Below, I review papers an ongoing work under three main themes. Papers can be downloaded using the hyperlinks.

Elite Capture of Financial Institutions and Firms

[1] *Banking System Control, Capital Allocation, and Economy Performance:* Elite capture of countries' financial systems argued to be the culprit in persistent underdevelopment or reversal of financial systems (Rajan and Zingales, 2003, 2004). La Porta, Lopez-de-Silanes, and Shleifer (1999) show that most large firms in most countries are controlled by wealthy families, therefore linking elite to business families may make sense. These families, by controlling financial institutions, may skew capital allocation in their favor and limit access to competitors. To explore these issues across countries, we measure the fraction of each country's largest banks, listed and unlisted, that is ultimately controlled by families. We find more predominantly family-controlled banking systems correlated with less efficient capital allocation. This result holds regardless of whether we gauge capital allocation quality as in Rajan and Zingales (1998), as in Wurgler (2000), or by nonperforming loans. In addition, family-controlled banking systems also correlate with financial instability and inequality, escaping the classic welfare economics trade-off between the two. We tentatively conclude that entrusting the control of large banks to business families provides capital allocation efficiency losses comparable to those associated with state-controlled banking, which is augmented by the inequality consequences associated with crony capitalism.

[10] *State-Controlled Banks, Money Growth and the Real Economy:* We examine how government control over banks affects bank's response to monetary policy. Money supply growth is thought to spur the real economy, at least in the short-run, by possibly stimulating credit growth and investment. However, there is large cross country variation in effectiveness of monetary policy. Often banks are seen as the conduit of monetary stimulation. However, banks' responses to a monetary stimulus depend on expectations about ensuing real effects: A value-maximizing bank expecting no real effect would rationally ignore the stimulus. Yet, a utility-maximizing bank manager's career concerns may also matter. In particular, state-run bank managers' lending policies are known to be susceptible to political influence (e.g., La Porta et. al. 2003; Sapienza 2004; Berger et. al. 2005; Dinc 2005; Carvalho 2014; Coleman and Feler, 2015). We find that state-run bank lending responds more to a given monetary stimulus compared to similar private sector banks, and its real effects are more evident. In economies with no large state-run banks, money growth appears to be neutral. Thus, state-run banks might be a policy tool for reducing social costs of business cycles. However, state control of banks clearly also correlates with socially costly long-run capital misallocation (e.g. La Porta et. al. 2002, 2003; Sapienza 2004; Berger et. al. 2005; Dinc 2005, Deng et al 2011; Morck et al. 2011; Carvalho 2014). Therefore, state-run banks are not *prima facia* welfare improving. However, a public policy trade-off may exist, with state-controlled banks rendering a monetary stimulus more effective in the short-run, but imposing long-term capital misallocation costs.

[11] *Investor Protection and Asset Prices:* It has been argued that investor protection affects stock returns, volatilities and interest rates. It is intuitive that investor protection can affect valuation of firms (Shleifer and Wolfenzon, 2002) however there is not much guidance on why it may affect expected returns and volatility. We develop a dynamic asset pricing model to shed light on the

empirical regularities and underlying mechanisms at play. Our model features a controlling shareholder who can divert a fraction of the firm's output. The diverted fraction is constrained by investor protection in the economy. This constraint becomes tighter with better protection and looser with higher stock holdings that increase the controlling shareholder's power over the firm. The dynamic accumulation of control and the ability of controlling shareholders to trade and rebalance their portfolios are new aspects of our work which creates a mechanism between investor protection and asset holdings, expected returns and volatility. In equilibrium, consistent with empirical evidence, imperfect investor protection implies higher stock holdings by controlling shareholders, lower stock returns, higher stock return volatilities and lower risk free rate.

[12] *The Hidden Cost of Banks within Family Conglomerates:* We explore how family control of banks may affect intra-group wealth transfers. While a bank is heavily scrutinized, its scope, lending capacity, and opacity could allow a family owner greater power to tunnel. Using a large sample of public and private firms from over 100 countries, we examine whether a bank plays a wealth-transfer role within a family conglomerate. Compared to unlinked family firms, family bank-linked firms exhibit a greater relation between owner rights and financial revenue; and greater financial-revenue sensitivity to its upstream-firm sales growth. The results are stronger in countries with weak anti-self-dealing practices and do not occur for non-family groups. The evidence suggests that family controlled banks could facilitate tunneling in family business groups.

[13] *Group Firms and Incorporation of Idiosyncratic Information into Prices:* This is a work in progress. There is large body of literature trying to understand why incorporation of idiosyncratic information into prices differ across countries (Morck Yeung and Yu, 2000). Many possible explanations are proposed including differences in property rights protection, R&D investments and clarity of accounting statements. We contribute to this literature in two ways. First, we argue that idiosyncratic information is less likely to be incorporated into prices of firms that are members of business groups because investors consider the possibility of intra-group propping and tunnelling. Second, and perhaps more importantly, we introduce a new methodology to mitigate endogeneity concern in this cross country literature. We use idiosyncratic component of shocks to global commodity prices to understand whether information is differently incorporated to firms that are members of a business groups compared to other firms in the same industry and country. In order to identify which industries should be affected by shocks to commodity prices we follow Rajan and Zingales (1998) methodology of using out of sample US firms. We find that idiosyncratic shocks are less likely to be incorporated into prices of firms within business groups and cross country differences in prevalence of business groups explain cross country differences in comovement of stocks.

Financing of Venture firms, Specialized Assets and Innovation

[2] *Specialization, Productivity, and Financing Constraints:* Investments in specialized assets constitute an important part of economic activity however financing of these assets assumed to be difficult to the extent that the ability to obtain outside financing may depend critically on an asset's liquidation value. This is particularly true for entrepreneurial firms, where imperfect verifiability of cash flows may force financiers to rely on control rights and liquidation threats to ensure repayment (e.g., Bolton and

Scharfstein 1990, 1996; Aghion and Bolton 1992; Hart and Moore 1994). Prior literature focusing on the importance of liquidation value has taken the degree of asset specificity as exogenous. However, the decision of what assets to acquire and how specialized they should be is often an integral component of a firm's investment decision. We present a theory of endogenous asset specificity when firms are financially constrained. Specialization increases the long-term productivity of assets within the firm, but it also reduces their value under liquidation if the project is terminated. We find that the increase in long-term cash flows resulting from specialization increases the entrepreneur's incentive to continue the project and makes him more willing to repay investors in order to avoid liquidation. Thus investors may require less of a threat to convince the entrepreneur to pay since the higher long-term cash flows provide the entrepreneur with a superior bonding mechanism. A novel implication of our analysis is that specialization may in fact increase the financing capacity of a project through its effect on long-term cash flows, in contrast to the more commonly asserted notion that specialization, by reducing liquidation value, necessarily makes financing more difficult to obtain (Williamson 1988).

[5] *Private Equity Fund Returns and Performance Persistence:* Anecdotal evidence indicates that follow on funds of successful private equity managers tend to be oversubscribed, suggesting that managers restrict fund size and decline some of the money investors are willing to provide. Recent evidence also shows that successful managers generate persistent abnormal returns (Kaplan and Schoar, 2005) in contrast to mutual funds. To explain these puzzles, we focus on a fundamental difference between private equity and mutual funds. Unlike mutual funds that invest in public securities, investments by private equity funds are subject to a two-sided matching problem (Sorensen, 2007). Private equity funds seek to invest in high-quality entrepreneurial firms while, on the other side, entrepreneurs try to pair with talented fund managers that are more likely to add value. In a signal jamming model (Stein, 1989; Holmstrom, 1999), we show that the manager finds it optimal to exert additional effort in searching and matching with higher quality firms in the hope of manipulating the beliefs of entrepreneurs about his ability to add value. The marginal cost of effort increases with the size of the fund, so that beyond a certain size it becomes too costly to try to manipulate beliefs by providing higher returns. We show that this limits the extent of investor funds that the manager will accept. Since the manager may not accept all the funds that investors are willing to provide, fund returns for investors will be positive in expectation and persistent over time for managers with ability to add value. This is despite the fact that the manager chooses the fund's fees and size optimally for each consecutive fund he raises. We can also explain several related empirical evidence as discussed in the paper.

[7] *Bargaining Power, Network Prominence and Alliance Contracts:* We suggest and provide empirical evidence that the bargaining power of alliance partners stemming from their prominence in alliance networks influences the ex-ante allocation of value capturing rights in high-tech alliance contracts. Network prominence can enhance the availability of alternative partners for a firm, and thereby elevates the firm's bargaining power and enables the firm to receive i) more value capturing rights vis-à-vis its partner (i.e., more net value capturing rights) and ii) more rights to the unexpected outcomes vis-à-vis its partner. We empirically investigate the content of R&D collaboration contracts between biotech and pharmaceutical firms and show that as the prominence of the client (i.e., pharmaceutical firm) increases, it is able to attain i) more net value capturing rights to outcomes within the area of collaboration and ii) more rights to unexpected outcomes. By contrast, increased prominence of the

R&D firm (i.e., biotech firm) decreases both the number of net value capturing rights the client receives as well as the rights to unexpected outcomes that the client captures in an alliance contract. The bargaining power that the R&D firm attains from its prominent position in alliance networks becomes less important during hot IPO markets, which presumably provide an R&D firm more outside options to obtain financial resources. Hence, our paper documents that firms' network positions can be an important source of bargaining power, contributing to the literature on strategic alliances, bargaining, and contract design.

[9] *Outside Insiders: Does Access to Information Prior to an IPO Generate a Trading Advantage After the IPO?:* VC funds typically have had investments in these startups for several years prior to the IPO, particularly if they are the lead VC fund of the funding consortium. During this time, the Limited Partners (LPs) of the VC funds obtain information about these startups. This information may remain relevant to stock prices after the startups go public if stock prices do not fully incorporate the information at the time of the IPO. We find that LPs' investments in connected stocks have an average raw return of 12.43% and an average Carhart 4-factor alpha of 18.64% in the next quarter. These results are consistent with LPs having information about connected stocks, and cannot be explained by LPs' heterogeneous abilities to pick stocks, or by VC reputation effects. These returns are higher when LPs presumably have a greater information advantage over the public. We find that the difference between an LP's returns in connected investments and an LP's returns in unconnected investments is higher among stocks that are not covered by any analysts in IBES, smaller stocks, and non-NYSE listings. Further, LPs' access to information eliminates the familiarity bias that they display otherwise. Overall, access to information prior to the IPO results in a trading advantage. Acquisition of such information is not illegal but at the same time the information may not be fully accessible by the public even after the IPO. The legality of trading on non-public information is a crucial part of recent debates on proposed insider trading bills. Our results demonstrate a setting where a broad definition of illegal non-public information may have unintended spill-over effects in private equity investing.

[14] *Financing of Innovation.* This is a work in progress. There is a surprisingly large and active market of financing innovation through bank loans where banks take possible future patents as collateral. This evidence is in contrast to common belief that such projects with uncertain outcomes and specialized investments with low liquidation values are more likely to be financed by equity. In this context, we examine financial contracts and an entrepreneur's patenting and investment decisions. We assume that patenting protects entrepreneur from competition and allows to capture higher rents from innovation, however at the same time generates an asset that can be verified by courts and liquidated by the financier. The entrepreneur cannot credibly commit to patent innovation and optimally decides whether to patent or not after obtaining financing. We analyze implications of this setup on feasibility of debt financing, financing terms and entrepreneur's decision to invest in specialized assets.

[8] *The Effect of Inter-firm Ties on Performance in Financial Markets.* We examine the effect of the information obtained through close inter-firm ties. We suggest that there is a closely connected tie between an investor and an entrepreneurial firm if the investor is a limited partner of the entrepreneurial firm's lead venture capital (VC) fund. We hypothesize that such closely connected ties convey credible, timely, and precise information regarding the underlying value of the entrepreneurial firm, which is especially valuable when market conditions are unfavorable and when the investor faces

higher information asymmetry. Supporting our hypotheses, we show that investors with closely connected ties to entrepreneurial firms receive higher returns on their investments, and their returns are particularly high when investor sentiment is low (unfavorable market conditions) and when there is higher information asymmetry due to greater geographical distance.

Social and Behavioral Finance

[3] *Style Investing, Comovement and Return Predictability:* Barberis and Shleifer (2003) argue that style investing generates momentum and reversals in style and individual asset returns, as well as comovement between individual assets and their styles. A simple way to test whether style investing is responsible (at least in part) for asset-level return predictability is to see if past style returns have any predictive power in the cross section. We identify styles using the now ubiquitous size and value-growth grids, and then estimate Fama and MacBeth (1973) regressions of future stock returns on size, book-to-market ratios, past stock returns, and past style returns. We find that past style returns help explain future stock returns. Although the Fama-MacBeth regressions are suggestive of the role of style investing, a prediction of Barberis and Shleifer (2003) allows us to specifically identify its impact; namely, that style investing generates not only momentum but also comovement of a stock with its style. Therefore, we use comovement to identify style investing and assess its impact on momentum. High comovement momentum portfolios have significantly higher future returns than low comovement momentum portfolios. Overall, our results suggest that style investing plays a role in the predictability of asset returns.

[4] *Investor Networks in the Stock Market:* We study the trading behavior and performance of investors in an estimated information network for the entire stock market. The general idea is that information links may be identified from realized trades, since investors who are directly linked in the network will tend to trade in the same direction in the same stock at a similar point in time. Using an account level dataset of all trades on the Istanbul Stock Exchange in 2005, we identify investors with similar trading behavior as linked in an empirical investor network (EIN). Simulations show that the true information network is indeed well estimated by the EIN. We first verify that the EIN is fairly stable over time and its characteristics are consistent with social networks. Then we study the relationship between investor centrality and returns, and find substantial support for a positive relationship. We also document that centrality is directly related to acting early on information. We identify several idiosyncratic information events that were associated with large stock price movements, and find that central investors in the network tended to trade—in the right direction—before peripheral investors. Our study reinforces a view of the stock market as a place where information is incorporated into asset prices through gradual decentralized diffusion.

[6] *Momentum and Reversal: Does What Goes Up Always Come Down?:* We simply show that stocks that are included in a standard momentum portfolio, which actually contribute to momentum do not experience subsequent reversal. On the other hand, stocks that are included in the standard momentum portfolio but do not exhibit momentum, i.e. contrarian stocks, significantly experience reversal. Merging these two groups of stocks into momentum portfolio causes momentum and reversal patterns appear to be linked. We show that we can ex-ante predict stocks that will have momentum versus reversal by sorting on stock characteristics. Our results point to an interaction

between characteristics and past returns, which may proxy for an omitted risk factor, or a behavioral bias that does not generate mispricing and correction, as a potential explanation for momentum profits.

[15] *Non-Ubiquitous Sentiment:* This is a work in progress. We suggest that investor sentiment need not be ubiquitous and, instead, at different points in time, can pertain to very different subsets of the economy and to very different features of a security. If investors systematically under- or overvalue certain subsets of the economy and certain features of a security, in the presence of limits to arbitrage, these investors' trading on their sentiment should cause the corresponding securities to move up or down synchronously (Barberis and Shleifer, 2003). Our idea is to use synchronous price movements to back out an investor sentiment measure that applies to certain group of stocks. We have preliminary results showing that such a sentiment measure negatively and significantly predicts future returns of the relevant group of stocks.

Published/Forthcoming Papers

[1] Morck, R., Yavuz, M.D., & Yeung, B. ,2011. Banking System Control, Capital Allocation, and Economy Performance. *Journal of Financial Economics*, *100*(2), 264-283.

[2] Marquez, R., and Yavuz, M. D. ,2013. Specialization, Productivity, and Financing Constraints. *Review of Financial Studies*, *26*(11), 2961-2984.

[3]Wahal, S., and Yavuz, M. D. ,2013. Style Investing, Comovement and Return Predictability. *Journal of Financial Economics*, *107*(1), 136-154.

[4] Ozsoylev, H. N., Walden, J., Yavuz, M.D., Bildik, R.,2014. Investor Networks in the Stock Market. *Review of Financial Studies*, 27(5), 1323-1366.

[5] Marquez, R., Nanda, V. and Yavuz, M.D., 2015. Private Equity Fund Returns and Performance Persistence. *Review of Finance*, 19(5), pp.1783-1823.

[6] Conrad J., and Yavuz, M.D., 2015. Momentum and Reversals: Does What Goes up Always Comes Down? Forthcoming*, Review of Finance.*

[7] Ozmel, U., Yavuz, M.D., Reuer, J., Zenger, T., 2016. Bargaining Power, Network Prominence and Alliance Contracts. Forthcoming, *Organization Science.*

Revise and Resubmit

[8] Ozmel, U., Yavuz, M.D., Gulati, R., Trombley, T., 2016. The Effect of Inter-firm Ties on Performance in Financial Markets. R&R from *Organization Science*.

[9] Ozmel, U., Trombley, T., Yavuz, M.D., 2015. Outside Insiders: Does Access to Information Prior to an IPO Generate a Trading Advantage After the IPO? R&R from JFQA.

Working Papers

[10] Morck, R., Yavuz, M.D., Yeung, B. ,2013. State-Controlled Banks, Money Growth and the Real Economy.

- Presented at NBER Summer Institute (2014)
- Finalist Best Paper Award in Financial Institutions FMA (2016)

[11] Basak, S., Chabakauri, G., Yavuz, M.D., 2015. Controlling Shareholder and the Cost of Capital.

- Presented at WFA (2016), North American Winter Meeting of the Econometric Society (2016), EFA (2016)

[12] Brown, C. Yavuz, M.D. 2015. The Hidden Cost of Banks within Family Conglomerates.

Work in progress

[13] Faccio, M., Morck, R., Yavuz, M.D. Group Firms and Incorporation of Idiosyncratic Information into Prices.

[14] Marquez, R., Yavuz, M.D. Financing of Innovation.

[15] Conrad, J., Hwang, B., Yavuz, M.D. Non-Ubiquitous Sentiment.