



# Fickle Formulas

## The Revenge of Political Arithmetic.

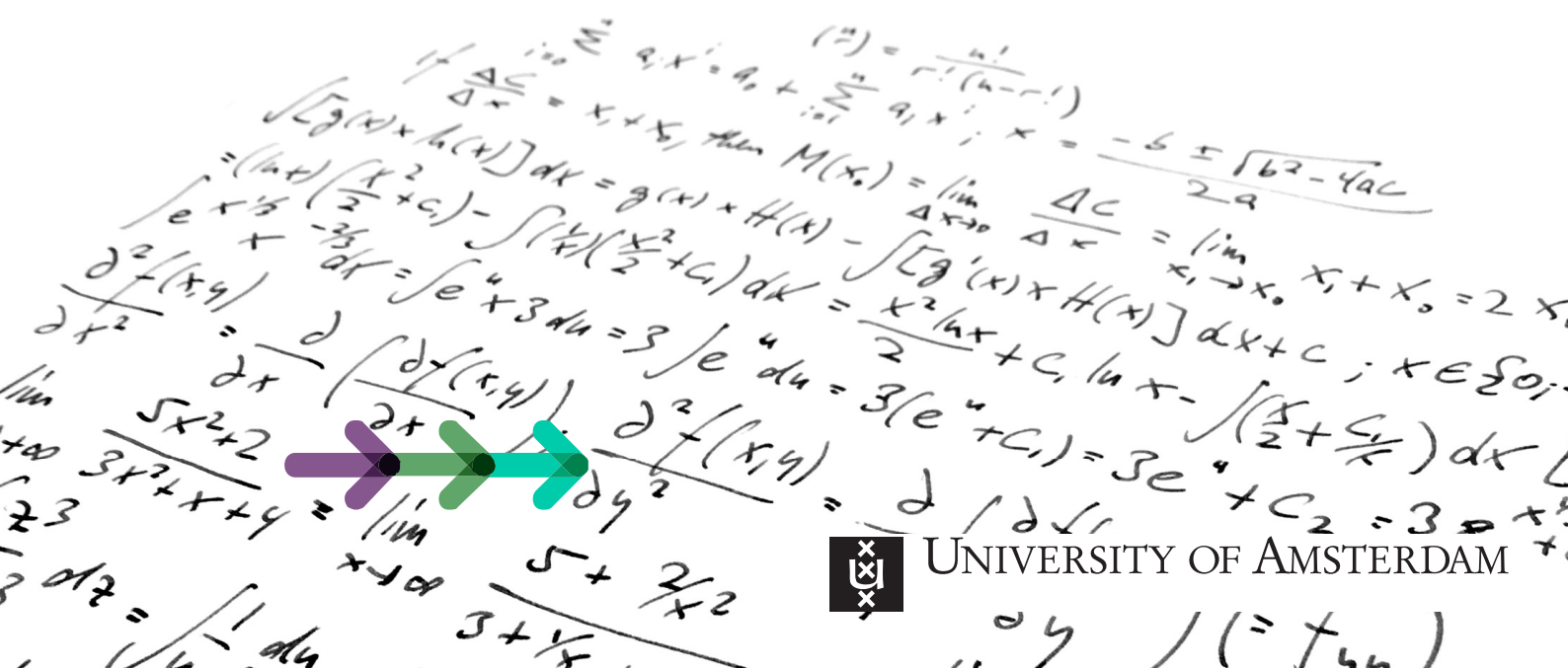
### Economic Statistics and Political Purpose

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## The Revenge of Political Arithmetick. Economic Statistics and Political Purpose<sup>1</sup>

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**ABSTRACT.** Contemporary governance is thoroughly quantified, and in no policy field more so than economic policy. The numbers on which economic debates draw present themselves as objective, technocratic data, above the everyday tussle of politics. At the same time, governance by the numbers has increasingly come under fire in recent years. In the extreme, critics decry statistics as just another opinion or manipulation devices.

I argue that both the excessive trust and the excessive skepticism are unjustified, and that both betray an a-historical understanding of the macroeconomic statistics that surround us today. In response, this article offers a truncated history of central economic indicators, which measure inflation, unemployment, economic growth and international economic exchange. It shows how these metrics have been infused with political purpose, and hence bias, from the very start.

This account builds on the abundant scholarship about the history of statistics, all the way back to William Petty's Political Arithmetick in the 17th century. Modern day evidence-based policy and statistics-based research have forgotten – or consciously ignore – their roots in openly normative political projects. I therefore propose to see and study economic statistics as a form of political arithmetic 2.0. Cognizant of economic statistics' historical baggage, we can heed the biases they may harbor and better put governance by numbers in its place.

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## Introduction

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We live in an age of thoroughly quantified politics and policies (Muller, 2018; Beer, 2019). Carefully calculated campaigns, using all available digital and quantitative tools, increasingly dominate political contest. Policies, too, are crafted and justified with statistics, and nowhere more so than in economic policy. After all, “the economy” would remain an intractable abstraction without the figures meant to capture it. Such governance by numbers presents itself as a triumph of reason over the uninformed and arbitrary exercise of power, and it has infused transnational politics (e.g. Davis et al., 2012; Cooley and Snyder, 2015; Kelley, 2017; Broome, Homolar and Kranke, 2018). It is the ultimate form of technocratic rule.

Over the past years, the success of governance by the numbers has come under heavy fire. Populists across the globe have dismissed expertise-based rule as blood-less technocracy, if not outright manipulation by statistics-tweaking politicians and policy makers. Such attacks are often motivated by political opportunism rather than genuine concern about misleading figures. They unfairly corrode trust in statistical offices. In the case of climate science, unfounded offensives against experts and their statistics are unequivocally dangerous. And yet, they capture a genuine suspicion that statistics, and the policies based on them, are not as detached from the everyday tussle of politics as they pretend to be.

I argue that both views are misleading, even while they feed off each other. Official economic statistics are neither epitomes of enlightened rule nor nefarious deception devices. Instead, we might best understand their present-day embrace as what I call Political Arithmetic 2.0. Such a reappraisal is essential for a responsible use of economic statistics – both among citizens and policymakers, but just as much among their users inside academia, in particular in economics and the social sciences more broadly.

When William Petty pioneered large-scale economic statistics in the 17th century, he designed them as policy tools and weapons to win political fights for the English crown. He christened this approach Political Arithmetick (Carroll, 2006; McCormick, 2009). The label soon died out, but Petty’s approach flourished. The genealogy of economic statistics I offer here shows how they have been political all along not only in their effects, but also in their origins. They have always been infused with political purpose – often to oppress, at other times to liberate.

Yet today, the political nature of economist statistics remains sidelined in both politics and scholarship, arguably because acknowledgement that statistics are anything less than objective might invite scorn and nihilism. At the same time, precisely the unwillingness to



come clean about the inevitable political charge of statistics makes them easy targets for unfair, blanket dismissal.

When we use and study statistics, we should therefore carefully steer between the Scylla of naïve acceptance and the Charybdis of disdainful rejection. Historical awareness is essential lest as users of statistics we unwittingly reproduce the biases built into statistics in our politics and research. After all, they were crafted for Western industrialized countries, and they privileged white male wage labor and production for money at the expense of all other forms of economic activity, broadly conceived.

In this article I lay out how the main economic indicators we use today—about inflation, unemployment, growth, and international economic exchange—have been formed in the fulcrum of political struggle and state-building. The history of statistics is an enormously rich field (e.g. Alonso and Starr, 1987; Hacking, 1990; Desrosières, 1993; Porter, 1995; Stapleford, 2009; Sætnan, Lomell and Hammer, 2011; Lepenies, 2013; Philipsen, 2015). I cannot hope to add historical detail to what other scholars have uncovered before. Instead, as my account builds on this wealth of scholarly material, I hope to distill from it insights that are useful for social scientists and economists, wherever they work with or come in contact with economic statistics.

My truncated history shows how economic indicators never stopped being a form of political arithmetic, however much their creators hoped to present them as superseding the realm of politics. The account below begins with Petty in the 17th century, and from there reaches through industrialization and two world wars to fully fledged economic management by post-war governments. If these sections concentrate on Europe and North America, then because it has been there that the currently ubiquitous indicators have been born. Nevertheless, the later sections show how international organizations such as the United Nations diffused these historically and geographically contingent metrics around the world, often to countries they fit poorly. By showing the historical forest for the trees, I evidence how our present-day, thoroughly quantified mode of governance—Political Arithmetic 2.0—is the ultimate success of a deeply political project that has its roots in the 17th century.

## The roots of evidence-based policymaking

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Governments have collected data for millennia, mainly to help them raise money—modern-day taxes. Relatively benign rulers would solicit funds from citizens to finance roads, armies, temples or bath houses. More predatory ones would skim whatever surplus ordinary



citizens—mostly farmers—had under the threat of violence. The ability to tax hinged on information about who owned and produced what. Where rulers were too weak simply to appropriate the surplus, they often borrowed the required funds. Debt registers are among the oldest economic records early civilizations have bequeathed upon us (Graeber, 2011).

Figures about debt, income and wealth fulfilled clear political purposes. But they were records about individuals and not yet concerned with, say, national averages. That history begins in the seventeenth century when, in what were still private applications, Dutch actuaries began collecting mortality statistics to price the precursors to present-day life insurances (Desrosières and Naish, 2002, p. 24f).

The first protagonist for the public use of economic statistics was William Petty, born in England in 1623<sup>2</sup>. Petty applied this empiricist mindset to a breadth of fields unimaginable to the modern scientist, foraying into musicology, medicine, shipbuilding and natural science. His lasting fame, however, built on a purely intellectual innovation: *Political Arithmetick*. Petty's hour came when the English rulers once more faced upheaval in their Irish colony. Effective domination, Petty realized, required a charted and legible island. The population had to be counted and categorized, just as the land had to be gauged and plotted (Carroll, 2006, p. 52ff). Petty proposed this approach to the English rulers and got his way. In the 1650s he was charged with the infamous Down Survey: a census cum cartography of Ireland to bolster England's grip. However imperfectly, Petty made the island amendable to bureaucratic rule.

It might seem an historical oddity that quantified rule, pervasive as it is today, had its origins in a region as peripheral as seventeenth century Ireland. But that was no accident: the impersonal character of numerical knowledge fit the rule of poorly understood, distant and restive subjects much better than that of nearby local citizens in metropolitan London. As Timothy Mitchell has argued about 19th century European colonialism in Egypt,

[it] opened up a distance, a space of separation, a relationship of curiosity, that makes it possible to see something as “a case,” a self-contained object whose “problems” could be measured, analyzed, and addressed by a form of knowledge that appears to stand outside the object and grasp it in its entirety. (Mitchell, 2002, p. 100)

The English had even more oppressive aims in seventeenth century Ireland than the French and British had in Egypt 200 years later. But for the rest, Mitchell's description fits Petty's

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<sup>2</sup> By far the most authoritative source on Petty is Ted McCormick's biography (McCormick, 2009).



endeavor just as well. Colonial expansion and social cartography through statistics have a shared history (Appadurai, 1996).

Petty synthesized his lessons from the Irish experience as *Political Arithmetick* (Carroll, 2006). Effective domination and benevolent governance—the line between the two was never quite clear—should shun superstition, abstract musing, religious fervor and gut feeling and instead be approached with the same rational and empiricist mindset as modern science. To allow a more systematic comparison of English naval power with that of the United Provinces and France, Petty offered the first ever national income estimate in 1665 (Studenski, 1958, p. 26ff). Social statistics served internal rule; aggregate income statistics power projection towards the rest of the world.

To be sure, in Petty's days, statistics were not divided into social versus economic figures. Just as "the economy" as a separate sphere of social life only blossomed in the 20th century, the numbers that describe it only received the "economic"-label much later. Indeed, as we will see below, the combination of macroeconomic theory and empirical data that claimed to capture it were essential to cement the economy as a separate sphere in our thinking and policy practice (Mitchell, 2002; Hirschman, 2016).

Consonant with the mainstream thinking of his day, Petty saw science-based rule as a positive development. He had studied with Thomas Hobbes in France, who extolled the necessity of a Leviathan—a ruler perched atop society to enforce order, without which people could not live in peace (McCormick, 2009). At worst, top-down rule was a necessary evil for stability, and political arithmetic could make it more effective, rational and less bloody. With a hubris that mirrored the later colonial enterprises, Petty hoped that scientific population management would help "to civilize backwards people". Like Michel Foucault in the twentieth century, Petty saw both the restraining and productive dimensions of the power that political arithmetic would bestow upon its practitioners.

Political arithmetic was a transformative project—science not only with a mission but with a concrete goal. Societies were put under Petty's magnifying glass with the purpose of molding them. His fledgling social and economic statistics served a political project; they were not collected for their own sake or for the idle entertainment of scientists. That said, the statistics remained ad hoc: data collection was driven by problems as they emerged, a far cry from the statistical programs institutionalized around the world today. The 1665 national income estimate was only updated twelve years later.

William Petty died in 1687. But his political arithmetic—a loose approach more than a full-fledged method—flourished. In the eighteenth century, advisors to kings wielded it as a catch-all label for (mostly quantitative) data about populations, trade, stocks, and so on. It



also became professionalized. Petty himself was a political administrator more than what we would think of today as a statistician or bureaucrat. In the decades after Petty's death, political arithmetic morphed from a way of doing politics into a separate field of knowledge generation, with its own professionals—early political scientists. By the mid-eighteenth century, Diderot defined Political Arithmetick as “that [arithmetic] that has as its goal research that is useful to the art of governing populations.”<sup>3</sup> A quarter-century later, Robinet offered an even more recognizable summary: “Political arithmetic is the art of reasoning, through numbers and calculation, about objects that concern public administration.”<sup>4</sup> Ignore the stilted syntax, and what Robinet describes here is the default mode of present-day governance.

## Social statistics' intellectual discontents

Debates over the advantages and disadvantages of trying to capture social reality in spreadsheets are as old as macrosocial statistics themselves (Desrosières, 1998, p. 35ff). Already during his lifetime, Petty had no shortage of critics. But the countermovement against political arithmetic received a singular boost from Adam Smith. While his *Wealth of Nations*, published in 1776, is revered as the foundational text of modern economics, its status at the time was less obvious. Just two years before the *Wealth of Nations* appeared, Smith's contemporary Arthur Young published his own *Political Arithmetic*. And although it was less ambitious in scope than Smith's eventual bestseller, it was well received. Back then, political arithmetic was widespread both as a label and as a practice.

Adam Smith changed all that. The *Wealth of Nations* discusses neither Petty nor Young.<sup>5</sup> Political arithmetic gets a single substantive mention, for Smith to note that he has “no great

<sup>3</sup> » Celle [arithmétique] dont les opérations ont pour but des recherches utiles à l'art de gouverner les peuples. » (Saulnier, 2012, p. 18) The quote is from 1751; translation by the author.

<sup>4</sup> » L'arithmétique politique est l'art de raisonner, par le moyen des chiffres et du calcul, sur des objets qui tiennent à l'administration publique. » (Saulnier, 2012, p. 18) The quote is from 1778; translation by the author.

<sup>5</sup> Petty appears in one footnote, as one of several sources for a point that is peripheral to Smith's overall aim. If anything, this footnote highlights that Smith did read Petty's book but found nothing in there worth mentioning beyond an arbitrary estimate of the time it took the English population to double in size. As if to underline the looseness of political arithmetic Smith subsequently quotes another estimate that he finds in the work of Davenant, a French economist positively predisposed towards political arithmetic (see below). All this reads like a sneer that suggests that “political arithmeticians” cannot even agree among themselves.





faith in political arithmetick, computations.”<sup>6</sup> If you took Smith as the starting point of economic thinking, you might well believe that political arithmetic never existed.

The balance between Smith’s eagerness to push his own label—political economy—and his substantive disagreement with political arithmetic’s approach remains unclear. Either way, he could tap into a numbers-skepticism that had developed alongside the fledgling political arithmetic (Dimand, 1995, p. 25). Two criticisms stood out in *The Wealth of Nations*, foreshadowing present-day suspicions about quantitative social science: numbers have an air of objectivity that can hide political motives, and they have a pretense to accuracy that can mask the patchiness of the data and methods underlying them.

These two problems were well-understood in the eighteenth century. Then, as now, they arise from the tension between statistics as policy tools and as scientific knowledge (for contemporary discussions of the same dilemma, see Dorling and Simpson, 1999; Sætnan, Lomell and Hammer, 2011). Consider this list of political arithmetic’s shortcomings discussed by French pre-revolutionary writers (all these points are from Saulnier, 2012, p. 20ff):

- Political arithmetic is slow but politics is fast—the sovereign will rarely want to wait long for results, and this dents data quality.
- Political arithmetic aspires to be exact, but the sovereign is not interested in exactitude; he [given that rulers were assumed to be male by default] is interested in something that works, even if the underlying science is inexact.
- Poor data quality means that conclusions based on this data are weak as well.
- Calculations are often based on shaky assumptions (for example that certain variables can be omitted from analysis and that correlations generate evidence of causal links).
- When political goals consciously inform political arithmetic, they can misdirect and tarnish the analysis.
- Even the most basic data are made by humans, and this introduces a host of problems, for example because people may have incentives to misreport data.

<sup>6</sup> Book IV, chapter 5 [On Bounties], paragraph 69 of the *Wealth of Nations*. It is what we would today call a throwaway remark – the point Smith makes here in fact has little to do with political arithmetic as a developed form of economic reasoning and simply concerns recent figures about British corn trade and consumption. If even such basic figures deserve skepticism, how much more is that true for the broader conclusions that political arithmeticians base on their data. An accessible online version of the passage can be found here: <http://www.econlib.org/library/Smith/smWN15.html#IV.5.69> (last accessed on 27 February 2018). There is one other mention of political arithmetic, in I.8.33, without any link to Petty at all. The suggestion there is that an estimate of the annual income of laborers, generated through the application of political arithmetic, in fact is not so different from one the contemporaneous Chief Justice Matthew Hale had made, without the need of recourse to political arithmetic.





We immediately recognize all of these problems—the trade-off between the timeliness of data and its accuracy, the reliability of data versus its concept-validity, confirmation bias in the analysis, survey problems, and so on (for a recent summary of such problems, see Smith, 2014). From day one, the critics of political arithmetic highlighted the pathologies that still plague numbers as governance tools today.

Henceforth, statistics evolved on two separate tracks. On the first, we find abstract, intellectual debates about statistical methods and their potential for revealing deeper truths about society (Porter, 1995). For the most part, these disputes remained detached from day-to-day politics. Debates on the second track had a different flavor. Here, the critics of statistics correctly sensed that both their producers and users were often blunt opportunists. Numbers served ulterior political goals, and their champions might well cut corners to craft the numbers they desired, or even just any number at all. They might look the other way when sampling procedures were poor and evidentiary bases too weak to draw solid inferences. They might also trumpet their favorite interpretations of the data, even if the latter could equally support opposite conclusions.

We find this two-track evolution of statistics through history up to the present day. In their inner circles, statistical experts debate the most appropriate way to measure economic property X or Y. But this expert discussion is surrounded by a layer of politics in which the actual users of data—politicians, academics, activists—decide whether and when to use the data, or how to discredit that cited by their opponents. In short, the production, use and contestation of statistical data have also been a crude political game, and it has remained so as statistics have continued their ascent.

## Industrial capitalism and statistics as emancipation

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If statistics became more visible in public life in the second half of the nineteenth century, this was not only due to theoretical advances, but also because new political and social constellations and power struggles followed large-scale industrialization and the rise of organized labor. In the first instance, this reinforced the governance and control-dimension of statistics. As urban masses became visible and extended families were torn apart, the state frequently had to fill the gaps in social provision, for example through old age provisions or insurance (Hacking, 1981). Modernity and industrialization created, on a different scale, the needs of states to administer their populations, one pillar of such administration being the mapping of populations through statistics.



Much more important than intensified top-down monitoring of populations, however, was the opposite movement: statistics as a tool for emancipation and empowerment of the masses. New forms of labor—now compressed in factories—spawned statistics on employment: governments needed to get a handle on an increasingly pressing ‘social question’. Cognizant of the growing potential for mass warfare, political rulers started to look differently on able-bodied subjects and their grievances.<sup>7</sup> Intensifying inter-imperial rivalry asked for a capable and cooperative work- and war-force. Socialist agitation promised a radical alternative to the disenchanted. And so governments started to heed worker complaints about rising costs of living that had earlier fallen on deaf ears. In the same spirit, proliferating unions often spearheaded employment statistics – in the USA, 32 national unions had sprung up by 1870 (Fogel et al., 2013, p. 13). Documenting the routinely dismal position of the industrial underclass clearly had an emancipatory dimension, serving as hard evidence against the arbitrary exercise of power (Desrosières, 2014).

To be sure, price collectors weren’t pursuing some national phenomenon called inflation. Instead, they picked politically sensitive sectors like steel production, tracked especially important foodstuffs like bread, monitored particularly restive cities such as Boston. They chronicled changes in the cost of living to adjudicate between workers anxious about their purchasing power and employers anxious about their wage bill.

If the growth of price statistics had still been lackluster and incremental in the early 20th century, 1914 changed everything. Worker acquiescence and labor peace assumed utmost importance as imperial powers took to the battlefields. More dependent on loyal subjects than ever before and with communism threatening to lure away disaffected workers, governments now felt pressured to monitor workers’ cost of living systematically (Tooze, 2001; Stapleford, 2009). At the same time, border-crossing trade and financial networks were shattered. Globalization 1.0 fell apart at dazzling speed (James, 2001; Frieden, 2006). The resulting shortages, compounded by resource diversion to war production, triggered politically perilous price rises.

Workers in France and the UK didn’t have to wait long for governments to build better price indexes; they appeared in 1914 and 1915, respectively (Hayes, 2011, p. 101f). The US intensified work on cost of living statistics, fearing unrest in shipyards in particular (United States Department of Labor, 1966, p. 2). In Germany, the real push came after the war, in the wake of demobilization and the need for guidance in industrial wage setting amidst economic and

<sup>7</sup> The history of price statistics is not an exclusively European and North American one. If we focus on those countries here nevertheless, then mainly because they did dominate early discussions and both through their relatively early economic development, which gave rise to such statistics, as well as through their global preponderance, significantly influenced developments elsewhere. For early 20th century inflation politics in Latin America, see e.g. (Lanata Briones, 2016).



political turmoil (Tooze, 2001, p. 91). Many of these early indices covered individual big cities: the Weimar Republic calculated separate figures for, say, Nuremberg and Cologne; in the US in 1919, there were no less the 32 different figures, each focused on a different urban area (United States Department of Labor, 1966, p. 2; Tooze, 2001, p. 91; cf. Stapleford, 2009).

Viewed at a century's distance, it is striking how purely practical concerns dominated these cost of living indices. They were to answer a pressing real-world question: how much more expensive had the life of urban workers become whose support political rulers could not afford to lose? If prices rose faster in Seattle than in San Francisco, it was only natural that wage increases in these cities should reflect that. These indices put the paycheck of the average factory worker against his weekly expenses.

Emancipatory as inflation and unemployment statistics may have been, in their concern with "his" weekly expenses, they cemented another axis of inequality: between men and women. Just as economics as a discipline prioritizes and valorizes masculine dimensions of society (Nelson, 1996), concerned with wage labor and production of marketable commodities and services, economic statistics revolved around the male factory worker at their center (Folbre, 1994; Waring, 1999). As I have argued above, statistical measures emerged when extant power constellations were challenged – for example male proletarians compressed into factories. In that view, the lack of statistics that would aid women's emancipation has been an artifact of enduring patriarchal structures in which gender inequality failed to upset existing power structures. In a nutshell, the men in power had to heed male factory workers, but they could very well afford to ignore the injustices towards women. Even as women's emancipation has progressed since the late 19th century, the marginalization of in particular unpaid female labor in economic statistics persists to this day (Hoskyns and Rai, 2007; cf. Alenda and Mügge 2019).

## Connecting the dots

Government statistics professionalized during the 1920s and 1930s. In the final year of the First World War, Woodrow Wilson had already created a central planning and statistics bureau, elevating the role of academic economists in US economic policy (Fogel et al., 2013, p. 34). Right after the Roosevelt administration assumed office in 1933, the new Secretary of Labor called on the American Statistical Association to aid the government's statistics program, with a particular emphasis on cost of living statistics—unsurprisingly, given quickly-spreading economic misery in the wake of the 1929 crash. Germany, France and the United Kingdom too boosted their efforts (Desrosières, 1993; Tooze, 2001). Although the



political dynamics in all these countries were rather different, they shared a common context: the increase in overt government intervention in economic matters, whether through the New Deal or Nazi steering of economic affairs.

What was still missing was the eventual crown on the edifice of macroeconomic indicators—the gross domestic product (GDP) as the quintessence of the nation’s economic power. It is one thing to collect data about social developments in different jurisdictions or territories: how many homeless people live in Birmingham; how much more expensive taxis have become in Istanbul, and so on. But that is different from using these numbers to say something about the condition of a fictitious “national economy,” thought of as a self-contained organism.

The “gestalt” of the national economy, as Karabell calls it, is intimately tied to GDP—the one number that claims to depict the national productive unit in its entirety (Mitchell, 2002; Mitra-Kahn, 2011; Hirschman, 2016). The embrace of GDP in policy-making therefore marks the definitive victory of macroeconomic statistics. Just as debates over statistics had earlier proceeded on two parallel tracks—one intellectual-academic, the other political-pragmatic—this success in the twentieth century built on developments in both arenas. Let’s consider the technical and theoretical advances first.

Although they were not particularly consequential for policy-making at the time, estimates of national income had become more and more sophisticated around the turn of the century, and by the end of the Great War, almost 20 countries had produced such figures (Studenski, 1958; Kenessey, 1994). But these figures were not comparable. The people who compiled the national data had different ideas about which sectors of the economy really mattered, and which ones should be included when calculating national income (Heilbroner, 1953; Kendrick, 1970).

Equally important, they lacked strong theoretical underpinnings. What we would today call macroeconomic thinking is associated with John Maynard Keynes more than with anybody else (Galbraith, 1987; Blaug, 1996, p. 641ff). Keynes deserves this titular position, not least because he was uniquely positioned to make these new ideas relevant to politics and policy (Skidelsky, 2003). At the same time, the Keynesian revolution was not entirely a one-man show. In the late 1920s, Scandinavian economist Ragnar Frisch promoted the mathematical formulation of economic theory and fostered econometric techniques (on Frisch’s contribution to econometrics, see Arrow, 1960); later in his life, Frisch and the Dutch economist Jan Tinbergen emerged as pioneers of macroeconomic modelling, work for which they jointly received the first Nobel Prize in Economics (Vanoli, 2002, p. 35). Economists in Weimar Germany had also developed ideas that later fused into Keynes’ macroeconomic



thinking (Tooze, 2001, p. 290). By the early 1930s, ideas and statistical techniques were thus in place—all that was lacking was decisive support from policy-makers and politicians.

Even if economic thought in political circles had never been a monolithic block, liberal economic ideas had traditionally had the upper hand. What was the use of costly public statistics if economic micromanagement by governments was superfluous? Inflation and unemployment figures had been political weapons more than instruments of holistic economic policy. But as organized labor became a force to be reckoned with, citizens gradually gave political elites responsibility for economic development in emerging welfare states (Celik, 2016).

The trend towards active government intervention accelerated as the First World War wreaked havoc on national economies and the nineteenth-century gold standard crumbled between the two world wars (Frieden, 2006). However chaotically, the 1917 Bolshevik revolution cemented government planning in the world's largest country for the subsequent seven decades. But also in countries that didn't succumb to authoritarianism, public authorities slowly climbed into the driving seat (Frieden, 2006, p. 229ff), leading to much more intense state monitoring and stewardship of economy activity.

The 1929 crash in the US economy finally created the political demand for a systematic overview of economic activity (Lepenies, 2013; Philipsen, 2015). Quizzed by Congressmen, US government agencies were unable to answer basic empirical questions about the collapsed American economy. In 1932, Congress instructed the Department of Commerce to compile national income estimates for the years 1929 to 1931 (Masood, 2016, p. 11ff). Simon Kuznets became the person to do it (Fogel et al., 2013). Together with the British Colin Clark and Richard Stone, he created the foundations of the now ubiquitous Gross Domestic Product (GDP) (Lepenies, 2013).

It would be unfair to suggest that the web of national statistics that grew ever denser after the Second World War was somehow an instrument of malign nationalism, even if it reinforced nations as seemingly natural social units. In fact, national economies played a much more paradoxical role, as they became part of the answer to the horrors of the two world wars. Keynes argued that government intervention was necessary to smoothen business cycles and to stimulate aggregate demand during slumps to forestall the kinds of economic implosion seen by the USA after the 1929 Wall Street crash or by Germany in its gradual economic demise since the mid-1920s (Skidelsky, 2003). Economic and thus political balance would not come to societies by themselves; it required public support. And for that to work, the economy needed to be charted.



## Numbers conquer the globe

The story of statistics as told thus far has mainly unfolded in Europe and North America. But macroeconomic indicators are not just a story of “the West.” Governance by numbers had taken root outside of Europe and North America before the globalizing push following the Second World War. Countries in South America had begun collecting statistics much like their European counterparts early in the twentieth century (Studenski, 1958; Lanata Briones, 2016). Debates in Brazil and Argentina about, say, the utility of inflation statistics closely tracked those elsewhere in the world. At the same time, thinkers from outside the Northern hemisphere had limited influence on the methodological debates there. Where statistical ideas travelled around the globe, it was mostly one-way traffic.

More consequentially, although macroeconomic indicators were mainly conceived by and for highly developed capitalist countries, they soon spread around the world. International organizations from the United Nations (UN) to the International Monetary Fund (IMF) and the World Bank proselytized for economic statistics in the name of modern economic governance and prosperity. The League of Nations, the United Nation’s predecessor, had already collected some data, just as the International Labour Organization (ILO) had done after its foundation in 1922 (Mitchell, 2002, p. 101).

GDP has formed the keystone of domestic statistical edifices, and its march around the world has been the leading form of international statistical harmonization. GDP’s spread was again directly linked to the Second World War. The USA and Canada had set up the Organisation for European Economic Co-operation (OEEC) in 1948 to administer and monitor the distribution of Marshall Aid (Masood, 2016, p. 34f). As part of that effort, the North American donors requested Western European countries to provide economic statistics in line with the GDP template that Richard Stone had pioneered.<sup>8</sup>

Around the same time, the United Nations Statistical Office (UNSO) was also poring over statistical standards for the world, and it eventually turned to Stone to adapt what he had developed for the OEEC into a global standard. Former senior UN statistician Michael Ward finds that

the bold objective to “quantify the world” was very close to what the founding fathers of the UN statistical system originally set out to accomplish. [...] The aim [of the UNSO] was to enable everyone to adopt and follow the same compilation procedures and it became incumbent

<sup>8</sup> Lepenies (2013) details this dynamic for the introduction of GDP in the post-war Federal Republic of Germany.





on the UNSO to develop an extensive program of technical assistance to draw all countries into the fold and apprise them of their standard reporting obligations. (Ward, 2004, p. 5f)

The world may never conform to the lofty ambitions of the UN—true human equality and dignity. But for all we know, key figures such as the British Stone and the Indian Mahalanobis genuinely saw statistics as part of a drive to put politics on more rational foundations (Ward, 2004, p. 3). Just as Petty had championed an approach to politics beyond tradition, unquestioned beliefs and superstition, the UNSO, under Stone’s guidance, hoped—however naively—to develop tools that would allow governments to pursue more enlightened and effective policies.

That said, two additional factors pushed the development of international organizations such as the UN to become clearinghouses for statistical standards and to promote their application around the world. First, the System of National Accounts (SNA), which codifies how GDP is calculated, suited an approach to economic policy heavy on government intervention and planning. The kind of system that the UN propagated was built for a specific approach to policy, one that could be practiced relatively sheltered from economic disturbances beyond national borders. In this sense, the SNA had a high-modernist flavor (cf. Scott, 1998; Mitchell, 2000).

The second aspect is even more important. Even before the Second World War was over, the 1944 conference at Bretton Woods hammered out the contours of the post-war international economic order (Block, 1977; de Cecco, 1979; Frieden, 2006). Governments agreed that their balance of payments would be regulated by international rules. Cross-border payments were legitimate as compensations for trade; in contrast, governments retained the right to limit capital flows—in particular capital fleeing a country to earn higher returns elsewhere. They also fixed exchange rates and resolved to adapt them only through multilateral agreement, especially when currency devaluations seemed inevitable to stem money outflows.

Here statistics enter the picture: “monitoring” effectively meant collecting data about countries’ balance of payments. Without centralized data collection, it was impossible to decide whether a country had stuck to the agreement or faced sufficient economic adversity to justify special treatment (Mügge, 2019). The IMF could not collect the data in the countries itself, so it developed a detailed rule book for statistics-building—what became the Balance of Payments Manual (BPM), the first edition of which appeared in 1948 (cf. Linsi and Mügge, 2019). This first BPM was still an undertheorized how-to guide. The second edition appeared two years later and “greatly [expanded] the material describing the concepts of the system” (International Monetary Fund, 2009, p. 3). It had shifted from an inductive exercise—rote data collection—to a system aspiring to intellectual coherence. The same happened to the System





of National Accounts, which—as the name suggests—aspired to capture the national economy in its entirety rather than just a specific, if important, dimension of it.

Thinking back to the UN’s original mission, it is surprising that this organization emerged as the one to internationalize national income measures in the form of gross national product (GNP) and later GDP. At least in theory, the UN was charged with promoting peace among the world’s nations and improving the lot of humanity. The latter mandate would suggest a stronger focus on poor people, and with it the privileging of different statistics, in particular those focused on social development (nutrition levels, adequate shelter and so on). After all, the main problem in many developing countries was—and to an important degree remains—abject poverty and widespread hunger and malnutrition. These concerns are not well captured in statistics that focus on things like (effectively male) employment and aggregate output. But when the UNSO was set up, the UN only had 46 members, the majority of them developed countries (Ward, 2004, p. 6). The dominance of the affluent world shaped the statistical lens through which the UN studied economic development as powerful nations championed more narrowly economic statistics privileging capitalist values.

The mismatch between the concerns of the poorest countries and the statistical measures pushed onto them mars global statistical standards up to this day. As is widely acknowledged, particularly poor countries struggle to produce economic statistics that satisfy the expectations of the international organizations that collate them (Jerven, 2013). These problems are often tied to the specific political, economic and administrative regimes to which the colonies were subjected (for the Indian case, see e.g. Appadurai, 1996). Colonialism messed with the statistics of the imperial powers as it made delineating “national (colonial) economies” even more complicated—after all, flows of capital, labor, knowledge and profits between colony and metropole were extensive and often poorly monitored (Mitchell, 2002, p. 111). In the lineage of these asymmetrical relations, GDP statistics today continue to skew our image of the global distribution of production, because they confuse observed prices with inherent value-creation (Smith, 2012; Mügge, 2019).

Beyond the obfuscation of global power dynamics, international statistical standards inspired by industrialized nations often proved ill-fitting for developing countries. For example, agricultural statistics assumed “farms” to be the productive units (Mitchell, 2002, p. 113). But in many parts of the world, agricultural production was not organized in farm-like entities at all, certainly not commercial ones (Varga, 2018). Standard ILO definitions of unemployment have been devised for highly industrialized countries. They catch labor market conditions poorly when much work is informal, when subsistence looms large, when racial cleavages systematically exclude people from work or when the practical costs of finding work prevent people who want paid employment from looking for it (Alenda and



Mügge forthcoming). Imposing such statistical frames inevitably generates misleading figures. As decolonization gathered pace in the second half of the twentieth century, the suitability of international statistical standards for developing countries became only more doubtful (Masood, 2016, p. 52).

The IMF mission—and the international role of macroeconomic statistics more generally—changed once the Bretton Woods System of fixed exchange rates and capital controls unraveled around 1970 (Helleiner, 1994). When the USA drastically raised its interest rates after a decade of accelerating inflation in 1980, the debt bonanza triggered sovereign defaults—most prominently in Latin America. The IMF stepped in with loans tied to stringent conditions in the form of structural adjustment, which, more often than not, entailed economic liberalization and privatization of government assets as well as the reorientation of domestic production towards short-term profitable export crops or commodities. To establish whether borrower countries were sticking to the agreements, to monitor how their economic situation was evolving and whether debt loads were sustainable, the IMF needed reliable economic statistics (Hjertholm, 2003).

None of this is to say that the IMF's policies generated satisfactory results; critics have frequently depicted the IMF as more of a Trojan Horse for Western economic interests than as a genuine partner for crisis-stricken countries (Bello, Cunningham and Rau, 1999; Soederberg, 2001). And particularly in countries with very low statistical capacity, the meaningfulness of the data gathered by the IMF remains questionable (Jerven, 2013). But these doubts about whether statistics function as their champions claim raises the stakes on understanding the politics behind them. After all, international investors consider debt and inflation data when they price their loans (Mosley, 2003), and international aid allocation and debt forgiveness take these numbers seriously (Hjertholm, 2003; Kerner, Jerven and Beatty, 2017).

Over the decades, statistical emphasis closely tracked the evolution of dominant development ideas and the mandates of the international organizations presiding over them. In 1997, unsustainably high capital inflows into Southeast Asian countries reversed direction and forced countries there to prop up their exchange rates with rapidly depleting government foreign exchange reserves. When the latter were used up, domestic currencies collapsed and the IMF had to step in.

But this time around, it was hard to blame poor economic policies for the collapse. The countries hit hardest—Indonesia, Thailand and Malaysia—had not been disparaged as basket cases following antiquated interventionist policies; rather, this second wave of “Asian



Tigers” has been applauded for their export-oriented development strategies and GDP growth rates.<sup>9</sup>

Nevertheless, the emerging narrative still pinned the blame on governments in the region. International investors had been unable to monitor government finances effectively; the piecemeal provision of economic data had caused tectonic shifts in investor sentiment, which then got out of hand. Had trustworthy information been more readily available, none of this, it was implied, would have happened and adjustment would have been gradual (IMF, 1998).<sup>10</sup>

This version of the crisis carried specific implications for international statistics: for ‘global market forces’ to allocate capital efficiently and discipline developing countries towards beneficial economic policies, they needed trustworthy, high quality data. As part of the regulatory reform package that became the new standard for governing financial systems, countries were asked to improve their data sharing. Not unlike membership levels in air travel loyalty programs, countries could sign up to the General Data Dissemination Standard (GDDS, bronze level), the Special Data Dissemination Standard (SDDS, silver) or the SDDS Plus—the gold standard. True to the belief that in a world of perfect information flows, global financial markets could prod governments to ideal policies, macroeconomic statistics in line with international standards have become a key plank in the effort to optimize global economic governance.

To be sure, it would be misleading to see an organization such as the IMF as an autonomous force; like the World Bank, it has a hybrid role in the global economy (Woods, 2006; Broome, 2010). Although both confront their clients as powerful masters, they remain the agents of influential member states and, like it or not, often do their bidding (Momani, 2004). But this ambivalence only strengthens the lure of statistics, because quantitative targets and reliable metrics are indispensable in the struggle to safeguard organizational independence (Barnett and Finnemore, 2004, p. 68). The longer the chains of accountability, the more attractive reductionist and seemingly hard metrics become as instruments of control.

<sup>9</sup> The first set of four Asian Tigers were South Korea, Taiwan, Singapore and Hong Kong. Together with Japan, Thailand, Malaysia and Indonesia they were roundly lauded in the 1993 World Bank Report *The East Asian Miracle*. (Birdsall et al., 1993)

<sup>10</sup> Needless to say, that was a very particular narrative of the crisis. An alternative account would lay much more blame with investors themselves and their inevitable herd behavior (e.g. Sachs and Radelet, 1998). In that way, there is built into the statistics that are collected power relations about the dominant definition of a problem. On top, there is built into the Enhanced Surveillance Mechanism the idea that more information makes us more secure in our investment decisions – that markets can function really well if only all the relevant information is there. That is highly dubious (Mügge and Perry, 2014).



Early in the twenty-first century, macroeconomic indicators as we know them have become part and parcel of the global economic governance landscape and the way we run our individual economies. Remarkably, the indicator landscape has changed little over the past decades. The main indicators have been around in some form for decades, some of them for much longer. So has criticism of them (Morgenstern, 1963). It has taken 15 years to update the 1993 System of National Accounts to its current 2008 version, which many countries have yet to implement. This is remarkable in an age in which globalization and digitization are transforming our economies fundamentally (Sennett, 2006; Brynjolfsson and McAfee, 2014; Baldwin, 2017).

That said, the basic dynamic I have highlighted so far—that, be it with some delay, economic statistics are adapted to suit the political context of the day—remains intact. On the one hand, standard macroeconomic indicators have increasingly been castigated for the putative narrowness, including their materialist and market-oriented biases. By design, they fail to capture most consumption and production that happens outside the market (Stiglitz, Sen and Fitoussi, 2010), and they have a hard time incorporating economic production that builds on ephemeral digital inputs and knowledge (Brynjolfsson and Saunders, 2009).

This criticism is plausible. The reaction, however, has not been to scale back skewed quantification, but rather to enlarge its ambit also to include dimensions of economic life that had hitherto escaped it. The UK Cameron government had ordered a review of national statistics to establish how the digital economy—including free-to-use apps such as Google Maps—could be captured in GDP figures (Bean, 2016). During the recent years, the German, French and Dutch governments have all commissioned reviews of their economic statistics to gauge whether they should or could be made to capture the more elusive dimensions of economic life (Moati and Rochefort, 2008; Stiglitz, Sen and Fitoussi, 2009; Deutscher Bundestag, 2013; Tweede Kamer der Staten Generaal, 2016).

Externally, we find the same dynamic. The Bretton Woods institutions have broadened their remit and understanding of “development” over the decades. The Human Development Index went from one indicator (GDP per capita) to integrating three; the Millennium Development Goals took the number of indicators into the double digits; the Sustainable Development Goals now track more than 150 indicators. This broadening of the indicators is well-intentioned, and helps to address previous blind spots in development policies, for example concerning gender equality, local cultural heritage or ecological dimensions. Yet the response is to draw the net of monitoring and governing by numbers ever wider—not only in economic and developmental policy, but in international politics more generally (Davis et al., 2012; Cooley and Snyder, 2015; Kelley, 2017; Broome, Homolar and Kranke, 2018). In our



days, the World Bank tries to make countries in the global south legible through the SDGs. Are those efforts a perpetuation of the past asymmetrical relationship, or a reversal of them, given that they now aspire to support and collaboration rather than extraction? Whichever way we look at it, it would be naïve—for either side—to ignore that the statistics produced along the way are political tools with an eye to social transformation, not just information that languishes on statisticians' desk, waiting to be used.

## Conclusion: political arithmetic today

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Modern day evidence-based policy has forgotten—or consciously ignores—its roots in political arithmetic, an openly normative political project. Yet to paraphrase Robert Cox (1981), statistics are always developed for someone and for some purpose. Political arithmetic as a lens encourages us acknowledge this political purpose when we study statistics or use them in our own reasoning and research.

Statistics can outlive their usefulness and continue to be produced, for example due to rigid political institutions or sticky international statistical standards. There is no automatism that would keep indicators aligned with present-day priorities, whether those of current political masters or anybody else. Yet it is precisely when they are so deeply engrained as to seem natural—as is true for example for GDP—that the political baggage may be both most relevant and easiest to miss.

This truncated history of economic statistics has highlighted the political purpose underlying them. They have their roots in colonial endeavors in Petty's time. Yet since they have matured in the 20th century, they have solidly been built around white, male wage-labor in factories in the Global North. Consonant with that, they privilege an image of production and consumption that centers on material goods, without too much concern for hidden costs. Acknowledgement of that baggage is essential when we use statistics today.

This mission is important because much contemporary evidence-based policy is political arithmetic in self-denial: policy instruments and their application are infused with political values, and these political charges belie the veneer of objectivity of which evidence-based policy prides itself. Contemporary statistics-bashers sense as much, even if their criticism frequently overshoots and misses its goal.

At the same time, statistics don't deserve the opprobrium their critics heap on them. They are powerful when they structure reality for us. Yet they can serve progressive and emancipatory as well as oppressive goals. Indeed, when social and economic complexity



seems bound to overpower us and our institutions, numbers remain essential to condense complicated conditions into actionable and easily communicable information. Numbers as governance tools won't disappear anytime soon, and neither should they. The appropriate stance towards them is neither nihilism nor condemnation but constructive criticism.



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