FINANCIAL DEVELOPMENT, GROWTH, AND CRISIS:
IS THERE A TRADE-OFF?

Norman Loayza
Amine Ouazad
Romain Rancière

ABSTRACT

This paper reviews the evolving literature that links financial development, financial crises, and economic growth in the past 20 years. The initial disconnect—with one literature focusing on the effect of financial deepening on long-run growth and another studying its impact on volatility and crisis—has given way to a more nuanced approach that analyzes the two phenomena in an integrated framework. The main finding of this literature is that financial deepening leads to a trade-off between higher economic growth and higher crisis risk; and its main conclusion is that, for at least middle-income countries, the positive growth effects outweigh the negative crisis risk impact. This balanced view has been revisited recently for advanced economies, where an emerging and controversial literature supports the notion of "too much finance," suggesting that there might be a threshold beyond which financial depth becomes detrimental for economic growth by crowding out other productive activities and misallocating resources. Nevertheless, the growth/crisis trade-off is alive and strong for a large share of the world economy. Recognizing the intrinsic trade-offs of financial development can provide a useful framework to design policies targeting financial deepening, diversity, and inclusion. In particular, acknowledging the trade-offs can highlight the need for complementary policies to mitigate the risks, from financial macroprudential policies to monetary policy frameworks that monitor the growth of credit and asset prices.

Norman Loayza
The World Bank
1818 H St., NW
Washington, DC 20433
nloayza@worldbank.org

Amine Ouazad
HEC Montreal
3000, Chemin de la Cote Sainte Catherine
H3T 2A7, Montreal, QC
Canada
amine.ouazad@hec.ca

Romain Rancière
Department of Economics
University of Southern California
Los Angeles, CA 90097
and NBER
ranciere@usc.edu

1. Introduction and Background

Finance is the fuel of economic growth. Yet, the same fuel, when excessive and triggered by a shock of flame, can engender an economic crisis. For decades, the economics literature studied these two effects separately, building independently massive cases in favor of and against financial activity. Since the mid-2000s, however, the economics literature recognized that the positive and negative aspects of finance should be considered jointly. This innovation has prompted an exploration of the trade-offs involved in various aspects of financial development, such as depth, inclusion, composition, and variety. Likewise, it has induced a new type of policy debate regarding monetary and financial affairs, a debate that takes into account the trade-offs intrinsic in financial development (see, for instance, World Bank (2013)) [1]. And from this debate, a diversity of policy reforms has been implemented across the world, from financial macroprudential policies to monetary policy frameworks that monitor credit and asset price growth.

The level of financial development is the degree to which financial instruments, markets, and intermediaries ameliorate the effects of information, enforcement, and transactions costs by providing broad categories of financial services to the economy: (i) producing ex ante information about possible investments, (ii) monitoring investments and exerting corporate governance, (iii) trading, diversification, and management of risk, (iv) mobilizing and pooling savings, and (v) facilitating the exchange of goods and services. Each of these financial functions may influence savings and investment decisions and hence economic growth (Levine, 2005).

Financial development is, therefore, a rather general term, and the literature has often used more concrete concepts and measurements to characterize it. One of the most commonly used is the concept of financial depth, which denotes the extent of credit, financial capital, and financial products in the economy. In turn, the most popular empirical proxy for measuring financial depth is the ratio of credit extended by commercial banks to the private sector over

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[1] For applied discussions, see also, Loayza et al. (2007), Cull, Demirguc-Kunt, and Lyman (2012), Borio (2014), Cihak, Mare, and Melecky (2016), and Han and Melecky (2017).

GDP (Levine, Loayza and Beck, 2000). There are other dimensions of financial development – value, quality, diversity, efficiency, and inclusiveness—and corresponding empirical proxies that can be relevant to evaluate the contribution of finance to the economy. Some of the recently used proxies include the value added of the financial sector (Philippon, 2010), the share of employment in the financial sector (Cecchetti and Kharroubi, 2015), and the wages and wage premia in the financial industry (Philippon and Resheff, 2012). These additional measures might be particularly relevant to discuss the allocation or misallocation of factors between the financial sector and the rest of the economy and to test some model-based hypotheses.

The first objective of this paper is to review the literature that considers the trade-offs and the sometimes opposite effects of financial deepening. The second objective of the paper is go beyond aggregate growth outcomes and consider the effect of financial depth, volatility, and crises on other socio-economic outcomes such as segregation and inequality.

Before we embark on these objectives, let us examine briefly the literatures that consider, on the one hand, the link between finance and growth and, on the other hand, the link between finance and crisis.

The evidence suggests that there is a strong and robust long-run relationship between financial and economic development. Moreover, there is sufficient evidence that financial development causes economic growth. King and Levine (1993) has proven to be a seminal paper in this line of research, prompting dozens of related studies in the following 25 years. Levine (1997) gives an early account of this burgeoning literature, providing also a conceptual framework to understand the connection between finance and growth comprehensively. Almost a decade later, Levine (2005) reviews critically the theoretical and empirical literature, proposing in turn an agenda of research that includes understanding the heterogeneous effects of finance on growth in different contexts.

Although the long-run relationship between finance and growth has been broadly accepted, there have been two main areas of controversy.[2] The first one deals with the direction of

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[2] A minority of papers has found weak or insufficient evidence that financial development causes economic growth. See Harris (1997), Ram (1998), Singh (1997), and Favara (2003).

causality, and the second concerns the homogeneity of the impact in various countries, contexts, and levels of development.

On the causality issue, Levine, Loayza, and Beck (2000) provide strong, though not uncontroversial, evidence that financial depth generates larger economic growth. Working with a panel of cross-country and time observations, the paper uses both external instruments (legal origin) and internal instruments (past observations of explanatory variables) to isolate the exogenous impact of financial depth on growth, finding it to be statistically and robustly positive. Beck, Levine, and Loayza (2000) and Benhabib and Spiegel (2000) go one step further and find that the mechanism through which finance improves growth is mainly through its positive effect on total factor productivity. Moreover, Bekaert, Harvey, and Lundbladl (2005), among others, establish that financial liberalization policies lead to long-run growth, presumably by incentivizing financial deepening .

Studies using primarily cross-country or longitudinal panel data mainly test the causality direction from finance to growth, confirming in most cases its significance. On the other hand, papers using more intensively the time-series dimension of the data (whether for a single country or for many), test the causality in both directions. Although specific results vary, they tend to find that causality may run in both directions. See, for example, Berthelemy and Varoudakis (1996), Luintel and Khan (1999), Shan, Morris, and Sun (2001), Khalifa Al-Yousif (2002), Calderon and Liu (2003), and Ghirmay (2004). [3]

The second area of controversy has been the homogeneity of the growth effect of financial deepening. Although the original papers did not pretend to measure other than average effects and considered non-linearities through a log-linear regression specification, they have been criticized for advocating a one-size-fits-all approach. A large literature has emerged trying to understand how the effect of financial deepening varies according to the level of economic development, the level of financial development, and other country characteristics. See, for example, Arestis and Demetriades (1999), Deidda and Fattouh (2002), Rousseau and Wachtel (2002), Rioja and Valev (2004a, 2004b), Aghion, Howitt, and Mayer-Foulkes (2005), Demirguc-

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[3] A few papers, however, reject bi-directionality, favoring causality from finance to growth. See Christopoulous and Tsionas (2004), Liang and Teng (2006), and Ang and McKibbin (2007).

Kunt, Feyen, and Levine (2011), Arcand, Berkes, and Panizza (2011), and Barajas, Chami, and Yousefi (2016). Pasali (2013) provides a comprehensive review of this strand of this literature. The paper finds little consensus on whether more economically advanced countries benefit more from financial deepening than developing countries do; however, it does find an emerging consensus that the benefits of financial deepening may decrease for large levels and large accelerations of financial depth, posing the possibility of "too much finance."

While much of the empirical evidence uses cross-country data at the national scale, several studies have also shown a strong relationship between finance and growth at the local and firm levels. They have also concerned themselves with issues of causality and homogeneity. See, for example, Jayaratne and Strahan (1996), Guiso, Sapienza, and Zingales (2004), and Kendall (2012). A key paper in this vein is Rajan and Zingales (1998), which, using firm-level data, finds evidence that industrial sectors that require greater levels of external finance grow faster in countries with more developed financial markets. This documents one mechanism through which financial development can positively affect growth: a reduction in the cost of external finance to firms.[4] Similarly, Demirguc-Kunt and Maksimovic (1998) show that firms in countries with developed financial institutions and efficient legal systems obtain more external financing than firms in countries with less-developed institutions. Beck, Demirguc-Kunt and Maksimovic (2005) assess the impact of financial, legal, and corruption problems on firms' growth rates. It finds that smaller firms are more constrained by these problems but also benefit the most from financial and institutional development. Finally, Love (2001) shows that financial development diminishes financing constraints by reducing information asymmetries and contracting imperfections.

Turning now to the crisis literature, it must be said that it is at least as rich and diverse as the growth literature. Here, we only review the main messages from studies that have focused on the connection between financial deepening and economic crisis. The first finding is that rapid acceleration of bank credit, sovereign debt, and equity prices are robust predictors of the occurrence and intensity of financial crisis. See, for example, Kaminsky and Reinhart (1999) and

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[4] Khan (2001) develops a theory of financial development that is based on the costs associated with the provision of finance, consistent with the evidence of Rajan and Zingales (1998).

Jordá, Schularick, and Taylor (2011). The second, related finding is that this rapid acceleration in volumes and prices of financial assets is part of a boom-bust cycle, with the financial bust producing the negative effects on the real economy. Dell'Arrica et al. (2016), for instance, finds that one out of three credit booms is followed by a crisis, and that the longer is a boom, the most likely it ends in a crisis. See, in addition, Higgings and Osler (1997), Allen and Gale (1999, 2000), Reinhart and Rogoff (2008), Allen et al. (2011), and Schularick and Taylor (2012). The third finding is that this boom-bust phenomenon can be fueled and aggravated in an international economy context, with the bust connected to the "sudden-stop" of capital flows. See, for instance, Dornbusch, Goldfajn, and Valdes (1995), Calvo (1998), Chang and Velasco (2001), and Aguiar and Gopinath (2007). The link between financial liberalization and increased instability has also been the subject of much debate, which is extensively discussed in Stiglitz (2000).

While the evidence suggests that both financial institutions and financial markets influence economic growth and crisis, there is a branch of the literature dedicated to determining whether a bank-based system or market-based system is better for growth and stability. See Levine and Zervos (1998), Levine (2002), Beck (2012), and Haiss, Juvan and Mahlberg (2016). This work is summarized in Beck (2012), which concludes that there is little evidence that either financial structure is uniformly better. This ambiguity is reflected in the findings of recent papers. For instance, Gambacorta, Yang, and Tsatsaronis (2014) conclude that the services provided by banks are particularly beneficial for less developed countries and that while healthy banks are able to cushion shocks during normal downturns, this shock-absorbing capacity is impaired during financial crises. On the other hand, Langfield and Pagano (2016), focusing on advanced economies and taking into account the 2007-2008 crisis, document that an increase in the size of the banking system relative to equity and private bond markets is associated with lower growth and more systemic risk.

The insight that there may be a darker side to finance is derived from two, often interrelated aspects: first, the possibility that some features of finance may be wasteful and crowd out productive activity; and second, the realization that certain characteristics of financial development may make the economy more vulnerable to crisis. This insight features

prominently in recent papers, such as Gabaix and Landier (2007), Beck (2012), Beck et al. (2012), Beck, Degryse, and Kneer (2014), Law and Singh (2014), Cecchetti and Kharroubi (2015), Caldera-Sanchez and Gorri (2016), Eden (2016), and Beck et al. (2016).. Importantly, it is at the heart of the literature that has attempted a link between financial development, growth, and crisis that started in the mid-2000s, with Tornell, Westermann, and Martínez (2003), Loayza and Ranciere (2006), and Ranciere, Tornell, and Westermann (2006).

The next sections of this paper assess the benefits and drawbacks of financial development in terms of growth and stability. In section 2, we document a large literature that has developed an integrated approach to study the effects of financial development on growth and crises, and that has established the presence of a higher growth-higher crisis risk trade-off, in particular for middle-income countries. In section 3, we review a more recent literature that focuses on advanced economies and suggests the possibility that pushing financial development beyond some level can be detrimental for growth and expose countries to severe crisis risk. In section 4, we explore the distributional effects of financial development, recognizing that an exclusive focus on aggregate growth outcomes runs the risk of masking important within-country distributional effects of financial development and crises. To illustrate such effects, we analyze the boom-bust credit cycle experienced by the US economy during 2000-2010, considering outcomes such as segregation and wealth distribution. Section 5 concludes, outlining some avenues for future research.

2. The Integrated Approach: A Trade-Off between Higher Growth and Higher Crisis Risk

The apparent paradox between the long run growth view which emphasizes the contribution of financial development to growth (Levine, Loayza and Beck, 2000), and the early warning signals literature view which stresses credit growth as the most powerful predictor of financial crises (Schularick and Taylor, 2012) calls for an *integrated approach*. The central hypothesis is the existence of a trade-off associated with the dual effect of policies fostering financial development, potentially leading to both higher growth and higher crisis risk. An integrated framework should enable us to understand under what conditions contrasting effects are triggered and to quantify the net effect of financial development.

Loayza and Ranciere (2006) and Ranciere, Tornell, and Westerman (2006) provide the first econometric models that allowed to estimate such dual effects. In the context of a panel error-correction model estimated by the Pooled Mean Group estimator (Pesaran, Shin, and Smith, 1999), Loayza and Ranciere (2006) show that a positive long-run relationship between financial depth and economic growth could co-exist with heterogeneous, country-specific, short-run effects that are, on average, negative. This suggests that along a long-run path in which finance and growth are positively related there might be short-run fluctuations in which (excessive) credit growth is associated, on average, with output contractions. An analysis of the distribution of the estimated short-run coefficients reveals that crisis-prone countries are about twice more likely to experience a negative relationship. Crisis-related volatility is not, however, the only reason for this short-run negative dynamic: a fair share of lending booms end up in soft landing with a protracted output contraction but without experiencing a full-blown crisis, as pointed out by Gourinchas et al. (2001).

Ranciere, Tornell and Westerman (2006) provide the first direct test of the dual effects of financial liberalization in an integrated framework, using the treatment effect model developed by Heckman (1978). The model combines a *growth equation* that includes a dummy for financial liberalization and a dummy for financial crises with a *crisis equation* that endogenizes the probability of a crisis. The probability of a financial crisis depends on a range of crisis predictors including the dummy for financial liberalization. In a first step, the crisis model is estimated using a standard probit model as in the Early Warning Signals literature. In a second step, the growth equation is estimated augmented by the hazard rate derived from the probit model to capture the endogeneity of crisis risk. In this two-equation model, financial liberalization has a dual effect on growth: a *direct effect* which reflects the impact of financial liberalization on growth in tranquil times, and an *indirect effect* which accounts for the expected cost of crisis. Formally, we obtain:

$$E(Growth\ Gains\ From\ FL) = E\ (Growth\ Effect\ of\ FL\ |\ No\ Crisis)$$
$$+ E(Crisis\ Costs) * [\Pr(Crisis\ |\ FL) - \Pr(Crisis\ |\ No\ FL)]$$

where *FL* is a dummy for financial liberalization.

The results based on a sample of 60 middle-income countries between 1960 and 2000 indicate that the direct growth effect (the growth gain conditional on no crisis) is positive with a point estimate of about one percentage point per year, while the indirect effect ranges between 0.25 and 0.3 percentage point per year, depending on the financial liberalization index used. Therefore, the overall *net growth effect* is positive at about 0.7-0.75 percentage points. To understand this result, keep in mind that while crises entail very large output costs -- typically an output contraction of about 10 percentage points -- they remain rare events even after financial liberalization --financial liberalization typically raises the annual probability of crisis from 2 to 4 percentage points.[5]

While the hypothesis of a trade-off between instability and growth sounds reasonable by analogy with the risk-return trade-off for financial returns, it still requires a framework to be fully understood in a macroeconomic context. Ranciere, Tornell, and Westerman (2008) and Ranciere and Tornell (2016) provide such framework. The basic idea is that risk-taking is a way to alleviate contract enforceability problems that severely constrain credit and investment in growth-enhancing activities. With imperfect enforceability of contracts, lenders must limit the leverage undertaken by investors in order to curb their incentives to divert borrowed funds. When risk-taking allows entrepreneurs to reduce the effective cost of capital, it also reduces their incentives to divert funds and allows them to attain greater leverage and investment. Higher leverage for entrepreneurs comes at a cost of default in bad times and therefore the leverage gains enjoyed by entrepreneurs should be large enough for such risky strategy to arise in equilibrium. This is the crisis/growth trade-off at the microeconomic level.

An important question is how the micro-level incentives for risk-taking, generate systemic risk-taking at the macroeconomic level. First, the presence of systemic bailout guarantees provides incentives to both entrepreneurs and lenders to coordinate in risk taking, a phenomenon labeled by Farhi and Tirole (2012) as *collective moral hazard*.[6] Second, risk-taking should

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[5] Razin and Rubinstein (2006) use a similar approach to look at the effects of the exchange rate regime and capital flows on growth and crisis risk and find similar results.

[6] While systemic bailout guarantees are useful to understand how risk-taking is taken collectively (Farhi and Tirole, 2012), other market imperfections, such as limited liability, can also reduce the effective cost of funds and provide incentives for risk taking even in the absence of bailouts.

generate a feedback loop between credit leverage, prices, and firm profitability that results in multiple equilibria with a solvent "tranquil-times" equilibrium and a crisis equilibrium. In an open economy, such feedback loop arises, for instance, when risk-taking takes the form of a currency mismatch between the denomination of debt liabilities and that of revenues. In the good (tranquil-times) equilibrium, lenders anticipate entrepreneurs to be solvent, and so provide enough credit so that the demand for non-tradables is sufficiently high, ensuring entrepreneurs to be indeed solvent. In the crisis equilibrium, lenders anticipate default, credit constraints become tighter, and the price of non-tradeables collapses (i.e. a *real-exchange rate depreciation*). In this case, a currency mismatch results in a balance sheet crisis where entrepreneurs default (Krugman, 1999).

The framework of Ranciere, Tornell, and Westerman (2008) and Ranciere and Tornell (2016) produces two types of growth trajectories: a safe growth path, which is characterized by low credit, low leverage, and low growth but no crisis risk; and a risky growth path, which is characterized by boom-bust cycles. Under financial repression only the safe growth path exists, while under financial liberalization both the safe and the risky growth paths can arise.

For which countries can we expect the growth gains to outweigh the crisis costs when they shift from safe growth to risky growth? Ranciere, Tornell, and Westerman (2008) find that they are typically the countries with an intermediate degree of contract enforcement, a group that largely consists of middle-income countries. For countries with a very low degree of contract enforcement, risk-taking allows only for limited leverage gains; growth gains are therefore modest and do not outweigh crisis costs. For countries with a high degree of contract enforceability, credit constraints are much less severe and therefore the growth gains of relaxing them are more limited.

A key element for risky financial development to pay off despite the higher risk of a crisis is that relaxing credit constraints for the most constrained firms or sectors generates positive externalities for the rest of the economy. Varela (2016) provides evidence of such externality in the case of financial liberalization in Hungary by comparing the productivity of domestic firms and that of multinational firms. Following the 2001 liberalization, domestic firms were able to access more credit and to upgrade their technology, and multi-national firms reacted by also

increasing their productivity-enhancing investments. As a result, competition increased and the economy became more efficient. Levchenko, Ranciere, and Thoenig (2009) provide industry-level evidence that financial liberalization favors entry and lead to a reduction of the markups. To sum up, technology upgrading (Varela, 2016), a reduction of bottlenecks through more abundant and cheaper production of key inputs for the rest of the economy (Ranciere, Tornell, and Vamvakidis, 2011; and Ranciere and Tornell, 2016), or a reduction in markups (Levchenko, Ranciere, and Thoenig, 2009), are the typical channels through which higher access to credit and the associated relaxation of borrowing constraints foster growth and compensate for the increased crisis risk.

A related empirical question is about how to best measure the macroeconomic volatility associated with crisis risk. A boom-bust cycle is generally characterized by a protracted and gradual credit boom that ends in a sudden and abrupt crisis when credit collapses. Such asymmetric fluctuations can, arguably, be better captured by the skewness of credit growth, which measures the degree of asymmetry of a distribution, rather than by its variance.[7] Using skewness allows disentangling the incidence of rare crises from more high frequency and symmetric volatility driven, for example, by pro-cyclical fiscal policy (Kaminsky, Reinhart and Vegh, 2004). Using a sample of 83 countries over the period 1960-2000, Ranciere, Tornell, and Westerman (2008) finds that the skewness of credit growth is associated with higher long-run growth, especially so for countries with a medium capacity of contract enforceability. The positive effect of the skewness of credit growth on GDP growth –indicating that countries experiencing boom-bust cycles grow on average more rapidly than countries with more stable credit conditions—co-exists, however, with the result that the variance of credit growth reduces economic growth, a result consistent with those in Ramey and Ramey (1995) and Hnatkovska and Loayza (2005), Kharroubi (2007), and Imbs (2007).

How do financial sector policies compare with other pro-growth reforms in creating a trade-off between more growth and more exposure to crisis? Caldera-Sanchez and Gorri (2016) and Caldera-Sanchez et al. (2016) revisit empirically this possible trade-off by considering a range of

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[7] In other terms, the distribution of credit growth is skewed by the incidence of rare but severe crisis, which can be interpreted as the realization of an abnormal downside risk.

reform policies for a sample of 100 countries over the period 1970-2014. They use a methodology similar to that of Ranciere, Tornell, and Westermann (2006) combining a growth equation and a crisis equation. They find that the trade-off higher growth - high crisis risk only applies to financial market liberalization policies. Product market reforms do not have any significant impact on crisis risk while trade reforms and strong active labor market programs can simultaneously increase growth and reduce the risk of crisis.

Caldera-Sanchez et al. (2016) also find that it is domestic private credit and international private debt flows that are the main driver of crisis risk. This result does not mean, however, that switching to policies favoring equity financing will necessarily ameliorate the trade-off. Debt finance provides some disciplinary mechanism in normal times even if, as a non-contingent liability, it simultaneously increases tail risk. Caldera-Sanchez et al. (2016) also finds that a higher quality of institutions improves the trade-off associated with financial reforms, with growth gains more likely to outweigh crisis costs.

 Most results on the trade-off higher growth/ higher volatility and crisis risk have been obtained with aggregate data and may suffer from the usual pitfalls associated with cross-country growth regression (endogeneity and simultaneity biases). There are, however, a number of papers that tackle the same issue using sector-level data and exploiting (plausibly) exogenous cross-sectoral variation, such as sectoral difference in financial dependence (Rajan and Zingales, 1998). Levechenko, Ranciere, and Thoenig (2008) using a panel of 28 sectors in 60 countries for the period 1970-2014, finds that financial liberalization increases simultaneously growth and volatlity. Interestingly, the growth effects are likely to be transitory while the volatility effects tend to be permanent. A welfare analysis *a la lucas (1987)* suggests, however, that because the growth effects are large enough –leading to a permanent increase in the level of output-- there are positive net welfare gains despite the increase in growth volatility being permanent. Manganelli and Popov (2015) finds that a large share of such increased volatility corresponds to sectoral reallocation that can also increase long-run growth by reducing misallocation. Popov (2014) finds that the effect of financial liberalization on the skewness of credit growth can also be observed at the sector-level.

To sum up, the empirical evidence points towards the existence of a trade-off of higher growth and higher crisis risk associated with liberalization policies that foster domestic financial development and international financial openness. The trade-off seems to be mostly relevant for liberalizing *middle income countries.* These are countries whose institutions are typically strong enough so that they can benefit from financial liberalization in tranquil times, but weak enough so that the severity of borrowing constraints makes it worthwhile for them to take on crisis risk to boost leverage, investment, and growth.

3. "Too Much Finance" or "Trade-Off No More"?

The crisis of 2007-2008 has re-opened the debate on whether there is an optimal degree of financial depth; or, in other terms, whether beyond some level of financial depth there is "too much finance" so that there are no more positive benefits in terms of growth and investment but still significant costs in terms of financial fragility and macroeconomic stability. A more drastic version of the "too much finance" hypothesis implies that certain types of financial activity might generate social welfare losses *even in tranquil times* and result in a misallocation of resources in the economy.

Theoretically, what are the minimal conditions under which a deepening of financial liberalization can lead to a reduction in welfare? Ranciere and Tornell (2011 and 2016) suggest that a simple change in the menu of assets, such as the introduction of derivatives contracts on top of debt and equity contracts, can be enough to overturn the result that systemic risk-taking is growth and welfare-enhancing. In the presence of systemic bailout guarantees, the use of derivatives (such as a "catastrophe bond" or CAT) induces borrowers to shift a greater fraction of their liabilities into the crisis state in which bailouts are triggered. In such an environment, the disciplinary effect of a standard debt contract (whereby the borrower/investor should generate returns in excess of the lending rate in normal times and be exposed to losses if the risk materializes) breaks down. When this happens, projects with negative net present value are funded and the generosity of expected bailouts matters more than repayment incentives in determining leverage.

Ranciere and Tornell (2011) argue that the mechanism described above was at play in the run-up to the 2007-2008 financial crisis (see also Cochrane, 2010). Prior to the crisis, many households obtained mortgages they could not repay unless real estate prices would keep increasing, allowing them to continuously refinance at low interest rates. When real estate prices stopped rising in 2006, households' liabilities increased sharply as they lost the ability to refinance at low ("teaser") interest rates or with interest-only loans. A large share of such price-sensitive borrowers then underwent mortgage defaults and foreclosures. By facing different interest rates in normal and crisis times, these borrowers were de facto having derivatives-like payoff structures, which induced them to shift liabilities to the crisis and bailout states. The same applies to the financial institutions that packaged these loans into mortgage-backed securities (MBS) and collateralized debt obligations (CDO), and to those who insured them with Credit Default Swaps.

Let us now turn to the empirics on how "too much finance" may affect the trade-off between higher growth and higher crisis risk. Specifically, do the growth effects vanish at high levels of financial depth, or is it that the volatility and crisis effects become so large that they more than offset the growth effect? Arcand, Berkes, and Panizza (2015) explore both hypotheses and conclude that only the former is not rejected by the data. Beyond a ratio of private credit to GDP of 100 percentage points, the growth effects of financial deepening are no longer significant. There is no evidence, however, that a high ratio of credit to GDP by itself is associated with higher macroeconomic volatility. This latter result is consistent with the notion that *rapid growth* of credit rather than *high level* of financial development increases crisis risk (Schularick and Taylor, 2012).

The findings of Arcand et al. (2013) leave open the question on whether the *interaction* between high level of financial depth and some other economic trends can be the source of financial fragility and crisis risk. Kumhof, Ranciere, and Winant (2015) explore the role of *income inequality* as such source. Both the period prior to the great depression and the period prior to the great recession in the US have witnessed a rapid increase in household credit, a rapid increase in income inequality, and, ultimately, a deep financial crisis. A potential explanation is that the widening of income inequality generates large savings at the top of the

income distribution that are, in part, recycled in the form of loans to households in the bottom part of the income distribution (who are using them to mitigate the effect of their relative fall in income). As a result, the bottom income group becomes increasingly indebted, which creates a risk for financial stability. Kumhof, Ranciere, and Winant (2015) find that quantitatively the increase in income inequality between 1983 and 2007 --where the top 5% share of the income distribution increased from 24 to 34 percent—explains more than two-thirds of the increase from 60 to 140 percentage points in the debt to income ratio of the bottom 95 percent of the income distribution. They argue that the financial innovations observed in that period, such as the emergence of a new securitization chain for subprime mortgages, were partly an endogenous response of the financial system to changes in the income distribution. A feedback loop between finance and income inequality can also occur: Philippon and Resheff (2012), for instance, finds that about 15 percent of the increase in income inequality in the US since 1970 can be traced to the rapid growth in earnings in the financial sector.

A recent literature has focused in explaining the source of the vanishing growth effects of financial depth, a fact first highlighted by Rousseau and Wachtel (2011). Following Beck et al. (2012), Arcand, Berkes, and Panizza (2015) studies whether the difference in the effect of household credit vs. firm credit could explain such vanishing effect. It finds evidence that firm credit is more growth conducive than household credit, and, therefore, the vanishing effect can be related to excessive household credit and, especially, mortgage loans. Furthermore, Chakraborty et al. (2018) document empirically that household credit tends to crowd-out firms' credit, and especially so for firms that are more capital constrained. Relatedly, Mian, Sufi, and Verner (2017) show that an increase in household debt relative to GDP tends to predict lower GDP growth and higher unemployment in the medium run.

The empirical evidence on the vanishing effect of finance on growth forces us to clarify the underlying theoretical hypotheses. As discussed in Levchenko, Ranciere, and Thoenig (2009), there are three competing hypotheses. The first is that finance only accelerates convergence to a given steady state, whose level depends only on technology. The second is that finance increases the GDP growth rate indefinitely, as it would be the case in AK growth models where finance enables an increase in the investment rate (see Obstfeld, 1994 and Bencivenga and

Smith, 1991). The third, intermediate hypothesis is that finance allows the economy to reach a higher steady state and by so doing boosts growth in the transition process. A conclusion of the "too much finance" literature is to rule out the second hypothesis. Distinguishing between the first and last hypotheses is empirically more challenging. The results by Aghion and Mayer-Foulk (2005) and Arcand, Berkes, and Panizza (2015) seem to support the first, accelerating convergence view. Using industry-level data, Levchenko, Ranciere and Thoenig (2009) provide more support to the third hypothesis, by showing that finance has a strong effect of reducing industry mark-ups and has therefore the potential to lift the economy towards a higher (less distorted) steady state.

Another explanation for the vanishing effect is the view that certain financial activities crowd out more productive ones and result in a misallocation of talent in the economy that is detrimental to growth. Cecchetti and Kharroubi (2012) shows that the non-monoticity in the relationship between finance and growth is particularly strong when financial sector employment is used as a proxy for financial depth. Cecchetti and Kharroubi (2015) proposes a model to understand the source of the negative relationship between the rate of growth of the financial sector and productivity growth at high levels of financial development. The model is centered on two externalities, an investment externality through which finance favors projects with high collateral even when they are less productive, and a labor externality by which the financial sector attracts skilled labor and grows at the expense of the real economy. Using a cross-country panel of industry-level data, the paper finds supportive evidence for the two externalities.

What role do financial regulation and supervision play in controlling the risk that financial deepening results in misallocation of resources and talent? Philippon and Resheff (2012) find a tight link between the wage premium commanded by the financial industry and an index of financial deregulation. By 2006, the excess wage premium in the financial industry was about 50% in absolute terms and between 20% and 30% in certainty-equivalent terms. The premium for CEOs in the financial sector was about 250% compared to CEOs elsewhere. Interestingly only one-fifth of this premium could be related to the size of assets under management, a standard explanation for the rise in CEOs pay (Gabaix and Landier, 2008). A fraction of the rest

can be due to innovation in the financial sector but might also be related to risk-taking behavior, facilitated by deregulation such as the 1999 repeal of the Glass-Steagall Act. Philippon and Resheff (2013) finds cross-country evidence on the positive link between the share of the finance industry, wage premia in the financial sector, and measures of financial deregulations. Philippon and Resheff (2012) also suggest that wage premia in the financial sector render more difficult the enforcement of financial regulations, since such activities require similar skills as those sought after in the private financial sectors but command salaries that are constrained by the public sector pay scale.

From a policy perspective, how shall we deal with "too much finance"? Tightening financial regulation should be balanced to prevent misallocation and abuse while also keeping the incentives for innovation. Ranciere and Tornell (2011 and 2016) discuss how regulation should be designed in an environment where systemic bailouts during crises exist. If these bailouts cannot be eliminated, risk takers should also bear the consequences of their losses. Special attention must be paid to the regulation of derivatives that give the option to shift losses to the crisis state. This implies, for example, putting Credit Default Swaps on an organized exchange, with marginal calls ensuring that risks are adequately provisioned. Better financial supervision can also have an impact on wage premium and generate a larger flow of talent towards other sectors.

Apart from improvements in financial regulation and supervision, taxation can be used to avoid excessive finance. Philippon (2010) proposes a theoretical framework which discusses how the financial sector and the non-financial sector (or, in schematic terms, financiers vs. entrepreneurs) should be taxed or subsidized as a function of the externalities they bring on the rest of the economy. The issue is complex since entrepreneurs face borrowing constraints and, therefore, require the service of financiers to invest efficiently. A key result is that when education and investment are properly subsidized to account for the innovation externalities, the financial sector should be taxed in exactly the same way as the non-financial sector.

The recent literature on the theme of "too much finance" has been primarily focused on the vanishing growth effects of financial deepening beyond a certain level of depth. Less evidence is provided on its effect on financial stability and crisis risk even if the crisis of 2007-2008 suggests

that unfettered financial liberalization and the proliferation of new financial instrument increases crisis risk. This creates the possibility that financial deepening without proper regulation can be harmful for both growth and stability. Therefore, from a policy perspective, the challenge is to find the kind of financial regulation and supervision that can, first, minimize the trade-off between higher growth and higher risk, and second, generate positive effects on growth and stability by expanding the quality of financial services from a social standpoint.

4. Beyond Aggregate Outcomes: Distributional Impacts of the U.S. Credit Boom and Bust

An extensive literature in the economics of education and in labor economics has documented the potentially positive welfare effects of relaxing borrowing constraints. For instance, Brown,

Scholz, and Seshadri (2011) suggest that financial aid leads to an increase in educational attainment for borrowing-constrained families. The findings in Levine, Levkov, and Rubinstein (2008) imply that an increase in banking competition leads to an increase in credit supply and a decline in labor market discrimination. In standard consumer theory, borrowing constraints prevent consumption smoothing and produce a greater dependence on current income than predicted by intertemporal welfare optimization theories (such as the permanent income hypothesis).

However, a recent and rather controversial literature suggests that financial deepening in the form of a greater supply of credit or of a greater diversity of financial products might have ambiguous distributional and welfare impacts, depending on how social welfare is measured. Three reasons are cited to postulate this ambiguity. First, general equilibrium effects distort price distributions. Indeed economy-wide increases in credit supply could affect the distribution of prices of products and assets in a way that may offset the partial equilibrium positive welfare impacts for a substantial fraction of households. Second, there is evidence that social preferences are present in locational choices (Krysan and Farley, 2002), consumption decisions (Bertrand and Morse, 2016), and educational production functions (Sacerdote, 2011). With such externalities, an unconstrained market equilibrium could be less efficient than a constrained market equilibrium. Third, the expansion of the supply of credit towards less

creditworthy or towards more risky products can lead to large and potentially suboptimal welfare losses during downturns.

Ouazad and Rancière (2016a) use transaction-level micro data to estimate the empirical relevance of the first mechanism, that is, general equilibrium effects. The paper puts forward a novel general equilibrium model of a metropolitan area to estimate the impact of the relaxation of lending standards on the distribution of housing prices. The model introduces endogenous borrowing constraints in a locational choice model, where heterogeneous households choose location across block groups based on the variation of local amenities. The paper introduces borrowing constraints by noting that the households' choice set is constrained by mortgage originators' lending standards. Conditional on their choice set, households choose across locations based on a comparison of the bundle of local amenities and housing prices. The probability of a given choice set is determined by the product of the probabilities of approval of a mortgage application. Hence demand for a neighborhood is the weighted average of demands conditional on the choice set:

$$Demand(j \,|\, \mathbf{x}, \mathbf{z}) = \sum_{C \subset \{1,2,\dots,J\}} \underbrace{P(C \,|\, \mathbf{x}, \mathbf{z})}_{\text{Probability of Choice Set C}} \cdot \underbrace{Demand(j \,|\, \mathbf{x}, \mathbf{z}, C)}_{\text{conditional demand}} \quad (1)$$

where j indexes neighborhoods $\{1, 2, \dots, J\}$, x is the vector of household characteristics, and z the vector of all neighborhood amenities. The probability of a choice set C is a product of the probabilities of approval of mortgage applications:

$$P(C \,|\, \mathbf{x}, \mathbf{z}) = \Pi_{j \in C} P(\text{Approval in } j | \mathbf{x}, \mathbf{z}) \cdot \Pi_{j \notin C} \left[1 - P(\text{Approval in } j | \mathbf{x}, \mathbf{z}) \right] \quad (2)$$

In turn, approval probabilities are driven by mortgage originators' standards. Explicitly endogenizing the choice set presents the unique advantage of allowing an analysis of the impact of changes in lending standards on each neighborhood demand.

In turn, preserving the equilibrium of the city requires an adjustment of housing prices in response to the rise in neighborhood demand. Changes in lending standards thus produce a shift at each quantile of the housing price distribution. As the marginal impact of a relaxation of lending standards depends on household characteristics (e.g., race and income), housing price

shifts vary across quantiles regardless of whether lending standards depend on neighborhood characteristics. Estimates based on micro data of the San Francisco Bay area for 2000-2006 suggest that the relaxation of lending standards led to a compression of the price distribution: housing prices rose more for the lower quantiles than for the higher quantiles of the housing price distribution. Such compression of the price distribution is consistent with a gentrification of lower-priced neighborhoods as the number of mixed Black-White neighborhoods is declining both in general equilibrium simulations and in observed data.

Price responses to increases in lending supply typically occur in markets with low supply elasticities. While markets for consumer goods exhibit high elasticity, housing supply and the provision of higher education services can exhibit low elasticity and thus experience large and heterogeneous price responses. While Saiz's (2010) estimates suggest a large variance of housing supply across metropolitan areas, Ouazad and Rancière (2016a) finds substantially smaller neighborhood-level supply elasticities for the metropolitan area of San Francisco. Thus, changes in the distribution of housing prices may be greater than what would be predicted using standard metro-level estimates. Ouazad and Rancière's (2016a) estimates of supply elasticities using 30m by 30m satellite data also display a positive correlation between supply elasticities and the distance to the central business district, a potential evidence of the importance of within-city distribution of elasticities in driving changes in wealth inequalities. Elasticities of the provision of higher education services are also likely far from the perfectly elastic benchmark. Heckman, Lochner, and Taber (1999) makes the point that general equilibrium endogenous responses to tuition subsidies can offset the estimated partial equilibrium effects and calls for a revision of microeconomic studies that do not estimate price responses. Recent developments in the use of micro data now enable a microeconomic analysis of such general equilibrium effects. Overall, as in Ouazad and Rancière (2016a), financial deepening and the rise of credit are unlikely to yield uniformly positive welfare impacts, even before the onset of a credit downturn.

Another driver of financial development's welfare and distributional consequences is the presence of social spillovers, peer effects, or social externalities. Krysan and Farley (2002) use the multi-city study of urban inequality in Atlanta, Boston, Detroit, and Los Angeles to show

that African-American households prefer diverse neighborhoods with about half African-American residents while White households prefer neighborhoods with greater fractions of White neighbors. With such preferences, market equilibrium in urban location choice models as in Schelling (1971) and Benabou (1996) is perfectly segregated. This is in stark contrast with market equilibrium in labor economics, where Becker (1957) predicts that competition leads to lower discrimination. Moreover, such perfect segregation at market equilibrium in a city with no credit market imperfection can be inefficient. The inefficiency of segregation or of diversity depends crucially on two key parameters: (i) whether low- and high-human capital households' welfare is equally affected by their peers in neighborhoods and schools, and (ii) whether the marginal impact of peers is concave in the fraction of high-human capital peers.

To make this clear, consider a stylized two-neighborhood city as in Benabou (1996), with two types of households, with high- and low human capital, $h \in \{h_A, h_B\}$, $h_A > h_B$. The city has a fixed density 1 of housing, and neighborhoods 1 and 2 have the same size 1/2. The total density of households of human capital $h = h_A$ is $n \in [0, 1]$ in the city, and $x \in [0,1]$ in neighborhood 1. The welfare of an individual with human capital h and a fraction x of high-human capital neighbors is a function $w(h, x)$. The welfare of a neighborhood is thus:

$$W(x) = x \cdot w(h_A, x) + (1-x) \cdot w(h_B, x) \qquad (3)$$

The city's social optimum is reached at the maximum of $W(x) + W(n - x/2)$. The city's optimum will be to segregate individuals if such total welfare is a convex function of x. Crucially, the optimality of segregation thus depends on two empirically measurable parameters: (i) whether high human capital individuals' welfare benefits more from high-human capital peers than low-human capital individuals, and (ii) whether welfare is a concave function of peers' human capital.

$$W''(x) = \underbrace{2\left[\frac{\partial w}{\partial x}(h_A, x) - \frac{\partial w}{\partial x}(h_B, x)\right]}_{\text{differential impact of peers on welfare}} + \underbrace{x \cdot \frac{\partial^2 w}{\partial x^2}(h_A, x) + (1-x) \cdot \frac{\partial^2 w}{\partial x^2}(h_B, x)}_{\text{concavity of peer effects in welfare}} \qquad (4)$$

There is evidence in some dimensions that more segregated metropolises have lower average welfare, and that low-human capital individuals benefit more from their peers than high-human

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capital individuals. Estimates of peer effects in schools and neighborhoods suggest that low ability peers are more affected by their peers than high ability peers (Sacerdote, 2011). Card and Rothstein (2007) find that higher segregation arguably causes a higher Black-White test score gap.

A city where high human capital households are constrained in their ability to borrow could lead to higher average welfare, e.g. a third-best allocation with greater welfare than at market equilibrium. Controversially, relaxing borrowing constraints may lead to greater segregation and lower welfare, even absent a credit bust.

Ouazad and Rancière (2016b) estimate the impact of the relaxation of lending standards during the housing boom of 2000-2006 on changes in racial segregation across neighborhoods within metro areas. The paper first estimates such impact for the 935 metropolitan and micropolitan statistical areas of the United States. At the metropolitan area level, a common measure of racial segregation is the set of exposure indices. For instance, the exposure of Blacks to Whites is the average fraction of White individuals in the neighborhood of an average Black resident. Despite declines in overall racial segregation, the exposure of Blacks to Whites declined between the 2000 and the 2010 censuses.

The paper's first metro-level analysis correlates changes in exposure with changes in credit standards:
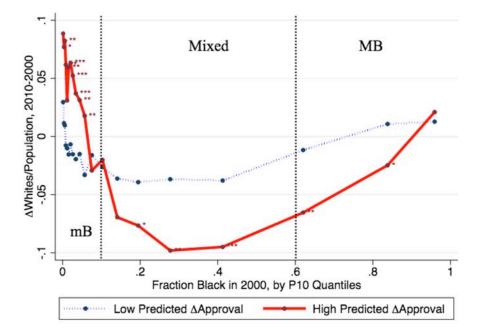
$$\Delta Exposure_{j,2010-2000} = \Delta Credit_{j,2010-2000} \cdot \beta + \mathbf{x}_j \gamma + Metro_j + \varepsilon_j \quad (5)$$

where $\Delta Credit_{j,2010-2000}$ is a measure of the change in lending standards for metropolitan area j, x_j is a set of controls, including controls for demographic changes, and $Metro_j$ is a metro-area fixed effect. Two key measures of lending standards, the change in approval rate and the change in the loan-to-income ratio, experience significant changes between 2000 and 2006: the loan-to-income ratio of mortgage originations increases by 0.4, and the approval rate for mortgage applications increases by 13 percentage points. As changes in credit conditions typically reflect both shifts in the demand for credit as well as shifts in the supply of credit, identification of the causal impact β requires an exogenous source of credit supply shifts. Banks' liquidity level in the early 1990s is a significant predictor of the rise in leverage and approval

rates between 2000 and 2006. Specifically, banks that were liquidity constrained or that had a less securitizable portfolio of assets in the early 1990s benefited more from the securitization boom of the early 2000s. Such boom was arguably triggered by the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, by preferential treatment to banks holding mortgage-backed securities backed by the Government Sponsored Enterprises.

While early 1990s bank liquidity and asset securitizability is a significant predictor of 2000-2006 changes in lending standards, there is little empirical evidence of its correlation with observable demand shifters or with observable drivers of racial segregation. Results suggest an economically significant impact of credit supply shifts on the exposure of Blacks to Whites: without the credit supply shock, Black households would have had between 2.3 and 5.2 percentage points more White neighbors in 2010.

Figure 1: Inflows into Census Tracts, by Percentage of Black Population in Tract

Stars next to a point indicate the significance of the F test that the coefficient for high liquidity metropolitan areas and the coefficient for low liquidity metropolitan areas are identical. One star for 10% significance, two stars for 5% significance, three stars for 1 percent. Standard errors clustered by state. mB: minority black tract, fraction of Black population below 10%. Mixed: Mixed tract, fraction of Black population between 10 and 60%. MB: Mostly Black population tract, fraction of Black population above 60%.

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A second approach delves into metro areas' structure and estimates White, Black, Hispanic, and Asian inflows and outflows from neighborhoods based on (i) their initial composition, and (ii) credit supply shifts during the 2000-2006 boom. In that sense, the key question is whether credit supply facilitates or enables Schelling (1971)-like tipping shifts in neighborhood demographics. Figure 1 from Ouazad and Rancière (2016a) plots the coefficients of a regression of census tract-level white population changes as a fraction of initial population, on a set of dummies for quantiles of the initial fraction of Black population in 2000. The red line is the regression for metropolitan areas with high increase in approval rates as predicted by the instrument described above and the blue dotted line is for metropolitan areas with a low predicted increase in approval rate.

A first observation from this graph is that there is tipping as in Card, Mas, and Rothstein (2008): there are outflows of White households from neighborhoods with more than 10-15% Black residents; there are inflows of white households into other neighborhoods. More importantly, the tipping behavior is stronger in metropolitan areas with a greater credit supply increase, as the difference between the blue dotted line and the red line is statistically significant. Thus, Figure 1 provides neighborhood-level evidence that the relaxation of borrowing constraints may strengthen racial segregation. In other words, the expansion of credit supply may not be 'a tide that lifts all boats', as the credit boom may have led to adverse welfare consequences even prior to the credit bust.

The distributional impacts of the credit bust are well established. During the four-year period between the beginning of the Great Recession in 2007 and 2011, more than half of all families lost more than 25% of their wealth (Danziger, Pfeiffer, Danziger, and Schoeni, 2013). While wealth declined at all percentiles of the distribution, the largest relative wealth losses were experienced by households already at the bottom of the wealth distribution, thus further widening the wealth dispersion. Danziger et al. (2013) documents that the median wealth of households in the bottom quintile fell up to 2011 to reach 26% of its 2003 level, while the median wealth held by the top quintile fell to 81% of its 2003 level.

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The Great Recession led to a widening of racial wealth gaps and a reversal of the relative gains of minority households of the late 1990s. The White-Black wealth ratio declined from a value of 12 in 1984 to 7 in 1995, reaching a historic low of 6 in 1998. The Hispanic-White wealth ratio experienced a more modest decline during the same period, from 8 to 7. The Great Recession led to more than a doubling of this wealth ratio for Blacks, and an increase of 30% for Hispanics. In 2013, the median White household's net worth was 13 times that of the median Black household and 10 times that of the median Hispanic household (Kochhar & Fry 2014).

A decomposition of wealth changes sheds light on the drivers of widening inequalities. Changes in net wealth NW_{it} are driven by shifts in asset prices, weighed by asset holdings in bonds, stocks, and housing, as well as changes in debt liabilities.

$$NW_{it} = p_{stocks,t} \cdot S_{i,t} + p_{bonds,t} \cdot B_{i,t} + p_{housing,t} \cdot H_{i,t} - r_t \cdot D_{i,t}$$

with $S_{i,t}$ stock holdings, $B_{i,t}$ bond holdings, $H_{i,t}$ real estate ownership, $D_{i,t}$ household debt, and p and r the corresponding prices. Both stock prices $p_{stocks,t}$ and house prices $p_{housing,t}$ experienced sharp drops. The S&P 500 index lost 17% of its value between January 2006 and January 2010. The Case Shiller national house price index (resp. 20-city house price index) dropped 19% (resp. 28%). The sharpest drop in total household net worth (−19%) happened between 2007 and 2008. Both housing (−15.5%) and non-housing wealth (−22.7%) declined, with housing at about half of households' net worth.

The average decline in housing wealth masks considerable heterogeneity across space, racial and ethnic groups, and initial income levels. The heterogeneity is reflected in differences both in the households' portfolio composition and in the distribution of price drops. The spatial heterogeneity in housing wealth losses was partly driven by housing supply constraints, with stronger increases during the boom and declines during the bust in the least elastic metropolitan areas (Glaeser, Gyourko, and Saiz 2008); recent evidence also points towards land hoarding as a mechanism pushing house price volatility upwards in metropolitan areas with elastic housing supply.

Within metropolitan areas, the adverse effects of the decline in housing wealth are most strongly felt in specific neighborhoods rather than spread more or less evenly across space. This

spatial segregation of negative welfare impacts is driven by at least two mechanisms: first, foreclosed homes increase the supply of housing in the neighborhood, thus lowering the price of nearby properties (Hartley, 2014). Second, homeowners are less likely to invest in the maintenance and upkeep of foreclosed homes, leading to externalities on neighboring properties (Gerardi, Rosenblatt, Willen, and Yao, 2015). Further, careful empirical analysis has identified economically significant impacts of vacancies on crime in the vicinity of foreclosed properties (Cui and Walsh, 2015). Foreclosure externalities reinforce a dynamic of interacting segregation and inequality.

Housing-related wealth losses were also more acute among low-income and minority borrowers. Such losses are in great part explained by the highest fraction of minority households using high-cost mortgage loans, even controlling for credit score and other measures of creditworthiness (Bayer, Ferreira, and Ross 2016). This descriptive fact is the consequence of both an adverse match of lenders to borrowers, and a worse treatment of minority borrowers by lenders with similar characteristics but a different race or ethnicity. The larger losses of minority households are compounded by the greater share of housing wealth in minority households' net position, even as minority households typically held smaller equity in their housing investments.

An overall assessment of the net distributional impact of the boom and the bust remains beyond the scope of this paper. Nevertheless, an assessment of descriptive statistics on (i) the wealth distribution, (ii) homeownership, housing equity, and household leverage, and (iii) segregation, can shed light on the net welfare impacts of the 2000-2010 credit boom and bust cycle.

First, the wealth share of the top 1% wealth holders rose from 32% to 40% during this period. Second, while the homeownership rate is almost identical in 2000 and in 2010 at 67.1%, the Black homeownership rate declined by 1.8 percentage points, from 47.4% to 45.6%, the Hispanic homeownership rate increased by 3 percentage points, from 45.7% to 48.5%, and the White homeownership rate increased by 1.1 percentage points, from 73.4% to 74.5%. Third, while overall urban racial segregation declined through a greater exposure of Whites, Blacks, and Asians to Hispanics, Blacks exposure to Whites remained virtually constant. In 2000 as in

2010, the average Black resident lives in a neighborhood (census tract) that is 35% White, substantially below the national share of Whites in U.S. population, which stood at 72.4% in 2010.

5. Concluding Remarks

The literature on financial development, financial crises, and economic growth has considerably evolved in the last 20 years. The initial disconnect, with one literature focusing on the role of financial depth on long-run growth and another studying its impact on volatility and crisis, has given way to a more nuanced literature that analyzes the two phenomena in an integrated framework. The main finding of this literature is the existence of a trade-off between higher growth and higher crisis risk and the conclusion that, for at least middle-income countries, the positive growth effects outweigh the negative crisis risk impact.

This balanced view has been revisited recently, especially for advanced economies. A number of findings support the notion of "too much finance," suggesting that there might be a threshold beyond which financial depth becomes detrimental to growth even in tranquil times, by crowding out other productive activities and misallocating resources within and across economies. While these results are important and must be considered in the design of financial regulation in advanced countries, we should not forget that the trade-off is alive and strong for a large share of the world economy, providing a useful framework to assess the impact of policies targeting financial deepening, diversity, and inclusion (World Bank, 2013).

The discussion on the existence of a growth/risk trade-off is also relevant when we look at within-country distributional impacts of financial deepening and financial crises. For instance, U.S. policy makers, who pushed in the 1990s for a large expansion of credit to less creditworthy borrowers, believed that it could bring a host of socio-economic benefits, especially for the poor and minorities. The evidence shows, first, that these policies did not sufficiently account for the trade-off inherent in financial deepening and inclusion: without proper financial regulation and supervision, the expansion of household mortgage credit led to a massive financial crisis. More controversially, there is some evidence that these financial liberalization policies in the U.S. have had, through general equilibrium effects, adverse effects on the

dynamics of segregation during the credit boom and a widening of wealth gaps during the bust and its aftermath.

What is the likely direction of future research? First, it will consider a larger heterogeneity of agents and impacts of financial deepening. Recent advances in both the static and dynamic modeling of household consumption decisions are pushing the frontier in the analysis of the distributional impacts of credit supply. The progress has been twofold: (i) dynamic and static models that feature rich household heterogeneity in preferences, consumption patterns, and price responses have been introduced (Bajari, Chan, Krueger, and Miller, 2013, Landvoigt, Piazzesi, and Schneider, 2015, and Ouazad and Rancière 2017), and (ii) newly available household panel data, particularly in the context of real estate tax and deeds files, has enabled the estimation of such dynamics using the most recent developments in the econometrics of discrete choice panels (Kuminoff, Smith, Timmins, 2013, and Baltagi and Bresson, 2017). Key topics in future contributions include the interaction of credit constraints, lenders' and households' beliefs, and life-cycle dynamics. The challenge will be to relate these heterogenous effects and complex interactions to macroeconomic outcomes regarding economic growth and crisis risk.

Second, from an applied perspective, new research will likely be directed at evaluating and proposing a fresh set of financial policies. Unlike the Great Depression, the Great Recession was immediately followed by massive bailouts and unconventional monetary policies. Some specialists have argued that these policy responses contributed to making the consequences of the recession less severe than those of the great depression. Looking forward, however, these large bailouts have created a dangerous precedent, that is, a potential source of moral hazard that could strongly affect the outcome of the tradeoff between higher growth and higher crisis risk. Research on financial regulation should consider policy design in a world where the commitment not to bailout is not time consistent. Freixas and Rochet (2013), Ranciere, Tornell (2016) are early examples of this growing research agenda. More generally, however, policy relevant research should be addressed at evaluating and proposing a set of measures that realistically balances the growth and crisis effects, as well as the innovation and risk potential, inherent in financial development.

References

Acemoglu, Daron, and Fabrizio Zilibotti. "Was Prometheus unbound by chance? Risk, diversification, and growth." Journal of political economy 105, no. 4 (1997): 709-751.

Adasme, Osvaldo, Giovanni Majnoni, and Myriam Uribe. 2006. "Access and Risk: Friends or Foes? Lessons from Chile." Policy Research Working Paper 4003, World Bank, Washington, DC.

Aghion, Philippe, George-Marios Angeletos, Abhijit Banerjee and Kalina Manova. 2010. "Volatility and growth: Credit constraints and the composition of investment". Journal of Monetary Economics, 57 (3): 246-265. http://dx.doi.org/10.1016/j.jmoneco.2010.02.005.

Aghion, Philippe, Peter Howitt, David Mayer-Foulkes. 2005. "The effect of financial development on convergence: Theory and evidence". Quarterly Journal of Economics, 323–351.

Aguiar, Mark, and Gita Gopinath. 2007. "Emerging market business cycles: The cycle is the trend." Journal of political Economy 115 (1): 69-102.

Akinlo, Anthony Enisan, and Tajudeen Egbetunde. 2010. "Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited." The Review of Finance and Banking, 2(1).

Allen, Franklin, Thorsten Beck, Elena Carletti, Philip R. Lane, Dirk Schoenmaker and Wolf Wagner. 2011. Cross-border banking in Europe: implications for financial stability and macroeconomic policies. CEPR, 2011.

Allen, Franklin and Douglas Gale. 1999. "Bubbles, crises, and policy." Oxford Review of Economic Policy 15 (3): 9-18. doi: 10.1093/oxrep/15.3.9

Allen, Franklin and Douglas Gale. 2000. "Bubbles and crises." The Economic Journal 110 (460): 236–55. doi:10.1111/1468-0297.00499.

Ang, James B. 2008. "A survey of recent developments in the literature of finance and growth." Journal of economic Surveys 22 (3): 536-576.

Ang, James B. 2009. "Financial development and the FDI–growth nexus: the Malaysian experience". Applied Economics, 41 (13): 1595-1601.

Ang, James B., and Warwick J. McKibbin. 2007. "Financial Liberalization, Financial Sector Development and Growth: Evidence from Malaysia." Journal of Development Economics 84 (1): 215–33. doi:10.1016/j.jdeveco.2006.11.006.

Antonakakis, Nikolas and Harald Badinger. 2016. "Economic growth, volatility, and cross-country spillovers: New evidence for the G7 countries". Economic Modelling, 52, Part B: 352-365. http://dx.doi.org/10.1016/j.econmod.2015.08.035.

Arcand, Jean-Louis and Berkes, Enrico and Panizza, Ugo. 2015. "Too Much Finance?" Journal of Economic Growth 20 (2): 105-148. doi:10.1007/s10887-015-9115-2

Arestis, Philip, and Panicos Demetriades. 1997. "Financial Development and Economic Growth: Assessing the Evidence." The Economic Journal 107 (442): 783–99.

Badinger, Harald. 2010. "Output volatility and economic growth". Economics Letters 106 (1): 15-18, http://dx.doi.org/10.1016/j.econlet.2009.09.012.

Bajari, Patrick, et al. "A dynamic model of housing demand: Estimation and policy implications." International Economic Review 54.2 (2013): 409-442.

Baltagi, Badi H., and Georges Bresson. "Modelling Housing Using Multi-Dimensional Panel Data." The Econometrics of Multi-Dimensional Panels. Springer, Cham, 2017. 349-376.

Barajas, Adolfo, Ralph Chami, and Seyed Reza Yousefi. 2016. "The Finance and Growth Nexus Re-Examined: Do All Countries Benefit Equally?" Journal of Banking and Financial Economics 1 (5): 5-38.

Barro, Robert J. 2001. "Economic growth in East Asia before and after the financial crisis" (No. w8330). National Bureau of Economic Research.

Bayer, P., Ferreira, F. & Ross, S. L. (2016), What drives racial and ethnic differences in high cost mortgages? the role of high risk lenders, Technical report, National Bureau of Economic Research.

Beck, Roland, Georgios Georgiadis, Roland Straub. 2014. The finance and growth nexus revisited, Economics Letters 124 (3): 382-385. http://dx.doi.org/10.1016/j.econlet.2014.06.024.

Beck, Thorsten, Buyukkarabacak Berrak , Rioja Felix, and Neven Valev, 2012   "Who Gets the Credit? And Does It Matter? Household vs Firm Lending accross Countries," B.E. Journal of Macroeconomics: Contributions 12, May 2012.

Beck, Thorsten, Hans Degryse, and Christiane Kneer. 2014. "Is more finance better? Disentangling intermediation and size effects of financial systems." Journal of Financial Stability 10: 50-64. http://dx.doi.org/10.1016/j.jfs.2013.03.005.

Thorsten Beck & Asli Demirgüç-Kunt & Vojislav Maksimovic, 2005. "Financial and Legal Constraints to Growth: Does Firm Size Matter?," Journal of Finance, American Finance Association, vol. 60(1), pages 137-177, 02.

Beck, Thorsten, Mattias Lundberg, and Giovanni Majnoni. 2006. "Financial Intermediary Development and Growth Volatility: Do Intermediaries Dampen or Magnify Shocks?" Journal of International Money and Finance 25 (7): 1146–67. doi:10.1016/j.jimonfin.2006.08.004.

Beck, Thorsten, Ross Levine, and Norman Loayza. 2000. "Finance and the Sources of Growth." Special Issue on International Corporate Governance 58 (1–2): 261–300. doi:10.1016/S0304-405X(00)00072-6.

Beck, Thorsten, Buyukkarabacak Berrak , Rioja Felix, and Neven Valev, 2012   "Who Gets the Credit? And Does It Matter? Household vs Firm Lending accross Countries," B.E. Journal of Macroeconomics: Contributions 12, May 2012.

Beck, Thorsten, Tao Chen, Chen Lin, and Frank M. Song. 2016. "Financial innovation: The bright and the dark sides" Journal of Banking & Finance 72: 28-51. http://dx.doi.org/10.1016/j.jbankfin.2016.06.012.

Beck, Thorsten. 2012. "The Role of Finance in Economic Development: Benefits, Risks, and Politics". Oxford Handbooks Online 2012-11-21. Oxford University Press. Date of access 21 Mar. 2017. http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195391176.001.0001/oxfordhb-9780195391176-e-7.

Beck, Thorsten. Bank competition and financial stability: friends or foes? No. 4656. The World Bank, 2008.

Becker, G. S. (1957), The economics of discrimination, University of Chicago press.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundbladl. 2005. "Does financial liberalization spur growth?" Journal of Financial Economics 77 (1): 3-55. http://dx.doi.org/10.1016/j.jfineco.2004.05.007.

Benabou, R. (1996), `Equity and efficiency in human capital investment: the local connection', The Review of Economic Studies 63(2), 237 264.

Bencivenga, Valerie R. and Bruce D. Smith, 1991, "Financial Intermediation and Endogenous Growth", The Review of Economic Studies, Vol. 58, No. 2, pp. 195-209

Benhabib, Jess and Mark M. Spiegel. 2000. "The role of financial development in growth and investment." Journal of Economic Growth 5: 341. doi:10.1023/A:1026599402490

Berthelemy, Jean-Claude and Aristomene Varoudakis. 1996. "Economic Growth, Convergence Clubs, and the Role of Financial Development". Oxford Economic Papers 48 (2): 300-328. http://EconPapers.repec.org/RePEc:oup:oxecpp:v:48:y:1996:i:2:p:300-328.

Bertrand, M. & Morse, A. (2016), `Trickle-down consumption', Review of Economics and Statistics 98(5), 863 879.

Bloom, Nicholas, Max Floetotto, Nir Jaimovich, Itay Saporta-Eksten, and Stephen J. Terry. 2012. "Really uncertain business cycles". No. w18245. National Bureau of Economic Research.

Bloom, Nicholas. 2009. "The Impact of Uncertainty Shocks". Econometrica, 77: 623–685. doi:10.3982/ECTA6248

Borio, Claudio, and Piti Disyatat. 2011. "Global Imbalances and the Financial Crisis: Link or No Link?" Bank for International Settlements. http://EconPapers.repec.org/RePEc:bis:biswps:346.

Borio, Claudio, Craig Furfine, and Philip Lowe. 2001. "Procyclicality of the Financial System and Financial Stability: Issues and Policy Options."

Borio, Claudio. 2014. "The financial cycle and macroeconomics: What have we learnt?" Journal of Banking & Finance 45: 182-198. http://dx.doi.org/10.1016/j.jbankfin.2013.07.031.

Brown, M., Scholz, J. K. & Seshadri, A. (2011), `A new test of borrowing constraints for education', The Review of Economic Studies p. rdr032.

Brüeckner, Markus, and Francisco Carneiro. 2015. "The effects of volatility, fiscal policy cyclicality and financial development on growth: evidence for the Eastern Caribbean." Policy Research Working Paper No.7507. The World Bank: Washington DC.

Brunnermeier, Markus K., Thomas M. Eisenbach, and Yuliy Sannikov. 2013. "Macroeconomics with Financial Frictions: A Survey" in Daron Acemoglu, Manuel Arellano and Eddie Dekel (eds.), Advances in Economics and Econometrics, Tenth World Congress of the Econometric Society, Vol. II: Applied Economics, Cambridge University Press, New York, pp. 4-94.

Caldera-Sanchez, Aida and Filippo Gorri, (2016) "Can reforms promoting growth increase financial fragility?" OECD WP 1340.

Caldera-Sanchez, Aida and Filippo Gorri, (2016) "Can reforms promoting growth increase financial fragility?" OECD WP 1340

Caldera-Sanchez, De Serre, Alain, Filippo Gorri, Mikkel Hermansen, and Oliver Röhn 2016, " Strengthening economic resilience: Insights from the post-1970 record of severe recessions and financial crises", OECD Economic Paper 20

Calderón, César, and Lin Liu. 2003. "The Direction of Causality between Financial Development and Economic Growth." Journal of Development Economics 72 (1): 321–34. doi:10.1016/S0304-3878(03)00079-8.

Calvo, Guillermo. 1998. "Capital Flows and Capital Market Crises: The Simple Economics of Sudden Stops." Journal of Applied Economics 1 (1): 35-54

Card, D., Mas, A. & Rothstein, J. (2008), `Tipping and the dynamics of segregation', The Quarterly Journal of Economics 123(1), 177 218.

Card, D. & Rothstein, J. (2007), `Racial segregation and the black white test score gap', Journal of Public Economics 91(11), 2158 2184.

Cecchetti, Stephen G. and Kharroubi, Enisse. 2015. "Why Does Financial Sector Growth Crowd Out Real Economic Growth?". CEPR Discussion Paper No. DP10642. Available at SSRN: https://ssrn.com/abstract=2615882

Cecchetti, Stephen G., Marion Kohler, and Christian Upper. 2009. "Financial crises and economic activity," Proceedings - Economic Policy Symposium - Jackson Hole, Federal Reserve Bank of Kansas City, pp. 89-135.

Chakraborty, Indraneel and Goldstein, Itay and MacKinlay, Andrew. 2018 « Housing Price Booms and Crowding-Out Effects in Bank Lending. » Review of Financial Studies, Forthcoming.

Chang, Roberto and Andres Velasco. 2001. "A Model of Financial Crises in Emerging Markets." The Quarterly Journal of Economics 116 (2):489-517. https://doi.org/10.1162/00335530151144087

Christopoulos, Dimitris K, and Efthymios G Tsionas. 2004. "Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests." Journal of Development Economics 73 (1): 55–74. doi:10.1016/j.jdeveco.2003.03.002.

Claessens, Stijn, Giovanni Dell'Ariccia, Deniz Igan, and Luc Laeven. 2010. "Cross-country experiences and policy implications from the global financial crisis." Econ Policy 2010; 25 (62): 267-293. doi: 10.1111/j.1468-0327.2010.00244.

Claessens, Stijn, Hui Tong, and Shang-Jin Wei. 2012. "From the financial crisis to the real economy: Using firm-level data to identify transmission channels." Journal of International Economics 88(2): 375-387. http://dx.doi.org/10.1016/j.jinteco.2012.02.015.

Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones. 2012. "How do business and financial cycles interact?" Journal of International Economics 87 (1): 178-190. http://dx.doi.org/10.1016/j.jinteco.2011.11.008.

Cochrane, John. 2010. "Lessons from the Financial Crisis." *Regulation.* Winter 2009-10: 34-37. http://blogs.unwe.bg/vyotzov/files/2013/03/Lessons-from-the-financial-crisis.pdf

Cournede, Boris and Denk, Oliver and Hoeller, Peter, Finance and Inclusive Growth (June 1, 2015). OECD Economic Policy Paper, No. 14. Available at SSRN: https://ssrn.com/abstract=2649801 or http://dx.doi.org/10.2139/ssrn.2649801

Cournède, Boris and Oliver Denk. 2015. "Finance and economic growth in OECD and G20 countries". OECD Economics Department Working Papers No. 1223. OECD Publishing, Paris. http://dx.doi.org/10.1787/5js04v8z0m38-en

Cui, L. & Walsh, R. (2015), `Foreclosure, vacancy and crime', Journal of Urban Economics 87, 72 84.

Cull, Robert, Asli Demirgüç-Kunt, and Timothy Lyman. 2012. "Financial Inclusion and Stability: What Does Research Show?" The World Bank. http://EconPapers.repec.org/RePEc:wbk:wboper:9443.

Danziger, S., Pfeiffer, F. T., Danziger, S. & Schoeni, R. F. (2013), `Wealth disparities before and after the great recession', The Annals of the American Academy of Political and Social Science 650(1), 98 123.

Deidda, Luca, and Bassam Fattouh. 2002. "Non-Linearity between Finance and Growth." Economics Letters 74 (3): 339–45. doi:10.1016/S0165-1765(01)00571-7.

Dell'Ariccia, Giovanni, Deniz Igan & Luc Laeven & Hui Tong, 2016. "Credit booms and macrofinancial stability," Economic Policy, CEPR;CES;MSH, vol. 31(86), pages 299-355.

Demetriades, Panicos O. and Khaled A. Hussein. 1996. Does financial development cause economic growth? Time-series evidence from 16 countries, Journal of Development Economics, Volume 51, Issue 2, December 1996, Pages 387-411, ISSN 0304-3878, http://dx.doi.org/10.1016/S0304-3878(96)00421-X. (http://www.sciencedirect.com/science/article/pii/S030438789600421X)

Demirgüç-Kunt, Asli and Enrica Detragiache. 1997. "The Determinants of Banking Crises in Developing and Developed Countries," IMF Staff Papers, 45: 81–109.

Demirgüç-Kunt, Asli and Feyen and Levine. 2011. "The Evolving Importance of Banks and Securities Markets." Policy Research Working Paper No.5805. The World Bank: Washington DC.

Demirgüç-Kunt, Asli and Maksimovic. 1998. "Law, Finance and Firm Growth." The Journal of Finance 53 (6): 2107-2137.

Dornbusch, Rudiger, Ilan Goldfajn, and Rodrigo O. Valdés. 1995. "Currency Crises and Collapses". Brookings Papers on Economic Activity 26 (2):219-293.

Drezner, Z. & Farnum, N. (1993), `A generalized binomial distribution', Communications in Statistics-Theory and Methods 22(11), 3051 3063.

Eden, Maya. 2016. "Excessive Financing Costs in a Representative Agent Framework." *American Economic Journal: Macroeconomics*, 8(2): 215-237.

Eschenbach, F, Francois, J. 2002. 'Financial Sector Competition, Services Trade, and Growth'. London, Centre for Economic Policy Research. http://www.cepr.org/active/publications/discussion_papers/dp.php?dpno=3573

Farhi, Emmanuel and Jean Tirole. 2012. "Collective Moral Hazard, Maturity Mismatch, and Systemic Bailouts." American Economic Review, 102(1): 60-93.

Favara, Giovanni. 2003. "An Empirical Reassessment of the Relationship Between Finance and Growth". IMF Working Paper No. 03/123: 1-47. Available at SSRN: https://ssrn.com/abstract=879199

Forbes, Kristin, and Michael Klein. 2015. "Pick Your Poison: The Choices and Consequences of Policy Responses to Crises." IMF Econ Rev 63: 197. doi:10.1057/imfer.2015.2

Fountas, Stilianos and Menelaos Karanasos. 2008. "Are economic growth and the variability of the business cycle related? Evidence from five European countries". International Economic Journal, 22 (4): 445-459, DOI: 10.1080/10168730802497478

Xavier Freixas & Jean-Charles Rochet, 2013. "Taming Systemically Important Financial Institutions," Journal of Money, Credit and Banking, Blackwell Publishing, vol. 45, pages 37-58, 08.

Gabaix, Xavier, and Augustin Landier, 2008. "Why has CEO Pay Increased So Much?" The Quarterly Journal of Economics 123(1): 49-100.

Gambacorta, L., Yang, J. and Tsatsaronis, K., 2014. Financial structure and growth1. BIS Quarterly Review, p.21.

Garretsen, H., Lensink, R. and Sterken, E. .2004. Growth, financial development, societal norms and legal institutions. Journal of International Financial Markets, Institutions and Money 14: 165–183.

Gerardi, K., Rosenblatt, E., Willen, P. S. & Yao, V. (2015), `Foreclosure externalities: New evidence', Journal of Urban Economics 87, 42 56.

Gertler, Mark, and Nobuhiro Kiyotaki. 2010. "Financial Intermediation and Credit Policy in Business Cycle Analysis," in Handbook of Monetary Economics, ed. by B. M. Friedman, and M. Woodford, vol. 3, chap. 11, pp. 547–599. Elsevier

Ghirmay, Teame. 2004. "Financial Development and Economic Growth in Sub-Saharan African Countries: Evidence from Time Series Analysis." African Development Review, 16: 415–432. doi:10.1111/j.1017-6772.2004.00098.

Glaeser, E. L., Gyourko, J. & Saiz, A. (2008), `Housing supply and housing bubbles', Journal of urban Economics 64(2), 198 217.

Gourinchas Pierre-Olivier, & Rodrigo Valdes & Oscar Landerretche, 2001. "Lending Booms: Latin America and the World," ECONOMIA, vol. 0(Spring 20), pages 47-100, January

Graff Michael, and Alexander Karmann. 2006. "What Determines the Finance-growth Nexus? Empirical Evidence for Threshold Models". Journal of Economics, 87 (2): 127-157.

Guiso, Luigi, Paola Sapienza, Luigi Zingales 2004. "Does Local Financial Development Matter?" Q J Econ 119 (3): 929-969. doi: 10.1162/0033553041502162

Haiss, Peter, Hannes Juvan, and Bernhard Mahlberg. 2016. "The Impact of Financial Crises on the Finance–Growth Relationship: A European Perspective". Economic Notes, 45: 423–444. doi:10.1111/ecno.12067

Han, Rui; Melecky, Martin. 2013. Financial inclusion for financial stability: access to bank deposits and the growth of deposits in the Global Financial Crisis. Policy Research working paper; no. WPS 6577. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/850681468325448388/Financial-inclusion-for-financial-stability-access-to-bank-deposits-and-the-growth-of-deposits-in-the-Global-Financial-Crisis

Harris, Richard D.F. 1997. "Stock markets and development: A re-assessment". European Economic Review 41 (1): 139-146. http://dx.doi.org/10.1016/S0014-2921(96)00021-9.

Hartley, D. (2014), `The effect of foreclosures on nearby housing prices: Supply or dis- amenity?', Regional Science and Urban Economics 49, 108 117.

Hassan, M. Kabir, Benito Sanchez, and Jung-Suk Yu. 2011. "Financial Development and Economic Growth: New Evidence from Panel Data." The Quarterly Review of Economics and Finance 51 (1): 88–104. doi:10.1016/j.qref.2010.09.001.

Heckman, J. J., Lochner, L. & Taber, C. (1999), General equilibrium cost bene t analysis of education and tax policies, Technical report, National bureau of economic research.

Higgins, Matthew, and Carol Osler. 1997. "Asset market hangovers and economic growth: the OECD during 1984-93". Oxf Rev Econ Policy 1997; 13 (3): 110-134. doi: 10.1093/oxrep/13.3.110

Hnatkovska, Viktoria, and Norman Loayza. 2005. "Volatility and Growth". In: Managing Economic Volatility and Crises: A Practitioner's Guide. Ed. by J. Aizenman and B. Pinto. Cambridge: Cambridge University Press, pp.65–100.

James J. Heckman, 1978, "Dummy Endogenous Variables in a Simultaneous Equation System" Econometrica, Vol. 46, No. 4 (July, 1978), pp. 931-959

Jayaratne and Strahan. 1995. "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation." Federal Reserve Bank of New York Research Paper No. 9513.

Imbs, Jean. 2007. "Growth and volatility", Journal of Monetary Economics 54 (7): 1848-1862, ISSN 0304-3932, http://dx.doi.org/10.1016/j.jmoneco.2006.08.001.

Jordà, Òscar, Moritz Schularick, and Alan M. Taylor. 2011. "Financial crises, credit booms, and external imbalances: 140 years of lessons." IMF Economic Review 59, no. 2 (2011): 340-378.

Kaminsky, Graciela L. and Carmen M. Reinhart. 1999. "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems." American Economic Review 89(3): 473-500.

Kaminsky, Graciela L. , Carmen M. Reinhart, and Carlos A. Végh. 2004 « When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies » NBER Macroeconomics Annual 19:, 11-53

Kendall, Jake. "Local financial development and growth." 2012. Journal of Banking & Finance 36 (5):1548-1562. http://dx.doi.org/10.1016/j.jbankfin.2012.01.001.

Khalifa Al-Yousif, Yousif. 2002. "Financial Development and Economic Growth: Another Look at the Evidence from Developing Countries." Review of Financial Economics 11 (2): 131–50. doi:10.1016/S1058-3300(02)00039-3.

Khan, Aubhik. 2001. "Financial Development and Economic Growth." Macroeconomic Dynamics 5 (3): 413–33.

Kharroubi, Enisse. 2007. "Crises, Volatility, and Growth". World Bank Econ Rev, 21 (3): 439-460. doi: 10.1093/wber/lhm015

King, Robert G. and Ross Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." The Quarterly Journal of Economics 108 (3):717-737.

Kochhar, R. & Fry, R. (2014), `Wealth inequality has widened along racial, ethnic lines since end of great recession', Pew Research Center 12.

Koren, Miklós, and Silvana Tenreyro. 2007. "Volatility and Development". The Quarterly Journal of Economics 2007; 122 (1): 243-287. doi: 10.1162/qjec.122.1.243

Krysan, M. & Farley, R. (2002), `The residential preferences of blacks: Do they explain persistent segregation?', Social Forces 80(3), 937 980.

Kumhof, Michael, Romain Rancière and Pablo Winant. 2015. "Inequality, Leverage, and Crises." American Economic Review, 105(3): 1217-45.

Kuminoff, Nicolai V., V. Kerry Smith, and Christopher Timmins. "The new economics of equilibrium sorting and policy evaluation using housing markets." Journal of Economic Literature 51.4 (2013): 1007-1062.

Krugman, Paul. 1999. "Balance Sheets, the Transfer Problem, and Financial Crises." *International Tax and Public Finance*, 6(4): 459–472.

Landvoigt, Tim, Monika Piazzesi, and Martin Schneider. "The Housing Market (s) of San Diego." The American Economic Review 105.4 (2015): 1371.

Langfield, S, and M Pagano (2016), "Bank bias in Europe: Effects on systemic risk and growth", Economic Policy, 31(85): 51-106.

Law, Siong Hook and Nirvikar Singh. 2014. "Does too much finance harm economic growth?" Journal of Banking & Finance 41: 36-44. http://dx.doi.org/10.1016/j.jbankfin.2013.12.020.

Leahy, Michael, Sebastian Schich, Gert Wehinger, Florian Pelgrin, and Thorsteinn Thorgeirsson. 2001. "Contributions of Financial Systems to Growth in OECD Countries". OECD Economics Department Working Papers, No. 280, OECD Publishing, Paris. http://dx.doi.org/10.1787/888167575648

Levine, Ross. 1997. "Financial development and economic growth: Views and agenda." Journal of Economic Literature 35: 688-726.

Levine, Ross. 2002. "Bank-based or market-based financial systems: Which is better?" Journal of Financial Intermediation 11(4): 398-428.

Levine, Ross. 2005. Chapter 12 Finance and Growth: Theory and Evidence, In: Philippe Aghion and Steven N. Durlauf, Editor(s), Handbook of Economic Growth, Elsevier, Volume 1, Part A: 865-934. http://dx.doi.org/10.1016/S1574-0684(05)01012-9.

Levine, Ross, Norman Loayza, Thorsten Beck. 2000. Financial intermediation and growth: Causality and causes, Journal of Monetary Economics, Volume 46, Issue 1, August 2000, Pages 31-77, ISSN 0304-3932, http://dx.doi.org/10.1016/S0304-3932(00)00017-9. (http://www.sciencedirect.com/science/article/pii/S0304393200000179)

Levine, Ross, and Sara Zervos. 1998. "Stock markets, banks, and economic growth." The American Economic Review 88(3): 537-558.

Levine, R., Levkov, A. & Rubinstein, Y. (2008), Racial discrimination and competition, Technical report, National Bureau of Economic Research.

Liang, Qi, and Jian-Zhou Teng. 2006. "Financial Development and Economic Growth: Evidence from China." China Economic Review 17 (4): 395–411. doi:10.1016/j.chieco.2005.09.003.

Loayza, Norman V. and Claudio Raddatz. 2007. "The Structural Determinants of External Vulnerability". World Bank Econ Rev 2007; 21 (3): 359-387. doi: 10.1093/wber/lhm018

Loayza, Norman V., and Romain Rancière. "Financial Development, Financial Fragility, and Growth." Journal of Money, Credit and Banking 38, no. 4 (2006): 1051-076. http://www.jstor.org/stable/3838993.

Loayza, Norman V., and Romain Rancière. 2006. "Financial Development, Financial Fragility, and Growth." Journal of Money, Credit and Banking 38 (4): 1051-076. http://www.jstor.org/stable/3838993.

Loayza, Norman V., Romain Rancière, Luis Servén, and Jaume Ventura. 2007. "Macroeconomic Volatility and Welfare in Developing Countries: An Introduction." The World Bank Economic Review 21 (3): 343–57. doi:10.1093/wber/lhm017.

Levchenko, Andrei A. & Rancière, Romain & Thoenig, Mathias, 2009. "Growth and risk at the industry level: The real effects of financial liberalization," Journal of Development Economics, Elsevier, vol. 89(2), pages 210-222, July.

Lucas, Robert E., Jr. (1987). Models of Business Cycles. Oxford: Blackwell.

Love, Inessa. 2003. "Financial development and financing constraints: International evidence from the structural investment model." Review of Financial Studies 16 (3): 765-791.

Luintel, Kul B., and Mosahid Khan. 1999. "A Quantitative Reassessment of the Finance–growth Nexus: Evidence from a Multivariate VAR." Journal of Development Economics 60 (2): 381–405. doi:10.1016/S0304-3878(99)00045-0.

Obstfeld, Maurice, 1994, "Risk-Taking, Global Diversification, and Growth." The American Economic Review, Vol. 84, No. 5. pp. 1310-1329

Ouazad, Amine, and Romain Rancière, 2016. "Credit Standards and Segregation," The Review of Economics and Statistics, vol. 98(5), pages 880-896.

Macovei, Mihai. 2009. "Growth and economic crises in Turkey: leaving behind a turbulent past?" (No. 386). Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.

McCaig, Brian, and Thanasis Stengos. 2005. "Financial Intermediation and Growth: Some Robustness Results." Economics Letters 88 (3): 306–12. doi:10.1016/j.econlet.2004.12.031.

McFadden, D. L. (1984), `Econometric analysis of qualitative response models', Handbook of econometrics 2, 1395 1457.

Mian, Atif, Amir Sufi, and Emil Verner, 2017. "Household Debt and Business Cycles Worldwide," The Quarterly Journal of Economics, vol 132(4), pages 1755-1817

Morgan, Peter, and Victor Pontines. 2014. "Financial Stability and Financial Inclusion." Asian Development Bank Institute. https://ideas.repec.org/p/ris/adbiwp/0488.html.

Obstfeld, Maurice. 2009. "International Finance and Growth in Developing Countries: What Have We Learned?" NBER Working Paper Series: 14691.

Odedokun, M.O. 1996. "Alternative Econometric Approaches for Analysing the Role of the Financial Sector in Economic Growth: Time-Series Evidence from LDCs." Journal of Development Economics 50 (1): 119–46. doi:10.1016/0304-3878(96)00006-5.

Ouazad, A. & Rancière, R. (2016a), City equilibrium with borrowing constraints: General equilibrium effects, Technical report, USC-INET Research Paper.

Ouazad, A. & Rancière, R. (2016b), `Credit standards and segregation', Review of Economics and Statistics 98(5), 880 896.

Manganelli, Simone & Popov, Alexander, 2015. "Financial development, sectoral reallocation, and volatility: International evidence," Journal of International Economics, Elsevier, vol. 96(2), pages 323-337.

Pasali, Selahattin Selsah. 2013. "Where is the cheese? Synthesizing a giant literature on causes and consequences of financial sector development." Policy Research working paper; no. WPS 6655. Washington, DC: World Bank.

http://documents.worldbank.org/curated/en/730041468152101741/Where-is-the-cheese-synthesizing-a-giant-literature-on-causes-and-consequences-of-financial-sector-development

Pesaran, M. Hashem & Smith, Ron, 1995. "Estimating long-run relationships from dynamic heterogeneous panels," Journal of Econometrics, Elsevier, vol. 68(1), pages 79-113, July.

Philippon, T., (2010), "Financiers versus Engineers: Should the Financial Sector be Taxed or Subsidized?", *American Economic Journal: Macroeconomics, 2(3), 158-182*.

Philippon, Thomas and Ariell Reshef. 2013. "An international look at the growth of modern finance." The Journal of Economic Perspectives, 27(2): 73-96.

Philippon, T. and A. Reshef, (2012) "Wages and Human Capital in the U.S. Finance Industry: 1909-2006", *Quarterly Journal of Economics, 127(4), 1551-1609*.

Popov, Alexander, " Credit Constraints, Equity Market Liberalization, and Growth Rate Asymmetry" Journal of Development Economics, 107(1), pp. 202–214, March 2014

Rajan, Raghuram G., and Luigi Zingales. 1998. "Financial Dependence and Growth." The American Economic Review 88 (3): 559-86. http://www.jstor.org/stable/116849.

Ram, Rati. 1999. "Financial Development and Economic Growth: Additional Evidence." The Journal of Development Studies 35 (4): 164–74. doi:10.1080/00220389908422585.

Ramey, Garey & Ramey, Valerie A, 1995. "Cross-Country Evidence on the Link between Volatility and Growth," American Economic Review, American Economic Association, vol. 85(5), pages 1138-1151, December.

Ranciere, Romain, Aaron Tornell, and Frank Westermann. 2006. "Decomposing the effects of financial liberalization: Crises vs. growth". Journal of Banking & Finance, 30 (12): 3331-3348. http://dx.doi.org/10.1016/j.jbankfin.2006.05.019.

Ranciere, Romain, A Tornell, F Westermann, 2008, "Systemic crises and growth", Quarterly Journal of Economics 123 (1), 359-406,

Ranciere Romain & Aaron Tornell, 2011. "Was the U.S. Crisis a Financial Black-Hole?" IMF Economic Review, Palgrave Macmillan;International Monetary Fund, vol. 59(2), pages 271-305, June.

Ranciere Romain & Aaron Tornell & Athanasios Vamvakidis, 2010. "Currency mismatch, systemic risk and growth in emerging Europe," Economic Policy, CEPR; CES; MSH, vol. 25, pages 597-658, October.

Rancière, Romain and Aaron Tornell. 2016. "Financial Liberalization, Debt Mismatch, Allocative Efficiency, and Growth." *American Economic Journal: Macroeconomics*, 8(2): 1-44.

Reinhart, Carmen M. and Kenneth S. Rogoff. 2008. "Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison." The American Economic Review, 98(2), 339-344. Retrieved from http://www.jstor.org/stable/29730044

Razin Assaf & Yona Rubinstein, 2006. "Evaluation of currency regimes: the unique role of sudden stops," Economic Policy, CEPR; CES; MSH, vol. 21(45), pages 119-152, 01.

Reinhart, Carmen M., and Kenneth S. Rogoff. This time is different: Eight centuries of financial folly. Princeton University Press, 2009.

Reinhart, Carmen M. and Kenneth S. Rogoff. 2008. "Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison." The American Economic Review 98(2), 339-344. http://www.jstor.org/stable/29730044.

Rioja, Felix, and Neven Valev. 2004. "Finance and the sources of growth at various stages of economic development". Economic Inquiry 42, 27–40

Rioja, Felix, and Neven Valev. 2004. "Does One Size Fit All?: A Reexamination of the Finance and Growth Relationship." Journal of Development Economics 74 (2): 429–47. doi:10.1016/j.jdeveco.2003.06.006.

Rodriguez, Cesar M. 2014. "Financial development, fiscal policy and volatility: Their effects on growth". The Journal of International Trade & Economic Development, 23(2): 223-266.

Romer, Christina D., and David H. Romer. 2015. "New evidence on the impact of financial crises in advanced countries". No. w21021. National Bureau of Economic Research.

Rose, Andrew K. and Mark M. Spiegel. 2011. Cross-country causes and consequences of the crisis: An update, European Economic Review, Volume 55, Issue 3, April 2011, Pages 309-324, ISSN 0014-2921, http://dx.doi.org/10.1016/j.euroecorev.2010.12.006.

Rousseau, Peter L., and Paul Wachtel. 2002. "Inflation thresholds and the finance-growth nexus". Journal of International Money and Finance, 21 (6): 777-793.

Rousseau, Peter L., and Paul Wachtel. 2011. "What is happening to the impact of financial deepening on economic growth?" Economic Inquiry, 49: 276–288. doi:10.1111/j.1465-7295.2009.00197.x

Sacerdote, B. (2011), Handbook of the Economics of Education, Vol. 3, Elsevier, 249-277 Peer Effects in Education: How Might They Work, How Big Are They and How Much Do We Know Thus Far?

Saiz, A. (2010), `The geographic determinants of housing supply', The Quarterly Journal of Economics 125(3), 1253 1296.

Schelling, T. C. (1971), `Dynamic models of segregation', Journal of mathematical sociology 1(2), 143 186.

Schularick, Moritz, and Alan M. Taylor. 2012. "Credit booms gone bust: monetary policy, leverage cycles, and financial crises, 1870–2008". The American Economic Review, 102(2), pp.1029-1061.

Shan, Jordan Z., Alan G. Morris, and Fiona Sun. 2001. "Financial Development and Economic Growth: An Egg-and-Chicken Problem?" Review of International Economics 9 (3): 443–54. doi:10.1111/1467-9396.00291.

Singh, Ajit. 1997. "Financial Liberalisation, Stockmarkets and Economic Development." The Economic Journal 107: 771-182.

Stiglitz, Joseph E. "Capital market liberalization, economic growth, and instability." World Development 28 (6): 1075-1086.

Taylor, Alan M. 2012. The great leveraging (No. w18290). National Bureau of Economic Research.

Tornell, Aaron and Westermann, Frank. 2005. Boom-Bust Cycles and Financial Liberalization, vol. 1, 1 ed., The MIT Press, http://EconPapers.repec.org/RePEc:mtp:titles:0262201593.

Tornell, Aaron, Frank Westermann, and Lorenza Martinez. 2003. "Liberalization, growth, and financial crises: Lessons from Mexico and the developing world." Brookings Papers on Economic Activity (2): 1-112.

Tornell, Aaron, Frank Westermann, and Lorenza Martinez. 2004. "The positive link between financial liberalization, growth and crises" (No. w10293). National Bureau of Economic Research.

Varela, Liliana, 2016, "Reallocation, Competition and Productivity: Evidence from a Financial Liberalization Episode" mimeo

Yilmazkuday, Hakan. 2011. Thresholds in the Finance-Growth Nexus: A Cross-Country Analysis. World Bank Econ Rev 25 (2): 278-295. doi: 10.1093/wber/lhr011

World Bank. 2013. World Development Report 2014: Risk and Opportunity—Managing Risk for Development. Washington, DC. https://openknowledge.worldbank.org/handle/10986/16092 License: CC BY 3.0 IGO."