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The Political Underbelly of Economic Measurements

Why we quantify our economies the way we do

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The Political Underbelly of Economic Measurements

The Political Underbelly of Economic Measurements

Why we quantify our economies the way we do

Rede

uitgesproken ter gelegenheid van de aanvaarding van het ambt van
hoogleraar Politieke Arithmetiek
aan de Faculteit der Maatschappij- en Gedragwetenschappen
van de Universiteit van Amsterdam
op vrijdag 16 juni 2017

door

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*Esteemed Rector Magnificus,
Esteemed Dean,
dear colleagues, students, family and friends,*

You probably know Alice. Alice, the little bored girl who plays by the river when suddenly, a talking rabbit appears. Intrigued, she follows him down a hole in the ground, hidden between tree roots. Down to Alice's Wonderland.

Comparing myself to that rabbit is not exactly flattering, but I will take the risk anyway. Because I want you to follow me down a kind of rabbit hole today. Down there, we will get a very different view of economic numbers than we're used to – of the numbers that crowd our research, that crowd our policies, that crowd our news reporting, that crowd our lives. I am thinking here of numbers about inflation, economic growth, public debt, unemployment, trade, investment – just about all facets of our national economies.

We won't meet mad queens or singing decks of cards, as Alice did. But there will be quite a few strange encounters, rows of numbers that may start dancing in front of your eyes, and a case of intellectual murder.

Before we climb out of that rabbit hole again, I hope to will have shown you three things:

First: you should not take economic numbers for granted the way you may do now. There are choices behind the numbers – choices that we normally know little about.

Second: these invisible choices matter. They matter when we base our policies, academic analyses or voting in elections on them. They also matter when they determine how much our pensions go up per year, or whether a government in trouble can get a new loan or not.

And third: because these numbers matter, it is our job as social scientists, but also as journalists, to find out more about where these numbers come from, who makes them, how they matter, and how they may bias our own analyses.

A Journey through History

To begin that journey down the rabbit hole, let me take you back to the second half of the 17th century and introduce you to Sir William Petty. As an intellectual, Petty was about as colourful as they come. He beat the odds of his poor upbringing and became Professor of Music at Oxford. He dreamt up new ship design for high sea. And as a famous surgeon, he operated on this fellow citizens.

William Petty's most famous invention, however, was a simple idea. The English crown at the time was facing bloody uprisings in Ireland, an island the English occupied but could not quite control. Petty thought he knew why. What was needed, he argued, was a completely new approach to crafting effective policy. Rulers should discard tradition, religion and intuition as guides to action. Instead, they should embrace a scientific approach to politics.

What did he mean by that? Cartographers had to map Ireland so that the crown could move people and troops around well. In the same spirit, a new breed of social scientists should map societies and establish how populations function. To rule effectively, Petty felt, you had to discover the laws that govern large groups of people. And you could only find those laws through collecting large amounts of quantitative data – people's occupations, age, wealth, religion, sex, and so on. The road to understanding society, Petty believed, was paved with tables full of numbers. And ever the intellectual salesman, he invented a catchy label for this new approach to politics. He called it Political Arithmetick.

For the first hundred years, Political Arithmetick was a big success. When people embarked on what we would today see as quantitative social science, Political Arithmetick was their label of choice. And yet, today you won't find political arithmetic in any newspaper or university curriculum. What happened?

If any one person is to blame for that, it is Adam Smith – widely seen as the founder of economics. In Smith's social circles, political arithmetic must have been all over the place. But in a form of intellectual homicide, he completely ignored it in his world famous *Wealth of Nations*. It gets a single mention, for Smith to say that he has 'no great faith in political arithmetick'.¹

For Smith's taste, the numbers are too untrustworthy to allow solid conclusions. Often, he feels, they are politically motivated, if not manipulated. And there is too little theory, too little reasoning, and too much faith that data can answer big questions by itself. So, he pushes his own intellectual label of choice – political economy. And in *The Wealth of Nations*, the book that

founded economics, numbers play a small role. The whole 1.200 pages feature seven tables – and three of those are in the appendix.²

In the event, Smith's approach to studying economic life became even more popular than Petty's had been before, and with the rise of political economy, political arithmetic disappeared in the dustbin of history.

Or so you'd think.

Because William Petty may have lost the battle. But his ideas won the war. Today, political arithmetic is everywhere. We do not call it that. But the kind of social science that Petty envisaged, driven by quantitative data, is mainstream. It is the Smithian approach, deductive reasoning while sitting in a leather armchair, that has become the academic side show.

In the 21st century, we live in an age of numbers. Many people find it natural that we understand our societies and economies through the prism of data, and that we rule them through spreadsheets. Economics as for example the University of Amsterdam teaches it is in essence a numbers science. Without some serious math skills, you will not survive the first year. Macroeconomics, more specifically, tells us how big economic quantities – numbers about the debt of the government, the unemployment in a country, or its inflation rate – hang together.

Macroeconomic data, the kind you can download from the Eurostat or World Bank websites, is not only raw material for academic research. Policy-makers use it to take the temperature of our economies and to design political interventions: overhauling tax systems, switching government expenditure from one item to the other, adjusting your pensions and your unemployment benefits. Journalists dutifully report macroeconomic figures – “growth is down”, or “debt goes up” – and citizens use these numbers to judge whether politicians have done a good job steering the economy or not. Macroeconomic indicators are the fundament of political debates and economic policy, and we have no way of “seeing” things like public debt, inflation or unemployment without them.

If these numbers are so important, it is crucial that we get them right. When you leaf through a statistical yearbook, the numbers that fill the pages have a calm, serene, objective air. This is data. Hard information. Knowledge.

The problem is that once you start probing what actually went into the figures, you will find that they are much more shaky and fragile than their feel of authority would suggest. You cannot tell from the outside. But there is a whole world of politics hiding behind the tables.

We should therefore start unearthing, mapping, and understanding the politics behind the numbers. We normally use them like an observation platform, from which we see our surroundings better and can analyse them. I

suggest that we turn that same critical gaze on the numbers themselves – where they come from, who actually made them, and for what purpose. What do they reveal, and what do they hide? Who benefits from them and who loses? If political arithmetic is the art of applying numbers to politics and society, we have to study political arithmetic itself – a way of thinking and governing that no longer has that name, but that we find everywhere.

The Forensic Approach to Dubious Numbers...

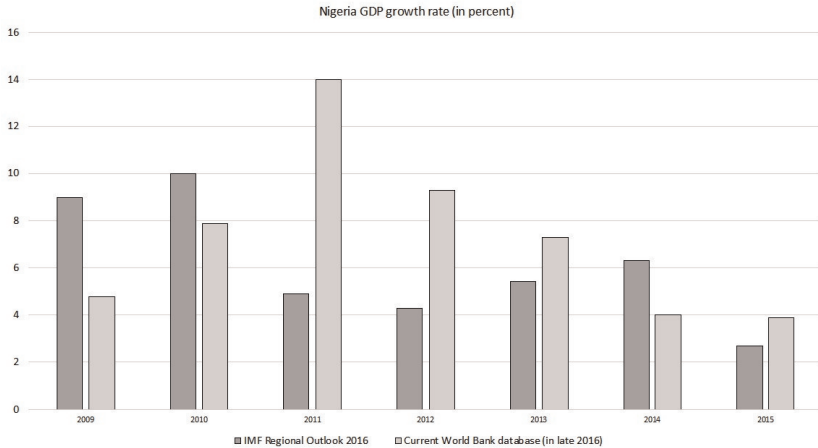
At this point, one could be forgiven to think that all this is an exaggeration – much ado about nothing. Everybody knows that data is not perfect. Surely statisticians realize that. Work remains to be done to improve data quality, and they're on it. Digital technology washes more and more data onto our shores, so things are on the mend. You might think that – but I think you would be wrong.

When you want to investigate the fragility of economic statistics, there are two angles you could take. Like a forensic agent, you can enter the spreadsheets themselves and seek out evidence in the rows and columns that something is wrong. Or alternatively, you can use the Sherlock Holmes method and logically reason the whole matter through. I want to show you a bit of both.

Let us begin with the forensic approach. The first thing to realize is that there are many gaps and much uncertainty in reported economic data. Not minor margins of error, but gaping holes. There was a swirl in the news when Ghana reported in 2010 that overnight, its economy had grown by 60 percent. Or, more precisely, it hadn't grown over night, but new measurements showed that the old figures had been completely off.

The Ghana example may sound extreme. But it is not an isolated case. Statistical updates – so-called rebasings – showed that GDP data for other countries was wide of the mark, as well. In 2013, Kenya revised its GDP upward by more than 25 per cent. Tanzania, almost 28 percent. Uganda, 13 percent. And Nigeria – almost 90 percent.

Do we at least have it right now, after those corrections? Well, not quite. Let's imagine we're interested in how a country like Nigeria – in terms of population more than ten times the size of the Netherlands – has performed during the past decade. Ask the World Bank, and the GDP growth figures it provides look like the light grey bars in the Figure 1.



Just down the road from World Bank headquarters in Washington, however, you have another, equally respected institution – the International Monetary Fund. Read its Regional Economic Outlook for Africa, and the GDP data you get are the dark grey bars. Completely different numbers. Which ones are we to believe? Which ones should we use when we research economic development and what makes it happen?

To be fair, Sub-Saharan African countries frequently have trouble collecting data. And international statistical standards often don't map well onto the realities on the ground in Lagos or rural Zambia.

But we find data problems and ambiguities around the world. Take government debt. These debt figures can be hugely consequential – think for example of the government in Athens, desperately trying to assuage Wolfgang Schäuble in Berlin or the European Commission in Brussels.

So imagine you are a finance minister, an EU official or a university academic interested in government debt and you have a simply question: what was the level of debt in, say, Australia, France, or Iceland in 2009?

Two researchers from the Organization of Economic Cooperation and Development (OECD) looked to the most credible sources – the International Monetary Fund and the OECD itself – and put together the numbers these organizations reported in different publications.³ Table 1 shows that data for the first half of countries.

	IMF World Economic Outlook, April 2014	OECD Economic Outlook No. 95, June 2014	IMF (2014) Government Financial Statistics Yearbook 2013	OECD (2014) National Accounts at a Glance 2013
<i>Australia</i>	16.7	19.4	40.6	37.4
<i>Austria</i>	69.2	74.3	73.1	74.0
<i>Belgium</i>	95.7	101.0	99.8	99.8
<i>Canada</i>	81.3	87.4	100.6	102.9
<i>Chile</i>	5.8			13.4
<i>Czech Republic</i>	34.2	40.8	33.5	40.9
<i>Denmark</i>	40.7	49.3	49.3	51.3
<i>Estonia</i>	7.1	12.6	12.8	12.4
<i>Finland</i>	43.5	51.8	51.5	51.8
<i>France</i>	79.2	91.4	91.4	91.2
<i>Germany</i>	74.5	77.5	77.5	77.4
<i>Greece</i>	129.7	138.3	137.9	134.3
<i>Hungary</i>	79.8	86.4	86.0	86.7
<i>Iceland</i>	88.0	94.5	120.3	119.8
<i>Ireland</i>	64.4	71.1	67.8	71.9
<i>Israel</i>	75.3	75.3		89.5
<i>Italy</i>	116.4	132.4	132.2	128.0

This is a direct replication of the table by Bloch and Fall 2015, p/7.

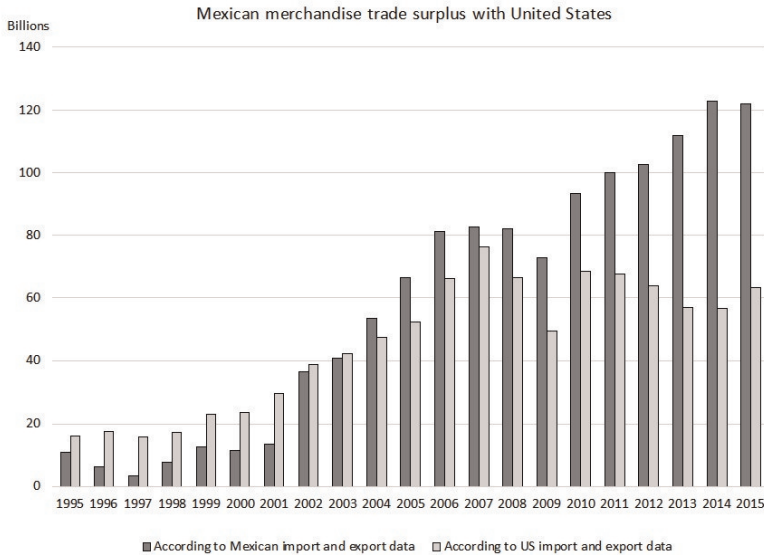
The numbers show the government debt pile of a country, as a percentage of its economic size, in 2009.

The point of this table is simple: no matter which country you take, the numbers differ from one column to the next – even though they are supposed to capture same thing. The numbers in any one row are all official answers to the same question: how high was, say, Iceland’s debt pile in 2009?

And two of the columns each come from one and the same organization, from in the same year. They are just taken from different publications. The figures sometimes differ enormously.

Things get worse for international economic statistics. Donald Trump has complained for a long time that the United States was the big loser from easy trade with Mexico. The whole debate hinges on the trade balance between the two countries – the difference between the amount of merchandise that is trucked from the US to Mexico, and that going in the other direction, from Mexico to the US. So what is that trade balance?

Together with my colleague Lukas Linsi, I have looked into that question. The Americans collect data through their custom officials, and the light grey bars in the figure below show what they have to say about US trade with Mexico.



Data source: OECD STAN bilateral trade database rev.3 (1995-2011) and rev.4 (2012-2015), <https://stats.oecd.org/Index.aspx?DataSetCode=BTDIXE>

What American numbers show is that there is more merchandise going from Mexico to the US than in the other direction – potential ammunition for the Trump argument. But the Mexicans also have their customs officials collect data. The dark grey bars are the Mexican data, and they are very different. Mexican data says that the disadvantage for the US is even bigger – twice as high – than US data suggests.

Again – which data should we believe? Which should we use? That is simply unclear. What is clear, however, is that economic data is a lot less solid than the hard numbers you find in an Excel table make you believe. With help from other colleagues, Lukas and I have looked into a much broader range of trade connections, and this kind of uncertainty is not limited to trade across the Southern US border.

... and the Deductive Approach to Dubious Numbers

There is a completely different angle into the problem, as well. It starts from the following question: when we compile economic data, how well do we actually know what we are looking for? When we put together numbers for

government debt or foreign direct investment, do we actually know what information should go into those spreadsheets? That it is actually far from clear.

Let us examine one of these concepts more closely – inflation – and get a sense of just how blurry definitions can get. In principle, inflation is a rather straightforward concept. It measures how much the overall price level in an economy changes from one year to the next or, more exactly, how the purchasing power of money dwindles over time. I still have an Asterix and Obelix comic book that my father bought in the 1960s. The price is mentioned on the cover: 2.80 German marks. Buy the same comic today, and you pay twelve euros, or more than 23 marks.

Such price changes matter. If you have lots of money in a bank account, what you can buy with it decreases over time. Citizens are therefore wary of government policies that let inflation run high.

Inflation figures also matter when we want to understand how we, as citizens, have been doing over the years. Imagine the average Joe or Jane made \$10,000 a year in the 1950s, and that the average income today would be something like \$37,000.⁴ Is today's average person better off than her counterpart 60 years ago? That depends on what has happened to inflation over the decades: how much more expensive has life become? Can we buy more with \$37,000 today than Joe and Jane could with \$10,000 in the 1950s?

Realize that the answer to that question is political dynamite. Much popular anger against elites – the kind that brought Donald Trump into office – feeds on the sense that while the rich are getting richer, average Joe and Jane do not see their lives getting better.

So, are they better off with \$37,000 today than someone was with \$10,000 decades ago? That all depends on the inflation measure you use. If you convert nominal wages to current price levels using the Consumer Price Index for Urban Consumers, the standard US inflation gauge, the median real income for men between 25 and 34 years old in 1959 was \$38,700 against \$37,200 in 2015. Things have gotten worse, rather than better.

Use the personal consumption expenditures price index, produced by the US Bureau of Economic Analysis, instead, and the story looks very different. Then the 1959 income was much lower (because measured inflation was lower) and stood at \$30,100 in today's prices. Compare that to \$37,200 today, and things have actually gotten a lot better.

This gives you a sense of how much of a difference alternative measurements can make. Both inflation measures are official American statistics, with good arguments for and against their respective methodologies. There is no obviously correct answer, and we would have to go into enormous detail before we could even understand what the difference between the two is.

How we measure inflation is not only interesting for academics or politicians who want to sell their favourite arguments. Often, there is a direct link to your pocket book. Many regular incomes are more or less automatically adjusted to official inflation figures – pensions for example, unemployment benefits, and often also wages. To get these adjustments right, we need to measure inflation accurately – measure accurately how much more expensive our lives have become from one year to the next.

That sounds easier than it is. For one thing, what we spend our money on changes over time. Forty years ago, we did not buy computers, mobile phones, or CDs. If inflation is about tracking the price of the standard shopping cart over time, which one should we use – that from back in the days, or today's, full of things that did not even exist in 1970?

Statisticians have long debated the different mathematical fixes to this problem. A sort of consensus has emerged about the way to tackle it. But depending on the approach you use, your inflation thermometer will show higher or lower price rises, and thus a need for more or less increases to your wages or pensions. No surprise that political fights break out about the right way to measure inflation. For roughly twenty years, politicians in the US have been quarrelling about what the right inflation measure for adjusting welfare state payments – and that fight remains undecided to this day.

There is an even thornier and deeper problem, however, one that has not really been solved at all. Not only do new products appear in our shopping baskets. The ones that have been in there for quite a while change in quality over time.

Why is that a problem? Consider the different iPhone generations, from when the first one was introduced roughly ten years ago. Look only at the price tags, and what you pay for an up-to-date iPhone hasn't changed much since the first one was introduced – roughly €700.

But the quality of iPhones has changed enormously – more memory, better cameras, sharper screens. So you get more iPhone for the same money. Or, put the other way around, for the same amount of iPhone performance, you pay less. So when the statisticians take the rising quality into account, iPhones *have* gotten cheaper – a lot cheaper. And the falling price of iPhones and other digital devices has pushed overall inflation readings down.

Many consumers, of course, might disagree. They still have to pay €700 for an up-to-date device, just like for the first iPhone almost ten years ago. Many may actually use it in much the same way that they used the first version that hit the shelves.

But you could also argue the other way around. A new smartphone is not just a telephone. It is also a navigation system, an mp3 player, a video camera,

a remote control for your central heating, a notebook, and so many other things. Should we not compare the price of a new smartphone to what all these other devices once cost individually? Look at it that way, and smartphones have made our lives dramatically cheaper, because they pack all these different gadgets into one sleek machine. How should smartphones – and many other digital devices with it – show up in our inflation statistics? It's really in the eye of the beholder.

With iPhones, it is at least obvious that quality changes are a thorny problem for price statisticians. But take a closer look, and you find such issues all over the place.

Some seventeen years ago, when I first moved to the Netherlands, the quality of your average local cup of coffee was rather mediocre. Now, there is a hipster coffee bar on every corner, and freshly ground crema coffee even in our own political science department. Average coffee quality has arguably gone up.

Coffee has also become more expensive. You will have no trouble shelling out €3,- for a fancy Americano or Flat White, a price that not long ago would have been considered ridiculous for coffee in a paper cup.

So arises the question for the price statistician: to what degree has coffee gotten tastier, and to what degree has it simply become more expensive? Depending on your answer, €3.50 Hazelnut Latte Macchiatos have pushed up inflation, or not.

Such ambiguities pop up in many places. Are fancy designer jeans for €280,- better than a Levi's 501, or just more expensive? When you buy a photo camera on the internet, is it really cheaper than in the shop? Or do you actually buy a worse product, because online you do not get personalized advice, and have no chance to hold the camera in your hand before you click the Buy-button?

Things become worse once we think about services – haircuts, health care, or advice from your bank. How should we put a number on how their quality has changed over time? Because a number you need. Whether it is spelled out or not, every inflation figure is full of assumptions about how the quality of all these things has changed. Even if you refuse to make any adjustment for quality changes, you in fact assume that the quality of things does not change – which we know not to be true for lots of items we consume. There is no getting around this issue.

Let me point you to a final problem with inflation – one that is even broader than the quality changes just mentioned. For most people the inflation rate is the answer to the question: how much more expensive has it become for me

to sustain a stable standard of living? How much more money does it cost this year to be as well off as I was last year?

The answer, it turns out, depends not only on the products I consume and how their prices and quality change. It also depends on how society changes. Imagine the crime rate in your neighbourhood has gone up, and so to get the same level of security against burglars you need a more expensive lock on your door. The statistician would see no increase in your cost of living – you have simply bought a better product. But you paid more to get the same as before, namely the same level of security.

Or imagine that you have to get more and more education – more and better degrees – to achieve a certain level of income and job security after university. Yes, you may be getting more lessons and learn more. But if you see the product that a university sells as a career prospect later on, then social and economic changes mean that you need to pay and invest more and more to get the same result. The education package necessary to reach to a certain station in life has become more expensive, indeed – no matter what has happened to per-year tuition fees.

The usefulness of the things we buy depends on the society in which we live. As that changes over time, so does our cost of living. If that is what we want inflation figures to capture, we will find statistics woefully inadequate.

All of this is to illustrate a simple point. At first sight, inflation is a rather intuitive concept, and its measurement mainly a technical challenge. In fact, however, conceptual ambiguities lurk everywhere. There is no simple and straightforward answer to any of the problems that I have raised. There are always different options for what should end up in our statistics. Often, your answer will be different than mine, because we live in a different place or time, or value different things. I could tell similar stories for other economic statistics.

The thing is, of course: by the time you see numbers in a newspaper article or in your data set, someone has made the choices necessary to arrive at a single number, one way or the other. Most of us do not know what those choices are, who made them and why, and how they matter to us individually or to our societies as a whole. As political arithmetic has become the standard mode of running our economies and societies, we should find out.

The Origins of Shaky Statistics

So why do we measure our economies the way we do? A cynical observer might have two intuitions right away: first, politicians continually twist the

numbers to fool citizens. And second, statistics has become such a nerdy enterprise that statisticians themselves are ignorant of the broader issues at play. Both intuitions are wrong.

For the past two and a half years I have studied these questions, often together with a team that I have built here at the UvA. I have interviewed several dozen statisticians and policymakers – in the US, in the UK, in France, Belgium, and Germany. Time and again, I find that they are perfectly aware of the pitfalls of the data. Say of statisticians what you will, but they are certainly not naïve about the data they provide.

By the same token, I have found little evidence of actual manipulation of the figures by politicians. In that sense, official statistics are in much better shape than many sceptics fear.

So what *is* going on?

The first thing to realize is that there is an enormous demand for numbers. Numbers about every aspect of our lives. In Dutch we say “*Meten is weten*” – to measure is to know.

There are different ways of knowing, of course. If you want to know how the Amsterdam economy is doing, you could pore over spreadsheets. Or you could spend two days walking around the city, up and down the canal and to the suburbs, chatting with dozens of people, trying to get a feel for how things are going, and how much buzz there is. When we juxtapose these alternatives, why are statistics so much more attractive as a form of knowledge than these personal experiences?

First, numbers are simple and exact. If economic growth in the Netherlands has gone from 1 percent to 1.5 percent, things have gotten better. Try to convey the same message without any numbers, and you find yourself talking for half an hour.

Numbers also have the unique advantage of being comparable. 2.8 percent GDP growth in the Netherlands is more than 2.6 percent in Nicaragua. Maybe we are comparing apples and oranges, maybe there are all kinds of arbitrary choices. But once we have the numbers, and we forget the data acrobatics behind them, we can compare and rank: which country performs better? We can make seductive graphs, which all of a sudden speak for themselves.

Maybe the most important reason for our insatiable numbers-hunger, however, is that they seem objective. They come across as facts, not opinions.

It is worthwhile pondering this point for a moment. Why is objective information about something or the other so important – about the economy, our health system, or our performance on the job? It is important because with objective information, we can hold decision makers to account. With

numbers we can judge whether politicians or policymakers have done a good job, or which neighbourhood deserves special government support, and which one does not. Because numbers feel objective, they also come across as neutral. In a day and age in which many citizens distrust ‘those up there’, ‘those in power’, numbers become a key tool to justify decisions to others.

Often, numbers *are* indeed facts. We could count the people in a lecture hall, and the number we would get would tell us more than “there were a lot of people” or “there were not so many people”. But as I tried to show you before, you cannot simply count economic growth, inflation or public debt. It takes serious numbers gymnastics, and many choices, to construct such data.

What have I found so far about those who actually make the choices for one or the other formula?

Unsurprisingly, the devil is often in the detail. There is a story to tell about each indicator in its own right. But there are some patterns that we meet time and time again. I limit myself to two important ones here.

First, once we have decided to use a particular formula for measuring, say, debt, we tend to stick to it. People have become used to measuring things a certain way, and they have built their expectations and policies around it. Imagine your pension is tied to inflation. You will fight tooth and nail against a switch to a new inflation indicator that shows a lower price rises – no matter what you think is correct or not. The same is true once many countries have agreed on a common formula, for example for trade balances. If you change the methodology, some will benefit, others will lose – and the losers are likely to block statistical reform. The more important statistics grow, the worse this lock-in effect gets.

Second, time and again statisticians have told me that one thing they really dislike is having to make subjective judgments. Think back to the coffee example, where the question was whether Starbucks coffee is better, or only more expensive, than your regular cup of Douwe Egberts. Statisticians need to agree a procedure to find an answer. But it cannot be that the chief statistician in every country tastes a few zips, and then lets his palate decide. You need a procedure that works in a rather mechanistic way – which, no matter who follows it, produces the same result. You need a procedure, in short, that is what social scientists call reliable.

This quest for reliability makes sense. As a statistician, you do not want citizens to accuse you of just making things up, or going by your personal preferences. That means that often you end up with measures that do not make much sense. For the sake of time, let me give you just one example.

A large chunk of GDP is produced by or financed through the government – in particular health care and education, like the work that I do. Now, how

much does the University of Amsterdam (UvA) contribute to GDP? If it were a private company, we would simply take the price of its services – the tuition students pay – as an indication of the value of its education. But the UvA is subsidized. Tuition fees do not cover our costs, and they are a poor indication of the value we create.

So what do statisticians do? According to international agreements, the UvA contribution to GDP is equal to its costs. Now you may wonder whether that makes sense. Maybe what we produce as academics is actually worth much less than all the money that goes into higher education? Or much more?

And when we face budget cuts, our contribution to GDP goes down, no matter how hard we try to teach more students, and to teach them better, with the time and money we have.

You could have long arguments about this. Whatever your personal position, the choice for UvA output to equal UvA costs is arbitrary. So why do we use it? It has *one* decisive advantage: it requires no subjective judgment. You can simply look up what it costs to run this university per year. Once you agree that that is the number you use, you have solved your troubles.

This pattern I found in many, many places. We could summarize it as follows: in the logic of official statistics, you prefer to be exactly wrong to being approximately right.

What should we do?

The problems that this quest for objectivity and precision generates are getting bigger by the day. Because in our 21st century economies, old economic concepts make less and less sense.

Fifty years ago, economic activity was mostly about things you could count, weigh, put in a box and ship abroad – car tires, corncobs, iron bars. Now, economic activity is dominated by intangible things such as software and all sorts of hard-to-measure services. Knowledge and patents are key production factors. Fewer and fewer companies still have a clear nationality. And even when they do, the products they make are often put together from pieces made in dozens of countries.

What is true for production is also true for our work: the standard 40-hour a week job, worked for 45 years, is no longer the reality for many people today. So defining and measuring unemployment has become all that much harder. In short, all sorts of boundaries in our economies are getting blurry – between countries, between companies, between work and leisure – so that

our economic numbers are more and more problematic and, in extreme cases, either meaningless or plain misleading.

Hearing me speak that way might let you conclude that I am on a crusade against numbers. Let me tell you, I am not.

Numbers as drastic simplifications of reality are not going to go away. They shouldn't. We need simple information to make decisions, for example where to invest. Citizens are right to demand that decisionmakers should be held accountable for their actions, and often that involves reasoning through numbers. Translating social life into numbers has allowed social scientists to teach us things about our societies and politics that otherwise we would never know. But precisely because numbers are here to stay, and rightly so, I hope we would get smarter in how we view them and deal with them.

In elementary schools around the world, one important goal is numeracy – the ability of people to work with numbers and at least do simple calculations with them.

What I advocate here, is a kind of Numeracy 2.0. Not only the ability to work with the numbers, as a pocket calculator might. But we should understand, study and research, three additional facets of theirs:

- Their actual content: what are the choices behind the numbers we read, download, report, and use in our analyses?
- Their consequences: how is it important for our goals as individuals, as societies or as analysts that formula A has been used in a particular instance, rather than formula B?
- And their origins: why is it actually that we use formula A rather than formula B? Who has made those choices, and what has motivated her?

It is these three things, taken together, that I have in mind when I say that we need to study political arithmetic itself – this ubiquitous way of organizing our social and economic affairs.

Amsterdam is a good place to launch that endeavour. William Petty spent quite some time in the Netherlands in 1645, and for all we know he passed through our city; just a decade after this university had been founded. Maybe he even passed through this very church in which I hold my inaugural lecture, which opened its doors when Petty was a boy of ten years old.

Together with the FickleFormulas team – generously supported by the European Research Council and the Netherlands Organization for Scientific Research, NWO – I have tried to make a start. We investigate the politics of economic numbers from a range of angles. My own current work unravels the driving forces behind official economic data in Europe and North America today. Jessica de Vlioger studies how we build the numbers that underpin

European rules about government debt and deficits as well as unemployment. Danny DeRock focuses on the role of international organizations, such as the United Nations, in imposing a uniform set of indicators on wildly different countries around the world. Joan van Heijster and Roberto Aragão zoom in on China, India and Brazil. We know next to nothing about how these hugely important countries measure their economies, and why so. A new team member will add South Africa to that list in September. Lukas Linsi has become our expert for international economic statistics, like the trade data I mentioned earlier. And a new colleague, who will join us after the summer, will add a yet an additional dimension to our endeavour – understanding not only how the numbers are put together, but how citizens actually make sense of them.

With this overview of the FickleFormulas team, we crawl out again from the rabbit hole. I am sure that, after her journey through that glistening, mysterious world, Alice never again looked at rabbits and card decks in quite the same way. I hope the same is true for you the next time you meet macroeconomic numbers.

Acknowledgements

I have given you a brief tour of that Wonderland today, and I hope that with many of you – the FickleFormulas team, but also other colleagues, from my own department as well as others – I get a chance to explore many more corners of it in future research.

Even though I have acted as your guide today, I did not end up in that rabbit hole all by myself. It has been a journey with many companions, and even though they – just as I – didn't know that this was where the road led, I am immensely grateful for their support, encouragement and company.

The title of the chair I now occupy – Professor of Political Arithmetic – raises more questions than it answers when you first come across it. So I am grateful to the Board of the University and the Dean of the Faculty not only for putting their faith in me, personally. I am also grateful, and proud, to work at a university that is willing to embark on such a wild enterprise. I am genuinely unsure whether anywhere else in the world but in Amsterdam you can find a university willing to sign off on a professor of political arithmetic. I see it as my duty to repay the intellectual advance credit you have given me.

The idea for that title, I must confess, was not my own – it was that of my colleague Jonathan Zeitlin, who may not have realized at the time that I would actually take his suggestion and run with it.

Speaking of colleagues: I owe many thanks to those of you who have supported my appointment, including Floris Vermeulen as head of our department, but of course also those – in the Political Economy and Transnational Governance research group in particular – in whose midst I can do my work.

I owe special thanks to two of my colleagues whom I have maybe known the longest at the UvA. I took Geoffrey Underhill's financial markets course after I had moved here for the first time in 2000, and his take on political economy inspired me to devote my research life to it, as well. I was, and through that legacy, remain his student.

And Brian Burgoon. I have never actually taken a course of his, but somehow, it feels, he has been by my side ever since I walked through the UvA gates. I am grateful for his support, his unceasing intellectual challenges, his invaluable advice, and of course his friendship.

In academia, colleagues of course means not just those who type away at their computers just down the hallway. It also means fellow academic travellers in other places, near and far. Many inspire you and help you grow, some become friends, including James Perry, Chris Bickerton, Eleni Tsingou and Len Seabrooke.

That said, the journey to this lectern is never just an academic one. It is a personal trip, as well. And one of the biggest challenges that we face as academics to keep it real, as they say. To keep a healthy perspective on things. For that, I have my friends to thank – going back all the way to Kindergarten, like Arne, those from my high school days, like Schönje and Ovi, those I met later during my studies – Tom, Joe, Nicki, Niels, and Anna – and of course all the people I encountered here in Amsterdam, not least Taco and Takeo.

Among the people I met here in Amsterdam, my quartet of in-laws deserves a special mention, Eveline and Chow Fang, Egbert and Hendrickje. I count myself exceptionally lucky to have found a real family here, which makes me feel at home in this city, and by extension at this university, in a way that would otherwise have been impossible.

While I have been lucky enough to find a new home here in Amsterdam, I am equally lucky never to have lost my old one – in Borghorst, just across the Dutch-German border. And for that I have my parents to thank. They have supported my academic adventures ever since I left their home exactly 20 years ago. That support has come in many ways. But the one that makes me most happy is how they have always been ready to take care of our kids, at times for two weeks on end, so that we could get our work done or simply some rest. Dafür ganz vielen Dank!

Because the beauty and danger of academic work is that it can be rather absorbing. There are no natural limits to our curiosity, and there is no natural

limit to how deep and for how long we can climb down our own rabbit holes. If there is anyone who has made sure that I don't get stuck down there, it is my children, Romy and Kolja.

The second time I moved to Amsterdam was in 2003, to embark on my doctoral studies. I had not even unpacked my suitcases, and I met Liza, in a seminar room just a few minutes by foot from here. A mere five weeks after I had stepped off the train, we were a couple, and that is the way it has been ever since.

When some years later, I published my dissertation, I dedicated it to her – “my love and academic partner in crime”, as the dedication read. We are lovers and academic partners in crime now as much as then. And I see me, holding this inaugural lecture today, as one station of our common journey through life. I am infinitely blessed – and simply freaking lucky – to have found her as my companion.

Ik heb gezegd.

Notes

1. Robert Dimand, “I Have No Great Faith in Political arithmetick’ Adam Smith and Quantitative Political Economy,” in *Measurement, Quantification and Economic Analysis. Numeracy in Economics*, ed. Ingrid Rima (London: Routledge, 1995), 22-30.
2. The edition used here is the Bantam Classics edition from 2003.
3. Debra Bloch and Falilou Fall, “Government Debt Indicators. Understanding the Data,” OECD Economics Department Working Papers (Paris, 2015), <http://dx.doi.org/10.1787/5jrxvoftbff2-en>
4. This example and the numbers mentioned below are borrowed from Brent Moulton’s Political Arithmetic blog. See <https://politicalarithmetick.com/2017/05/22/in-search-of-a-price-index-for-household-income/>