Motivating Subnational Research on Female Labor

Force Participation Patterns: A Case Study of Malaysia

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November 30, 2020

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Abstract

Studies of female labor force participation typically focus on national trends but, especially in countries with substantial regional variation, national-level analysis can produce misleading conclusions. This paper demonstrates the value of subnational research, deploying the case of Malaysia. Using several datasets in this mixed-methods study, I find that manufacturing is not a predictor of female labor force participation in Malaysia, contrary to what current national-level research suggests. Instead, I find using state-level data that a one percent growth in the share of the tourism industry (measured as jobs in the accommodations and food service sector as a share of total jobs) is associated with a 0.865 percent decline in the gender gap. These results suggest that subnational studies are critical to ensuring that policymakers are properly informed with which to shape social and economic policy.

Introduction

Most empirical literature in the political economy of gender focuses on variation in female labor force participation across countries. An increasing awareness of the limitations of aggregated data, including the magnitude of regional disparities, it is important to re-examine widely accepted theories at a subnational level. [1] *To what extent do national level theories explain subnational trends?* The stakes are high: governments make use of available data in making policy decisions that affect the lives of their citizens.

In this paper, I look specifically at one measure of gender equality — female labor force participation — at the subnational level and aim to uncover the mechanisms that explain state-

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[1] Matti Kummu, Maija Taka, and Joseph H. A. Guillaume, "Gridded Global Datasets for Gross Domestic Product and Human Development Index over 1990–2015," *Scientific Data* 5, no. 1 (February 6, 2018): 1–15, https://doi.org/10.1038/sdata.2018.4; Cheryl Ulmer, Michelle Bruno, and Sheila Burke, *Future Directions for the National Healthcare Quality and Disparities Reports* (National Academies Press (US), 2010), https://www.ncbi.nlm.nih.gov/books/NBK220148/.

level variation. I undertake this study in Malaysia, a country that has been applauded for making strides in promoting female labor force participation and outpacing its Southeast Asian and Muslim Majority country counterparts.[2] National level data on Malaysia suggests that the expansion of the manufacturing industry has been driving this growth in female labor force participation. [3] This finding is in line with Michael Ross (2008) who, in his classic study of female employment in Muslim majority states in the Middle East and North Africa, finds that the light-manufacturing industry was an important employer of women.[4] I find, however, extreme variation in female labor force participation trends across Malaysian states and explore whether the national-level theory of the importance of the manufacturing sector holds across states. [5]

Deploying Malaysian Department of Statistics datasets, I undertake a mixed methods approach combining two qualitative analyses — an extreme case analysis and a diverse case analysis — as well as a state-fixed effects regression. I find that the service sector is a more important predictor of female labor force participation than national-level statistics, which tend to credit the manufacturing industry, would suggest. It seems the extreme variation in states' levels of manufacturing and service sectors obscures true drivers of female labor force participation and understates the importance of the service sector. These findings confirm the hypothesis that studies of female labor force participation using countries as the unit of analysis may offer different

[2]Chris Hirschman, "Gender, the Status of Women, and Family Structure in Malaysia," *Malaysian Journal of Economic Studies* 53 (June 10, 2016): 33–50; Anthony Reid, "Female Roles in Pre-Colonial Southeast Asia," *Modern Asian Studies* 22, no. 3 (1988): 629–45; Nor'Aznin Abu Bakar and Norehan Abdullah, "Labor Force Participation of Women in Malaysia" (conference, International Economic Conference on Trade and Industry (IECTI) 2007, Bayview Hotel Georgetown, Penang, 2007), http://repo.uum.edu.my/2469/.

[3]Abu Bakar and Abdullah, "Labor Force Participation of Women in Malaysia," 4; Aminah Ahmad, "Women in Malaysia" (Asian Development Bank, December 1998), 22, https://www.adb.org/sites/default/files/institutional-document/32552/women-malaysia.pdf.

[4] Michael L. Ross, "Oil, Islam, and Women," *American Political Science Review* 102, no. 1 (February 2008): 107–23, https://doi.org/10.1017/S0003055408080040.

[5]See: "Principal statistics of labor force participation, Malaysia/states 1982-2019)" https://www.dosm.gov.my/v1_/index.php?r=column/ctimeseries&menu_id=NHJlaGc2Rlg4ZXlGTjh1SU1kaWY5UT09

conclusions from studies that are based on subnational units of analysis.

Thus, I make a compelling case for the importance of subnational-level research prior to making policy decisions. As seems to be the case in Malaysia, trends that are established at the country-wide level may obscure subnational trends and undermine progress. This project aims to contribute to the field of political economy in two ways: first, by motivating subnational analysis in the field of gender inequality and second, highlighting best practices for encouraging female labor force participation in Malaysia's unique landscape. Ultimately, policymakers should not be informed by national statistics that allow the successes of some women to overshadow the continued suffering of others.

This project aims to contribute to the field of political economy in two ways: first, methodologically, I demonstrate the importance of subnational analysis to understanding gender inequality. Second, substantively, I show that the service sector has replaced the manufacturing sector in drawing women into the labor market. It is important for policy makers to be informed by statistics that show the most important drivers of female employment and empowerment.

This paper is structured as follows. It begins with a literature review exploring existing theories of patterns of female labor force participation, considering social, economic, religious and political predictors. It then highlights the lack of subnational research as a gap in the literature, justifies the case selection of Malaysia and presents an overview of the Malaysian context. Then, the paper presents its data and outlines a mixed-methods approach. A qualitative case study of specific Malaysian states is followed by a more comprehensive quantitative analysis of all states in Malaysia. Finally, a discussion of this paper and conclusion establishes the importance of these findings and highlights key takeaways.

Literature Review

I draw on four primary literatures to contextualize the drivers and effects of female employment in Malaysia: labor markets, social structure, religion, and politics. Much of the work across these fields is either focused on cross-national analysis or is conducted at the national level. Moreover, this paper does not seek to reconcile the debates across social science disciplines represented in these studies, which would carry me well beyond the scope of this paper. I leave open the possibility that different approaches illuminate different pathways or effects of gender equality. Rather, I lay out a menu of theories that can help to illuminate various aspects of the Malaysian case.

Labor Markets

From the viewpoint of micro-economics, the leading predictors of female labor force participation are a historic "brawn premium," the U-shaped curve of economic development, and the growth of the manufacturing and service sectors. Alesina, Gulliano and Nunn (2013) suggest the theory that societies that were dependent on the plough in their agricultural past have lower levels of female labor force participation in the status quo.[6] They show that a "brawn premium" increased the demand for male labor in plough-conducive economies, and that patriarchal norms developed around the increased role of males in food production and defense.

Goldin (1994) finds a U-shaped curve in female labor force participation by levels of economic development.[7] Women are more likely to be involved in the labor market in countries at lower levels of income, even where there is a brawn premium, due to a need for household income.

[6]Alberto Alesina, Paola Giuliano, and Nathan Nunn, "On the Origins of Gender Roles: Women and the Plough*," *The Quarterly Journal of Economics* 128, no. 2 (May 1, 2013): 469–530, https://doi.org/10.1093/qje/qjt005.
[7]Claudia Goldin, "The U-Shaped Female Labor Force Function in Economic Development and Economic History," Working Paper (National Bureau of Economic Research, April 1994), 1, https://doi.org/10.3386/w4707.

As incomes rise, she speculates, women retreat into the household due to family pride and class-based norms. As income and female education continue to increase, women move back into paid work thereby completing the U-shape of the curve.

In the developing world today, the high participation of women in the labor force is attributed primarily to the manufacturing and service sectors. Research has shown that because the manufacturing sector can make use of low-skilled labor, factories draw female workers from surrounding areas.[8] Much of the literature focuses specifically on the benefits of garment manufacturing. For example, in Bangladesh, women's employment in the garment sector is empirically shown to have decreased the gender gap in employment, income, social positioning and decision making.[9] Because manufacturing is a low-skilled industry, poor and desperate women have often fulfilled this newfound demand for their labor. Heath and Mobarak (2015) found that , despite harsh working conditions, the growth of the garment sector has encouraged families to invest in higher education levels and to delay marriage for their daughters.[10]

The service sector is also associated with higher levels of female labor force participation, at both the individual level and the national level. Goldin (1994) suggests that this may be so because women from richer families can afford to forgo employment opportunities that may be associated with a stigma, such as working in a factor.[11] Wealthier women are more likely seek employment opportunities in the service sector, which is less associated with social stigma and, in some cases, has a glow of status, especially at managerial levels. At the same time, for women of lower socioeconomic levels, service sector employment can serve as an extension of domestic

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[8]David Atkin, "Working for the Future: Female Factory Work and Child Health in Mexico," April 2009, 48.
[9]Pratimā Pāla-Majumadāra and Anwara Begum, *Engendering Garment Industry: The Bangladesh Context* (University Press Limited, 2006).
[10]Rachel Heath and Mushfiq Mobarak, "Manufacturing Growth and the Lives of Bangladeshi Women," *Journal of Development Economics* 115 (July 1, 2015): 1–15, https://doi.org/10.1016/j.jdeveco.2015.01.006.
[11]Goldin, "The U-Shaped Female Labor Force Function in Economic Development and Economic History," 23.

work that rarely requires much, if any, additional education or training.[12] In either case, the service sector provides an additional avenue of employment for females. Taken as a whole, the existing literature paints a complex picture of how a country's level of growth, its major industries, and household incomes are interwoven with female labor force participation.

Social Norms

Social norms also bear on the likelihood of female work. The most well-researched predictor is female educational attainment.[13] Abu Bakar and Abdullah (2007) claim that "overall increase in women's education level appears to be one of the main factors of [female] contribution in labor force."[14] In addition to education, high levels of fertility are also seen as a social barrier to female labor force participation, although some recent research suggests that this may not be the case in the status quo.[15] In either case, the availability of child care is theorized to remove barriers of employment for females with young children, thereby boosting female employment.[16] Historically, child care has been provided privately, either through relatives or friends of the

[12]Peter Cave and Serpil Kilic, "The Role of Women in Tourism Employment With Special Reference to Antalya, Turkey," *Journal of Hospitality Marketing & Management* 19, no. 3 (March 8, 2010): 280–92, https://doi.org/10.1080/19368621003591400.

[13]Abu Bakar and Abdullah, "Labor Force Participation of Women in Malaysia"; Goldin, "The U-Shaped Female Labor Force Function in Economic Development and Economic History"; Jacob Mincer, "Labor Force Participation of Married Women: A Study of Labor Supply," *National Bureau of Economic Research*, 1962, 45.

[14]Abu Bakar and Abdullah, "Labor Force Participation of Women in Malaysia," 12.

[15]Namkee Ahn and Pedro Mira, "A Note on the Changing Relationship between Fertility and Female Employment Rates in Developed Countries," *Journal of Population Economics* 15, no. 4 (November 1, 2002): 667–82, https://doi.org/10.1007/s001480100078; David E. Bloom et al., "Fertility, Female Labor Force Participation, and the Demographic Dividend," *Journal of Economic Growth* 14, no. 2 (June 1, 2009): 79–101, https://doi.org/10.1007/s10887-009-9039-9.

[16]Stefan Bauernschuster and Martin Schlotter, "Public Child Care and Mothers' Labor Supply—Evidence from Two Quasi-Experiments," *Journal of Public Economics* 123 (March 1, 2015): 1–16, https://doi.org/10.1016/j.jpubeco.2014.12.013; William T. Gormley, *Everybody's Children: Child Care as a Public Problem* (The Brookings Institution, 1775 Massachusetts Avenue, N, 1995); Francine D Blau and Lawrence M Kahn, "Female Labor Supply: Why Is the United States Falling Behind?," *American Economic Review* 103, no. 3 (May 2013): 251–56, https://doi.org/10.1257/aer.103.3.251; Chris M. Herbst and Burt S. Barnow, "Close to Home: A Simultaneous Equations Model of the Relationship Between Child Care Accessibility and Female Labor Force Participation," *Journal of Family and Economic Issues* 29, no. 1 (March 1, 2008): 128–51, https://doi.org/10.1007/s10834-007-9092-5.

parents or hired child care; but more recently some governments have begun to subsidize child care.[17] Regardless of the mechanism by which child care is provided, non-maternal child care options have the potential to encourage female labor force participation alongside female education levels and lower fertility rates.

Marriage market norms present yet another social barrier to female employment in developing countries. In some contexts, women are educated not for the purpose of employment but rather for marriage.[18] Child marriage further prevents these women from ever entering the labor force, although the causal relationship is less clear.[19] It may be that the lack of employment opportunities encourages child marriage, or that child marriage prevents employment. In either case, young married women do not enter the labor force.

Lastly, males' concern for social status can prevent women from seeking employment.[20] Recent research explains that second order beliefs — what one believes someone else will think of their actions — surrounding female employment are more negatively perceived by males than females.[21]In other words, males believe that their community will view them poorly if their wives enter the labor force. It is striking, however, that men actually overestimate their community's negative perceptions. Thus, this research suggests that perhaps the lack of transparency on social attitudes towards female employment incorrectly informs intra-household decisions regarding female labor force participation.

[17]Gormley, *Everybody's Children*.

[18]Abigail Adams and Alison Andrew, "Why Do Parents Invest in Girls' Education? Evidence from Rural India," May 8, 2019, https://voxdev.org/topic/health-education/why-do-parents-invest-girls-education-evidence-rural-india.

[19]Jennifer Parsons et al., "Economic Impacts of Child Marriage: A Review of the Literature," *The Review of Faith & International Affairs* 13, no. 3 (July 3, 2015): 12, https://doi.org/10.1080/15570274.2015.1075757.

[20]Arielle Bernhardt et al., "Male Social Status and Women's Work," *AEA Papers and Proceedings* 108 (May 2018): 363–67, https://doi.org/10.1257/pandp.20181086.

[21] Joanna Syrda, "Spousal Relative Income and Male Psychological Distress:," *Personality and Social Psychology Bulletin*, October 28, 2019, https://doi.org/10.1177/0146167219883611.

Religion

Religion appears to be associated with levels of female labor force participation. Tzannatos (1999) looks at 136 countries and argues that religion by itself explains nearly a third of variation in female labor force participation.[22] Protestant countries, for example, are found to have about 6% higher total labor force participation and 11% higher female labor force participation than countries dominated by other religions.[23] In Indonesia, Hindu women are 31% more likely to be employed than Muslim women.[24] There are several theories on the mechanisms that may enable religion to be a strong predictor of female labor force participation. Much work in this area, however, has focused specifically on the role of Islam in hindering female labor force participation through Islamic gender roles and traditions of early marriages or higher fertility rates.[25]

There is a lively and inconclusive debate about religion as a predictor of female labor force participation. Some researchers find that confounding variables, such as economics and socio-cultural factors, diminish the influence of religion on female labor force participation. Michael Ross (2008) published perhaps the most influential piece in this regard, demonstrating that low female labor force participation in Muslim countries is a result of high levels of oil production, not Islamic belief systems by themselves.[26] By demonstrating his argument in other oil-rich, non-Muslim countries, Ross exposed a significant confounding variable. While some

[22]Zafiris Tzannatos, "Women and Labor Market Changes in the Global Economy: Growth Helps, Inequalities Hurt and Public Policy Matters," *World Development* 27, no. 3 (March 1, 1999): 551–69, https://doi.org/10.1016/S0305-750X(98)00156-9.

[23]Horst Feldmann, "Protestantism, Labor Force Participation, and Employment Across Countries," American Journal of Economics and Sociology, October 17, 2007, 808, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1536-7150.2007.00540.x.

[24]Imam M. Alam, Shahina Amin, and Ken McCormick, "The Effect of Religion on Women's Labor Force Participation Rates in Indonesia," *Journal of the Asia Pacific Economy* 23, no. 1 (January 2, 2018): 31–50, https://doi.org/10.1080/13547860.2017.1351791.

[25]Ghazal Bayanpourtehrani and Kevin Sylwester, "Female Labour Force Participation and Religion: A Cross-Country Analysis," *Bulletin of Economic Research* 65, no. 2 (2013): 108, https://doi.org/10.1111/j.1467-8586.2012.00443.x.

[26]Michael L. Ross, "Oil, Islam, and Women."

critics have argued that cultural differences may overpower this gender based resource curse,

Joel Simmons (2018) demonstrates that "oil wealth reduces the demand for female labor by

hurting the export-oriented industries that employ female labor intensively…[thereby]

undermin[ing] the positive effect of gender egalitarianism on FLFP."[27] Bayanpourtehrani and

Sylwester (2013) also discover another confounding variable: geography.[28] After controlling for

religion, region, female to male labor force participation ratios, fuel outputs, GDP, and several

other variables, they find that geography undermines the influence of religion on female labor

force participation perhaps due to historical differences in how regions, their norms and their

economies evolve. H'madoun (2010) confirms these findings by demonstrating that "a country's

institutions, economic structure and socio-political context matter for the way religiosity comes

into play in women's work decisions."[29] The literature on religion's influence on female labor

force participation suggests that context is hugely important.

Politics and Policy

There are primarily two ways that politics can shape female labor force participation:

female representation in political office, and policy action that promotes female employment.

Female office holders can at least hypothetically offer better outcomes for female citizens at large,

depending on many factors including the percentages of women in the legislature.[30] Descriptive

representation refers to politicians "looking like" the people they represent; in other words, female

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[27] Joel W. Simmons, "Does Oil Substitute for Patriarchy?," *Economics & Politics* 31, no. 3 (2019): 293–322, https://doi.org/10.1111/ecpo.12127.

[28] Bayanpourtehrani and Sylwester, "Female Labour Force Participation and Religion."

[29] Maryam H'Madoun, "Religion and Labor Force Participation of Women," *University of Antwerp, Faculty of Applied Economics, Working Papers*, January 1, 2010.

[30] Tanushree Goyal, "Local Female Representation as a Pathway to Power: A Natural Experiment in India," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, May 1, 2020), https://doi.org/10.2139/ssrn.3590118.

political leaders are descriptively representative of female citizens. Though descriptive representation may confer valued benefits, such as inspiring younger constituents, it does not necessarily produce substantive policies.[31]

Substantive representation considers, instead, the extent to which political leaders are motivated to respond to the *needs* of subgroups. Representing the physical characteristics of a subgroup does not guarantee substantive representation, which is arguably more critical in improving outcomes for females. Iversen & Rosenbluth (2010) suggest that in campaigning "women may be better able to credibly commit to policies that advance the position of women" given shared experiences by "[signaling] their support for policies that help women balance family and career."[32] Chattopadhyay & Duflo (2004) tested for substantive representation by exploiting the results of a 1993 amendment in India that randomly reserved one-third of all chief positions in local village councils to women. They empirically demonstrate that "leaders invest more in infrastructure that is directly relevant to the needs of their own genders" and, more specifically, reserving positions for females "affects policy decisions in ways that seem to better reflect women's preferences."[33] Chattopadhyay & Duflo (2004) also cite Besley and Case (2000) who have similar findings, in which they "show that worker compensation and child support enforcement policies are more likely to be introduced in states where there are more women in parliament, after controlling for state and year fixed effects."[34] As such, it seems clear that descriptive female leadership may lead to substantive representation as well, which is crucial for

[31]Lori Beaman et al., "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India," *Science* 335, no. 6068 (February 3, 2012): 582–86, https://doi.org/10.1126/science.1212382.

[32]Torben Iversen and Frances Rosenbluth, *Women, Work, and Politics: The Political Economy of Gender Inequality* (Yale University Press, 2010), https://www.jstor.org/stable/j.ctt1nq33z.

[33]Raghabendra Chattopadhyay and Esther Duflo, "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India," *Econometrica* 72, no. 5 (September 2004): 1409–43, https://doi.org/10.1111/j.1468-0262.2004.00539.x.

[34]Chattopadhyay and Duflo, 1410.

securing policies that are aimed at promoting female labor force participation.

Yet, existing literature highlights two limitations of female political representation. First, it is more difficult to elect women in single-member districts as opposed to proportional representation systems. As Iversen and Rosenbluth (2010) highlight, because single member districts "require uninterrupted tenures and long inflexible schedules, [they put] women at a distinct disadvantage." [35] Second, the women who do get past these barriers and secure office often do not substantively align with the larger female population.[36] They are more likely to be unmarried or widowed, and are expected to fall in line with policy demands of their male counterparts. In this way, it is possible that female representation in politics *by itself* is not important for encouraging female labor force participation.

The second way in which politics is important for female labor force participation is through policies that determine which rights are granted to women and the extent to which those rights empower women to engage in the labor force. These rights can be understood as either broad rights or smaller supportive policies or programs that aim to reduce barriers. For example, female land rights in South Asian agrarian communities are critical to grant females access to the economy. In so far as females are barred from this resource, they cannot possibly participate in the labor market.[37] Broader studies have found that "restrictions on women's rights to inheritance and property, as well as legal impediments to undertaking economic activities such as opening a bank account or freely pursuing a profession, are strongly associated with larger gender gaps in labor force participation."[38] Policies that promote female labor force participation do not necessarily

[35]Iversen and Rosenbluth, *Women, Work, and Politics*, 158.

[36]Mukul Kesavan, "The Solitude of Female Politicians in South Asia," accessed November 13, 2020, https://www.aljazeera.com/opinions/2016/12/20/the-solitude-of-female-politicians-in-south-asia/.

[37]Bina Agarwal, *A Field of One's Own: Gender and Land Rights in South Asia*, Cambridge South Asian Studies (Cambridge: Cambridge University Press, 1995), https://doi.org/10.1017/CBO9780511522000.

[38]Christian Gonzales et al., "Fair Play: More Equal Laws Boost Female Labor Force Participation," *Staff Discussion*

require wide-sweeping reform; they may take the form of smaller supportive programs such as child-care subsidies, women-only buses to work sites, TV programming that depict women in powerful roles and job skills training programs.[39] In this way, policies of all scales are critical in reducing barriers of entry for females, alongside substantive and descriptive female political representation.

Gap in Literature

Although existing work on female labor force participation is vast — spanning a range of time periods and methodologies — it is almost always conducted on a national level comparing countries. From health sciences to economics, however, academia has shifted away from national data and has begun to prefer subnational data for its deeper granularity.[40] Research on gender equality is no exception to this trend. In Bosnia, for example, the Organization for Economic Cooperation and Development finds that "regional disparities at the sub-national level are often hidden by national-level statistics" which undermines the success of national level policies aimed at reducing inequalities.[41] National-level analyses minimize the plight of women in less equal areas making it difficult for disadvantaged women to gain access to necessary aid and push for empowering policies. To then continue to analyze variation in female labor force participation

Notes 15, no. 2 (2015): 1, https://doi.org/10.5089/9781498354424.006.

[39]Rabia Mehmood, "Buses for Women Easing the Way?," DAWN.COM, March 16, 2014, http://www.dawn.com/news/1093519; Paloma Acevedo et al., "Living Up to Expectations: How Job Training Made Women Better Off and Men Worse Off" (Cambridge, MA: National Bureau of Economic Research, March 2017), https://doi.org/10.3386/w23264.

[40]Matti Kummu, Maija Taka, and Joseph H. A. Guillaume, "Gridded Global Datasets for Gross Domestic Product and Human Development Index over 1990–2015," *Scientific Data* 5, no. 1 (February 6, 2018): 1–15, https://doi.org/10.1038/sdata.2018.4; Cheryl Ulmer, Michelle Bruno, and Sheila Burke, *Future Directions for the National Healthcare Quality and Disparities Reports* (National Academies Press (US), 2010), https://www.ncbi.nlm.nih.gov/books/NBK220148/.

[41]"Burkina Faso Social Institutions and Gender Index" (Social Institutions Gender Index, 2018), https://www.genderindex.org/wp-content/uploads/2018/01/BurkinaFasoSIGI-20x20-EN-web.pdf?fbclid=IwAR0V_SS8tR_YgiRxh5C-7o5LAJqAEgXF8Apfy1YFJuzgt8Xu9sZr_WXspfE.

from only a national perspective would be shortsighted and unmerited. This is not to say national analysis is not valuable, but rather that it should serve as a starting point for more granular research. In the next section, I do precisely this by presenting a case study of Malaysia.

Case Selection

My primary motivation for selecting the Malaysian case lies in the fact that Malaysia presents itself as a puzzle — Malaysian national statistics do not reflect subnational trends. Anthony Reid (1988) was amongst the first to analyze the positioning of women in Southeast Asia — including Malaysia — as a whole and suggested that they were better off than their counterparts in East and South Asia.[42] In fact, he pointed out a common saying in Southeast Asia, "the more daughters a man has, the richer he is," which serves to demonstrate just how unique Southeast Asia was.[43] Reid also believed that Southeast Asian women retained their physical and financial independence even through the rise of Islam, though more recent literature tells us that religion may or may not matter. Looking more specifically to Malaysia, Charles Hirschman (2016) traced these findings from the 1990s to establish their continuity into the 21st century.[44] He ultimately concluded that women in Malaysia today still enjoy relatively better economic conditions than their South and East Asian counterparts despite an extremely low ranking on the World Economic Forum's Global Gender Gap Index. The Asian Development Bank more specifically attributed the advancements of females in Malaysia to the growing electronics and garments manufacturing industries, which stimulated better education, health and economic outcomes.[45] It is clear that

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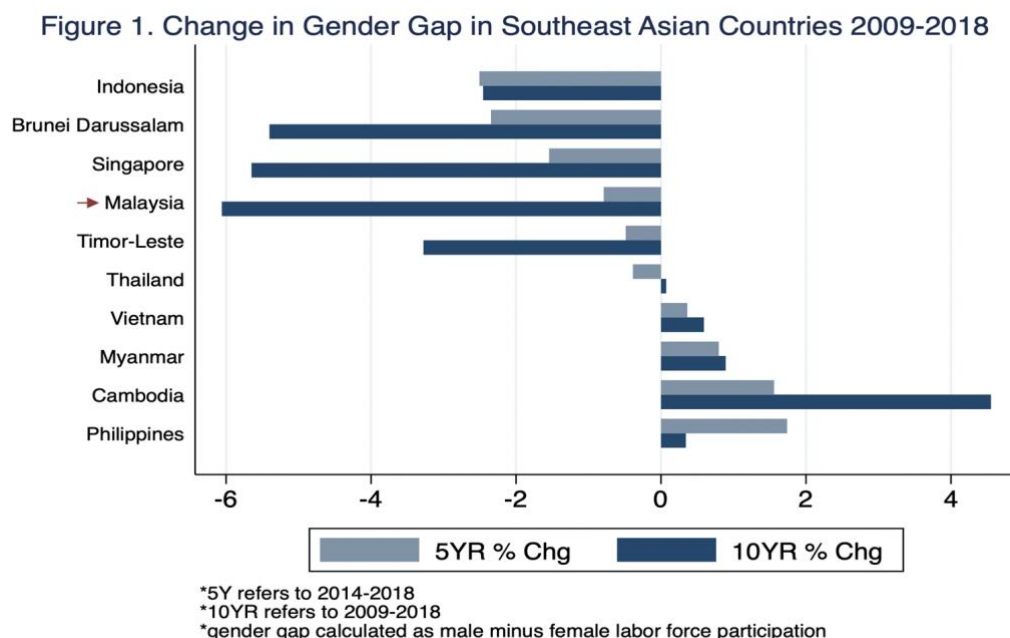[42]Reid, "Female Roles in Pre-Colonial Southeast Asia."
[43]Reid, 629.
[44]Hirschman, "Gender, the Status of Women, and Family Structure in Malaysia."
[45]Abu Bakar and Abdullah, "Labor Force Participation of Women in Malaysia," 4; Aminah Ahmad, "Women in Malaysia" (Asian Development Bank, December 1998), 22, https://www.adb.org/sites/default/files/institutional-document/32552/women-malaysia.pdf.

despite performing quite poorly on holistic measures of gender equality, Malaysia does exceptionally well when looking specifically at female labor force participation.[46]

Existing literature's discussion of Malaysia can be verified by analyzing The World Bank's ILO data from the last ten years. Malaysia's female labor force participation (50%) ranked in the bottom half of the Southeast Asian region in 2018. At the same time, however, Malaysia's labor force gender gap has seen a 6% decline in the last decade. In fact, Malaysia has the fastest declining labor force gender gap in all of Southeast Asia (Figure 1 & 2). It is then clear that Malaysia is outperforming its Southeast Asian and Muslim majority country counterparts in its efforts to drive female labor force participation and close the gender gap.[47] In addition to outperforming other Southeast Asian countries, Malaysia also outperforms female labor force participation amongst other Muslim majority countries. The country ranks in the top half of its counterparts with the 8th fastest declining gender gap (Figure 3 & 4).

Figure 1. Change in Gender Gap in Southeast Asian Countries 2009-2018

*5Y refers to 2014-2018
*10YR refers to 2009-2018
*gender gap calculated as male minus female labor force participation

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[46]"Assessment of Development Results (ADR) Malaysia," UNDP in Malaysia, Singapore & Brunei Darussalam, 2014, 12, https://www.my.undp.org/content/malaysia/en/home/library/adr-malaysia.html.

[47]Southeast Asian country as defined by Northern Illinois University's Council on Southeast Asia, https://www.niu.edu/cseas/resources/countries.shtml; Muslim majority country as defined by the World Population Review; http://worldpopulationreview.com/countries/muslim-majority-countries/

Figure 2. Female Labor Force Participation in Southeast Asian Countries 2018
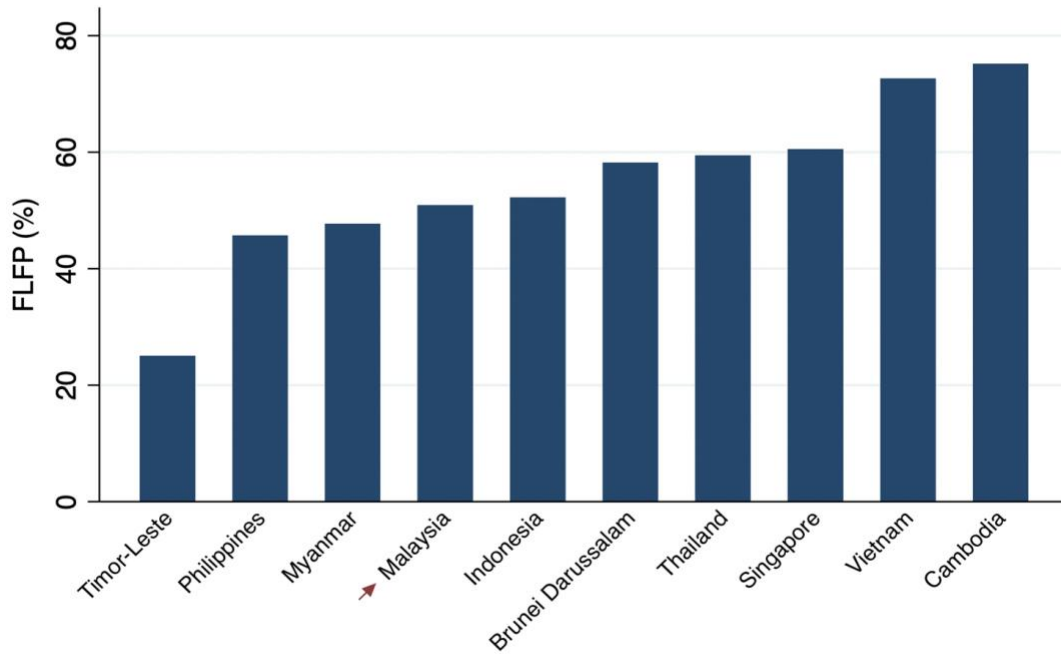

Figure 3. Female Labor Force Participation in Muslim Majority Countries 2018
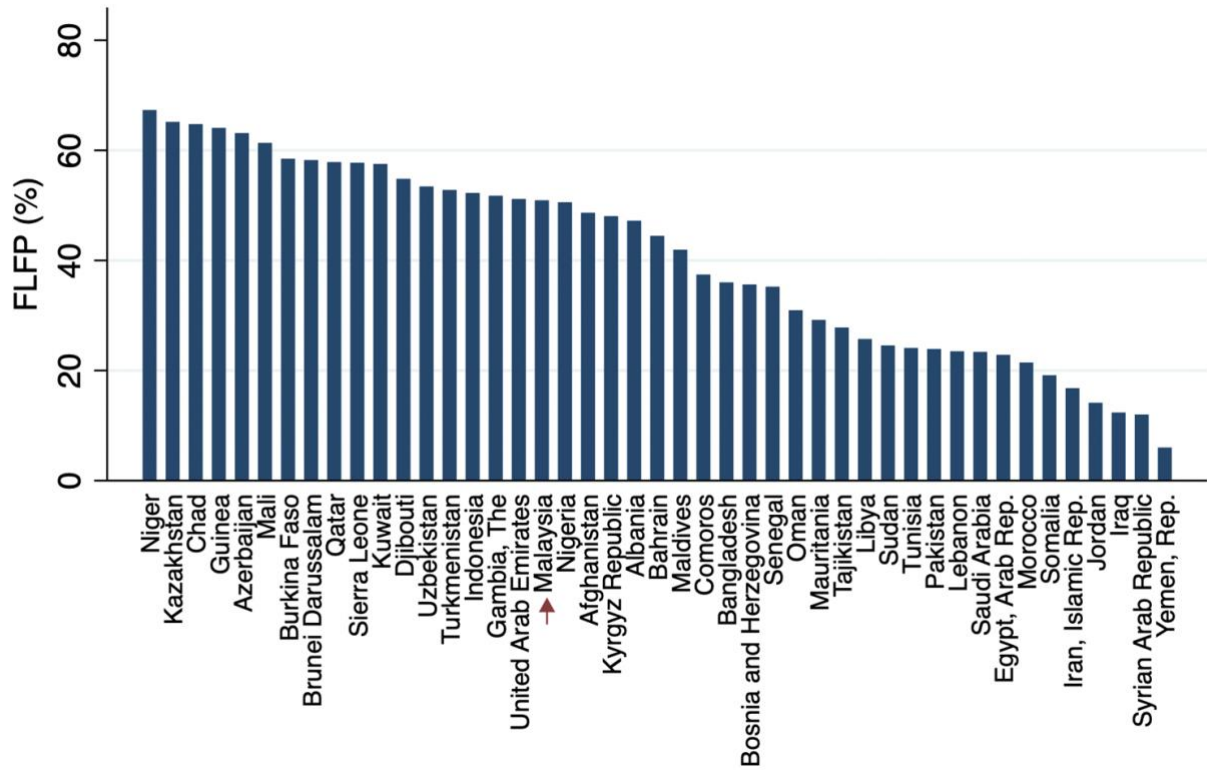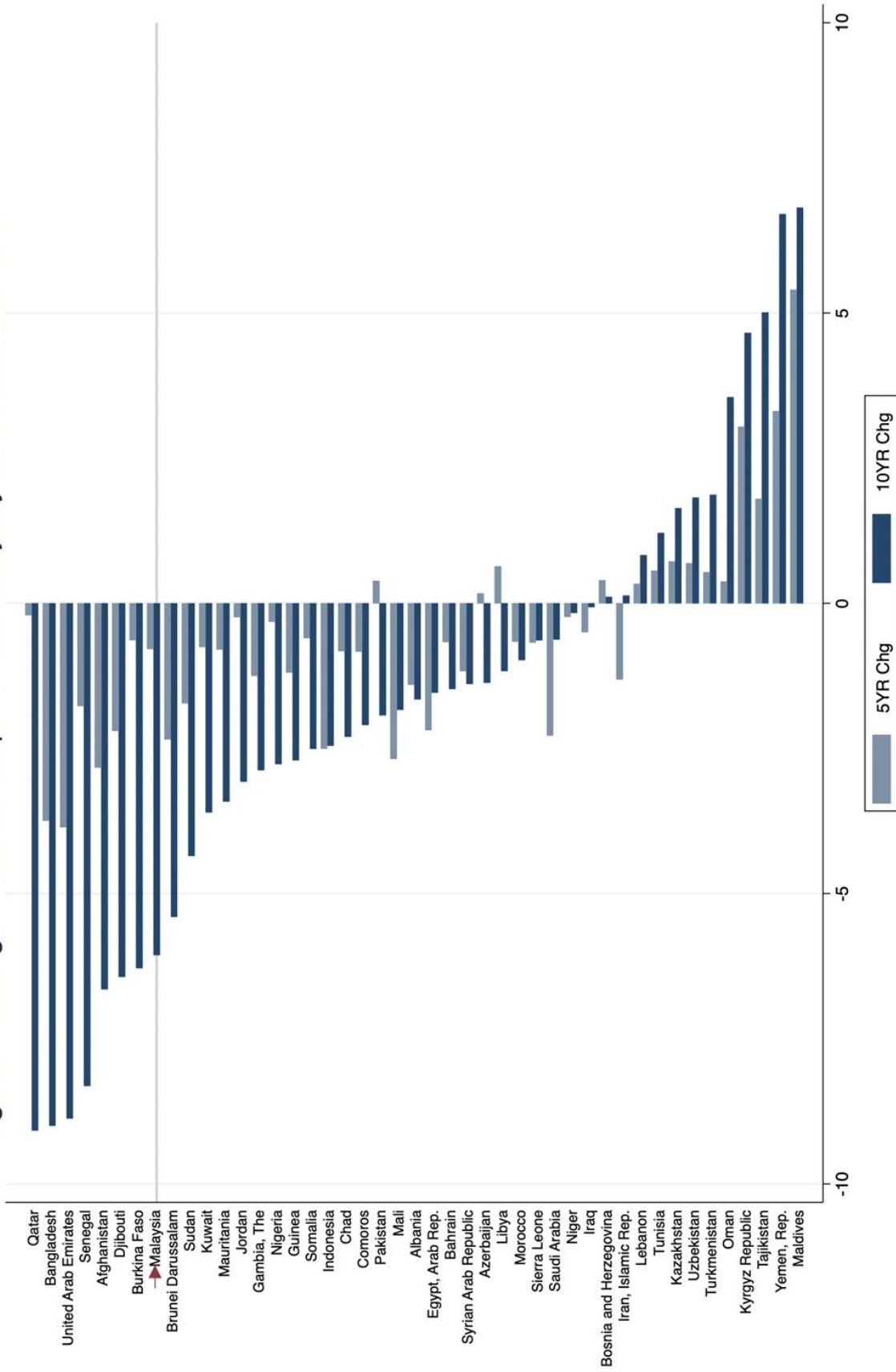
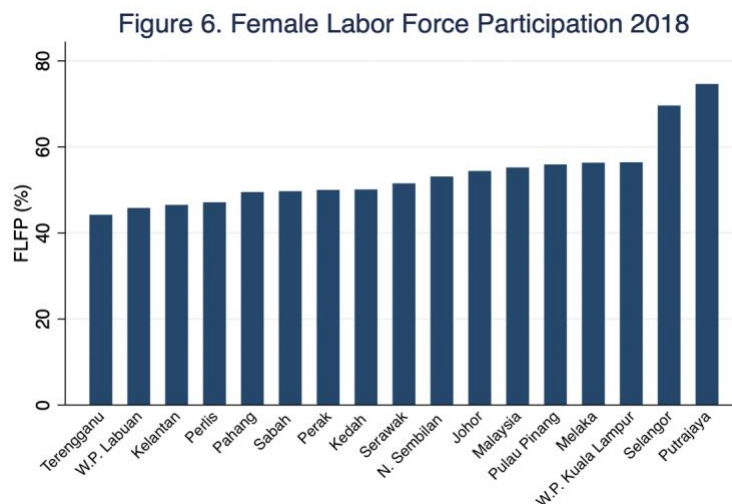Figure 4. Change in Gender Gap in Muslim Majority Countries 2009-2018
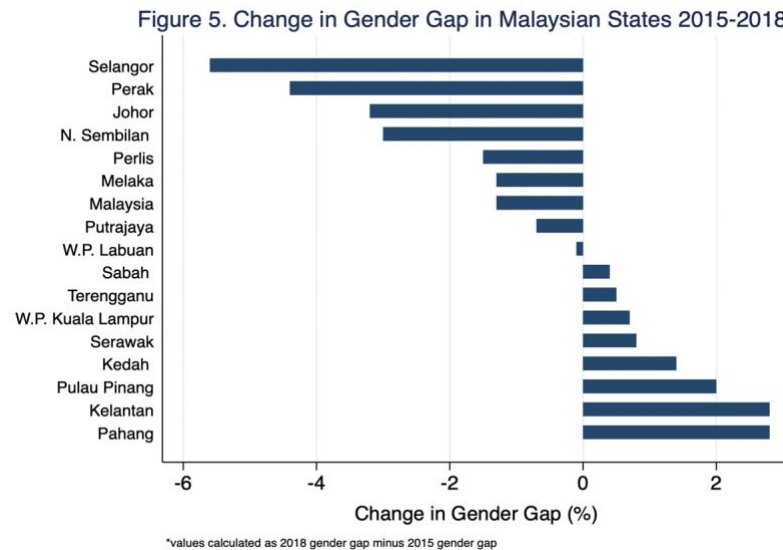
*5Y refers to 2014-2018
*10YR refers to 2009-2018
*gender gap calculated as male minus female labor force participation

5YR Chg   10YR Chg

18

The Department of Statistics Malaysia's data on labor force participation by state, however, highlights stark disparities over the last four years (Figure 5). While the gender gap has closed by 4% in some states, it has widened it by 3% in others. For example, Putrajaya has close to 75% female labor force participation and a 5% gender gap, while Lauban has merely 46% female labor force participation with a 40% gender gap (Figure 5 & 6). With such dramatic state-level variation, using national level statistics to inform policies creates a dangerous illusion by conflating the distinct experiences of privileged women and struggling women.

Figure 5. Change in Gender Gap in Malaysian States 2015-2018

*values calculated as 2018 gender gap minus 2015 gender gap

Figure 6. Female Labor Force Participation 2018

Contextualizing Malaysia

Prior to diving into the methodological approach of this paper, this section aims to familiarize the reader with the economic, demographic and political contexts of Malaysia. The content presented here is also used to determine which country and state-level dynamics are important to consider when executing qualitative and quantitative analyses in this paper.

Map 1. Malaysian States [48]
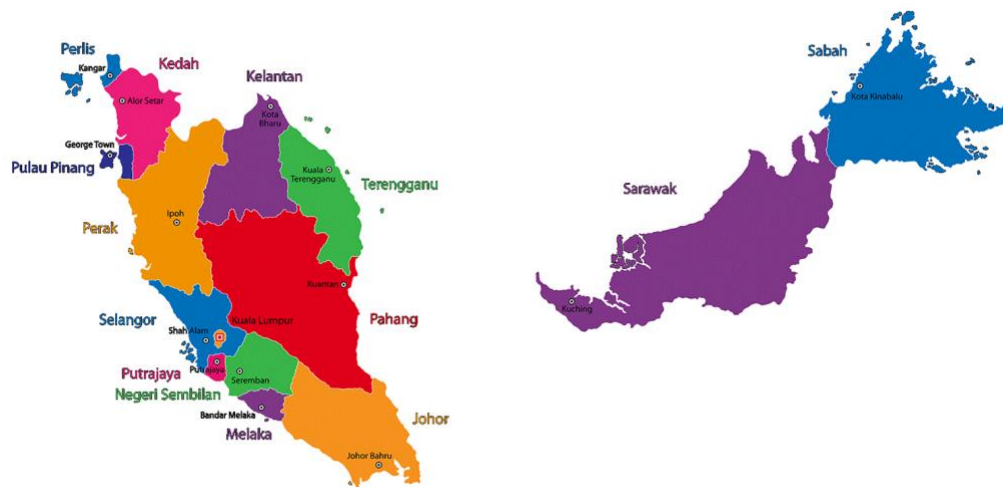
Economic Landscape

Malaysia currently stands as an upper middle-income economy. As reported by The World Bank (2020), recent development is rooted in the diversification of the Malaysian economy from agriculture and commodities to manufacturing and services industries after gaining its independence from Britain in 1957. [49] Since then, the economy has been expanding rapidly due to

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[48] *Large states map of Malaysia*. Mapsland. Accessed November 28, 2020.
https://www.mapsland.com/asia/malaysia/large-states-map-of-malaysia
[49] "The World Bank in Malaysia," Text/HTML, World Bank, April 2020,

its openness to trade, with its trade to GDP ratio averaging over 130% and an average growth rate of 5.4% since 2010. To keep pace with this growth, foreign labor has often been called upon from Indonesia, Philippines and Singapore to fulfill excess demand. At the same time, The World Bank (2012) reports that Malaysia's economic growth is partially also due to improvements in female labor force participation rates.[50] In fact, the International Monetary Fund (2018) reports that between 2010 and 2016, "female employment grew at a compound annual rate of about 4½ percent, compared to about 2 percent rate for male employment." [51] Moreover, "not only women's share in total employment has increased, but also the gender gap in average years of schooling has shrunk, leading to additional contributions to growth through human capital formation." The combination of foreign and female labor in the manufacturing and service industries has helped Malaysia sustain its growth.

The booming manufacturing and services industries in Malaysia, however, have varied in their distribution amongst states. Of Malaysia's 13 states, the five largest economies in Malaysia by GDP per capita are Kuala Lumpur, Labuan, Pulau Pinang, Selangor, and Sarawak.[52] Most of these, like Pulau Pinang, Selangor, and Sarawak, are home to majority of Malaysia's booming manufacturing economy. Kuala Lumpur serves as Malaysia's capital and, as a result, has a services focused economy. Lastly, Labuan is the international financial center in Malaysia and given the country's openness to trade, most of the state's GDP is also comprised of the services sector. Most other states in the Western Malaysian peninsula are primarily involved in manufacturing, though

https://www.worldbank.org/en/country/malaysia/overview.

[50]*Malaysia Economic Monitor, November 2012*, Economic Updates and Modeling (World Bank, 2012), https://doi.org/10.1596/27228.

[51]"Selected Issues Paper on Malaysia" (International Monetary Fund, January 25, 2018), https://www.imf.org/~/media/Files/Publications/CR/2018/cr1862.ashx.

[52] "Workbook: Economic Statistics," Department of Statistics Malaysia, accessed November 15, 2020, https://public.tableau.com/views/MLS_WEB_16_Economic_15802014820600/16_EconomicStatistics?:embed=y&: display_count=yes&:showTabs=y&:display_count=yes&:showVizHome=no.

not at the same scale as Sarawak, Selangor, Johor and Pulau Pinang. It is also important to note that Putrajaya is Malaysia's public administration center and given that it is relatively new, much of its GDP comes from ongoing construction.[53]

A subnational analysis of female labor force participation may help illuminate the dynamics of this rapidly changing economy on a more granular level as female labor force participation is an important driver of growth and household income. Moreover, identifying avenues of sustainable labor practices that can ensure that women can remain in the workforce after entry is critical to sustaining current growth trends. In fact, though the *Case Selection* section above expands on the status of women in Malaysian society, it is important to also note that the Malaysian government has taken steps towards increasing the visibility of the needs of women in their society. The Malaysian government founded and funded a Ministry of Women and Development in 2001 and have since extended this resource to states themselves by establishing a Department of Women Development in each state to address state-specific issues.[54] These actions by the Malaysian government make it clear that the future of female labor is critical for Malaysia's economic development.

Demographic Overview

Malaysia's population is one that is extremely polarized, primarily on the basis of two cleavages: ethnicity and religion. Bridget Welsh from the Carnegie Endowment for Peace explains that historically, these differences were only in the consciousness of Malaysian elites, but are now "permeating Malaysian society, endangering interethnic harmony, and eroding social cohesion."

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[53] "Workbook: Economic Statistics."

[54] "Kementerian Pembangunan Wanita, Keluarga Dan Masyarakat," accessed November 29, 2020, https://www.kpwkm.gov.my/kpwkm/index.php?r=portal/about&id=b0J5ZFBERFhsalo2U05TWk1nSzVDQT09.

[55] First and foremost, Malaysia's colonial roots gave rise to ethnic hierarchies to begin with.[56] Under the British rule, Malays — also referred to as Bumiputeras — were given special privileges in exchange for their loyalty as natives of Malaysia. After gaining independence, Malay elites sought to maintain their powerful positions and, to do so, structured political parties to that end. In effect, Malays, who make up about 60% of the population, remained hierarchically "above" Chinese Malaysians and Indian Malaysians.

As a result of these tensions, Malaysia frequently experiences race riots and protests. In fact, in 1969 race riots resulted in a New Economic Policy aimed at extending affirmative action privileges to ethnic minorities. Yet, the policy failed to create real change and, in fact, more often than not ironically worked to the advantage of Malays. Though the tensions have improved with time, Malays can still be found living in independent silos. Even across states, the distribution of different ethnicities varies dramatically. Some states, like Pulau Penang, have about 40% Chinese Malaysians and 45% Bumiputeras, while others, like Kelantan, are 96% Bumiputera. [57] While progress is slowly being made, it is clear that there is still quite a way to go in improving ethnic relations across Malaysia.

Religious disagreements are also closely linked to ethnic tensions amongst the Malaysian population. Though Islam is the national religion, Malaysia guarantees religious freedom in everyday life. Still, Islam is closely intertwined with politics and the debate between secular or Islamic policy-making is vibrant in Malaysian society.[58] Malays, who make up majority of the

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[55]Bridget Welsh, "Malaysia's Political Polarization: Race, Religion, and Reform - Political Polarization in South and Southeast Asia: Old Divisions, New Dangers," Carnegie Endowment for International Peace, August 18, 2020, https://carnegieendowment.org/2020/08/18/malaysia-s-political-polarization-race-religion-and-reform-pub-82436.
[56]Welsh.
[57]"Workbook: Population Statistics," Department of Statistics Malaysia, accessed November 15, 2020, https://public.tableau.com/views/MLS_PopulationStatistics_Portal_15801990280820/2_Population?:embed=y&:display_count=yes&:showTabs=y&:display_count=yes&:showVizHome=no.
[58]Welsh, "Malaysia's Political Polarization."

Malaysian population, are largely Muslim, while ethnic minorities are mostly Buddhist or Hindu. As a result, the disagreements around religion are inextricably linked to ethnicity. This strife has, in fact, intensified in recent years as Malaysia experiences an Islamic revival of sorts. For example, Islamic education in public schooling is on the rise, composing nearly half of the school day. As such, society in Malaysia continues to be divided on ethnic and religious lines.

Understanding ethnic and religious underpinnings and how they may manifest at the state level is critical in informing subnational research in Malaysia. Variation in distribution of the Malaysian population will likely affect outcomes in each state, especially when ethnicity and religion are so significant in determining one's place in society. This paper keeps this at the forefront while conducting its analysis, particularly in the qualitative analysis where state-fixed effects are less able to account for differences in state demographics that may confound findings.

Political Sphere

The political atmosphere in Malaysia is greatly influenced by the religious and ethnic tensions discussed in the section above. In particular, political elites have played a significant role in maintaining religious and ethnic cleavages.[59] Take, for example, the United Malays National Organization (UMNO) coalition. This coalition of political parties publicizes its primary goal of defending special rights for Malays. This priority has never changed for UMNO — not even as they eventually became more inclusive of Chinese and Indian Malaysian communities and rebranded as a multiethnic coalition under the new name of Barisan Nasional (BN or National Front). This blatant preferential treatment of Malays is especially striking given that the BN coalition led the national government from 1957 - 2018. It seems the coalition was

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[59]Welsh.

somehow able to balance their promise of hierarchical protections to Malays against their interethnic cooperation efforts.

Alongside the UMNO, there are three other major political coalitions that are of significance. Pakatan Harapan (PH) is Malaysia's progressive party and was in national power until February 2020 when it was overthrown without an election by UMNO; Malaysian Chinese Association (MCA) is a proponent of advancing the policy needs of Chinese Malaysians; Parti Islam se-Malaysia (PAS) was formerly a part of BN but broke off in 1951 due to differing beliefs about the extent to which the Islamic religion should be present in government.[60] Recall that most Malays, who also make up majority of the Malaysian population, are Muslim and so the intensifying role of Islam in politics is often pitted against the need for a secular government structure. Today, PAS boasts a policy platform that aims to create a more Islamic Malaysia, which unsurprisingly does not resonate with most non-Malay voters.[61]

These parties and coalitions are important in determining both federal and state policy, given the national government's Single Member District Plurality and First-Past-the-Post system. More specifically, Malaysia has a decentralized political system in which the country is headed by a king who appoints a prime minister, each of the 13 states have their own chiefs and states are given representation in both the Senate and House of Representatives. Each state possesses their own constitution, executive authority and a state-specific legislature.[62] Moreover, each

[60] Sophie Lemière, "The Malaysian Political Game: Where Are We?," September 29, 2020, https://www.csis.org/analysis/malaysian-political-game-where-are-we; WILLIAM F. CASE and LIEW CHIN-TONG, "How Committed Is PAS to Democracy and How Do We Know It?," *Contemporary Southeast Asia* 28, no. 3 (2006): 385–406; Muhamad M. N. Nadzri, "The 14th General Election, the Fall of Barisan Nasional, and Political Development in Malaysia, 1957-2018," *Journal of Current Southeast Asian Affairs* 37, no. 3 (December 1, 2018): 139–71, https://doi.org/10.1177/186810341803700307.

[61] Nadzri, "The 14th General Election, the Fall of Barisan Nasional, and Political Development in Malaysia, 1957-2018."

[62] "Malaysia Political Structure," The Economist, September 1, 2019, https://country.eiu.com/article.aspx?articleid=1438401527&Country=Malaysia&topic=Summary&subtopic=Political+structure.

state's government is made up of at least a simple majority of one of these coalitions. Understanding the role of parties at the state level is, therefore, important for analysis as states will vary in the extent to which policies promote female labor force participation given their party platforms. As such, state-level politics will be taken into consideration in both the qualitative and quantitative portions of analysis.

Methodology

Data & Variables

This paper uses three datasets from the Malaysia Department of Statistics that are on the state and federal territory level. For the sake of concision and to align with reporting by Malaysia's Department of Statistic, this paper refers to both federal territories and states when using the term "states." The first dataset is the "Principal statistics of the labour force by sex, Malaysia/states, 1982 - 2018." This dataset reports male and female labor force participation rates for each gender in each state, which I subtract (male minus female) to calculate the dependent variable: *gender gap in labor force participation*. I choose to study gender gap in labor force participation rather than female labor force participation in order to ensure that the independent variable is measuring only the effect on female labor force participation rather than factors that impact the labor force as a whole.

The second dataset this paper references is the "Employed persons by industry, Malaysia/states, 1982 - 2018." Rather than simply using the number of jobs in each sector as reported in the dataset, this data is used to calculate the *percent of jobs in each industry* for each state in order to account for varying sizes of the economy. More specifically, the size of these industries is calculated by taking total jobs in the industry as a fraction of the total number of jobs

in a state. The primary independent variables will focus on the percent of jobs in the manufacturing, service and public administration sectors as existing literature suggests that these are the most likely to employ women.[63] It is important to note that these primary independent variables — size of the service, public and manufacturing industries — are an imperfect proxy for measuring the size of states' industries, as the number of jobs does not necessarily correspond to the value of produced goods or contributions to GDP. Due to data constraints, however, the share of jobs is the closest proxy to understanding the dominant industries in each state.

It is also important to note that the categories in this dataset were modified in 2010. As such, it may be the case that prior to 2010 some industries' employment totals were calculated differently. To avoid aligning data that is otherwise incongruent, I use only data from 2010-2018 despite having data that dates back to 1982. Moreover, Putrajaya was only added as a federal territory in 2011 so both datasets do not have data for Putrajaya in 2010.[64] Even so, I maintain a sample size of 143 for both datasets which is sufficient for running a regression model. Both of these datasets can be publicly accessed on the Malaysia Department of Statistics website.[65]

I compile the third dataset for my research by purchasing data from the Malaysia Department of Statistics, conducting a thorough search of their publicly available datasets on their website and researching newspaper archives for historical data on majority political parties. This

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[63]Nor'Aznin Abu Bakar and Norehan Abdullah, "Labor Force Participation of Women in Malaysia" (conference, International Economic Conference on Trade and Industry (IECTI) 2007, Bayview Hotel Georgetown, Penang, 2007), http://repo.uum.edu.my/2469/; David Atkin, "Working for the Future: Female Factory Work and Child Health in Mexico," April 2009, 48; Rachel Heath and Mushfiq Mobarak, "Manufacturing Growth and the Lives of Bangladeshi Women," *Journal of Development Economics* 115 (July 1, 2015): 1–15, https://doi.org/10.1016/j.jdeveco.2015.01.006; Cassey Lee, "Manufacturing Performance and Services Inputs: Evidence from Malaysia," February 2019, 25; Pratimā Pāla-Majumadāra and Anwara Begum, *Engendering Garment Industry: The Bangladesh Context* (University Press Limited, 2006).
[64]Sarah Moser, "Putrajaya: Malaysia's New Federal Administrative Capital," *Cities* 27, no. 4 (August 1, 2010): 285–97, https://doi.org/10.1016/j.cities.2009.11.002.
[65]See: https://www.dosm.gov.my/v1_/index.php?r=column/ctimeseries&menu_id=NHJlaGc2Rlg4ZXlGTjh1SU1kaWY5U T09

dataset includes a list of demographic and social statistics that will serve as control variables —

literacy rates, fertility, GDP, political party in majority power, ethnic majority, and share of

Muslims (Malaysia's major religion). These variables have been carefully selected to control for

existing literature's theories presented above.

I will note that due to the COVID-19 pandemic and the resulting closure of government

offices in Malaysia, primarily the Department of Statistics, I was limited in my ability to acquire

data from government sources. Future research should consider adding variables that may be

critical to understanding the predictors of female labor force participation in Malaysia, such as

school enrollment rates and number of children in each household.

Analytical Strategy

I employ a mixed-methods approach for my empirical strategy: 1) a qualitative analysis of

an extreme case, 2) a qualitative analysis of a diverse pair and 3) a state-fixed effects OLS

regression. Due to the small number of states in Malaysia, random sampling is not a meaningful

method of controlling for confounding variables amongst cases as it will likely result in a sample

that is substantially unrepresentative of the population at large. At the same time, the sample is not

so small that an in-depth study of each state for matching purposes is feasible. As such, both

qualitative analyses employ the small-N case selection strategies outlined by Seawright and

Gerring (2008).[66] The frameworks outlined by these authors depart from existing literature on data

analysis as they require only reasonable amounts of information to be gathered for each case to

draw conclusions rather than in depth familiarity, all while maintaining qualitative value. Given

the practicality of their work, Seawright and Gerring (2008) serve as a gold standard for small-N

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[66]Jason Seawright and John Gerring, "Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options," *Political Research Quarterly* 61, no. 2 (June 2008): 294–308, https://doi.org/10.1177/1065912907313077.

case studies in the field of comparative politics, cited in a plethora of textbooks on qualitative methods.[67]

Of their seven case selection procedures — typical, extreme, diverse, deviant, influential, most similar, and most different cases — I select the extreme and diverse methods to be most appropriate for my research. In both these cases, it is important to note that the frameworks disregard within case characteristics and focus solely on cross-case comparisons. While this may seem unconventional, Seawright and Gerring (2008) compellingly explain "this is how the term *case selection* is typically understood, so we are simply following convention by dividing up the subject in this manner."[68] Because the amount of case familiarity required is reduced significantly, however, this approach will undoubtedly raise concerns regarding external validity which will be discussed further below.

I base case selection for both the extreme and diverse cases on variation in the dependent variable — gender gap in labor force participation. Descriptive analysis of the states (elaborated on in the following section) reveals an obvious outlier: Putrajaya. As such, I employ the extreme case method as outlined by Seawright and Gerring (2008). This method selects cases (one or more) that "exemplify extreme or unusual values of X or Y relative to some univariate distribution" and makes only exploratory claims. I then select the diverse case method due to the limited amount of within case data available to me in conducting this research. This method "requires the selection of a set of cases—at minimum, two—which are intended to represent the full range of values characterizing *X, Y,* or some particular *X/Y* relationship."[69] In this case, the full range of the

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[67]David Silverman, *Interpreting Qualitative Data* (SAGE, 2015), 62; Todd Landman and Edzia Carvalho, *Issues and Methods in Comparative Politics: An Introduction* (Taylor & Francis, 2016), 74.

[68]Jason Seawright and John Gerring, "Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options," *Political Research Quarterly* 61, no. 2 (June 2008): 296, https://doi.org/10.1177/1065912907313077.

[69]Seawright and Gerring, 300.

dependent variable is represented by two categories: increasing *or* decreasing gender gaps in labor force participation. To employ this strategy, I select Perak and Pulau Pinang as the two focal cases since they present opposing trends in the labor force participation's gender gap. While a practical option given the constraints of my data, the diverse case method is one of the weakest methods outlined by Seawright and Gerring (2008) and is "likely to be representative in the minimal sense of representing the full variation of the population." [70] In other words, since the cross-case comparison in the qualitative analysis is limited to a comprehensive view of only economic variables, any factors beyond observational differences in social norms, demographics or politics may confound any findings. This is an important note as the literature review and the Malaysia overview sections both underscore the importance of these variables in influencing female labor force participation rates. To this end, the qualitative analysis only serves to descriptively understand the key components of the economy and its labor force in Malaysia and gain familiarity with the context.

The generalization limitations discussed above precisely motivate the inclusion of a state-fixed effects regression in this paper. This type of regression is more appropriate than a standard OLS regression as states have unobserved characteristics that may correlate with the errors in an OLS regression model. Therefore, the independence assumption of regression models is violated as the errors are not necessarily independent.[71] By using the states themselves as controls, a state-fixed effects regression is able to control for unobserved variables and reestablish the assumption of independence. For example, though the OLS regression does include control variables — such as GDP, percentage of Muslims in the state's population, distribution of the population across ethnicities, female literacy rates, fertility rate and political party in power — the state fixed effects

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[70]Seawright and Gerring, 297.
[71]Paul D. Allison, *Fixed Effects Regression Models* (SAGE Publications, 2009).

model will allow any other omitted variables, like geography or household size, to be accounted for. The results of the state-fixed effects regression model are, therefore, robust and will be the most reliable of the three methods outlined in this section.

I. Extreme Case

I first explore Putrajaya as an extreme case (Figure 7). In Putrajaya in 2018, there is not only exceptionally high female labor force participation, 74.6%, but also a mere 3.7% gender gap in labor force participation (Figure 8). This exceptional level of female labor force participation is nearly 30% higher than the next closest state Kuala Lumpur, which has a 56.4% female labor force participation rate. As such, it is critical to analyze this state in order to understand the conditions under which this extreme case is able to sustain itself.

Figure 7. Box Plot of Gender Gap by State 2010 - 2018
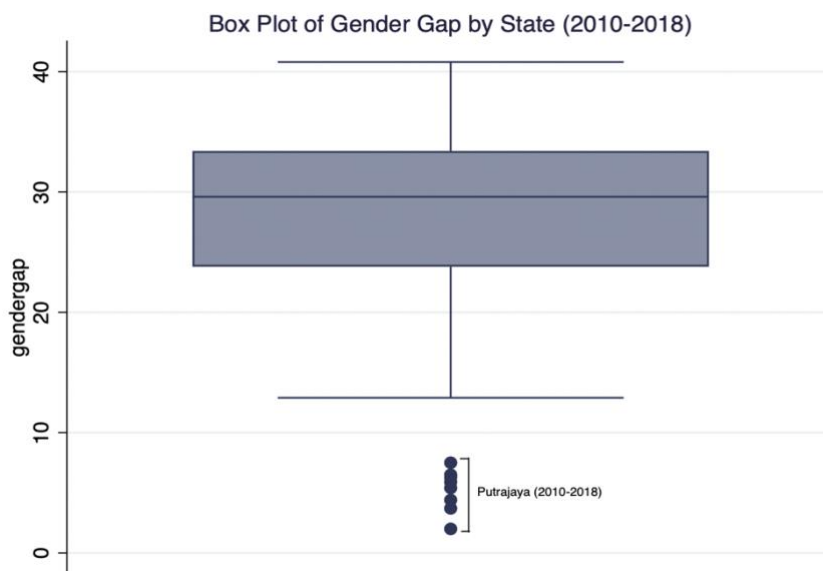
Figure 8. Putrajaya Labor Force Participation 2011 - 2018
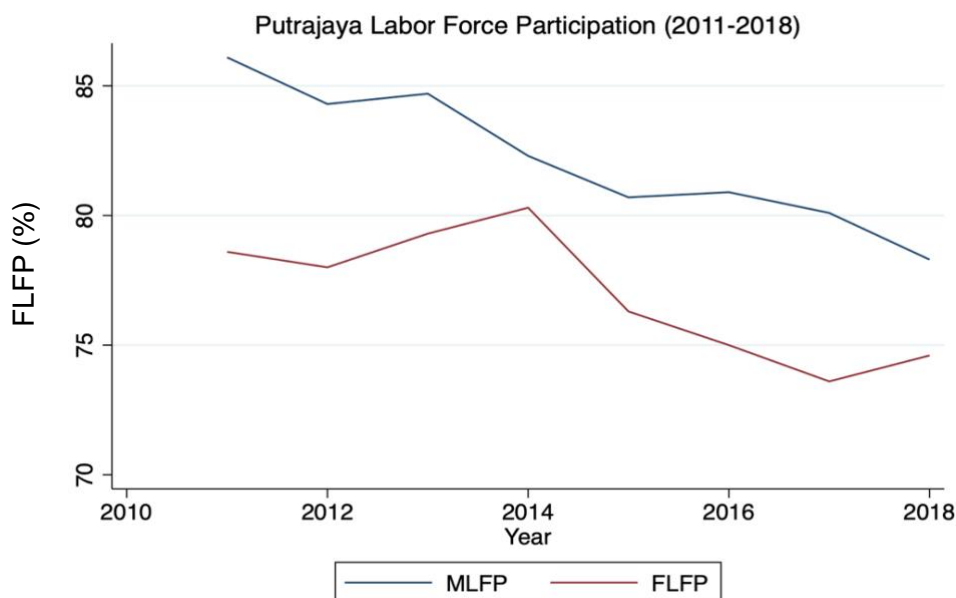

II. Diverse Case Pair

The two cases I select are two states that present steady patterns of change in gender gap over the last five years: Perak and Pulau Pinang. It is important to note that unlike the rest of the paper, I focus on particularly the last five years when comparing these two states. As is made clear by Figures 9 & 10, these two states become truly and dramatically divergent beginning in 2014. Keeping in mind the work of Seawright and Gerring (2008), I leave analysis of changing female labor force participation patterns in Pulau Pinang in 2014 for future research as this paper is not concerned with within case characteristics but rather only cross-case comparisons.

Pulau Pinang has consistently had higher absolute female labor force participation than Perak, 59% and 46% in 2015 respectively. Yet, while Perak has grown its female labor force participation by 4% and decreased the gender gap by over 4%, Pulau Pinang has seen a 3% decline in female labor force participation and grown the gender gap by 2% (Figure 9 & 10). In addition to identifying the industries that may correlate with divergent labor force participation patterns in

these states, this method may also illuminate the ways in which industries systematically influence female labor force participation. The analysis will also attempt to account for political and demographic differences, though recall that this will bear limited power. At the same time, the analysis of Perak and Pulau Pinang are conducted as small-N case studies, which does not hold much generalization power but will help me rationalize one possible hypothesis.

Figure 9. Perak Labor Force Participation 2010 - 2018
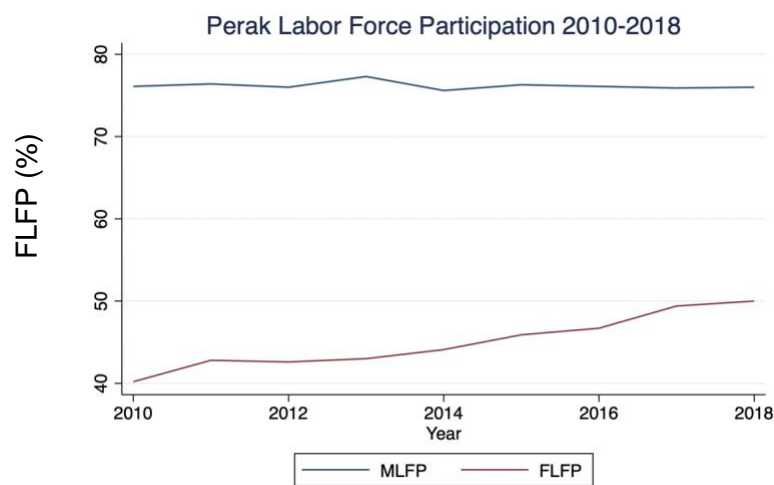
Figure 10. Pulau Pinang Labor Force Participation 2010 - 2018
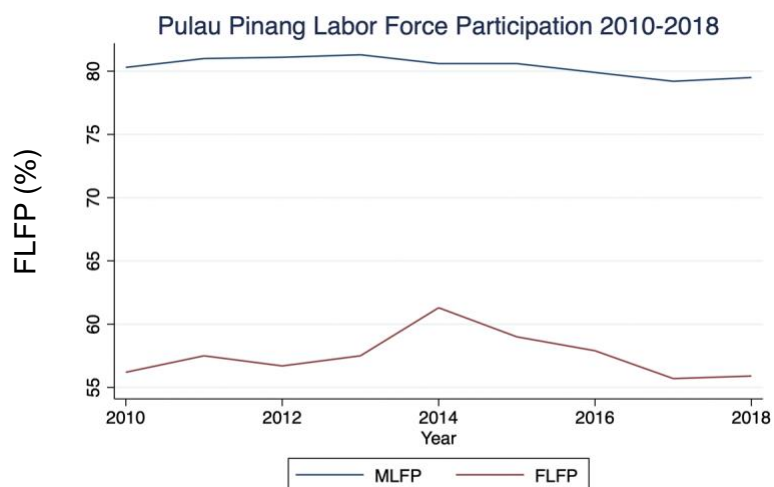
III. Regression Models

In order to draw a more generalizable conclusion, I will lastly test the learnings of the diverse case study by building various regression models. First, I will conduct a standard OLS regression to determine the relationship between the manufacturing, service and public sectors and gender gap in labor force participation. Then, to account for confounding variables, I will introduce several control variables – literacy, fertility, GDP, majority political coalition, ethnic majority, and religious majority. While the relationship between the data points meets the linearity assumption, the independence assumption will be violated here as the dataset is panel data at the state level. The OLS regressions then only serve to be a descriptive, baseline of analysis. As such, I will follow with a state-fixed effects regression model as discussed above. By leveraging various modeling techniques, we can ensure that the models capture the true extent of impact of these variables.

Analysis

Extreme Case — Putrajaya

This paper establishes Putrajaya as an extreme case when looking at female labor force participation in Malaysia, with nearly 75% of females participating in the labor force (Figure 7 & 8). It is important to note that Putrajaya is a relatively new federal territory, intended to assume all public administration functions from the capital city Kuala Lumpur.[72] Due to Putrajaya's recent construction which began in 2011, the area is built quite lavishly, incorporating new technologies and a modern design. As a result, Putrajaya seems to be an attractive location for those seeking employment regardless of gender.

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[72]"Putrajaya - The Making of a New City | The Star Online," accessed December 8, 2019, https://www.thestar.com.my/travel/malaysia/2013/09/16/putrajaya-the-making-of-a-new-city.

Figure 11. Putrajaya Manufacturing Sector Share of Total Jobs x FLFP 2011 - 2018
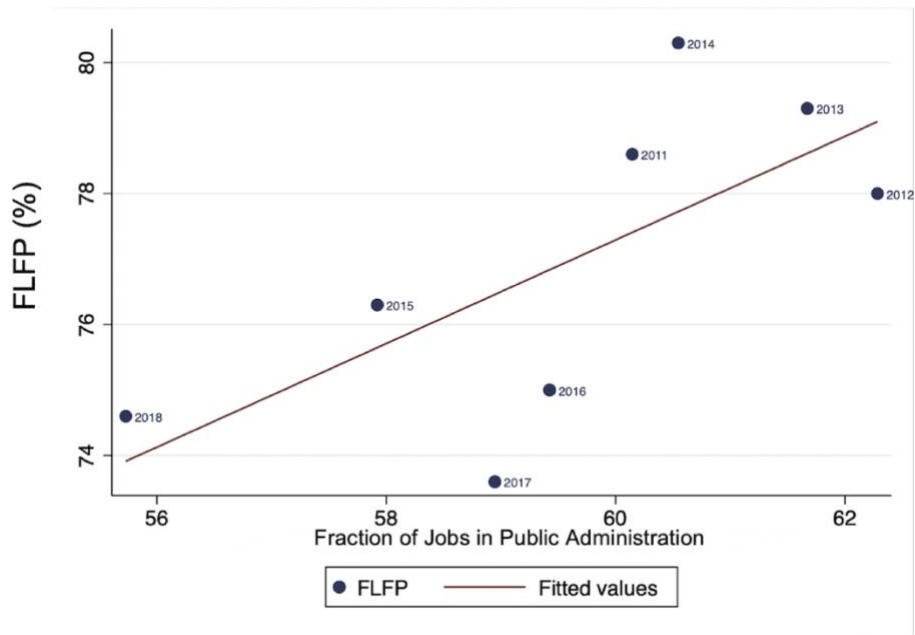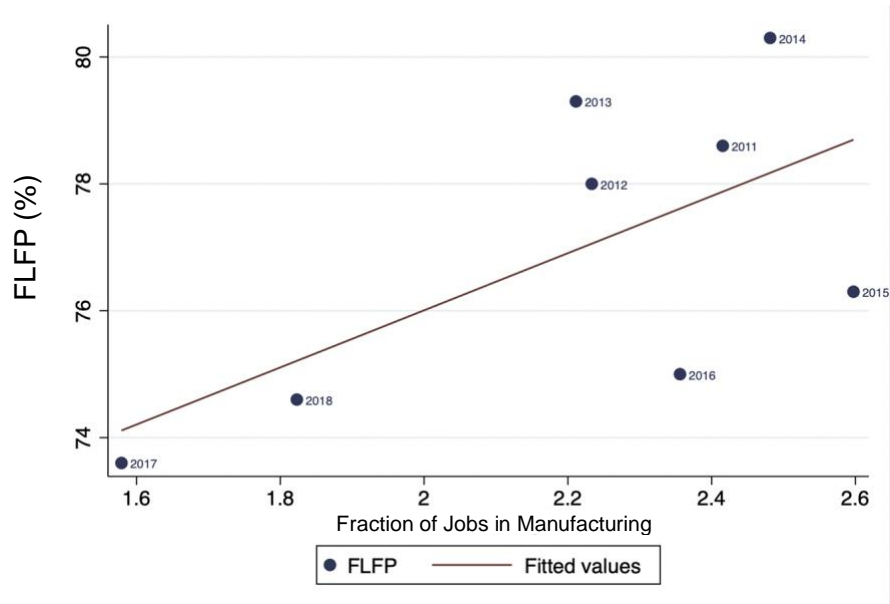

Figure 12. Putrajaya Public Admin. Sector Share of Total Jobs x FLFP 2011-2018

From a demographic and political perspective, Putrajaya is positioned as the center of "modernization" and a "progressive Muslim" identity.[73] The fact that this federal territory is situated in Malaysia's Multimedia Superior Corridor (MSC), which was intended to be similar to the Silicon Valley in San Francisco, is a testament to its desire to demonstrate political and economic Westernization. Some even argue that Putrajaya's architecture reinforces the superiority of the Malay-Muslim polity in a way that is attractive to investments from the Western wold, presenting Malaysia as a trendy, high-modernist country while maintaining its Islamic roots.[74] This singular identity is sustainable given that Putrajaya is a federal territory rather than a full state, with a population of only 91,000 in 2018.[75] For reference, Malaysia's population as a whole is 31.5 million.

Moreover, considering that Putrajaya has an abundance of federal jobs, is situated in an urban setting and reflects the historical superiority of Bumiputeras in Malaysia, it is unsurprising that Putrajaya is 98% Bumiputera and has very fews non-citizens in its population. Additionally, the average household size is only 3 people per household while the country's average household size is 4.3. This may be indicative that child care responsibilities may be lower for females in this region which may contribute to higher levels of employment since child care responsibilities often fall on the shoulders of women.[76] Surely, the causal arrows could go either way; Putrajaya could be attractive to women who have fewer children, or women have fewer children because of the demands of their public administrative jobs). In either case, the combination of demographic and

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[73]Moser, "Putrajaya."
[74]Moser, "Putrajaya."
[75]"Workbook: Population Statistics," Department of Statistics Malaysia, accessed November 15, 2020, https://public.tableau.com/views/MLS_PopulationStatistics_Portal_15801990280820/2_Population?:embed=y&:display_count=yes&:showTabs=y&:display_count=yes&:showVizHome=no.
[76]Ahn and Mira, "A Note on the Changing Relationship between Fertility and Female Employment Rates in Developed Countries."

political factors likely makes Putrajaya a friendly place for women to participate in the workforce.

Moreover, of the three industries most likely to be linked with female employment, descriptive graphs make the case that growing size of manufacturing and public administration sectors are most closely linked with female labor force participation (Figures 11 & 12). Nearly 60% of jobs in Putrajaya, however, are in public administration while only 2.5% of jobs are in the manufacturing sector. As one may expect, this indicates that public administration may contribute more significantly to the high levels of female labor force participation in Putrajaya.

Some may question how Putrajaya's federal jobs can contribute to high female labor force participation given that females are historically and generally underrepresented in political office. It is important to recognize, however, that Putrajaya is home to Malaysia's *public administration* functions, which is distinct from *policy-making* where females are often excluded. The function of policy-making occurs in the country's capital — Kuala Lumpur — where the country's parliament is based, not in Putrajaya.[77]

In fact, there are several theories as to why public sector jobs encourage female labor force participation. The leading argument suggests that high levels of transparency in the public sector encourage smaller wage gaps between male and female employees.[78] In addition to wage equity, the federal government in Malaysia also subsidizes public agencies that chose to establish a child care facility for their employees.[79] In this way, the public sector provides child care options that enable females with young children to enter and remain in the labor force. Regardless of the

[77] Moser, "Putrajaya."

[78]Ronald G. Ehrenberg and Robert S. Smith, "Comparable-Worth Wage Adjustments and Female Employment in the State and Local Sector," *Journal of Labor Economics* 5, no. 1 (January 1, 1987): 43–62, https://doi.org/10.1086/298136; Ganesh Seshan, "(PDF) Public-Private-Sector Employment Decisions and Wage Differentials in Peninsular Malaysia," *Emerging Markets Finance and Trade*, November 2013, 163–79, https://doi.org/10.2753/REE1540-496X4905S510.

[79]"Subsidy of RM180 for Public Sector Childcare Centre Fee," *The Star Online*, March 26, 2012, https://www.thestar.com.my/news/nation/2012/03/26/subsidy-of-rm180-for-public-sector-childcare-centre-fee.

mechanism, it is clear that Putrajaya's role as the center of public administration has enabled it to maintain exceptionally high levels of female labor force participation.

Diverse Case Pair — Perak & Pulau Pinang

Recall that Peak and Pulau Pinang reflect divergent patterns of change in the labor force participation's gender gap. While Perak has grown its female labor force participation by 4% and decreased the gender gap by over 4%, Pulau Pinang has seen a 3% decline in female labor force participation and grown the gender gap by 2% (Figure 9 & 10). This section aims to dive into demographic, political and economic factors in order to better understand this variation between the two states.

An observational analysis seems to indicate that Perak and Pulau Pinang are very different though their characteristics have remained more or less constant over time. In terms of demographics, this paper considers population, fertility rates, proportions of ethnic groups, and percentage of Muslims in the population. Perak is 21,000 km^2 while Pulau Pinang is only 1,000 km^2.[80] This difference is even more striking when one considers Perak and Pulau Pinang's population — 2.5 million and 1.75 million respectively. In fact, Pulau Pinang's population is growing at 1%, while Perak's is growing at a rate half that. As such, it's clear that Pulau Pinang is a much more densely populated and urban state. Moreover, while the fertility rate in Perak has remained on par with the national average (2 births per woman) between 2010 - 2018, the fertility rate in Pulau Pinang is lower than that at about 1.5 births per woman. Given its urban setting and lower fertility rates, it is then unsurprising that Pulau Pinang has a slightly higher absolute female labor force participation rate than Perak. However, it is important to note that Perak's population

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[80] "Department of Statistics Malaysia Overview," Department of Statistics Malaysia, accessed November 29, 2020, https://www.dosm.gov.my/v1/index.php?r=column/cone&menu_id=ZmVrN2FoYnBvZE05T1AzK0RLcEtiZz09.

is 60% Bumiputera, while Pulau Pinang's is only 45% Bumiptera.[81] Given that Bumiputera are systematically given more privileges as an ethnic group in various aspects of Malysian life, this may signal the importance of the *types of jobs* that are available in both states and how this may impact how females from different ethnic groups differ in their inclination to enter the labor force. However, given that trends in demographics have remained constant over the time period that this paper is concerned with, it is not clear from demographics alone why there may be a difference in change in the labor force's gender gap between these two states.

Like demographic variables, the political landscape in both states supports higher levels of absolute female labor force participation in Pulau Pinang yet fails to explain the divergent trends in the labor force's gender gap. Recall that policy platforms can contribute to differences in the extent to which female employment is supported. This is important because Pulau Pinang is a more progressive state than Perak in terms of political preferences. The Pakatan Harapan party, which is known as the moderate progressive party in Malaysia, has held about 60% of seats in Pulau Pinang's government for several elections.[82] On the other hand, in Perak 50% of seats are held by Pakatan Harapan, while the other 50% of seats are held by the more right-wing, nationalist coalition Barisan Nasional. The fact that progressive governments are more likely to push for policies that support females in the workforce may help understand different levels of female labor force participation in these states. It cannot, however, illuminate why the gender gap has been growing in Pulau Pinang and shrinking in Perak as the distribution of seats amongst the coalitions remains roughly constant in both the 2013 and 2018 general elections. Therefore, demographics and political factors seem to paint only a partial picture of the state of female labor in Perak and

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[81] "Workbook: Population Statistics"

[82] Meredith L. Weiss, "Malaysia's 13th General Elections: Same Result, Different Outcome," Asian Survey 53, no. 6 (2013): 1135–58, https://doi.org/10.1525/as.2013.53.6.1135.

Pulau Pinang.

Though the two states also seem similar in terms of economic landscape at first glance, distinct patterns in industry growth may provide some explanation of different trends in female labor force participation. Both states exceed Malaysia's average GDP per capita — 11,300 RM — and by a landslide. Perak's is nearly 30,000RM and Pulau Pinang's is 50,000RM. As such, both states are economically much more well-off than the average Malaysian state. Moreover, recall that they also have similar levels of female labor force participation though Pulau Pinang exceeds Perak by 5%. Lastly, both states have been experiencing similar levels of growth at 5% annually. Yet it would be amiss to not note that the vehicles for this growth seem to be different in both states.

Both Perak and Pulau Pinang rely on manufacturing and service sectors for their economic growth, yet Perak has seen much more significant growth in its service sector than Pulau Pinang in recent years. It is then possible that Perak's position as a notably historic state in Malaysia may have contributed to growing its female labor force participation.[83] A quick Google search returns endless tour guides to the state's iconic destinations.[84] The Department of Statistics Malaysia data suggests that it is perhaps this growth of tourism that has given rise to the accommodations and food services sector, which has grown its share of Perak's economy from 8% to 12% in the last ten years. More importantly, this rise has almost perfectly correlated with the rise in female labor force participation in Perak (Figure 13). Existing literature shows that tourism is a large employer

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[83]R. O. Winstedt and R. J. Wilkinson, "A HISTORY OF PERAK," *Journal of the Malayan Branch of the Royal Asiatic Society* 12, no. 1 (118) (1934): v–180.

[84]"Top Perak Attractions," Malaysia Traveller, accessed December 11, 2019, https://www.malaysia-traveller.com/top-perak-attractions.html; "THE 15 BEST Things to Do in Perak - 2019 (with Photos) - TripAdvisor," accessed December 11, 2019, https://www.tripadvisor.com/Attractions-g298297-Activities-Perak.html.

of females for two reasons.[85] First, much of the work the tourism sector demands, like hotel upkeep and restaurant service, can be viewed as an extension of domestic work which creates demand for female labor due to the gendered division of household labor. Second, these low-skilled jobs require little additional training and expertise which often disproportionately fall to women who prefer from flexible work options during their childbearing years.

**Figure 13. Perak Accommodation & Food Services Sector Share of Total Jobs x FLFP 2010 – 2018**
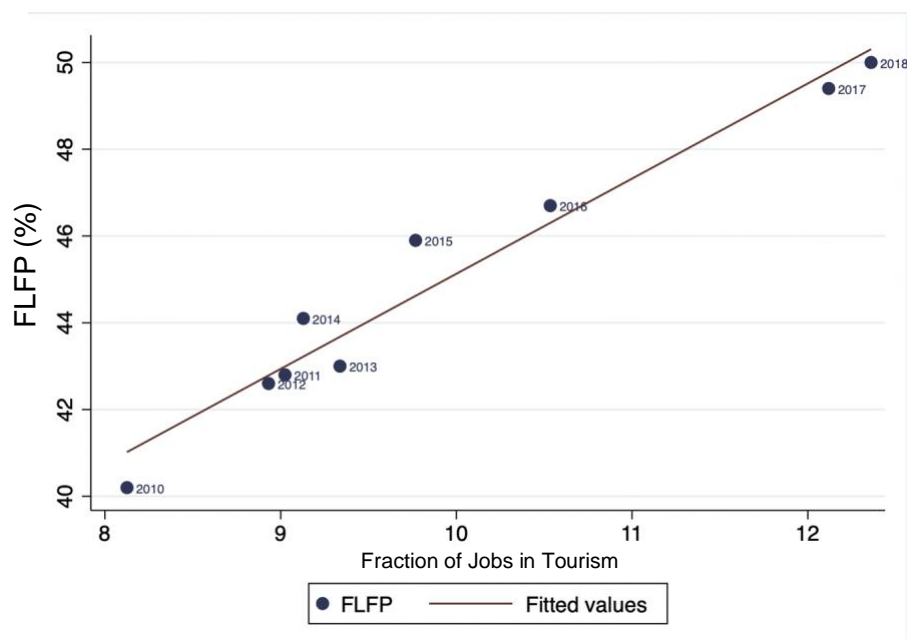
While tourism seems to correlate, at least in part, with the rise of female employment in Perak, the manufacturing industry descriptively seems to have a negative relationship with female labor force participation (Figure 14). In fact, this pattern not only exists in Perak but also in Pulau Pinang though to a lesser extent (Figure 15). Therefore, it is possible that in Perak the rise of the accommodations and services factor may be offsetting (and perhaps even supplanting) the decline correlated with the manufacturing sector. Pulau Pinang, on the other hand, has not seen much

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[85]Cave and Kilic, "The Role of Women in Tourism Employment With Special Reference to Antalya, Turkey."

growth in its tourism sector which may help understand the declining female labor force participation in Pulau Pinang.

Figure 14. Perak Manufacturing Sector Share of Total Jobs x FLFP 2010 - 2018

*2017 removed as an extreme value
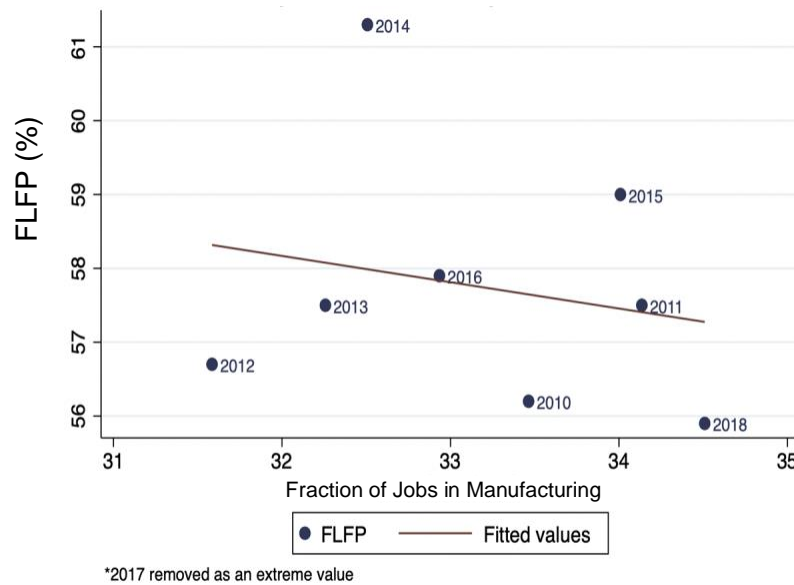
Figure 15. Pulau Pinang Manufacturing Sector Share of Total Jobs x FLFP 2010-2018
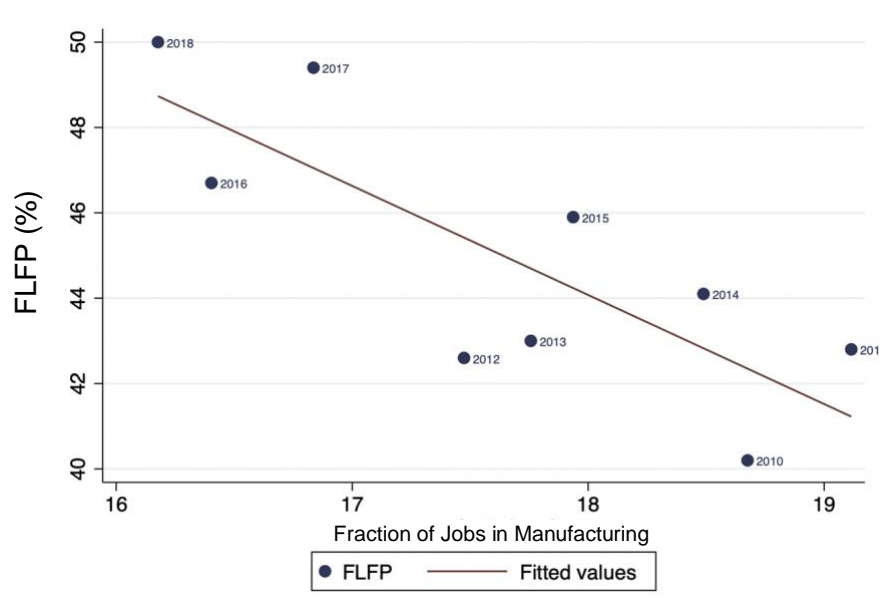
This finding then begs the question — *why is manufacturing a declining source of female*

labor force participation? There are several theories as to why manufacturing may lead to a decline in female employment. First and foremost, existing literature does not argue that *any* type of manufacturing encourages female employment; it is specifically garment manufacturing that has been applauded for bringing females into the workforce. While there is a garment sector in Malaysia, both Pulau Pinang and Perak are mostly dependent on electronics and electrical products which may not contribute to female employment.[86] This is especially true if the garment sector in these states is shrinking to allow for further specialization of electronics manufacturing. Though the data this paper uses does not differentiate between different types of manufacturing, this is certainly a question worth considering in future research. An alternative argument may be that the rise of electronic and electrical manufacturing is increasing employment opportunities for males, eliminating the need for women to seek employment and contribute to their household's financial security. However, the data does not show an increase in male employment in the manufacturing industry that would offset declines in female employment. Second, the introduction of technology in manufacturing flows may require higher levels of training which discriminates against females in the hiring pool regardless of whether or not they are capable.[87] Because Malaysia as a state has seen a rise in the technical capital in its factories as it seeks to grow production capabilities, it is very much so possible that women are being pushed out.[88] Third, increasing competition has driven wages down across the manufacturing focused countries.[89] In effect, it may no longer be worth it

[86]"The Performance of State's Economy 2017" (Department of Statistics Malaysia, May 8, 2018), https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=449&bul_id=L25EUXQxbWdBaEVoWXU5 aTFQWUpNdz09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09.

[87]Nor'Aznin Abu Bakar and Norehan Abdullah, "Labor Force Participation of Women in Malaysia" (conference, International Economic Conference on Trade and Industry (IECTI) 2007, Bayview Hotel Georgetown, Penang, 2007), 5, http://repo.uum.edu.my/2469/.

[88]"Global Defeminization? Industrial Upgrading and Manufacturing Employment in Developing Countries: Feminist Economics: Vol 22, No 2," accessed February 22, 2020, https://www.tandfonline.com/doi/abs/10.1080/13545701.2015.1120880?journalCode=rfec20.

[89]Homi J Kharas et al., *Cities, People & the Economy: A Study on Positioning Penang* (Kuala Lumpur, Malaysia: Khazanah Nasional, 2010), 4.

for females to supply labor. For example, if wages fall too low, women may no longer save any of their income after paying for child care, transportation, etc. In this case, we would expect women to exit the labor force. It is important to note, however, that Pulau Pinang seems to already be tackling this opportunity cost challenge with their recent policy that grants working mothers an annual incentive of RM300 and, in effect, encourages female labor force participation.[90] Although it is difficult to definitively say why, it seems — at least observationally — that the manufacturing industry is suppressing female employment while the tourism sector seems to be promoting it.

Regression Analysis

Table 1 tests several existing theories of possible predictors of female labor across three models. The OLS regression employed in Model 1 considers only the relationship between the primary independent variable — size of various industries — and the gender gap at a sample size of 152 observations. Model 2 introduces control variables into the regression model, which limits the sample size to 64 observations. These control variables include *GDP* measured at constant prices 2010 in RM million; *fertilityrate* measured per 1,000 women aged 15–49 years; *literacy* per 1,000 women age group 15-64; *muslimperc* measured as the percentage of state population identifying as Muslim in the 2010 Census; *party* measured as the political party of the incumbent state head of government; share of Bumiputera, Chinese, Indian and other ethnic groups. Model 3 further strengthens the OLS regression by including state-fixed effects, which aim to account for any unobserved factors that may be associated solely with the states themselves, rather than the variables this model is testing.

These three models present two key findings. First, the manufacturing sector fails to be a

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[90]Opalyn Mok, "Penang Budgets RM15m Child Care Aid for Working Mums | Malay Mail," November 2, 2017, https://www.malaymail.com/news/malaysia/2017/11/02/penang-budgets-rm15m-child-care-aid-for-working-mums/1500945.

significant predictor of the gender gap amongst Malaysian states across models, even after controlling for state-level variation and other social, economic and political predictors. The lack of statistical significance suggests there may be an external factor that is endogenous to both the gender gap and the share of the manufacturing industry. The data included in the models cannot be used to definitively conclude that there is no endogenous variable.

Second, the tourism sector is a statistically significant predictor of the gender gap though in opposing directions between the uncontrolled and state-fixed effects models. Model 1 suggests that a one-percent increase in the size of the tourism industry, measured as the fraction of total jobs in accommodation and food services, *increases* the gender gap by .769 percent. Model 3, however, suggests that a one-percent increase in the size of the tourism industry *decreases* the gender gap by .865 percent. These opposing conclusions can be reconciled by considering the merits of both models. Model 1 provides only descriptive findings, as it includes no measures of robustness. Without sufficiently including possible confounding variables, the findings cannot be considered reliable. On the contrary, Model 3 not only controls for possible confounding variables but also adjusts for unobserved state-level variation. As such, the findings of Model 3 are much more reliable. This finding is statistically significant at the 0.05 level, which allows us to confidently generalize the findings of the diverse case analysis that the growth of the tourism sector in Malaysia has significant benefits for the gender gap in labor force participation. On a state level, this implies that states that have a higher share of tourism in their economy are also more likely to see smaller gender gaps in their labor force. Ultimately, the fixed effects regression model demonstrates that the share of the tourism sector — not the manufacturing sector — explains, at least to some extent, the subnational variation in female labor force participation in Malaysia.

Table 1: Regression results of Labor Force Participation Gender Gap

	Model 1 OLS	Model 2 Controlled OLS	Model 3 State FE OLS
manufacturing_fr	-0.051	-0.177	0.132
	(0.049)	(0.122)	(0.241)
tourism_fr	**0.769*****	-0.168	**-0.865****
	(0.260)	(0.381)	(0.371)
adminservice_fr	0.155	0.401	-0.803
	(0.246)	(0.500)	(0.544)
publicservice_fr	**-0.310*****	0.203	-0.066
	(0.050)	(0.401)	(0.474)
health_social_fr	**-4.257*****	**-2.643*****	**-0.764***
	(0.366)	(0.436)	(0.379)
Education_fr	**1.027*****	-0.154	0.255
	(0.254)	(0.448)	(0.404)
serviceoth_fr	**-5.357*****	**-2.855****	-1.758
	(1.127)	(1.339)	(1.055)
gdp		**-0.000*****	-0.000
		(0.000)	(0.000)
fertilityrate		**4.247****	-4.358
		(2.043)	(2.873)
literacy		0.545	**0.681****
		(0.330)	(0.270)
muslimperc		**-17.207****	
		(7.791)	
party		**-1.916*****	**1.773***
		(0.380)	(0.907)
bumiputera		-1.109	-0.123
		(0.761)	(5.034)
chinese		-0.975	0.535
		(0.758)	(4.949)
indians		**-1.478***	3.609
		(0.775)	(6.310)
Obs.	152	64	64
R-squared	0.779	0.867	0.869

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

This table presents regression results of labor force participation gender gap in Malaysian states. Independent variables include fraction of jobs in manufacturing, tousim, administrative services, health and social work, education and other service industries; *GDP* measured at constant prices 2010 in RM million; *fertilityrate* measured per 1,000 women aged 15–49 years; *literacy* per 1,000 women age group 15-64; *muslimperc* measured as the percentage of population identifying as Muslim in the 2010 Census; *party* measured as the political party of the incumbent state head of government; share of Bumiputera, Chinese, Indian and other ethnic groups. Model 1 is an OLS regression model without control variables, measuring only the relationship between size of industry and gender gap. Model 2 is an OLS regression model with control variables. Model 3 is a state-fixed effects regression model with controls.

Discussion

      This case study of Malaysia attempts to tackle the puzzling variation in female labor force participation across states, despite existing literature commending the performance of Malaysia as a whole. This case study asks two questions primarily: 1) *Why do some states perform better than others in terms of closing the gender gap in labor force participation?* 2) *How do different patterns amongst states inform economic policymaking especially in understanding how to promote female labor force participation?* While this paper's findings depart from the expectations of the manufacturing sector to create opportunities for females, the findings are consistent with literature on the role of the service sector in female employment.[91] The service sector relies on "general skills" that are more accessible to females given their unequal responsibility towards housework and child-care, which sometimes prevents them from developing specialized skills.[92] Without a subnational look at the Malaysian case, in which a 1% increase in share of the tourism sector in a state leads to a .865 percentage point decrease in the gender gap, it would be difficult to reconcile the two different perspectives these researchers present and determine which apply to the Malaysian case.

      This newfound understanding is critical in informing the policy choices of the Malaysian government, and more importantly state governments. There is no denying that greater female labor force participation is commendable. Yet, it is important to ensure that the work environments in which where females are participating are *safe* and will, in fact, empower them. More

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[91] Rachel Heath and Mushfiq Mobarak, "Manufacturing Growth and the Lives of Bangladeshi Women," *Journal of Development Economics* 115 (July 1, 2015): 1–15, https://doi.org/10.1016/j.jdeveco.2015.01.006; Torben Iversen and Frances Rosenbluth, "The Political Economy of Gender: Explaining Cross-National Variation in the Gender Division of Labor and the Gender Voting Gap," *American Journal of Political Science* 50, no. 1 (January 2006): 1–19, https://doi.org/10.1111/j.1540-5907.2006.00166.x.

[92] Iversen and Rosenbluth, "The Political Economy of Gender," 4.

specifically, if Malaysian females truly are better off from a labor perspective in states that have a growing service sector, then policymakers must look closely at labor practices in the service sector and ensure that they are comprehensive enough to support this growth. For example, females who choose to participate in the service sector rather than the manufacturing sector may also be forgoing the greater protections, benefits, wages and bargaining power that come with specialized skills in the manufacturing sector.[93] More critically, one must ask how this shift may impact their position in society and, in effect, their role in the political sphere? To prevent a backsliding of female empowerment, policymakers in Malaysian states that are experiencing this shift, perhaps with the support of the national government, may need to shift their focus to creating programs, policies and oversight that can protect women in the service sector. Certainly, the differences between these sectors and implications for Malaysian females must be continued to be researched rigorously to fully inform policy decision-making.

Conclusion

This paper has demonstrated, using the case of Malaysia, the importance of conducting subnational research as a way to grasp the mechanisms of female labor force participation and empowerment. Without subnational research, the importance of the service sector as a driver of female employment would be obscured, and it would be easy to exaggerate instead the lingering effects of manufacturing of women in the workforce.

Understanding what drives female employment is important for several reasons. Female labor force participation is an accelerator of economic growth, both within households and for entire nations.[94] For women, the stakes are even higher. Female labor force participation is

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[93]Iversen and Rosenbluth, 4.
[94]Bloom et al., "Fertility, Female Labor Force Participation, and the Demographic Dividend."

associated with the right to vote, as well as with female descriptive and substantive political representation.[95] Finally, female labor force participation is linked to changing social norms and higher levels of bargaining power for working women. In summary, female employment promotes female empowerment. Yet, without understanding subnational variation, policy makers may be poorly informed, and the successes of some women will continue to overshadow the continued struggles of others. A more accurate view of female empowerment is crucial to policy effectiveness.

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[95]Torben Iversen and Frances Rosenbluth, "Work and Power: The Connection Between Female Labor Force Participation and Female Political Representation," *Annual Review of Political Science* 11 (June 10, 2008): 482, https://doi.org/10.1146/annurev.polisci.11.053106.151342.