Heun et al. Chapt 1

Fig. 1.1 Source: Authors’ calculations using data obtained from World Bank databank (Indicator

NY.GDP.PCAP.KD.ZG accessed August 1, 2014.) [? ] <<<<<<<<

Fixed. The caption now reads:

Fig. 1.1 Five-year trailing averages of economic growth, 1960–2013.[4]

Page 3

This emerging paradigm is taking shape with the leadership of theorists such as Robert Ayres, Kenneth Boulding, Robert Costanza, Herman Daly, Charles Hall, Marina Fischer-Kowalski, and others. [\*\*\*\* others?

\*\*\*\*] In this book, we’ll refer to this approach as a “biophysical” approach to the economy.

[ Fix, Blair . (in press) Rethinking growth theory from a biophysical perspective. Springer;

Boyd, Roger, 2013. Energy and the financial system: What every economist, financial analyst and investor needs to know. Springer NY

Kopits, Steven ……..Springer.

Added Boyd, Kopits.

Added Fix, but couldn’t find a reference to the title. I copied Charlie’s reference verbatim.

Added an important reference for each author.

4 But, clean air and water, SOILS , forests, and natural areas2

Added SOILS.

p.6 activity are highly correlated, as Cleveland, <<no comma

Removed comma between “Cleveland” and “et. al.”

Writing is good so far

Thanks.

and disposal of the biological or physical (as opposed to financial

Unclear whether the above is a comment to be addressed.

\*\*\*\* Need to obtain permission to use this graph? Yes ask Science Magazine

There are several places in Chapter 1 where we need to obtain permission to use images. Will Springer (David Packer) assist with this?

Fig. 1.3 Gasoline shortages in 1973. \*\*\*\* We probably don’t need to obtain permission

to use this photograph, because it is from the US national archives. <<<<<<<<<<<<all US data is open access and permission not needed

Removed the comment about obtaining permission for the gas shortage photo.

Added a proper reference and citation.

Fig. 1.4 Oil prices and production. \*\*\*\* Recreate this graph from our own data? http://www.

theoildrum.com/node/8162 <<probably best to use oil alone.(not condensate) I have sent out some in my Energy list Serve. Best to get from Ron Patterson in Texas

We will use crude only when recreating this graph.

p. 9 But, in 1960 could worldwide the <<<<<<<oil production rate have been increased by 20% in

Now changed to “But, in 1960 could the oil production rate have been increased …”

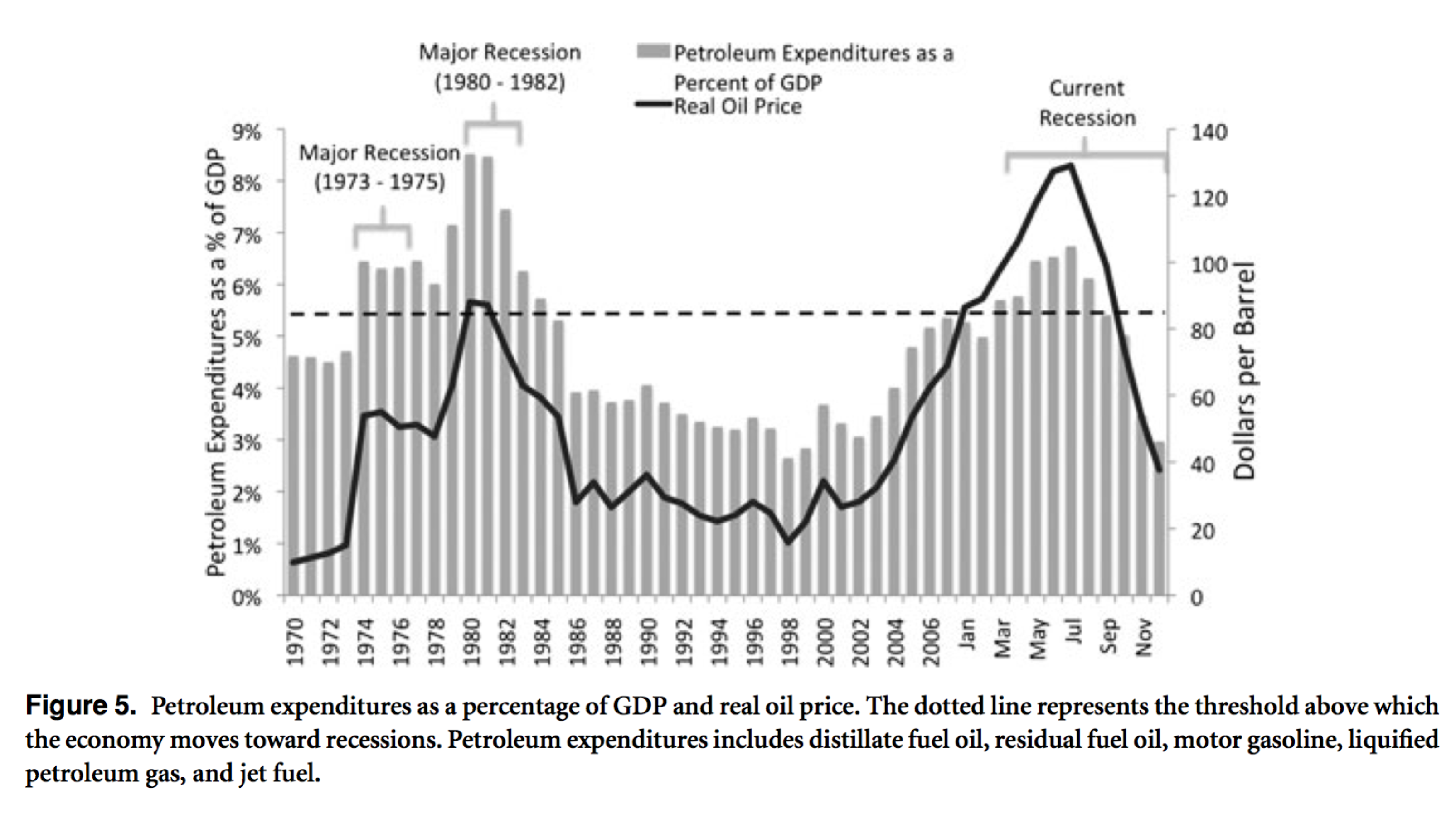
p. 10 In these circumstances, oil supply is said to be very inelastic (unresponsive) <<< to price.

Changed to “In these circumstances,

oil supply is said to be very inelastic (unresponsive) to price.”

p.11 . For oil only, Murphy and Hall found that the oil cost share threshold that correlates with US recessions is about 5.5%.[14] Not Murphy and Hall but Hamilton is source….

The above comment is unclear. Reference [14] is Murphy and Hall. Murphy and Hall [14] do not reference Hamilton. Murphy and Hall [14] has the following figure:



which clearly shows the 5.5% cost share threshold.

Perhaps Charlie can expound a bit on the comment above.

Low cost share. Ironically, economists assign low importance to energy because of its cheap price, when its cheap price that has allowed our economy to be able to afford to be so productive.

Good point about irony. A sentence has been added here to indicate the irony. This paragraph now reads:

This may be somewhat surprising in light of mainstream economic theory,

which ascribes economic importance

based on financial cost share,

not biophysical factors.

Indeed, the cost share of energy in mature economies is low,

and viewing energy as relatively unimportant is justified if

one's view of ``importance'' is limited to financial information only.

But, many have noted that the physical importance of energy to the economy

far exceeds its cost share.\cite{Ayres:2013aa}

And, as discussed above, because the economy is coupled

to the biophysical world through time constraints (as manifest

by the low price elasticity of energy supply),

the physical importance of energy far exceeds its financial importance.

Ironically, low energy cost share

is precisely the condition that

has allowed economies to be incredibly productive over the last century.

The connection between energy and the economy may be difficult to see,

but, eventually, it becomes impossible to ignore.

but it usually EVENTUALLY REFLECTED IN cost

The above comment is unclear. To what does “it” refer?

Turning again to our oil example, EROIsoc for oil has declined from a value of 100 in the 1930s [18, p. 781] to around 20 today.[19, Fig. 2] In other words, ……Actually this is misleading because the value of 100:1 is not for extracting oil but for finding it. The values for US are given in Guilford et al. (aboput 28:1 in 1970s to 10:1 in 2007)v and for the world (publically traded) in Gagnon et al. 36:1 in 1990s to 18:1 in 2006 or so. SO it has declined to ½ to 1/3 of its peak …

Thanks for the clarification. This paragraph now reads:

Turning again to our oil example, $EROI\_{soc}$ for production of US oil has declined

from a value of 23 in the 1950s

to 10 in 2007.\cite[Fig.~2]}\cite{Guilford:2011ci}

$EROI\_{soc}$ for production of oil worldwide has declined

from a value of 35 in 1999

to 18 in 2006.\cite[Fig.~1]{Gagnon:2009fc}.

In other words, it takes about twice as much energy today

than in years past

to make a barrel of oil available to society.

13 The early 19th century economist Ricardo applied this … theowners of <<<

This section now reads:

The early 19$^{th}$ century economist David Ricardo applied this

principle to the theory of land rents.

As population increases,

the demand for food will increase.

Because arable land is not reproducible,

less-productive land will be utilized for crops.

This leads to increasing profits accruing to owners of the best land.

that

has lower EROIsoc than early Texas crude oil. (EROI of tight oil is not too different from regular oil today

…

Hmmmm. Cleveland and O’Connor indicate that shale oil has EROI between 1:1 and 2:1, when self-use is included. See: http://www.westernresourceadvocates.org/land/pdf/oseroireport.pdf

For now, the text is unchanged, except for adding a reference to Cleveland’s report.

Fig. 1.6 US oil production. http://ourfiniteworld.com/2014/07/23/

world-oil-production-at-3312014-where-are-we-headed/ \*\*\*\* Becky–can you

obtain this data and plot it similarly? \*\*\*\* >>>again Ron Patterson has this updated

OK. We’ll pursue this.

consequence, more financially expensive to extract oil today than it was 10, 20, 30,

and 100 years ago. It Not 100 (see Gilford et al )

This sentence now reads:

All of this comes about simply because it is

more physically ``difficult,'' and, as a consequence,

more financially expensive

to extract oil today than it was just a few decades ago.

Without going into detail, we state without discussion that similar dynamics will

apply to any non-renewable material (e.g. copper, fish, soil, timber) or energy stock (natural gas, hydro dam sites) in the biosphere

This sentence now reads:

Without going into detail, we state without discussion

that similar dynamics will apply to

any non-renewable material (e.g. copper, fish, soil, timber)

or energy stock (natural gas, hydro dam sites)

in the biosphere

for which substitution is difficult.

Page 15

Fig 15 What does free cash flow OF mean (vs TO?)?

They are making less profits? That is true I think, but needs more explicit statement and better validation maybe….

p. 16 To first order, replace with to a first approximation ….

p. 17 Paradoxically, and contrasting with mainstream policy prescriptions, expansion of

the stock of capital in the economy can contribute to the ULTIMATE slowdown of economic

growth.

focused on increasing many material, energy, and financial flow rates in the economy. Set against the backdrop of Section 1.4, we see that consumption-driven policies are ine↵ective, because of biophysical limits that ULTIMATELY constrain the scale of the economy

In short, the economic analyses that support consumption-driven policies are

incomplete. Consumption-driven economic growth is ULTIMATELY unsustainable. [For the time being we can and do just use more energy to exploit lower grade resources….]

Bottom half of page 17 kind of redundant (could remove sentence above)

P. 18 This is the end of an era. In mature economies, consumption-enhancing economic

policies can no longer guarantee growth of living standards and well-being. But, the

mainstream is blind to what should be done instead. This has to change! <<I WOULD REMOVE AS IS redundant with next nsection.

Markets are, AT LEAST IN ECONOMIC THEORY,extremely efficient allocators of resources.

\*\*\* reference here about higher average fuel economy of autos in the US. \*\*\*\*

PN 18-19 Seems like if we need to add in stocks but the market etc are incapable of putting a value on them then why are we sayin g we ust do it? Just a little ironic…

Wordy: Because the allocative efficiency of markets is predicated upon correct and complete

information being available to market participants, today’s markets are a poor choice

for allocative decisions about scarce and difficult-to-substitute resources (such as oil)

or non-property goods (such as clean air, clean water, and other ecosystem services).

In the age of resource depletion, the allocative efficiency of markets is attractive.

Indeed, life would be better if the markets could shift supply and demand away from

binding biophysical constraints when they are encountered. But, lack of information

in today’s markets leads us to argue that they are not up to the task.

??Change to: In the age of resource depletion, the allocative efficiency of markets is attractive.

Indeed, life would be better if the markets could shift supply and demand away from

binding biophysical constraints when they are encountered. But, lack of information

in today’s markets leads us to argue that they are not up to the task. Thus today’s markets are a poor choice for allocative decisions about scarce and difficult-to-substitute resources (such as oil)

or non-property goods (such as clean air, clean water, and other ecosystem services).

Second paragraph is good…..

Final paragraphs are good but unlikely to be implemented….

I gave it another quick read and liked it a lot.

had these two thoughts:

1.4.3 Stall is related to capital stock     What does STALL mean?    Might change subtitle

last part of chapter 1    Can you change this a bit to lead into rest of your book?

We suggest that all of this information (economic, material, and energy indicators)

should be collated by a single agency and reported from a single location. Doing so

will provide convenience and consistency and indicate the interconnectness of the

economy and the biosphere to policymakers and researchers.

Until these crucial pieces of information are routinely available in a centralized

location, society will be unable to properly frame and conceptualize the “problem”

of “stalling” growth. Until this information is available to markets, investment,

consumption, and policy decisions will not lead to socially optimal outcomes