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BUSINESS LAW AS A SOURCE OF COMPARATIVE ADVANTAGE

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I. INTRODUCTION

A variety of outcome measures have been used in the law and finance literature to assess the impact of differences between countries' legal regimes. These outcome measures include a country's level of financial development, such as the size of the country's stock market or the extent of private credit available in the economy, the premium for control blocks and firm valuation. This paper adds to this important literature by examining the impact of legal differences between countries based on the export performance of countries' industries. More specifically, can the quality of a country's business law, broadly defined, be a source of comparative advantage for that country's external finance dependent industries?

This paper begins with the assumption, well-motivated by a number of studies, that "high-quality" business law can reduce the cost of external finance in a country. "High-quality" business law may make it more difficult and costly, in a variety of ways, for controlling shareholders and managers to engage in transferring value from external investors to themselves. Moreover, "high-quality" business regulation may remove informational asymmetries that can drive up the cost of external finance. A lower cost of external finance should disproportionately benefit external-finance dependent industries. This disproportionate benefit should create a source of comparative advantage in externally-finance dependent industries for countries with "high quality" business law relative to countries with lower quality business law. Importantly, "high-quality" business law should not create a source of comparative advantage for industries not reliant on external finance if the primary effect of "high-quality" business law is to reduce the cost of external finance.

Based on this reasoning, we test whether external finance dependent industries' export share increases relative to that of industries not reliant on external finance as the quality of a country's business law increases. Our sample consists of fifty-six countries with country import and export figures broken down by thirty-six industries. These thirty-six industries have a wide range of external finance dependency. We find, with

economic and statistical significance, that the quality of business law does affect the relative export performance of externally-finance dependent industries. Specifically, we find that the quality of a country's disclosure regime appears to be a particularly important source of comparative advantage for externally-finance dependent industries based on export data.

We also test a number of additional, related hypotheses. Several recent papers have indicated that a country's level of financial development disproportionately benefits external-finance dependent industries. Manova (2006). Consistent with these papers, we also document, using a variety of proxies for financial development, that financial development disproportionately benefits (again in terms of their export performance) externally-finance dependent industries. We also document that externally-finance dependent industries with naturally "small" sized firms are disproportionately benefited by increased levels of financial development. Interestingly, externally-finance dependent industries with naturally "small" sized firms do not appear to be especially benefited relative to industries with "larger" sized firms from increased business law quality.

Finally, we investigate the effect of a liberalized capital account. We hypothesize that a liberalized capital account should disproportionately benefit external finance dependent industries with "larger" sized firms as it is these firms that will be able to raise external finance on the international capital markets. We find strong results that this is, in fact, the case.

Part II will briefly describe the existing literature. Part III will then explain in more detail our hypotheses, and the motivation for them, while Part IV will describe our data. Finally, Part V will present our results.

II. EXISTING LITERATURE

This paper is related to two literatures: the law and finance literature, and the nascent trade and finance literature. There is a substantial law and finance literature that investigates the effect that the differences between countries in their legal regimes have on a variety of outcome measures, such as financial development. As a result of the focus on legal differences, a number of indexes have been developed that attempt to quantify differences in countries' legal regimes along several dimensions. There are

indexes that measure, for example, differences in the extent to which countries (or their primary exchange) impose mandatory disclosure requirements on firms, see La Porta, Lopez-de-Silanes, & Shleifer (2006), and differences in the extent to which creditors' interests are legally protected. La Porta, Lopez-de-Silanes, Shleifer & Vishny (1998). These studies have tended to find that "law matters" in the sense that a number of legal differences are correlated with differences across countries in their level of financial development and other outcome measures. In order to control for reverse causation, these studies typically use the "legal origins" of a country as an instrument reasoning that the legal origins of a country is a pre-determined variable.

One important area of research in the law and finance area (as well as in the corporate finance literature) has been on the implications of firms and industries varying in their external finance dependency. External finance dependency is the extent to which firms need to raise capital to fund investment opportunities from external investors, such as issuing equity. In an important paper, Rajan and Zingales (1998) found that the more the median firm in an industry relies on external financing in the United States, the faster firms in this industry grow in countries with good accounting standards relative to firms in those same industries in countries with weaker accounting standards. The Rajan and Zingales measure of the external finance dependency of an industry has been widely used in a number of subsequent studies (see, e.g., Fisman 2003). In related work, Carlin and Mayer (1998) found that industries that substantially rely on issuing equity to finance investment grow faster in countries with better accounting standards.

Beck (2003) showed that countries with higher levels of financial development exported more goods in industries reliant on external financing relative to exports of those same industries in countries with lower levels of financial development. The same basic results were also documented in Becker and Greenberg (2005). Building on this work at the intersection of trade and finance, Manova (2006) also finds that countries with better developed financial systems tend to export relatively more in highly external capital dependent industries and in sectors with fewer collateralizable assets. She also found that equity market liberalizations increase exports disproportionately for sectors more reliant on external finance.

III. BUSINESS LAW AND COMPARATIVE ADVANTAGE

Our starting point is the hypothesis that a country with “high quality” business law will have a comparative advantage in industries that rely on external finance relative to those same industries located in countries with “low quality” business law. The more externally-finance dependent an industry is, holding all else constant, the greater the comparative advantage for the country with the “high quality” business law will be. In contrast, a higher quality for a country’s business law will not translate into a greater comparative advantage for industries not reliant on external finance, or at least to the same degree as for external-finance dependent industries.

Our hypothesis is motivated by two observations. First, if firms in industries that are externally-finance dependent, i.e. need to raise capital to fund investment opportunities from external investors, enjoy a lower cost of external finance in a particular country, than that country should have a comparative advantage in those industries relative to firms in other countries in those same industries which face a higher cost of external finance. The fact that a country has a comparative advantage in externally-finance dependent industries should manifest itself in the industrial composition of the country’s exports. The second observation connects the cost of external finance in a country with the quality of that country’s business law. There are theoretical and empirical reasons to believe that high-quality business law can enhance the availability and reduce the cost of external finance within that country. Both observations will be briefly discussed as they form the motivation for our hypothesis.

A. Lower Cost of External Finance as a Source of Comparative Advantage

In the standard Heckscher-Ohlin factor model of trade, countries that are relatively “abundant” in a particular factor of production, such as labor, will tend to export goods that use that factor intensively. Put slightly differently, countries have a comparative advantage in whichever factors of production are “abundant” in that country relative to the world endowment of those factors. In line with such a model, one can think of external finance as a factor of production that is more “abundant” in countries

where the cost of external finance is comparatively low.¹ As a result, countries where the cost of external finance is comparatively low will tend to export goods that use this factor intensively, i.e., the products of externally-finance dependent industries.² This is a potentially important source of comparative advantage as industries differ substantially in terms of their need for external finance (as proxied by the median firm in that industry) and, moreover, countries vary substantially in the quality of their business law.

B. Business Law and the Cost of External Finance

There are a number of reasons why high-quality business law, broadly defined to encompass corporate law, securities regulation and creditor-debtor/bankruptcy law, might reduce the cost and enhance the accessibility of external capital for firms. First, high-quality business law could provide increased assurance that the funds being raised will be used for the highest valued purpose. Prohibitions on self-dealing, improved shareholder rights, increased transparency and other kinds of business regulation could potentially have this effect by reducing the agency costs created by separation of ownership and control and conflicts between controlling and minority shareholders' interests. For residual claimants, improved allocation of capital will improve the value of their claims and, hence, the amount of capital a firm receives for issuing those claims in the first place. There is, in fact, growing empirical evidence that strong business protections can improve a country's allocation of capital (see, e.g., Wurgler 2000). In addition, improved capital allocation might reduce the need of external investors to expend resources monitoring management and controlling shareholders to ensure funds are properly allocated and spent (Lombardo and Pagano 2002).

On a related note, business law can enhance the "pledgeability" of the firm's assets (and the cash-flows generated by the firm's assets) and thereby increase the

¹ A lower cost of external finance in a country, holding all else constant, implies a larger stock of external capital in that country.

² Two theoretical papers have focused on financial development as a source of comparative advantage. Baldwin (1989) developed a model in which financial development served as a source of comparative advantage due to an enhanced ability to diversify risk. The lower cost of bearing risk, given the ability to diversify, reduces the cost of production in risky goods in financially developed countries. Kletzer and Bardhan (1987) demonstrate that a country's financial development can be a source of comparative advantage.

availability of external finance and reduce its cost. (Shleifer and Wolfenzon 2002). Consider, as an example, countries with concentrated ownership of firms, such as those in Continental Europe and most of Asia. There is the widespread concern that firm assets might be “tunneled” to other entities, owned by the controlling shareholder of the firm, at below-market prices. This is not an idle concern (see, e.g., Bertrand, Mehta and Mullainathan 2002). The possibility of firm assets being transferred to other entities at below-market prices would impede the ability of these assets (and the cash-flows they produce) to provide assurance to external investors that they will receive payment given that the tunneled assets are no longer owned by the firm. Strong fiduciary obligations, mandated disclosure requirements, minority shareholder rights and other types of business law might reduce the incidence and size of such transfers (and, importantly, any deadweight costs associated with such transfers). In the context of debt, strong creditor rights can increase the “pledgeability” of firm assets if strong creditor rights are defined as the ability to seize or control firm assets, in a cost-effective manner, in the event of default.

Mandatory disclosure requirements (and enforcement thereof) could reduce the cost of external finance through two additional mechanisms. First, mandatory disclosure requirements could reduce the well-documented adverse selection cost associated with raising external finance due to asymmetric information (see, e.g., Huang & Stoll 1997). Reducing adverse selection by reducing asymmetric information is value-enhancing as adverse selection makes it less likely that firms with high-valued projects will raise external finance to fund attractive investment opportunities as their shares will sell at a discount to their true value. Second, mandatory disclosure requirements might reduce the level of private information held by traders and, hence, the cost of trading for uninformed investors. If the cost of external capital is set by uninformed investors, reducing private information should reduce the cost of external capital as uninformed investors’ expected losses from trading should be lower (Easley, D. and M. O’Hara (2004)).

If high-quality business law is particularly important in reducing the cost of external finance, and there is substantial evidence that business law can have these desirable effects (see generally Ferrell 2005 and papers cited therein), then the presence of such regulation should primarily benefit firms in industries that rely on external

finance. The cost of external finance is simply not relevant for firms that do not rely on external financing.

Of course, it might be the case that business law could reduce the overall cost of capital generally and not the cost of external finance *per se*. One would then expect a country with high-quality business law to have a comparative advantage in capital-intensive industries as opposed to just external-finance intensive industries. In this scenario, one would not necessarily expect to see a differential impact of business law on external-finance dependent industries versus non-external finance dependent industries.

C. Additional Hypotheses: Firm Size and Capital Account Liberalization

In addition to the hypothesis that business law can serve as a source of comparative advantage for external-finance dependent industries, we are also interested in exploring the effects on the export performance of industries of two additional factors: the median size of a firm in an industry and a country having a liberalized capital account. Specifically, there are three sets of questions we wish to investigate.

First, does a country's level of financial development disproportionately benefit (in terms of export performance) industries where firm size tends to be naturally "small," holding constant the external finance dependency of that industry? The motivation for this hypothesis is the supposition that larger firms have an easier time raising external capital than smaller firms in less financially developed markets and, hence, small firms will be disproportionately benefited by higher levels of financial development.

There is, in fact, substantial support for the view that small firms often have more difficulty raising external finance in less financially developed markets. For instance, one study found that small firms in the less financially developed regions of Italy have a more difficult time raising external finance than small firms in more financially developed regions of Italy. In contrast, large firms' access to external capital was not affected by their location within Italy (Guiso, Sapienza & Zingales 2004). On a related note, large diversified business groups tend to be the dominant economic actors in less financially developed countries due to their ability to fund investment projects through internally generated funds rather than having to raise those funds from external investors

(Khana & Palepu 2000). The fact that a potentially costly substitute for external finance, diversified business groups, has arisen in less developed financially countries (but nowhere near to the same degree in financially developed countries) suggests that small firms in less financially developed countries face nontrivial barriers to external finance. Finally, based on a firm survey, Beck, Demirguc-Kent and Maksimovic (2005) report that smaller firms face binding financing constraints more often than larger firms. The results from this survey suggest that this difference between small and large firms is especially acute in less financially developed countries.

Second, does a liberalized capital account disproportionately benefit (again, in terms of export performance) industries where firm size is naturally “large”, holding constant the external finance dependency of that industry? Countries with liberalized capital accounts are countries that permit the free flow of capital, such as foreign direct investment and portfolio flows, into and out of a country. The motivation for this hypothesis is that for sufficiently small firms the ability to access the international capital markets as a result of capital account liberalization is unlikely to be an important new source of external capital. It simply might not be in foreign investors’ self-interest to take the time to investigate and monitor “small” firms in a foreign country just in order to make a small investment. In contrast, for “larger” firms access to the international capital markets could be an important new source of funding. Informational asymmetries between foreign investors and domestic firms might be less acute for larger firms. There is some evidence that foreign portfolio flows are invested (beyond their market weights) in larger firms (see, e.g., Liljeblom, E. and A. Loflund (2000)). Whether this hypothesis holds true turns, in part, on whether “larger” firms would, but for capital account liberalization, face some financing constraints in their domestic markets in terms of the cost and availability of the external finance they need. Particularly large firms, which might be more likely to have political connections or well-established domestic reputations, might not be financially constrained even when the international capital markets are closed. Laeven (2003).

Third, does a country’s quality of business law disproportionately benefit industries where the firm size is “small,” holding constant the external finance dependency of that industry? If there were economies of scale, for example, in privately

credibly committing to better governance or higher-quality disclosures than small firms might be at a disadvantage in the absence of law. Reputational markets might work better for large firms that repeatedly raise capital on the market. On the other hand, if business law equally benefits “large” and “small” firms in terms of their cost of external finance (even if financial development perhaps does not), then one would not see a differential effect.

IV. DATA

A. Data Description

Trade Data

The import and export data for fifty-six countries, broken down by the 36 ISIC Revision 2 industry classification, was obtained from the United Nation’s Comtrade Database (which has been deflated by World Bank export and price indices). This database provides the average of the exports or imports of a country for an industry over the 1980-1989 period. Our “export share” variable is the export industry-level data by country divided by that country’s GDP. Our “trade share” variable is the net exports (exports minus imports) of an industry for a country divided by that country’s GDP for the 1980-1989 period.

Quality of a Country’s Business Law Proxies

The eight proxies for the quality of a country’s business law are taken from the law and finance literature. The “anti-self-dealing” index, which measures the degree to which a country provides minority shareholders protection against self-dealing by controlling shareholders, and the updated version of the “anti-directors” index, which measures the degree to which shareholders have rights vis-a-vis management, was taken from Djankov, LaPorta, Lopez-de-Silanes, Shleifer (2006). The “anti-self-dealing” index’s two components, the average of the two of which constitutes the “anti-self-dealing” index, were also used. These two components are measures of the extent to which a country’s business law empowers the ex-ante private control of self-dealing, defined as the various approval requirements necessary prior to engaging in a self-interested transaction and the immediate disclosures required in connection with

undertaking such a transaction, and the ex-post private control of self-dealing, defined as the ease with which minority shareholders can prove wrongdoing as a result of a self-interested transaction. The “public enforcement” variable was also taken from Djankov, LaPorta, Lopez-de-Silanes, Shleifer (2006) which measures the potential fines and criminal penalties imposed by a country as a result of engaging in self-dealing transactions.

Another important proxy for the quality of a country’s business law is the quality of a country’s mandatory disclosure requirements. The “disclosure” index for countries is taken from La Porta, Lopez-de-Silanes, & Shleifer (2006). The “disclosure” index measures whether a country requires disclosure of such items as the equity ownership structure of publicly-traded firms, compensation of directors and key officers, contracts outside the ordinary course of business, and transactions between the company and its directors, officers or large shareholders. The accounting standards index, which measures the quality of a country’s accounting standards, is the International Financial Analysis and Research’s accounting index. This index measures, as of 1990, the extent to which firms in a country disclosed in their annual reports ninety potentially important pieces of information. Finally, the creditors’ rights index, which measures the legal rights creditors are afforded, was taken from La Porta, Lopez-de-Silanes, Shleifer & Vishny (1998).

The legal origins of a country’s legal regime, typically used as an instrument for the quality of a country’s business law, is taken from La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997). The legal origins of a country can be British, French, German or Scandinavian.

Capital Account Liberalization

We measure the degree to which a country has a liberalized capital account based on Quinn (1997). Quinn reports, with zero being a totally closed capital account and a score of four being a completely liberalized capital account, a country’s capital account liberalization score as of 1958. Quinn also documents the change in a country’s capital account liberalization score between 1958 to 1988. From these two pieces of information we calculate a country’s capital account liberalization score as of 1988.

Proxies for Industry External Finance Dependency

The external finance dependency of an industry measure is an attempt to quantify the extent to which firms in a particular industry need to raise capital from external investors. The definition of the external finance dependency of an industry, now widely used in the literature, is taken from Rajan and Zingales (1998). External finance dependency of an industry is the median value in that industry of firms' capital expenditures minus cash flow from operations divided by capital expenditures. We will use three different samples to measure the extent to which an industry relies on external financing. External financial dependency of 36 industry classifications based on ISIC Revision 2 is based on U.S. data for all firms in the 1980s; U.S. data for "young" firms (firms that have gone public within the last ten years) in these industries for the 1980s; and, as a robustness check, all U.S. firms in the 1970s.³ Focusing on "young" firms is potentially informative as it is typically young firms in an industry that tend to rely on external financing. Moreover, it is possible that firms in industries in the United States tends to be more mature and, hence, focusing on young firms in an industry might provide a more useful measure of the need for external finance of firms in other countries with potentially less mature industries.

An example of an industry with a very low score for external finance dependency is the Tobacco industry. Firms in the Tobacco industry tend to generate substantial cash-flows relative to investment opportunities and, as a result, rarely have to raise capital from external investors, such as issuing net additional shares on the capital markets. The Drugs and Pharmaceuticals industry, in sharp contrast, is an industry that has a substantial need to raise capital from external investors and, hence, has a high score for the external finance dependency variable.

Firm Size of an Industry

We define the firm size of an industry as hundred minus the industry's share of employment by firms with less than 500 employees, and, alternatively, the industry share

³ Manova (2006) reports that the correlation between measures of industry external finance dependency based on 1980s data and 1990s is very high.

of employment by firms with less than 100 employees, less than 20 employees, less than 10 employees and, finally, less than 5 employees (hereinafter 500, 100, 20, 10 and 5 measures of firm size). Therefore, as the “firm size” variable increases, the firm size in the industry increases as a higher “firm size” value represents a larger percentage of employees in the industry not working in either firms with 500, 100, 20, 10 or 5 or less employees depending on which cut-off is used. These industry-share of employment figures are reported in Beck, T. Demircuc-Kent A., Laeven L., and R. Levine (2004), which in turn took these figures from the 1992 U.S. Census data. We use their data, which covers the 36 ISIC Revision 2 industries, in calculating the firm size of an industry. The U.S. Census did not collect industry-share employment figures prior to 1992.

Financial Development Proxies

We use several widely used proxies for a country’s financial development.⁴ One variable is “Private Credit” which is defined as the value of credits by financial intermediaries to the private sector divided by GDP. We also use, as in Beck (2003), two related variables as a robustness check: the variable “Liquid Liabilities” which is the liquidity liabilities of a country’s financial system and the variable “Commercial-Central Bank” which is defined as the ratio of commercial banks’ domestic assets divided by commercial and central banks’ domestic assets. The “Private Credit” variable is a particularly important and widely used proxy for financial development in the law and finance literature (see, e.g., Manova (2006); Levine, Loayza, and Beck 2000; King & Levine 1993).

“Market Capitalization,” another widely used proxy for the level of a country’s financial development, is also used. “Market Capitalization” is the value of listed domestic shares on the country’s domestic exchanges divided GDP. Two related variables, “Value Traded” and “Turnover”, are also used as a robustness check. “Value Traded” equals the value of shares traded on a country’s domestic exchanges divided by GDP, while “Turnover” is the value of domestic exchange trades divided by the value of listed domestic shares (Levine and Zervos 1998).

⁴ We obtained the financial development data from Thornstein Beck.

Finally, the variable “Total Capitalization” is the sum of the “Private Credit” and “Market Capitalization” variables. As a result, the “Total Capitalization” variable captures financial development as reflected in both the size of the equity markets and the level of financial institutions’ credit provision activity. As a result, the “Total Capitalization” variable is arguably the most comprehensive of the financial development measures.

B. Correlations

The correlation matrix for the financial development measures – Private Credit, Liquid Liabilities, Commercial Central Bank, Market Capitalization, Value Traded, Turnover Ratio, and Total Capitalization – is presented in Table I. There is substantial correlation between the different financial development measures. The “Total Capitalization” measure’s correlation with the other financial development measures varies from a low of .54, with the Turnover Ratio, to a high of .95, with Private Credit (the latter not being surprising as “Private Credit” is a component of “Total Capitalization”).

The correlations between the different proxies for quality of business law is reported in Table II. As is obvious, the correlation between different proxies for business law quality, while often substantial, also varies substantially suggesting that using different indexes for business law quality is potentially informative. Among the highest correlations is between the two indexes that attempt to measure the quality of a country’s disclosures: the disclosure index and the accounting standards index with a correlation of .66. The capital account liberalization index, on the other hand, has a very low correlation with the eight indexes for business law quality.

V. RESULTS

A. Financial Development and Comparative Advantage

As previously discussed, several papers, starting with Beck (2003) and most recently Manova (2006), have examined whether financial development can act as a

source of comparative advantage. Given this literature, we start our empirical analysis by seeing whether, consistent with these papers, we find that a country's level of financial development can serve as a source of comparative advantage in externally finance dependent industries. Accordingly, we run the following regression:

$$\text{Exp}_{ic} = \alpha + \beta_1 * (\text{FinDev}_c * \text{FinDep}_i) + \sum \beta_i \text{Industry}_i + \sum \beta_c \text{Country}_c \quad (1)$$

where Exp_{ic} is the value of the exports of country c in industry i normalized by country c 's GDP (the export share variable); FinDev_c is the level of financial development in country c ; FinDep_i is the external finance dependence of industry i ; $\text{Industry}_i, i = 1, \dots, 35$, are industry dummy variables for the 36 ISIC Rev. 2 industries; and $\text{Country}_c, c = 1, \dots, 55$, are the country dummy variables for our fifty-six countries. Industry dummies control for the possibility that some industries might be more likely to engage in exports than other industries for reasons other than the quality of business law. The country dummies control for country-level variables other than the quality of business law, such as GDP, that might affect a country's exports. All the regressions were run with robust standard errors with errors clustered at the country-level. Moreover, the financial development variable was instrumented by a country's legal origins (although this does not qualitatively affect the results).

If financial development improves the export share of externally finance dependent industries *relative* to industries not reliant on external finance, then the coefficient on the interaction of $\text{FinDev}_c * \text{FinDep}_i$, β_1 , should be positive. In other words, the interaction coefficient should measure the relative impact on externally-finance dependent industries' exports of a change in a country's level of financial development.

The results, consistent with the findings of Beck (2003) and Manova (2006), are reported in Table III. Only the results from the three most commonly-used proxies for a country's level of financial development are presented: Total Capitalization, Private Credit and Market Capitalization. Using all U.S. firms in the 1980s as the basis for computing the external finance dependence of an industry, all three proxies for financial development are statistically significant at the 1% level (Panel A of Table III). The total

market capitalization point estimate is 1.22, private credit is 1.25 and market capitalization is .63. Based on these point estimates, the level of private credit in an economy appears to be a more important factor than the size of the equity markets in explaining the export share of a country's externally-finance dependent industries, although both are important. Using young U.S. firms in the 1980s (Panel B of Table III) and, alternatively, all U.S. firms in the 1970s (Panel C of Table III) as the bases for computing industry external finance dependency, one gets similar results: all three coefficients for the three financial development proxies are positive and statistically significant at the 1% level with the private credit point estimate being, as before, substantially larger than that for market capitalization, although with market capitalization still being important.

The variables "Commercial-Central Bank," "Liquid Liabilities," "Turnover Ratio," and "Value Added" were also used as proxies for financial development. The (unreported) results were not qualitatively changed by using these variables as proxies for financial development.

B. Business Law and Comparative Advantage

In this section, we turn to our primary hypothesis. We test whether countries with "higher-quality" business law, as measured by the various law and finance indexes, export more products as a percentage of GDP of externally-finance dependent industries than countries with lower quality business law. Moreover, we also simultaneously test whether countries with "high-quality" business law export relatively fewer products of less externally-finance industries as a result of having "high-quality" business law.

We ran the following regression:

$$\text{Exp}_{ic} = \alpha + \beta_1 * (\text{BusQ}_c * \text{FinDep}_i) + \sum \beta_i \text{Industry}_i + \sum \beta_c \text{Country}_c \quad (2)$$

where BusQ_c is the quality of business law in country c . The other variables are the same as in equation (1). Eight proxies were used for the quality of business law: the anti-self-dealing index; ex ante private control of self-dealing index; ex-post private control of

self-dealing index; public enforcement index; accounting standards index; anti-directors index; disclosure index; and the creditor rights index.

As before, all the regressions were run with robust standard errors with errors clustered at the country-level. Moreover, to address reverse causation, $BusQ_c$ is instrumented for, as is standard in the law and finance literature, by the legal origins of the country. Therefore, equation (1) is the second stage of a 2SLS estimation. As a robustness check, $TradeSh_{ic}$ was also used as a dependent variable with $TradeSh_{ic}$ being defined as the difference in the exports in industry i minus the imports in industry i normalized by country c 's GDP. The results are not qualitatively affected by substituting $TradeSh_{ic}$ for $Exports_{ic}$ as the dependent variable (unreported regressions). Moreover, all the results reported in Table IV are not affected by whether the legal origins instrument is used or not (uninstrumented results are not reported).

If the quality of business law, as proxied by one of the eight measures, improves the export performance of externally finance dependent industries relative to industries not reliant on external finance, then the coefficient on the interaction of $BusQ_c * FinDep_i$, β_1 , should be positive. A positive point estimate on the interaction term indicates that an increase in the quality of a country's business regulation will have a greater positive impact on the export share of externally-finance dependent industries than that of industries less reliant on external finance. Alternatively, the greater the external-finance dependency of an industry the great the impact a change in the quality of a country's business law will be on that industry's export share.

The results, measuring external finance dependency of an industry based on all U.S. firms in the 1980s and using export share as the dependent variable, are reported in Panel A of Table IV. The coefficient estimates on the industry and country dummies are not reported. The explanatory power of the independent variables in equation 2 in accounting for variation in export performance across industries and countries is in the 83% to 85% range. Six of the eight proxies for business law quality are statistically significantly positive with at least 10% statistical significance with the accounting standards, the disclosure index, public enforcement index, and the creditor's rights index all being statistically significant at the 1% level. Of the later four indexes, the accounting standards index and the disclosure index are always statistically significantly positive at

the 1% level regardless of the way in which external finance dependency is calculated (Panel B are the results when external dependence is calculated using only young 1980s U.S. firms and Panel C are the results when external dependence is calculated using all U.S. firms from the 1970s). The disclosure index's coefficient point estimate, however, is far larger in all three specifications than that of the accounting standards' estimate.

Mandatory disclosure requirements, as proxied by the accounting standards index and, in particular, the disclosure index, appear therefore to be consistently important, economically and statistically, as a source of comparative advantage in externally-finance dependent industries. There is a variety of mechanisms by which such an association might arise: improved disclosure reducing the adverse selection costs of external finance, reducing private information, and increasing transparency at the firm-level thereby making it more difficult for controlling shareholders and managers to engage in value-destroying or value-transferring activities. Other legal indexes appear to also be important, the public enforcement and the anti-directors index is always significant and positive at the 5% level and the creditor rights and ex post private control of self-dealing index is always significant and positive at the 10% level.

It is worth noting that a benefit of focusing on within country differences – in these results on the difference in the export share of a country's external finance dependent industries and its industries not reliant on external finance – is that it allows one to control for country-level characteristics, sometimes difficult to measure, through the simple device of introducing a country dummy. The country-level characteristics that can be controlled for through a country dummy are those country characteristics that systematically affect export share across all industries, external finance dependent or not. Accordingly, when we included in our regressions indexes such as a “rule of law” index or a “corruption” index as independent variables, the results in Table IV do not change. When the dependent variable is a country-level variable, such as market capitalization, controlling for this kind of country-level characteristic in this way is not possible.

C. Industry Firm Size

Turning to the first question raised in section C of Part III, does an increase in a county's level of financial development disproportionately benefit (in terms of export share) industries where firm size is naturally "small" taking into account the external finance dependence of the industry. Again, such an effect might be the result of small firms having more difficulty raising external finance than large firms in financially undeveloped countries. In order to test this hypothesis, we ran the following regression:

$$\text{Exp}_{ic} = \alpha + \beta_1(\text{FinDev}_c * \text{FirmSize}_i * \text{FinDep}_i) + \beta_2(\text{FinDev}_c * \text{FirmSize}_i) + \beta_3(\text{FirmSize}_i * \text{FinDep}_i) + \beta_4(\text{FinDev}_c * \text{FinDep}_i) + \sum \beta_i \text{Industry}_i + \sum \beta_c \text{Country}_c \quad (3)$$

The coefficient value of interest is β_1 , the coefficient on the triple interaction term. If increases in the level of financial development – the FinDev_c variable – enhances the ability of industries with small firm size – as measured by the FirmSize_i variable – to export their goods *relative* to industries with larger firms, taking into account the external finance dependency of the firm's industry, then the point estimate for β_1 should be negative. The expected sign is negative because as the firm size variable increases, firm size in the industry becomes larger.

All the second level interaction permutations were included in the regression so that the triple interaction does not capture their omitted effects. As before, industry and country dummies were included, robust errors clustered at the country level, and all the interaction terms instrumented by legal origins (although instrumenting does not qualitatively change the results). "Total Capitalization" is used as the proxy for financial development as it captures both the size of a country's equity markets as well as the overall private credit provision by financial institutions in the country. We vary the definition of firm size using all five definitions (5, 10, 20, 100, 500) of industry firm size.

Results are reported in Table V. Financial development does appear to disproportionately benefit industries with "small" firm size in terms of their export share using the 5, 10 and 20 definitions of firm size. The triple interaction coefficient point estimate is negative and statistically significant at the 1% for the 5 and 10 definitions of firm size and at the 5% level for the 20 definition of firm size. However, this effect statistically disappears, with the point estimate is still negative but small, when firm size

is defined using the 100 or 500 cut-off. Moreover, the size of the effect of financial development on the relative export performance of industries with “small” firm size is monotonically decreasing towards zero as the size cut-off moves from 5 to 500 employees. The progression in the point estimates, moving from the 5 to 500 definition of firm size, is -1.15, -.44, -.18, -.03, and -.01. One possible interpretation of this progression is that industries with a large share of firms above a sufficiently high size threshold do not face different financing constraints than those of industries with a smaller share of firms of the same size threshold. Only industries with a relatively large fraction of truly “small” firms are disproportionately benefited in terms of their export share by increased levels of financial development. This differential effect gradually disappears as one gradually relaxes the strictness of the definition of a “small” firm.

Interestingly, these results parallel findings reported by Beck, Demirgu-Kent, Laeven and Levine (2004). They found that only when one uses a firm size definition based on employment share by firms with 20, 10 or 5 or fewer employees does one get a statistically significant result at the 1% or 5% level on the effect of the provision of private credit in an economy on the average annual grow rate in real value added for “small” firm industries. With a definition of firm size based on the 100 employee cut-off the positive effect of private credit on “small” firm industries has statistical significance at only the 10% level and no statistical significance when firm size is based on the 500 employee cut-off in their study.

What of the hypothesis that a liberalized capital account should enhance the ability of “large” relative to “small” firms to raise external finance taking into account the external finance dependence of the industry? As before, to address this question we again run a regression with a triple interaction:

$$\text{Exp}_{ic} = \alpha + \beta_1(\text{CapAcct}_c * \text{Firm Size}_i * \text{FinDep}_i) + \beta_2(\text{CapAcct}_c * \text{Firm Size}_i) + \beta_3(\text{Firm Size}_i * \text{FinDep}_i) + \beta_4(\text{CapAcct}_c * \text{FinDep}_i) + \sum \beta_i \text{Industry}_i + \sum \beta_c \text{Country}_c \quad (4)$$

Again, the point estimate of interest is β_1 . If increases in capital account liberalization – the CapAcct_c variable – enhances the ability of industries with large firm size to export their goods *relative* to industries with smaller firms, taking into account the external

finance dependency of the industries, then the point estimate for β_1 should be positive. As before, we vary the definition of firm size using all five definitions (5, 10, 20, 100, 500) of industry firm size.⁵

The results are reported in Table VI. Using the strictest definition of firm size, the cut-off of five employees or less, the coefficient value is .92 and statistically significant at the 1% level. The cut-offs of ten and twenty also result in positive and statistically significant at the 1% level coefficients. Firm size using the 100 definition results in a positive point estimate at the 5% statistical significance while the 500 definition is statistically insignificant. Similar to the financial development results, the size of the point estimate is monotonically decreasing towards zero as the size cut-off moves from 5 to 500 employees. The progression in the point estimates, moving from the 5 to 500 definition of firm size, is .92, .43, .2, .04, and .01.

Finally, turning to the last hypothesis, does higher-quality business law improve the export performance of small, external-finance dependent industries relative to larger, external-finance dependent industries? To test this, we replaced the variable $CapAcct_c$ with $BusQ_c$ in equation 4. As before, we use the eight proxies for the quality of business law.

The results are reported in Table VII. The results do not support the hypothesis. Using the firm size cut-off of ten, six out of the eight proxies for business law quality do not result in statistically significant point estimates, even at the 10% level, for the triple interaction coefficient. The two statistically significant variables, at the 5% level, are when business law quality is proxied for by public enforcement and creditors' rights. Both point estimates are, however, positive rather than negative as the hypothesis would have predicted. No consistent result emerges when one varies the definition of "small" firm.

⁵ Second level interaction terms, industry and country dummies were included and robust standard were clustered at the country level as before.

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TABLE I: CORRELATION BETWEEN MEASURES OF FINANCIAL DEVELOPMENT

	Private Credit	Liquid Liabilities	Commercial Central Bank	Market Capitalization	Value Traded	Turnover Ratio	Total Capitalization
Private Credit	1.00						
Liquid Liabilities	0.81	1.00					
Commercial Central Bank	0.65	0.44	1.00				
Market Capitalization	0.63	0.55	0.56	1.00			
Value Traded	0.68	0.62	0.37	0.62	1.00		
Turnover Ratio	0.55	0.45	0.26	0.38	0.92	1.00	
Total Capitalization	0.95	0.79	0.68	0.84	0.72	0.54	1.00

TABLE II: CORRELATION BETWEEN MEASURES OF QUALITY OF BUSINESS LAW AND CAPITAL ACCOUNT LIBERALIZATION

	Anti-director index	Accounting standards	Anti-self-dealing index	Ex-ante private control of self dealing	Ex-post private control of self dealing	Public enforcement	Disclosure	Creditors' rights	Capital liberalization
Anti-director index	1.00								
Accounting standards	0.51	1.00							
Anti-self-dealing index	0.64	0.45	1.00						
Ex-ante private control of self dealing	0.50	0.29	0.91	1.00					
Ex-post private control of self dealing	0.62	0.52	0.79	0.47	1.00				
Public enforcement	0.23	0.09	-0.08	-0.17	0.07	1.00			
Disclosure	0.58	0.66	0.66	0.47	0.71	-0.10	1.00		
Creditors' rights	0.05	0.17	0.30	0.27	0.24	-0.07	0.08	1.00	
Capital Account Liberalization	-0.28	-0.15	0.01	0.07	-0.08	-0.04	0.00	-0.17	1.00

TABLE III: EXPORT SHARE AND FINANCIAL DEVELOPMENT

Panel A		Dependent Variable: Export Share of an Industry		
(External Dependence All Firms 1980s) × (Fin. Dev.)				
ext. dep. × total capitalization	1.22***			
ext. dep. × private credit		1.25***		
ext. dep. × market capitalization			0.63***	
Adj. R-squared	.86	.87	.86	
Number of Observations	1492	1982	1492	
Panel B		Dependent Variable: Export Share of an Industry		
(External Dependence Young Firms 1980s) × (Fin. Dev.)				
ext. dep. × total capitalization	0.51***			
ext. dep. × private credit		0.44***		
ext. dep. × market capitalization			0.32***	
Adj. R-squared	.85	.85	.85	
Number of Observations	1409	1874	1409	
Panel C		Dependent Variable: Export Share of an Industry		
(External Dependence All Firms 1970s) × (Fin. Dev.)				
ext. dep. × total capitalization	2.97***			
ext. dep. × private credit		2.74***		
ext. dep. × market capitalization			1.75***	
Adj. R-squared	.85	.85	.85	
Number of Observations	1450	1925	1450	

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01

TABLE IV: EXPORT SHARE AND QUALITY OF BUSINESS LAW

Panel A		Dependent Variable: Export Share of an Industry							
Quality of Business Law as Measured by Regulation									
(External Dependence All Firms 1980s) x (Regulation)									
ext. dep. x anti-director index	0.30**								
ext. dep. x accounting standards		0.04***							
ext. dep. x anti-self-dealing index			-0.14						
ext. dep. x ex-ante private control of self dealing				-1.67**					
ext. dep. x ex-post private control of self-dealing					1.14*				
ext. dep. x public enforcement						4.00***			
ext. dep. x disclosure							1.77***		
ext. dep. x creditor's rights								0.56***	
Adj. R-squared	.83	.85	.85	.84	.85	.85	.85	.85	.85
Number of Observations	1501	1385	1241	1501	1501	1501	1385	1913	
Panel B		Dependent Variable: Export Share of an Industry							
Quality of Business Law as Measured by Regulation									
(External Dependence Young Firms 1980s) x (Regulation)									
ext. dep. x anti-director index	0.20**								
ext. dep. x accounting standards		0.02***							
ext. dep. x anti-self-dealing index			0.46						
ext. dep. x ex-ante private control of self dealing				-0.18					
ext. dep. x ex-post private control of self-dealing					0.81**				
ext. dep. x public enforcement						1.30**			
ext. dep. x disclosure							1.04***		
ext. dep. x creditor's rights								0.23*	
Adj. R-squared	.83	.85	.85	.85	.85	.85	.85	.85	.85
Number of Observations	1418	1308	1172	1418	1418	1418	1308	1808	

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01

Panel C		Dependent Variable: Export Share of an Industry							
Quality of Business Law as Measured by Regulation									
(External Dependence All Firms 1970s) x (Regulation)									
ext. dep. x anti-director index	1.01***								
ext. dep. x accounting standards		0.13***							
ext. dep. x anti-self-dealing index			1.88						
ext. dep. x ex-ante private control of self dealing				-1.52					
ext. dep. x ex-post private control of self-dealing					4.18***				
ext. dep. x public enforcement						7.75***			
ext. dep. x disclosure							5.27***		
ext. dep. x creditor's rights								1.67***	
Adj. R-squared	.83	.85	.84	.84	.85	.84	.85	.85	
Number of Observations	1458	1346	1206	1458	1458	1458	1346	1858	

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01

TABLE V: EXPORT SHARE, TOTAL CAPITALIZATION, AND FIRM SIZE

Dependent Variable: Export Share of an Industry (External Dependence All Firms 1980s) × (Fin. Dev.) × (Firm Size)	Varying firm size as measured by				
	Firm Size 5	Firm Size 10	Firm Size 20	Firm Size 100	Firm Size 500
ext. dep. × total capitalization × firm size	-1.15***				
ext. dep. × total capitalization × firm size		-0.44***			
ext. dep. × total capitalization × firm size			-0.18**		
ext. dep. × total capitalization × firm size				-0.03	
ext. dep. × total capitalization × firm size					-0.01
Adj. R-squared	.84	.84	.84	.84	.84
Number of Observations	1410	1410	1492	1492	1492

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01

TABLE VI: EXPORT SHARE, CAPITAL ACCOUNT LIBERALIZATION AND FIRM SIZE

Dependent Variable: Export Share of an Industry (External Dependence All Firms 1980s) × (Fin. Dev.) × (Firm Size)	Varying firm size as measured by				
	Firm Size 5	Firm Size 10	Firm Size 20	Firm Size 100	Firm Size 500
ext. dep. × capital liberalization × firm size	0.92***				
ext. dep. × capital liberalization × firm size		0.43***			
ext. dep. × capital liberalization × firm size			0.20***		
ext. dep. × capital liberalization × firm size				0.04**	
ext. dep. × capital liberalization × firm size					0.01
Adj. R-squared	.84	.84	.84	.84	.84
Number of Observations	1401	1401	1481	1481	1481

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01

TABLE VII: EXPORT SHARE, QUALITY OF BUSINESS LAW AND FIRM SIZE

small firm variable is 10	Dependent Variable: Export Share of an Industry							
Quality of Business Law as Measured by Regulation (External Dependence All Firms 1980s) × (Regulation) × (Firm Size)								
ext. dep. × anti-director index × firm size	0.14							
ext. dep. × accounting standards × firm size		0.00						
ext. dep. × anti-self-dealing index × firm size			0.43					
ext. dep. × ex-ante private control of self dealing × firm size				0.46				
ext. dep. × ex-post private control of self-dealing × firm size					0.37			
ext. dep. × public enforcement × firm size						1.71**		
ext. dep. × disclosure × firm size							0.13	
ext. dep. × creditor's rights × firm size								0.25**
Adj. R-squared	.83	.85	.85	.85	.85	.85	.85	.85
Number of Observations	1421	1309	1173	1421	1421	1421	1309	1811

Notes: * = p -values < .1; ** = p -values < .05; *** = p -values < .01