

David Hume was the first to tie down the implications for rationality within such a formulation:

Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.

In this quote, Hume [11] denies that reason can tell us what we ought to want. Contrary to Immanuel Kant and numerous philosophers before and after, Hume argues that rationality is about means rather than ends. As he extravagantly put it:

'Tis not contrary to reason to prefer the destruction of the whole world to the scratching my finger. 'Tis not contrary to reason for me to chuse my total ruin, to prevent the least uneasiness of an Indian or person wholly unknown to me. 'Tis as little contrary to reason to prefer even my own acknowledge'd lesser good to my greater, and have a more ardent affection for the former than the latter.

Modern economists have developed this doctrine into a theory that reduces rationality to nothing more than consistency. Not only must Philo's beliefs be consistent with his experiences, but his decisions (hypothetical as well as actual) must all be consistent with each other.

The Nobel Prize winner most associated with this philosophical position is Paul Samuelson [16]. David Hume [10] would probably not have approved of Samuelson's avowed aim of separating economics from psychology, but he would certainly have approved of the idea that we should pay attention to what people do rather than to what they say.

Hear the verbal protestations of all men: Nothing so certain as their religious tenets. Examine their lives: You will scarcely think that they repose the smallest confidence in them.

Rather than speculating about what is going on inside someone's head, Samuelson's theory of revealed preference assumes that we already know what people choose (or would choose) in some situations, and uses this data to deduce what they will choose in other situations. For example, Philo may buy a bundle of goods on each of his weekly visits to the supermarket. Since his household budget and the supermarket prices vary from week to week, the bundle he purchases is not always the same. However, after observing his shopping behaviour for some time, one can make an educated guess about what he will buy next week, once one knows what the prices will be, and how much he will have to spend.

With appropriate consistency assumptions, it is possible to characterize Philo's choices by saying that he behaves as though trying to maximize the value of a utility function. Von Neumann and Morgenstern [23] and later Savage [17] added the finishing touches by incorporating uncertainty into the model. With the additional consistency assumptions of what is now called Bayesian decision theory, Philo behaves as though trying to maximize the long-run average value of a utility function relative to some subjective probability distribution (Binmore [6]).

3 Utility

Hume would have been rightly outraged at the naive but popular belief among modern economists that Bayesian decision theory solves the problem of scientific induction, but one may reasonably ask how well the modern concept of utility fits with his own use of the word, since Hume is commonly held by philosophers to be the first of a utilitarian succession that continues with Bentham, Mill and (so economists believe) ends with Harsanyi [7].

It certainly seems to be true that Hume was one of the first authors to speak of utility, but he uses the word in a manner that seems to me too distant from its later usage to justify his being counted as a utilitarian at all. When he refers to the public utility of some behaviour, he seems to be talking about its general usefulness rather than something that can be quantified in the modern manner. However, his usage seems closer to the modern orthodoxy than that of Bentham and Mill, for whom utility simply meant happiness or felicity. Hume [12] occasionally mentions happiness in such phrases as:

The great end of all human industry is the attainment of happiness;

but there seems no suggestion that the ideal society is to be achieved by maximizing the sum of everybody's happiness. So I hope nobody is offering David Hume as an authority for the current craze for measuring the welfare of our nation by somehow quantifying our total happiness.

4 Equilibrium

In the context of perfectly competitive markets, Arrow and Hahn [1] argue that none of the classical authors, including Adam Smith, gave sufficient prominence to the fact that demand is as important as supply in determining equilibrium prices. But, as Alfred Marshall observed, demand and supply are like the two parts of a pair of scissors. It is only with Walras [24] that Arrow and Hahn believe the general theory of markets was finally put on a sound footing. My own view is that this desirable outcome was actually achieved only relatively recently, when game theorists succeeded in deducing Walrasian conclusions from the study of the Nash equilibria of certain games of incomplete information.

A Nash equilibrium is a profile of strategies—one for each agent—in which each agent's strategy is a best reply to the strategies of the other agents. Its relevance to economics lies in the fact that any trial-and-error adjustment process that always moves in the direction of higher utilities for all agents can only stop at a Nash equilibrium. John Nash [14] was awarded a Nobel Prize in 1994 for exploring the properties of the idea that now bears his name.

To what extent was something resembling Nash's notion of an equilibrium anticipated by previous thinkers? In reading Hume and earlier scholars such as Hobbes, one often feels that they are on the very edge of formulating a modern definition

of an equilibrium, but somehow they never quite make it. Hume [12] speaks of the balance of power and the balance of trade, using the analogy of water finding its own level in the latter case, but the emphasis both with Hume and others seems always to be on the process by means of which equilibrium is achieved rather than the structural properties of the end-product of the process. But without any information on the latter, how could one attempt any comparative statics?⁵

Some people speak of a Cournot-Nash equilibrium to recognize that Cournot anticipated Nash by more than a hundred years. Why was Cournot's work largely ignored by his contemporaries? My guess is that, like Hume and seemingly everybody else, they were focused on the equilibrating process rather than the equilibrium itself. Cournot did describe such a process (nowadays known as Cournot adjustment), but it is not particularly realistic. And who cares where an unrealistic process is going? By contrast, Nash [14] unconsciously allowed the profession to refocus its attention on the properties of equilibria independently of the question of how they are achieved simply by not raising the question at all.⁶ After a delay of more than twenty years, the result was a flowering of *static* economic models that heralded a new approach to imperfect competition that continues to this day.

I do not see any direct link with this work in David Hume's writings, but I think we must nevertheless credit Hume's determined naturalism with finally squashing the idea that some supernatural or metaphysical influence is necessary to explain how we manage to operate our societies. He understood that it is legitimate to explain that Philo did this because Cleanthes did that, and Cleanthes did that because Philo did this. The reasoning is circular, but that is the nature of equilibrium reasoning.

5 Folk Theorem of Repeated Game Theory

The idea that reciprocity is the mainspring of human sociality goes back nearly as far as there are written records. When Confucius was asked to encapsulate the "true way" in a single word, he is said to have replied *reciprocity*. Here is David Hume's

⁵In comparative statics, one examines how an equilibrium outcome varies with the environment.

⁶The editor removed Nash's brief comments on this issue as being of no interest! However, the literature on evolutionary game theory now confirms Nash's intuition that the fine details of an equilibrating process need not matter very much. Biologists therefore often discuss evolutionarily stable strategies (which necessarily generate symmetric Nash equilibria) without any reference whatever to the evolutionary process that generates them.

[11] explanation of how it works:⁷

I learn to do service to another, without bearing him any real kindness, because I foresee, that he will return my service in expectation of another of the same kind, and in order to maintain the same correspondence of good offices with me and others. And accordingly, after I have serv'd him and he is in possession of the advantage arising from my action, he is induc'd to perform his part, as foreseeing the consequences of his refusal.

When various game theorists, notably Robert Aumann [2], reinvented this idea in the 1950s, they were totally unaware of Hume's work.⁸ Since it was obvious to them that one-shot games have a limited range of application, they simply set to work to extend Nash's [14] newly minted equilibrium notion to repeated games—games played by the same agents over and over again. The result is called the folk theorem, because nobody knows to whom it should properly be attributed. It says that all interesting outcomes of a one-shot game are available as Nash equilibria in indefinitely repeated versions of the game—provided that the players care enough about the future and have no secrets from each other. No external enforcement agency is therefore needed to enforce contracts in such repeated situations, because nobody has an incentive to be the first to deviate from the terms of a contract that requires everybody to operate a Nash equilibrium.

The proof follows the lines proposed by Hume. The essential idea is that any deviation from a contract will be followed by some kind of punishment by the other players. The punishment may simply consist of withdrawing future cooperation as Hume suggests, but it could also be something much more pro-active. In his usual prescient style, Hume points out that if one player deviates by victimizing another, the punishment need not be administered by the victim, but by some third player—a point commonly overlooked by those social scientists who think that all one needs to know about reciprocity is encapsulated in the strategy TIT-FOR-TAT.⁹

Hume [11] also understood that the number of players is important, because it is much easier for people to keep their bad behaviour secret in a large society:

Two neighbours may agree to drain a meadow, which they possess in common; because 'tis easy for them to know each other's mind, and each may perceive that the immediate consequence of failing in his part is the abandoning of the whole project. But 'tis difficult, and indeed impossible, that a thousand persons shou'd agree in any such action.

Elinor Ostrom won her Nobel Prize partly for exploring the political institutions that societies have evolved for coping with the monitoring problem in large societies that I think Hume must have been the first to identify in such clear terms.

⁷Behavioral economists would say that Hume is talking about *weak* reciprocity in this passage, whereas the laboratory evidence points to what they call *strong* reciprocity, according to which people do not reciprocate for instrumental reasons as Hume proposes, but because they like reciprocating. As in much else, their claims about what the evidence demonstrates are controversial.

⁸Robert Trivers [22] rediscovered the notion in 1971. He called it reciprocal altruism.

⁹The strategy says to start by cooperating in the repeated Prisoner's Dilemma, and to copy whatever the opponent did in the previous round thereafter (Axelrod [3]).

6 Convention

Tom Schelling won the Nobel Prize in 2006 alongside Robert Aumann. He studied the games of coordination of which social life largely consists. Like the Driving Game most of us play every day, such games have multiple Nash equilibria. Indefinitely repeated games provide an even better example, since the folk theorem tells us that they have an infinite number of (efficient) equilibria. Since rationality is helpless in deciding between such matters as whether we should drive on the left or the right, Schelling argued that we need social norms or conventions (which he called focal points) to ensure that we all coordinate on the same equilibrium. Or to put it more strongly, social norms can be seen as devices for selecting among equilibria in games with many equilibria.

There is no mention of David Hume in Schelling's [19] *Strategy of Conflict* but Hume [10] had made essentially the same point long before. He even commented on the equivalent of the Driving Game in the Edinburgh of his day:

Waggoners, coachmen, and postillions have principles by which they give way; and these are chiefly founded on mutual ease and convenience. Sometimes also, they are arbitrary, at least dependent on a kind of capricious reasoning like many of the reasonings of lawyers.

However, Hume took the argument much further, thereby disgracing himself in the eyes of most modern philosophers¹⁰ by supposedly reducing the fundamental principles on which our societies are based to the same status as traffic signals. Here is what is perhaps the most quoted passage of all from Hume's [11] work:

Two men, who pull the oars of a boat, do it by an agreement or convention, although they have never given promises to each other. Nor is the rule concerning the stability of possessions the less derived from human conventions that it arises gradually, and acquires force by a slow progression, and by our repeated experience of the inconveniences of transgressing it. . . . In like manner are languages gradually established by human conventions without any promise. In like manner do gold and silver become the common measures of exchange, and are esteemed sufficient payment for what is of a hundred times their value.

The next passage extends the same reasoning to the authority of governments:

Nothing appears more surprising to those who consider human affairs with a philosophical eye, than the ease with which the many are governed by the few, and the implicit submission with which men resign their own sentiments and passions to those of their rulers. When we inquire by what means this wonder is effected, we shall find that, as Force is always on the side of the governed, the governors have nothing to support them but opinion. It is therefore on opinion only that government is founded, and this maxim extends to the most despotic and most military governments as well as to the most free and most popular.

¹⁰Immanuel Kant was supposedly awakened from his intellectual slumber by reading a commentary on Hume. His denials of Hume's naturalism are still the prevailing orthodoxy among moral philosophers (particularly in the USA).

In short, the authority of popes, presidents, kings, judges, policemen, and the like is just a matter of convention and habit. Philo obeys the king because such is the custom—and the custom survives because the king will order Cleanthes to punish Philo if he fails to obey. But why does Cleanthes obey the order to punish Philo? That is to say, who guards the guardians? However, I do not think that Hume had an answer to this perennial question, which I believe is only to be found in the versions of the folk theorem that replace Nash equilibria by subgame-perfect equilibria (Binmore [4, p. 85]).

The philosopher Lewis [13] pursued Schelling's line in his famous book *Conventions*. The book gives David Hume proper credit for being first on the scene, and I suspect it was largely responsible for restoring Hume's reputation among analytic philosophers as one of the truly great thinkers. But Lewis takes Hume's iconoclastic view that nothing justifies even our most sacred conventions but commonly held opinion much too far. He claims that conventions cannot work unless they are common knowledge, which means that everybody must know the convention, everybody must know that everybody knows, everybody must know that everybody knows that everybody knows, and so on. But such a severe requirement would require us to say that it is not conventional to speak French in France! (Binmore [5])

I think Lewis's mistake is to try to use rational (or eductive) game theory as a framework within which to fit Hume's notion of a convention instead of evolutionary (or evolutive) game theory, which is much better suited to the task. As Hume [11] says: conventions arise gradually, and acquire force by a slow progression, and by our repeated experience of the inconvenience of transgressing them.

7 Mechanism Design

Here is what is perhaps the most misunderstood of all passages in Hume [11]:

In constraining any system of government and fixing the several checks and controls of the constitution, every man ought to be supposed a knave and to have no other end in all his actions than private interest.

Hume is not saying that every man *is* a knave. He is saying that, when designing a permanent organization, one should accept that if power can be abused, then it will eventually be abused. Once a climate of abuse has become habitual, even good and generous people find it hard to resist the disapproval of their fellows by trying to climb out of the basin of attraction of the local convention. Even those who initiate the abuse tell themselves stories that excuse their abusive behaviour in this particular case. The recent scandal over MPs expenses is an example with a farcical flavour, but there is no humour to be found in the reports of the abuse of helpless old people in care homes, or the callous neglect of patients in NHS hospitals.

Insofar as it is possible to deal with these problem at all, Hume argues that organizations should take the eventual emergence of knavery for granted and set up rules and incentives that minimize the extent to which knaves can prosper. I do not

know to what extent the founding fathers of the American Republic were conscious of their debt to Hume when they wrote a constitution that split the exercise of power between three entities that were intended to be independent of each other, but whether they knew it or not, they were following Hume's prescription.

The same goes for Leo Hurwicz, Eric Maskin and Roger Myerson in their work on mechanism design that won them a Nobel Prize in 2007. Mechanism design takes up Hume's challenge by designing games in which the assumed knaves to whom power is delegated are treated as players. The checks in the constitution are the rules of the game. These are used to prevent a player going off the rails in situations that the designer can effectively monitor and evaluate. However, it is the controls that are more important, since these apply to decisions that the designer can't monitor, or doesn't know how to evaluate. To get the players to act in accordance with the designer's aims rather than their own in such situations, it is necessary that the payoffs of the game be carefully chosen to provide the right incentives. The long-run behaviour of the agents is then predicted by finding a suitable Nash equilibrium of the game. All the players are thereby modeled as simultaneously "acting like knaves" by seeking only their own personal interest.

Mechanism design is perhaps the most successful contribution that microeconomic theory has made to economic practice ever. Its use in designing big-money telecom auctions has been particularly important. For example, the money raised at the British 3G auction in the year 2000 would have been enough to take 10p of the rate of income tax in the following year—if it had not been largely wasted on ineffectual meddling in the NHS.

8 Behavioral Economics

Samuelson's attempt to separate economics from psychology was hailed in its time as a major advance, but is now under attack from behavioral economists who feel that the time has come to bring psychology back into economics. Their position on this subject seems more than a little inconsistent to me, since one of their avowed intentions is to dispense with the "selfishness axiom" on which their more extreme exponents insist that neoclassical economics is based. (Henrich *et al* [8]). But much of the point of Samuelson's theory of revealed preference would be lost if its function were merely to differentiate between the various ways that people might exhibit their supposedly selfish natures.

In particular, there is nothing in the foundational assumptions of neoclassical economics (or in the classical economics to which behavioralists have partly reverted) that denies that people may have social or other-regarding preferences that reflect their concern for people outside their circle of family and friends. Game theorists can handle such other-regarding preferences without any difficulty simply by building any social inclinations of the players into their payoffs in the game to be studied. As the Chicago school used to say: *De gustibus non est disputandum*.

It is true that experiments aimed at confirming or denying economic predictions

in the laboratory were very badly received at first. I recall my own early attempts being scornfully dismissed with the observation that I was so ignorant that I didn't even know that economics is not an experimental science. But those days are long past and experimental work is now part of the economic mainstream, with a Nobel Prize going to Daniel Kahneman and Vernon Smith in 2002. However, there is seldom any reference to David Hume's strong interest in human psychology in this work, although he was the leading figure in what foreigners called the British psychological school of philosophers.

I believe that Hume's [11] emphasis on the human capacity of sympathizing with others is particularly important:

No quality of human nature is more remarkable, both in itself and in its consequences, than that propensity we have to sympathize with others, and to receive by communication their inclinations and sentiments, however different from, or even contrary to our own.

The idea is the basis of John Harsanyi's [7] theory of interpersonal comparison of utility that is one of the two foundational planks of his revival of utilitarianism in recent years. (He got his Nobel Prize in 1994.) However, more on David Hume's views on sympathy (and empathy) would be inappropriate here since Alan Kirman is to give a companion lecture entirely devoted to this subject.

9 Conclusion

This lecture has been an attempt to look beyond David Hume's prescient contributions to what was then called political economy, and to focus instead on the manner in which his sceptical philosophical outlook became embedded in the foundational assumptions of modern economics. Perhaps better scholars than I could ever be will be prompted to take up the topic and give it the close textual attention it properly deserves.

However, one cannot close an assessment of Hume's work without commenting on David Hume as a great human being. Here is what I said about him at the end

of Chapter 3 of my *Natural Justice* (Binmore [4]):

As the ancient skeptics taught, contentment is possible without the need to cling to comforting beliefs. As proof, we have the example of David Hume who lived an entirely admirable life without any belief in the supernatural. His personal example shows that nobody need feel gloomy because life has no ultimate purpose, or because conventional conceptions of moral responsibility are built on foundations of sand. So what if our fine feelings and intellectual achievements are just the stretching and turning of so many springs or wheels, or our value systems are mirrored by those of chimpanzees and baboons. Our feelings are no less fine and our values no less precious because the stories we have traditionally told ourselves about why we hold them turn out to be fables. In discarding the metaphysical baggage with which the human race bolstered its youthful sense of self-importance, Hume taught us that we throw away nothing but a set of intellectual chains.

Far from being dehumanized or dispirited, Hume was the most civilized, companionable, and contented of men—especially when compared with neurotic oddities like Rousseau or Kant, from whom the human race usually seeks inspiration on how best to live. Even on his deathbed, Hume retained his good humor, totally disarming Samuel Johnson's biographer, James Boswell, when he tactlessly quizzed him on how it felt to be at death's door without a belief in the afterlife. As Boswell reports, "Mr Hume's pleasantry was such that there was no solemnity in the scene, and death for the time did not seem so dismal."

In a less ghoulish deathbed conversation, Hume told Adam Smith that he had been reading Lucian's *Dialogues of the Dead*, in which various notables offer reasons to Charon why they shouldn't be ferried across the Styx. When his own time came, he proposed to say, "Have a little patience, good Charon, I have been endeavouring to open the eyes of the Public. If I live a few years longer, I may have the satisfaction of seeing the downfall of some of the more prevailing systems of superstition." But then, says Hume, Charon would lose all patience, "You loitering rogue, that will not happen these many hundred years. Do you fancy I will grant you a lease for so long a term? Get into the boat, you lazy, loitering rogue."

David Hume was right to predict that superstition would survive for hundreds of years after his death, but how could he have anticipated that his own work would inspire Kant to invent a whole new package of superstitions? Or that the incoherent system of Marx would move vast populations to engineer their own ruin? Or that the infantile rantings of the author of *Mein Kampf* would be capable of bringing the whole world to war?

Perhaps we will one day succeed in immunizing our societies against such bouts of collective idiocy by establishing a social contract in which each child is systematically instructed in Humean skepticism. Such a new Emile would learn about the psychological weaknesses to which *Homo sapiens* is prey, and so would understand the wisdom of treating all authorities—political leaders and social role-models, academics and teachers, philosophers and prophets, poets and pop stars—as so many potential rogues and knaves, each out to exploit the universal human hunger for social status. He would therefore appreciate the necessity of doing all of his own thinking for himself. He would understand why and when to trust his neighbors. Above all, he would waste no time in yearning for utopias that are incompatible with human nature.

Would Adam and Eve be happy in such a second-best Garden of Eden? On this subject at least, Hume's own experience is immensely reassuring. We don't need to tell ourselves lies to be content. We don't need to believe that utopia can be achieved by some quick fix. It isn't even necessary to be optimistic that things will get better in the long run. We need only the freedom to create a stable micro-society within which we can enjoy the respect of those whose respect we are able to reciprocate. As Hume's example shows, even death can then be faced with equanimity.

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**What would Hume make of our Current Theories and our Current Economic Predicament?
And what should we make of his views on government debt?**

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Abstract: In his essay on public credit, Hume advances two arguments in favour of government borrowing and five against. It is interesting to cast his various arguments and claims in terms of modern models, or their variants, to see how they might be formalized - and thus potentially supported, or qualified, or contradicted. Some of Hume's observations seem somewhat mistaken in the light of later and recent experience, while others appear uncannily prescient.

1. Introduction

This paper aims to do offer observations on two things: first, what Hume would make of the present predicament of economics and our economy; and second, what today's economists should make of his writing on our subject. The focus of the paper is on Hume's *Of Public Credit*, which is much less well known than his other writings on economics, yet devoted to a subject very much at the forefront of contemporary events and discussion among economists. Section 2 looks at Hume on us; the sections that follow, at us on Hume.

2. What Would Hume Make of Today's Economy and Today's Economics?

Hume was above all an empiricist philosopher. So he would surely have welcomed the growth of empirical economics, and even more, of its great lens, econometrics, one of the products of the last few decades. The concurrent growth of economic data, would undoubtedly have amazed and pleased him. As would the explosion of financial data in just the last two decades.

But Hume was, like almost everyone in our profession, a sceptic. He would have been curious about the way our models clean cut movements in variables into systematic changes linked to movements in other variables which we are (reasonably) sure about, and stochastic disturbances of which we know nothing. Are what we call "shocks" really shocks, he would ask? Could they not be the product of off-model developments we are lazily assuming away? That worry would have made him insistent on the issue of bias from variable omission in estimation. And why are we often so sure about the deterministic elements in our models, he would ask?

The increasing attention paid to model-uncertainty would have appealed to him; and so would the search for appropriate functional forms. He would find the postulation of purely linear relationships linking a few variables no more than a pardonable, preliminary step for beginners – or perhaps a useful simplification in discussion and in teaching. The general-to-specific approach, exemplified by Hendry (1974), would have been much more to his liking. That combines the wide range of possibilities as a first stage, with a systematic evidence-based selection of those statistical relationships that stand up best, in just the way he would have approved of – and the all important distinction between short run relationships, the butterflies, and the long run relationships, around which the butterflies dance.

The short-run, long-run distinction does not start with Alfred Marshall. There are traces of it in many earlier writings. In particular, Hume's analysis of the way monetary phenomena affect the macroeconomy is shot through with it. Contrast *Of the Balance of Trade*, where (big) money stock changes are held to affect nominal costs and prices unambiguously and reasonably rapidly, and *Of Interest*, which is still more emphatic on this point, with an eventual one-to-one response, with *Of Money*, with its insistence – based on observation – that the repercussions are less than one to one for quite some time. Hume would surely praise the fact that macroeconomics now embraces both short run and long run theories, both a largely Keynesian “still photograph” picture where aggregate demand matters greatly for output and jobs, and a Ramsey-type “film” where information and human behaviour make for an essentially neoclassical background to the long run dynamics.

Furthermore, it is noteworthy that Hume's macroeconomic zoo includes merchants, whom we might think of as bankers. Merchants play a subtle role in the background in *Of Public Credit*. But those animals come right out into the sunlight in *Of Interest*. There Hume argues that prosperity, low borrowing and low profits from commerce all go hand in hand with “low interest”. If merchants impose big profit margins, capital is scarce and expensive. If the feral beasts of Hume's counting houses and trading companies can transmogrify into investment bankers, that resonates powerfully with us today.

Hume was not just a philosopher and an economist. He was also an historian, too. History was his laboratory – and an object of interest in its own right. His economic writings are peppered with empirical observations about economic developments. Some are drawn from events in his own day; some from earlier occurrences, in the British Isles or Continental Europe; many go back to the classics, and biblical references. One thing Hume would definitely regret is the way students and scholars of economics – just as much as those in nearly all other disciplines - are nowadays allowed, or allowing themselves, to spurn this rich tapestry of material.

Amnesia is clouding in on Academe. We are witnessing a backwards form of cultural Alzheimer's disease, where it is the earliest memories that fade first. Academic articles win referees' approval if they bulge with protracted plaudits for other contemporary papers before getting to the point. Governments build legitimacy or foster nationalism by limiting or doctoring the study in schools of *ancien regime* events. If something is too old to have been photographed or filmed, it is banished to an oubliette peopled by a handful of intellectual geologists. If it isn't on a Bloomberg real time minute-by-minute financial data tape, as almost nothing was more than 20 years ago, hedge funders and investment bankers can't use it to ascertain the variance-covariance matrices of returns on which they hope to win their fortunes. We react to the surfeit of contemporary information by discounting or discarding earlier data, Hume would complain, just like the discounted least squares learning processes described by Cho, Williams and Sargent (2002) or Evans and Honkapohja (2001)¹.

Another aspect of empirical economics that would intrigue Hume is the way economists treat causation. Granger-causation is very similar to Humean causation: an inference to be drawn cautiously from observation of what Hume called "constant conjunction", and what we might refer to nowadays, more coyly, as "frequent consecution". But even here, Hume

¹ Although the possibility of permanent intercept or gradient shifts in one or more of the relationships in the model make this a perfectly plausible technique, and not just a way of forgetting the lessons of longer history.

might object, we have little ground for thinking that the timing of response of one variable to another must be rigid enough to be detectable by Granger causation methods.

Furthermore, the impact might be mediated through, or dependent upon, other variables, some of them possibly unseen. And expectations today of an event next week (often but not always later validated) might drive something that happens tomorrow. “Post hoc, ergo propter hoc?” Tobin (1970) once asked, in an ingenious riposte to monetarist reasoning about causal chains which actually echoed Hume; and one can level the same objection to naive interpretation of evidence that money stock changes are poorly correlated, in practice, with the kind of near-term subsequent changes in the balance of payments or exchange rates which a strict reading of Hume’s work would encourage one to predict.

Hume would admire the econometricians’ insistence, in co-integration exercises, that data span is indispensable if one is to pick up low frequency events. Pure numbers of observations confer degrees of freedom, but are not enough when big disturbances occur rarely. It is this that makes amnesia really perilous in financial markets. And Hume would surely stress the significance of this as a force that has contributed to numerous financial disasters, such as the collapse of Long Term Capital Management in 1998, and culminating in Great Financial a decade later.

Looking at our current financial and economic predicament, Hume would lament that many of our problems stemmed from excessive borrowing, particularly (but not only) by the state. He would find it ironic while that Scotland’s humbling failure at Darien led to union with England, three centuries later it was Scottish banks that played such a big role in the UK banking crisis. These were the Bank of Scotland, yoked haplessly with the Halifax; the Royal Bank of Scotland cursed by winning an absurd auction for the Dutch bank ABN Amro; and the small but grandly profligate Dunfermline Building Society. And, Hume would observe, in the excessive borrowing, some explicit but much concealed, *in good times* by a Government whose First Lord of the Treasury had been a schoolboy at Edinburgh, and Chancellor and

successor a son of the Kirkcaldy manse. Why should poor Caledonian financial stewardship, and chicanery, have led to the suspension independence in 1707, but help to revive a campaign for it in 2011, he would ask? He might reply in jest that the English have, in the main, been rather well governed since 1707, but that it would be churlish to deny them autonomy if they request it.

Much of what follows will concentrate on Hume's *Of Public Credit*. But no glance at our state's finances would be complete without at least a brief mention of the off-balance sheet shenanigans by numerous banks around the world, not just Scottish ones. Nor of the conceptually defensible, but in practice duplicitous and ruinous, "private finance initiatives". These had been invented before 1997, but it was the Blair-Brown government that exploited them to the full. Hospitals, schools, fire service buildings, prisons, and government offices were to be built and financed by private companies, and leased back to the state for 25 to 30 years.

In principle this was a sensible idea. It should not affect the public sector's net worth. But in practice, it did. This was because the advantage (the public sector administration's apparent inability to ensure the completion of construction projects to time and within budget) was purchased at an excessive cost in heavily marked up annual rental rates. To make matters worse, these were themselves bloated by other lamentable monopolistic mark-ups, traceable to contract clauses inserted by cunning lawyers, and little if any of the profits thus purloined were returned to the Treasury in corporation tax as the firms moved off-shore. The cost of borrowing from the private sector firms in this way ended up, therefore, far above rates at which the State could borrow directly from the markets. Unless Parliament were to legislate to annul the overcharging, the swollen rental charges and fees to private financiers will be no small factor behind the fiscal challenges confronting all governments in the United Kingdom today.

3. Build A Precautionary Reserve – or Borrow as Needed?

Hume starts his chapter *On Public Credit* by noting that the “modern” governments of his day tended to borrow as needed to finance extraordinary expenditures, rather than – as (in his view) wiser monarchs in classical or biblical times – amass reserves ahead from which to meet these costs as and when they arose. Was he right to be critical of government borrowing in this form?

It is natural to start with a Ricardian framework, with perfect capital markets and foresight, non-distorting taxes, and intergenerational altruism that makes decision takers act as if they were immortal. In these circumstances an irrelevance proposition follows at once. Ahead or arrears – government can do either and no real economic variable of consequence is affected by which course of action it chooses.

But taxes are not lump sum. The case for smoothing tax rates and consumption, rather than trying to balance the books each period, is unassailable when capital markets can help to spread the burden of random high outlays by government. But the bigger the imperfections in capital markets, the thinner that spreading should go.

But should the burden be prepaid or paid in arrears? If the date at which the need for extra government spending is unknown ahead, and we start the clock now, it is quite likely that the bad event will have occurred before we have amassed the reserves required to meet it. Suppose the cost of the bad event is y and that its probability at any instant is x . Hume’s advice would presumably be to build up a stock of y , in a reserve fund, and if the complications of interest and growth are set aside, do so at a rate of xy each instant.

If the hazard were constant, the chance that it would not have happened after $1/x$ time had elapsed, is $1/e$. So there is a 64% chance that we would not reach this point. In the

meantime, we might even have suffered two or more bad events. And it gets even worse if we cannot predict y and do not know how much we shall need to spend when the bad event materializes. Even x may not be known either. Both might need to be learnt over time. And learnt anew, perhaps, after structural change. Furthermore, neither x nor y may be truly exogenous, even as stochastic variables.

A stochastic but stationary version of Hume's system would be a kind of (s, S) model: we would have continuous, steady subscriptions to the fund, and occasional big withdrawals. Hume thinks of this as an inventory, where prudence imposes a floor. He suggests that prudence dictates a floor of zero: government should never "go into the red". But as the analogy with financial inventory theory suggests, where the floor actually lies depends critically on the structure of interest rates and the penalty for emergency borrowing.

Capital market imperfections can take many forms. The simplest would be a symmetric mark up on some true interest rate for any borrowing, and a markdown of similar size on lending. What that would do is inject some of Polonius into the problem: some of the extra costs posed by the bad event should be met by extra taxes levied then, even granted that this would generate some intertemporal distortions. The bigger the wedge, the greater the proportion of those costs to be paid there and then – neither ahead, nor in arrears.

We can play with that framework, however, in various ways. Let the marginal cost of borrowing be steeper than what is sacrificed by lending. Prepaying is now more advantageous than before. And the greater the cost difference, the more we should try to prepay into the fund. Similar conclusions would be reached if it were fixed rather than marginal costs that were asymmetric in this way. Another modification would be to introduce curvature into the costs of borrowing. This could arise in two ways: the marginal cost of borrowing might increase with the stock already borrowed, or with the rate at which this increases over time. Both are possibilities, too. Flow-convexity has two general implications: ex-ante, build up your fund, above what its optimum mean level would

otherwise have been; ex-post, meet more of the emergency shortfall out of current taxation. Stock-convexity makes the former still more imperative.

For Hume, the random bad event is war. This is interesting. War with other states is not a game of solitaire. In an international capital market, any borrowing you have to do will be synchronized with extra borrowing by your allies – and by your enemies, too. Bond interest rates will tend to be abnormally high on such occasions. This is an unmistakably pro-Hume effect.

On top of this, there is the chance that the war may be lost - and perhaps lost so badly that your national government topples. Defeat might even spell absorption into another state. Delinquency and default could well follow. The possibility of this may be anticipated by creditors. If so, a risk premium will be added to emergency borrowing by belligerent states. That argument supports Hume's case, too. And even if the military emergency is domestic – an insurrection, for example – questions about the regime's survival prospects continue to bubble up, and similar inferences may be drawn.

Although the resources can be switched to other purposes, building up a "war chest" can be thought of as a form of commitment or quasi-commitment. Doing so may be part of a perfect equilibrium in which a defensive state, the fund accumulator, signals the fact that it has made itself more able and willing to fight aggression. A war chest provides insurance. It may deter. It is not itself a standing army or navy, but it can easily pay for one quite quickly should the need arise. With no reserve to fund emergency defence, the threat to resist depredation or invasion might be empty.

There are some debating points to be made on the other side. One is that the authorities may earn next to nothing on the reserve they hold against the contingencies of war or other disasters. The social return on public investments that the authorities might undertake,

even in the 1750s, could well be much higher. By contrast, if the reserve is held in specie, and the monetary system is based on that, the nominal return on the reserve fund must be zero by definition (or slightly negative if the cost of guarding it is allowed for). In that case, devote the reserves to public investment – assuming that the return gained from that at least matches what has to be paid on borrowing for war.

Another anti-Hume canard is the spectre of dynamic inefficiency, which can conceivably arise in an economy with distortions, or non-optimizing behaviour, or finite horizons. This happens when the rate of growth exceeds the rate of interest. In that case the authorities and the public can enjoy the ultimate free lunch, of raising consumption opportunities for every date by a judicious act of depleting some of the capital stock. This notion is sometimes advocated as a case in favour of pay as you go pension systems, as opposed to fully funded ones. And there are periods of history, such as the 1950s and 1960s, and many more recent years until the Great Crash of 2008, when many nations' rates of economic growth ran ahead of both ex-ante and ex-post relevant measures of real rates of interest. This said, there other periods, such as the century to 1914, or the 1980s, or the last few years, when the reverse is true; any systematic excess of growth over interest would render the series of discounted income for many asset non-convergent; and a wide portfolio of different macro theories points strongly in favour of dynamic efficiency².

The third observation that appears to go against Hume stems from the very fact he stresses – modern governments *do* borrow to balance the books in emergencies, rather than drawing down a reserve. The boundary between the normative and the positive is ill defined and apt to shift – and arguably, nowhere more than in the related fields of (modern) political economy and public economics. If this is how most governments do in fact behave, can we be so sure they are mistaken? The best retort to this probably comes from Hume himself³.

² See Sinclair (2011) for example.

³ Hume (1759, II: IX).

1. “It is very tempting to a minister to employ such an expedient [borrowing], as enables him to make a great figure during his administration, without overburthening the people with taxes, or exciting any immediate clamours against himself... “

In other words, politicians are myopic, and tend to apply a higher discount rate than the citizens of the country where they hold sway. This view (of some politicians) is richly endorsed by Besley (2006), and Besley and Persson (2011), among others.

Most governments today do have debts. But they also have assets. It is net debts that surely matter most in any modern discussion of Hume’s views. Here the picture is complex; many of the assets are hard to value, precisely because they are not marketed; but that does not make them valueless. There are some states with next to no gross debt, and substantial net assets. These include many oil exporters (Norway, Saudi Arabia and other Gulf states, and more recently, Russia) as well as a very small number of oil importers, such as Singapore, which have consistently followed Humean fiscal principles.

The oil exporters are in a special position, since they are selling an exhaustible resource – an irreplaceable capital asset – and not a standard product or service that could keep being produced indefinitely. Selling oil, or any fossil fuel is a portfolio decision. And since a claim on metals in the ground resembles one on oil in the ground, their flows of extraction, and export, are quite similar, especially if they are used up in production and not capable of being recycled. So such rights to revenue as the natural resource exporting government may enjoy are an asset too. They are not something to be squandered quickly on ephemera, but to be devoted to a modest but sustainable flow of consumption captured, approximately, by the real rate of interest.

One general point of importance that emerges from considering these issues is how wise Hume is to recognize that government spending is liable to undulate, and how unwise it

would be, as Hume himself implies, to aim to meet most or all of the extra spending in any year by attempting to adjust tax revenues in step. The case for smoothing is beyond reproach, unless capital markets are hopelessly gummed up. These lessons are sometimes forgotten in popular discussion, and even in official circles, today.

Hume's initial diatribe against borrowing by government is colourful, thought-provoking – and not short on hyperbole. He follows it by giving two more detailed arguments in favour of the issuance of government bonds, and five against.

4. The Possible Bonus from Bonds

Bonds are far easier to deal in than other income-yielding assets. Cash is convenient too, but, unlike bonds, bears no nominal interest. Hume makes these points clearly in his two arguments in favour of the existence of government bonds. He goes on to claim that the benefits merchants derive from bonds can extend to a general increase in output and capital.

This is an interesting line of thought. There are very few parallels with it in subsequent literature. Hume's ideas seem to bear some resemblance to Tobin's (1965) prediction that faster growth of nominal assets (Tobin amalgamates money and bonds) will raise output and capital per head in the long run. Tobin's model is a nice twist on Solow's, with the notion of real-for-paper capital substitution in portfolios, and an unexplained mechanism through which inflation reduces the propensity to consume. But Tobin's story, like Solow's, is incompatible with intertemporal optimizing. So it is natural to ask if we can try to express Hume's views in the somewhat more satisfying framework of a Ramsey model.

Indeed we can. Suppose agents' work hours are fixed, and preferences, endowments, and technology are all alike. Utility is increasing and concave in consumption. We have three assets: (real) currency; (real) bonds; and capital. Agents draw some pleasure not just from consumption, but also from a "reserve". The reserve consists of holdings of each, presumably reflecting the idea that they can all be used to meet emergency spending needs when necessary. Capital claims are least useful from this standpoint; and currency holdings are best; and bonds come somewhere in the middle. Holdings of currency can be used at once, and without any loss – that gives them the edge as reserve assets over the other two. But bonds (which incidentally bear a higher return) are valuable too, because they can be liquidated quickly and at modest charge; and because they can be offered readily as collateral for an immediate loan.

Titles to capital are inferior in these respects. Valuation may be difficult, and the market for them rather thin. For convenience, let us assume that Inflation is zero, at least in the steady state, and also that (real) currency gives an extra source of utility as well (that is helpful to limit the substitutability between currency and bonds, and tie down the rate of interest on bonds). Inflation might be zero on average because currency is specie, or credibly linked to it, as in Hume's day; or else we might have all adopted (and be known to stick to) the zero inflation target recommended in Woodford (2003) as the one that minimizes the distortions associated with price disparities in a Calvo-Dixit-Stiglitz world⁴. For convenience, utility is additively separable in three goods, therefore: consumption; real money; and the reserve. All three marginal utilities are positive and diminishing. Output is increasing and concave in capital. Interest charges on government debt are financed by total seignorage (on bonds and currency) and by a lump sum transfer. The system is assumed to be stable, with interactions from off-diagonal effects dominated by diagonal effects. Households choose paths for their three assets and consumption to maximize an

⁴ Dixit and Stiglitz (1977) pioneer the standard model of monopolistic competition, a simplified version of which lies at the heart of most popular contemporary macroeconomic models. Calvo (1983) suggests that temporary price stickiness be treated as a stationary, known, uniform, and serially uncorrelated non-unitary probability that any firm will be given the opportunity to alter its nominal price in any period. See Eichenbaum and Fisher (2007) for a broadly favourable appraisal of the Calvo story. Hume would surely be rather pleased by the Calvo doctrine, since it would build a bridge between the short run effects of monetary expansion that Hume describes in *Of Money*, and the long run story he told so elegantly in *Of the Balance of Trade*.

infinite stream of utility discounted by a given rate of impatience, and follow a saddle path towards a unique steady state. Population and technology are stationary and there is no depreciation. The endogenous variables are consumption which equals output in the long run; the capital stock on which it depends, and its marginal product; the interest rate on bonds; and the stock of real money. The long run real bond stock is a policy variable chosen by the authorities – and that is what we, like Hume, are especially interested in. What happens in the long run if this goes up?

The key long run effect will be a fall in the marginal utility of the reserve. So capital claims lose a little of their attractiveness. The long run stock of capital drops, raising its yield. So the gap between the rates of time preference and profit falls. Steady state output and consumption are reduced. Short term dynamics are complicated, and depend *inter alia* on the functional forms for utility and production, as well as on what it is that has generated the need for borrowing. But consumption tends to jump, temporarily, in order to generate dissaving required to bring capital down.

The magnitude of these long run effects tends to shrivel up to nothing in two cases. One happens when the weight of capital in the reserve becomes negligible. The other occurs when our assumption of zero inflation is replaced by Friedman's (1969) optimum quantity of money, more recently strongly supported, among others, by Lagos and Wright (2005) which prescribes that prices trend downwards at the real rate of interest. In such circumstances, making real currency a free good expands its quantity towards infinity, and the marginal utility of the reserve falls to zero, raising capital's marginal product up to the rate of impatience. So this means that the non-neutrality of bonds arises only when inflation is not first best. And the long run utility effects of extra real bonds (which are ambiguous in sign away from Friedman's optimum) will vanish when currency is free.

Thus far we have turned Hume's second benefit from bonds on its head: at least as far as long run output is concerned, more government debt is contractionary in the long run. But

it is not hard to modify the story a bit and find circumstances when Hume's intuition is supported. Scrap the idea of a reserve which agents like. Replace it by the notion that holdings of real currency, and to a lesser extent bonds, assumed now to be an imperfect substitute for real money, save the agents some of the time that would otherwise be devoted to searching for trading partners, transacting, and making payments. Suppose that "shopping time" is decreasing and convex in these two assets - not capital this time. Less time spent shopping means more time spent at work. Output depends explicitly on both labour and capital now; assume that perfect competition reigns, and that the production function has standard properties.

In the long run, capital will be taken up to the point where its marginal product equals the rate of impatience. But its marginal product depends on the capital-labour ratio: extra labour raises it. Imagine that the rate of inflation is zero – or anything greater than in Friedman's optimum. Real money holdings are finite. The first order, long run effect of additional bonds, the legacy of a sequence of budget deficits, will be to *lower* shopping time. Labour rises. So, in time, will capital – and by a common proportion. Long run consumption and output rise by the same ratio. And utility will rise in the long run as well. Hume's insight is vindicated. There is just one qualification: extra bonds bring these gains only when the agents are not already saturated with real money, which it is convenient to assume they will be in Friedman's optimum when money is free.

The only honest conclusion about Hume's benefits from bonds, therefore, is the inference to be drawn so often from economic models, old and new: "It all depends".

5. The First Possible Snag: Burgeoning Cities, Burgeoning Debts - and a Default Scare that Stops Revolution?

The first against strikes the modern reader as odd. State debts appear to accumulate during a period of migration to the capital city. A populous capital city threatens disorder. But the rentiers, who receive interest on what they have lent the government, dwell there too. These creditors of the state see that civil unrest might lead to a collapse of the government on which their income depends. So they will seek to defend the state against the mob, something Hume welcomes.

True, a new regime might dishonour prerevolutionary debts. Czarist Russia is the classic case. But most of the bondholders who financed the Trans Siberian Railway, probably still the world's greatest single investment project, lent on the bourses of Paris or Berlin. They, and the fortunes they stood to lose, may have stiffened the will of western powers to support the white army against the Bolsheviks. But in this case to no avail. Twenty five years later, the great surprise hyperinflations in China and Hungary were engineered by the incoming communist authorities as a simple device for impoverishing the bourgeoisie and annihilating the real value of bonds held domestically. More often, however, post-revolutionary governments perceive a pressing need to borrow. They are much more inclined to renegotiate old debts, or even continue flows of interest on them, than to disavow them - and instead, to attempt recovery of the riches secreted by ousted tyrants.

Be this as it may, as an aside, one can say that Hume's interest in the economics of cities would surely make him approve warmly of much current writing on the subject. The texts by Kahn (2010) and Fujita, Krugman and Venables (2001) would certainly interest him, and he would be delighted that Krugman's insights have recently received a ringing empirical endorsement by Handbury and Weinstein (2011).

There is one strand in Hume's argument that does strike a chord. Migration from the countryside to the capital city has accelerated since he wrote, in many countries, rich and poor. In the European Union, the phenomenon has been most pronounced in Greece, Ireland and Portugal. The extraordinary construction boom that accompanied it was

matched by record borrowing from banks by house purchasers and developers, sustained in the Greek case, at least, by woefully deficient tax revenues and over-optimistic private sector perceptions of disposable income. Large government budget deficits, part concealed, lay at the core of the problem. For Ireland, by contrast, it was the banks that overextended themselves in the property boom, while the state's finances, hitherto robust, were to be poisoned suddenly by its guarantee of their deposits, necessary to thwart a run, in 2008. Portugal's predicament differed again: here a leading difficulty, in the eyes of many, was an increasingly overvalued currency and payments deficits that would no longer, once in the Euro-zone, lead to monetary tightening not unlike the form Hume had sketched out in his *Balance of Trade*, but rather subject to the positive feedback mechanism known as the Walters Critique⁵.

A further difficulty all three countries shared was lingering memories of faster inflation than in Germany, whose strict inflation-fighting traditions were inherited and absorbed by the European Central Bank. The three had become habituated, unlike Germany, to a tradition of high nominal interest rates, and mortgages with flat nominal amortization time-profiles, which, in the past, had been associated with pronounced front loading and high nominal debt servicing costs in the early years. Many lender and borrowers were delighted when monetary union⁶ brought nominal rates down, but often failed to realise that the lower initial nominal and real costs of servicing a mortgage were offset by higher real repayments later on. The need to restrain commercial bank lending for construction and house purchase that could be traced to this type of myopia was recognized by the Bank of Spain: hence the dynamic provisioning on which she insisted, despite furious protests and lobbying from the lenders. This was to save her banks from catastrophe, and her government's credit from the consequences of guaranteeing their deposits.

⁵ This is the idea that an overheating member of a monetary union – Portugal – will display higher inflation than one in the doldrums, but because the nominal interest rates are uniform, real interest rates will be lower in the overheating country, spurring additional spending and aggravating the differential inflation. See Walters (1990), and also Miller and Sutherland (1991) for a critical analysis.

⁶ Iceland reminds us, on the other hand, that Euro-zone participation was not a necessary precondition for such events.

Greece, Ireland and Portugal were less fortunate. All three have witnessed demonstrations and unrest, Hume would remind us – in opposition to the fiscal retrenchment packages that had to be introduced as a result. But the combination of profligate borrowing, migration, and, in time, a crisis of solvency has not (yet) been accompanied by disorder and revolt on anything resembling the scale in 2011 of Bahrain, Egypt, Libya, Syria, Tunisia, and Yemen, all of them countries where any migration-building boom-debt nexus is far less easily detected.

6. Hume's Other Arguments about the Adverse Effects of Government Debt

We now turn to the other things that Hume disliked about government bonds. His second argument against them stressed the similarity of bonds with paper money. Bonds are just fiat money, we would agree today, with a “can't use before” (instead of a “use by”) stamp on them. So an increase in the stock of bonds, all else equal, drives up the equilibrium price level. This point presumably makes Hume the first economist to suggest the germ of the idea now known as the “Fiscal Theory of the Price Level”. But not quite: Hume treated the stock of bonds on a par with the paper money stock, rather than its ultimate driving force, at least in the circumstances of an unsustainable structural budget deficit. So he would have enjoyed refereeing some of the disputes between its supporters (such as Woodford), critics such as Buiter (1999) and qualified supporters, such as Bassetto (2002) and Cochrane (2005).

Next comes Hume's observation that labour will either suffer from the taxes needed to pay bond interest, or pass them on in higher wage rates. If we can interpret labour as what he means by “the poorer sort” in this passage, that sounds more like a tautology than a debating point of substance. If we apply the model sketched in section 4, and imagine that the tax under consideration is a simple income tax (something unknown in Hume's day), the steady state will see the tax borne solely by labour. This is because savings are infinitely

elastic at a given after tax rate of return, so they must ultimately escape the tax completely. Bond holders and capital owners get off scot free. One way out of that depressing conclusion is to switch from income tax to an expenditure tax, which taxes the excess of all income over net investment. Old rentiers would be caught in the tax net now. Labour would escape some of the burden of the tax.

An expenditure tax is rather like a tax on consumption. In *Of Taxes*, which needs in this author's view to be read here to gain a clearer view of Hume's argument at this point, Hume opines that taxing consumption is much preferable to poll taxes. Poll tax, Hume complains, lacks what we would think of as a Laffer curve ceiling that any indirect tax will normally exhibit. And they are regressive, while consumption taxes need not be, if "necessaries of life" are exempt. Taxing consumption, in Hume's view, encourages "frugality": this gets to the heart of the advantage of expenditure tax, which removes the intertemporal distortion against saving which is inherent in income tax, and *a fortiori* in "taxes on possessions", which "have every disadvantage" except ease of collection. So Hume would have praised Kaldor (1956). To stress the point: if higher debt entails a higher income tax rate, long run capital and output must inevitably be squeezed in the Ramsey setting of section 4. But ignoring second order effects at least, a higher rate of expenditure tax does not have this feature.

Hume's fourth argument against government borrowing sounds very contemporary. He tells us that some of our government's creditors may live abroad, and hence that servicing these debts would call, in the end, for a trade surplus. The mechanism for achieving this would presumably be a lowered real exchange rate. What makes this such a sharp observation is that net claims between countries' residents are the main absentee from *Of the Balance of Trade*, coupled with its relevance to current discussions about international imbalances – not to mention the fact that this passage reveals how Hume would have smelt the rat in the Mundell-Flemming short run claim that fiscal expansion must lead to real exchange rate appreciation.

Hume's final objection to government borrowing refers to the incentive effects of receiving debt interest. These, he says, "give great encouragement to an useless and unactive life". The key point is that leisure is best treated as a normal good. Returning to the simple representative agent Ramsey model of section 4, we can infer that if debt interest balances a lump sum tax exactly, it will have no enduring effect on labour supply. But replace some or all of the lump sum tax by an income tax – or an expenditure tax – and we are left with an inescapable conclusion. This is that with increased debt interest charges, and leisure a normal good, labour supply must be reduced. But that will entail a reduction in capital's marginal product, which steady state conditions will preclude. So not just labour, but capital will fall too, in the long run, and by the same proportion if it is expenditure not income that is taxed. If income is taxed, the higher tax rate needed to pay the interest on debt will pull down capital, and long run output, even more.

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Hume on Money, Trade, and the Science of Economics
Margaret Schabas and Carl Wennerlind

This feature addresses the history of economic terms and ideas. The hope is to deepen the workaday dialogue of economists, while perhaps also casting new light on ongoing questions. If you have suggestions for future topics or authors, please write to Joseph Persky of the University of Illinois at Chicago at <jpersky@uic.edu>.

Introduction

David Hume (1711-1776) is arguably the most esteemed philosopher to have written in the English language. Many current philosophers, both in moral and political philosophy and in epistemology and metaphysics, self-identify as Humeans (Norton and Taylor, 2009). During his lifetime, however, Hume was as well known for his contributions to the human sciences, including his economic essays published as the *Political Discourses* (1752). Hume left his mark on the economic thought of the physiocrats, the classical economists, and the American Federalists. Adam Smith, who met Hume circa 1750, was his closest friend and interlocutor for some twenty-five years. Their correspondence suggests that Smith labored under the formidable shadow cast by Hume, and that this accounts partly for Smith's prolonged delay in publishing *The Wealth of Nations* (Ross 1995, 243-7).

Among modern economists, Hume's essays on money and trade have informed theorists of both Keynesian and Monetarist persuasions (see Keynes 1936, Friedman 1975, Samuelson 1980, Mayer 1980, Lucas 1996). Milton Friedman, when asked what economists had learned about monetary theory in the past twenty-five years, replied that the better question would be to ask what had been learned in the two hundred years since Hume. "Very little," he replied. "We have now a more secure grasp on the quantitative magnitudes involved; second, we have gone one derivative beyond Hume" (Friedman 1975). In a similar spirit, Robert Lucas deemed Hume's 1752 work as the "beginnings of modern monetary theory" (Lucas 1996). Even though Hume recognized that money is inherently intractable, his analyses settled the prevailing questions of his time such that money ceased, with a few exceptions, to be central to economic discourse until the early twentieth century with the work of Knut Wicksell and Irving Fisher.^{1[1]}

In this essay, we begin with Hume's monetary economics, and then proceed to spell out his theory of economic development, noting his qualified enthusiasm for the modern commercial system. We end with an assessment of his views on the scientific standing of economics, specifically his counterintuitive argument that knowledge claims in economics could be more reliable than those in physics.

Hume's Monetary Theory

Hume is best known among modern economists for his articulation of facets of the quantity theory of money. It was futile to stockpile gold within a nation, since this would only raise the overall price level, rendering imported goods more desirable, thus leading to an outflow of gold and deflation. This process, which came to be known as the specie-flow mechanism, insures that the domestic quantity of money is commensurate to its genuine level of output, and thus achieves a global equilibrium. Like the oceans, money is always at sea-level, flowing to the nation with the most advantageous exports.

While Hume's global analysis treats money as neutral, within a nation he granted money the capacity to have real growth effects during the period between an increase in the money stock and the adjustment of prices and wages.^{2[2]} This appears to be inconsistent with his specie-flow mechanism which demands an instantaneous adjustment. We have argued, albeit for different reasons, that the inconsistency is only apparent. Hume's account of an increase in the money stock distinguished between an inflow of coin from abroad due to manufacturing exports (endogenous) and an expansion

^{1[1]} The main exception was the Banking-Currency School debates of the early 1800s, but the canonical accounts of the principles of political economy relegated money to the sidelines. As John Stuart Mill characteristically maintained, there is no "more insignificant thing, in the economy of society, than money" (Mill 1848 (1965), 3:506).

^{2[2]} Hume noted that "we find, that, in every kingdom, into which money begins to flow in greater abundance than formerly, every thing takes a new face: labour and industry gain life; the merchant becomes more enterprising, the manufacturer more diligent and skilful, and even the farmer follows his plough with greater alacrity and attention" (Hume 1752, 286).

of paper money engineered by the state (exogenous) (Wennerlind 2005). Only the former monetary expansion could have beneficial consequences; the “effect of that public wealth and prosperity which are the end of all our wishes” (Hume 1752, 284). The other scenario, akin to credit-expansionist schemes such as the one undertaken by John Law that resulted in the Mississippi bubble of 1720, “can never be the interest of any trading nation” (Hume 1752, 284). Although Hume appreciated the role of banking and the issuance of redeemable paper notes in commercial nations, he adopted a cautionary stance on their over-issuance.^{3[3]}

Another way to make sense of Hume’s monetary discussion is to recognize that he took pains to present the specie-flow mechanism in the form of a thought experiment, unleashed by a hypothetical overnight doubling of the money stock. This device served to establish the neutrality of money as a propensity that was never fully instantiated (Schabas 2008b). By contrast, his account of a region with an influx of metallic money was imbedded in a real-world scenario, one in which a positive balance of trade enables the existing credit obligations to be discharged by bona fide specie. In an economy notoriously plagued by a scarcity of coins, the vast majority of which were also clipped and damaged, the actual appearance of full-bodied coins had the effect of inspiring the weavers and farmers to work with greater intensity, in part because they purchased, without resorting to IOUs, more and better quality goods from their local purveyors prior to any rise in employment, prices or wages (Perlman 1987; Schabas 2008a).

A legislator seeking to promote economic prosperity should promote manufacturing and commerce. Money, Hume believed, would take care of itself and any attempt to interfere with its natural level and diffusion would only prove counterproductive (Wennerlind 2008). It was important for Hume to encourage pecuniary transactions in place of barter, to reduce the hoarding of silver and gold, and to promote the “right use of paper-money” by which he meant privately-issued banknotes (Hume 1752, 318; see Wennerlind 2001). Government interventions, he believed, tended to induce inflation and public debt, as witnessed in the aftermath to the War of the Spanish Succession (1701-13). Most government debt was prompted by military expenditures, and those tended to undermine the best path to peace and prosperity, namely trade. Even if Britain managed to prevail in its military conflicts, it would most likely collapse due its ever-burgeoning debt: “either the nation must destroy public credit, or public credit will destroy the nation” (Hume 1752 (1985), 360-1; see Hont 1993).

Hume on Commercial Modernization

Hume is difficult to categorize. He did not fully subscribe to any of the prevailing eighteenth-century schools of thought such as the mercantilists or the cameralists; nor could he rob Adam Smith of his place as the founder of classical political economy. Although Hume explicitly sought laws pertaining to such economic phenomena as money and prices, trade and commerce, he did not offer a full and systematic economic theory, at least as we know it. To fully appreciate his economic vision, one must take the trouble to join his essays of 1752 with his other books. His *Treatise of Human Nature* (1739-40) contains a rich and trenchant account of human agency as well as insights on the nature of contracts, property, and money (see Wennerlind 2001; Sugden 2005). Hume’s multi-volume *History of England* (1754-62) attends throughout to economic conditions and, more significantly, forges a coherent narrative of the advent and growth of modern commerce that celebrates its civilizing and salutary effects (see Wennerlind 2002; Wootton 2009).

When seen in its entirety, Hume’s dynamic and generally favorable account of the rise and spread of commerce across the globe also raises fundamental questions about the significance of wealth for human flourishing. For example, while he championed certain kinds of luxury consumption as sources of pleasure and as incentives to industriousness, he also pointed out that there were other kinds of “feverish, empty amusements” that soon “draw ruin upon us, and incapacitate us for business and action” (Hume 2000a, 611). Certainly, “the most expensive luxury” is inferior to the enjoyment of “a poem or a piece of reasoning” (Hume 2000b, 5). A pursuit of luxury that did not leave enough time for “ambition, study, or conversation, is a mark of stupidity, and is incompatible with any vigour of

^{3[3]} Hume rubbed shoulders with many of Scotland’s leading bankers and merchants and thus learned how merchants benefited from the full negotiability of their bills, as well as novel lines of credit (Hume 1985, 319-20). Hume was consistently critical of paper money backed by public credit, such as the Bank of England bills and Exchequer notes, because there was no inherent discipline governing their issuance (Hume 1752, 352). During his employment at the British embassy in Paris in the mid-1760s, Hume participated in the settlement of the notorious playing cards used as money in Quèbec and thus witnessed these problems first hand (see Rotwein 2007, 215; Wennerlind 2008; Dimand 2008).

temper or genius.”^{4[4]} Hume worried about the human propensity for greed; in his words, avarice is “insatiable, perpetual, universal, and directly destructive of society” (Hume 2000a, 491-2). But he also sincerely sought a higher standard of living, especially for those in the middle station, and envisioned that the right kind of manufactured luxuries would eventually become conveniences and even necessities as wealth expanded, stimulated by industry, prudence, and the accumulation of property.

Hume championed higher wages, arguing that a healthy remuneration was the best incentive for diligence and ingenuity and that higher levels of consumption tend toward greater happiness, at least up to a point. While conservative in temperament, he discerned that at the margin, higher incomes brought more utility to the poor than to the rich (Hume 1752 (1985, 265). He saw that the low price of capital was generally coupled with high wages, in his view because of the abundance of capital in a flourishing state. Hume thus stressed the importance of capital accumulation, including efforts to foster human capital in the form of both knowledge and virtue. “We cannot reasonably expect, that a piece of woollen [sic] cloth will be wrought to perfection in a nation, which is ignorant of astronomy, or where ethics are neglected” (Hume 1985, 270-1). Arguing that there was an “indissoluble chain between industry, knowledge, and humanity,” Hume further suggested that modern commerce had enhanced our capacity for honesty, probity, sociability, and politeness in both the private and public spheres. This enhancement of virtue contributed to the overall stock of trust, as evidenced by the increased circulation of fiduciary notes, the shift to wholesale market contracts, and the diminution of haggling (see Ignatieff 1984; Schabas 1994; Boyd 2008).

Hume believed that it was in the interest of all nations to undergo commercialization and that, once part of the fraternity of trading nations, a kind of global justice would ensue. Since capital was more mobile than labor, its outflow to regions with lower wages meant that a once-developed nation could no longer sustain its economic hegemony. Hume saw this migration of economic opportunity as potentially unlimited; each nation would reach its economic height only to be superseded by another. As such, he saw that the future lay rather with America or even China. In a letter to James Oswald, Hume noted presciently that “a Chinese works for three-halfpence a day, and is very industrious. Were he as near us as France or Spain, everything we use would be Chinese” (Rotwein 2007, 198).

Although cosmopolitan by inclination, Hume’s personal experience with the underdevelopment and political instability of the Scottish Highlands figured prominently in the genesis of his economics (Emerson 2008). While he was unequivocally in favor of commercial modernization, he acknowledged that social strife was likely if the transition unfolded too quickly. He therefore tried to convince the political elite of Edinburgh to move more cautiously in the aftermath of the Jacobite rebellion of 1745. Commerce, Hume argued, could not be imposed on the region until a generation or more had enjoyed an agrarian surplus. The best policies were therefore to ensure that property and contracts were honored, and commodity taxes kept to a moderate level to promote industrious habits; manufacturing and trade would follow in their wake.

Hume granted the possibility that a wealthy country, while no longer the most powerful economically, might sustain its prosperity by maintaining the skills that enabled it to rise in the first place (see Hont 1983; Elmslie 1995). Hume pointed to the examples of Holland and England, the former for its prominence as a shipping nation and the latter as a major textile producer. In the first half of the eighteenth century, a series of pamphlets expressed the English worry that lower wages in Ireland and Scotland would hasten the demise of its cloth manufacturing (Hont 2008). In response, Hume argued that England had less to fear by dismantling trade barriers, as long as it promoted efficiency and innovation. Overall, he was in support of freer trade, although not without some qualification. In near-famine conditions, grain should be priced so as to avoid starvation, and in the case of infant industries, such as the production of linen in Scotland in the 1740s, tariffs were justified (Berdell 1996; Emerson 2008).

Hume may be at his finest in addressing the problem of the uneven distribution of wealth between nations, the so-called “rich-country poor-country question” (see Hont 1983; 2008). He weaves a tapestry that is colorful and diverse in its range across space and time, looking back to ancient Rome and forward to the Yankee supremacy. Wealth ebbed and flowed from one nation to another such that each upturn and inevitable downturn in a given nation unfolded at a rate of about three or four centuries (see Schabas 2008). But it was also possible, concomitant with these long waves, for the aggregate wealth of the globe to increase through international trade and world peace. “Nature, by

^{4[4]} Hume 1752 (1985), 269. Hume appreciated the Stoics for their account of the “empty and transitory nature of riches” (Hume 2000b, 35). Susato (2006) and Berry (2008) capture well Hume’s circumspect views on the acquisition of luxuries.

giving a diversity of geniuses, climates, and soils, to different nations, has secured their mutual intercourse and commerce, as long as they all remain industrious and civilized” (Hume 1985, 329).

Hume on the Scientific Standing of Economics

Hume’s opening essay of the *Political Discourses* aspires to devise a “science of commerce,” one with “universal propositions, which comprehend under them an infinite number of individuals, and include a whole science in a single theorem” (Hume 1985, 254). In an earlier essay of 1742, he asserts that there are some laws of politics (by which he meant political economy) that may be “almost as general and certain . . . as any which the mathematical sciences afford us” (Hume 1985, 16). Indeed, a striking characteristic of Hume’s economic writings is his categorical voice, asserting causal relations that are known “almost with certainty” or that “no one can doubt”. This is in contrast to the more skeptical tenor of his earlier writings on epistemology and metaphysics.

Hume’s inclination to upgrade the epistemic standing of economics vis-à-vis the natural sciences was based on a number of considerations. One was his allegiance to “fallibilism,” the belief that all scientific laws are probabilistic and thus subject to revision. Another was his account of our mental machinery, whereby the mind operated along a limited stock of associations or causal paths. And yet another stemmed from his efforts to secure empirical support for his theoretical claims in economics. We will examine each in turn.

Book One of Hume’s *Treatise of Human Nature* can be viewed as a systematic dismantling of the received view in natural philosophy. Hume cast doubt on the existence of atomic particles and the vacuum, and on our ability to access absolute time or velocity, “God’s sensorium” as Isaac Newton put it. Hume was also wary of the law of gravitational attraction, not its formal properties that are logically entailed by positing a central force, but the fact that we have no understanding of the purported mechanisms by which bodies attract one another. Our ideas of “power, force, [and] energy” remain “obscure and uncertain.”^{5[5]}

Hume was even more devastating about the tools by which we build our edifice of knowledge. There is no guarantee that the future will resemble the past; the world might at any moment take a radical turn in its operations. “The scenes of the universe are continually shifting, and one object follows another in an uninterrupted succession; but the power or force, which actuates the whole machine is entirely concealed from us” (Hume 2000b, 51). Hume grants that we might over time discern more underlying powers or forces, but that we will never reach the fundamental causes. He notes “how soon nature throws a bar to all our enquiries concerning causes, and reduces us to an acknowledgment of our ignorance” (Hume 2000b, 50). In sum, we cannot prove that nature is fundamentally uniform.

To find a way out of this skepticism, Hume points towards our ability to survive as a species and to regulate our conduct in the world. Our relative success in this gives us reason to hope that there is a “pre-established harmony between the course of nature and the succession of our ideas” (Hume 2000b, 44; see also Stroud 1977; Baier 1991). Our perceptual apparatus, in short, enables inferences and patterns that correspond, in part, to some veridical regularity. With repeated instances of correlated events, we start to track uniformities and thus form reliable expectations.

For Hume, scientific inquiry is a natural extension of this same process. Laws are the product of the habitual exposure to similar events for which there has been no exception, but the possibility of a single counter-example in the future must always be entertained (Hume 2000b, 47). Claims of certainty are without warrant. Nevertheless, what knowledge we possess serves to promote our functioning as creatures. Hume emphasizes that all knowledge of the external world is delimited by our human capacities and hence we must first arrive at generalizations about our behavior before developing the natural sciences: “the science of man is the only solid foundation for the other sciences” (Hume 2000a, 4; see Biro 2009).

Indeed, for Hume we ascribe a greater number of uniformities to the human realm than we do to the natural realm; “from observing the variety of conduct in different men, we are enabled to form a greater variety of maxims, which still suppose a degree of uniformity and regularity” (Hume 2000b, 65). In other words, there is no law that demonstrates the overarching uniformity of physical nature, just laws about specific uniformities, planets and pendula for example. There is, however, more

^{5[5]} Hume 2000b, 50. To Newton’s credit, he also admitted to complete ignorance on this matter. Hume noted that “nothing is more suitable to that [Newtonian] philosophy, than a modest skepticism to a certain degree, and a fair confession of ignorance in subjects, that exceed all human capacity” (Hume 2000a, 47n). Incidentally, Albert Einstein acknowledged a significant debt to Hume leading up to his 1905 pronouncements on special relativity, with specific appreciation for Hume’s sensory reductionism and eschewal of all things metaphysical (Norton 2010).

justification for the meta-induction that establishes overarching uniformity in the human realm, precisely because, for Hume, there was a larger and more varied set of supporting regularities. To put it another way, Hume believed it was more warranted to believe in the fundamental uniformity of human nature than in the uniformity of the fundamental building blocks of the physical world.^{6[6]}

Introspection served him well in this regard. Hume believed that the mind operated according to a limited set of faculties or “mental powers” and that these could be observed and ascertained by “reflection.” Once understood, the patterns of our beliefs and desires explain the patterns evinced by human actions. In the economic realm, where we deal with “the actions and volitions of intelligent agents,” we can safely assume that “the conjunction between motives and voluntary actions is as regular and uniform, as that between the cause and effect in any part of nature.” For example, a producer “expects, that, when he carries his goods to market, and offers them at a reasonable price, he shall find purchasers; and shall be able, by the money he acquires, to engage others to supply him with those commodities, which are requisite for his subsistence” (Hume 2000b, 68).

Hume believed that in economic inquiry we have the means to venture more deeply into the internal causes of the relevant phenomena than in the physical sciences, where we are well-advised to “confine our speculations to the *appearances* of objects to our senses, without entering into disquisitions concerning their real nature and operations” (Hume 2000a, 46-7). In a well-known passage that contrasts the natural and the human sciences, Hume remarks that the latter are superior “because we not only observe, that men *always* seek society, but can also explain the principles, on which this universal propensity is founded” (Hume 2000a, 258). These additional epistemic resources meant that we could be more confident about the degree of uncertainty to ascribe to claims in the human sciences than in the natural sciences.^{7[7]}

A careful reading of Hume’s economic writings reveals a systematic thinker who generated his economics not only from the armchair but also from an engagement with the world and the extant empirical record. Hume was first and foremost a philosopher, but he was also a man of the world, meeting and corresponding with merchants and bankers, statesmen and aristocrats. Accounts of his travels to France, Holland, Austria and Italy in the 1730s and 40s draw comparisons about standards of living, patterns of urbanization, and commercial practices (see Ross 2008). His economic writings reflect sustained efforts to observe and estimate features of the European economic landscape, noting price differentials for grain, taxes, duties, and interest rates.

Hume also took advantage of the inexpensive print material on commerce that became readily available during the first half of the eighteenth century; hundreds of pamphlets, broadsides, and periodicals debated the questions of trade and finance (Poovey 2008; Mokyr 2009). Whether reading the *Gentleman’s Magazine*, Jonathan Swift’s *Short View of the State of Ireland* (1727-8), or Malachy Postlethwayt’s *Universal Dictionary of Trade and Commerce* (1749), to name but a few, Hume had access to an abundance of economic data. He refers authoritatively to the leading economic indicators of his time, aggregate money supply, output, trade levels and population. He extended the methods pioneered by Edmund Halley and William Petty to estimate local populations, life expectancy, and the velocity of money (see Endres 1987; Rusnock 1999). He also made stabs at price indexing, drawing temporal comparisons on the silver price of corn. The nominal price of corn in France in 1750, for

^{6[6]} Hume is reasoning in a circle here, since he must use induction to draw this comparison of the degrees of overarching uniformity in the two realms. Newton’s law of universal gravitation might also tip the balance in favor of the natural sciences, but Hume did not see things this way (nor would his contemporaries). By the nineteenth century, philosophers such as John Stuart Mill put much more weight on the convergence and ever-increasing number of laws in natural science as the means to motivate the belief in nature’s uniformity, although he also firmly believed in the scientific legitimacy of political economy and its comparable standing to the physical sciences.

^{7[7]} Adam Smith held similar views. As a young man fresh from Oxford, he became an expert in the history of physics and astronomy and, in his first book, the *Theory of Moral Sentiments* (1759) he ridiculed the French natural philosophers for subscribing to the Cartesian system of vortices for nearly a century. No account in the human sciences, however, could “deceive us so grossly, nor depart so very far from all resemblance to the truth.” A person may describe a distant country and provide absurd fictions that he disguises as matters of fact, “but when a person pretends to inform us of what passes in our neighbourhood, . . . he may deceive us in many respects, yet the greatest falsehoods which he imposes upon us must bear some resemblance to the truth, and must even have a considerable mixture of truth in them” (Smith 1976, 313-314). Natural science is that distant country and economics our local parish.

example, was the same as it had been in 1683, but given a significant debasement of the currency, this meant that the silver price had been reduced considerably and bread was much cheaper.^{8[8]}

Hume's knowledge of classical texts similarly provided a wealth of data. In one comparison, he estimated that a mere 1.6 million pounds was needed to sustain the Roman Legions, a pittance compared to his own crown expenditures (see Hume 1985, 282-3n). Most impressive was his use of a wide array of sources to establish, contrary to the conventional wisdom of his day, the superior size of the European population of 1750 to Rome at its height (see Hume 1985, 377-464).

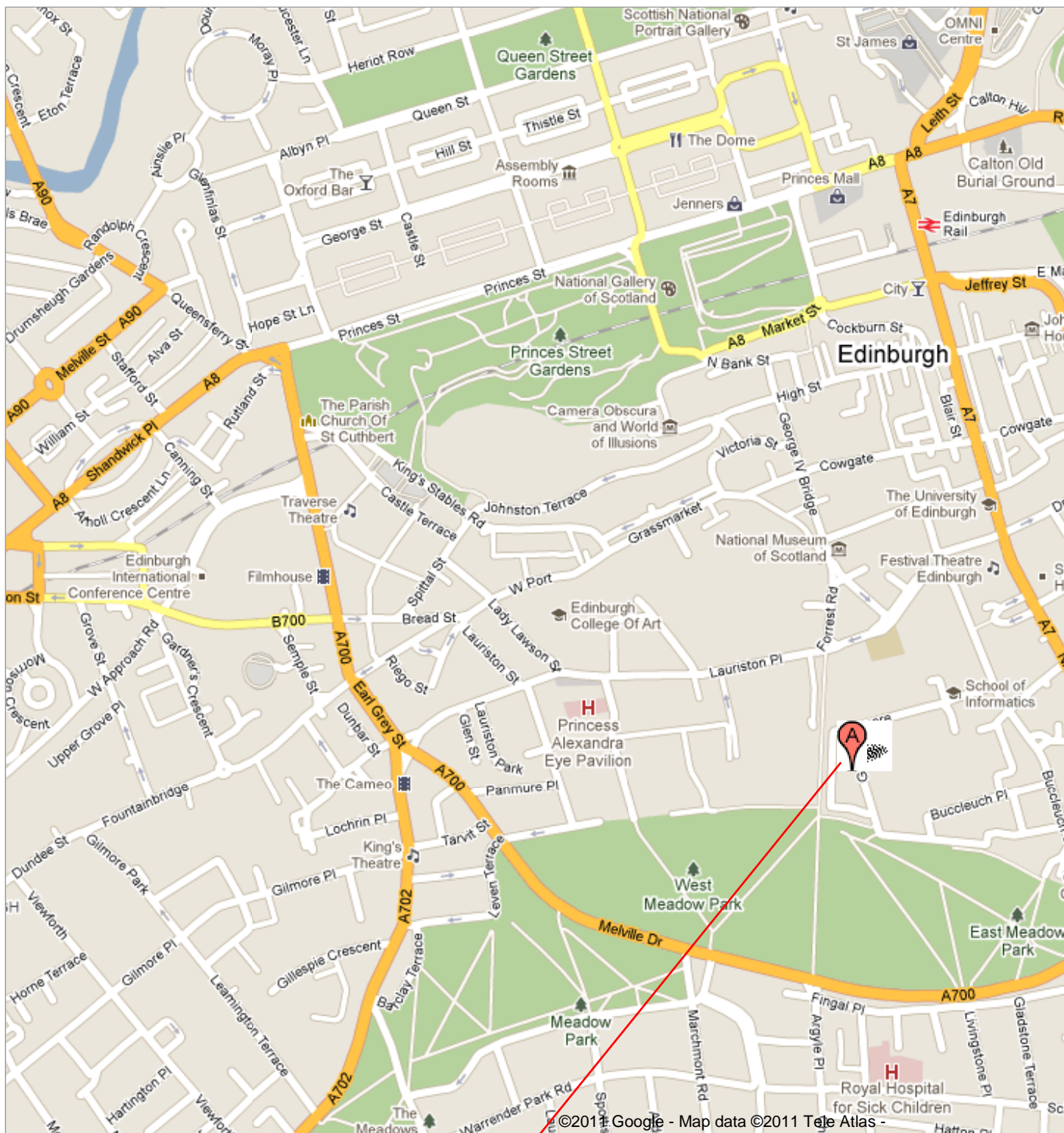
Hume's statistical bent was part and parcel of his devotion to empiricism. Although it is unlikely that Hume knew or understood Jacob Bernoulli's proof for the law of large numbers issued in 1713, he appreciated John Arbuthnot's demonstration of the unequal ratio of male and female births per annum, generated by data from London christenings for over eighty years. Arbuthnot started with an *a priori* equal ratio by sex, and then showed that, in light of his data set, the probability that this held true was vanishingly small (see Mossner 1980, 84-5; Stigler 1986, 225-6). Hume's own analysis of probability covers a wide range of insights on the subject, and he makes good use of a proto-Bayesian method in his critique of miracles (see Hacking 1978; Salmon 1978). For Hume, "a wise man, therefore, proportions his belief to the evidence," and as a result, many of his observations are couched in comparative probabilities (Hume 2000b, 84). For example, it is more probable than not that frost will occur at some point in the month of January in every country of Europe, but that the probability increases as one moves north (Hume 2000b, 47). When it comes to human actions, "a man who at noon leaves his purse full of gold on the pavement at Charing Cross, may as well expect that it will fly away like a feather, as that he will find it untouched an hour after" (Hume 2000b, 69-70). Hume goes on to say that more than one half of our quotidian inferences are of a similar nature, "attended with more or less degrees of certainty, proportioned to our experience of the usual conduct of mankind in such particular situations" (Hume 2000b, 70).

It is important to realize that Hume forged his views about the epistemic advantages of the human sciences before 1750, when it was still reasonable to challenge the legitimacy of Newtonian physics (see Schliesser 2007). The general laws of economics, while not as systematically or rigorously laid out as those in physics and astronomy, were nonetheless able to appeal to a significant quantity of evidence, and Hume made a concerted effort to deepen this body of knowledge. More importantly, Hume was *confident* that he had command of a robust system of economic relationships, one that was confirmed by observations found around the world and reaching back to antiquity. It was this confidence and sustained enthusiasm, whether warranted or not, that helped propel economic discourse along the path towards scientific respectability by the early nineteenth century.

^{8[8]} Hume took his figures from a well-known text by Charles Ferrère Du Tot but notes that he finds them suspect. Silver coins in 1683 were at 30 livres the mark and had risen to 50. Hume also remarks that debasement of the British shilling might be advisable when the time arrives for calling in the coins (see Hume 1985, p. 287-8). The silver price of corn was adopted by Adam Smith as the best index for century-by-century comparisons.



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