

Intellectual property, technorents and the labour share of production

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journals.sagepub.com/home/cch**Herman M Schwartz** Faculty of Economics and Social Sciences, Inland University College,
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Abstract

How does the capture of explicit monopoly rent via intellectual property rights interact with the capture of additional profit via monopsonistic labour markets, and with what consequences? Most analyses of changes in the labour market focus on the distributional struggle between capital and labour over the wage share. This paper examines how the distributional struggle among firms over shares of aggregate profit has affected the labour market, generating rising income inequality. Over the past 40 years, struggles over shares of the value generated in a given commodity chain have driven *de jure* but not *de facto* vertical disintegration of those value chains. Firms vertically disintegrated by outsourcing non-core production and support activities, by in-sourcing contingent labour, and, where possible, by adopting a franchise model of corporate organization. The franchise model enables core firms to exert near total control over firms that are technically separate legal entities, while avoiding legal and social responsibility for the workers (and owners) of those subordinate firms. Vertical disintegration has produced three ideal typical kinds of firms whose differing ability to capture value and thus profit stems from their different forms of control over other firms in the value chain. Vertical disintegration generated labour shedding and employment contingency. Differential value capture has concentrated profit into firms with relatively small headcounts, reducing the degree to which profits are (partially) redistributed among workers.

Keywords

Monopsony, labour markets, intellectual property rights, technorents, industrial organization

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How does the capture of monopoly rent via intellectual property rights (IPRs) interact with the capture of additional profit via monopsonistic labour markets, and with what consequences? Put differently, most analyses of changes in the labour market focus on the distributional struggle between capital and labour over the wage share. Here, I examine how the distributional struggle among firms over shares of aggregate profit has affected the labour market, contributing to rising income inequality. Over the past 40 years, struggles among firms over shares of the value generated in a given commodity chain have driven the disintegration of formerly vertically integrated firms through outsourcing of non-core production and support activities, in-sourcing of contingent labour, and, where possible, adopting a franchise model of corporate organization. The franchise model enables firms to exert substantial control over firms that are technically separate legal entities, while avoiding legal and social responsibility for the workers (and owners) of those subordinate firms.

This vertical disintegration has produced three *ideal typical* kinds of firms whose differing ability to capture value and thus profit stems from their different ability to extract value from other firms and their ability to segment labour markets. Almost all firms have made employment more contingent. But the big firms capturing the largest volume of profit are now those with relatively small headcounts, reducing the degree to which profits are (partially) redistributed among workers. These firms enjoy what Harvey (1982) calls monopoly rent 2 and what Pagano (2014; Durand and Milberg, 2020) labels intellectual monopoly profit. Control over intellectual property (IP) and especially IPRs – patents, copyright, trademark and brand – generate these monopoly rents. IPRs are increasingly detached from physical production and used to create legal barriers to entry.

The second type of firm derives smaller profit volumes by controlling an expensive capital-intensive production process or significant tacit knowledge. Investment or tacit production knowledge barriers deter competitive entry. The third type of firm – mostly small and medium sized enterprises (SMEs) – encompasses low-skill, labour-intensive firms and independent or temporary workers. These produce commoditized services and manufactures with no entry barrier. Small volumes of profit arise from hyper-exploitation of labour (or self-exploitation). The volume of profit matters here more than the profit rate because the volume of profit and its distribution among firms is a major factor determining the labour share of income. A relatively small number of US and global firms capture a wildly disproportionate share of global profits.

All three firm types expel and contingently reintegrate labour co-constitutively. Workers expelled from IPR-based and physical-capital-intensive firms must go somewhere, typically the long tail of SMEs and micro-enterprises. Labour expulsion has four characteristic forms: franchising, outsourcing, off-shoring and domestic geographic dispersion – FOOD for short. Ideally, firms that successfully create strong IPR-based monopolies establish a franchise structure in which they license the right to use brands and other IP to nominally independent franchisees hiring low-skill labour for direct production. Alternately, firms outsource or off-shore production in search of cheaper, more malleable workers. Firms on the losing end of extraction from value chains by IPR-based monopolies partly respond by trying to amplify labour exploitation to prop up their own profits. Value chains tie together firms that may have formerly been housed within one legal container (a vertically integrated firm).

Three caveats. These three firm types are *ideal types*. Many firms exhibit hybridity. Second, per William Gibson, ‘The future is already here – it’s just not evenly distributed’. The shift towards the current three-tier industrial structure exhibits considerable

heterogeneity due to national welfare states and corporate governance law. The analysis below concentrates on US listed firms because of data availability, because these shifts have gone farthest there and because US firms capture a disproportionate share of global profits.

Analyses of various slices of the FOOD phenomenon already exist and correctly document individual trends (Durand and Milberg, 2020; Fröbel et al., 1980; Johnson, 1985; Murray and Schwartz, 2019; Quinn and Hillmer, 1995; Weil, 2014). But they tend to homogenize firms and focus on the generic distributional conflict between capital and labour. Likewise, studies pointing to rising concentration and oligopoly power in the US economy tend to homogenize firms with respect to organizational structure (Davis and Orhangazi, 2019; De Loecker and Eeckhout, 2017). This blurs the distribution of profit across firms inside a given sector when those firms occupy different positions in a commodity chain. It also blurs divergent motivations for concentration: IPR-based firms typically pre-empt competition through acquisition, while physical-capital-intensive firms typically absorb existing competitors.

Here, I add to the literature by considering how distributional struggles among firms to capture ‘profit’ – as financial markets define it – motivate changes in firm strategy and structure that manifest as adoption of one or more of the FOOD organizational forms. This reveals the common origins of these four different organizational outcomes. The analysis follows Chandler (1990: 14) in defining *strategy* as ‘the determination of the basic long term goals and objectives of an enterprise’ – that is, how it plans to capture profit – and *structure* as ‘the design of organization through which the enterprise is administered’ – that is, the actual organizational form through which it puts that plan into action. Per Chandler, ‘structure follows strategy’. Data on publicly listed US firms, supplemented by data on global listed and unlisted firms, confirm the emergence of the three broad firm types.

The first part of the article explains why the practical difficulties defining monopoly rents require using gross profit as defined by accounting convention and corporate practice as a proxy. The second part contrasts corporate strategy and structure in the Fordist and contemporary eras. The third part discusses differences in the emergence of FOOD organizational forms in the shift from one era to the next. The fourth part examines the macro-economic consequences of profit inequality for labour markets.

Profit, IPRs and monopoly

The distribution of profit among firms matters for income distribution and macro-economic outcomes. Demonstrating this requires defining ‘profit’ and the various forms of monopoly rent, and, within monopoly profit, technorent in particular. The other articles here provide various conceptual understandings of technorent (Birch, 2020). But using these to assess the profit generating capacity of intangible assets and, within those, formal IPRs is difficult. Conventional accounting categories imperfectly map the sources of profit to IPRs and other intangibles (Corrado et al., 2005), sweeping much into ‘goodwill’. IP shows up as an intangible asset on balance sheets, but valued at its cost of production rather than its profit generating capacity.

Barkai (2020) tried to separate value added in production among wages (unfortunately including bloated managerial wages that arguably absorb part of profit), the capital share (defined as returns to invested physical and intangible capital, measured via their balance sheet asset value) and what he terms pure profit. But Barkai assumed homogenous capital and labour inputs in order to make his general equilibrium model tractable. As noted above,

firms increasingly resemble one of three different ideal types, with different labour control strategies and wage levels. Durand and Milberg (2020: 420) have tried to parse monopoly rents from IPRs and other intangibles into four distinct categories, including Legal IP rents (IPRs *stricto sensu*), Natural Monopoly Rents (network effects), Dynamic Innovation Rents (these days, control over data) and Intangibles Differential Rent (uneven returns to scale for intangible as compared to tangible assets).

Operationalizing Durand and Milberg's categories is impossible with available data. This article thus uses a conventional definition of profit because this is what motivates the behaviour of firms and financial market actors, and the object of interest here is how that behaviour affects labour markets. Nonetheless, this pragmatic choice seems to proxy for the essential information we seek, which is the rising share of monopoly rents and within that technorents in total profit (see also Barkai, 2020; Ocean Tomo, 2017; Orhangazi, 2019).

Empirically, Bessembinder (2018) shows that 52% of the 25,782 firms ever appearing in US equity markets from 1926 to 2015 had equity returns at or below the returns from simply holding a series of one-month US Treasury bills – an extremely forgiving proxy for their cost of capital. Similarly, 811 firms out of 62,000 listed firms globally from 1990 to 2018 account for all excess returns (Bessembinder et al., 2019: 3). The flow of dividends and capital gains from the majority of firms was below the flow of interest obtained from holding one-month Treasury bills, suggesting that gross profit was used to replace depreciated capital, and that most firms do not generate any durable monopoly rents.

Here, Schumpeter's two different arguments about innovation and profit matter. In Schumpeter (1961 [1934]) 'Mark I', entrepreneurs pioneer substantially new markets, products, processes, etc., that obliterate existing firms and transfer their rents to a new monopolist (Schumpeter, 1950: 85–87, 90). In Schumpeter (1950) 'Mark II', large firm R&D departments generate relatively incremental innovation that deter challengers through accumulated tacit knowledge, sunk production costs and deeper pockets (Malerba and Orsenigo, 1995).

If profit is a return to Schumpeter's pioneering Mark I entrepreneurs, then today's disruptive firms might explain the expansion and persistence of technorents. But many notionally disruptive firms remain profitless precisely because they lack any plausible monopoly position – *vide* Uber, Lyft or WeWork. Meanwhile, most Mark II manufacturing firms have seen their profits decline over the past 30 years. Second, not all high profit volume firms are 'tech' based, but many are IPR based. Third, Schumpeter (1950: 81–86) expected monopoly-based profits to erode over time, but the longest lived IPR-based firms, like IBM, Microsoft or Lego, have persistent monopolies that shift their basis as the core firm pre-empts or deters competition through acquisitions and IP lawsuits. This suggests looking at IPRs in creating legally enforceable monopolies.

Here, Veblen's (1904, 1908) and Harvey's (1982) arguments that profit in general and monopoly rent in particular arise from socially constructed exclusion, organized through firms whose property rights are defined and sustained by state power matter. Both link intangible assets, including goodwill and IP, to corporate strategy and structure. Veblen defined goodwill differently from the contemporary accounting usage, where it is a largely arbitrary residual revealed through a premium price paid during a merger or acquisition. For Veblen (1908: 114–115), goodwill referred to 'such special advantages as inure to a monopoly or a combination of business concerns through its power to limit or engross the supply of a given line of goods or services', thus encompassing the rents rising from control over physical capital and IPRs. Goodwill is the capitalized value of the profit streams that

IPRs and control over physical capital generate. Veblen's definition provides a foundation for the accounting definition by pointing to a real phenomenon: most mergers enhance or protect some kind of monopoly position that financial market actors then capitalize in equity markets.

The lopsided ratios of goodwill to intangible assets on the balance sheets of Microsoft (6::1) or Google (10::1) show this.¹ These reflect acquisition of other firms' IPRs, as when Microsoft bought Nokia's devices division for €5.4 billion or when Google bought Motorola Mobility for \$12.5 billion. Buying a firm to absorb its IPR partially transforms the target firm's intangible fixed assets and IPRs into goodwill in conventional accounting terms, but these IPRs ultimately resolve into some profit-enhancing barrier to entry. Google CEO Larry Page explained why Google bought Motorola Mobility as a defensive acquisition of roughly 17,000 patents that would 'protect Android from anti-competitive threats [i.e. patent lawsuits]'.² The quantity of patents is not directly connected to profitability, and tacit knowledge remains the bedrock of many manufacturing SMEs.

But the bulk of profit is going to firms whose intangible assets are largely IPR based, even if they show up on balance sheets as goodwill. Ultimately, intangible assets like post-merger goodwill, customer loyalty and 'technology' resolve into some form of IPR – Veblenian, not conventional, goodwill. The difference between a Nike trainer and a generic trainer is precisely the emotional and social content conveyed by the swoosh, but the swoosh would not generate profits without legal protection for the brand. That extra profit is what the equity market capitalizes into Nike's share price. Nike's 2017 market capitalization was \$110 billion on profits of \$1.8 billion, as compared to the virtually invisible Pou Chen with market capitalization \$3.7 billion on profits of \$0.43 billion.³ Pou Chen is the world's largest manufacturer of trainers, employing five times as many people as Nike, yet has no recognizable brands.

Pragmatically, only conventional accounting based definitions of gross profit – the difference between gross sales and the gross cost of goods and labour used to generate those sales – show up in available databases like WRDS *Compustat* or Bureau van Dijk *Orbis*. But this particular understanding of profit is a social fact orienting corporate executives towards executing strategies to maximize that profit via IPR-based barriers to entry and labour-light corporate structures. These actors have the sense that profits and profitability hinge on the possession of Veblenian goodwill. Bigger barriers mean more secure profits, and the biggest barriers now are constructed from robust IPRs. Conventional definitions of profit are thus a reasonable proxy in the analysis below.

Likewise, we should compare a global set of firms, but comparable data for the earlier Fordist era are sparse. The analysis thus uses *Compustat* data to compare the top 100 US firms by cumulative gross profits in the Fordist era, 1950–1980 and the contemporary era, 1992–2017. The top 100 US firms account for 44.8% of cumulative gross profits and 50% of net income for the 7756 publicly listed US firms with net profits, 1950–1980, and the 11,038 publicly listed firms, 1992–2017.⁴ The top 100 have both macro-economic and social significance. Their choices drive the economy and institutional mimesis (DiMaggio and Powell, 1983; Porter, 2008) by firms imitating them. Sector characterizations for firms are based on their US Securities and Exchange form 10-K self-description. Using listed firms excludes a long tail of SMEs as well as private equity firms, but US listed firms account for approximately – very approximately – 77% of cumulative gross operating surplus in the US economy from 1992 to 2018.⁵ Residual firms populate the lower levels of the new three level economy. *Orbis* data from 2010 to 2018 show the degree to which this is not a specifically US phenomenon.

Changing strategy and structure

Corporate profit strategies shifted from capture of oligopoly profit via control over physical capital to capture of monopoly profit via control over IPRs and other intangibles between the 1950s to 1980s 'Fordist' era as compared to the 1990s to 2010s 'IPR' era. Firms' strategies dictated industrial structure, producing vertically integrated firms in the first era and de jure disintegrated but de facto relatively integrated value chains in the second. Differential success enacting these strategies created Fordism's ideal typical dual industrial structure and today's three layer structure. This section describes strategy and structure in each era and reasons for the shift.

Fordism

Broadly, Fordist era firm strategy aimed to generate oligopoly profits via control over asset-specific physical capital (Chandler, 1990; Lazonick, 1990). Successful firms could use large scale investment deter competitive entry by rivals who might not hope to run at full capacity after late market entry (Bulow et al., 1985; Steindl, 1952: 9–13). This barrier to entry enabled oligopoly profit. But investment in physical capital was only profitable if factories could be run continuously near full capacity to maximize economies of scale and scope. The need for stable production runs at full capacity to generate oligopoly profits motivated vertical integration and thus large labour headcounts, structuring competition and the distribution of income. Vertical integration ensured a stable flow of inputs (Chandler, 1990; Piore and Sabel, 1984). Sharing rents bought labour peace from an increasingly unionized and militant workforce, securing the uninterrupted production crucial to profitability with large fixed investments.

The strategic use of large fixed physical capital investments as a barrier to entry had two major macro-economic consequences. First, actually deterring entry required constant investment and re-investment in a physical capital stock whose use implied real and not just accounting depreciation. These investments had strong multiplier effects, which in turn reduced slack in labour markets. Second, rent sharing inside the many firms with high labour headcounts flattened the income distribution, reinforcing the extra aggregate demand already inherent in high levels of investment. Firms' desire for stable inputs and demand in largely national markets drove firms' political support for macro-economic stability (Aglietta, 1979; Fligstein, 2002; Shonfield, 1965). Politically, sectoral bargaining or state enforced concatenation of wage bargains homogenized wages across a sector regardless of differentials in profitability.

Not all firms succeeded in creating an oligopoly, producing a dual industrial structure polarized between a handful of larger, highly profitable firms with stable markets, and smaller, less profitable firms in unstable or marginal markets (Galbraith, 1967; Piore and Sabel, 1984). The top 100 US firms by cumulative profits captured 44.8% of total cumulative profits of all publicly listed firms, 1950–1980. A dual employment structure matched the dual industrial structure, with employers sorting workers into two groups: largely male, white workers with stable, higher wage employment, and largely minority and female workers with unstable, lower wage employment.

Production and labour markets were also geographically polarized. For example, half of US automobile assembly plants operating in 1945 were in Michigan or its neighbours, and European firms clustered around Paris, Coventry, Göteborg and Turin. Both US and

European automobile firms reacted to labour conflicts by dispersing production to lower wage zones (Murray and Schwartz, 2019).

Continuous-flow assembly-line production with dedicated machinery could be disastrously unprofitable if volatile markets or workers prevented full capacity utilization. Compliance with factory routines disappeared in a wave of strikes in the 1960s everywhere (Sabel, 1982). Strikes lifted the wage share of gross value added in manufacturing in the United States by 5.9 percentage points, 1964–1974, and by similar levels in other industrial countries.⁶ Overall capacity utilization in the United States declined by about 8 percentage points from 1950 to 1982.⁷ These conflicts induced firms' owners and managers to change their profit strategy and thus organizational structure to reduce their vulnerability to macro-economic shocks, to reduce the wage share and to regain control over production.

Managers and owners tried to transform fixed costs (both dedicated machinery and unionized workers) into variable costs to improve their return on equity and assets. Firms thus deconcentrated production and shed legal responsibility for their workers by adopting the franchise format, moving production off-shore, contracting out (both on- and off-shore), dispersing production geographically and, at the margin, de-merging. From the point of view of capital markets and managers, the ideal firm combined a low employee headcount and a minimal physical asset base with a robust profit flow. This maximizes return on assets. Business schools and consultancies blessed firms paring themselves down to their 'core competency' (Quinn and Hillmer, 1995).

The changing political and legal environment accelerated and abetted these decisions, albeit with considerable variation in the rich economies. In the United States, passage of the Employee Retirement Income Security Act 1974 (ERISA) mandated that all fulltime employees receive essentially the same non-wage benefits. This raised the relative cost of low-skill labour, encouraging outsourcing of non-essential tasks. The Reagan administration weakened protections for unions after 1980 (Lichtenstein, 2013). Second, the International Franchise Association won court, Federal Trade Commission and National Labor Relations Board decisions that enabled franchisors to license brands and trademarks to their franchisees, to tightly control the nature of their operations and to supply critical inputs while avoiding legal responsibility for their workforce and anti-trust litigation (Callaci, 2018).

Third, legal changes enhanced the profit potential of IPRs (Fisk, 2009; Pistor, 2019). IPRs have no natural term or content – law and litigation establish the duration of a given IPR, what things and processes IPRs can cover and whether something infringes on that IPR. US legislation and jurisprudence created or enhanced the market value of IPRs: legislation enabled the copyrighting of software in 1976 and 1980, strengthened trademark protection in 1988 and extended copyright on works for hire to 75 years in 1976 and then to between 95 and 120 years in 1998; in 1980, the US Supreme Court permitted patenting of genetically modified organisms. The Bayh-Dole Act 1980 enabled universities to grant exclusive licence to their patents, substantially increasing their value to universities. Finally, a variety of international trade treaties exposed manufacturing to low-wage competition and encouraged off-shoring while exporting US legal protection for IPRs to other economies. On the other side, a 2014 US Supreme Court decision limited the ability to patent business processes, reducing their value.

The IPR economy

The full shift from a Fordist dual firm structure towards a franchise economy three-tier structure occurred over roughly 30 years, 1970–2000. That said, the shift was necessarily

uneven across countries. Not all firms could be winners in a changing global division of labour that left some firms as suppliers or labour-intensive production and others as physical-capital-intensive producers. Second, local political coalitions, legal regimes, welfare states and degrees of union power necessarily shaped outcomes.

This shift coincided with the general increase in automation, digitalization of the economy and cheaper information and communication technology (ICT). These enabled but did not drive the shift in strategy and structure. Firms could have deployed new technologies in existing factories and with the existing level of legal responsibility for employees in ways that made production more flexible and less vulnerable to shocks (Noble, 1984; Zuboff, 1988). But management sought to decrease, not preserve worker power in factories.

Firms that succeeded in creating robust IPRs could use their monopoly position to extract large shares of the value created in any given commodity chain. For example, Qualcomm's patents on the technologies linking cell phones to cell towers and WIFI enabled it to levy a 2–5% royalty on the average selling price of almost all cell phones. IP was also present in the Fordist era, and, indeed litigation to establish corporately owned IP started in the 19th-century (Fisk, 2009). Nor is the new economy an exclusively 'tech' phenomenon, even though technorents comprise the largest part of IPR-based monopoly rents. Branded soft drink manufacturers have also largely sloughed off direct production aside from patented, concentrated flavourings and the major hotel chains – hardly the embodiment of high tech – have also shed ownership of most of their buildings in favour of being pure brand owners. Likewise, firms with above average profits have paid above average 'efficiency wages' since the late 19th-century; *vide* Ford's famous \$5 day.

But vertical disintegration has concentrated increasingly larger IP related profit onto smaller and fewer firms with correspondingly smaller employee headcounts. The reverse was true in the late 19th-century and during Fordism. At the plausible peak of Fordism, 1961–1965, the top 100 firms employed 42.1% of all employees of all publicly listed firms and generated 49.8% of cumulative gross profit. The top 100 listed firms, 2013–2017, generated nearly the same 49.4% of gross profit but employed only 32.1% of employees. US manufacturing firms halved the number of production workers 1977–2012, replacing them with roughly the same number of 'human capital' workers and robots (Fort et al., 2018). This shift to a more 'services'-oriented footprint involved an expansion of IP, as with jet engine makers' post-2000 shift towards preventative maintenance based on big data, or agricultural equipment makers' shift towards integration of sensor data into equipment performance.

Not all firms successfully generated IPR-based monopolies. Two other kinds of firms emerged. Vertical disintegration concentrated and segregated IP ownership into a small number of legally distinct and highly profitable firms, while concentrating ownership of physical capital into a second set of firms and labour into a third set. Some firms still operate in sectors where large scale investment or the importance of tacit production knowledge creates barriers to entry. For example, a state of the art semiconductor fabrication facility in the early 2020s costs about \$10 billion, and an automobile assembly plant costs between \$1 and \$2 billion. Similarly, tacit production knowledge shields German SMEs making precision components or customized machinery from much competition. This assures them some profit, though not on the volumes accruing to IPR-rich firms.

Finally, firms with neither IPRs nor a barrier entry typically adopted a high human headcount but low human capital and relatively physical asset light model of production. As with IPR-rich firms, they sought to minimize their fixed costs, but by making

employment as contingent as possible, as with British ‘zero-hour contracts’. Most of the long tail of SMEs – the United States has 5.3 million firms with fewer than 20 employees and 24 million non-employee firms (US Small Business Administration, 2019: 4) – lives at this level.

Overall, every firm tried to shift risk onto weaker actors or reconfigure the production process in a legal rather than physical sense. IPR-rich firms shifted the risk of un-used capacity onto firms with fixed capital; those firms shifted the risk of excess labour onto labour-heavy firms; labour-heavy firms made and job security weak and employment hours unpredictable through on-call employment. Tellingly, even IPR-rich firms at the top of the profit pyramid used contract employees to buffer their labour needs. Microsoft pioneered the use of ‘permatemps’; almost half of Google’s 2018 workforce consisted of temps and contract employees, many sourced from the Swiss temp firm Adecco (Bergen and Eidelson, 2018; Wong, 2019). Exclusively gig employment, however, remains a single digit percentage of the labour force and typically supplements regular employment (Katz and Krueger, 2019). Critically, in almost all of these value chains, the lead firm exerts something close to managerial control over the entire chain, despite having shed formal legal control. For example, Satariano and Burrows (2011) note that Apple ‘exerts control over nearly every piece of [its] supply chain, from design to retail store’. In this respect, Apple is much like the brand owners in the fast food or hotel sectors.

The contemporary IPR economy thus has a three-tier structure, in ideal typical terms. Human capital-intensive, low employee headcount, low physical capital firms comprise the high profit volume top tier. Physical-capital-intensive firms comprise the moderate profit volume middle tier. High employee headcount firms with little physical or human capital are the bottom tier. The tech world precisely exhibits this structure: consider the iPhone value chain with Apple and Qualcomm in level 1, Intel, Toshiba or Corning in level 2, and Hon Hai Precision (aka Foxconn), Pegatron or Flextronics in level 3. The first group typically does only chip and software design, the second group uses capital-intensive processes to produce parts based on those designs and the last group assembles those parts. Apple produces nothing physical for its phones, though it owns many of the sophisticated tools used to make its products (Kahney, 2019).

This three-tier structure is not unique to tech, which remains a relatively small share of employment and whose profit share, while, disproportionate, is not completely dominant. The low tech hotel industry also exhibits a three-tier structure. The major hotel brands largely neither own physical buildings nor employ most of the workers inside those buildings. Hilton Worldwide Holdings, for example, has 16 distinct brands across carefully gradated market segments and 5900 registered trademarks.⁸ Hilton develops and curates these brands and then franchises them out to owners of hotel buildings. Hilton Worldwide directly owned or leased only 71 buildings and directly managed another 689 buildings on a contractual basis out of the 5685 properties labelled with some Hilton brand as of December 2018. In short, it is an intangibles firm whose major asset is the IPR around its brands. AirBNB, likewise, is just software and servers. Accor, Europe’s largest hotel brand owner, owns roughly half of its buildings and franchises the rest.

Hotel buildings, by contrast, are a large physical asset, variously owned by private equity firms, family trusts and real estate investment trusts. Consider a different ‘Apple’ – Apple Hospitality Real Estate Investment Trust. It owns 242 hotels carrying various allegedly competing Hilton and Marriott brands.⁹ Hotel management firms run all of Apple’s buildings under contract. These management firms either directly employ or contract in labour

from firms like Adecco, Hospitality Services Group or GHJC Group. These jobs can be ‘gig’-like but are more often standard, albeit precarious employment relations. Note that as with fast food and other franchises, the lead hotel ‘brand’ firm minutely controls the behaviour of firms and workers farther down the chain, much as in a vertically integrated production process.

It might be argued that these ideal types are rarely found in the wild, and that the bulk of firms are hybrids or still substantially vertically integrated. But this view has three problems. First, it misses the point that ideal types are always simplifying abstractions whose purpose is to enable analysis. ‘Fordist’ firms and economies were also rarely found undiluted by craft production (Piore and Sabel, 1984), but the ideal type helped understand Fordist dynamics. Second, the ideal type establishes a base line to understand change from the Fordist dual industrial structure to the current three-tier industrial structure. In the 1980s, Apple Computer was a relatively integrated firm that not only wrote software and did design but also physically manufactured computers. By 2000, Apple was subcontracting almost all production to Hon Hai, though as noted Apple increasingly owns and leases out some of the specialized equipment used for making its products.

The distributional consequences of the shift from a dual to three-tier structure can be seen in the differences in cumulative gross profits among the three types of firms at a US and global level. The three-tier structure concentrates profits upward to IPR-rich firms while pushing bodies downward into firms, that, as we will see, tend to pay low wages.

Although disintegration is a general phenomenon linked to IPRs and not to tech as such, ‘tech’ firms in software, hardware and biotech-pharmaceuticals do capture the lion’s share of IPR related profit. Figure 1 contrasts the cumulative profit share of the top 100 publicly listed firms, 1961–1965 (arguably high Fordism) with that of the top 100 firms 2013–2017, broken up by sector. Arguably 2013–2017 is biased against manufacturing firms. But things were much the same from 1992 to 2017: the top 100 firms accounted for 44.6% of cumulative profit, with finance and IPR firms (primarily software, hardware and pharmaceuticals) each claiming 15 percentage points, versus 6.5pp for manufacturing and oil combined. The declining headcount in high profit firms – from 26.4% to 19.1% of listed firm employment – reduced the span for the redistribution of profit that naturally occurs within firms. The much shorter data series (2010–2018) on global listed and unlisted firms in the Bureau van Dijk Orbis database has the same rough distribution (Figure 2), suggesting that US listed firms are broadly representative.

Workers, wages and precarity

This section slices up FOOD – franchising, outsourcing, off-shoring and domestic geographic dispersion – for analytic clarity. The subsequent section discusses the wage and macro-economic consequences of the FOOD organizational forms. The shift to a three-tier industrial structure and the expulsion of human labour via FOOD interacted with the concentration of profits into IPR-based firms to generate three consequences. First, the labour share of GDP declined. Second, firms’ differing abilities to capture profit flowed into differential labour force compensation. Third, labour market monopsony arose in various regions and sectors. The analysis concentrates on the United States but the other rich OECD countries have experienced similar trends. From 1985 to 2013, the share of non-standard jobs in total employment increased from 21 to 34% in France, 25 to 39% in Germany and 29 to 40% in Italy (Goldschmidt and Schmieder, 2017; OECD, 2015:

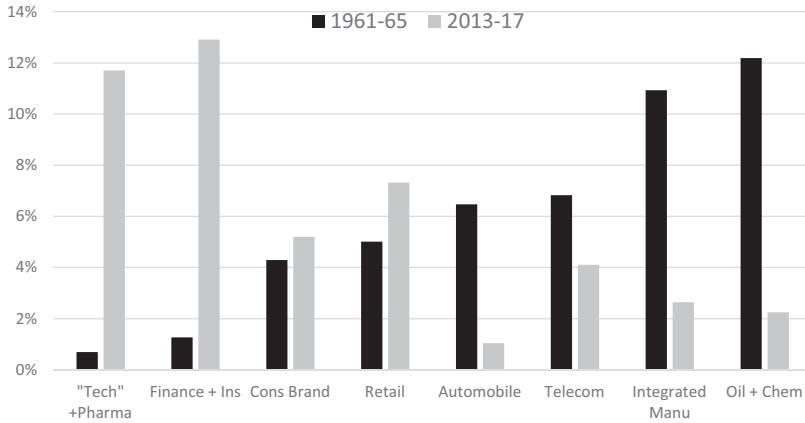


Figure 1. Top 100 share of gross profit for all publicly listed US firms, 1961–1965 versus 2013–2017. Source: author calculation from WRDS *Compustat* database. Sector labels: Tech = software, semiconductor and other computer equipment. Integrated Manufactures = vertically integrated firms with significant technical knowledge but also large production footprints, like Honeywell, United Technologies or General Electric.

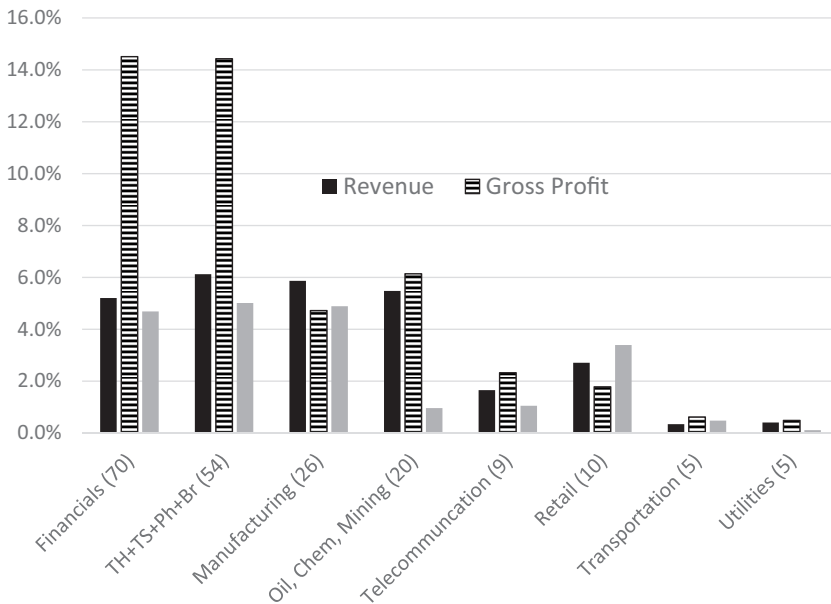


Figure 2. Top 200 *global* ultimate owner share of cumulative revenues, gross profits and employees for 10,826 *global* ultimate owners, 2010–2018. Memo: TH + TS + Pr + Br = Tech hardware, tech software, pharmaceuticals and consumer brands. # = Number of firms in indicated sector; one firm excluded for clarity. Source: author calculation from Bureau van Dijk Orbis database.

144–146). Gordon (2017) estimates that non-standard employment in Japan rose from 15 to 38%, 1982–2014. Moreover, western European labour markets polarized faster than in the United States, 1995–2015 (OECD, 2019: 64), reflecting the weakening of unions everywhere (Baccaro and Howell, 2011).

Welfare states and union power moderated the human consequences of these trends in varying degrees, however (Emmenegger et al., 2012). In Germany, for example, the bottom three deciles of workers by income saw declining real wages from 1995 to 2017, but social assistance and public health insurance buffered this decline. Similarly, temporary workers only accounted for 17% of all Swedish employees in 2014 (Svalund and Berglund, 2018: 265) despite Sweden's many IPR-based firms.

Outsourcing and off-shoring – the 'O's in FOOD — get the lion's share of attention in discussions of the falling wage share and rising precarity. *Franchising* is equally significant. Using a narrow definition of franchise (which for example excludes the hotel industry, despite an identical employment structure), 9.1 million people, or roughly 6% of all US employees, worked in one of roughly 785,000 franchised businesses in 2018, producing 3% of US GDP (Department of Commerce, 2018). By contrast, about 15 million people worked in US manufacturing, albeit with significantly higher measured output. The roughly 3400 brand-holding franchisors exert considerable market power relative to their 785,000 franchisees.

Franchisors control brands, trademarks and business practices. Business practices are often codified via patented machinery that franchisors compel franchisees to buy or lease. Franchisors typically take a specific percentage of gross revenue, meaning they get paid whether or not the franchisee is profitable. For example, Pizza Hut charges an upfront franchise fee of \$25,000 and takes 6% of gross sales (nb: not gross profit) as royalties and another 4.25% of gross sales for advertising expenses; franchisees meanwhile invest between \$300,000 and \$560,000 in building and equipment.¹⁰ While franchisees have a lower probability of failure, the tie to franchisor supplied inputs and franchise fees cap the franchisee's potential residual. De facto franchisees are more managers than entrepreneurs, who essentially control only relative labour costs. Minimal control over the cost of capital goods and components reduces their profit strategy to some form of hyper-exploitation of their workers: speed up, wage theft and other forms of uncompensated labour. App-based gig work – driving for Uber – has a franchise format.

Franchising was neither a natural nor technologically enabled development. In the early 1960s – well before the ICT revolution – franchise firms in the US restaurant and hospitality sectors created the International Franchise Association, which lobbied to legalize the franchising business model. Franchising per se was illegal under 1960s US anti-trust law, as it involved a corporation (the franchisor) dictating prices and business practices to franchised resellers; these are classical vertical restraints on trade (Callaci, 2018). If the franchisor effectively controlled the franchisee and its employees, then it would be a Fordist-style integrated firm, making it legally responsible for providing employment benefits and liable for labour law violations. If it was not an integrated corporation, then its practices constituted vertical restraint of trade. Legal challenges to anti-trust laws banning vertical restraint and a 1969 decision by the US National Labor Relations Board enabled franchisors to license brands and trademarks to their franchisees, to control the nature of their operations and to supply critical inputs while avoiding legal responsibility for the workforces at franchised establishments. The franchise model subsequently spread from the restaurant and hotel sectors to the entire range of service sector industries (Weil, 2014). By

contrast, in 2016, British courts ruled that Uber drivers were employees based on the substantive reality of their work.

Franchise firms practise a variety of anti-competitive labour practices. For example, many US fast food chains now force non-compete agreements on employees, and approximately 60% of franchise workers are covered by tacit ‘no poaching’ agreements about luring away competitors’ workers (Starr, 2019). Non-compete agreements make no functional or ethical sense for the typical low-wage, low-skill franchise employee, but do increase labour market monopsony power for franchise firms. Studies show decreased wages, decreased job offers and increased tenures at a given firm in US states with stronger non-compete laws (Starr, 2019: 11).

Outsourcing overlapped with and enabled franchising. Firms shedding labour inessential to their ‘core competency’ still needed logistics, janitorial, security, catering, etc., services. Firms increasingly contracted these expelled workers back from franchised labour-intensive enterprises, or from labour suppliers like Randstad, Manpower and Adecco. Even Fordism’s main sector, automobiles, core firms outsourced production of low and medium value components to concentrate on design and assembly. Where the old GM had generated 70% of final value in-house, and Ford 50%, almost all automobile firms were down to about 20% of value produced in-house by the 2000s (Klier and Rubenstein, 2008: 47). In turn, new components firms off-shored production of labour-intensive, low-skill parts production to Mexico to remain profitable in the face of demands for 5% year on year cost reductions. By 2008, Ford and GM’s spin-offs had more Mexican than American employees (Klier and Rubenstein, 2008: 51–52). The expulsion of the low-skill labour into new firms left the major auto assemblers as hybrids of the top two tiers – IP-intensive design and capital-intensive assembly – even as external software and semiconductor firms provided an increasing share of value added.

Firms in the top and middle tiers also contracted in temporary labour for some of their core activities. Roughly one-fifth of assembly-line workers in the typical Japanese automobile assembly factory are contract workers. Tech giants like Google employed vast numbers of temporary coders and analysts – 100,000 in the mid-2010s (Wong, 2019).

Europe also saw outsourcing. Even in Germany, where unions and works councils constrain firms from overt labour shedding, external and internal outsourcing started in the 1970s and rose sharply after the mid-1990s. VW, for example, shed 30% of its German work force 1974–1975, and 30–40% of VW’s assembly plant headcount is ‘temporary’ workers (Brooks, 2019; Doellgast and Greer, 2007; Tolliday, 1995: 122). Goldschmidt and Schmieder (2017) find that wages for outsourced jobs fell by 10–15% relative to similar non-outsourced jobs.

Off-shoring by definition is undertaken by transnational corporations (TNCs). TNC manufacturers, former manufacturers turned merchants and pure merchant firms all pursued off-shoring as a way to lower or eliminate labour costs. Brand-holding merchant firms like Nike, GAP or Inditex (owner of Zara) subcontract nearly all production to independent firms. Firms looking to reduce wage costs found China’s relative unit labour costs, estimated at about 23% of the US level in 1998, irresistible.¹¹ Off-shoring and outsourcing each account for half of the 41% decline in US manufacturing employment from 1993 to 2011 (Boehm et al., 2019).

Off-shoring is a form of global dispersion, but firms also pursued *domestic dispersion* in search of local labour market monopsonies (Moretti, 2012). Thus, Japanese and European automobile firms relocating production mimicked US producers, becoming the dominant

employer parts of rural north America. Europe's automobile assembly plants similarly drifted into east central Europe after 1991. The majority of highly concentrated US labour markets were in rural areas, where increasingly capital-intensive resource extraction and farming had reduced both primary and tertiary employment opportunities. Azar et al. (2017: 1; see also Autor, 2019; Barkai, 2020; Naidu et al., 2018) found that 'going from the 25th percentile to the 75th percentile in [employer] concentration [was] associated with a 17% decline in posted wages'.

Manufacturers of relatively undifferentiated goods moved to rural labour markets as a defensive move in the face of unrelenting pressure to lower costs each year. Many of these firms confronted buyer monopsonies. From 1980 to 2014, the share of revenue received from a large firm by the average publicly listed US manufacturing firm increased from 10 to 25% (Wilmers, 2018: 213). These firms could either increase product differentiation and quality – no easy task – or shift price pressure onto their workers via franchise-style hyper-exploitation. Rural workers faced local labour monopsonies while urban workers confronted franchisees; in either case, cost pressures from dominant firms or brand owners pushed the lowest level firm in the direction of labour hyper-exploitation.

FOOD and the macroeconomy

Rising profit concentration and the FOOD strategies depressed wages elsewhere and shifted profit to firms with a low marginal propensity to invest, hindering growth. FOOD strategies and market concentration interacted. Firms that could reliably move upwards into the IPR space did so, shedding excess labour and much of their production-side physical capital, becoming pure monopolies with high profit volumes. Firms which could not shift to an IPR-based strategy but which could deploy investment-scale barriers to entry regained some market power by merging, and then confronting IPR monopolists with an equivalent oligopoly or monopoly position.

Middle-tier firms used Veblenian horizontal concentration to restore some pricing power and thus profit in the markets for goods and labour (Davis and Orhangazi, 2019; Philippon, 2019). Mergers in manufacturing, 1997–2012, produced a 30% increase in mark-ups at acquired firms (Bloningen and Pierce, 2016). From 1997 to 2012, the average revenues of the top four firms in a given industry rose from 24 to 33% of total industry revenues (Shambaugh et al., 2018: 2; see also Orhangazi, 2019). In two influential studies of concentration and mark-ups, De Loecker and Eeckhout (2017, 2018) reported that from 1980 to 2014, average mark-ups nearly quadrupled for publicly listed US and global firms.

The average increase in mark-ups conceals a distribution skewed towards IPR-based firms. The top 10% of US firms showed the strongest relative and absolute increase in mark-ups, from a 40% mark-up in 1980 to a 160% mark-up in 2014 (De Loecker and Eeckhout, 2017: 13). Increased profitability seems to be strongly correlated with possession of intangible assets as the profit data presented above show (see also Davis and Orhangazi, 2019; Orhangazi, 2019). Durand and Milberg (2020: 419) attribute this to the fact that intangible assets have increasing returns as compared with tangible assets, but this obscures both the degree to which investment scale constitutes a barrier to entry and the degree to which the value of and profit capture by intangible assets is a function of how IPRs are constituted legally. Despite increased concentration in all sectors, the bottom 50% of US firms did not demonstrate any appreciable increase in mark-up pricing (De Loecker and Eeckhout, 2017). This suggests concentration for most firms is largely defensive in nature,

aiming at preserving existing profit shares. The long tail of largely unlisted SMEs in the bottom tier do not appear in these studies.

Unequal degrees of market power in the three-tier structure flowed into wage inequality, because firms tend to share rents internally for social and efficiency reasons (Swenson, 1989). During Fordism, sectoral or pattern bargaining, or state concatenation of wage deals, weakened the connection between a specific firm's profits and wages for its employees. Vertical disintegration has restored the direct connection, translating profit inequality into wage inequality and a declining wage share of GDP. The labour share of US GDP fell more or less continuously from 61.2% of GDP in 1992 to 56.9% in 2017; European countries had larger declines.¹²

The wage share decline was closely connected to the emerging three-tier economy, not uniform across all workers. In a study using US administrative rather than survey data to match employees with firms rather than establishments, Song et al. (2019; Barth et al., 2014) showed that inter-firm variation in wages was considerably higher than intra-firm variation. Higher productivity and profitability firms paid higher wages for the same kind of work than lower productivity and profit firms. This suggests that 'skill-biased technological change' arguments are wrong, as profitability should not affect the inter-firm dispersion of wages among skilled labour.

Workers and small firms lost from concentration and monopolization. Figure 3 shows the differences in average gross profit per employee, in terms of the percentage point deviation from the average, by type of top 100 listed US firm for the usual two eras, 1961–1965 and 2013–2017. Large differences in profit per employee across sectors correspond to the intuition that IP-based sectors – pharmaceuticals, finance (largely a software based business these days), tech hardware and software and copyright based firms like Disney – generate more profit per employee and thus are in a position to redistribute revenues towards those workers. By contrast, automobile assembly and other manufacturing firms are below average. The exceptions are telecoms – a four firm oligopoly – and oil – which benefitted from a demand shock from 2004 to 2020.

Rising concentration and franchising also affected SMEs. New business formation slowed markedly in the United States after 1979 (Shambaugh et al., 2018: 19–24), and Europe saw declining self-employment, 1986–2017 (OECD, 2019: 61–62). The franchise phenomenon is both iconic and generic in the contemporary economy, involving the separation of IP from production, fissured legal responsibility for employees (Weil, 2014) and decapitation of the small business class. Franchising limits the upside of success, turning the small business class into ferocious advocates for labour repression and limited welfare; *vide* the policy positions of the US small business association, National Federation of Independent Business.¹³ The NFIB sued the Obama Administration to block expansion of publicly funded healthcare and its individual health insurance mandate. In a franchise, the only production input owners control is labour costs. When local businesses were truly independent they had more latitude on inputs, faced no fixed revenue sharing with a franchisor and tended to recycle part of their profit. Income dispersing dynamics at the regional and individual level have replaced income equalizing forces.

Finally, the shift in strategy and organizational structure reinforces the growth suppressing effects of rising income inequality. Put simply, the firms that make profits do not need to invest (as much) and the firms that might invest more do not make profits (Schwartz, Forthcoming). Monopoly tends to depress economic growth (Steindl, 1952). Weak investment generates labour market slack.

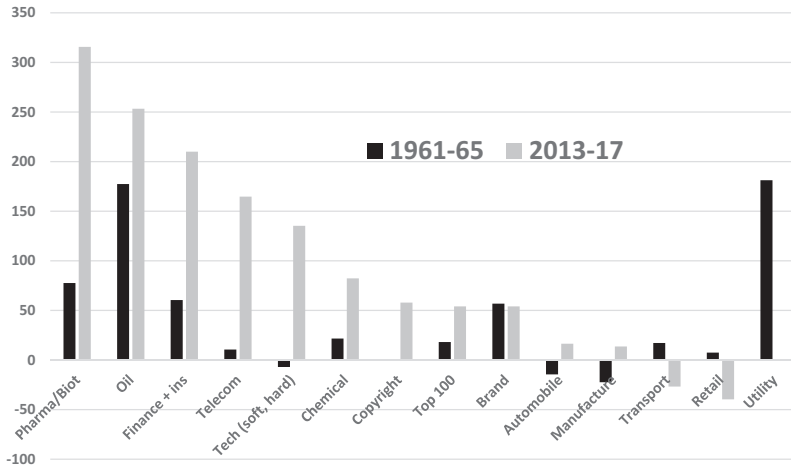


Figure 3. Percentage point deviation from average gross profit per employee for top 100 US listed firms. Source: author calculation from WRDS Compustat data.

Isolating the iconic tech sectors makes the disproportion between profit share compared to capital expenditure and headcount share even sharper. Fourteen software and tech hardware firms in the top 100 firms captured 8.4% of cumulative profit for all publicly listed firms 2013–2017, but did only 4.9% of capital expenditures, and employed only 3.6% of all employees (of which IBM employed a full quarter). Their production model – high human capital employees generating new brands, software, chip designs, images emotional attachment – means even their limited investment tends to have very small multiplier effects, as it involves continuing to pay people wages rather than building new plant and equipment or hiring new workers.

In this environment, firms with no particular ability to differentiate their product or defend pricing through an IPR understandably seek to limit wages through the FOOD strategies while their weak profitability constrains capital expenditure. This tends to dampen the growth of aggregate demand.

Conclusions

Over the past 40 years, firms have vertically disintegrated, outsourcing non-core production and support activities, producing a three-tier industrial structure composed of IP-intensive firms with large profit volumes, physical-capital-intensive firms with more modest profit volumes and low-skill labour-intensive firms whose profitability rests on hyper-exploitation of that labour. That said, the analysis above has several obvious limitations.

First, the three-tier organizational structure with de jure separation but de facto control is an ideal type. Hybrids blending two tiers and fully integrated firms remain. Corporatized public sector firms in Europe typically depart from this model. And while the long tail of SMEs undoubtedly contains many labour-intensive firms, it is also highly heterogenous in most countries. Obviously further studies should attend to specific sectoral nuances.

Second, the analysis compares two long historical periods but systematic, comparable data are only available for one country and even there only for listed firms. Likewise, the conventional accounting definition for profits used above maps inaccurately on the more fine grained concepts noted above. Nonetheless, the conventional data above suggest a strong connection between intangibles and especially IPRs and profitability (Orhangazi, 2019). While private equity remains essentially terra incognita in data terms, research suggests similar patterns; the top 10 private equity firms account for 30% of assets under management (Morgan and Nasir, Forthcoming: 4).

Third, this process is more advanced in the United States than elsewhere. Differences in unionization levels, welfare states, labour market regulation and corporate governance obviously affect employment and profit dynamics, and variation in a complex global division of labour is no surprise. Orbis data on global firms show a similar distribution of profit volumes in the three tiers, 2010–2018.

Corporate responses to rising labour militance and market volatility in the late 1960s and 1970s created that structure, as firms shifted to a strategy based on the capture of explicit rents via control over IP embedded in vertically disintegrated commodity chains. Inter-firm struggles transformed the dual industrial structure of the Fordist era into a three-tier structure. The most profitable firms capture monopoly rents from control over IP, while delegating direct production to other firms. The second tier of firms derive profits from control over a key, usually capital-intensive production process, or over tacit knowledge. The largely labour-intensive third tier firms capture no visible rents, instead capturing profit through hyper-exploitation of their labour force. While all levels display the FOOD formats, they are most visible in this bottom tier. Monopsonistic labour markets and depressed wages sustain minimal profitability for firms with weak bargaining positions vis-à-vis the first two types of firms. Finally, off-shoring puts rich country workers into direct competition with workers in low-wage, labour repressive economies.

All four slices of this FOOD phenomenon interact. Obviously, outsourcing by dominant firms creates a market for franchises providing those outsourced activities. Equally so, outsourcing and core firms' demands for ever lower input prices motivate weaker firms to seek monopsony power by dispersing themselves into rural labour markets. Off-shoring weakens labour demand in the aggregate, constraining demand growth and incentivizing firms to seek even greater wage savings. A self-reinforcing pattern of slow growth emerges from these strategies. The concentration of profit into a handful of firms that have little interest or need to expand investment deters the larger universe of firms that might invest from actually investing, for fear of creating excess capacity. Competition among firms over the past four decades has thus produced changes that have worsened the growth trajectory of capitalist economies and created ever growing income inequality in America and the rich OECD more generally.

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Notes

1. Microsoft 2019 10k report at <https://microsoft.gcs-web.com/static-files/7c96b326-33bc-4b84-8abb-7afd7a517ea3>; Alphabet (i.e. Google) 2019 10k report at https://abc.xyz/investor/static/pdf/20200204_alphabet_10K.pdf?cache=cdd6dbf.
2. TechCrunch, 15 August 2011, <https://techcrunch.com/2011/08/15/breaking-google-buys-motorola-for-12-5-billion/>
3. *Forbes* Global 2000 for 2018 @ <https://www.forbes.com/global2000/list/>
4. Unless otherwise noted all data on profits, employee headcount and capital expenditure below are author calculations from Wharton Research Data Services (WRDS), *Compustat* database at <https://wrds.wharton.upenn.edu>, accessed 15 March 2019. Ginis calculated only for firms with positive cumulative net profits.
5. This calculation blends Compustat data for gross profit of listed firms with OECD data (<https://OECD-iLibrary.org/statistics>) for a similar concept including unlisted firms' income.
6. European Commission, DG ECFIN, Ameco database Series ALCD0 at https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm
7. Data from US Federal Reserve Bank of St Louis Economic Database (FRED) @ <https://fred.stlouisfed.org/series/TCU>
8. Data in this paragraph are from the Hilton Worldwide 2019 US Securities and Exchange Commission Form 10-K filing @ https://otp.tools.investis.com/clients/us/hilton_worldwide2/SEC/sec-show.aspx?FilingId=13217616&Cik=0001585689&Type=PDF&hasPdf=1
9. Data in this paragraph are from Apple Hospitality REIT 2019 US Securities and Exchange Commission Form 10-K filing @ https://ir.applehospitalityreit.com/SEC_Filings
10. Pizza Hut Corporation @ <https://franchise.pizzahut.com/faqs/>
11. Conference Board, *The Conference Board Total Economy DatabaseTM (Original version)*, November 2018 @ <https://www.conference-board.org/ilcprogram/>
12. European Commission, DG ECFIN, Ameco database, Series ALCD0 and ALCM at https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm
13. National Federation of Independent Business @ <http://www.nfib.com/advocacy/labor>

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