Economics from the Top Down

new ideas in economics and the social sciences

The Business-to-Industry Index and the Geography of Global Capitalism

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> *'Industry' and 'business' . . . are not synonyms . . . they are opposing realms of human activity*.
>
> — Jonathan Nitzan and Shimshon Bichler

A defining feature of neoclassical economics is that it treats 'business' and 'industry' as synonyms. As such, mainstream economists assume that a firm's business income reveals its industrial output

To arrive at this convenient equivalence, economists pretend that in a competitive market, commodity prices reveal the production of consumer 'utility'. So when economists speak of 'output', they mean the creation of paid-for satisfaction. But since this 'utility' goes perpetually unmeasured, the whole operation represents an act of faith — no different than the imagined equivalence between the father, the son, and the holy ghost.

Looking at this act of ideological faith, Jonathan Nitzan and Shimshon Bichler find little reason to believe. Instead, they take the heretical view, first articulated by Thorstein Veblen, that 'industry' and 'business' are *opposing* activities.

Let me explain their thinking.

In the Veblenian sense, the human capacity to be 'industrious' predates capitalism; indeed, it predates humanity. All living things are 'industrious' in the sense that they pursue activities that help them survive and reproduce in the natural world. So when humans farm corn, we are manifesting a deep biological urge to exploit the natural world in ways that benefit us.

Enter capitalism. In capitalism, human industriousness gets controlled by a paywall. Thus, when a capitalist farmer grows corn, he does so not to feed himself (directly), but to make a profit. As such, farming becomes a 'business' activity marked by the use of property rights to extract income.

This use of property rights, in turn, gives rise to a complicated relation between human 'industry' and capitalist 'business'. Sometimes, what is good for business is good for industry. For example, when a farmer buys a larger tractor, he can grow more corn, and therefore, receive more income. But other times, business benefit comes at the *expense* of industry. For example, if a farmer monopolizes the corn market, he can extract more income by restricting corn production and raising corn prices. The point is that outside of neoclassical fantasies, 'industry' and 'business' have a complex relationship that cannot be deduced from armchair theory. To understand how the real world works, we need to get our boots muddy with actual data.

Enter the *business-to-industry index*. This is a metric that I devised while thinking about the business of the US Pentagon (and its surprising inability to wage war). In this essay, I explore how the business-to-industry index can be used to study the broader history and geography of capitalism.

Here's the basic math that I'll apply. The business-to-industry index consists of a double ratio. For a given entity, we calculate the business-to-industry index by dividing the entity's share of world income by its share of world energy use:

$$\text{business-to-industry index} = \frac{\text{share of world income}}{\text{share of world energy use}}$$

In this metric, the numerator is a measure of business success. (Since the goal of business is to extract income, we can measure its success in terms of an income share — the most general being the share of world income.) In contrast, the denominator is a measure of relative industrial capacity, as measured by the ability to harness energy. (I focus on energy because it's the universe's natural currency — the fundamental quanta that makes stuff 'go'.)

Looking ahead, I get the analysis rolling by studying the long-term history of capitalism, as captured by the rise (and fall) of three hegemons: Britain, the United States, and China. In all three cases, I find that these hegemons went through a period of industrial 'disruption', during which the business-to-industry index fell, followed by a period of 'monetization', during which the

business-to-industry index rose. One of the most startling conclusions is that when it comes to setting the stage for business monetization, communism may be the best game in town.

Next, I switch gears and look at the geography of modern capitalism. Taking a nod from world-systems theory, I search for the 'core' of global capitalism by looking for the regions that are most business dominated. That leads me down a tangent on US politics, followed by a return to the world stage.

All in all, I hope to convince you that the business-to-industry index is useful for understanding the structure of global capitalism. Consider it an unpaywalled tool for studying the world's business paywalls.

Part I: A brief history of capitalist hegemony

History, one might say, is a book about the past that is written with the present in mind. As such, writing a coherent history of capitalism requires understanding this system as it exists today.

Working during the most frenzied period of the British industrial revolution, Karl Marx saw capitalism as a 'mode of production' with capitalists at the reins. This vision was not a bad description of 19th-century British industrialism; it is, however, a terrible description of 21st-century capitalism — a system that is plainly dominated by finance and its abstract manipulation of property rights.

Sadly, Marx's 19th-century vision has come to dominate contemporary histories of capitalism, making them feel frustratingly incomplete. Giovanni Arrighi's seminal book *The Long Twentieth Century* is a good example. The book sketches the history of capitalism by charting the rise and fall of four world hegemons (Genoa, the Netherlands, Britain, and the United States). So far so good. Unfortunately, Arrighi then tries to study the financial nature of capitalism while simultaneously holding onto Marxist baggage about 'modes of production'. The results are (in my mind) both confusing and disappointing.

Still, Arrighi's analysis of hegemonic cycles represents one of the most compelling ways to study the history of capitalism. By applying the business-to-industry index to this topic, not only can we uncover the changing currents of global capitalism, we can also understand why Marx thought the way he did.

The business-to-industry index in Britain

For Arrighi, the history of capitalism unfolded through four waves of hegemony: the first wave came with the 16th-century expansion of Genoa, the second with 17th-century Dutch conquest, the third with the 19th-century British empire, and the fourth with the 20th-century United States. Of these four waves of global power, we can construct the business-to-industry index for the latter two. Let's get started by using the business-to-industry index to chart the rise and fall of British power.

Figure 1 shows two views of British hegemony. The blue curve shows the 'business view' — the British share of world income. And the red curve shows the 'industry view' — the British share of world energy use. In broad terms, these two views of British hegemony are similar, which is expected. But what interests me here is the *relation* between the business view and the industry view. To capture this relation, Figure 2 shows the long-term history of the British business-to-industry index.[1]

Before diving into the evidence in Figure 2, let me pause to define some terms. When a region has a business-to-industry index that is *greater* than one, I say that this region is 'business dominated' — it receives more income than is warranted by its share of world energy use. Similarly, when a region has a business-to-industry index that is *less* than one, I say that this region is 'industry dominated' — it consumes more energy than is warranted by its share of world income.

Next, when the business-to-industry index drops over time, I call this a period of *disruption*. And when the business-to-industry index rises over time, I call this a period of *monetization*. Note that I've chosen this language to echo the jargon used by Silicon Valley startups, because I think their ethos mimics larger currents in capitalism.

In Silicon Valley, 'disruption' is code for technological innovation mixed with low prices that are designed to capture market share. To see this strategy in action, just look to the unfolding AI boom. Not only are AI companies rushing to push out a new technology, they're dumping their product at prices so low that we need knew adjectives to describe the scale of their losses. Of course,

[1] I should point out that all the charts in this essay plot the business-to-industry index on a log scale, because such a scale gives the index symmetry. That is, a business-to-industry index of 2:1 (business dominance) should mirror a business-to-industry index of 1:2 (industry dominance). Only the log scale preserves this symmetry.

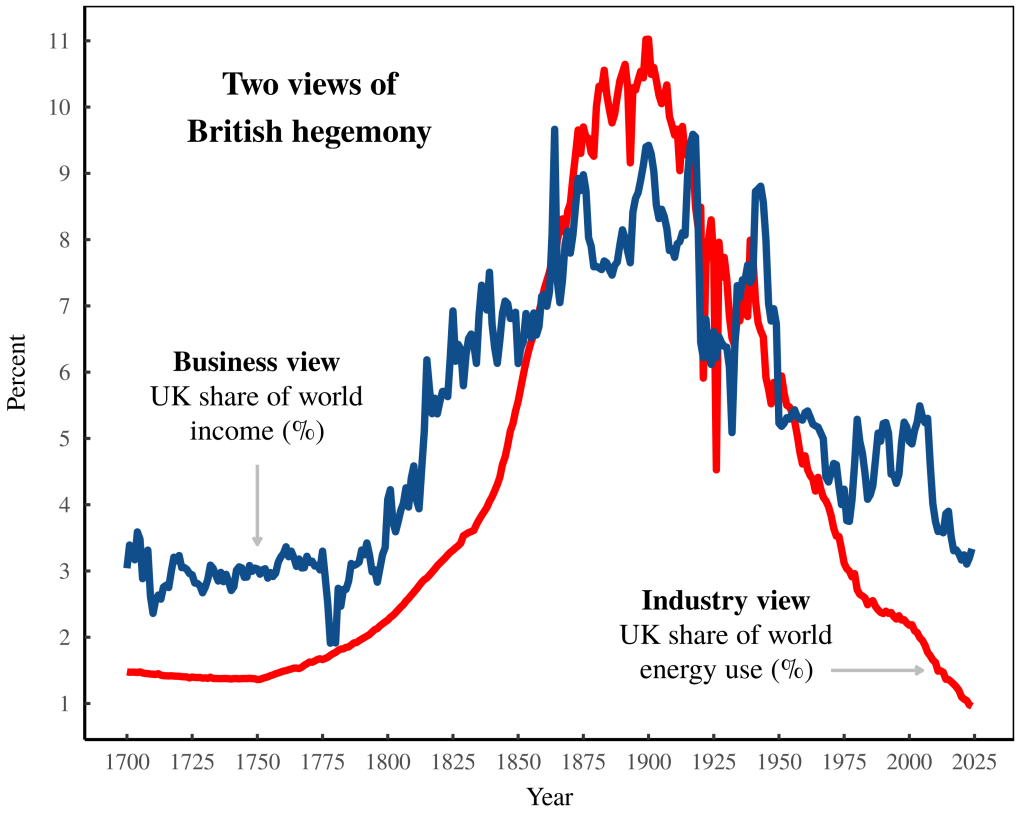

Figure 1: Two views of the rise and fall of British hegemony

The blue curve shows the 'business' view of British hegemony — Britain's share of world income. The red curve shows the 'industry' view — Britain's share of world energy use. Sources and methods

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everyone knows that this disruption can't last. But for the AI companies playing this game, the hope is to capture enough market share that they can eventually flip on the monetization switch, hike prices, and rake in money.

Returning to the history of the British business-to-industry index (in Figure 2), it seems that capitalist empires may play a similar game, albeit one that is unplanned. When our data begins at the turn of the 18th century, Britain was already a major world power, having been propelled to global dominance by its naval prowess. Now as a rule, centers of power are places that are business dominated (they have a share of world income that far surpasses their share of world energy use). So given Britain's 18th-century status as an established imperial power, it's unsurprising that we find the place to be business dominated. What *is* surprising is the period of disruption that followed.

Figure 2: The business-to-industry index in Britain

The business-to-industry index consists of the ratio between an entity's share of world income and its share of world energy use. This chart combines the time series in Figure 1 to plot the British business-to-industry index over the last three centuries. Note the log scale on the vertical axis. Sources and methods

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Since the dawn of civilization, empires have waxed and waned; they have conquered new territory and then relinquished it. But before Britain, no empire had harnessed the industrial power of fossil fuels. When Britain began to exploit its coal reserves in the 19th century, the industrial disruption that followed caused the British business-to-industry index to plummet. Yes, Britain as a whole got richer, but at a pace that was slower than its frenzied energy burn. By the late 1800s, Britain had become the world's factory, dumping manufactured goods onto the world stage at bargain-basement prices.

Of course, this period of disruption did not last forever. By the early 20th century, British capitalists had begun to monetize, causing the business-to-industry index to rise steadily. But before we get to this period of monetization, it's worth dwelling on the period of British industrial disruption.

As we'll soon seen, both the US and China saw their business-to-industry indexes drop steadily during their most intense periods of industrialization. Based on this evidence, it seems plausible that rapid industrialization is associated with a falling business-to-industry index. Again, the startup mantra shows why. If you want to gain industrial dominance, your product must be competitively priced, even to the point of business loss.

Of course, I'm *not* saying that during the 19th century, British capitalists decided to under-price their commodities so that they could later monetize their property rights. Surely, there was no such foresight. What I *am* saying is that when an industrial build-out occurs, it's likely created by a social environment that encourages technological innovation yet suppresses workers' income.

Thinking about this environment, the work of Karl Marx is informative, because he studied during the most intense period of British industrial disruption. Note four features of Marx's thinking.

First, Marx legitimately admired the productivity of British capitalism — indeed, he thought capitalism was so productive that it would set the material stage for socialism. (In hindsight, the reverse was true; wherever it existed, state communism set the stage for capitalism. More on this reversal when we look at the rise of China.)

Second, Marx was critical of the poor wages paid to 19th-century factory workers. He did not foresee the affluent salaried class that would emerge during later stages of capitalism.

Third, Marx was obsessed with so-called 'real capital' — the ownership of machines and factories. He dismissed finance as 'fictitious capital'. Of course, after Marx died, it became obvious that finance was a rather unfictitious form of power.

Fourth, Marx thought that capitalism's key failing was that in a competitive market, the rate of profit tended to fall.[2] Thus, capitalists would slowly compete themselves into oblivion, paving the way for a socialist utopia. Marx clearly failed to anticipate the power of oligarchy and its ability to profit from institutionalized exclusion.

Now, my point is not (solely) to criticize Marx, but to observe that he was a man of his time. He wrote about the social tendencies that existed during an intense period of industrial disruption. He erred not in describing these tendencies, but in thinking they were permanent features of capitalism. They were not.

For the 21st century observer, the trends that followed need no introduction. As British wages rose, British capitalists realized that so long as property rights were enforced internationally, they could offshore their factories while continuing to onshore their profits. And so the manufacturing bustle of 19th-century London was replaced by the white-collar hustle of global finance. To be specific, the ship-building yards closed, but the shipping insurance business (Lloyds of London) flourished.

For their part, modern Marxists look at this transformation and see pathology. However, a more apt description is that under capitalism, monetization is what naturally follows an industrial build out. The build out creates transitory technological superiority, which allows elites to ensconce more enduring forms of institutional power. What follows is the mature stage of capitalism, in which elites monetize the long tail of their declining institutional power. Sure, this behavior creates all forms of cravenness; but for the late-stage capitalist, it is rational calculus. It is more profitable to toll than to build.

[2] In a mainstream context, the 'rate of profit' is synonymous with the 'profit margin' — profit as a share of revenue. However, when Marx spoke of a falling 'rate of profit', he was referring to a different ratio — profit as a share of the *capital stock*. The problem with Marx's thinking is that his denominator is an amorphous quantity.

If we look at the stock of capital that capitalists themselves care about — market capitalization — the rate of profit has not fallen. And that's by design; profit is what owners use to perform their ritual of capitalization. If instead we impute a more expansive concept of 'capital' that somehow aggregates across all capital goods, well there we run into trouble. First, owners don't actually care about this form of 'capital', so it's unclear why it matters. Second, aggregating capital goods is a fools errand, since it depends circularly on prices, as the Cambridge capital controversy revealed. (For a nice demonstration of this aggregation problem, see Nitzan and Bichler's discussion in Chapter 8 of *Capital as Power*.)

The business-to-industry index in the United States

Traveling across the Atlantic, let's now look at the history of the business-to-industry index in the United States. Figure 3 shows the business and industry views of US hegemony, both of which rose until 1950 and fell thereafter. Meanwhile, Figure 4 combines these two views to calculate the US business-to-industry index.

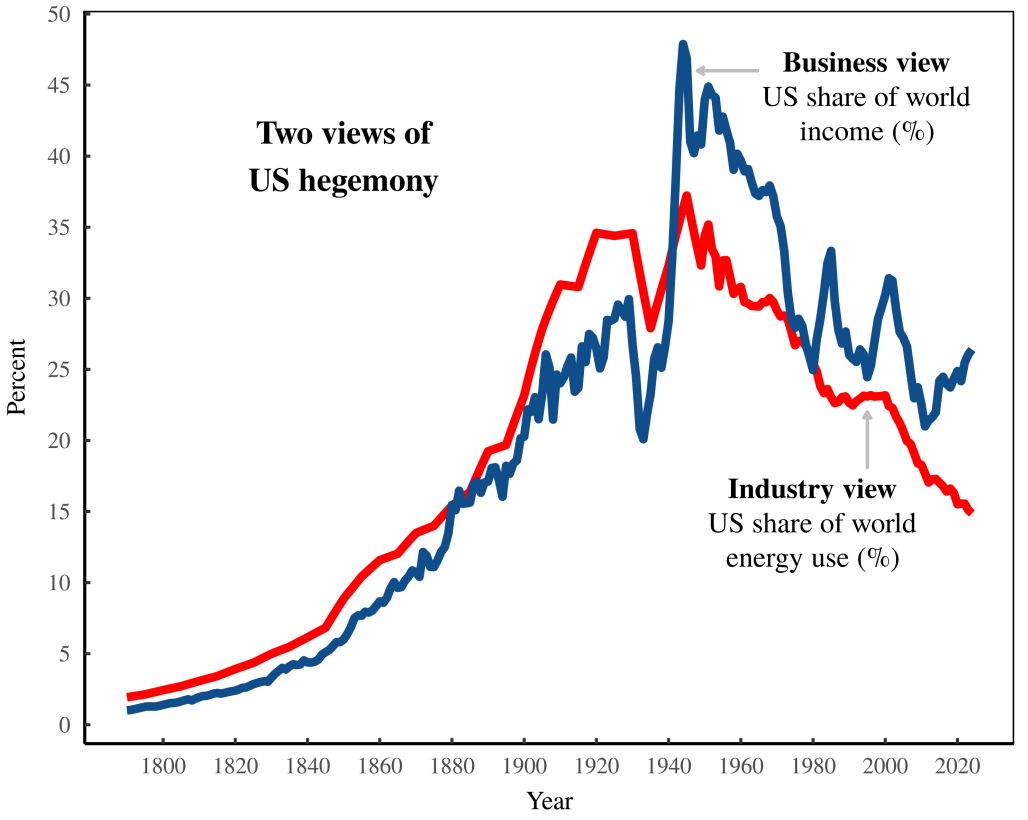

Figure 3: Two views of the rise and fall of US hegemony

The blue curve shows the 'business' view of American hegemony — the US share of world income. The red curve shows the 'industry' view — the US share of world energy use. Sources and methods

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Looking at Figure 4, let's discuss the business-to-industry trends. Unlike Britain, which entered our historical record as an imperial power, the United States enters our record (in 1790) as a colonial periphery, having freshly won independence from the British crown. As a periphery in the capitalist system, we find that the early US was industry dominated — its share of world income was dwarfed by its share of world energy use. But as the former colony gained power (driven in no small part by slave labor), its business-to-industry index steadily rose.

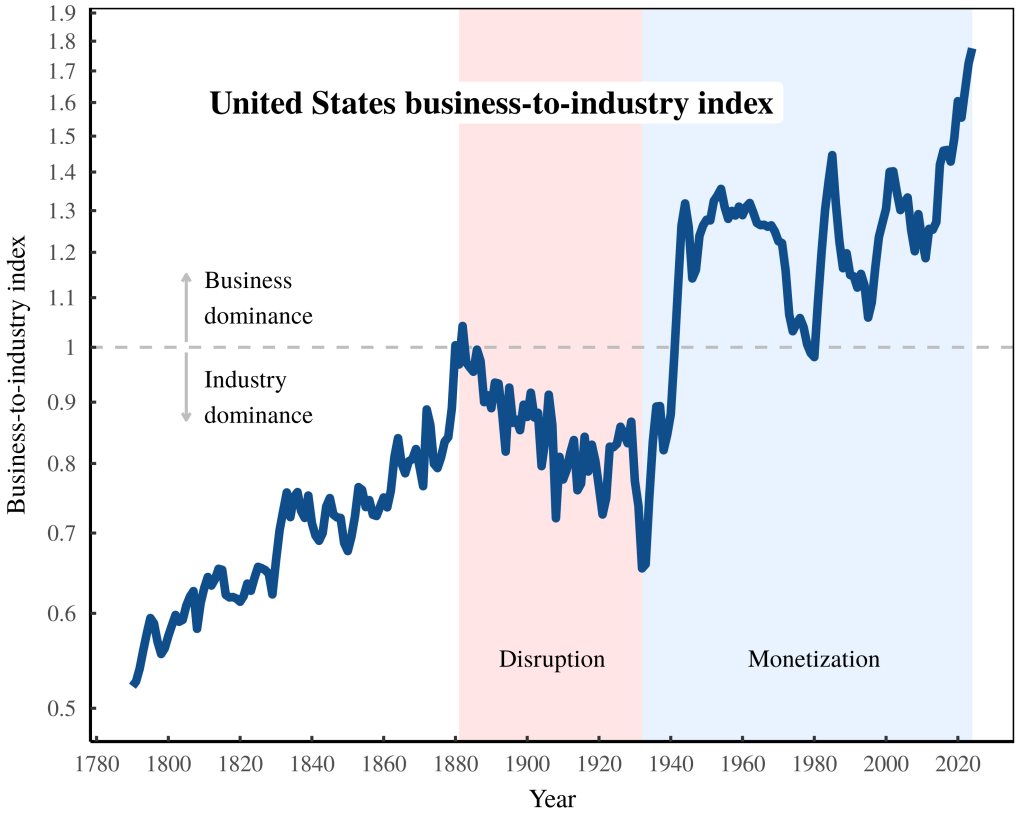

Figure 4: The business-to-industry index in the United States

The business-to-industry index consists of the ratio between an entity's share of world income and its share of world energy use. This chart combines the time series in Figure 3 to plot the US business-to-industry index over the last two centuries. Note the log scale on the vertical axis. Sources and methods

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Note that this early period of US expansion was a standard story of imperial conquest. European settlers came to the New World where they first expunged the natives and then exploited the land for themselves. As this expansion unfolded, US coastal cities became centers of business. In the annals of human history, such conquest is standard practice. But what came next was more abnormal.

By the late 19th century, the US entered a fifty-year period of industrial disruption marked by a steady stream of technological innovation. In 1882, Thomas Edison built his first commercial electric power plant. In 1886, Carnegie Steel built the world's largest open hearth furnace. In 1892, John Froelich built the first viable gas-powered tractor. In 1896, Henry Ford built

his first automobile. And in 1903, the Wright brothers built the first airplane. By the end of World War I, this run of technological innovation had allowed the US to surpassed Britain as the world's factory.

As in Britain, the era of American disruption was formative not just for industrialism, but also for political economy. In 1899, John Bates Clark published his wildly influential book *The Distribution of Wealth*, which expounded the neoclassical theory of income distribution. And in 1910, Irving Fisher wrote his seminal neoclassical textbook *Introduction to Economic Science*. Collectively, James Tobin later noted, the two men helped erect the 'temple' of American neoclassical economics.

In this temple, capitalism is theorized as a competitive market in which firms are unwittingly forced to maximize social welfare. Of course, for those who stared closely at this theory, it was always a fairy tale. But at the turn of the 20th century, it was at least a mildly believable story. Although the robber barons actively stymied competition, these men were still titans of *industry*; they built real factories and real infrastructure.

Today, neoclassical textbooks continue to wax about the market production of 'stuff' (i.e. 'widgets'). But in the mean time, American capitalists have offshored their factories, leaving the dirty work of making things to others. That's because the real money is made by monetizing the institutional vestiges of American power.

Of course, legions of political economists have commented on the 'deindustrialization' and 'financialization' of American capitalism. In this light, the rising business-to-industry index of the last half century simply provides another way to quantify an otherwise widely-recognized pattern. That said, the long-term trend in the business-to-industry index also shows something new. When it comes to capitalism, neoclassical economics takes the state of industrial disruption as 'normal'. But in hindsight, Britain and the United States have both spent far more time in periods of monetization — periods when capitalists inflated their assets without building much of physical substance.

If one presumes, as Nitzan and Bichler do, that capital is finance and finance alone, then this prolonged state of monetization is unsurprising. Instead, what's remarkable is that periods of industrial disruption occur at all. Indeed, it takes a special set of circumstance to prod owners to build rather than to

simply toll. Looking ahead, the irony is that perhaps the most fertile environment for industrial disruption is created not by the market, but by state communism.

The business-to-industry index in China

When Marx envisioned a future socialist utopia, he thought that it would spring from the ashes of capitalism. Let capitalists create the pistons of industry, Marx declared. Then let workers seize the controls and run the machine for themselves. Unfortunately, things did not work out as Marx planned.

In reality (as Branko Milanović often notes), communism turned out to be an alternative path to capitalism.[3] Or more specifically, state communism was a potent tool for industrial disruption — a way to rapidly build industrial infrastructure by letting government run the show. Once this build out matured, however, communist control invariably gave way (either by evolution or revolution) to monetized capitalism.

Modern China offers an excellent case study of this transformation. With communist disruption (and capitalist monetization) in mind, let's turn to Figures 5 and 6. Figure 5 shows both the business view and the industry view of rising Chinese hegemony. Meanwhile, Figure 6 combines these two views to measure China's business-to-industry-index.

Before I discuss the evidence, let's review some history. When the data for China's business-to-industry index begins (in 1953), the country was four years into its communist revolution. Mao was firmly in control, and his government was busy forcing peasants off the land and into newly constructed factories. To be sure, Mao's policies were in many ways disastrous; after all, they prompted what is perhaps the most catastrophic famine in human history. But in a sense, the trauma is the point. That's because Maoist China was an industrial disruption machine. During Mao's tenure (which ended in 1976), China's business-to-industry index dropped like a stone.

Here's why this cliff makes sense.

At its root, industrial disruption requires the construction of industrial infrastructure at the same time that peoples' incomes are suppressed. Almost by definition, such an experience is unpleasant. In capitalism, owners have a

[3] In *Capitalism Alone*, Milanović notes how the real-world use of communism turned Marx's thinking on its head. In historical terms, he observes that communism is a "social system that enabled backward and colonized societies to abolish feudalism, regain economic and political independence, and build indigenous capitalism".

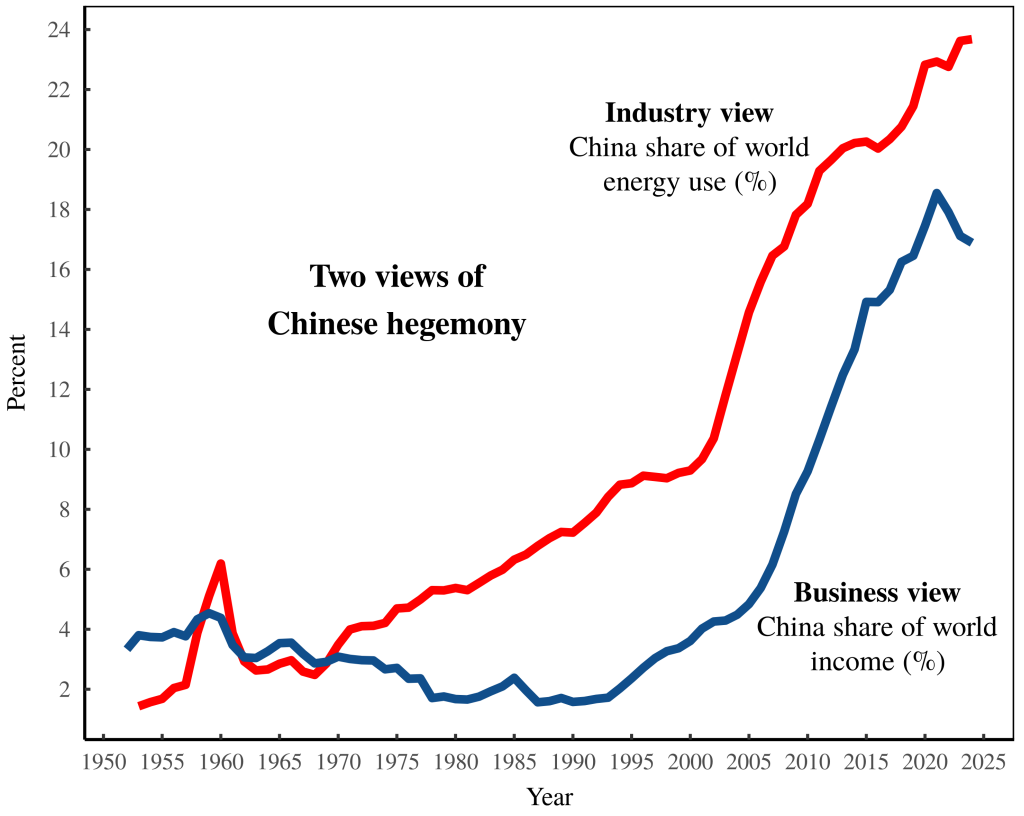

Figure 5: Two views of the rise of Chinese hegemony

The blue curve shows the 'business' view of Chinese hegemony — China's share of world income. The red curve shows the 'industry' view — China's share of world energy use. Sources and methods

limited ability to command, and so are forced to disrupt with both the stick and the carrot. For example, Henry Ford was a ruthless businessman who nonetheless paid his workers fairly well. This carrot makes the industrial disruption more palatable, but also weakens its pace.

Under communist governance, the state's enormous stick means that there is little need for the carrot. A communist regime can build heavy industry that is every bit as productive as its capitalist equivalent. Yet the communist factory need not pay ample wages. Indeed, the communist manager can feed his workers bland rations and house them in stark barracks.

Of course, the problem with communist disruption is that it is self limiting. At some point, workers begin to resent living in a sprawling industrial environment that provides them little benefit. It's at this point that communism runs its course, for by definition, it cannot monetize. So in hindsight, Mi-

Figure 6: The business-to-industry index in China

The business-to-industry index consists of the ratio between an entity's share of world income and its share of world energy use. This chart combines the time series in Figure 5 to plot China's business-to-industry index over the last seventy years. Note the log scale on the vertical axis. Sources and methods

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lanović is right; in practice, communism proved to be a temporary strategy for fostering industrial disruption — a way to propel backwards regions onto the industrial world stage.

In China, communist policies were slowly abandoned after Mao's 1976 death, with market reform accelerating during the 1990s. As we might expect, this transformation marked the end of China's period of industrial disruption, and prompted the transition to a period of monetization. From the mid 1990s onward, China's business-to-industry index rose steadily.

Today, China is the undisputed center of world industry. But it has yet to become the center of global capitalism. That will surely come. If history teaches us anything, it's that rewiring the circuits of global capital takes longer than resituating industrial capacity. Long after factories fled the shores

of London and New York, bankers there continued to monetize the long tail of Western power. Looking to the future, the financiers of Shanghai can almost certainly look forward to similar glory.

Part II: The geography of global capitalism

So far I've studied capitalist history through the lens of hegemony. But of course, there can be no hegemony in isolation, just as there can be no rulers without followers. In the language of world-systems theory, I've captured the history of the capitalist 'core'. But what of the capitalist 'periphery'? For that matter, what does it mean to be in the 'core' or the 'periphery' of the capitalist system?

Here, it's worth a brief digression to discuss the failure of Marxist theory, of which world-systems theory is an extension. For Marx, the key feature of capitalism was the exploitation of workers by capitalists. Workers produce 'surplus value', which is then appropriated by capitalists. Looking at international relations, world-systems theorists extend this idea to regions and countries. As they see it, the 'periphery' of the capitalist system produces surplus value that is then expropriated by the capitalist 'core'.

As with Marx's original thinking, this world-systems extension is seductive but vacuous. The problem comes down to measurement. Marx claimed to explain profit in terms of 'surplus value', but provided no independent way to measure the latter quantity. Likewise, world-systems theorists would like to locate the 'core' of global capitalism by identifying the flow of surplus value, but have no way of doing so. Hence, in practice Marxists simply point to what we already know and apply different verbiage. They look at profit and claim to see 'surplus value'. Meanwhile, world-systems theorists look at international income disparities and infer a regime of exploitation. But without independent measurement, why should we believe either claim?[4]

[4] In world-systems theory, the (presumed) flow of surplus value means that trade between the periphery and the core is unequal. Dollar for dollar, commodities shipped from the periphery to the core have more embodied labor value than the commodities shipped from the core to the periphery.

Setting aside the unmeasurable notion of 'labor value', there are many *measurable* ways in which core-periphery trade is unequal. Alf Hornborg has done much of the seminal work here. For example, his paper 'Footprints in the cotton fields' shows how during the early 19th century, British colonial trade was unequal in terms of the exchange of embodied land and embodied labor time (measured in simple hourly terms). More recently, Jason Hickel and colleagues have found similar unequal patterns in modern world trade.

Here is where the business-to-industry index can (in my opinion) improve world-systems theory. The key insight behind this index — an insight that originates with Veblen and was later elaborated by Nitzan and Bichler — is that human industry is a separate beast from capitalist business. Human industry consists of the physical manipulation of the natural world, and can be organized using many different social systems. Capitalist 'business', in contrast, is an ideological practice that monetizes control over property rights. Yes, capitalist control has tended to coincide with industrial development. But we must take care to study these two tendencies separately.

While I laud this sort of empirical work, there's a sense in it concedes too much to neoclassical economics. What I mean is that by stressing 'unequal' trade, the analysis presumes that monetary exchange could (and perhaps should) be equal. But this is *never* true. Instead, the belief in equivalent exchange is the central tenet of capitalist ideology. That is, capitalism consists of an ideology in which property rights are denominated in units of money. It follows, therefore, that monetary exchange is ideologically defined to be equal. So by definition, when I pay $100 for something, I get back $100 worth of property. But since this numerical agreement is an ideological construct, we expect that it is the *only* part of the exchange that is equal. Every other measurable quantity will be unequal (to differing degrees). So in capitalism, unequal exchange is the norm.

Now, there's a sense in which the quantitative nature of capitalism masks the ubiquity of unequal exchange. Things become more obvious when the ideology is qualitative. For examples, Catholics agree that during communion, a blessed wafer becomes 'the Body of Christ'. But suppose that a devout Catholic becomes convinced that a blessed Corvette is also 'the Body of Christ'. This fellow might then exchange a Corvette for a wafer, thinking the exchange 'equal'. But of course, that's absurd. The 'equivalence' is an ideological agreement. Everything else about the exchange is unequal.

So yes, world-systems theorists are correct that trade between the 'core' and the 'periphery' is unequal, in the same way that when a CEO hires a cleaner, a tiny portion of his annual salary buys a whole year of the cleaner's time. That's an unequal exchange of labor time. But then again, this is a rather laborious way to restate what we already know: the CEO's hourly income is much greater than the cleaner's.

(Sidenote: This tendency to laboriously restate what stares us in the face is one of Marx's worst legacies. Marx got the ball rolling by defining worker's value-creating ability as the sum of their embodied commodity consumption, which is a laborious way of recalculating wages, which we already knew.)

In a more general sense, the notion of 'unequal exchange' is useful if we focus on commodity trade. However, it becomes unwieldy when we focus on the flow of *assets*. For example, when Apple shifts its profits to Ireland by selling (dubious) intellectual property to an Irish subsidiary, there is nothing of substance being 'traded'. Instead, Apple is simply moving assets around to juice its US tax return. From these transactions, Irish lawyers and accountants then make a killing.

To call these shenanigans an 'unequal exchange' is to remain stuck in Marx's 19th-century world of commodity production. Indeed, it is to concede too much to neoclassical ideology, which frames market transactions as an extension of simple barter. For capitalists, monetary transactions are not a tool for 'exchange'. They are a tool for organizing power through the purchase and sale of property rights. Or put another way, unequal commodity exchange is a tiny subset of the wider world of unequal power.

With the business-industry distinction in mind, I propose the following revision of world-systems theory: what defines the 'core' of the capitalist system is not monetary wealth itself, but monetary wealth in the *absence* of industry. Such a dichotomy is the signature mark of finance — of monetized control over abstract property rights. Likewise, what defines the 'periphery' of global capitalism is not the lack of monetary wealth, but rather, the lack of monetary wealth in relation to the scale of industry. In other words, places in the capitalist 'periphery' engage in industry that is outside the control of global finance.

With this revision of world-systems theory in hand, let's turn to the global empirical evidence. Widespread international data for the business-to-industry index becomes available only in 1990. Fortunately, this year is significant, as it marked the date when the Soviet Union began to collapse. Figure 7 shows the business-to-industry picture at that moment.

Looking at this data, we find that the 'core' of the capitalist system resides largely in the collective 'West' (Europe, North America, and Australia), exactly where we expect. Still, there are some surprises. For example, it appears that in 1990, Western Europe was more central to global capitalism than was the United States. Is that really true? Kind of. What the data is actually telling us is that when it comes to business dominance, the United States is not really one country. More on this disunity in a moment.

By 2023, the capitalist world system had changed appreciably. Some of this change is discernible by eyeballing the 2023 business-to-industry data, shown in Figure 8. But in my mind, the degree of global change is best captured by Figure 9, which plots the percentage change in each country's business-to-industry index between 1990 and 2023.

When we stare at this data, it becomes clear that after 500 years of Western hegemony, the center of global capital is shifting eastward. It's future home will almost certainly be in China. Yes, the US and Western Europe continue to ride the long coat-tails of their imperial power. But expect this advantage to wane. When Shanghai becomes the center of global capital, those who keep financial tollbooths in New York and London will probably find that their business runs dry.

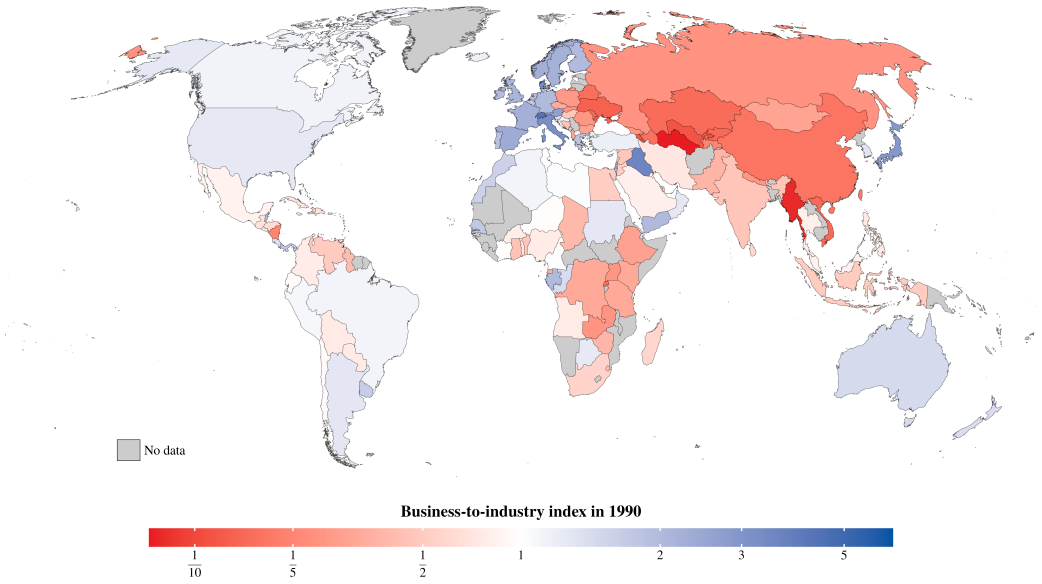

Figure 7: The business-to-industry index across countries in 1990

In 1990, Western Europe was the most business-dominated region on Earth. True, the US was then the unquestioned world hegemon; however, as we'll see shortly, it is the coasts of the United States where business power resides. (The rest of the country is a rather different place.) In 1990, decades of communist policy had made Asia was the most industry-dominated region. Note that the business-to-industry index is plotted on a log scale. Sources and methods

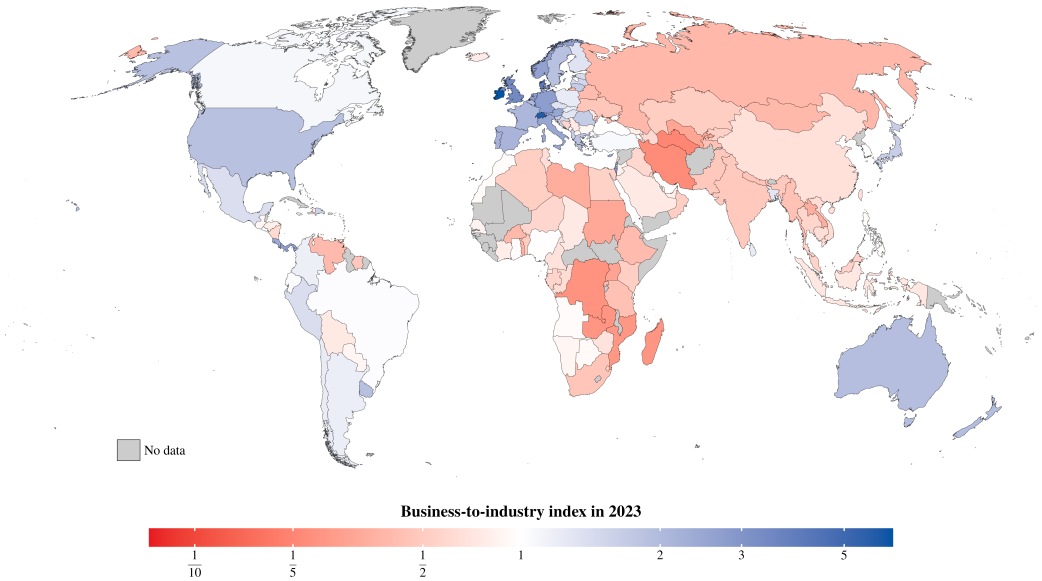

Figure 8: The business-to-industry index across countries in 2023

Although broadly similar to the 1990 picture, the business-to-industry world map of 2023 is subtly different. In particular, decades of monetization have left Asia less industry-dominated. Note that for comparison purposes, this chart uses the same color scale as in Figure 7. Sources and methods

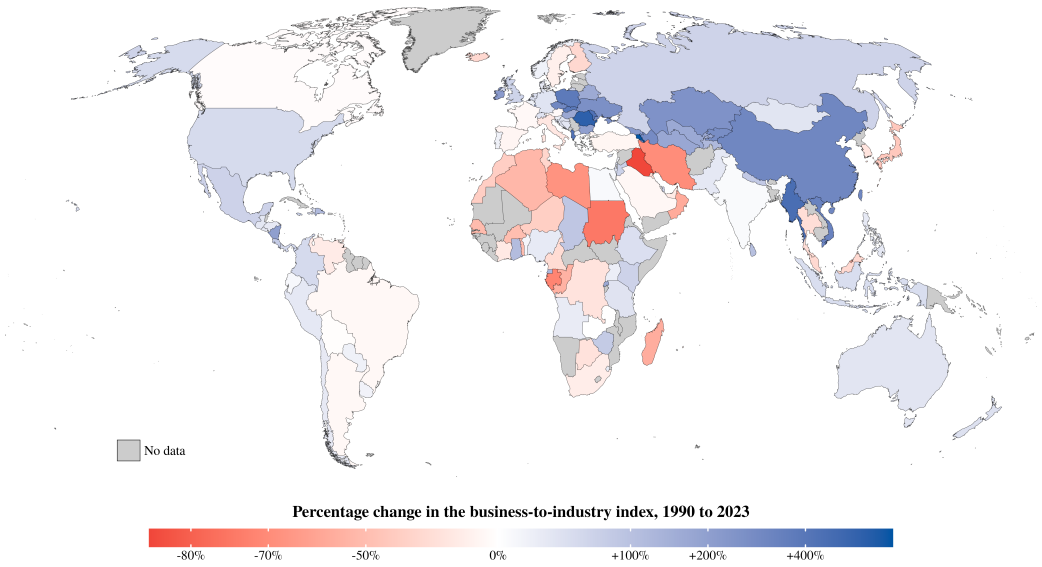

Figure 9: Percentage change in the business-to-industry index, 1990 to 2023

This chart isolates the eastward shift in global capitalism. In Asia, formerly communist states, including communist-in-name-only China, have seen their business-to-industry indexes rise dramatically over the last forty years. Sources and methods

The (dis)United States

Given that the United States is the waning global hegemon, much of the world remains glued to the intricacies of US politics. Of course, most of the unfolding US drama is pure idiocy that's not worth discussing. But beyond the drivel issued by individual politicians, there is a comprehensible structure to US politics — one that paints a picture of growing disunity. True, the rise of stark American partisanship is well recognized. But what's less understood is the fact that the US partisan divide now plays out along a structural schism in US capitalism.

Let me make the case. In Figure 10 I've mapped the business-to-industry index among US states in 2023. My choice of colors and scale is designed to evoke a fairly startling conclusion: across states, the business-to-industry index seems to align with partisan politics. To convince ourselves that this relation is no trick of the eye, Figure 11 shows how each state's business-to-industry index relates to the results of the 2024 presidential election. It seems that the more business-dominated the state, the more it swung for Kamala Harris over Donald Trump.

What should we make of this structural schism? For starters, the geographic shape of US capitalism is nothing new. That is, US coastal regions have long been places of business, while the interior of the country has traditionally been a place of industry. Instead, what's new is the fact that partisan politics have become divided along capitalism's structural lines. This was not always so.

Figure 12 shows the evolving relation between partisanship in US state legislatures and the state business-to-industry index. Back in 1960, the relationship was muddy but slightly reversed from today. More business-dominated states tended to vote Republican, while more industry-dominated states (traditionally in the South) tended to vote Democrat. However, over the ensuing decades, this relation slowly reversed and then tightened in the opposite direction. Today, more business-dominated states overwhelmingly vote Democrat, while more industry-dominated states are staunchly Republican.

So what does this geographic schism tell us? Well, it suggests that in political terms, the US is no longer one country. The business-dominated coasts of the US remain committed to the cosmopolitan ideals that invariably exist at the core of empire. Meanwhile, the rest of the country has rejected these ideals and turned increasingly to (let's face it) American-flavored fascism.

How does this schism play out? Well, it either gets worse, leading to the fracture of the union and potential civil war, or it gets better, leading to renewed national unity. For his part, Trump is pushing the country towards dissolution. (He relishes attacking blue states.) Meanwhile, a determined group of leftists are trying to wrench the Democratic party from its corporate overlords so that they can push mildly socialist policies (that are wildly popular). If these leftists succeed, it's possible that unity could return to US politics. In either case, watch this space.

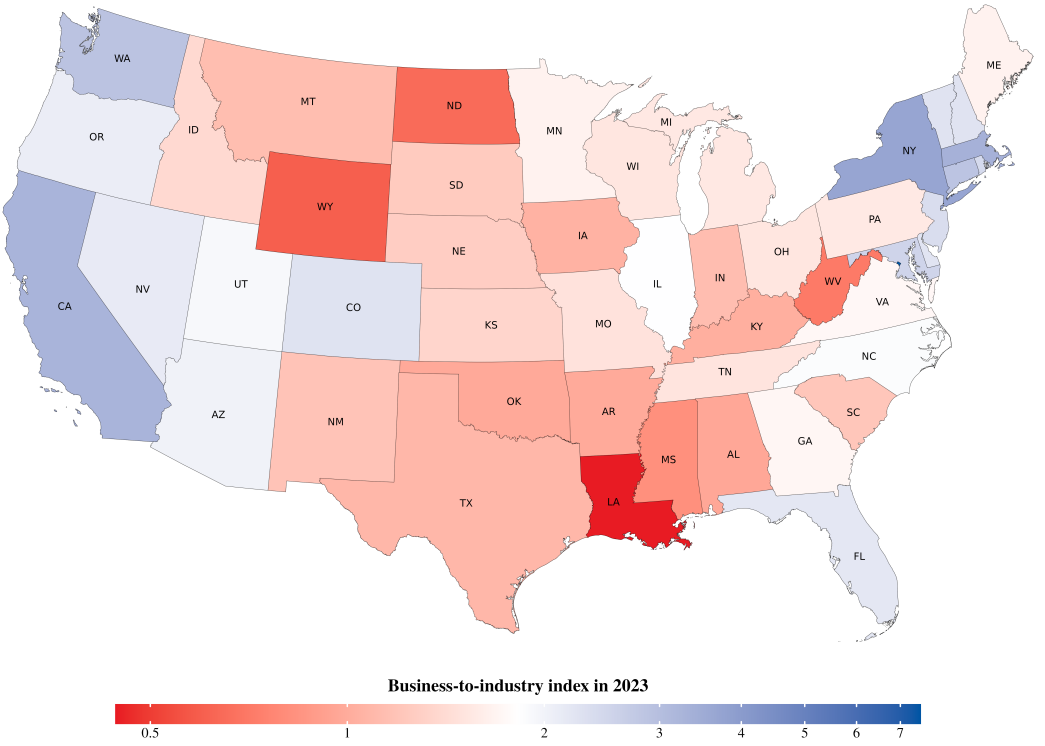

Figure 10: The business-to-industry index among US states in 2023

This chart shows the geographic divisions of US capitalism, as captured by the business-to-industry index. My choice of color scale is designed to highlight the connection with US politics. Sources and methods

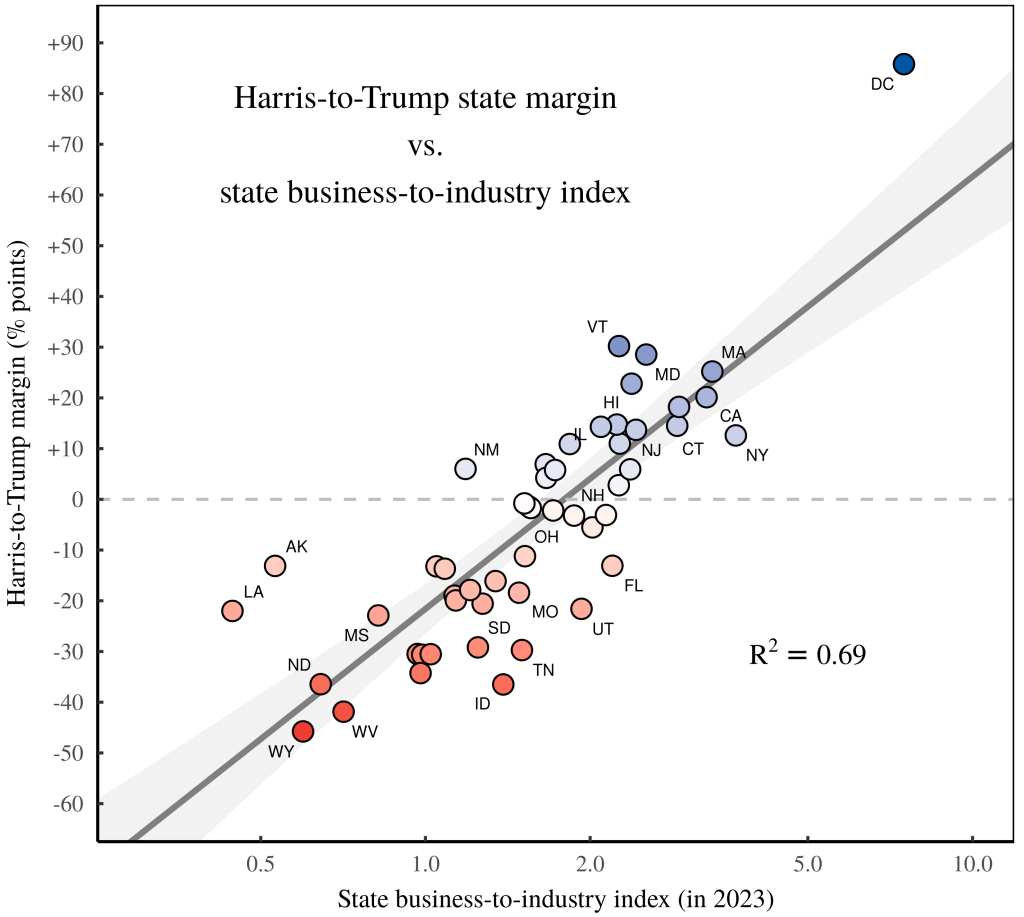

Figure 11: The 2024 presidential vote fell along business-to-industry lines

The vertical axis shows the Harris-to-Trump state margin in the 2024 US presidential election. (Point color shows the same variable.) The horizontal axis plots the state business-to-industry index in 2023. Note the log scale. Sources and methods

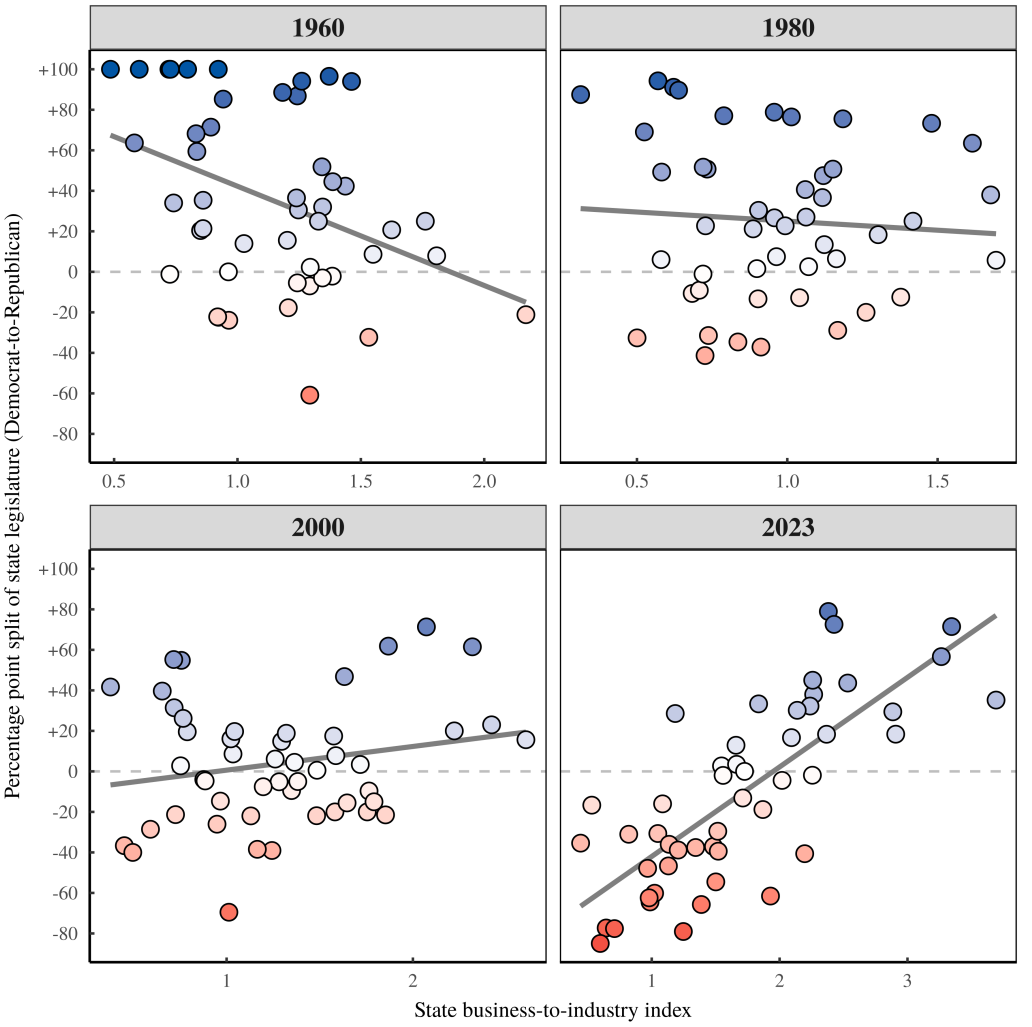

Figure 12: The transformation of US partisan politics along business-to-industry divisions

In each panel, the vertical axis shows the partisan split of US state legislatures. (This split is also indicated by point color.) The horizontal axis shows the state business-to-industry index. (Note the log scale.) In 1960, more industry-dominated states (traditionally in the South) tended to vote Democrat, while more business-dominated states tended to vote Republic. But this relation was fairly muddy. Over the ensuing decades, the relation reversed, and then tightened markedly in the opposite direction. Today, the most business-dominated states are Democrat strongholds, and industry-dominated states are Republican bastions. Sources and methods

Another look at the capitalist world system

Now that you've indulged my tangent on American politics, let me return to my original reason for calculating the business-to-industry index across US states. Back in Figures 7 and 8, the international data indicated that Western Europe was more business dominated than the United States. This is true but misleading — an artifact of aggregation.

When we disaggregate the US into its constituent states, we get the more satisfying picture of the capitalist world system, shown in Figure 13. In 2023, the core of global capitalism was located in Western Europe and along both seaboards of the United States. These are the most business-dominated places on Earth.

Continuing the analysis, Figure 14 eschews maps for a quantitative summary of business dominance. Overall, this list of the twenty most business-dominated regions is composed largely of US states and Western European countries.

Washington DC, the center of US power, tops the list — a fitting nod to the fact that business success is forged in large part by state power. Moving down the list we find Ireland, Switzerland, Hong Kong, and Malta — all notable hubs of finance and tax evasion. Continuing down the list, we get the US coastal states, along with familiar powers of Western Europe. The colonial state of Israel also comes along for the ride, as does the infamous tax haven of Panama. All in all, these business-dominated regions are places of white-collar activity, just as we'd expect. To do 'business' in the Veblenian sense is not to run machines or to build factories; to do 'business' is to manipulate property rights from inside a downtown office.

Now, before we make too much of this business-dominated list, it's important to recognize that political boundaries necessarily affect the analysis. In terms of physical geography, cities are the locus of business power. So if we draw a political boundary around a city (as with Washington DC), its business-to-industry index will tend to be higher than if we extend the boundary into the industrial hinterland.

Because of this issue, the best way to study the business-to-industry index would be to calculate it for units of constant geographic area. Unfortunately, the requisite statistical data (particularly data for energy consumption) is usually restricted to large-scale political boundaries. So while we might like to know the business-to-industry index of Shanghai or Lower Manhattan, such fine-grain data will likely remain difficult to come by.

In the same vein, large countries like China almost certainly have business-to-industry schisms similar to what's found across the United States (Figure 10). Untangling these divisions is an important job for the future. (Quantitative researchers, take note!)

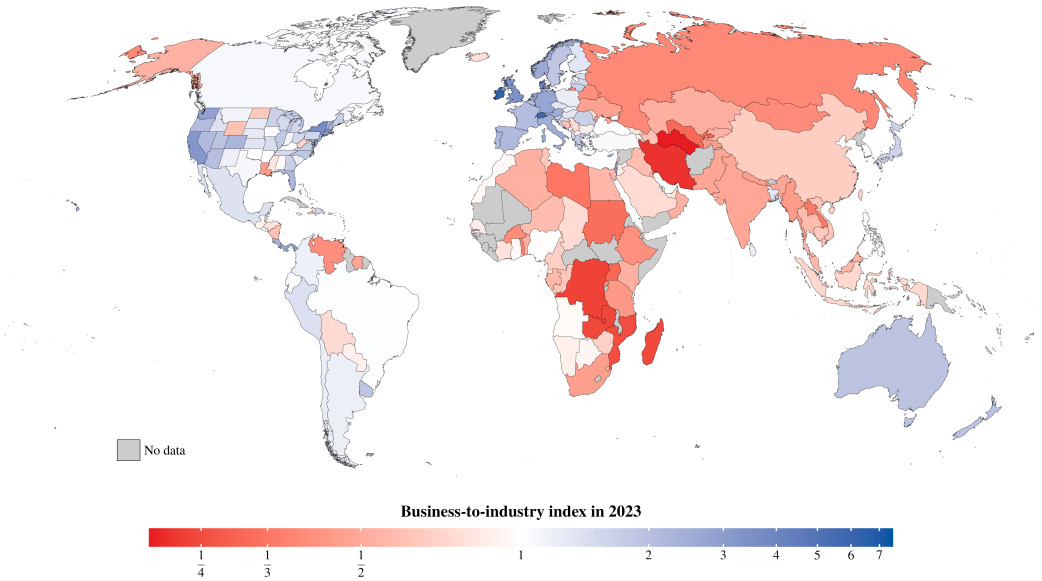

Figure 13: The capitalist world system of 2023

This chart replots the business-to-industry data from Figure 8, with two important changes. First, I've restricted the color scale to match the scope of the 2023 data. Second, I've disaggregated the US into its constituent states. The results nicely highlight the geography of modern global capitalism, which remains centered in Western Europe and the seaboards of the United States. Sources and methods

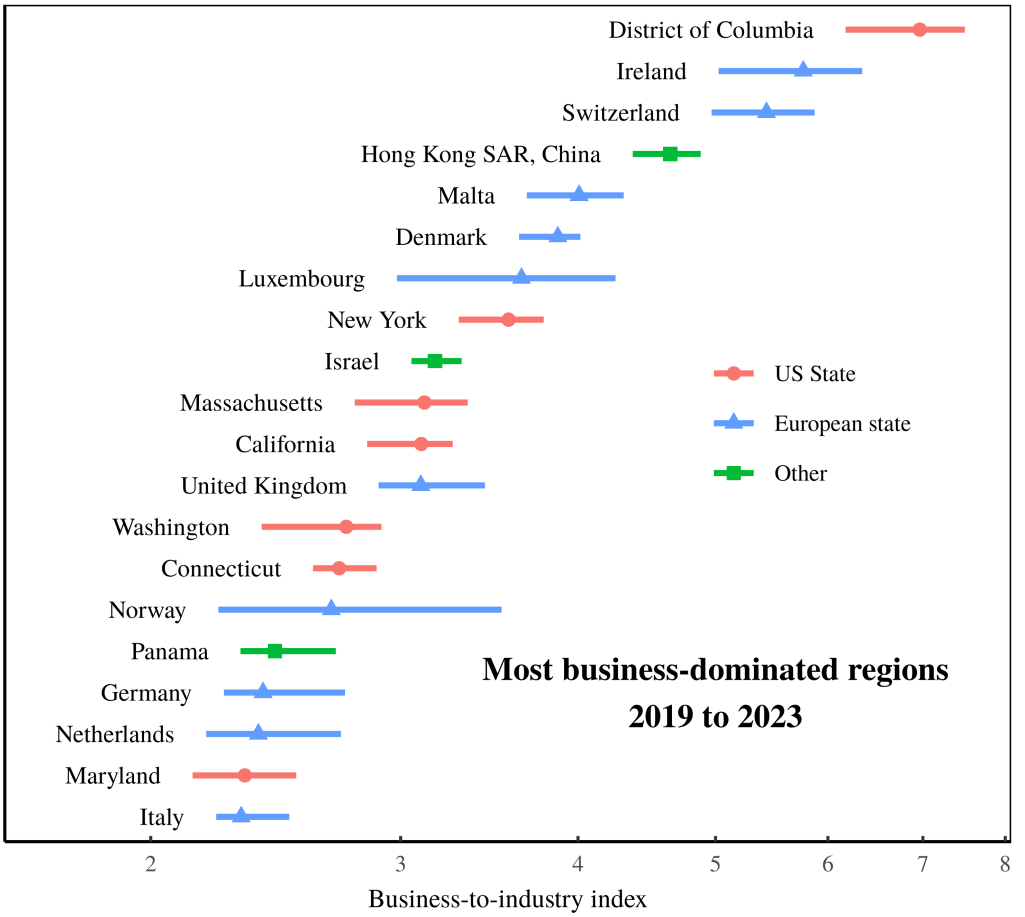

Figure 14: The most business-dominated regions in modern capitalism

Looking at the twenty most business-dominated regions on Earth, whiskers show the range of the business-to-industry index between 2019 and 2023. Points show the geometric mean over this period. Note the log scale on the horizontal axis. Sources and methods

Our bottom-heavy world

If you ask a New York financier why their income is so fat, they'll probably echo some neoclassical trope about having 'generated' their earnings through skill and hard work. Likewise, if you asked a feudal lord why they control so many serfs, they'd respond that doing so is their god-given birthright. In both cases, the response has an obvious purpose: to provide an ideological justification for (otherwise arbitrary) power and privilege.

For critics of social injustice, the temptation is to subvert these dominant ideologies by appealing to some (but not all) of their basic tenets. Thus, the critic of feudalism might accept that god gave rights to men, but claim that these rights are distributed equally. Likewise, the critic of capitalism might accept that value is 'produced', but propose that elites are appropriating value created by others. Such arguments make for good rhetoric because they retain enough of the dominant ideology that they remain comprehensible to the indoctrinated mind. Still, these arguments are a scientific dead end; they gain rhetorical power by conceding basic untruths. We humans make our own rights, just as we impose onto the world our own abstract quantities of monetary value.

To scientifically study a social order, I think it is essential to eschew rhetorical tricks and instead adopt some form of dual measurement that contrasts the dominant accounting scheme with an alternative way of measuring the world. In capitalism, the dominant accounting scheme is, of course, money. In contrast, the alternative account could be anything non-monetary (provided that thing is objectively measurable). That said, energy consumption is particularly meaningful because of its biophysical significance. Energy is what keeps life from devolving into a pool of entropic mud. Energy is the 'go of things' … the 'master resource'.

Returning to the notion of 'justness', when we contrast monetary value with energy consumption, it's conceivable that we might find a picture that's balanced. Imagine, if you will, the world of Isaac Asimov's 'spacers' — future humans who are dispersed on plantation-like compounds in which armies of robots do virtually all the work. Supposing that these spacer compounds exchanged money, we might find that the business-to-industry index was fairly balanced among them.

Of course, the real world of 21st century capitalism looks rather different. In our world, places of 'business' are not dispersed plantations manned by robots. They are not even factories manned by ordinary humans. No, places

of 'business' consist of shining office towers inside which humans buy, sell, and manage property rights. Places of 'business' are invariably places of finance. Because of this reality, it follows that the geography of capitalism cannot be 'balanced'. By definition, centers of finance are hubs of exclusion — places that exist because only the few can inhabit them.

Testifying to this exclusion, when we run the numbers on the population-weighted distribution of the business-to-industry index, we find that less than a quarter of the world's population inhabit business dominated regions. What's more, less than 1% of the population live in regions where the business-to-industry index exceeds four (the territory of financial hubs like Hong Kong, Switzerland and Ireland, and government hubs like Washington DC). Meanwhile, more than three quarters of the world's population live in places of industry dominance. Figure 15 paints this picture of our bottom-heavy world.

Let me summarize the main message. In real-world capitalism, the 'normal' human experience is to work hard for little financial gain. Only the lucky few rake in money with their feet up. Here, it's tempting to imagine some unseen flow of value that gets sent from the hard workers to the leisure class. But no such flow exists. The exploitation in capitalism (if it exists) lies in the nature of property rights themselves — rights which allow the hoarding of monetized institutional power. Industry for the many. Business for the few.

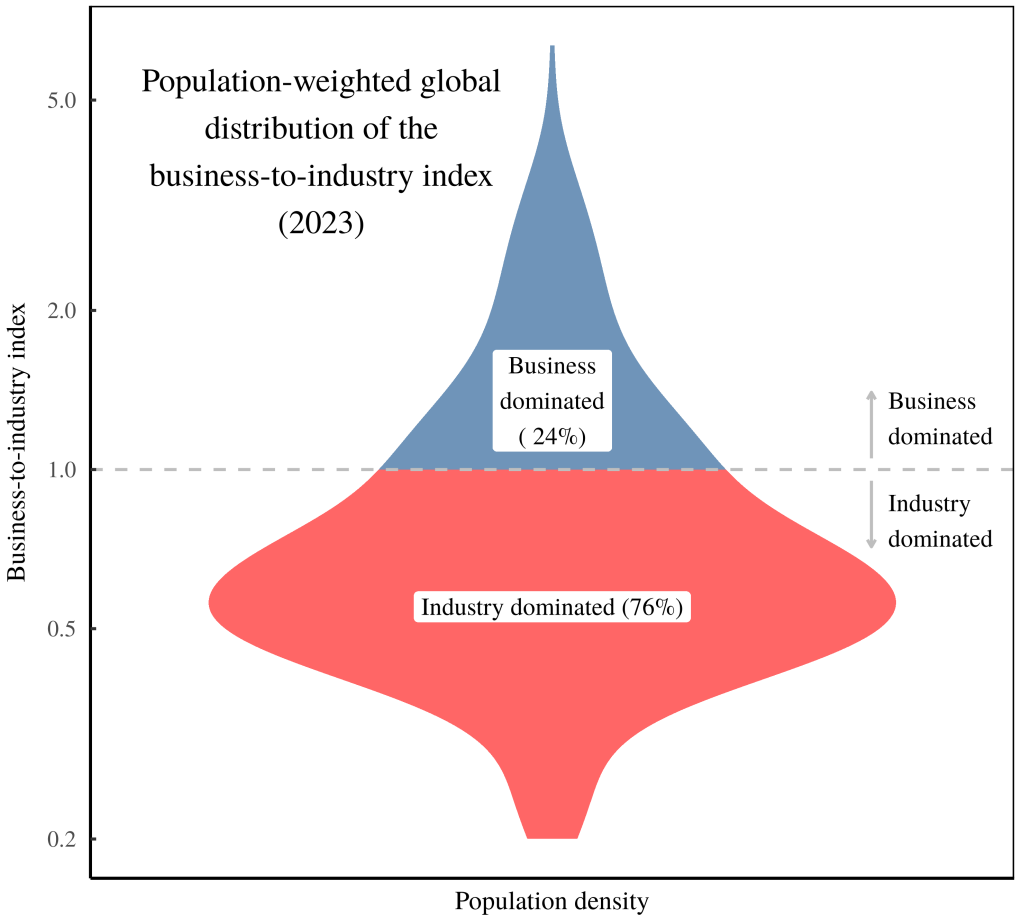

Figure 15: The population-weighted distribution of the business-to-industry index in 2023

This chart estimates the portion of the world's population that live in regions with the given business-to-industry index. Less than a quarter of the world's people live in business-dominated regions, while more than three quarters live in industry-dominated regions. Sources and methods

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Hi folks, Blair Fix here. I'm a crowdfunded scientist who shares all of my (painstaking) research for free. If you think my work has value, consider becoming a supporter. You'll help me continue to share data-driven science with a world that needs less opinion and more facts.

Sources and methods

Want to have a closer look at my business-to-industry data? You can download it here.

World income

I measure world income in terms of world nominal GDP, denominated in US dollars. Data from 1960 onward is (relatively) unproblematic and comes from the World Bank, series NY.GDP.MKTP.CD — GDP in current US dollars. Note that the measure of nominal world GDP is influenced by the exchange rate for local currencies. This is a desired effect. To isolate Veblenian 'business', we want a pure measure of financial income, one that makes no attempt to 'correct' for local currency value (and its associated local purchasing power).

As we attempt to measure nominal world GDP for earlier periods, things become more difficult. First, there are some fundamental conceptual problems. For example, prior to the American Revolution (which began in 1775) there was no such thing as an 'American dollar'. Hence, calculating nominal GDP in US dollars involves assuming some currency value for a currency that did not actually exist. Typically, that's done by fixing (and projecting back in time) later exchange rates that do exist.

Second, economic historians tend to be disinterested in nominal incomes. Instead, they use incomes and prices to estimate *living standards*. Case in point, the Maddison project (an extension of the historian Angus Maddison's seminal work) has extensive data for historical GDP, but it is measured in terms of purchasing power parity. The idea is that across countries, one measures GDP relative to a price index calculated from the same basket of goods.

Now in theory, if researchers published their purchasing power indexes for each country, one could use these indexes to 'undo' their inflation adjustment. By doing so, we could recomputed a satisfying measure of world nominal GDP. Unfortunately, the Maddison project does not (to my knowledge) publish its internal data for purchasing power parity. As such, we must hack our way to a measure of nominal world GDP.

The way I create this hack is by first calculating a time series for the US GDP deflator using the following data:

- 1929 to 1960: FRED series A191RD3A086NBEA;

- 1800 to 1928: Historical Statistics of the United States, Millennial Edition, calculated using the ratio between nominal GDP (series Ca10) and real GDP (series Ca9);
- 1790 to 1799: Historical Statistics of the United States, Millennial Edition, CPI series Cc1. (I use the consumer price index as a proxy for the GDP deflator.)
- 1209 to 1789: *Measuring Worth* data for the British retail price index. Prior to the existence of the US dollar, this British price-index data serves as a kind of 'global deflator' for Maddison's US-dollar denominated real GDP.

Next, I take the US GDP deflator data and use it to convert Maddison's global 'real GDP' data into nominal dollars. I use the following Maddison GDP data:

- 1820 to 1959: Maddison Project database, via Our World in Data;
- 1700 to 1819: Archived data from Angus Maddison. (I interpolate this data annually.)

Finally, I splice the nominalized Maddison data backwards from the modern World Bank GDP data. Because this historical data involves a rather heavy-handed hack, one should treat it with appropriate uncertainty.

British income

Data for British income is calculated using nominal GDP data from *Measuring Worth*. I use what they call the 'consistent series', which presumes consistent political boundaries for the 'United Kingdom'. This data is denominated in British pounds. I convert the GDP data to US dollars using *Measuring Worth* data for the dollar-pound exchange rate. For data prior to 1791, I fixed the dollar-pound exchange rate at its 1791 value (4.55 dollars per pound).

United States income

Data for US income (nominal GDP) is calculated using the following sources:

- 1947 to 2025: FRED series GDP;
- 1800 to 1946: Historical Statistics of the United States, Millennial Edition, series Ca10;

- 1790 to 1799: Historical Statistics of the United States, Millennial Edition, series Ca9. This is 'real' GDP data that I convert to nominal GDP using the US consumer price index (Historical Statistics of the United States, Millennial Edition, CPI series Cc1).

China income

Data for Chinese income (nominal GDP) is from China's National Bureau of Statistics, using the series marked "Gross Domestic Product (100 million yuan)". I convert yuan into dollars using exchange rate data from the IMF, series CHN.USD_XDC.PA_RT.A.

International income

To create the global maps of the business-to-industry index (Figures 7, 8 9, 13) I use nominal GDP data from the World Bank, series NY.GDP.MKTP.CD (GDP in current US dollars).

US state income

State income (nominal GDP) is from the following source:

- 1997 to 2025: Bureau of Economic Analysis, series SAGDP1 (state annual gross domestic product)
- 1960 to 1996: Burea of Economic Analysis, series SAINC1 (state annual personal income), spliced to the GDP data above

World energy use

Data is from the following sources:

- 1800 to 2024: Our World in Data, Energy Production and Consumption;
- prior to 1800: Data is from Ian Morris' book The Measure of Civilization, Tables 3.1 & 3.4. Morris reports data for energy use per capita in the East and West. Using population data from Angus Maddison, I aggregate Morris' data to estimate world energy use. Then I splice this data to the OWID data from 1800.

Britain energy consumption

Data is from the following sources:

- 1965 to present: Energy Institute Statistical Review of World Energy
- prior to 1965: data is from Paul Warde, Energy consumption in England and Wales, 1560-2000

US energy consumption

Data is from the following sources:

- 1949 to 2025: Energy Information Agency, Table 1.3, Primary energy consumption estimates by source;
- 1789 to 1949: Appendix E1 in the EIA 2009 Annual Energy Review (available here).

China energy consumption

Data is from the following sources:

- 1965 to present: Energy Institute Statistical Review of World Energy
- 1954 to 1964: China's National Bureau of Statistics. I use the series called "Total Energy Consumption (10000 tons of SCE)". For the unfamiliar, SCE stands for 'standard coal equivalent'.

International energy consumption

To create the global maps of the business-to-industry index (Figures 7, 8 9, 13) I use per capita energy use data from World Bank (series EG.USE.PCAP.KG.OE, kg of oil equivalent per capita) multiplied by World Bank population data (series SP.POP.TOTL). From these results, I exclude nonsensical data where per capita daily energy use is less than the basic food-energy requirement of 2000 kilocalories per day.

US state energy consumption

US state energy use data is from the Energy Information Agency, State Energy Data System, series TETCB.

US presidential vote, 2024

State voting outcomes are from BallotWire.

State legislature composition

Data for the composition of US state legislatures sums seats in both houses and excludes Nebraska (whose legislature is officially non-partisan). Data comes from the following sources:

- 1934 to 2021: Philip Thomas's github repository;
- 2022 to present: scraped from the NCSL via its tortuously awful web interface that for some inexplicable reason, lacks a 'download data' button.

Population-weighted distribution of the business-to-industry index

My calculations in Figure 15 are based on the international business-to-industry data plotted in Figure 13, which disaggregates the US into its constituent states. To weight by population, I use country population data from the World Bank (series SP.POP.TOTL) and US state population from FRED. The weighted distribution can be conveniently calculated in one line with R's `density` function, which includes a term for `weights`.

Further reading

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