

# 1. Functions and Structure of the Financial System

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## 1.1 Introduction

A number of well-known researchers have argued that it is helpful to examine the financial sector from a “functional” perspective – asking what are the economic functions which are provided to end users? This leads to analysis of (a) why financial institutions and markets are required to facilitate performance of those functions, (b) how the design and features of financial products and services enable provision of those functions, (c) what determines whether these functions are performed by particular types of financial institutions or markets, (d) what risks arise as a result and how they are managed.

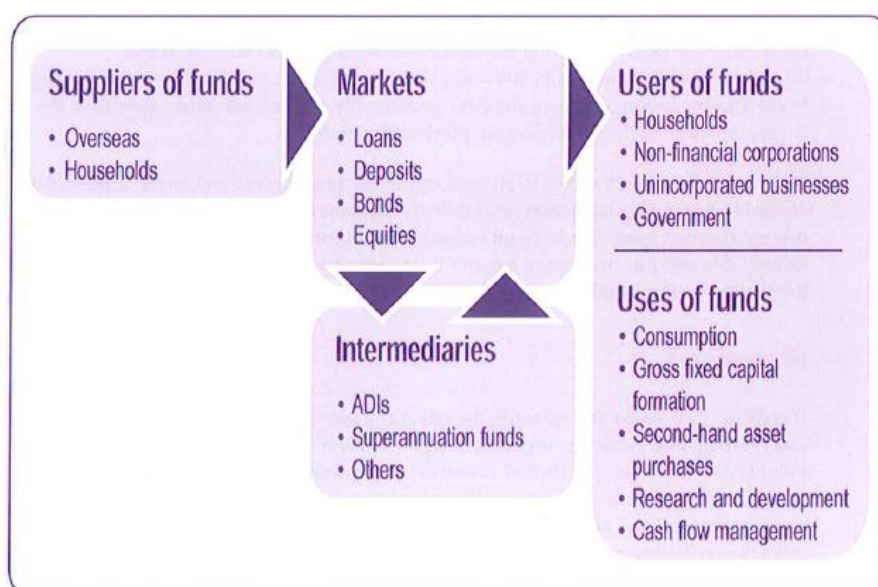
Underpinning this approach promoted by, among others, [Merton](#) and [Levine](#) is the view that the economic functions performed by the financial system are largely unchanging. They reflect types of activities which

aim to overcome the “financial frictions”, such as imperfect information and transactions /search costs which impede economic activity. One example (others later) is the function of maturity transformation – such as when financial intermediaries provide short term deposits from savers and provide long term loans to borrowers, meeting the maturity preferences of both. How they are able to manage the risks associated with this activity, what rate of return for the intermediary is required to compensate for risks and operating costs, how technology and financial innovation affect the ways in which maturity transformation can be achieved are questions which naturally arise.

Note that these economic functions might be performed by a financial institution such as a bank, or through the operation of financial markets. Continuing the example of maturity transformation, an alternative to banks “borrowing short and lending long” is for savers to purchase long term bonds issued by borrowers which they can sell to other investors in the bond market prior to the bonds’ maturity when they wish to recoup their funds. The risks and returns to savers and borrowers (often referred to as the “end-users”) are likely to be different between these two alternatives, and much of financial regulation is focused on ensuring that end-users are aware of the risks and appropriately protected against unwarranted risks.

The [AFSI Interim Report](#) provided a simple depiction of a financial system as shown in Figure 1. It shows how markets and/or intermediaries can fulfil the role of connecting together the end-users of the financial system.

FIGURE 1: FINANCIAL SYSTEM STRUCTURE



Note, one simplification in that figure is that it reflects the overall net balance sheet position of the various end-users, ie the stocks of financial assets and liabilities in existence. And it reflects the Australian situation where the overseas sector is a net supplier of funds. Obviously, some countries must have the opposite position to Australia, where the overseas sector is a net user of funds.<sup>1</sup> Also note that in examining the flows of funds over a time period some businesses (non-financial corporations and unincorporated businesses) can at times also be suppliers of funds, as could a government running a budget surplus.

The distinction between stocks and flows in asset markets is important, and their relative importance in determining asset prices (interest rates and yields) has long been a topic of debate. (See, for example [Tsiang](#)). At the risk of generalising, flows are small relative to stocks in asset markets (for example, new equity or bond issues in a year relative to the stock on issue). If the new issues are essentially indistinguishable from the existing stocks, the flow supply will have little effect asset prices compared to shifts in the demand for the stock.

Jakab and Kumholf in a Bank of England 2019 [Working Paper](#) examine alternative models of role of banks in macroeconomic analysis which also highlights stock-flow issues. They contrast models in which the stock of deposits is determined by bank decisions to make loans (which they argue is a view found in many Central Bank publications), with a flow approach in which flows of deposits from savers lead to new loan approvals. They argue the former is more compatible with the evidence and implies a role for financial aggregates (as well as interest rates) in the transmission of shocks to the real economy.

This is also an important issue in considering how the size of the banking sector is determined.

### Core Financial Infrastructure Requirements

In performing underlying economic functions, the financial sector contributes to economic growth and development. There has been much debate about the precise contribution, and whether it is economic development which promotes the growth of the financial sector or vice versa. Regardless (and both directions of causation are surely relevant) financial sector growth and development depends on a range of institutional characteristics of the country.

It is conventionally accepted that minimum requirements for a sound and efficient financial system include

- Strong Corporate Governance Standards and Practices

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<sup>1</sup> Although there have been various calculations showing discrepancies in national accounts consistently aggregate up to a surplus for the world as a whole (ie it is a net lender). Accounting errors and omissions are a better explanation than some sci-fi story about trading with the rest of the Universe!

- Effective Legal Protection and Enforcement of Property Rights
- Enforcement of Reliable Accounting and Auditing Standards
- Appropriate Information Disclosure Requirements and Practices
- Strong and Effective Supervisory Agencies

These are among the issues that the IMF and World Bank take into account when undertaking their Financial Sector Assessment Programs (FSAPs) of individual countries (and also relevant for assessments done by the more recently created Financial Stability Board (FSB)).

## 1.2 Functions of Finance

By understanding the needs of the end-users (suppliers and users of funds) and the impediments they face in dealing directly with each other, it is possible to identify the economic functions of a financial system. Suppliers of funds (often referred to as *surplus units*) want a reward for postponing consumption, but face risk in making funds available to others, have imperfect information about potential users of funds, and face transactions costs in dealing with them. Users of funds (*deficit units*) will have preferences for funding characteristics which differ from those of suppliers and need to expend resources to overcome information gaps which impede (and affect the terms of) their obtaining finance.

Because the functions are unchanging over time and fundamental to the role of financial institutions and markets, they provide a basis for development of theories about financial intermediaries which can assist understanding and development of regulation. Many of the influential models explaining features of banking and other financial firms focus upon one or more of the underlying economic fundamentals. A functional approach also assists in understanding how new business models (such as made possible by technological advances) may impact upon traditional suppliers of financial products and services.

Why are financial institutions and markets needed for performance of these functions, rather than end-users dealing directly with each other? The general answer is “financial frictions” – those characteristics of the economic environment which make direct interaction costly or infeasible. One financial friction is imperfect or asymmetric information. A second is transactions (real resource) costs. Developments in communications, technology, data capture, storage and processing are significantly affecting the relative importance and ways of overcoming these frictions.

As noted above, deficit and surplus units, and those wanting to change balance sheet structure, face market imperfections (impediments), or *financial frictions*, which markets may not overcome effectively. These include:

- search costs

- transactions costs
- mismatching preferences
- insufficient scale
- imperfect information
  - a priori
  - ex post
- uncertainty

In overcoming those imperfections, financial institutions typically undertake *asset transformation* (maturity, risk-bearing, etc) by issuing securities which have different characteristics to those they acquire. Consequently they take on a range of risks, for which they expect reward and need to manage those risks. Among the important management areas for financial institutions (discussed in later chapters) are:

- Asset - Liability Management
- Liquidity Management
- Interest Rate Setting
- Pricing of Products and Services
- Credit Evaluation and risk management
- Customer Relationships
- Capital Structure / Funding decisions
- Physical/Human/Knowledge Capital requirements
- Regulatory Compliance
- Institutional governance arrangements

While there is a wide consensus on the types of economic functions performed, there is no single agreed list which provides a definitive classification. One functional classification which focuses on the services provided to any end-user could be as follows:

- Storing/Investing of wealth to generate returns (with various resulting risk features)
- Financing expenditures (for those needing additional financial resources)
- Making payments / facilitating trade (although this is not directly related to the connection of suppliers and users of funds, it is generally accepted as a core economic function)
- Management of risks (economic and financial)
- Provision of information and advice

There are a range of other classifications of economic functions, among the best known are:

Merton framework with examples (also shown in Table 1) added. A financial system provides:

1. *a payments system for the exchange of goods and services* – involving Central Bank depository and settlement services, base money provision, bank provided payments and settlement arrangements, securities settlements services, credit card and EFT services, foreign exchange markets
2. *a mechanism for the pooling of funds to undertake large-scale indivisible enterprise* – involving banks and depository institutions, institutional investors and mutual funds, stock exchanges, capital markets, investment banks, private equity firms

3. *a way to transfer economic resources through time and across geographic regions and industries* – involving savings, depository and other financial intermediaries, pension funds, foreign exchange markets, capital and money markets
4. *a way to manage uncertainty and control risk* – involving insurance companies, financial intermediaries, forward markets, options and other derivatives markets.
5. *price information which helps coordinate decentralized decision-making in various sectors of the economy* – involving money and capital markets, stock exchanges, foreign exchange markets.
6. *a way to deal with the asymmetric information problems when one party to a financial transaction has information that the other party does not* – involving ratings agencies, credit bureaus, banking relationships, collateral, security and guarantee arrangements, auditing, disclosure requirements.

**Levine** framework (with explanatory notes added)

1. Facilitate the trading, hedging, diversifying, and pooling of risk (Since individuals are generally risk averse, risk reduction can increase willingness to save and invest).
2. Allocate resources (By providing funds to most productive uses, economic growth can be enhanced, and saving opportunities mean life-cycle consumption plans can be better achieved).
3. Monitor managers and exert corporate control (Ensuring that recipients of funds use them most productively and in the interests of the providers reduces risk of the latter and enhances growth).
4. Mobilize savings (typically the scale of funds for any physical investment is larger than the scale of individual savings and will involve different time horizons etc.).
5. Facilitate the exchange of goods and services (reducing the costs and risks of making transactions encourages investment in productive activities).

**Stevens** ([RBA, 2010](#)) – former RBA Governor: A financial system provides

1. a reliable way of making payments (that is, exchanging value);
2. a means for pricing and pooling certain types of risks;
3. a way of transferring resources from savers to borrowers;
4. a way of transferring the returns back again, which requires that the savers' money is not lost and which, in turn, requires monitoring of borrowers and managers; and
5. liquidity.

A comparison of these approaches is given below, showing their substantial overlap.

Function	Levine	Stevens	Merton
	<i>Corresponding function number</i>		
Payments & Exchange	5	1	1
Pooling risk etc	1	2	4
Price information	2?		5
Mobilizing savings	4	3	2
Monitor managers	3	4	6
Liquidity		5	3

It is relevant to note that these functions involve both *ex ante* and *ex post* considerations. The former relates to decision making about who to allocate funds to, based on assessment of risks and potential returns. The latter relates to management of risks arising after the contract has been entered into. As an old saying goes: "A debtor is someone who owes money. A creditor is someone who hopes to get it back."

**TABLE 1: PROVIDERS OF FINANCIAL SYSTEM FUNCTIONS**

Financial System Functions, Institutions and Markets Function	Institutions and Markets Involved

Payments systems for the exchange of goods and services	Central Bank depository and settlement services, base money provision, bank provided payments and settlement arrangements, securities settlements services, credit card and EFT services, foreign exchange markets
Mechanisms for the pooling of funds to undertake large-scale indivisible enterprise	banks and depository institutions, institutional investors and mutual funds, stock exchanges, capital markets, investment banks, private equity firms .
Ways to transfer economic resources through time and across geographic regions and industries	savings, depository and other financial intermediaries, pension funds, foreign exchange markets, capital and money markets
Way to manage uncertainty and control risk	insurance companies, financial intermediaries, forward markets, options and other (including credit) derivatives markets
Generation of price information which helps coordinate decentralized decision-making in various sectors of the economy	money and capital markets, stock exchanges, foreign exchange markets.
Mechanisms for dealing with asymmetric information problems when one party to a financial transaction has information that the other party does not	ratings agencies, credit bureaus, banking relationships, collateral, security, and guarantee arrangements, auditing, disclosure requirements

The fact that various institutions provide a range of economic functions may be one reason why the functional approach to finance has not had the effect its founders thought that it might. Wilson and Campbell ([JEM, 2016](#)) provide a recent analysis of the literature, and while emphasizing its potential benefits along a range of dimensions, highlight the limited influence it has played – despite regulators and others expressing a preference for adopting such an approach. However, it may be that it will assist in analysis and regulation of recently emerging fintechs.

### Finance and other economic services

An alternative form of division into functions is that involved in Figure 2 which divides them into provision of financial services in the form of a *brokerage* activity and provision of financial products involving *asset*

*transformation*. Financial intermediaries, such as banks, generally do both. At some risk of oversimplification, the provision of services via a brokerage activity generates fee income, while the asset transformation generates “spread” or “net interest income”. Figure 2 focuses on services and products provided to clients, but it should not be forgotten that intermediaries also undertake transactions on their own account, such as proprietary trading.

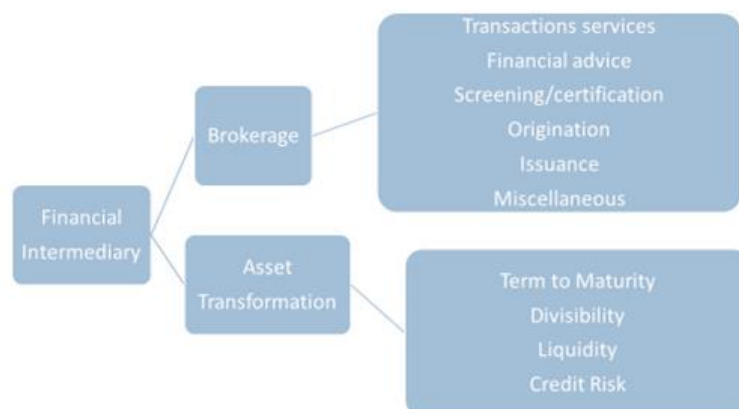


FIGURE 2: INTERMEDIARY FUNCTIONS (SOURCE: BHATTACHARYA AND THAKOR ([JFI, 1993](#)))

The financial intermediary role may also arise in association with provision of other economic activities. Traditionally fractional reserve banking is seen as having emerged out of the safekeeping role of goldsmiths etc., who recognised that not all customers would demand their gold back at once, and they could thus lend some of it out at a profit. Donaldson et al ([JFE, 2018](#)) present a model of banking based on this perspective which helps explain why “banks offer warehousing (custodial and deposit-taking) services within the same institutions that provides lending services and how banks create funding liquidity by creating private money”.

Life insurance often historically involved entering a long term contract to make premium payments which were “smoothed” over the lifetime of the policy holder. Thus the initial year payments involved a savings element (because premium paid was greater than actuarial cost of insurance for that year) causing life offices to accumulate funds for investment.

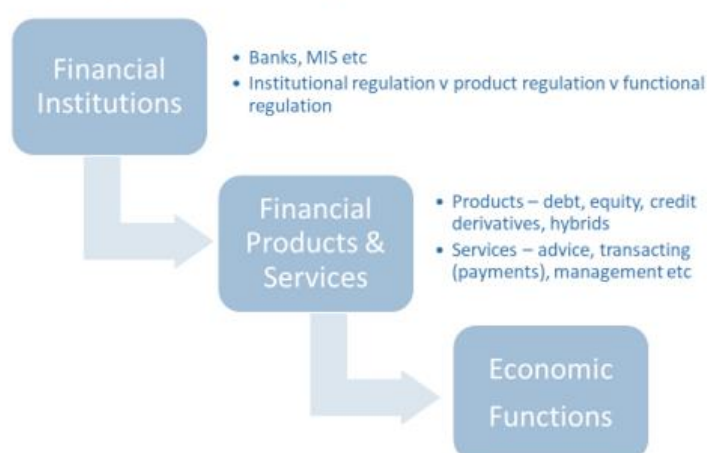
Payments services. Because a provider of payments services will require the customer to have a positive account balance in order to make a payment, the institution will have a positive “float” (funds received but not yet paid out) which can be invested.



### 1.3 A Functional Approach to Regulation

One of the dilemmas in financial regulation is set out in Figure 3. Economic functions are fulfilled by the delivery of various financial products and services, and these, in turn, are provided by various financial institutions (or markets). Historically financial regulation has been directed at either or both of institutional types (including market operators) or products and services. Ideally, if two different products perform the same economic functions, then regulation (and taxation) should not inappropriately disadvantage the competitive position of one (and the institution involved).

## Institutions, Products, Functions



**FIGURE 3: INSTITUTIONS, PRODUCTS AND FUNCTIONS**

### Fintech, Economic Functions, and Regulation

Fintech firms are developing new ways for the performance of economic functions which often do not fit easily with traditional forms of regulation focused on either institutions or products and services. The ways in which fintech is transforming finance reflects four main developments have been summarised by various commentators as ABCD where:

- A = Artificial Intelligence (AI), enabling new machine based methods of performing complex functions and analysis
- B = Blockchain, enabling new methods of recording and accessing transaction and ownership information
- C = Cloud, enabling access to software services and data hosted by third parties
- D= Data, reflecting the increased ability to capture, store and manipulate large amounts of data and thus analyse the information contained therein.

Among the examples are innovations such as Peer to Peer Lending (Chapter 2), Buy Now Pay Later (Chapter 8), Banking as a Service (BaaS) (Chapter 5), Cyber-Currencies (Chapter 13). Focusing on the economic

functions performed and the risks that these new activities create can help identify how regulation needs to be appropriately adjusted. In doing so, regulators face the problems of being technologically neutral, while dealing with new forms of financing techniques where there is no history available to accurately identify likely risks.

## 1.4 Banks v Markets

There is an extensive literature seeking to explain what factors prompt greater emphasis on banks v financial markets in the financing process in different jurisdictions, the implications for economic growth, as well as whether market-based or bank-based systems have differential implications for financial stability. (See, for example, Boot and Thakor ([SSRN, 2018](#))). Of course, all jurisdictions have some mix of market and bank based financing. The USA, UK and Canada are more market-based, whereas Europe, Japan and Australia are more bank-based.

Among the factors affecting both the growth of the financial sector and the relative role of banks v markets are the following.

- Legal systems - property rights and investor protection will affect the willingness of individuals to engage in certain forms of transactions
- Taxation – the structure of taxation can make certain types of transactions and activities more or less profitable
- Innovation / Technology – by finding new ways to overcome financial frictions (transactions costs and information imperfections) the profitability of different types of financing is affected
- International Integration / Segregation – international barriers can prevent the transmission from overseas of both financial resources and techniques which assist financial and economic development
- Regulation & Policy – as well as attitudes towards the role of the state versus private enterprise in providing financial services, regulation impedes some activities and induces innovations to avoid its effects
- Effects and Response to Financial Crises – a long international history of financial crises and their costs influences policies towards financial sector development and change

History is also an important, often neglected, factor. It is impossible to explain the current structure of financial systems and financial institutions without being aware of the historical influences that led to the current situation.

The Australian situation, based on asset size, is shown in Figure 4. The first obvious feature is the dominance of banks, both overall and relative to other intermediaries. Bank assets are around double the market capitalisation of the Australian Stock Exchange, and the memo item (showing the small size of the corporate bond market – excluding bonds issued by banks and other financial institutions) indicates that other market-based financing is relatively small. The size and growth of the

superannuation sector is noticeable, particularly when the self managed super funds (SMSFs, shown in the memo item) are added to the institutional sector shown in the graph. These long-term (retirement) savings vehicles invest in assets such as Australian and overseas equities and fixed interest securities, bank debt and deposits, property and infrastructure.



Source: RBA Tables B1, F7

FIGURE 4: AUSTRALIAN FINANCIAL SECTOR AND INSTITUTIONS

[Aggarwal and Goodell](#) from the FRBC note the arguments advanced earlier in papers by Rajan and colleagues that “bank financing is based mostly on relationships and collateral, while market financing is based mostly on social trust among strangers, high levels of disclosure, and faith in contracts” and that “bank financing is more suitable for physical industries that are well understood”. They examine the role of cultural tolerance for uncertainty and find evidence that bank-based financing is relatively higher in countries where there is less tolerance for uncertainty. (Bank financing involves relationships and collateral, whereas market financing relies on trust in contract enforcement – and thus is more common in jurisdictions with good property /creditor rights and information disclosure enforcement).

[Bats and Houben](#) in a 2020 JBF article argue that prior to the GFC, studies had generally suggested no systematic superiority of one system over the other, but that the post-GFC literature suggests that bank-based systems have greater risk of financial instability and crisis. Arguments include: bank tendency to over-extend credit in financial upturns; high bank leverage and balance sheet structures magnifying adverse (interest rate, liquidity, economic) shocks (including via contraction of credit, fire sales of assets, “runs” of creditors); interdependencies between banks leading to spillover effects.

In their empirical work Bats and Houben use bank credit to the private sector relative to the sum of stock market capitalisation plus debt securities on issue. Various measures of systemic risk are considered, including estimates of the capital shortfall (eg relative to regulatory requirements) of the financial sector if the stock market fell 40 per cent over a six month period. This measure (SRISK) has been developed by Robert Engle and colleagues and is explained [here](#). They find, *inter alia* that “bank financing may contribute more to systemic risk than market financing” and that “markets can provide ‘spare tire’ insurance”. But this is unlikely to be the last word on this issue!

## 1.5 The Australian Funds Management Sector (An overview)

Figure 4 illustrates how the importance of superannuation funds has grown in the Australian financial sector. They interact with banks and markets and are a major part of the funds management sector which is relatively complex involving a large number of different types of entities. Even though the focus of this book is on banks, it is worth providing a brief overview here.

Figure 5 provides a schematic overview of the funds management industry in Australia. At the top of the figure are “end user” investors such as individuals/households, businesses, charities, etc., with financial wealth to be invested. Some part of that wealth might be invested directly in financial institution liabilities (such as bank deposits) or company shares listed on the stock exchange – thereby bypassing the funds management sector. Some part of it will be held in accounts with superannuation funds whose trustees have responsibility for investing that wealth in financial and real assets (such as property) in a manner consistent with the member’s wishes.

Institutional super funds generally utilise the services of “asset consultants” who provide advice on expected returns and risk associated with different classes of assets and desirable allocations of portfolios. The funds may make and implement investment decisions in-house, or outsource some of those decisions by giving specific mandates to funds management firms.

Some “end investors” will use the services of a financial adviser (who is often part of a “dealer group”) for the management of their wealth, including accountants qualified to give such advice. Not only do advisers provide advice, they generally provide services for the actual management of an investor’s wealth across a range of investments, generally using one of the “platforms” (software) available from various providers. (This is also the case for many investors who establish Self Managed Superannuation Funds (SMSFs) and outsource the administration and management to an adviser). Funds under Management (FUM) by an advice firm are allocated across various managed funds and end products with the platform facilitating record keeping and management of cash flows associated with the investments.

There is a variety of funds management firms. “Boutique” firms may specialise in taking mandates from investors (including super funds) to decide on and manage investments in one asset class such as equities, or across several asset classes. Hedge funds offer specialised services (usually completely unrelated to “hedging”). Large firms (such as Vanguard or State Street) not only manage money for their direct clients, but create and market managed funds – which may be listed on the ASX, or available only to wholesale investors. Private Equity firms obtain funding from large investors (including superannuation funds) to buy companies where they see opportunities for improving performance under their management and subsequently selling for a profit.

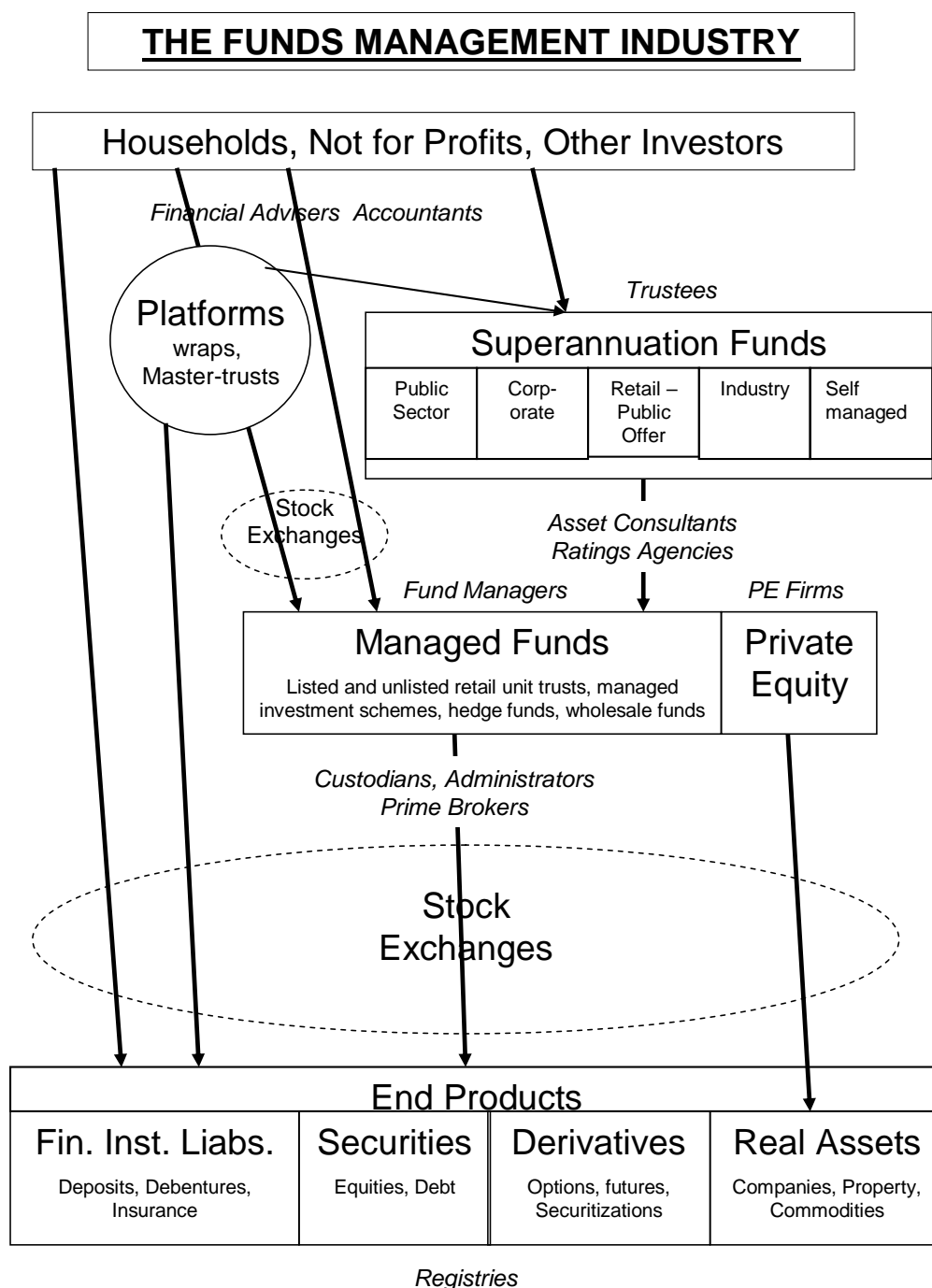


Figure 5: An overview of the Funds Management Industry

## 1.6 Finance and Growth

The contribution of the financial sector to economic growth and development has been long recognized. Financial institutions and markets perform a range of valuable economic functions (as

discussed earlier) which facilitate “real” activity. And the consensus regarding finance prior to the Global Financial Crisis (GFC) was essentially “the bigger the better”.

For example, Levine ([NBER 2005](#)) in a comprehensive review of the literature on “finance and growth” argued that a causal link from financial sector development to economic growth is well established (in contrast to an earlier, alternative, view that financial sector growth and development was essentially a consequence of economic development). But as Wachtel ([FRBA, 2003](#)) noted (and Levine made similar observations), “the research does not yet tell us enough about development strategies and processes. It provides little in the way of rigorous guidance about how best to develop the financial sector.” (But note the need for core “infrastructure” discussed earlier).

Since the GFC there has been the emergence of research questioning the benefits for economic growth and development of an ever larger financial sector. This is in addition to the literature asking questions about how modern financial sectors may contribute to instability. As Lord Turner, Chairman of the UK FSA noted in a speech at Bloomberg on 24 Jul 2012, some part of financial sector activity may be “not innovative in a social value sense – but dedicated to either regulatory, accounting, or tax arbitrage... [while] ... there is much greater opportunity than in other sectors of the economy for purely rent extracting activity”

And the research interest reflects community concerns. Lord Turner argued; “Trust in banks and bankers has eroded... people have come to doubt the economic benefits of financial liberalisation and of much banking activity.....”

### Empirical Evidence

One strand of this literature has involved statistical studies reassessing the link between financial sector size and economic growth.

[Cecchetti and Kharroubi](#) (2012) from the Bank for International Settlements study 30 years of data from 50 developed and emerging countries. They conclude: “the level of financial development is good only up to a point, after which it becomes a drag on growth. Second, focusing on advanced economies, ... a fast-growing financial sector is detrimental to aggregate productivity growth.” The turning points at which larger financial sector size ceases to be beneficial to productivity and economic growth they estimate to be where private sector credit is larger than GDP and where financial sector employment exceeds 3.5 per cent of the total.

[Arcand, Berkes and Panizza](#) (J.Econ.Growth, 2015) from the IMF also study the same issue with results that “suggest that finance starts having a negative effect on output growth when credit to the private sector reaches 100% of GDP”.

[Beck, Degryse and Kneer](#) (2012) “find that intermediation activities increase growth and reduce volatility in the long run. An expansion of the financial sectors along other dimensions has no long-run effect on real sector outcomes.” They distinguish between two views of financial sector activity as an “intermediation or financial facilitator” role and a “financial centre” role – with the latter focusing upon financial activities such as trading, market making, advisory services, as being a business in itself. As they note, the latter activity has grown relative to the former in recent times, particularly in advanced economies. Notably, the impact of non-intermediation activities appears to have some positive impact on economic activity, but at the expense of higher volatility in advanced economies.

Panizza ([CES, 2018](#)) surveys the large empirical literature which has developed on this topic, which he argues supports the “too much finance” hypothesis. He also considers arguments as to how a very large financial sector could have adverse effects on growth.

How can the financial sector be “too big”

Correlations between financial sector size and performance of the economy are informative, but do not provide an explanation of how, in a competitive economy, the sector could become “too big”. If financial services were “underpriced” in some sense, high demand could lead to output which is socially excessive. But that sits starkly at odds with the general perception that the sector has, generally, made excessive profits.

One response to this apparent inconsistency is that suggested by Haldane ([BOE, 2010](#)) that financial sector output has been mismeasured. National accounts essentially measure financial sector output by the sum of fee income and the net interest margin between loan and deposit rates. In the run up to the GFC high apparent margins and fee income disguised risk taking and potential future losses, which turned into actual losses during the GFC.

Another story is told by [Bolton et al](#) (JOF, 2016) who argue that asymmetric information and opaqueness enable participants in over the counter markets to extract rents from entrepreneurs seeking financial services, which also attracts talented (rent seeking) individuals into the sector.

Another aspect of the rethinking about finance has been related to the possible existence of a tradeoff between competition and stability in the banking sector. Vives ([OREP,2011](#)) notes that the era of financial deregulation was accompanied by a change in official attitude towards competition in banking towards a pro-competitive stance no different to that applied in other sectors of the economy. The greater incidence of financial crises since that time, and particularly the GFC, has prompted a reassessment of whether competition in banking increases the risk of financial instability. If so, and the evidence is mixed, banking regulation needs to reflect implications of competition policy



in banking. Moreover, less competition can be expected to lead to lower levels of output of financial services.

Philippon makes several contributions to this literature, including a focus on the relative growth of funds-management activities relative to intermediation. In a recent (2019) [paper](#) he considers how returns to scale and big data and machine learning may impact the growth of fintech and financial inclusion.

Panizza summarizes the main features of the “too much finance” perspective as:

- Frequency and consequences of financial crises
- Misallocation of talents – high financial sector remuneration not reflective of social value
- Different types of finance (intermediation – “good” v speculative/risk-taking – “bad”)
- Financial System structure – larger/concentrated financial institutions (less competition/efficiency) and more market based
- Political capture – undue influence of finance sector participants on the formulation and implementation of policy

## Appendix 1.1

### Examples of Alternative Methods of Financial Function Delivery

The same economic functions can often be performed in a variety of ways, in some cases with more emphasis on one particular function than another. In this example we consider possible ways of overcoming imperfect information about credit risk and connecting those who need finance with those requiring it.

#### ***Example 1: Credit Risk & Funding***

Traditional Approach: Financial Intermediary assessed credit worth of borrower, raised deposit funds and advanced funds to borrower.

#### ***Example 2: Guarantees***

Alternative Approach: Financial Intermediary guarantees primary security of borrower (for a fee) which is issued into the market.

Consequently, Credit Risk and Funding Risk are separated

Examples: Bank Accepted Bill Financing; Letters of Credit for Trade Financing

#### ***Example 3: Underwriting v Loan Sales***

Traditional Underwriting: Advise borrower on terms, conditions; guarantee a minimum price; place bond issue in market, take up any residual

Loan Sales: Make loan directly to borrower on agreed terms; subsequently sell security into market at best price

Both separate "pricing" risk from long term funding risk. Blurs investment/commercial banking distinction

**Example 4: Loan origination, servicing and funding v Securitisation**

Traditional Approach: Bank originates loan (receives, assesses loan application), provides funds, holds loan on balance sheet and receives loan repayments (servicing), and faces default risk.

Securitisation: Mortgage broker originates loan, arranges funding via "warehouse" facility, and loan eventually bundled together with others and securities sold to investors giving claims on the cash flow stream from those loans. Origination, funding, servicing, risk bearing separated.

**Example 5: P2P (Platform) lending**

Both involve provision of loans to households/SMEs

Traditional Approach: Bank takes deposits and originates and holds loans

Depositors promised specific return, have liquidity, at risk if bank fails

P2P: Investors have interest in a portfolio of loans approved by P2P manager

Investors face risk of actual return on loan portfolio, illiquid investment

## Appendix 1.2: How Tax Distorts the Financial Sector

Tax policies have a major influence on the shape of the financial sector and the pattern of financial flows. Sometimes these are deliberate government policies – such as the preferential tax treatment of superannuation or that of owner-occupied housing. In other cases it may be unintended, such as taxation of nominal returns in a time of high inflation. The Australian dividend imputation tax system and reduced tax rate for long-term capital gains are also particularly important. The following section provides an illustration of the outcome of various features of the Australian tax system.

### An Australian Illustration

Consider an individual on a tax rate  $t = 0.45$ , who earns \$181.81 before tax, giving \$100 after tax.

Assume inflation is  $p = 0.03$ , and the real return on risk free assets is  $r = 0.01$

Investment options are: buy own house; superannuation contributions; bank deposits; shares etc.

Tax treatment of the various investments:

- House: no tax on imputed rental value nor on capital gains

- Super: contributions taxed at 15% from pre-tax income; earnings at 15%; capital gains at 10% (zero tax if post retirement)
- Bank deposit: interest taxed at 45%

Assume a five year investment horizon and consider how real-after-tax-rates of return differ.

Note that \$181.81 pre-tax income is needed for \$100 post-income-tax investment (except in the case of super contributions where a concessional 15 per cent tax rate applies).

The outcomes are as follows:

House: \$100 grows to \$121.84 =  $100 * [(1+p)(1+r)]^5$

There is no taxation, and the real (inflation adjusted) value = \$105.10, giving a real after tax rate of return = 0.01 (1.00%) p.a.

Superannuation: with \$181.81 pre tax income, the individual can invest \$154.54 =  $(181.81(1-0.15))$  in super. Assuming super is invested in bonds, and interest taxed at 15% each year, this grows to \$182.89.

The real return is  $(182.89/100(1+p)^5)^{(1/5)} - 1$

and the real after tax rate of return = 0.0955 (9.55%) p.a.

Bank deposit: nominal interest rate 4.03% p.a. Interest taxed annually at 45%, grows to \$111.58 giving a real return = -0.76% p.a.

(With 3% inflation would need  $100(1.03)^5 = \$115.93$  to break even in real terms).

Super in equities – assume returns are via capital growth and thus are untaxed until realization (year 5) when the capital gain is taxed at 10% (the concessional rate). The value grows to \$184.92 (after capital gains tax). The real rate of return (compared to the alternative of investing \$100 after tax) = 9.79%

Summary: The returns are: House 1%; super 9.55% or 9.79%; deposit -0.76% , for these specific assumptions (no difference in pre-tax rates of return, five year holding period etc)

- Distortions greater for longer holding period
- Distortions greater for higher tax-rate individuals
- Dividend imputation creates further complications
- Ability to leverage investment with debt with tax-deductible interest expense creates further distortions. (eg: “negative gearing” where interest expense exceeds asset income generating an allowable tax deduction against other income, and asset returns are via capital gains (tax deferred and favourable rate)

The “Henry” White Paper on Tax Reform adopts a different (more comprehensive) approach to derive the results in Figure 6.

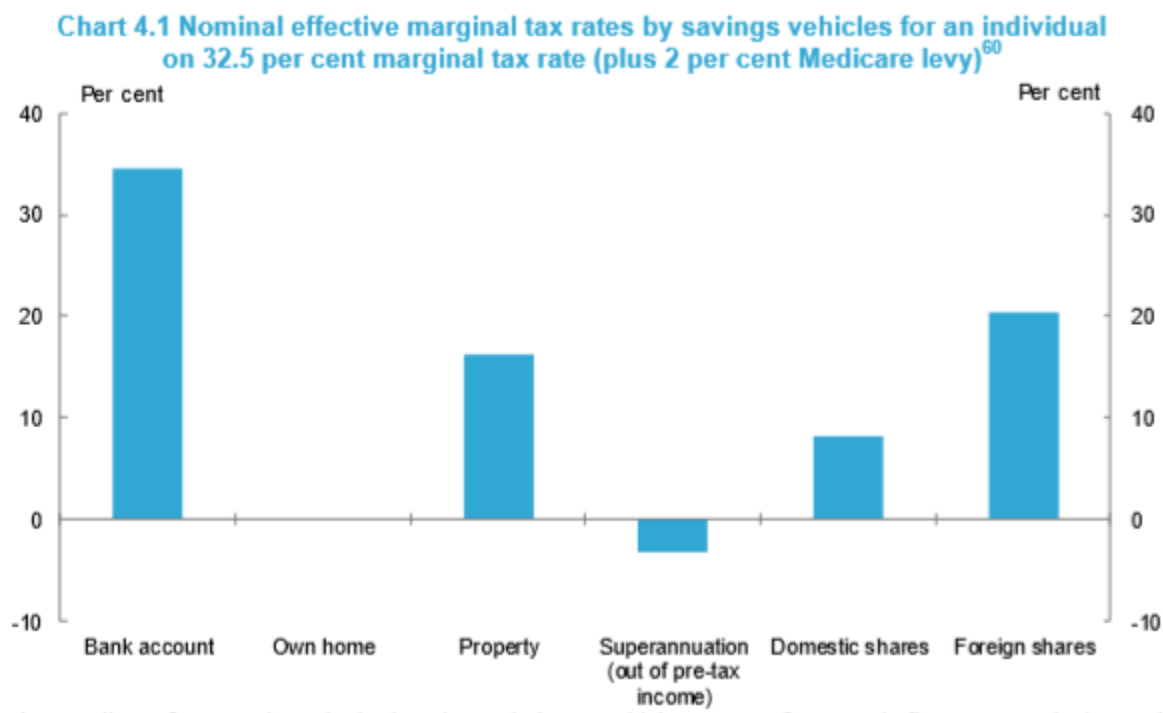


FIGURE 6: TAX DIFFERENTIALS FOR DIFFERENT SAVINGS (SOURCE: [RETHINK \(TAX DISCUSSION PAPER\)](#) P60)

The White Paper assumptions are:

- 6 per cent nominal return (except shares, which assumes 6 per cent after company tax);
- assets are all held for 25 years,
- for rental property, 50 per cent of the return is attributable to capital gain and 50 per cent to rental income
- superannuation contributions do not exceed the prescribed contribution caps.
- No assets have been negatively geared.
- The own home has a nominal effective marginal tax rate of zero, as it is purchased out of after-tax income, but subsequent returns on it are not taxed.
- Bank accounts, property and shares also use after-tax income but their returns are taxed depending on the vehicle.

The nominal effective marginal tax rate for superannuation is negative because contributions to superannuation are made pre-tax and are only taxed at 15 per cent. For example, \$100 of pre-tax labour income would result in a super contribution of \$85 (after 15 per cent tax) but an individual would only receive \$65.50 if they put it into other saving vehicles because of the application of their marginal tax rate (34.5 per cent in this case).

### Tax and Business Structures

Another important consideration is how taxation of (non-operating) trusts relative to companies can affect choice of business structures.

If a trust only holds/manages assets (and distributes all income), it becomes a “pass through” vehicle for tax, and is not subject to company tax. The investors pay tax on distributions at their individual tax rate (and can use any franking credits attached to the distribution), but there is a 15% withholding tax on distributions to foreigners. The investors are entitled to long-term capital gains tax concessions on any distributions which reflect income from sale of assets (held for more than one year) by the trust

In contrast a company is subject to company tax (30%, or lower for smaller companies) but shareholders are able to use franking credits distributed with dividends under the Australian dividend imputation system. The company does not get long-term capital gains tax concessions on sales of assets.

This has led to use of “stapled structures” (analysed by Davis ([ATF, 2016](#)) by many Australian Real Estate Investment Trusts (AREITS) and some infrastructure funds whereby investors hold units in a trust (which holds the assets) stapled to shares in a company (which leases the assets from the trust).

Businesses can also be operated as sole-proprietorships or partnerships, in which business income is considered to be part of the individual income of the owner or partners (and thus not subject to company tax but only individual income tax). One innovative structure is Limited Liability Partnerships (LLPs) in which a general partner who manages the entity is subject to unlimited liability and other limited partners, who are investors not involved in management, have limited liability. In many overseas jurisdictions, these are taxed the same as a partnership (and commonly used by hedge funds), but that only applies in Australia when the entity is a venture capital firm.

### Appendix 1.3: Some Definitions

*Deficit units* - expenditure exceeds income, therefore borrow (issue securities) or run-down assets

*Surplus units* - income exceeds expenditure, therefore lend/invest (acquire securities) or reduce borrowings

*Primary Markets* - where new securities are created by deficit and surplus units coming together

- Overcome impediments to deficit and surplus units transacting

- Enable raising of capital and allocation to best uses

- Provide securities for investment for wealth accumulation

- Create securities giving investors particular control/governance rights

*Direct financing* - where securities issued by deficit unit acquired by surplus unit

*Indirect financing* - where third party (financial institution) acquires deficit unit securities and issues its own securities to finance acquisition

*Secondary Markets* - where existing securities are traded

Facilitate trading, wealth reallocation, risk management

Generate price information / signals which influence resource allocation

Enable investors to influence governance – “exit”, “takeover”

*asset transformation* - (maturity, risk characteristics, etc) by intermediaries issuing securities which have different characteristics to those they acquire. Consequently they take on a range of risks, for which they expect reward and need to manage those risks.