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**Financial Development and Female Labor Income Share:
Evidence from Global Data**

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Abstract

This paper investigates the association between the dimensions of financial development and female labor income share for 160 countries for 1991-2019. The findings show that financial development is positively associated with women's income in high-income countries but not in low-income countries. This suggests that financial development in poor countries is not sufficiently inclusive enough to create economic opportunities for women.

Introduction

There is a sizeable literature on the effect of financial development (financialization hereafter) on economic growth, inequality, and poverty (Levine 2021). Using a novel data set, this paper contributes to this literature by providing evidence on the associations between the dimensions of financialization and female labor income share.

Financialization refers to advanced financial instruments, markets, and intermediaries that improve resource allocation by reducing transaction costs and making information more accessible. Empirical evidence shows that, overall, financialization increases economic growth and reduces income inequality. It affects income distribution through three major mechanisms (Levine 2021: 41-47). First, a better-functioning financial market allocates credit based on individuals' ideas and abilities rather than family wealth, thereby allocating available capital more efficiently in the economy. Second, financialization can alter the relative demand for more skilled or less-skilled workers by lowering barriers to the entry of new firms and creating a more competitive labor market. Finally, financialization reduces income inequality by making investment available for people with different incomes and wealth.

Financialization can help overcome women's generally limited access to credit by increasing their labor income through new economic opportunities. However, women's ability to benefit from this may be limited in lower income countries, especially those with stricter gender norms. Thus, despite some progress, gender gaps in access to financial services remain significant. The impact of financialization may also depend on the type of financialization.

To contribute to this line of research, this study is the first to examine the effects of all dimensions of financialization on women's labor income in countries with different income groups.

Data and Method

The main dependent variable is the female labor income share (FLIS), provided by Neef and Robilliard (2021) while the key independent variable is the financial development index, calculated by the IMF (Svirydzenka 2016). Since financialization is a multidimensional process, its measurement requires a comprehensive approach rather than using just one or a few variables. The IMF presents nine indices: the financial development index (the main index) and its sub-indices (the financial institutions index and the financial markets index). Each of these has three sub-indices measuring depth, access, and efficiency.

We also use real GDP per capita (2015 constant US dollars) and trade openness (shares of export and import in GDP) as alternative control variables, all obtained from the World Bank. We use data of 160 countries for 1991-2019, which is the largest data set available.

The generalized method of moments (GMM) is widely used for dynamic panel data analysis, particularly for common cases of large N and small T data. However, Kiviet (1995) warns that homogeneity assumptions regarding the slope coefficients of lagged dependent variables can create significant biases in GMM analyses. This can produce inconsistent and misleading long-run coefficients if the slope coefficients are not identical (Pesaran and Smith 1995). We therefore use the autoregressive distributed lag models (ARDL), introduced by Pesaran et al. (1999). These are heterogeneous dynamic panel models in which the cross-sectional dimension augments the time-series information and T is sufficiently large that the fixed effect Nickel bias is not a problem. It derives consistent and efficient estimates of the

parameters in a long-run relationship between both integrated and stationary variables in a panel data structure.¹

ARDL (p, q), the dynamic heterogeneous panel regression equation with the error correction model can be written as follows:

$$\Delta(y_i)_t = \sum_{j=1}^{p-1} \gamma_j^i \Delta(y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_j^i \Delta(X_i)_{t-j} + \varphi^i [(y_i)_{t-1} - \{\beta_0^i + \beta_1^i (X_i)_{t-1}\}] + \epsilon_{it} \quad (1)$$

Where y is FLIS; X represents the explanatory variables, including the financial development index, GDP per capita, and the cross-sectional means of all variables in the model; p and q are the lags of the dependent and independent variables, respectively; γ and δ are the short-run coefficients for profit and its determinants, respectively; β is the long-run coefficient; φ , which is a time-varying disturbance term, is the coefficient of the speed of adjustment to the long-run equilibrium ϵ ; i and t refer to country and time, respectively. The long-run regression coefficient in the square brackets in equation (1) is derived from equation (2) as follows:

$$(y_i)_t = \beta_0^i + \beta_1^i (X_i)_t + \mu_{i,t} \text{ where } \mu_{i,t} \sim I(0) \quad (2)$$

We use three estimators: first, the mean group (MG) estimator created by Pesaran and Smith (1995), which allows for complete diversity in cross-country parameters; second, the dynamic fixed effects (DFE) estimator of Pesaran et al. (1999), which equalizes all slope coefficients across countries; third, the pooled mean group (PMG) estimator, which equalizes the long-run slope coefficients across countries.²

¹ The results of the cointegration between the I (1) variables are not provided to save space.

² Note that 29 years is long enough to conduct this analysis as some model specifications in Pesaran et al. (1999) are even shorter.

A common characteristic of panel data models is cross-sectional dependence (CSD) in the errors. We also expect this in our study because the dependent variable, FLIS, is likely influenced by the global pattern of female labor participation and the income distribution between labor and capital. Hence, in addition to the major panel unit root tests, we also use CADF and CIPS unit root tests, which allow for cross-sectional dependence. These showed that the variables were a mix of I (0) and I (1), and that no variable was I (2), thereby justifying our use of ARDL³.

The major tests show that there is CSD in our dependent variable. We therefore control for CSD by incorporating the cross-sectional averages of FLIS and all independent variables, as suggested by Chudik and Pesaran (2015).

Results and Discussion

All model results, except for the *italicized*, meet the stationary condition that the coefficient of the error-correction term be negative and no less than -1 to stabilize adjustment in the error correction model.⁴ As suggested by the Hausman Test, we focus on the PMG and DFE results rather than MG. We present the results for the income groups, as categorized by the World Bank.

³ The test results can be provided on request.

⁴ Since our goal is a detailed analysis of the effects of different financialization dimensions on FLIS, we only provide those long-run coefficients to save space.

Table 1: Effects of Financialization on Female Labour Income Share

	Financial Development Index			Financial Institutions Index			Financial Markets Index		
	PMG	MG	DFE	PMG	MG	DFE	PMG	MG	DFE
All Countries	0.084*** (0.007)	0.491 (0.879)	0.116** (0.052)	0.166*** (0.015)	-0.632 (0.394)	0.125** (0.052)	0.046*** (0.004)	3.923 (3.791)	0.049 (0.036)
Low income	-0.304*** (0.096)	-0.173 (0.421)	6.264 (22.171)	-0.179* (0.092)	-0.063 (0.240)	2.705 (7.894)	-0.503*** (0.165)	9.141 (7.318)	1.321 (6.776)
Low middle	-0.153*** (0.051)	1.415 (2.877)	-0.081 (0.172)	-0.117 (0.121)	-1.413 (0.984)	-0.021 (0.130)	-0.131*** (0.021)	10.106 (12.872)	-0.054 (0.121)
Upper middle	0.256*** (0.034)	0.231* (0.135)	0.096* (0.051)	-0.012 (0.010)	-0.773 (0.947)	0.060 (0.045)	0.040*** (0.008)	1.374 (1.416)	0.059 (0.038)
High income	0.156*** (0.022)	0.057 (0.143)	0.099** (0.038)	0.091*** (0.014)	0.033 (0.158)	0.097** (0.045)	0.048*** (0.006)	-0.973 (0.974)	0.044** (0.022)
	Financial Institutions Depth Index			Financial Institutions Access Index			Financial Institutions Efficiency Index		
	PMG	MG	DFE	PMG	MG	DFE	PMG	MG	DFE
All Countries	0.092*** (0.011)	-0.526 (0.544)	0.161*** (0.054)	0.049*** (0.006)	-0.012 (0.141)	0.079** (0.036)	-0.010* (0.005)	0.199 (0.232)	-0.010 (0.032)
Low income	-1.194*** (0.230)	-0.801 (1.023)	3.845 (6.662)	1.732*** (0.358)	-0.331 (0.955)	0.361 (7.838)	-0.029** (0.014)	-0.033 (0.042)	0.710 (2.552)
Low middle	0.444*** (0.104)	0.064 (0.486)	-0.018 (0.163)	-1.885*** (0.656)	0.014 (0.158)	0.020 (0.083)	-0.035 (0.041)	0.791 (0.744)	-0.011 (0.066)
Upper middle	0.204*** (0.021)	0.295** (0.123)	0.105** (0.054)	0.069*** (0.015)	0.117* (0.066)	0.025 (0.029)	-0.100*** (0.016)	-0.052 (0.122)	0.006 (0.028)
High income	0.121*** (0.019)	-1.675 (1.615)	0.130*** (0.038)	0.058*** (0.008)	-0.024 (0.217)	0.036 (0.028)	-0.008 (0.009)	-0.078 (0.081)	-0.017 (0.031)
	Financial Markets Depth Index			Financial Markets Access Index			Financial Markets Efficiency Index		
	PMG	MG	DFE	PMG	MG	DFE	PMG	MG	DFE
All Countries	0.006 (0.006)	1.622 (1.416)	0.023 (0.031)	0.032*** (0.004)	3.034 (3.785)	0.035 (0.022)	0.028*** (0.003)	11.268 (11.332)	0.018* (0.011)
Low income	-0.180*** (0.064)	3.204 (2.664)	0.536 (2.615)	-1.003 (1.074)	90.084 (104.572)	-2.614 (6.958)	omitted	omitted	omitted

Low middle	-0.027** (0.012)	3.682 (4.837)	0.019 (0.098)	-0.002 (0.014)	-0.819 (3.734)	0.109 (0.106)	-0.054*** (0.008)	-0.117 (0.161)	-0.081 (0.078)
Upper middle	0.037*** (0.009)	0.721 (0.541)	0.031 (0.037)	-0.049** (0.021)	-0.202 (0.224)	-0.020 (0.041)	0.022*** (0.004)	0.015 (0.045)	0.033** (0.015)
High income	0.017** (0.008)	0.084 (0.062)	0.033* (0.020)	0.211*** (0.025)	0.017 (0.039)	0.042** (0.021)	0.026*** (0.005)	-0.086 (0.060)	0.027 (0.016)

Note: Standard errors in brackets. Significance denoted by *** at 1%, ** at 5%, and * at 10% level. Those omitted analyses are due to insufficient observations.

Table 1 presents the results. Regarding the financial development index, there is a highly significant positive association between financialization and FLIS for all countries. However, the results differ with respect to income groups. The effect is negative for low and low-middle-income countries but strongly positive in upper-middle and high-income countries. Regarding the financial institutions index, however, the significant positive overall association is only due to high-income countries. The results for the financial markets index, on the other hand, are very similar to those for the financial development index.

Regarding the financial institutions efficiency index, the results for wealthy countries are as expected except for upper-middle-income countries. The most important finding is that the higher depth and access sub-indices are associated with higher FLIS in low-middle-income and low-income countries, respectively. Although results for low-income countries are unavailable, there is also a notable difference between country groups for the financial markets indicators.

Thus, the two major findings are, first, financial development generally has dramatically different effects on poor and wealthy countries. Specifically, women in developed countries are far more likely to benefit from financialization due to economic development and perhaps gender relations. In contrast, financialization has almost no positive impact in developing countries. Second, while the financial institutions variables (e.g., the private-sector credit to GDP ratio or number of banks and ATMs) are associated with higher FLIS in developing countries, the financial market indicators (e.g., stock market capitalization to GDP) are negatively associated with it. These findings are consistent with the literature suggesting significant gender gap in access to finance (Morsy 2020). Making credit more available for women both through public and private agencies and reducing gender disparities in educational attainment would boost FLIS.

Conclusion

Our findings demonstrate striking differences between country groups regarding the effects of financialization on female labor income share. In addition, these differences vary depending on the specific financialization index. The main insight is that if financialization in developing countries ignores women's economic and social disadvantages then it will not be sufficiently inclusive to reduce economic gender disparities.

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