



Economic Structural Transformation and Litigation: Evidence from Chinese Provinces, to Economic Change and Restructuring

Doug Bujakowski

Drake University Law School

Follow this and additional works at: <https://via.library.depaul.edu/bclj>



Joan Schmit
Part of the Accounting Law Commons, Administrative Law Commons, Antitrust and Trade Regulation Commons, Banking and Finance Law Commons, Bankruptcy Law Commons, Business Organizations Law Commons, Civil Law Commons, Commercial Law Commons, Comparative and Foreign Law Commons, Computer Law Commons, Conflict of Laws Commons, Constitutional Law Commons, Construction Law Commons, Consumer Protection Law Commons, Contracts Commons, Disability Law Commons, Dispute Resolution and Arbitration Commons, Estates and Trusts Commons, First Amendment Commons, Government Contracts Commons, Housing Law Commons, Human Rights Law Commons, Intellectual Property Law Commons, International Law Commons, International Trade Law Commons, Internet Law Commons, Labor and Employment Law Commons, Law and Economics Commons, Law and Politics Commons, Law and Psychology Commons, Legal Ethics and Professional Responsibility Commons, Legal Profession Commons, Nonprofit Organizations Law Commons, Oil, Gas, and Mineral Law Commons, Organizations Law Commons, Property Law and Real Estate Commons, Retirement Security Law Commons, Second Amendment Commons, Secured Transactions Commons, Securities Law Commons, State and Local Government Law Commons, Supreme Court of the United States Commons, Taxation-Federal Commons, Taxation-Federal Estate and Gift Commons, Taxation-State and Local Commons, Taxation-Transnational Commons, Tax Law Commons, Transportation Law Commons, and the Workers' Compensation Law Commons

Recommended Citation

Doug Bujakowski & Joan Schmit, *Economic Structural Transformation and Litigation: Evidence from Chinese Provinces, to Economic Change and Restructuring*, 19 DePaul Bus. & Com. L.J. (2022)
Available at: <https://via.library.depaul.edu/bclj/vol19/iss1/3>

This Article is brought to you for free and open access by the College of Law at Via Sapientiae. It has been accepted for inclusion in DePaul Business and Commercial Law Journal by an authorized editor of Via Sapientiae. For more information, please contact digitalservices@depaul.edu.

Economic Structural Transformation and Litigation: Evidence from Chinese Provinces*

*Douglas J. Bujakowski** & Joan T. Schmit****

ABSTRACT

A rich body of literature suggests that economic development may be related to civil litigation trends, yet existing research has focused on economic output, rather than on economic structural changes. The current research begins to fill that gap. Using 24 years of province-level data from China, we estimate both static and dynamic models to test the relationship between civil litigation rates and two types of structural transformation: (1) changes in the composition of GDP across economic sectors and (2) the privatization of assets and jobs. Results suggest that privatization can explain at least 15 percent of the growth in China's civil litigation rates between 1993 and 2016. The results are inconclusive regarding the effects of GDP composition changes. Additionally, our methodology addresses the potential endogeneity of contemporaneous regressors, an issue commonly overlooked in studies of litigation development.

INTRODUCTION

The relationship between economic development and civil litigation has received notable empirical attention in recent years. Yet, despite numerous, thoughtful investigations, the connection between these phenomena remains a point of debate. Some studies observe a positive relationship between economic activity and civil litigation, while others find signs of a negative relationship, and still others find no

* This paper has benefited from comments and suggestions by Swiss Re, colleagues at the University of Wisconsin-Madison School of Business and Peking University School of Economics, and seminar participants at the 2018 ARIA conference. Special thanks to Swiss Re for their support in the acquisition of data.

** Corresponding author, Douglas Bujakowski is from the College of Business and Public Administration, Drake University, 2507 University Avenue, Des Moines, IA, 50311, USA. Email: doug.bujakowski@drake.edu.

*** Joan Schmit is from the Wisconsin School of Business, University of Wisconsin-Madison 5284A Grainger Hall, 975 University Ave., Madison, WI, 53706, USA. Email: joan.schmit@wisc.edu.

significant relationship.¹ Furthermore, studies have concluded that the relationship between economic activity and civil litigation may be non-linear and/or may vary across jurisdictions or the type of civil litigation studied.²

In this study, we propose a possible explanation for the mixed results observed in the literature, namely, that prior research has focused exclusively on the *volume* of economic activity and has neglected the *nature* of economic activities. Economic development involves more than just increases in total output. It also involves changes in the distribution of output, commonly known as structural changes. As we will explain, economic structural changes likely relate to the incidence of disputes and the incentives to pursue litigation. As such, commonly used measures of economic activity may leave us with an incomplete understanding of the relationship between economic development and civil litigation.

In this paper, we test the relationship between civil litigation rates (lawsuits per capita) and two types of economic structural change: (1) shifts in the composition of GDP away from agriculture and resource extraction activities and toward manufacturing and service sector activities and (2) the privatization of assets and jobs. To our knowledge,

1. For a positive relationship, *see, e.g.*, Paolo Buonanno & Matteo M. Galizzi, *Advocatus, et non Latro? Testing the Excess of Litigation in the Italian Courts of Justice*, 10 REV. L. & ECON. 285, 301 (2014); Michael W. Giles & Thomas D. Lancaster, *Political Transition, Social Development, and Legal Mobilization in Spain*, 83 AM. POL. SCI. REV. 817, 829 (1989); Theodore Eisenberg et al., *Litigation as a Measure of Well-Being*, 62 DEPAUL L. REV. 247, 286 (2013); Manuel Coutinho Pereira & Lara Wemans, *Determinants of Civil Litigation in Portugal*, 1 BANCO DE PORTUGAL ECON. STUD. 21, 38 (2015); Virginia Rosales & Dolores Jiménez-Rubio, *Empirical Analysis of Civil Litigation Determinants: The Case of Spain*, 44 EUR. J. L. & ECON. 321, 332 (2017). For a negative relationship, *see, e.g.*, F. Andrew Hanssen, *The Effect of Judicial Institutions on Uncertainty and the Rate of Litigation: The Election versus Appointment of State Judges*, 28 J. LEGAL STUD. 205, 224 (1999); Juan S. Mora-Sanguinetti & Nuno Garoupa, *Do Lawyers Induce Litigation? Evidence from Spain, 2001–2010*, 44 INT'L REV. L. ECON. 29, 38 (2015). For no significant relationship, *see, e.g.*, Amanda Carmignani & Silvia Giacomelli, *Too Many Lawyers? Litigation in Italian Civil Courts* 1, 20 (2010), available at <https://core.ac.uk/download/pdf/6689238.pdf>; Richard A. Posner, *Explaining the Variance in the Number of Tort Suits across U.S. States and between the United States and England*, 26 J. LEGAL STUD. 477, 484 (1997); Jeff Yates et al., *Assessing the Impact of State Judicial Structures on Citizen Litigiousness*, 63 POL. RES. Q. 796, 803 (2010).

2. For a non-linear relationship, *see, e.g.*, Tom Ginsburg & Glen Hoetker, *The Unreluctant Litigant? An Empirical Analysis of Japan's Turn to Litigation*, 35 J. LEGAL STUD. 31, 49 (2006). For variations across jurisdictions, *see, e.g.*, Tonja Jacobi, *The Role of Politics and Economics in Explaining Variation in Litigation Rates in the U.S. States*, 38 J. LEGAL STUD. 205, 222 (2009). For variations by type of litigation, *see, e.g.*, Burton M. Atkins & Henry R. Glick, *Environmental and Structural Variables as Determinants of Issues in State Courts of Last Resort*, 20 AM. J. POL. SCI. 97, 106 (1976); Joel B. Grossman & Austin Sarat, *Litigation in the Federal Courts: A Comparative Perspective*, 9 L. & SOC'Y REV. 321, 336 (1975); J. Mark Ramseyer, *Litigation and Social Capital: Divorces and Traffic Accidents in Japan*, 11 J. EMPIRICAL LEGAL STUD. 39, 68 & 69 (2014).

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 99

we are the first to conduct such tests. Results provide nuance to the study of economic development and litigation and are expected to be particularly relevant for developing economies, whose economic structures are still evolving.

To conduct our tests, we utilize 24 years (1993-2016) of province-level data from China. In addition to its rapid growth and enormous size, China is a nation that has undergone dramatic structural changes in its transition to a market economy. For instance, from 1993 to 2016, the proportion of China's GDP generated from service sector activities increased from 34.5 percent to 51.6 percent, and the proportion of China's workforce employed by private enterprises rose from 21.6 to 84.0 percent. This variability makes China an ideal environment in which to test the influence of economic structural changes.

Like many developing economies, China has received relatively little attention in the empirical literature. Existing empirical studies focus on specific segments of Chinese society and rely on data from select individuals, households, and specific types of cases. Such research is intentionally narrow in scope, offering deep insights into topics ranging from legal mobilization in rural communities to judicial outcomes in corporate litigation.³ We provide a much broader view by assessing province-level changes in the volume of civil litigation.

Our analysis employs a generalized method of moments (GMM) dynamic panel methodology. This methodology allows for the dynamic adjustment of litigation rates to long-run levels, which is central to understanding the long-run influence of socioeconomic conditions on litigation rates. Additionally, dynamic GMM accounts for the potential endogeneity of contemporaneous regressors.⁴ Endogeneity is an important consideration in the context of litigation given the rich literature documenting bidirectional causation between litigation rates and socioeconomic factors. For example, economic development has the potential to shape litigation rates; yet the reverse may also be true.

3. For legal mobilization in rural communities, see, e.g., Ethan Michelson, *Climbing the Dispute Pagoda: Grievances and Appeals to the Official Justice System in Rural China*, 73 *AM. SOC'Y REV.* 459, 459 (2007); Mingming Shen & Yuhua Wang, *Litigating Economic Disputes in Rural China*, 9 *CHINA REV.* 97, 97 (2009). For judicial outcomes in corporate litigation, see, e.g., Michael Firth et al., *The Effects of Political Connections and State Ownership on Corporate Litigation in China*, 54 *J.L. & ECON.* 573, 573 (2011); Haitian Lu et al., *Political Connections and Judicial Bias: Evidence from Chinese Corporate Litigations* 1, 1 (2011), available at <https://faculty.wharton.upenn.edu/wp-content/uploads/2012/04/ZCY.pdf>.

4. Dynamic GMM accounts for endogeneity by using lags of regressors as instruments for their contemporaneous values. Lagging ensures that regressors precede the dependent variable in time, eliminating the potential for reverse causality.

Legal outcomes may shape economic outcomes.⁵ Failure to account for endogeneity can lead to biased estimates and incorrect inferences.

Moreover, we build upon litigation rate studies in other jurisdictions and extend the literature in three specific ways. First, we provide a more comprehensive view of the connection between economic development and civil litigation through the consideration of economic structural changes alongside more conventional determinants. Second, we conduct the first empirical tests of Chinese civil litigation rates in aggregate, the results of which provide new insights into China's experience and contribute to a more general understanding of civil litigation in developing countries. Third, we account for litigation dynamics across time and the potential endogeneity of contemporaneous regressors. Such issues have serious implications for estimates and inferences but are often overlooked in studies of civil litigation rates.

Results suggest that privatization is associated with increases in civil litigation rates, even after controlling for a host of conventional determinants. We also observe that civil litigation rates display a high degree of persistence over time and that models that account for temporal correlations are warranted. GDP composition variables do not appear to influence civil litigation rates. Yet, it may be that GDP composition changes relate to different types of disputes in different ways, such that relationships are masked when civil lawsuits are measured in aggregate. With more granular data regarding the nature of litigated cases, one could investigate this possibility.

These findings may be useful in preparing for legal claims and setting public policy. Additionally, our findings have implications for the study of civil litigation development in other jurisdictions, especially emerging economies, highlighting the importance of economic structural changes and the use of methodologies that address endogeneity issues and incorporate dynamics over time.

The remainder of the paper is structured as follows: In section two, we review prior studies of economic development and civil litigation and argue that structural changes should be considered within this framework. In doing so, we connect with general theories of economic structural change and examine China's shifting economic structures. In section three, we review other factors relevant to the evolution of litigation rates. In section four, we describe the data used to test those hypotheses and develop our econometric model. In sec-

5. See, e.g., Rafael La Porta et al., *Legal Determinants of External Finance*, 52 J. FIN. 1131, 1131 (1997).

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 101

tion five, we present our results. And in section six, we conclude with a discussion of our findings and suggestions for future research.

THE ROLE OF STRUCTURAL TRANSFORMATION

A number of studies aim to understand the relationship between economic development and civil litigation. In most cases, these studies track the evolution of litigation rates in a particular jurisdiction and correlate changes with various economic, demographic, and legal factors. This field of research has leveraged data from a variety of developing and developed regions, including Austria, India, Italy, Japan, Portugal, Spain, and the U.S.⁶

All of the cited studies account for changes in economic activity and income in their analyses. This is typically accomplished through the inclusion of GDP per capita, which appears in 13 of the 16 studies. The three that do not include GDP per capita [Pereira and Wemans (2015), Ramseyer (2014), and Yates et al. (2010)], instead include measures of purchasing power, savings, and poverty, respectively.⁷ Eisenberg et al. (2013) consider both GDP per capita and the Human Development Index, a broader measure of well-being that incorporates economic and non-economic components.⁸

The inclusion of GDP or a related measure in an analysis of litigation rates seems reasonable for at least two reasons. First, civil litigation is often a byproduct of doing business. In a study of civil litigation in U.S. states, Jacobi (2009) explains that “whether suing former comrades, battling rivals in new markets, or defending lawsuits brought by the public, as the value of the relevant economic activity increases, the volume of litigation can be expected to similarly increase.”⁹ Second, litigation is costly.¹⁰ As incomes rise, a greater

6. For Austria, *see, e.g.*, Gerhard Clemenz & Claus Gugler, *Macroeconomic Development and Civil Litigation*, 9 EUR. J.L. ECON. 215, 215 (2000). For India, *see, e.g.*, Eisenberg et al., *supra* note 1, at 247. For Italy, *see, e.g.*, Buonanno & Galizzi, *supra* note 1, at 285; Carmignani & Giacomelli, *supra* note 1, at 5. For Japan, *see, e.g.*, Ginsburg & Hoetker, *supra* note 2; Ramseyer, *supra* note 2, at 41. For Portugal, *see, e.g.*, Pereira & Wemans, *supra* note 1, at 321. For Spain, *see, e.g.*, Giles & Lancaster, *supra* note 1, at 817; Mora-Sanguinetti & Garoupa, *supra* note 1, at 29; Rosales & Jiménez-Rubio, *supra* note 1, at 321. For the U.S., *see, e.g.*, Atkins & Glick, *supra* note 2, at 97; Grossman & Sarat, *supra* note 2, at 321; Hanssen, *supra* note 1, at 205; Jacobi, *supra* note 2, at 205; Posner, *supra* note 1, at 477; Yates et al., *supra* note 1, at 796.

7. Pereira & Wemans, *supra* note 1, at 332. Ramseyer, *supra* note 2, at 68 & 69. Yates et al., *supra* note 1, at 803.

8. Eisenberg et al., *supra* note 1, at 286.

9. Jacobi, *supra* note 2, at 206.

10. In many jurisdictions including China, plaintiffs are required to pay lawsuit filing costs and/or court acceptance costs, in addition to monies spent on attorneys, notaries, interpreters, and expert witnesses.

share of the population may find that they possess the financial resources necessary to file and sustain a lawsuit.¹¹

While these arguments suggest a positive relationship between economic activity and civil litigation rates, the empirical evidence is mixed. Buonanno and Galizzi (2014), Eisenberg et al. (2013), Giles and Lancaster (1989), Pereira and Wemans (2015), and Rosales and Jiménez-Rubio (2017) observe a positive relationship, while Hanssen (1999), Mora-Sanguinetti and Garoupab (2015) find signs of a negative relationship.¹² Carmignani and Giacomelli (2010), Posner (1997), and Yates et al. (2010) find no significant relationship in either direction.¹³ Ginsburg and Hoetker (2009) conclude that the relationship may be non-linear.¹⁴ Jacobi (2009) finds that the relationship varies across jurisdictions and Atkins and Glick (1976), Grossman and Sarat (1975), and Ramseyer (2014) observe that the relationship varies by the type of civil litigation studied.¹⁵

The seemingly inconsistent findings may not be so surprising when one considers that prior research has relied almost exclusively on GDP per capita or related measures of income and wealth to capture all aspects of economic development. While rising GDP is certainly an important component of development, a well-established body of literature suggests that economic development also involves changes in the composition of GDP across economic sectors and the privatization of assets and jobs. These varied elements may explain the mixed results and are the focus of our study.

Changes in the Composition of GDP

Clark (1940), Fisher (1939), and Fourastié (1954) are among the first to discuss changes in the composition of GDP as a feature of economic development.¹⁶ The pioneering work of these authors led to what is now commonly known as the “three-sector theory.” Ac-

11. See, e.g. Jacobi, *supra* note 2, at 214.

12. Buonanno & Galizzi, *supra* note 1, at 301. Giles & Lancaster, *supra* note 1, at 829. Eisenberg et al., *supra* note 1, at 286. Pereira & Wemans, *supra* note 1, at 38. Rosales & Jiménez-Rubio, *supra* note 1, at 332. Hanssen, *supra* note 1, at 224. Mora-Sanguinetti & Garoupab, *supra* note 1, at 38.

13. Carmignani & Giacomelli, *supra* note 1, at 20. Posner, *supra* note 1, at 484. Yates et al., *supra* note 1, at 803.

14. Ginsburg and Hoetker, *supra* note 2, at 49.

15. Jacobi, *supra* note 2, at 222. Atkins & Glick, *supra* note 2, at 106. Grossman & Sarat, *supra* note 2, at 336. Ramseyer, *supra* note 2, at 68 & 69.

16. COLIN CLARK, *THE CONDITIONS OF ECONOMIC PROGRESS* (1940). Allan G. B. Fisher, *Production, Primary, Secondary and Tertiary*, 15 *ECON. RECORD* 24 (1939). JEAN FOURASTIÉ, *Die Große Hoffnung des Zwanzigsten Jahrhunderts* [The Great Hope of the Twentieth Century] (1954).

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 103

According to this theory, all economic activity can be classified into one of three sectors: the primary sector, the secondary sector, and the tertiary sector. The primary sector includes all industries concerned with the extraction of natural resources or the production of raw materials. Examples include farming, mining, forestry, and fishing. The secondary sector includes all industries concerned with the manufacture of products. The tertiary sector includes all other industries and is sometimes referred to as the service sector. Examples of service sector activities include retail, financial services, health care, and entertainment.

The three-sector theory postulates that as an economy develops, the bulk of its activity shifts from the primary sector to the secondary sector and eventually, to the tertiary sector. This shift is made possible by gains in education, technology, and the specialization of labor, all of which increase productivity. Greater productivity provides for more efficient resource extraction and manufacturing, shifting the labor force away from these pursuits and towards service sector activities.

GDP composition changes in China have tracked closely with theoretical predictions. Figure 1 shows the composition of China's real GDP from 1993 to 2016. In 1993, approximately 19 percent of China's GDP was generated via primary sector activities, 46 percent was generated via secondary sector activities, and 35 percent was generated via tertiary sector activities. In 2016, these percentages were 8, 40, and 52 percent, respectively.

These changes may have implications for civil litigation rates. As economies restructure, new products and services are introduced to the market, people's jobs and activities become more diversified, and production and consumption structures become more complex. This dynamism may increase the pool of disputes on which to litigate and alter the composition of that pool. In a study of mediation in China, Halebua (2005) notes that compared with more traditional cases of divorce and land ownership, today's disputes involve breaches of contract, intellectual property, product liability, insurance coverage, rental agreements, and construction noise, among others.¹⁷ New types of disputes may be more prone to litigation, especially when legal rules surrounding those situations are not fully formed.

Yet, it could also be that GDP composition changes shrink the pool of underlying disputes. A number of studies note that economic struc-

17. Aaron Halebua, *Reforming the People's Mediation System in Urban China*, 35 HONG KONG L.J. 715, 718 (2005).

tural changes are typically accompanied by safety enhancements, including automation, government safety inspections, food quality standards, road safety precautions, and a host of other innovations and activities that may reduce the frequency of harms.¹⁸ As harms decrease, so too will associated lawsuits. Generally, we hypothesize that GDP composition changes are related to rates of civil litigation, but that the direction of this relationship will depend on the net effect of several forces.

Privatization

In addition to GDP composition changes, the Chinese economy has undergone a second form of restructuring: a shift in economic activity away from the public sector and toward the private sector. This trend of privatization is consistent with theoretical and empirical evidence of structural transformation arising from economic development.¹⁹ Generally, research suggests that economic development breeds competition and specialization, which disproportionately improves efficiency among private enterprises. As the gap between public and private efficiency grows, incentives to privatize increase.

Within the privatization literature, a number of studies examine China specifically.²⁰ We replicate measures of privatization used by Tian (2001) and Song et al. (2011), which we call private investment and private employment.²¹ These variables reflect the percentage of fixed asset investment and urban employment belonging to the private

18. For automation, *see, e.g.*, B Fabiano et al., *Occupational Injuries in Italy: Risk Factors and Long Term Trend (1951–98)*, 58 OCCUP. & ENVTL. MED. 330, 333 (2001). For government safety inspections, *see, e.g.*, James M. MacDonald et al., *Structural Change in Meat Industries: Implications for Food Safety Regulation*, 78 AM. J. AGRIC. ECON. 780, 785 (1990). For food quality standards, *see, e.g.*, Thomas Reardon & Elizabeth Farina, *The Rise of Private Food Quality and Safety Standards: Illustrations from Brazil*, 4 INT'L FOOD & AGRIBUSINESS MGMT. REV. 413, 415 (2012). For road safety precautions, *see, e.g.*, Jaeyoung Lee et al., *Analysis of Residence Characteristics of At-Fault Drivers in Traffic Crashes*, 68 SAFETY SCI. 6, 10 (2014).

19. For an overview of the privatization literature, *see, e.g.*, Simeon Djankov & Peter Murrell, *Enterprise Restructuring in Transition: A Quantitative Survey*, 40 J. ECON. LITERATURE 739 (2002); William L. Megginson & Jeffrey M. Netter, *From State to Market: A Survey of Empirical Studies on Privatization*, 39 J. ECON. LITERATURE 321 (2001).

20. *See, e.g.*, Chong-En Bai et al., *How Does Privatization Work in China?*, 37 J. COMP. ECON. 453 (2009); Gary H. Jefferson & Jian Su, *Privatization and Restructuring in China: Evidence from Shareholding Ownership, 1995–2001*, 34 J. COMP. ECON. 146, 146 (2006); Zheng Song et al., *Growing Like China*, 101 AM. ECON. REV. 196 (2011); Xiaowen Tian, *Privatization and Economic Performance: Evidence from Chinese Provinces*, 25 ECON. SYS. 65, 65 (2001); Yasuyuki Todo, *Effects of Privatization on Exporting Decisions: Firm-level Evidence from Chinese State-owned Enterprises*, 56 COMP. ECON. STUD. 536, 536 (2014).

21. Tian, *supra* note 20, at 71. Song et al., *supra* note 20, at 202. Studies by Bai et al. (2009), Jefferson and Su (2006), and Todo et al. (2014) utilize firm-level data. Without such data, we are unable to replicate the privatization measures used by these studies.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 105

sector, respectively. Figure 2 illustrates both metrics over the 24-year timespan of our study. In 1993, private investment stood at roughly 22 percent but has since grown to over 71 percent. Changes in private employment are even more drastic, increasing from less than 22 percent in 1993 to over 84 percent in 2016.

Both privatization measures may overstate the true level of privatization in China. Todo et. al. (2014) explains that “privatization [of state-owned enterprises (SOEs)] can occur in a variety of ways, including through reorganizations, mergers and takeovers, leasing and management contracts, and conversion to shareholding companies. Certain SOEs are completely privatized, whereas others are only partially privatized. Certain partially privatized SOEs remain under government control after privatization.”²² Given that certain enterprises remain under government control after being “privatized,” our measures may overestimate the extent of privatization within the Chinese economy. As a result, it may be more appropriate to interpret our metrics as upper bounds on the true level of privatization and to consider any observed relationship with civil litigation rates as a conservative measure.

Privatization may influence civil litigation rates in at least two ways. First, privatization is expected to increase business to business litigation, as privatized firms no longer share a common ownership interest (the state). Second, parties, whether individuals or businesses, may fare better in litigation against private enterprises than against state-owned enterprises, and thus may sue more often as privatization takes hold. Firth et al. (2011) and Lu et al. (2011) examine litigation involving a business either as the plaintiff or defendant in China and show that state-owned and politically connected enterprises fare better than other types of enterprises in the judicial process.²³ These findings are consistent with assertions by Potter (1999) and MacNeil (2002) that courts in China have a long tradition of protecting state interests.²⁴ Generally, we hypothesize that privatization yields more favorable outcomes for potential plaintiffs because they will more often be litigating against a private entity as privatization expands, leading to higher rates of civil litigation.

22. Todo et. al., *supra* note 20, at 6.

23. Firth et al., *supra* note 3, at 591. Lu et al., *supra* note 3, at 45.

24. Pitman B. Potter, *The Chinese Legal System: Continuing Commitment to the Primacy of State Power*, 159 CHINA Q. 673, 674 (1999). Iain MacNeil, *Adaptation and Convergence in Corporate Governance: The Case of Chinese Listed Companies*, 2 J. CORP. L. STUD. 289, 335 (2002).

OTHER DETERMINANTS OF CIVIL LITIGATION

Over the years, a number of theories have emerged that seek to explain the development of civil litigation rates. Krislov (1983) reviews four schools of thought that predominate the theoretical literature: the utilitarian approach, the functional approach, the system approach, and the normative evolution approach.²⁵ The utilitarian approach considers the perceived costs and benefits of litigation and suggests that litigation occurs only when benefits to the plaintiff outweigh costs. The functional approach posits that litigation is a byproduct of social transactions, whereby the volume of litigation in society reflects the nature of interactions and social tendencies. The system approach focuses heavily on the supply of legal services, including the capacity of courts to process cases. Finally, the normative evolution approach considers the clarity of legal rules and cycles of changing norms.

These theories point to a number of potentially important drivers of civil litigation rates, which has motivated further inquiry through empirical tests. To date, a number of determinants have been identified. In the following subsections, we briefly describe these factors and how we control them in the current analysis. Consistent with the existing literature, we group factors into three major categories: economic factors, demographic factors, and legal factors.²⁶ These categories each play a vital role in the development of civil litigation rates.

Economic Factors

As discussed in the previous section, economic conditions are expected to affect civil litigation rates. Prior studies have utilized GDP per capita, purchasing power, savings, and poverty to account for long-run changes in economic activity and income. In addition, several studies account for short-run economic fluctuations. In a study of civil litigation rates in Japan, Ginsburg and Hoetker (2006) find that litigation rates increased following a post-bubble economic slowdown in the 1990s.²⁷ The authors argue that recessions may break long term business cooperation, resulting in more litigation.²⁸ Rosales and Jiménez-Rubio (2017) uncover a similar result in Spain, showing that

25. Samuel Krislov, *Theoretical Perspectives on Case Load Studies: A Critique and a Beginning*, in *EMPIRICAL THEORIES ABOUT COURTS* 161, 163 (Keith O. Boyum & Lynn Mather eds., 1983).

26. Certain factors may pertain to more than one category. In these cases, we select the most closely affiliated category and discuss the factor only once.

27. Ginsburg & Hoetker, *supra* note 2, at 49.

28. *Id.* at 42.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 107

increases in unemployment during recessionary times are associated with increases in civil litigation.²⁹

Following the literature, we account for levels of economic activity, income, and unemployment in our analysis. Specifically, we include GDP per capita and household consumption expenditure per capita as measures of economic activity and income, and unemployment rates as a measure of aggregate unemployment. Given the mixed results surrounding GDP, we do not anticipate a particular relationship between GDP and civil litigation rates. For household consumption expenditure and unemployment, we anticipate a positive relationship. These economic phenomena are expected to increase the number of disputes, the ability of individuals to litigate in the event of a dispute, or both.

Demographic Factors

Individual and population characteristics are also expected to influence the development of civil litigation rates. For example, prior research has shown that litigation rates are higher in densely populated, urban areas. Other characteristics that we study include education, life expectancy, and social capital. Population density and urbanization are commonly employed proxies for the frequency of interactions in a jurisdiction.³⁰ As population density and urbanization rise, people may encounter each other more frequently, increasing the potential for disputes. Additionally, residents of high-density urban areas may face lower social costs of litigating compared with residents of more sparsely populated rural areas. In rural areas, social norms may punish litigious behavior, prompting individuals to seek other methods of dispute resolution.

In their study of civil litigation in India, Eisenberg et al. (2013) demonstrate that non-economic measures of well-being, such as education and life expectancy, play a significant role in the development of litigation rates.³¹ The authors explain that “an impoverished, uneducated field worker in poor health faces obstacles other than money to securing rights: lack of education likely reduces knowledge of one’s private and public rights; ill-health may disable one from many activities, including litigation; and shorter life expectancies provide less time to sue.”³² In addition to these direct effects on litigation, less education and shorter life expectancies may compromise economic

29. Rosales & Jiménez-Rubio, *supra* note 1, at 332.

30. *See, e.g.*, Buonanno & Galizzi, *supra* note 1, at 295; Eisenberg et al., *supra* note 1, at 257.

31. Eisenberg et al., *supra* note 1, at 286.

32. *Id.*, at 256.

development, and thereby indirectly influence civil litigation rates through economic measures.

The role of education has also been examined in Italy, Portugal, Spain, and the U.S.³³ Rosales and Jiménez-Rubio (2017) and Yates et al. (2010) find a positive correlation between education and civil litigation rates, supporting the idea that education may increase knowledge of one's legal rights.³⁴ On the other hand, Buonanno and Galizzi (2014), Pereira and Wemans (2015), and Posner (1997) find a negative association between these variables.³⁵ One possible explanation involves differences in risk attitudes. Halek and Eisenhauer (2001) and Hersch (1996) find that more educated individuals tend to express higher levels of risk aversion.³⁶ Given that litigation is an inherently risky proposition, risk-averse individuals may be less inclined to utilize this process.

Like education, access to the internet may increase knowledge of one's rights and aid in navigating legal processes. In a survey of over 6,000 residents in rural China, Shen and Wang (2009) find that media use is positively related to the decision to litigate both real and hypothetical economic disputes.³⁷ The same may be true of internet use. To our knowledge, the relationship between internet access and civil litigation rates has not been tested previously.

A final demographic factor that has received notable scholarly attention is social capital.³⁸ Social capital is generally defined as the strength of community networks in society. When social capital is high, people might behave in ways that maintain harmony in their relationships and strengthen social bonds. For example, people might steal less often and keep more of their promises. In this case, disputes and associated lawsuits are expected to occur less frequently.

Ramseyer (2012) finds support for this idea in studying divorce and auto accident litigation in Japan.³⁹ In his study, Ramseyer accounts for several dimensions of social capital, including civic engagement,

33. For Italy, *see, e.g.*, Buonanno & Galizzi, *supra* note 1, at 301. For Portugal, *see, e.g.*, Pereira & Wemans, *supra* note 1, at 38. For Spain, *see, e.g.*, Rosales & Jiménez-Rubio, *supra* note 1, at 332. For the U.S., *see, e.g.*, Hanssen, *supra* note 1, at 224; Posner, *supra* note 1, at 484; Yates et al., *supra* note 1, at 796.

34. Rosales & Jiménez-Rubio, *supra* note 1, at 332. Yates et al., *supra* note 1, at 803.

35. Buonanno & Galizzi, *supra* note 1, at 301. Pereira & Wemans, *supra* note 1, at 38. Posner, *supra* note 1, at 484.

36. Martin Halek & Joseph G. Eisenhauer, *Demography of Risk Aversion*, 68 J. RISK & INS. 1, 15 (2001). Joni Hersch, *Smoking, Seat Belts, and Other Risky Consumer Decisions: Differences by Gender and Race*, 17 MANAGERIAL & DECISION ECON. 471, 481 (1996).

37. Shen & Wang, *supra* note 3, at 114.

38. *See, e.g.*, Ramseyer, *supra* note 2, at 39.

39. Ramseyer, *supra* note 2, at 39.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 109

social engagement, workplace engagement, community infrastructure, family cohesion, community cohesion, and urban character. Several proxies for each dimension are discussed and the majority are found to be negatively correlated with civil litigation rates. Additionally, Ramseyer finds that couples are more likely to divorce in communities with low social capital – a finding that we leverage in measuring social capital in the current analysis.

Following prior studies, we include measures of population density, urbanization, education, life expectancy, and social capital in our analysis. Additionally, we account for an individual's ability to access the internet. Population density and urbanization are measured directly. Education is proxied using the number of students currently enrolled in universities per capita. Life expectancy is only available at 10-year intervals, in 1990, 2000, and 2010, and thus we impute values in other years. For years 1993-2010, we linearly interpolate between the two nearest known values. For years beyond 2010, we use 2010 values.⁴⁰ Social capital is proxied using divorce rates, following Ramseyer's (2012) finding that social capital is negatively correlated with the propensity to divorce.⁴¹ Finally, internet access is proxied using the percentage of people accessing the internet for at least one hour per week. We anticipate a positive relationship between civil litigation rates and population density, urbanization, life expectancy, internet access, and divorces.⁴² We do not anticipate a particular relationship between civil litigation rates and education. Given that education has the potential to increase or decrease civil litigation rates through various mechanisms, the net effect of these forces is ambiguous.

Legal Factors

A jurisdiction's legal system is expected to shape opportunities and incentives to litigate. We consider three aspects of China's legal environment: access to legal services, alternatives to litigation, and the evolution of legal rules. Access to legal services is among the most studied factors related to civil litigation rates, after GDP. Typically, access to legal services is measured using numbers of lawyers and law firms per capita. Greater numbers of lawyers and law firms may lower search costs and costs of representation, making litigation a more at-

40. We could instead use linear extrapolation to impute values for years 2011-2016. Doing so does not alter our results.

41. Ramseyer, *supra* note 2, at 39.

42. We hypothesize positive coefficients on divorce rates because increases in divorce are thought to reflect lower levels of social capital and hence, more disputes and a greater willingness to litigate.

tractive proposition. Additionally, lawyers may encourage litigation out of self-interest.

Ginsburg and Hoetker (2006) find that an expansion of the Japanese bar during the 1990s resulted in greater numbers of lawyers and judges, which in turn, contributed to a rapid increase in Japanese civil litigation rates.⁴³ This result is supported by studies in Italy, Portugal, Spain, and the U.S.⁴⁴ Studies by Carmignani and Giacomelli (2010) and Buonanno and Galizzi (2014) are especially notable in that they employ an instrumental variables approach to demonstrate that the presence of lawyers may induce civil litigation.⁴⁵ This finding is stronger than one of positive correlation given the possibility of reverse causality – that litigation rates might influence the supply of lawyers. That is, as litigation rates increase, growing demand for lawyers may attract students to the legal profession and incentivize part-time and non-practicing lawyers to practice full-time.

Less formal and less expensive alternatives to litigation may also impact the extent of civil litigation in a jurisdiction. In China, People's Mediation Committees are the embodiment of an informal system. These committees operate primarily at the village level and can be used free of charge to resolve any manner of dispute.⁴⁶ During mediation, mediators generally offer guidance and encourage voluntary resolutions between parties.⁴⁷ If a mediated resolution is acceptable to all parties, a legally-binding settlement agreement stating the terms of the resolution may be drawn up and signed.⁴⁸ However, if a mediated resolution cannot be reached, other channels of dispute resolution such as the court system remain available to the parties.⁴⁹

In a survey of residents in rural China, Shen and Wang (2009) find a preference for mediation over litigation in both real and hypothetical economic disputes, noting that this channel of dispute resolution is often more flexible, cheaper, and less reputationally damaging than

43. Ginsburg & Hoetker, *supra* note 2, at 49.

44. For Italy, *see, e.g.*, Carmignani & Giacomelli, *supra* note 1, at 20; Buonanno & Galizzi, *supra* note 1, at 301. For Portugal, *see, e.g.*, Pereira & Wemans, *supra* note 1, at 38. For Spain, *see, e.g.*, Mora-Sanguinetti & Garoupab, *supra* note 1, at 38; Rosales & Jiménez-Rubio, *supra* note 1, at 332. For the U.S., *see, e.g.*, Hanssen, *supra* note 1, at 224; Posner, *supra* note 1, at 484.

45. Carmignani & Giacomelli, *supra* note 1, at 20. Buonanno & Galizzi, *supra* note 1, at 300.

46. *See* People's Republic of China Const. art. 111, <http://english.people.com.cn/constitution/constitution.html>; People's Mediation Law of the People's Republic of China, art. 4, 7 & 8 (promulgated by the Standing Comm. of the Nat'l People's Cong., Aug. 28, 2010, effective Jan. 1, 2011), <https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/85806/96276/F1660942158/CHN85806>.

47. People's Mediation Law, art. 22.

48. People's Mediation Law, art. 28, 29 & 31.

49. People's Mediation Law, art. 3, 17 & 23.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 111

litigation.⁵⁰ Indeed, the Chinese government has encouraged the use of community mediation as an alternative to litigation and has strengthened the system in recent years with the 2010 passage of the People's Mediation Law. Yet, it may be that some disputants use people's mediation as an initial attempt to resolve a dispute, with an intent to litigate if people's mediation fails. In this case, people's mediation is sequential to litigation, rather than a substitute for litigation. Ultimately, the relationship between people's mediation and civil litigation is an empirical question.

A final aspect of China's legal environment that we consider is the evolution of legal rules over time, which has shaped and reshaped the costs and benefits associated with litigation. During our study period, a number of reforms have been enacted, including China's Civil Procedural Law (1991; 2007; 2012; 2017), Consumer Protection Law (1993; 2013), Product Quality Law (1993; 2000), Measures on Payment of Litigation Fees (2006), Property Law (2007), Patent Law (1984; 1992; 2000; 2008), Food Safety Law (2009; 2015), Copyright Law (1990; 2001; 2010), and Law of the Application of Law for Foreign-Related Civil Relations (2010).⁵¹ These laws have expanded the scope

50. Shen & Wang, *supra* note 3, at 107.

51. The first date listed refers to the time of original promulgation and subsequent dates refer to times of amendments. Consumers' Rights and Interests Protection Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Oct. 31, 1993, effective Jan. 1, 1994, amended Oct. 25, 2013), available at <https://www.chinalawtranslate.com/en/consumer-protection-law-including-2013-amendments/>. Product Quality Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Feb. 22, 1993, effective Sep. 1, 1993, amended Jul. 8, 2000), available at <http://www.lehmanlaw.com/resource-centre/laws-and-regulations/consumer-protection/product-quality-law-of-the-peoples-republic-of-china-2000.html>. Measures on Payment of Litigation Fees (promulgated by the St. Council, Dec. 19, 2006, effective Apr. 1, 2007), available at http://www.gov.cn/zwggk/2006-12/29/content_483407.htm. Property Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Mar. 16, 2007, effective Oct. 1, 2007), available at http://english.www.gov.cn/services/investment/2014/08/23/content_281474982978047.htm. Patent Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Mar. 12, 1984, effective Apr. 1, 1985, amended Sep. 4, 1992, Aug. 25, 2000 & Dec. 27, 2008), available at http://english.www.gov.cn/services/investment/2014/08/23/content_281474982978047.htm. Food Safety Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Feb. 28, 2009, effective Jun. 1, 2009, amended Apr. 24, 2015), available at https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=amended%20Food%20Safety%20Law%20of%20China_Beijing_China%20-%20Peoples%20Republic%20of_5-18-2015.pdf. Copyright Law of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Sep. 7, 1990, effective Jun. 1, 1991, amended Oct. 27, 2001 & Feb. 26, 2010), available at http://english.www.gov.cn/archive/laws_regulations/2014/08/23/content_281474982987430.htm#:~:text=article%201%20This%20Law%20is,to%20the%20construction%20of%20socialist. Law of the Application of Law for Foreign-Related Civil Relations of the People's Republic of China (promulgated by the Standing Comm. of the Nat'l People's Cong., Oct. 28, 2010, effective Apr. 1, 2011), available at <https://asadip.files.wordpress.com/2010/11/law-of-the-application-of-law-for-foreign-of-china-2010.pdf>.

of rights under protection, tightened liability rules favorable to potential defendants, and augmented damages, among other things. Zhang (2014) provides a detailed discussion of these items, offering several instances in which the litigation of specific disputes changed following the enactment of various pieces of legislation.⁵²

Following the literature, we account for the presence of lawyers and law firms in our analysis by including the number of full-time lawyers per 10,000 people and the number of law firms per 10,000 people. We also account for legal factors specific to China, including the utilization of people's mediation and the enactment of relevant laws. People's mediation is measured using the number of people's mediation claims per 10,000 people. Mediation rates include both successful and unsuccessful instances of people's mediation and exclude judicial mediation, arbitral mediation, and other matters handled by courts.⁵³

The measurement of legislative reforms is more challenging. Between 1993 and 2016, at least 13 national-level reforms were enacted that have the potential to alter the costs and benefits of litigating. Some of these reforms were implemented in the same year as others and all were implemented at a national-level, precluding the use of province-level variation to assess their impact on civil litigation rates. Given these obstacles, we are unable to assess the marginal effects of each reform; yet, it is still important that we account for them. We do so through the inclusion of year fixed effects. Year effects are expected to capture the influence of legislative and institutional changes that may exert a sizable impact on civil litigation rates in a given year. The motivation for this proxy stems from how one might address the influence of a newly enacted law. A natural method of accounting for such a change would be to create a binary variable that takes the value 1 when the law is in effect and 0 when the law is not in effect. Given that a great number of legislative changes occur over the 24-year timespan of our study, we allow for a unique legal environment in each year through the inclusion of 23 binary variables (year fixed effects).

Generally, we anticipate a positive relationship between civil litigation rates and measures of lawyers and law firms. We do not anticipate a particular relationship with people's mediation rates. Given that people's mediation may be sequential to litigation or serve as a substitute for litigation, the nature of this association is ambiguous.

52. Wei Zhang, *Understanding the Law of Torts in China: A Political Economy Perspective*, 11 U. PA. ASIAN L. REV. 171, (2016).

53. If parties pursue other means of dispute resolution after unsuccessful people's mediation, the instance of attempted mediation is included within our counts.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 113

DATA AND METHODOLOGY

Litigation Data

To test the drivers of civil litigation rates in China, we employ annual data collected by the National Bureau of Statistics of China and reported in the China Statistical Yearbook Database (CSYD). Civil litigation data reported in the CSYD are derived from two sources: courts and law firms. Court data include counts of all first-instance civil lawsuits at both the national and provincial levels. Unfortunately, these data are generally not sufficient for analysis. National-level counts are available from 1978-2016, resulting in 39 observations – too few for a robust analysis of litigation determinants. Province-level counts are available for just nine of China's 31 provinces and only in select years.⁵⁴

The limitations of court data likely explain the absence of prior studies of civil litigation rates in China. We attempt to overcome these limitations through the use of law firm data. Law firm data include counts of first-instance civil lawsuits in which the plaintiff used an attorney. While civil lawsuits involving a plaintiff attorney represent only a subset of total civil lawsuits, they are more widely available than total counts, such that empirical analyses are possible. Like court data, law firm data are reported in the CSYD at both the national and province level. Province-level data begin in 1993 and are available for 24 of China's 31 provinces.⁵⁵

Figure 3 shows national-level civil litigation rates derived from court data and from law firm data from 1993 to 2016. We observe that both measures of litigation increased in every year from 1993 to 1999. From 2000 to 2007, the two measures diverged. Total litigation declined slightly, while litigation involving a plaintiff attorney continued to rise, except in 2007 which saw a noticeable decline. Since 2007, both measures of litigation have risen sharply, more than doubling between 2007 and 2016. We also note that the proportion of civil lawsuits involving a plaintiff attorney averaged 23.5 percent over the timespan, reaching a low of 16.2 percent in 1993 and a high of 32.0 percent in 2006.

54. Province-level data are available in Shanghai, Chongqing, Beijing, Anhui, and Hubei from 2002 onward, in Henan and Shandong from 2005 onward, and in Jiangsu and Jilin from 2006 onward.

55. The seven missing provinces are Gansu, Guangxi, Hebei, Inner Mongolia, Shandong, Tibet, and Yunnan. Subsequent searches suggest that civil litigation data for these provinces are not publicly available. Before 1993, a number of provinces do not include economic disputes within counts of total civil lawsuits nor report these values separately.

While court and law firm litigation rates exhibit different trends in the early and mid-2000s, the two measures are highly correlated in more recent years. For instance, from 2008 to 2016, the correlation between year-over-year changes in total litigation and litigation involving a plaintiff attorney was 82.4 percent (compared with 61.2 percent for the full timespan).⁵⁶ Additionally, the proportion of civil lawsuits involving a plaintiff attorney remained stable over this time, ranging from 24.3 percent to 26.4 percent. These similarities suggest that recent litigation data from law firm records may provide a window into total rates of civil litigation in China.

We conduct two versions of our analysis: one that uses the full timespan (1993-2016) and another that restricts our sample to years 2008 to 2016. The full sample allows us to observe notable structural changes within China's economy. The more recent sample gives us confidence that our measure of civil litigation – litigation involving a plaintiff attorney – is a good representation of total civil litigation in China.

Figure 4 shows civil litigation rates by province according to law firm records. Here, civil litigation rates are expressed in natural logs, allowing us to visualize relative changes in litigation rates over the timespan. We observe that civil litigation rates increased in all provinces except Jiangxi and that many provinces display visually similar growth rates. Yet, notable variation also exists. For instance, Jiangxi, Heilongjiang, and Jilin have the lowest growth rates of -19 percent, 9 percent, and 69 percent, while Anhui, Zhejiang, and Guangdong have the highest growth rates of 1745 percent, 1466 percent, and 926 percent, respectively.

We also observe extreme values in certain province-years. Litigation rates in Heilongjiang in 2010, Jiangxi in 2016, and Shanxi from 2007 to 2010 are lower than one might expect.⁵⁷ Subsequent investigations into these province-years do not reveal any notable events, changes in legislation, or comparable outliers in the independent variables that might explain the sudden decreases in litigation. As such, these litigation rate values remain somewhat of a mystery. Nevertheless, we redo our analysis with these six outliers excluded and find that results remain virtually the same.

56. When correlating variables that are measured over time, it is important to detrend values before assessing correlations. Otherwise, results may be spurious. Using year-over-year changes accomplishes this goal.

57. Actual values are more than three standard deviations away from predicted values for these province-years.

Socioeconomic Data

The CSYD also contains economic, demographic, and legal information, which we use to construct our independent variables. Table 1 provides definitions for these variables and their hypothesized relation to civil litigation rates. All variables are measured at the end of each year and at the province level. Our dependent variable is litigation rate, defined as the natural log of the number of first-instance civil lawsuits involving a plaintiff attorney per 10,000 people per year.

Summary statistics are reported in Table 2. To account for skewness, all variables except those that are percentages or indices are expressed in log form. Most variables have small standard deviations relative to their mean, indicating that these variables are rather symmetric. The average civil litigation rate involving a plaintiff attorney is 9.4 cases per 10,000 people, the average number of full-time lawyers is 1.1 per 10,000 people, and the average number of law firms is 0.1 per 10,000 people. These numbers are comparable to those observed on a national scale, where average civil litigation rates, numbers of lawyers, and numbers of law firms are 9.5, 1.2, and 0.1 per 10,000 people, respectively. Thus, while law firm data are only available for 24 of China's 31 provinces, our sample appears to be representative of China's experience generally.

Another important item to note is that for many of the variables, variation between provinces is close to or greater than variation within provinces. This result illustrates the vast disparities that exist within Chinese society, which our study design exploits. Consider that our analysis spans over two decades in which China underwent significant economic, demographic, and legal changes, and yet, variation between provinces is comparable to that across time.

Econometric Model

Like many longitudinal studies, we begin by specifying a traditional two-way fixed effects model that accounts for province-level and year-level heterogeneity. This model is shown in Equation (1):

$$y_{it} = \alpha_i + \lambda_t + \mathbf{x}'_{it}\boldsymbol{\beta} + \varepsilon_{it}$$

where the natural log of the civil litigation rate in province i in year t (y_{it}) is a function of a fixed province-specific intercept (α_i), a fixed year-specific intercept (λ_t), a vector of explanatory variables ($\mathbf{x}'_{it}\boldsymbol{\beta}$), and an error term (ε_{it}).

Using logs, rather than levels of the dependent variable benefits our regression model in several ways. First, logging allows for a general, non-linear relationship among our variables. This non-linear relation

is apparent when transforming back to un-logged litigation rates: Litigation Rate_{it} = $e^{\alpha_i} e^{\lambda t} e^{x_i \beta} e^{\epsilon_{it}}$. Second, logging makes residuals more normally distributed and reduces heteroskedasticity. Third, logging addresses the fact that litigation rate is a limited dependent variable, in that it is bounded from below at zero. After taking logs, the result is unbounded, avoiding the need for limited dependent variable methods.

The inclusion of province fixed effects controls for unobserved province characteristics that are time-invariant.⁵⁸ Similarly, the inclusion of year fixed effects controls for shocks to litigation in particular years from sources beyond those included in our study, such as changes in relevant legislation. Given that these characteristics may partially explain differences in civil litigation rates across provinces and time, it is important that we hold them fixed in our analysis.

While the traditional two-way fixed effects framework provides a starting point for our analysis, it assumes (1) that civil litigation rates are serially uncorrelated and (2) that regressors are strictly exogenous. Both assumptions seem highly unrealistic. Figure 4 casts doubt on the first assumption, revealing a high degree of persistence in litigation rates from one period to the next. Indeed, tests for serial correlation reject the assumption of no serial correlation.⁵⁹ The second assumption is unrealistic given that civil litigation rates and socioeconomic factors are likely simultaneously determined; that is, each drives the other. For instance, La Porta et al. (1997) find that legal outcomes have the potential to shape economic outcomes.⁶⁰ Aluko and Azeez (2019) find support for this result in developing economies, demonstrating that legal institutions explain cross-country differences in stock market development in 11 countries in sub-Saharan Africa.⁶¹ The potential for simultaneity violates the assumption of strict exogeneity.

Perhaps the most common way of accounting for serial correlation is through the inclusion of an autoregressive process in the error term,

58. The Hausman specification test and multiple F test indicate that province fixed effects are preferred to random effects. The chi-squared statistic in the Hausman specification test is 234.08 (p-value of less than 0.001) and the F-statistic in the multiple F test is 31.04 (p-value of less than 0.001).

59. A test for first-order serial correlation results in a Z-statistic of -3.03 (p-value of 0.003). Thus, we reject the assumption of first-order serial independence.

60. La Porta et al., *supra* note 5, at 1131.

61. Olufemi Adewale Aluko & Bolanle Aminah Azeez, *Effectiveness of Legal Institutions in Stock Market Development in Sub-Saharan Africa*, 52 *ECON. CHANGE AND RESTRUCTURING* 439, 447 (2019).

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 117

as shown in Equation (2).⁶² While this approach deals with serial correlation, it does not address issues of endogeneity. To deal with both issues, we utilize GMM dynamic panel estimators pioneered by Holtz-Eakin et al. (1988), Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).⁶³ This model is shown in Equation (3).

$$y_{it} = \alpha_i + \lambda_t + \mathbf{x}'_{it}\boldsymbol{\beta} + \mu_{it}$$

$$\mu_{it} = \rho\mu_{i,t-1} + \varepsilon_{it} \quad (2)$$

$$y_{it} = \delta y_{i,t-1} + \alpha_i + \lambda_t + \mathbf{x}'_{it}\boldsymbol{\beta} + \varepsilon_{it} \quad (3)$$

Dynamic GMM utilizes a single lag of the dependent variable as a predictor of current values, allowing for the dynamic adjustment of civil litigation rates to long-run levels. Additionally, dynamic GMM accounts for endogeneity through the instrumentation of regressors. The original dynamic GMM estimator proposed by Arellano and Bond (1991) estimates Equation (3) by taking first-differences of both sides of the equation and then using lags of all regressors as instruments for their contemporaneous values.⁶⁴ This technique is known as the GMM difference estimator. It ensures that regressors precede the dependent variable in time, eliminating the potential for reverse causality.

Blundell and Bond (1998) show that when instruments are weak, estimates may be biased and imprecise.⁶⁵ As a potential remedy, they propose estimating a system of equations, where one equation is expressed in first-differences and the other is expressed in levels. In the differenced equation, lagged levels of the explanatory variables serve as instruments. In the levels equation, lagged first-differences of the explanatory variables serve as instruments. This technique is known as the GMM system estimator. The authors show that it provides substantial improvements in bias and precision over the original, difference GMM estimator. Following these developments, we report both

62. Here, we specify an autocorrelation structure of order one (AR(1)). We investigate more complex correlation structures but find that AR(1) provides sufficient flexibility.

63. Douglas Holtz-Eakin et al., Estimating Vector Autoregressions with Panel Data, 56 J. ECONOMETRIC SOC'Y 1371 (1988). Manuel Arellano & Stephen Bond, Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, 58 REV. ECON. STUD. 277 (1991). Manuel Arellano & Olympia Bover, Another Look at the Instrumental Variable Estimation of Error-Components Models, 68 J. ECONOMETRICS 19 (1995). Richard Blundell & Stephen Bond, Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, 87 J. ECONOMETRICS 115 (1998).

64. Arellano & Bond, *supra* note 63, at 278.

65. Blundell & Bond, *supra* note 63, at 115 & 116.

the difference and system GMM estimates when estimating Equation (3).

The consistency of the GMM estimators depends on two assumptions: (1) that errors are serially uncorrelated after controlling for a lagged dependent variable and (2) that instruments are valid. For all models, a test of first-order serial correlation suggests that the first assumption is met and the Sargan test of over-identifying restrictions suggests that the second assumption is met.⁶⁶

The ability of dynamic GMM to address issues of endogeneity and serial correlation has made it a useful tool in macro-level studies of market development, where such issues are common. For instance, Alhassan and Biekpe (2015), Esho et al. (2004), and Feyen et al. (2013) utilize dynamic GMM estimators to examine the determinants of insurance market development across nations.⁶⁷ These studies employ many of the same explanatory variables used in the current study (e.g., GDP per capita, education, urbanization, and life expectancy) and differ only in the dependent variable (insurance premiums vs. litigation rates). To our knowledge, only one other study has utilized dynamic GMM methodologies in the context of civil litigation – that by Pereira and Wemans (2015). The authors use comarca-level data from 1993-2013 to assess the determinants of civil litigation rates in Portugal.⁶⁸

RESULTS

Regression results for the full sample (years 1993-2016) and the restricted sample (years 2008-2016) are shown in Tables 3 and 4, respectively. In each table, model 1 provides estimates of the two-way fixed effects model shown in Equation (1) and Model 2 provides estimates of the two-way fixed effects model with AR(1) disturbances shown in Equation (2). Models 3 and 4 provide estimates of the dynamic GMM specification shown in Equation (3). Model 3 shows the difference

66. After controlling for a single lag of the dependent variable, a test for first-order serial correlation results in a Z-statistic of 0.44 (p-value of 0.66). Thus, we do not reject the assumption of first-order serial independence. In the Sargan test, the null hypothesis is that overidentifying restrictions are valid. This test results in a chi-squared statistic of 407.08 (p-value of 0.46). Thus, we do not reject the assumption that overidentifying restrictions are valid.

67. Abdul Latif Alhassan & Nicholas Biekpe, *Determinants of Life Insurance Consumption in Africa*, 37 RES. INT'L BUS. FIN. 17, 23 (2016). Neil Esho et al., *Law and the Determinants of Property-Casualty Insurance*, 71 J. RISK & INS. 265, 278 (2004). Feyen et al., *What Drives the Development of the Insurance Sector? An Empirical Analysis Based on a Panel of Developed and Developing Countries*, 1 J. FIN. PERSP. 1, 20 (2013).

68. Comarcas are local administrative divisions found in Portugal, Spain, Panama Nicaragua, and Brazil.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 119

GMM estimates of Arellano and Bond (1991), while Model 4 shows the system GMM estimates of Blundell and Bond (1998).⁶⁹ In Models 1 and 2, the regressors explain over 78 percent of the variability in litigation rates in the full sample and over 72 percent of the variability in litigation rates in the restricted sample. R squared measures are unavailable for the dynamic models (Models 3 and 4).

Specifications that account for persistence in litigation rates over time appear to be warranted. In the two-way fixed effects models with AR(1) disturbances, the autocorrelation of residuals is 0.678 in the full sample and 0.353 in the restricted sample. Similarly, coefficients on lagged dependent variables are positive and significant at the one percent level in all dynamic specifications. We also observe that the magnitude of statistically significant coefficients tends to shrink as we move from static to dynamic specifications. This is to be expected, as marginal effects in dynamic models are measured after accounting for each province's litigation rate in the previous period.

Given that litigation rates are expressed in log form, interpretation of explanatory variable coefficients requires transforming to unlogged values. For explanatory variables that are expressed in logs (GDP, household consumption expenditure, population density, education, divorces, lawyers, law firms, and mediation rate), a one-percent increase in that variable is associated with a β percent increase in litigation rates, where β is the variable's estimated coefficient. For explanatory variables that are not expressed in logs (manufacturing, services, private investment, private employment, unemployment, urbanization, internet, and life expectancy), a one-unit increase in that variable is associated with a $100(e^\beta - 1)$ percent increase in litigation rates.

The results shown in Tables 3 and 4 provide strong support for the hypothesis that privatization is positively related to rates of civil litigation. In both the full sample and the restricted sample, coefficients on private employment and private investment are positive and significant at the five or one percent level in three of four model specifications. From 1993 to 2016, a one percent increase in private investment is associated with a 0.4 to 0.9 percent increase in civil litigation rates, and a one percent increase in private employment is associated with a 0.6 to 1.3 percent increase in those rates.⁷⁰ From 2008 to 2016, we observe slightly larger effects. A one percent increase in private investment was associated with a 0.6 to 1.4 percent increase in civil liti-

69. Arellano & Bond, *supra* note 63. Blundell and Bond, *supra* note 63.

70. These estimates rely only on coefficients that are statistically significant at the five or one percent level.

gation rates and a one percent increase in private employment is associated with a 1.5 to 1.8 percent increase in those rates.⁷¹

Using these results, we find that the privatization of assets and jobs can explain 14.9 percent of the growth in national-level civil litigation rates involving a plaintiff attorney from 1993 to 2016.⁷² Results are nearly identical for years 2008 to 2016 – also 14.9 percent after rounding.⁷³ In both calculations, we rely on the smallest, most conservative estimates within the ranges reported above. Those estimates are derived from our GMM specifications, which account for endogeneity. If one were to redo the calculations using other estimates within the reported ranges, the percentage of growth explained would increase. Thus, even by the most conservative standards, the effects of privatization are meaningful and should not be overlooked in studies of civil litigation.

The finding that privatization is associated with increases in civil litigation is a new insight gleaned from this study. Yet, it is not surprising, especially given evidence by Firth et al. (2011) and Lu et al. (2011) that China's state-owned enterprises fare better than its private enterprises in judicial processes.⁷⁴ Likely, privatization signals more favorable prospects for potential plaintiffs, leading to higher litigation rates. Other explanations may also exist. With more granular data (e.g. at the individual level), one could investigate the relative willingness of parties to initiate litigation against public versus private entities. Unfortunately, such data are not available to us. More fully exploring the effects of privatization on civil litigation remains a promising area for future research.

Results do not support the hypothesis that changes in the composition of GDP are related to changes in civil litigation rates. In the full

71. If one is interested only in direct effects, they should err on the lower side of these ranges, as those estimates come from dynamic GMM specifications, which account for endogeneity.

72. From 1993 to 2016, national-level private investment increased by 49.74 percent, and national-level private investment increased by 62.39 percent. Using these values and the coefficient estimates on private investment (0.004) and private employment (0.006), we calculate associated increases in civil litigation. We then calculate the ratio of civil litigation growth due to privatization (57.48 percent) and actual civil litigation growth (386.80 percent). The result is 14.86 percent. This calculation implicitly assumes that our results, which rely on province-level data, hold true at the national level. While we only have data for 24 of China's 31 provinces, summary statistics suggest that these provinces are highly similar to the nation generally. See section 4.2 for details. As such, the assumption seems reasonable.

73. Calculation steps are the same as those discussed in the previous footnote. For the period 2008 to 2016, national-level private investment increased by 6.35 percent, national-level private investment increased by 6.16 percent, and the coefficient estimates on private investment and private employment are 0.006 and 0.015, respectively. Civil litigation growth due to privatization was 13.13 percent and actual civil litigation growth was 88.15 percent. The ratio is 14.89 percent.

74. Firth et al., *supra* note 3, at 591. Lu et al., *supra* note 3, at 45.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 121

sample, coefficients on manufacturing and services are not statistically different from zero in any specification. The story is much the same in the restricted sample. Coefficients are significant at the 10 percent level in one specification and not statically significant in the other three. Where significant, coefficients are negative – the opposite of what we anticipated.

While changes in the composition of GDP do not appear to relate to civil litigation in aggregate, this does not mean that GDP composition can be overlooked in studies of civil litigation. It may be that GDP composition changes relate to different types of disputes in different ways. For instance, shifts toward service sector activities may increase the frequency of contract disputes, while also improving safety and reducing the number of tort disputes. In this case, the aggregated effect is likely to be small, such that it is not statistically significant. With more granular data regarding the nature of litigated cases, one could investigate this possibility.

For most other variables, our results are consistent with those of other studies. Specifically, we find that civil litigation rates are positively related to urbanization, education, internet access, divorces, and law firms, and negatively related to GDP and people's mediation rates. Coefficients on GDP, urbanization, internet access, and law firms are statistically significant in both the full and the restricted sample. Coefficients on education and divorces are only significant in the full sample, and those on people's mediation rates are only significant in the restricted sample. We do not find evidence that household consumption expenditure, unemployment, population density, life expectancy, or lawyers are related to civil litigation rates.

Negative coefficients on GDP may be surprising, given that economic activity is generally thought to increase both the number of disputes and the financial resources available to litigate those disputes. Yet, it may be that impoverished areas actually experience more disputes than wealthier jurisdictions. In a survey of almost 3,000 Chinese households across 37 villages in six provinces, Michelson (2007) finds that the willingness of parties to litigate is highest in the most economically distressed parts of China where grievances are the most prevalent.⁷⁵ Michelson contends that legal mobilization “springs less from the needs of market-based commercial activity or capitalist economic development, and more from profoundly aggrieved villagers utilizing all institutional means at their disposal, including climbing the dispute

75. Michelson, *supra* note 3, at 459.

pagoda, in the pursuit of remedies to their everyday grievances.”⁷⁶ As with other items noted above, more detailed data would allow for further analysis of this particular possibility.

Our results are highly robust to changes in model specification and to changes in sample years.⁷⁷ The latter result is particularly important given notable increases in both total litigation and litigation involving a plaintiff attorney from 2008 to 2016, as well as the high correlation between the two litigation measures during this time. Recall that from 2008 to 2016, the proportion of total lawsuits involving a plaintiff attorney remained fairly stable, ranging from 24.3 percent to 26.4 percent, and the correlation between total litigation and attorney litigation was relatively high (82.4 percent). In earlier years, we observe greater divergence between the two measures.

CONCLUDING REMARKS

The link between litigation rates and economic development has received extensive attention in the literature, with mixed results to date. Prior studies have not considered the role of economic structural changes associated with development, which may explain the mixed results. In the current analysis, we identify and test two types of structural transformation: (1) changes in the composition of GDP across economic sectors and (2) the privatization of assets and jobs. Both of these changes are common in developing economies.

To test these factors, we utilize static and dynamic panel data models. Dynamic GMM specifications address issues of serial correlation and endogeneity through the inclusion of a lagged dependent variable and the instrumentation of regressors. Such issues have serious implications for estimates and inferences but are often overlooked in studies of civil litigation rates. To our knowledge, only Pereira and Wemans (2015) have employed dynamic GMM models in the context of litigation development.⁷⁸

Results suggest that privatization is positively related to rates of civil litigation. Specifically, we find that the privatization of assets and jobs can explain 14.9 percent of the growth in national-level civil litigation rates involving a plaintiff attorney from 1993 to 2016. Results for the period 2008 to 2016 are similar. These results are consistent

76. *Id.*, at 481.

77. Results are also robust to the exclusion of regressors. In a separate analysis, we re-estimate all models holding out various groups of explanatory variables. Results suggest that even when variables are excluded, the vast majority of regressors retain their direction and statistical significance. As such, multicollinearity does not appear to be an issue.

78. Pereira & Wemans, *supra* note 1, at 34.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 123

with the findings of Firth et al. (2011) and Lu et al. (2011) that China's state-owned enterprises fare better than its private enterprises in judicial processes.⁷⁹ Privatization may signal more favorable prospects for potential plaintiffs, leading to higher litigation rates. Testing this hypothesis requires more granular data than that available to us and remains a promising area for future research.

We do not find that changes in the composition of GDP are related to rates of civil litigation in aggregate. Yet, other authors have suggested that changes in economic conditions may affect different types of litigation in different ways.⁸⁰ For example, it may be that a growing service sector increases the number of contract disputes, while also improving safety and reducing the number of tort disputes. With more granular data regarding the nature of litigated cases, one could investigate this possibility.

The findings of this study may be useful in preparing for legal claims and setting public policy. As of 2016, private investment in China stood at 71 percent and private employment stood at 84 percent. Given that these values cannot exceed 100 percent, they will eventually begin to level off. As they do, growth in civil litigation rates may begin to slow. Yet, as we have discussed, our measures may overstate the true level of privatization in China, given that certain "privatized" businesses remain under government control. If privatization remains incomplete even as our measures level off, the result may be continued upward pressure on civil litigation rates. Accounting for these possibilities is critical to understand the future of civil litigation in China.

The findings may also have implications for other developing economies that have not yet privatized. While all regions are unique, policymakers in other jurisdictions may want to reflect on the effects of privatization on civil litigation in China and the potential for similar effects elsewhere. Such effects could substantially alter projections of civil lawsuits and associated costs.

The current analysis is limited somewhat by the availability of Chinese data. Ideally, we would use total litigation rates rather than litigation rates involving a plaintiff attorney and incorporate information from all of China's 31 provinces, municipalities, and autonomous regions for all 24 years of our study. Additionally, more detailed information regarding the legal process, including types of disputes, case resolution times, attributes of lawyers and judges, the probability of

79. Firth et al., *supra* note 3, at 591. Lu et al., *supra* note 3, at 45.

80. See, e.g., Mora-Sanguinetti & Garoupa, *supra* note 1, at 32; Rosales & Jiménez-Rubio, *supra* note 1, at 329.

successful litigation, the nature of settlements, and alternatives to litigation could provide additional insight into the development of civil litigation rates. Gathering such data would allow for a richer understanding of the factors associated with civil litigation in China.

| Variable | Definition | Hyp. |
|-----------------|--|------|
| Litigation Rate | Natural log of the number of civil lawsuits involving a plaintiff attorney per 10,000 people | |
| Manufacturing | Percentage of GDP associated with secondary sector activities | +/- |
| Services | Percentage of GDP associated with tertiary sector activities | +/- |
| Private Invest. | Percentage of fixed asset investment in non-publicly/collectively owned enterprises | + |
| Private Emp. | Percentage of urban employees working outside of publicly/collectively owned enterprises | + |
| GDP | Natural log of real gross domestic product per capita (base year = 2016) | +/- |
| HH Cons. | Natural log of real household consumption expenditure per capita (base year = 2016) | + |
| Unemployment | Percentage of the labor force that is jobless | + |
| Pop. Density | Natural log of the number of people per square mile (in 1,000s) | + |
| Urbanization | Percentage of the population living in urban areas | + |
| Education | Natural log of the number of students enrolled in universities per 10,000 people | +/- |
| Internet | Percentage of people accessing the internet for at least one hour per week | + |
| Life Expect. | Average life expectancy measured in years | + |
| Divorces | Natural log of the number of newly divorced persons per 10,000 people | + |
| Lawyers | Natural log of the number of full time lawyers per 10,000 people | + |
| Law Firms | Natural log of the number of law firms per 10,000 people | + |
| Mediation Rate | Natural log of the number of mediation claims per 10,000 people | +/- |

TABLE 1. DEFINITIONS AND HYPOTHESES

The table provides definitions for the variables included in our analysis and their hypothesized relation to litigation rates. All variables are measured at the end of each year and at the province-level.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 125

| Variable | Obs. | Mean | Standard Deviation | | | Min. | Max. |
|-----------------|------|-------|--------------------|---------|--------|-------|-------|
| | | | Overall | Between | Within | | |
| Litigation Rate | 522 | 2.24 | 0.70 | 0.51 | 0.48 | 0.18 | 4.02 |
| Manufacturing | 522 | 45.58 | 7.27 | 6.24 | 4.78 | 21.31 | 59.40 |
| Services | 522 | 41.22 | 8.39 | 7.00 | 4.81 | 26.81 | 77.95 |
| Private Invest. | 522 | 52.72 | 19.19 | 8.37 | 17.61 | 4.27 | 87.67 |
| Private Emp. | 522 | 52.42 | 23.08 | 10.00 | 21.00 | 5.47 | 91.51 |
| GDP | 522 | 9.93 | 0.79 | 0.46 | 0.65 | 8.12 | 11.67 |
| HH Consumption | 522 | 9.02 | 0.69 | 0.41 | 0.56 | 7.59 | 10.81 |
| Unemployment | 522 | 3.46 | 0.98 | 0.71 | 0.69 | 0.40 | 7.40 |
| Pop. Density | 522 | -0.45 | 1.30 | 1.27 | 0.10 | -4.09 | 2.29 |
| Urbanization | 522 | 0.48 | 0.17 | 0.14 | 0.08 | 0.12 | 0.90 |
| Education | 522 | 4.55 | 0.88 | 0.47 | 0.74 | 2.15 | 5.88 |
| Internet | 522 | 20.59 | 21.34 | 6.91 | 20.33 | 0.00 | 74.02 |
| Life Expect. | 522 | 73.43 | 3.31 | 2.69 | 1.91 | 62.21 | 80.26 |
| Divorces | 522 | 2.75 | 0.57 | 0.40 | 0.42 | 1.31 | 3.91 |
| Lawyers | 522 | 0.08 | 0.76 | 0.56 | 0.52 | -1.89 | 2.39 |
| Law Firms | 522 | -2.19 | 0.59 | 0.48 | 0.34 | -3.44 | -0.11 |
| Mediation Rate | 522 | 3.84 | 0.43 | 0.32 | 0.32 | 2.42 | 5.26 |

TABLE 2. SUMMARY STATISTICS

The table shows summary statistics for all variables employed in our analysis. The sample period is 1993-2016. See Table 1 for variable definitions. All variables are measured at the end of each year and at the province-level. Litigation rate, GDP, household consumption, population density, education, divorces, lawyers, law firms, and mediation rate are expressed in natural logs. “Standard deviation between” reflects variation across provinces, while “standard deviation within” reflects variation within provinces over time.

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|------------------|------------|-----------|------------------|-----------|----------------|-----------|------------|-----------|
| | Two-way FE | | Two-way FE AR(1) | | Difference GMM | | System GMM | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| Manufacturing | -0.003 | 0.008 | -0.010 | 0.011 | -0.002 | 0.007 | -0.001 | 0.006 |
| Services | -0.014 | 0.009 | -0.015 | 0.012 | -0.006 | 0.008 | -0.005 | 0.007 |
| Private Invest. | 0.009 | 0.002 *** | 0.006 | 0.002 ** | 0.004 | 0.002 ** | 0.003 | 0.002 |
| Private Emp. | 0.013 | 0.003 *** | 0.007 | 0.004 * | 0.006 | 0.003 ** | 0.005 | 0.003 ** |
| GDP | -1.610 | 0.249 *** | -0.948 | 0.414 ** | -0.650 | 0.225 *** | -0.274 | 0.155 * |
| HH Cons. | -0.024 | 0.181 | -0.014 | 0.273 | -0.164 | 0.162 | -0.129 | 0.159 |
| Unemployment | -0.069 | 0.020 *** | -0.008 | 0.023 | -0.034 | 0.018 * | -0.019 | 0.018 |
| Pop. Density | 0.310 | 0.324 | -0.227 | 0.385 | 0.125 | 0.269 | 0.104 | 0.051 ** |
| Urbanization | 2.373 | 0.518 *** | 2.053 | 0.827 ** | 1.378 | 0.491 *** | 0.929 | 0.401 ** |
| Education | 0.877 | 0.112 *** | 0.474 | 0.186 ** | 0.447 | 0.106 *** | 0.221 | 0.091 ** |
| Internet | 0.013 | 0.003 *** | 0.008 | 0.005 * | 0.007 | 0.003 ** | 0.006 | 0.003 ** |
| Life Expect. | 0.046 | 0.035 | 0.055 | 0.081 | 0.020 | 0.031 | -0.016 | 0.022 |
| Divorces | 0.350 | 0.107 *** | 0.161 | 0.137 | 0.171 | 0.091 * | 0.218 | 0.077 *** |
| Lawyers | 0.107 | 0.083 | 0.134 | 0.089 | -0.039 | 0.075 | -0.016 | 0.072 |
| Law Firms | 0.588 | 0.118 *** | 0.440 | 0.144 *** | 0.272 | 0.105 *** | 0.148 | 0.093 |
| Mediation Rate | -0.060 | 0.048 | -0.008 | 0.054 | -0.052 | 0.039 | -0.048 | 0.039 |
| Lag Litigation | — | — | — | — | 0.574 | 0.038 *** | 0.665 | 0.032 *** |
| AR(1) (ρ) | — | | 0.678 | | — | | — | |
| R2 | 0.782 | | 0.811 | | — | | — | |
| Province FE | Yes | | Yes | | Yes | | Yes | |
| Year FE | Yes | | Yes | | Yes | | Yes | |
| Provinces | 24 | | 24 | | 24 | | 24 | |
| Observations | 522 | | 498 | | 482 | | 506 | |

TABLE 3. MODEL ESTIMATES: YEARS 1993-2016

The table shows estimates from four regressions: (1) a two-way fixed effects model, (2) a two-way fixed effects model with AR(1) disturbances, (3) a generalized method of moments model that employs a single lag of the dependent variable, and (4) a system generalized method of moments model that employs a single lag of the dependent variable. In all models, the dependent variable is litigation rate, defined as the natural log of civil lawsuits involving a plaintiff attorney per 10,000 people. The sample period is 1993-2016. All models include a constant term, province and year fixed-effects, and economic, demographic, and legal variables. See Table 1 for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

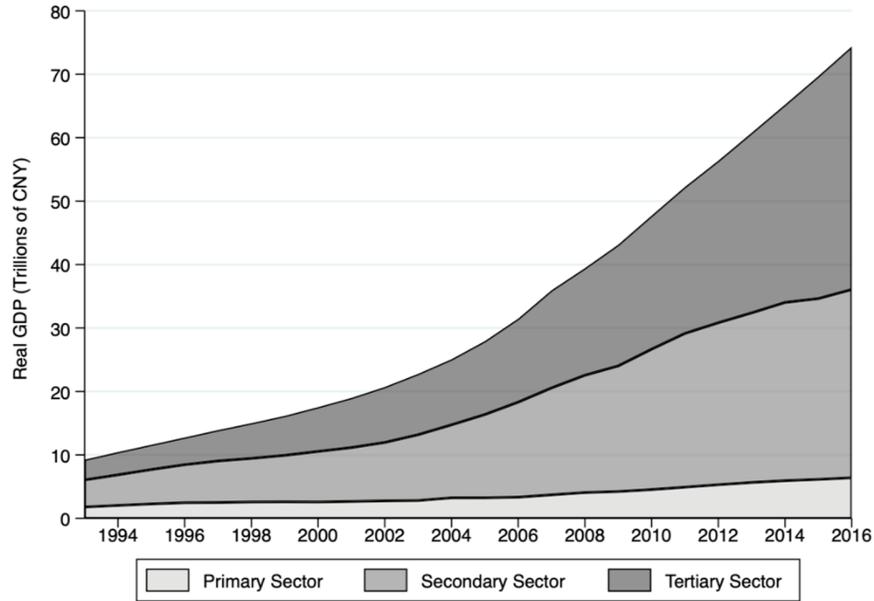
2020-21]ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 127

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|------------------|------------|-----------|------------------|-----------|----------------|-----------|------------|-----------|
| | Two-way FE | | Two-way FE AR(1) | | Difference GMM | | System GMM | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| Manufacturing | -0.014 | 0.015 | -0.042 | 0.023 * | -0.015 | 0.013 | -0.016 | 0.011 |
| Services | -0.009 | 0.016 | -0.038 | 0.022 * | -0.013 | 0.014 | -0.013 | 0.013 |
| Private Invest. | 0.010 | 0.004 ** | 0.014 | 0.004 *** | 0.006 | 0.003 ** | 0.004 | 0.004 |
| Private Emp. | 0.018 | 0.005 *** | 0.006 | 0.007 | 0.015 | 0.004 *** | 0.016 | 0.005 *** |
| GDP | -1.258 | 0.524 ** | -1.357 | 0.824 | -1.108 | 0.403 *** | -0.269 | 0.352 |
| HH Cons. | -0.459 | 0.425 | -0.640 | 0.523 | -0.446 | 0.338 | -0.034 | 0.368 |
| Unemployment | -0.098 | 0.056 * | -0.123 | 0.067 * | 0.017 | 0.051 | 0.017 | 0.053 |
| Pop. Density | -1.207 | 0.651 * | -1.758 | 1.101 | -0.814 | 0.506 | 0.343 | 0.107 *** |
| Urbanization | -6.172 | 1.431 *** | 5.670 | 1.853 *** | 4.751 | 1.196 *** | 3.697 | 1.208 *** |
| Education | 0.187 | 0.311 | -0.022 | 0.475 | 0.000 | 0.238 | -0.184 | 0.186 |
| Internet | 0.018 | 0.009 ** | 0.030 | 0.011 *** | 0.006 | 0.005 | 0.010 | 0.005 ** |
| Life Expect. | -0.091 | 0.251 | 1.087 | 0.914 | 0.174 | 0.117 | -0.049 | 0.079 |
| Divorces | 0.281 | 0.165 * | -0.061 | 0.203 | 0.201 | 0.145 | 0.195 | 0.151 |
| Lawyers | 0.157 | 0.241 | 0.749 | 0.315 ** | 0.154 | 0.199 | 0.012 | 0.177 |
| Law Firms | 0.622 | 0.245 ** | 0.604 | 0.269 ** | 0.578 | 0.195 *** | 0.377 | 0.170 ** |
| Mediation Rate | -0.178 | 0.062 *** | -0.034 | 0.078 | -0.151 | 0.054 *** | -0.154 | 0.060 *** |
| Lag Litigation | — | — | — | — | 0.164 | 0.058 *** | 0.328 | 0.056 *** |
| AR(1) (ρ) | — | | 0.353 | | — | | — | |
| R2 | 0.721 | | 0.740 | | — | | — | |
| Province FE | Yes | | Yes | | Yes | | Yes | |
| Year FE | Yes | | Yes | | Yes | | Yes | |
| Provinces | 24 | | 24 | | 24 | | 24 | |
| Observations | 214 | | 190 | | 212 | | 213 | |

TABLE 4. MODEL ESTIMATES: YEARS 2008-2016

The table shows estimates from four regressions: (1) a two-way fixed effects model, (2) a two-way fixed effects model with AR(1) disturbances, (3) a generalized method of moments model that employs a single lag of the dependent variable, and (4) a system generalized method of moments model that employs a single lag of the dependent variable. In all models, the dependent variable is litigation rate, defined as the natural log of civil lawsuits involving a plaintiff attorney per 10,000 people. The sample period is 2008-2016. All models include a constant term, province and year fixed-effects, and economic, demographic, and legal variables. See Table 1 for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

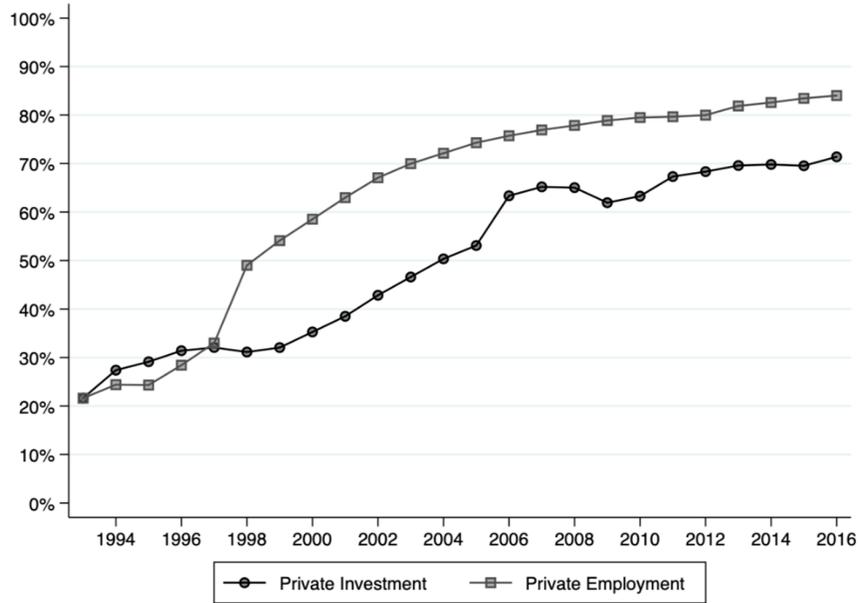
FIGURE 1: COMPOSITION OF REAL GDP IN CHINA



The graph shows the composition of China's real GDP from 1993 to 2016. Real GDP is measured at constant prices where the base year is 2016. Real GDP associated with a given sector refers to the value added by that sector. The primary sector includes all industries concerned with the extraction of natural resources or the production of raw materials. The secondary sector includes all industries concerned with the manufacture of products. The tertiary sector includes all other industries and is sometimes referred to as the service sector.

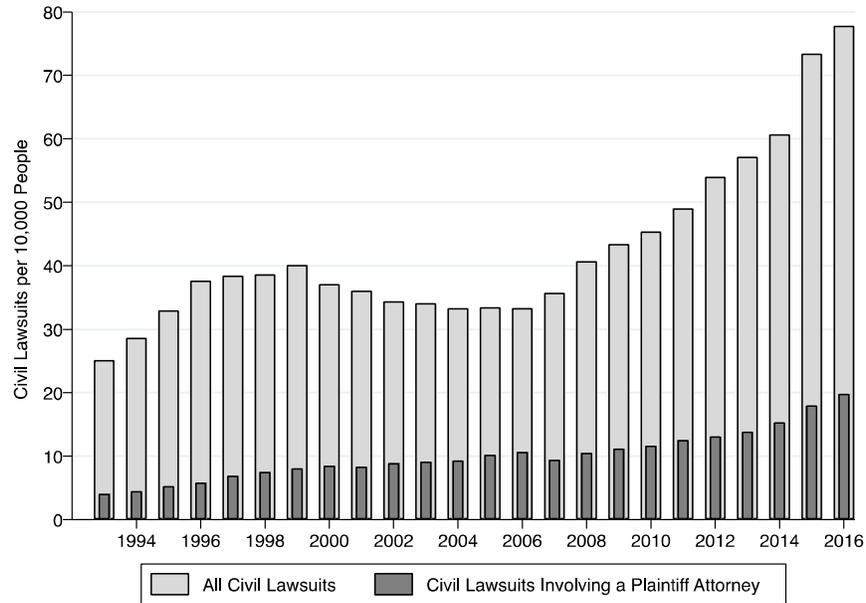
2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 129

FIGURE 2: PRIVATIZATION IN CHINA



The graph shows two measures of privatization from 1993 to 2016. Private investment is defined as the percentage of fixed asset investment in non-publicly/collectively owned enterprises. Private employment is defined as the percentage of urban employees working outside of publicly/collectively owned enterprises.

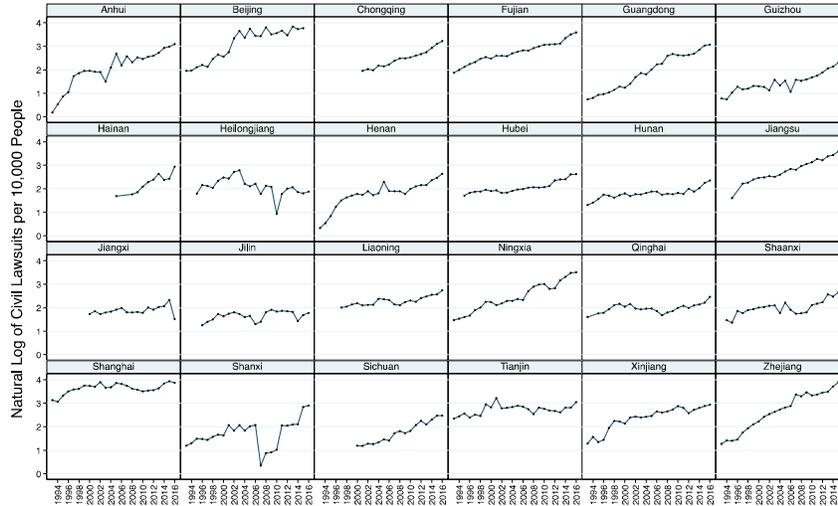
FIGURE 3. CIVIL LITIGATION RATES IN CHINA



The graph shows total civil litigation rates and civil litigation rates involving a plaintiff attorney from 1993-2016. Litigation rates are defined as the number of first-instance lawsuits per 10,000 people. Total civil litigation rates include all first-instance lawsuits, while civil litigation rates involving a plaintiff attorney include only those first-instance lawsuits for which the plaintiff used an attorney.

2020-21] ECONOMIC STRUCTURAL TRANSFORMATION AND LITIGATION 131

FIGURE 4. CIVIL LITIGATION RATES INVOLVING A PLAINTIFF ATTORNEY



The graph shows the natural log of civil litigation rates from 1993 to 2016 for 24 of China's 31. Here, litigation rates are derived from law firm records and thus, include only those cases for which the plaintiff used an attorney. Litigation rates are measured at the end of each year. We do not possess litigation rate data for the seven provinces excluded from this graph. Similarly, missing data points indicate that we do not possess litigation rate data for a given province-year.

