Normative Macro-Finance: An Agenda and Ten Rules*

Eduardo Dávila†

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Abstract

This essay surveys my research in normative macro-finance, recognized with the *XXIII Premio Fundación Banco Sabadell a la Investigación Económica*. It reviews contributions to understanding pecuniary externalities, arbitrage and mispricing, corporate taxes and financial transaction taxes, information and learning in financial markets, bank regulation, corrective policies, bankruptcy policy, leverage regulation under belief distortions, optimal monetary policy with heterogeneous agents, and the origins of welfare gains. It also presents ten guiding rules for conducting normative research in financial economics and macroeconomics.

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†Yale University, Department of Economics, 28 Hillhouse Avenue, New Haven, CT 06520, United States. Email: eduardo.davila@yale.edu

1 Introduction

Economics is unusual among the sciences in its capacity to offer normative assessments. It does not merely describe how individuals behave; it also has the ability to determine which outcomes are more or less desirable. This contrasts sharply with disciplines such as physics: while physicists can characterize the motion of bodies with great precision, they offer no judgment on whether such motion is desirable. Economics, by contrast, can formally evaluate how much individuals gain or lose under different scenarios. This rigor and clarity enable disciplined debates, where disagreements about the impact of policies or changes in the economic environment can be traced back to explicit assumptions, rather than to rhetoric or narratives.

Yet this capacity also presents a challenge. While economics can make normative assessments, doing so rigorously in complex environments — dynamic and stochastic, with heterogeneous agents and frictions — is difficult. My research over the past decade, generously recognized with the *XXIII Premio Fundación Banco Sabadell a la Investigación Económica*, has focused on advancing and consolidating "normative macro-finance." This is an area of economics — at the intersection of financial economics, macroeconomics, and public economics, building on insights from general equilibrium and welfare economics — that seeks to study the desirability and optimal design of economic policies in frictional environments in which time, uncertainty, and heterogeneity are of first-order importance. In this sense, normative macro-finance both exemplifies the distinctive normative capacity of economics and highlights the demands of exercising it rigorously.

My research spans both applied and conceptual contributions. On the applied side, it evaluates concrete policy interventions — ranging from deposit insurance to monetary policy — through a normative lens to quantify their welfare consequences. On the conceptual side, it develops insights and tools that enable systematic assessments of the desirability of policies across a broad range of environments.

This essay consists of three parts. Section 2 describes the underpinnings of the normative macro-finance agenda: the origins of my interest in normative questions, the welfare primacy philosophy that organizes my work, the combination of theory and measurement that underlies it, and the challenges that any normative assessment must confront. Section 3 summarizes my work in normative macro-finance recognized by the

Sabadell prize. In Section 4, I take the opportunity to present ten guiding rules for conducting normative research in financial economics and macroeconomics.

2 An Agenda

Background. My first formal encounter with economics dates back to the fall of 2004 at the Universidad de Las Palmas de Gran Canaria. As a newly minted freshman, I had the opportunity to serve as a research assistant for Ginés de Rus, one of the world's leading experts in cost-benefit analysis and policy evaluation. This experience proved deeply formative: I learned that, under reasonable assumptions, economics could rigorously evaluate whether expanding an airport or building a railway corridor was socially desirable. I continued my undergraduate studies at Universitat Pompeu Fabra, where I was introduced to Public Economics, Financial Economics, and Macroeconomics.

My early exposure to normative reasoning became especially relevant when I began my PhD at Harvard in the fall of 2008. The global financial crisis was unfolding, and economists everywhere seemed eager to deploy the discipline's unique capacity for policy design — yet the conceptual framework required to do so appeared underdeveloped. Drawing on my early exposure to cost-benefit analysis, I found myself wondering whether the same logic used to evaluate infrastructure projects could also be applied to determine whether regulatory interventions in the financial sector — widely discussed at the time — were socially desirable. More broadly, I came to believe that a unified framework capable of systematically evaluating the welfare consequences of financial regulations, tax instruments, and macroeconomic policies was essential. This line of reasoning has shaped, and continues to shape, my research program.

Financial economics, in particular, has historically leaned more toward positive questions. Its central questions concern (i) how asset prices behave and (ii) how firms make investment and financing decisions. This stands in contrast to other areas of economics, such as international trade or monetary economics, where normative questions lie at the core: arguably, the central question in international trade is whether there are welfare gains from trade, while the optimal conduct of monetary policy is central to monetary economics. Within finance, only in the domain of financial intermediation — and, more recently, in the study of household financial decisions — has there been

sustained interest in whether specific interventions improve or worsen welfare.[1]

It thus became evident to me early on that there was a major gap at the intersection of financial economics, public economics, and macroeconomics — one that presented opportunities for a new and promising research agenda. My training at Harvard — shaped by John Campbell, Emmanuel Farhi, Jeremy Stein, and Oliver Hart, each with a deep appreciation for normative work — placed me in a privileged position to contribute to this space.

Welfare Primacy. Building on the earlier observation that the normative nature of economics is what makes it distinctive, all of my work unapologetically adopts a *welfare primacy* philosophy: this is the view that the ultimate purpose of economics is to determine whether changes in the economic environment make individuals better or worse off. This stance goes beyond acknowledging that economics *can* offer normative assessments; it holds that economics *should* be organized around questions of individual well-being. That is, the ultimate value of studying positive questions in economics lies in their capacity to speak to the welfare of people.

This is not a universally held view. Some regard economics as valuable purely for its descriptive, positive content, and canonical definitions of the field — such as the characterization in Robbins (1932) of economics as the study of the allocation of scarce resources — make no reference to welfare at all. Nonetheless, welfare primacy has served as the organizing principle for my work.

Theory and Measurement. While I am a theorist at heart, my work typically combines theory and measurement. As I always emphasize in my teaching, theory is indispensable for making normative assessments. Well-identified, credible estimates of causal effects may speak to the consequences of a policy, but cannot by themselves determine whether that policy is desirable. Yet any framework that aims to explain the real world or to provide welfare assessments relevant for practical questions must ultimately be disciplined by data.

One methodology particularly well suited to bridging theory and measurement is the use of sufficient statistics. Sufficient statistics are variables that (i) directly answer

[1]Celebrated examples of normative work in finance include Diamond and Dybvig (1983), Shiller (1993), Allen and Gale (1994, 2007), and Hart (1995). The recent book by Campbell and Ramadorai (2025) exemplifies the normative motivation behind many questions in household finance.

a positive or normative question of interest, (ii) remain valid across a broad class of economic environments, and (iii) can potentially be measured, computed, or inferred from observable data. Several of my contributions rely on this approach, surveyed in Auclert and Dávila (2026) in the context of macroeconomics and finance.

Challenges and Qualifications. The normative approach can yield powerful insights, but it confronts serious challenges. Any normative assessment rests on three components: a positive description of the world, a measurement exercise, and a normative criterion. Each component raises difficulties of its own.

A normative conclusion is no more credible than the positive model that generates it, and constructing accurate models of behavior is itself difficult. The measurement exercise is often constrained by limited data availability and by the econometrics involved in identifying the objects required for welfare analysis. Finally, welfare assessments hinge on the chosen normative criterion, a particularly subtle issue in the heterogeneous-agent settings that finance requires. The contribution of normative macro-finance is therefore not to circumvent these difficulties, but to confront them explicitly, offering a disciplined basis for informing policy decisions.

3 Synthesis of the Research

This section traces the development of my agenda on normative macro-finance from specific financial frictions to a general framework for welfare analysis. I begin with the pecuniary externalities created by asset prices and then turn to arbitrage, corporate taxation, trading, and information aggregation. I subsequently study the design of bank regulation, bankruptcy policy, leverage regulation, and monetary policy. I conclude by describing my recent work on the origins of welfare gains, which provides a common language for interpreting the efficiency and redistribution effects that run through all of these applications.

3.1 Financial Frictions

I begin with financial frictions, where departures from complete and frictionless markets make asset prices, arbitrage gaps, and firms' financing conditions directly relevant for welfare.

Pecuniary Externalities. Experiencing the 2008–2009 global financial crisis made clear that price changes have a direct impact on individual well-being. Households and firms sold houses and assets at depressed prices — to willing buyers — a phenomenon often described as a fire sale (Shleifer and Vishny, 1992). Households and firms also found themselves unable to borrow, as the value of their collateral collapsed. These events naturally raise a normative question: What are the welfare consequences of changes in asset prices? Or, more technically, what is the welfare impact of pecuniary externalities? Pecuniary externalities are those that operate through changes in the prices of goods or assets.[2] This question has a long and fascinating intellectual lineage.[3]

A frequent misconception is that there are no externalities in competitive environments, or that pecuniary externalities somehow do not count as genuine externalities. The reality is more subtle: there are pecuniary externalities in competitive environments, but these add up to zero at each instant in which trading takes place. Therefore, in static models or in models with complete markets, in which all risks are perfectly insured, any gain one agent enjoys through a price change is exactly offset by another agent's loss. This is the mechanism underpinning the First Welfare Theorem, which states that all competitive equilibria are Pareto efficient. In contrast, in models with incomplete markets, this type of pecuniary externality — termed distributive in Dávila and Korinek (2018) — can generate constrained Pareto improvements, where constrained means that the asset span (the extent of the market incompleteness) is respected.

A central insight of Dávila and Korinek (2018) is that competitive models with incomplete markets feature two conceptually distinct types of pecuniary externalities. First, we have the distributive pecuniary externalities described above. These externalities arise because individual decisions have an impact on the prices at which individuals transact: when prices rise, net sellers gain and net buyers lose, while the reverse occurs when prices fall. Depending on relative valuations at different dates or states, this logic can be used to engineer constrained Pareto improvements.

Second, we have frictional (or collateral) pecuniary externalities. These externalities

[2]Or, more precisely, through changes in wealth. The term pecuniary derives from the Latin *pecunia* (money, wealth), itself from *pecus* (cattle).

[3]Earlier contributions include Diamond (1967), Hart (1975), Greenwald and Stiglitz (1986), and Geanakoplos and Polemarchakis (1986). More recent contributions include Gromb and Vayanos (2002) and Lorenzoni (2008) on distributive externalities, and Bianchi (2011) and Stein (2012) on collateral/frictional externalities.

arise when prices enter individual decision problems through constraints *other than* budget constraints, that is, when prices affect individual feasible choices directly rather than merely through the terms of trade. In economies with collateralized borrowing, asset prices appear in borrowing constraints, so changes in prices directly affect an individual's welfare through borrowing capacity rather than through trading gains or losses. Importantly, these externalities arise even when an individual is not actively buying or selling an asset: a fall in asset prices tightens borrowing limits and reduces welfare simply because collateral values decline. Analogous effects occur when prices enter other constraints, such as enforcement or participation constraints, or when prices determine allocations in non-Walrasian environments.

The challenge in distinguishing these two types of externalities is that a collateral constraint can generate both simultaneously — distributive pecuniary externalities alongside collateral/frictional externalities. By clearly separating and identifying sufficient statistics for these two channels, Dávila and Korinek (2018) provide a framework that subsequent work has used both quantitatively and empirically. For instance, Lanteri and Rampini (2023) embed distributive and collateral externalities in a quantitative model of capital reallocation across heterogeneous, collateral-constrained firms. They show that the equilibrium price of old capital is inefficiently high because the distributive externality dominates the collateral externality, and they use this result to characterize corrective taxes and subsidies on old and new investment. Fagereng, Gomez, Gouin-Bonenfant, Holm, Moll, and Natvik (2025), in turn, provide an empirical counterpart to the distributive channel, using Norwegian administrative data to measure the welfare effects of asset-price changes across households. Consistent with the distributive logic described above, each household's net trading position determines whether it gains or loses when asset prices change.

Arbitrage. A different manifestation of financial frictions is the presence of arbitrage opportunities. Remarkably, despite the central role of no-arbitrage pricing in modern financial economics, the study of the welfare implications of closing arbitrage gaps has received limited attention. Dávila, Graves, and Parlatore (2024) develop a framework to quantify the social value created by eliminating price differentials across assets with identical payoffs.

The core theoretical insight is simple: the arbitrage gap itself — the price difference

between two identical assets or strategies — is exactly equal to the marginal social value of executing an additional unit of the arbitrage trade. This result is general: it does not depend on the sources of the price differential, on market microstructure, or on the nature of the friction limiting arbitrage. It reflects a fundamental property of competitive equilibria with frictions: price gaps summarize the difference in marginal willingness to pay across investors on each side of the trade, and therefore serve as a sufficient statistic for marginal welfare gains. It is also useful for interpreting and justifying many empirical papers — such as Du, Tepper, and Verdelhan (2018) — which have emphasized the measurement of these gaps.

Beyond marginal gains, Dávila, Graves, and Parlatore (2024) show how to recover the total social value of closing an arbitrage gap. While prices suffice for marginal gains, quantities matter for total gains: the slope of the price-quantity relation — i.e., measures of price impact — determines how quickly the arbitrage gap shrinks as the required arbitrage trade scales up. In more liquid markets, prices are less sensitive to quantity, so closing a given arbitrage gap is associated with larger welfare gains; in illiquid markets, the same gap is cheaper to eliminate and therefore closing a given arbitrage gap is associated with smaller welfare benefits. This result makes the theory operational: arbitrage gaps and price impact curves are sufficient to measure the value of arbitrage in practice. The framework also extends to cases in which price differentials arise from nonpecuniary benefits, linking the analysis to classic questions such as the welfare cost of inflation or the liquidity premium of safe assets.

Empirically, applying this framework to covered interest parity (CIP) deviations (Du, Tepper, and Verdelhan, 2018) using high-frequency data on foreign exchange futures shows that their direct welfare significance is modest: despite occasionally large arbitrage volumes needed to close CIP gaps, the total welfare gains rarely exceed 0.01% of combined daily GDP, reaching at most about $1–2 billion on exceptional days. The reason is that periods with large CIP gaps tend to coincide with extremely illiquid markets, precisely when price impact is steepest.

Corporate Taxation. Another sign of the lack of normative emphasis in financial economics is the disproportionately small amount of research on corporate taxes relative to, say, labor or capital taxes. Dávila and Hébert (2023) revisit the question of optimal corporate taxation, emphasizing the role played by financial frictions. The starting

point is elementary: some firms are financially constrained and place a high value on internal funds, while others are effectively unconstrained. Taxing constrained firms is therefore especially costly, yet the government cannot observe which firms are which. The central result is that a uniform tax on corporate payouts naturally induces firms to sort themselves: constrained firms postpone payouts until they grow out of their constraints, while unconstrained firms distribute funds more freely. This separation allows a benevolent government that seeks to minimize the impact of taxes on investment and growth to place the tax burden almost entirely on the firms that can bear it with minimal efficiency loss.

In a fully dynamic environment with private information, entry, exit, and limited enforcement — and without assuming government commitment — a constant payout tax is still sufficient to implement the optimal allocation. By contrast, the corporate profit tax, which dominates most real-world systems, burdens precisely the firms for which funds are most valuable and therefore distorts investment decisions. Quantitatively, shifting from profit to payout taxation increases the total value of the corporate sector by roughly 7%.

3.2 Financial Market Trading

While the work described so far studies how frictions distort the allocations that financial markets generate, a complementary strand of my research examines the trading process itself: the taxes levied on financial transactions and the information revealed by the prices at which trades occur.

Financial Transaction Taxes. One central question in normative finance is whether financial transactions should be taxed. This issue periodically reenters public debate, particularly during episodes of economic turmoil. Tobin (1978) famously advocated for such a tax after the collapse of the Bretton Woods system, and similar proposals were advanced by Stiglitz (1989) and Summers and Summers (1989) after the 1987 crash. However, despite its recurrent prominence in policy discussions, this question has received relatively limited attention in formal normative analysis.

Dávila (2023) studies the welfare implications of financial transaction taxes in an equilibrium model in which financial markets facilitate both fundamental trading, due to hedging and risk-sharing, and nonfundamental speculative trading, driven by

heterogeneous beliefs. When investors trade partly because they disagree about asset payoffs — and a social planner evaluates welfare using a single belief — a corrective role for policy emerges, similar to that in Brunnermeier, Simsek, and Xiong (2014). The central theoretical result is that a positive transaction tax is optimal whenever belief-driven (nonfundamental) trading is not systematically related to fundamental trading. In this case, the welfare gains associated with curbing belief-driven trades are higher than the inevitable welfare losses associated with reducing fundamental trading.

Interestingly, the optimal tax depends only on two sufficient statistics: the share of nonfundamental trading volume and the semielasticity of trading volume with respect to the tax. This characterization makes the framework well suited for quantitative evaluation. Plausible calibrations yield optimal taxes on the order of tens of basis points; for example, a 30% share of nonfundamental trading combined with empirically estimated volume semielasticities implies an optimal tax of roughly 37 basis points. An important caveat is that these calculations assume perfect tax enforcement. If investors can easily shift trading activity to untaxed venues, the optimal tax may collapse to zero.[4] Overall, this study shows how a long-standing and contentious policy proposal can be evaluated transparently within a rigorous welfare framework.

Price Informativeness. The treatment of financial transaction taxes when individuals have heterogeneous beliefs does not account for the role of financial markets in generating and aggregating dispersed information. Dávila and Parlatore (2021) provide a systematic analysis of how trading costs — including transaction taxes, but not exclusively — affect the ability of financial markets to aggregate dispersed information.

The central result is an irrelevance theorem: when investors are ex ante identical, price informativeness — the precision of the signal about future payoffs revealed by asset prices — is independent of the level of trading costs. The intuition is that higher trading costs reduce both information-driven trades and noise-driven trades proportionally, leaving the signal-to-noise ratio in prices unchanged. When investors are heterogeneous, however, the relationship between trading costs and price informativeness becomes ambiguous and depends critically on the source of heterogeneity. If investors differ in the precision of their private information, trading costs reduce price informativeness; if they differ in the precision of their prior beliefs, trading costs increase it. These results

[4] Campbell and Froot (1994) provide evidence of this phenomenon.

hold for quadratic, linear, and fixed trading costs.

When investors can choose how much information to acquire, Dávila and Parlatore (2021) also show that higher trading costs unambiguously reduce price informativeness by diminishing the incentives to gather private information. These findings have direct implications for policy debates on financial transaction taxes: one cannot argue that such taxes will make prices more or less informative without specifying the nature of investor heterogeneity in the market. The analysis provides a unified framework for understanding how trading frictions interact with information aggregation, challenging the conventional wisdom that higher trading costs necessarily impair the informational efficiency of financial markets.

Seeking to test model predictions for informativeness led me to investigate the relationship between price volatility and price informativeness in financial markets. While volatility is easily computed and often used as a proxy for informativeness, Dávila and Parlatore (2023) show that this proxy is only valid under specific conditions. The analysis identifies two opposing channels: a noise-reduction channel, through which higher informativeness mechanically reduces volatility by incorporating less noise into prices, and an equilibrium-learning channel, through which higher informativeness makes investors' demands more correlated as they put greater weight on the price signal, thereby amplifying volatility. When informativeness is sufficiently high, the equilibrium-learning channel dominates and volatility positively comoves with informativeness; when informativeness is low, the noise-reduction channel dominates and the relationship reverses.

Building on these theoretical insights, the paper introduces the "comovement score," a statistic measuring whether a given stock is in the positive or negative comovement region based on two scale-invariant ratios: the signal-to-payoff ratio and the noise-to-payoff ratio. When applied to U.S. equities, comovement scores have trended downward since the mid-1980s, suggesting that changes in volatility are less likely to reflect changes in informativeness in the same direction in recent times.

While price informativeness is central to theories of information aggregation, it is not directly observable. Dávila and Parlatore (2026) show that outcomes from standard regressions of prices on fundamentals (specifically, parameter estimates and R-squareds) are sufficient statistics to recover exact measures of price informativeness. The methodology applies to dynamic environments with rich heterogeneity across

investors in terms of signals, private trading needs, or preferences, requires only minimal distributional assumptions, accommodates multiple risky assets, and allows for both stationary and non-stationary payoff processes.

Implementing this methodology on U.S. data, the paper finds a right-skewed distribution of price informativeness across stocks. Measured as the Kalman gain used by an external observer who updates beliefs based on asset prices, the mean price informativeness is roughly 2.5%, indicating that for the typical stock, prices reveal only a small fraction of the information about future payoffs. Cross-sectionally, price informativeness is higher for stocks with larger market capitalization and higher trading volume, consistent with the intuition that more actively traded stocks have prices that better aggregate dispersed information. This identification framework provides the empirical foundation for the comovement score methodology developed in the volatility and informativeness paper, and more broadly enables researchers to test theories of information aggregation using readily available market data.

Although these papers emphasize price informativeness, this focus is best viewed as an intermediate step toward a broader normative objective: understanding the welfare impact of information in financial markets. Ongoing work in Dávila, Parlatore, and Walther (2025) addresses this challenge by establishing a mapping from changes in probabilities to conventional cash-flow pricing, thereby bringing informational changes within the scope of asset pricing and welfare analysis.

3.3 Financial Regulation

I now turn to the broader design of financial regulation, emphasizing endogenous fragility and the imperfect set of instruments available to policymakers.

Bank Regulation. My work on bank regulation explores how policymakers should intervene in financial systems where fragility is endogenous and regulatory tools are imperfect. Dávila and Goldstein (2023) develop a rigorous framework to answer a fundamental question in financial regulation: what is the optimal level of deposit insurance coverage? Building on the classic Diamond and Dybvig (1983) model of bank runs, this paper shows that the welfare impact of changing coverage can be expressed through a small number of sufficient statistics — observable variables including bank failure probabilities, their sensitivity to coverage changes, consumption losses from

failures, and fiscal costs of intervention. The key tradeoff is intuitive: higher coverage reduces the likelihood of panic-driven bank runs, but it also increases fiscal costs when banks fail and require government intervention. The paper also characterizes optimal bank regulation, showing that deposit insurance premia alone are insufficient — regulators must also control banks' asset allocations to address the fiscal externalities created by moral hazard.

When applied to the 2008 U.S. policy change that raised coverage from $100,000 to $250,000, the framework finds that an increase was indeed welfare-improving given the crisis conditions. A calibrated version of the model suggests the optimal coverage level would have been approximately $381,000 — higher than what was implemented but consistent with the extended guarantees that followed.

Recent work by Ghosh, Limodio, and Vats (2025) builds on the optimal deposit insurance framework in Dávila and Goldstein (2023) to understand the consequences of India's fivefold increase in the deposit insurance limit in 2020. This work provides a valuable illustration of how the normative framework can be applied to improve measurement and understanding of the welfare consequences of policy changes.

Dávila and Walther (2020) explore whether the size distribution of banks matters for financial stability when government bailouts are possible. The analysis demonstrates that bank size plays a critical strategic role even when bailout policies treat all banks symmetrically. Large banks choose higher leverage than small banks because they internalize that their individual decisions directly affect the government's bailout response. This strategic behavior creates powerful spillover effects: when large banks increase their leverage knowing bailouts will be more generous, small banks respond by also increasing their leverage, encouraged by this implicit protection. These mutually reinforcing effects amplify system-wide risk, making bailouts both larger and more frequent when large banks are present — contradicting the "too-many-to-fail" argument that breaking up large banks would not reduce bailout pressures.

The normative analysis yields concrete policy implications. While optimal capital requirements should be uniform across bank sizes (given identical technologies), optimal Pigouvian taxes must be size-dependent. Large banks should face an additional "size tax" on borrowing to offset their strategic incentives to exploit government subsidies. Using U.S. banking data from 1990–2013, the quantitative analysis shows the model can explain roughly half the observed leverage differences between large and small banks.

The model predicts that an increase in concentration from 50% to 70% of assets held by the top five banks would raise aggregate debt-to-asset ratios by 3.5 percentage points.

Imperfect Instruments. A common denominator of realistic regulatory environments is the presence of imperfect instruments. For instance, the single linear financial transaction tax in Dávila (2023) is a heavily constrained instrument, while the leverage regulation policies in Dávila and Walther (2023) (discussed below) are imperfect in that investment is left unconstrained. Similarly, the various ways to shift activity away from the umbrella of regulators, say, by trading in different venues, by splitting bank deposits among different accounts, or through the emergence of shadow banks, are all manifestations of imperfections in the tools available for regulation.

Dávila and Walther (2026) develop a unified framework for optimal corrective regulation when policymakers face constraints on their regulatory instruments — a pervasive challenge in financial regulation where regulatory arbitrage and institutional limitations prevent perfect implementation of ideal corrective (Pigouvian) policies. The central result identifies leakage elasticities (measuring how imperfectly regulated decisions respond to changes in perfectly regulated ones) and Pigouvian wedges as sufficient statistics for determining optimal second-best policy. Crucially, whether perfectly and imperfectly regulated decisions are gross substitutes or complements determines the direction of optimal policy adjustment: with underregulated substitutes, it is optimal to set regulation below the Pigouvian level, while with underregulated complements, overregulation becomes optimal. The paper also uncovers a novel manifestation of the Le Chatelier principle, showing that reverse leakage effects attenuate the welfare gains from relaxing regulatory constraints. Intuitively, whenever a regulator optimally uses all available instruments, expanding the set of instruments yields smaller gains than it might seem at first, because agents adjust their behavior in offsetting ways.

The framework is applied to several policy questions, including financial regulation with environmental externalities, shadow banking, behavioral distortions, asset substitution, and fire-sale externalities. These results provide actionable guidance for policymakers by connecting optimal regulation directly to empirically measurable elasticities, while unifying several classical insights within a single theoretical framework.

3.4 Bankruptcy and Leverage

Beyond the regulation of banks, related normative questions arise for the policies that govern the leverage and default decisions of households and other market participants.

Bankruptcy. Also partly motivated by the global financial crisis, I became interested in the degree of leniency in bankruptcy systems. It is well known, for example, that the U.S. bankruptcy system is substantially more lenient than those in countries such as Spain. This issue has received considerable attention in the literature, both on the theoretical side (Zame, 1993; Dubey, Geanakoplos, and Shubik, 2005) and on the quantitative side (Chatterjee, Corbae, Nakajima, and Ríos-Rull, 2007; Livshits, MacGee, and Tertilt, 2007).

Dávila (2020) combines insights from both strands to provide a method for determining whether bankruptcy exemption levels are too high or too low. This paper develops a welfare-based method to set personal bankruptcy exemptions — the amount of assets a filer can keep — when households borrow unsecured and can default.

Its central result is a sufficient-statistic characterization of the marginal welfare effect of increasing exemption levels: deciding whether exemptions should be raised or lowered requires only four empirically interpretable objects. These are (i) households' debt positions, (ii) the response of credit supply, as reflected in loan pricing, to changes in exemptions, (iii) the probability that households file for bankruptcy with non-exempt assets at stake — that is, that they actually use the marginal exemption — and (iv) the value of an additional dollar in those bankruptcy states, captured by the conditional expectation of the household's stochastic discount factor or marginal utility.

This framing makes the tradeoff transparent. Higher exemptions provide insurance in bad states by shifting resources toward households when marginal utility is high. However, they also tighten unsecured credit supply and worsen intertemporal smoothing, because lenders anticipate lower recoveries in default. In the paper's implementation logic, the only object that fundamentally requires a regression-style estimate is the sensitivity of credit supply to exemption changes; the remaining components can be measured more directly (e.g., debt levels, bankruptcy transitions, and consumption drops to infer marginal valuations under standard preferences). The payoff from using this approach is that complicated behavioral margins — how much households borrow, when they default — do not need to enter the welfare formula directly because those

choices are privately optimal; they matter only through the sufficient statistics.

Beliefs and Leverage. Connected to the work on beliefs and transaction taxes explored earlier, Bailey, Dávila, Kuchler, and Stroebel (2019) ask how beliefs about future house price growth translate into households' leverage choices at purchase. The model isolates two forces. An expected-return force pushes optimists toward larger housing investments and, when resources are limited, can increase leverage to finance bigger homes. But housing is also a consumption good, and when home size/location is pinned down by non-investment motives, a second channel dominates: the downpayment-protection force. If default is possible and not too costly, pessimists may rationally choose smaller downpayments (higher loan-to-value ratios) to limit the amount of their own wealth exposed in states where prices fall and default becomes attractive. The paper highlights this contrast by analyzing a "variable house size" case where pessimists lever less versus a "fixed house size" case where pessimists lever more.

Empirically, the paper exploits plausibly exogenous variation in beliefs induced by social networks: the recent price experiences of a buyer's geographically distant friends shift the buyer's expectations. The main finding is consistent with the fixed-house-size/risk-shifting mechanism: more pessimistic buyers take on more leverage (smaller downpayments), especially where default costs are lower, and this pattern is reinforced by auxiliary evidence from surveys and narrative explanations that explicitly invoke limiting losses upon default.

Leverage Regulation. Given this evidence that beliefs shape leverage choices, Dávila and Walther (2023) tackle the normative question of whether to regulate leverage due to belief distortions.[5] This paper characterizes optimal leverage regulation in financial markets when equity investors and/or creditors hold beliefs that differ from the planner's. The paper's central takeaway is that "optimism" is not a single object for policy: who is optimistic matters.

The model features a planner who sets a leverage cap in a second-best environment where she can regulate leverage but not investment directly. Welfare effects decompose into an inframarginal effect (how extra leverage changes the planner's valuation of existing investment) and an incentive effect (how the leverage cap moves equilibrium

[5]This paper can be seen as the normative counterpart to Geanakoplos (2010) and Simsek (2013).

investment via a policy elasticity). The headline policy prescriptions are asymmetric: optimism by equity investors tends to call for looser leverage regulation, while optimism by creditors (or jointly by creditors and investors) calls for tighter regulation. Intuitively, creditor beliefs matter most because debt pricing and repayment states are central to leverage incentives, and creditors' greater patience makes their valuations especially influential at the margin.

The paper also emphasizes a positive implication that helps organize boom episodes: in "equity exuberance," investment can rise even as leverage falls (decoupling), whereas in "debt exuberance" both leverage and investment rise. And in the specific "debt exuberance" scenario, the optimal leverage cap not only binds but becomes tighter as creditor optimism increases.

3.5 Optimal Monetary Policy

The work described so far shows how financial frictions and incomplete markets shape borrowing, leverage, default, and the appropriate design of financial regulation. It is natural to also ask how the heterogeneity associated with these same forces affects the design of monetary policy. The development of heterogeneous-agent New Keynesian (HANK) models over the last decade has made it possible to pose these questions formally.

Dávila and Schaab (2023) characterize optimal monetary policy in HANK economies, systematically revisiting the canonical results established for representative-agent models (Clarida, Galí, and Gertler, 1999; Woodford, 2003). Under discretion, a utilitarian planner faces a novel redistribution motive: the incentive to lower interest rates to redistribute toward indebted, high-marginal-utility households. This redistribution channel emerges as a new source of inflationary bias — quantitatively dominating the standard markup distortion — and amplifies the gains from commitment. Under commitment, the paper establishes that zero inflation remains optimal in the long run, but achieving time-consistent policy requires not only the standard inflation penalty but also a distributional penalty that counteracts the planner's temptation to redistribute toward constrained households.

This paper makes several methodological contributions. It extends sequence-space perturbation methods to Ramsey problems and welfare analysis, introduces sequence-

space Hessians, and applies the fake-news algorithm (Auclert, Bardóczy, Rognlie, and Straub, 2021) to compute optimal policy in heterogeneous-agent environments both nonlinearly and to first order.

3.6 Origins of Welfare Gains

Taken together, these applications reveal a recurring question: where, exactly, do the welfare gains from a policy originate? Answering this question separately in every model makes it difficult to compare mechanisms across environments.

My most recent research efforts have focused on the question of "origins of welfare gains." The ultimate objective of this work is to identify the sources of welfare gains under minimal assumptions. In the foundational paper for this agenda, Dávila and Schaab (2025b) show how to systematically attribute the welfare gains of policies or perturbations to efficiency and redistribution considerations, and also how to further decompose efficiency gains into aggregate-efficiency, risk-sharing, and intertemporal-sharing gains. This approach requires only individual preferences and observed (or model-implied) allocation changes. Dávila and Schaab (2025a) advance this effort by further tracing back aggregate-efficiency gains to exchange and production efficiency. These decompositions clarify which margins matter for policy, which distortions are operative, and which empirical objects are sufficient to quantify welfare effects. Barcons, Dávila, and Schaab (2026) extend these ideas to environments with rich demographics and show how to make welfare comparisons in a common unit — perpetual consumption — across all generations, even in demographically disconnected economies, in which there is no date at which all individuals are concurrently alive.

The broader objective of this agenda is to change how financial economists and macroeconomists conduct policy analysis: by offering a systematic, almost "cookbook" approach, this work aims to provide tools to accompany all policy proposals with transparent welfare assessments. The hope is twofold. First, that the framework becomes the standard reference for conducting normative analysis in dynamic stochastic models with rich heterogeneity. Second, that welfare projections — analogous to budget projections by the Congressional Budget Office — eventually accompany all policy debates, enabling disagreements to be traced to explicit assumptions and measurable tradeoffs rather than intuition or rhetoric. Whether these objectives are achieved

remains to be seen, but the foundations are now in place.

4 Ten Rules

Throughout my years of teaching, I have compiled ten guiding rules for conducting normative research in financial economics and macroeconomics. I routinely share them with my students, and I take this opportunity to make them available more broadly.

Although geared toward normative work in macroeconomics and finance, many of the rules apply equally well to other fields and to positive contributions. When I began working in this area, I found that much of the craft of normative research consisted of "folk knowledge" that could only be acquired through reading many papers and attending many seminars. I have assembled these rules over the years to teach students how to conduct research in the area, with the aim of speeding up their transition from consumers to producers of research. When teaching PhD courses, I use the rules as a checklist that students must follow when presenting their own work or that of others. I hope these rules prove useful to a broad audience and help spur systematic and high-quality normative research.

It goes without saying that the starting point for writing a successful paper is to have a well-defined question of interest. These rules become useful only after that question is clearly identified.

Preliminary Rule: Carefully Introduce the Environment

This rule applies to any economic model — positive or normative — and precedes all others. The first step in economic modeling is to clearly specify the environment. A useful organizing principle is to distinguish between (i) the *planning structure* — the elements of the model necessary to solve the unconstrained Pareto problem and characterize Pareto optimal (first-best) allocations — and (ii) the *economic structure* — the remaining features that describe how economic activity takes place, including the notion of equilibrium used.[6]

[6] Dávila (2025) elaborates on the distinction between the planning and the economic structure of an environment. The *planning structure* includes (i) preferences; (ii) production and accumulation technologies; and (iii) resource constraints. The *economic structure* includes any other features of the economic environment. For instance, (i) the ownership of goods, factors, or assets; (ii) the behavior of individuals given the behavior of others (e.g., price-taking under linear budget constraints); (iii)

It should be possible to easily identify which variables or functions are model primitives — that is, exogenous or predetermined — and which are endogenous outcomes of the model. This distinction can be subtle: some variables may be treated as exogenous by individual agents yet determined endogenously in the equilibrium, as with prices in competitive models.

Rule 1: Use a Well-Accepted, Microfounded Environment

Normative analysis is most valued when conducted within environments that are well understood, empirically relevant, and widely accepted — that is, environments whose key mechanisms have been empirically documented and whose assumptions are standard in the literature. The Mirrlees (1971) optimal taxation framework exemplifies this approach: it spurred a vast normative literature by focusing on the most basic consumption-leisure tradeoff. In contrast, drawing normative conclusions from unconventional, counterfactual, and ad hoc environments is typically a bad idea.

It is possible to do normative analysis when agents are behavioral or have distorted beliefs, but the normative objective should be clearly stated in that case — see Rule #3.[7] Whenever possible, one should avoid the temptation to include non-microfounded elements, such as adjustment costs or ad hoc utility benefits or costs. This does not mean that adjustment costs — which may be important in specific scenarios — should be excluded from normative models. Rather, they should be explicitly derived from first principles since ad hoc functional forms for adjustment costs, sometimes included purely for tractability or to match moments, are vulnerable to the Lucas Critique (Lucas, 1976) — see Rule #4 — and may not remain invariant to the policy interventions being evaluated.

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the equilibrium concept through which individuals interact (e.g., competitive equilibrium, strategic trading, random or competitive search, matching, rational expectations equilibria, etc.); (iv) how technologies are operated (e.g., profit maximization by firms); (v) the timing of individual decisions; (vi) the universe of contractual or financial arrangements available to individuals (e.g., asset structures or contract spaces, highlighting whether markets are complete or incomplete); (vii) the extent to which individuals can commit (e.g., whether agents can renege on their promises, fully or partially, and the consequences of doing so); (viii) the information structure (e.g., who knows what, when, and how learning occurs); and (ix) constraints on factor reallocation (e.g., search and matching frictions).

[7] Dávila (2023) and Dávila and Walther (2023) are two examples.

Rule 2: Find the Most Insightful Way to Pose Your Problem

Normative problems typically admit multiple formulations, and different formulations can yield different insights. Choosing the right formulation is more art than science. In particular: is it better to work in the primal, choosing allocations and prices directly, or in the dual, adjusting policy instruments instead? Should an optimal policy problem be posed in sequence form or recursively? Is it better to use a Bellman equation or a Lagrangian? Is it useful to reformulate specific constraints, perhaps to more easily interpret the associated Lagrange multipliers? Are some constraints implied by others? Can a change of variables facilitate the analysis? How many degrees of freedom does each optimization problem have? The choice of formulation does not alter the underlying problem, but it can dramatically improve clarity, tractability, and the interpretability of results.

Rule 3: Define the Normative Objective

The normative objective must be explicitly stated. Is the goal to find Pareto improvements, constrained Pareto improvements, or Pareto improvements with transfers starting from some particular allocation? Is it to carry out a welfare assessment of a particular policy? Or to find a policy that maximizes a social welfare function? What are the conceptual, practical, and quantitative implications of using a utilitarian or other welfarist welfare function in a particular context? Is the planner paternalistic? Does the planner value redistribution? Or is the aim to focus exclusively on efficiency considerations? Are there insights or results that remain invariant to the choice of welfare function and to the answers to these other questions?

The framework developed in Dávila and Schaab (2025b) and subsequent work is helpful to answer these questions in general and in specific environments. A common confusion is to conflate welfare, efficiency, and redistribution gains in models with many agents.

Rule 4: Specify the Policy Instruments

The set of policy instruments available to the planner must be clearly specified. What actions can the planner take? Which taxes, transfers, or regulations are available? Are lump-sum transfers feasible? If so, this may have an impact on the normative

objective — see Rule #3. Are policy instruments subject to informational or political frictions? Are policy instruments perfect or imperfect? Dávila and Walther (2026) can be helpful to understand the role of imperfections in policy instruments. In what sense are instruments imperfect? Can the planner commit to policies, or are decisions made under discretion?

The analysis should also make transparent whether the planner has access to instruments or information unavailable to private agents — a structure sometimes referred to as a "chicken paper."[8] To what extent are the results subject to the Lucas Critique (Lucas, 1976)? That is, are there elements treated as policy-invariant in the model that perhaps should not be?

Rule 5: Identify Distortions and Wedges

The rationales for policy intervention must be explicit. This typically requires identifying distortions or wedges relative to competitive or planning benchmarks. These may include externalities (pecuniary or not), internalities, public good features (non-rivalry/non-excludability), lack of commitment, demographic considerations, etc. The positive structure of the model should accurately capture the relevant distortions.

It is important to identify the set of Pareto optimal allocations, as well as the Pigouvian benchmark with perfect policy instruments. In some cases, the rationale for policy intervention may simply be redistribution or revenue generation rather than correcting specific distortions or wedges. Welfare decompositions — such as those developed in Dávila and Schaab (2025b) — can be useful to identify and quantify the ultimate sources of welfare gains in specific economies, and to systematically contrast them across different economies.

Rule 6: Use Benchmarks

Benchmarks are central to normative research. A benchmark is a modified version of the economic environment — obtained by altering specific features — that serves as a point of comparison. Benchmarks help isolate mechanisms by revealing which features

[8]The term chicken paper, attributed to Ed Prescott, refers to a model structure in which: (i) households value some outcome (e.g., consuming chicken); (ii) households cannot achieve it on their own (e.g., they cannot produce chicken); and (iii) the government can. The inevitable conclusion in this case is that the government should intervene. See Uhlig (2018) for an elaboration of these ideas.

of the environment are responsible for particular normative conclusions. For instance, comparing a model with incomplete markets to its complete-markets counterpart isolates the role of market incompleteness; comparing flexible to sticky prices isolates nominal rigidities, etc.

At a minimum, one should identify the Pareto optimal (first-best) allocations (see the Preliminary Rule) and the Pigouvian benchmark associated with perfect policy instruments (see Rule #5). Useful benchmarks include (i) static vs. dynamic/stochastic, (ii) complete vs. incomplete markets, (iii) flexible vs. sticky prices, (iv) perfect vs. imperfect information, (v) commitment vs. discretion, (vi) representative-agent vs. heterogeneous-agent, (vii) rational vs. behavioral, (viii) centralized vs. decentralized trading, (ix) single vs. multiple goods, etc. Carefully chosen benchmarks help isolate mechanisms, discipline interpretation, and place results in context.

Rule 7: Embrace Abstraction — Avoid Functional Forms, Substituting Constraints, and Approximations

Generality and abstraction are powerful tools: embrace them. But this does not mean that models that answer specific questions should be unnecessarily complex. A model should be as simple as possible — but no simpler — to answer the question at hand. The value of deriving results in abstract frameworks lies in the ability to unify results from simpler models. Casting simple models within general abstract frameworks mitigates a common problem in modern applied economic theory — the proliferation of fragmented "small models," which makes it difficult to see how individual results relate to one another. Models designed to answer specific questions should be modular: they should remain valid when embedded as building blocks within richer, more general frameworks.

Functional forms should be avoided until they become necessary. While functional forms are eventually unavoidable — particularly to obtain closed-form or numerical solutions — imposing them too early obscures economic mechanisms and weakens the generality of results. The later functional forms enter, the more general and transparent the resulting claims.

Avoid substituting constraints prematurely. Retaining constraints and their associated Lagrange multipliers preserves economically meaningful shadow valuations that are often central to interpretation and welfare analysis. Likewise, avoid

approximations whenever possible, in particular in models with risk and heterogeneity. Approximations (of any finite order) can distort the role played by risk, especially when considering tail events. Importantly, marginal results are not approximate: integration translates marginal results into exact global results without requiring approximation. To be clear: numerically evaluating an integral requires functional forms, but analytically characterizing the integrand and the integral does not. Results can be expressed in terms of general marginal conditions, elasticities, and sufficient statistics, with functional forms imposed only at the quantification stage. This approach preserves generality while enabling exact global characterizations.

Rule 8: Understand and Be Explicit about Units

Normative analysis must pay careful attention to units. This is particularly challenging when there are many agents because individual utilities are ordinal and not directly comparable, so interpersonal welfare comparisons must be expressed in meaningful units, with welfare numeraires explicitly defined — see Dávila and Schaab (2025b).

Examples of unit inconsistencies include (i) making interpersonal comparisons in utils, (ii) adding quantities with different units (e.g., consumption or dollars at different dates or states without discounting), (iii) reporting magnitudes without clarifying whether they are instantaneous or perpetual flows (e.g., are the gains of a policy 5% of consumption at a point in time, or forever?). The fundamental principle is dimensional consistency: variables can only be meaningfully combined if they share the same units or are converted to comparable units through appropriate weights, ratios, or discount factors.[9] The units of all variables and multipliers should be stated explicitly. It is also important to assess whether variables are best expressed in levels, shares, or ratios, and whether the underlying model is scale-invariant.

Rule 9: Express Results in Terms of Observables

Whenever possible, results should be expressed in terms of observable variables. Effort, for example, is not directly observable, whereas hours worked or consumption can be measured. Optimal policy prescriptions are often most useful when formulated as

[9]See Sonin (2001) for an accessible introduction to dimensional analysis.

targeting rules — such as inflation targeting — or in terms of sufficient statistics that can be measured, estimated, or inferred from data.

In realistic environments, observable variables are typically endogenous. In many cases, identifying and measuring the variables that directly answer the normative question of interest is more important than recovering the underlying primitives themselves. At the same time, it is essential to understand how changes in preferences, technologies, or constraints map into observables, and through which observable channels these changes ultimately shape welfare and optimal policy.

Rule 10: Ensure the Problem Is Well-Behaved

Many normative problems are ill-behaved, in the sense that concavity of the problem is not guaranteed. This means that (i) first-order conditions may characterize a minimum rather than a maximum; (ii) multiple local optima may exist, making the solution depend sensitively on initial conditions; (iii) corner solutions may emerge; or (iv) optimal policies may exhibit extreme sensitivity to small parameter changes. These issues arise precisely because agents endogenously adjust their behavior in response to policy.

It is therefore essential to verify that a well-behaved formulation of the problem studied exists — at least for some plausible parameter values — and that optimality conditions characterize a maximum, not a minimum. Such verification is typically impossible analytically, making numerical solutions indispensable. Sensitivity analysis with respect to parameters, initial conditions, and functional assumptions is particularly valuable. When results are fragile, this should be stated explicitly and, when possible, the underlying reasons should be explained.

These are rules, not commandments, and exceptions are sometimes warranted. The final, bonus rule is simple:

If you have to break one of the ten rules, have a good reason to do so!

5 Conclusion

This essay has surveyed a research program that is by now well established but far from complete. Normative macro-finance has demonstrated that rigorous welfare analysis can be brought to environments once thought too complex for disciplined normative

reasoning. At the same time, it remains an area with abundant opportunities for further research, both conceptual and applied.

My hope is that this body of work, together with the ten rules set out above, encourages others to pursue normative questions in financial economics and macroeconomics in a systematic way. The ultimate test of any normative framework is whether it improves our ability to evaluate policies that affect people's lives. If the conclusions, tools, and principles discussed here contribute to that goal, the effort will have been worthwhile.

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