SUPPLEMENT TO "MISALLOCATION AND CAPITAL MARKET INTEGRATION: EVIDENCE FROM INDIA"

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APPENDIX A: DERIVATION OF AGGREGATION FORMULA

IN THIS SECTION, we derive equation (3), the formula used to approximate the change in the Solow residual due to the policy. In what follows, without loss of generality, we consider only wedges on output rather than inputs. This can be done without loss of generality since input wedges are a special case of output wedges. In particular, we can treat each input of each firm as being produced by a fictitious middleman intermediary who buys the input and sells it to the firm with some output wedge. This is isomorphic to having an input wedge on the original firm.

We start by defining

$$y_i = A_i f_i\big(\{y_{is}\}_s\big),$$

where y_i is the output of firm i, A_i is firm i's productivity, f_i is the production function, and y_{is} is the amount of input s used by firm i. Then, the total derivative of y_i is

$$d\log y_i = \sum_j \frac{\partial \log f_i}{\partial \log y_{is}} d\log y_{is} + d\log A_i. \tag{A.1}$$

Firm i solves the cost-minimization problem

$$\mathcal{C}_i(p, y_i) = \sum_s p_s y_{is} + \gamma_i\big(y_i - A_i f_i\big(\{y_{is}\}_s\big)\big), \tag{A.2}$$

where p is the vector of prices, p_s is the price of a good produced by s, and γ_i is the Lagrange multiplier. From the first-order conditions of equation (A.2),

$$p_s = \gamma_i A_i \frac{\partial f_i}{\partial y_{is}}. \tag{A.3}$$

Then,

$$\mu_i = \frac{p_i}{\partial \mathcal{C}/\partial y_i} = \frac{p_i}{\gamma_i},$$

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where μ_i is the output wedge of i (price over marginal cost), implying that $\gamma_i = \frac{p_i}{\mu_i}$. Substituting this relationship into equation (A.3) shows that $p_s = \frac{p_i}{\mu_i} A_i \frac{\partial f_i}{\partial y_{is}}$. Then,

$$\begin{aligned}\frac{p_s y_{is}}{p_i y_i} &= \frac{A_i y_{is}}{\mu_i y_i} \frac{\partial f_i}{\partial y_{is}} \\ &= \frac{\partial \log f_i}{\partial \log y_{is}} \frac{1}{\mu_i},\end{aligned}$$

which can be rewritten as $\mu_i \frac{p_s y_{is}}{p_i y_i} = \frac{\partial \log f_i}{\partial \log y_{is}}$. Then, substituting this into the total derivative (equation (A.1)) produces

$$d \log y_i = d \log A_i + \mu_i \sum_s \frac{p_s y_{is}}{p_i y_i} d \log y_{is}.$$

Note that this implies that

$$\frac{1}{\mu_i}(d \log y_i - d \log A_i) - \sum_{s \notin I} \frac{p_s y_{is}}{p_i y_i} d \log y_{is} = \sum_{s \in I} \frac{p_s y_{is}}{p_i y_i} d \log y_{is}. \tag{A.4}$$

Now that we have these expressions, we can turn to deriving our object of interest. We define firm-level net output to be c_i and total nominal industry-level output to be $PC = \sum_{i \in I} p_i c_i$, where $c_i = y_i - \sum_{s \in I} y_{si}$. Then,

$$d \log c_i = \frac{y_i}{c_i} d \log y_i - \sum_{s \in I} \frac{y_{si}}{c_i} d \log y_{si}.$$

The change in industry-level net output is defined by

$$d \log C = \sum_i \frac{p_i c_i}{PC} d \log c_i,$$

where after substitution, we get

$$d \log C = \sum_i \frac{p_i c_i}{PC} d \log c_i = \sum_i \left(\frac{p_i y_i}{PC} d \log y_i - \sum_{s \in I} \frac{p_i y_{si}}{PC} d \log y_{si} \right).$$

Then, the change in the Solow residual for I is given by

$$d Solow_I = d \log C - \sum_{i \in I} \sum_{s \notin I} \frac{p_s y_{is}}{p_i y_i} \frac{p_i y_i}{PC} d \log y_{is}.$$

Using equation (A.4), with a little algebra, we can rewrite this as

$$d Solow_I = \sum_{i \in I} \lambda_i \left(1 - \frac{1}{\mu_i} \right) (d \log y_i - d \log A_i) + \sum_{i \in I} \lambda_i d \log A_i, \tag{A.5}$$

where $\lambda_i = \frac{p_i y_i}{PC}$.

Now, we transform equation (A.5) to use input wedges instead of output wedges, so that it matches equation (3). To do this, we treat the inputs of each firm as a separate

producer, each with its own output wedge. Hence, for each firm i, we add three fictitious producers representing the capital, labor, and materials used by i. For example, consider input x used by firm i. We add a fictitious producer indexed by (x, i) who has an output wedge of $(1 + \tau_i^x)$ and sells input x to i at price $(1 + \tau_i^x) p^x$. The marginal cost of (x, i) is p^x. Hence, the gross output wedge for producer (x, i) is $\mu_i^x = 1 + \tau_i^x$, the sales share $\lambda_{(x,i)}$ is $\lambda_i \alpha_i^x$, and $d \log y_{(x,i)} - d \log A_{(x,i)} = d \log x_i$. Substituting all of this back into equation (A.5) gives

$$d\,Solow_{I,t} = \sum_{i \in I} \lambda_i\, d \log A_i + \sum_{\substack{i \in I \\ x \in \{K,L,M\}}} \lambda_i \alpha_i^x \left(1 - \frac{1}{1 + \tau_i^x}\right) d \log x_i,$$

which in turn simplifies to

$$d\,Solow_{I,t} = \sum_{i \in I} \lambda_i\, d \log A_i + \sum_{\substack{i \in I \\ x \in \{K,L,M\}}} \lambda_i \alpha_i^x \frac{\tau_i^x}{1 + \tau_i^x}\, d \log x_i.$$

To implement the first-order approximation, for any variable x, we use discrete changes Δx instead of infinitesimal changes dx. Then, the first-order approximation is given by

$$\Delta\,Solow_{I,t} \approx \sum_{i \in I} \lambda_i \Delta \log A_i + \sum_{\substack{i \in I \\ x \in \{K,L,M\}}} \lambda_i \alpha_i^x \frac{\tau_i^x}{1 + \tau_i^x} \Delta \log x_i.$$

APPENDIX B: Assessing Bias From Staggered Difference-in-Differences

A recent literature has shown that estimating difference-in-differences in settings where units are treated at different times can lead to biased estimates. We assess the extent of this problem in Table A.III, by stacking the two shocks. To do so, we create two data sets, one for each reform. Each data set contains all the firms that are not treated during the study period and all the firms affected by the 2001 and 2006 reforms, respectively. We center the time unit around each deregulation year and keep exactly the same number of years for each reform: 1995–2010 for the reform of 2001 and 2000–2015 for the reform of 2016. That way, we ensure that the effect of the reform is estimated exactly over the same number of years before and after the shock for each reform.[1]

To assess the risk of bias, we then stack both data sets and estimate equation (5) without and with the additional fixed effects *Reform vintage* × *Year*. When controlling for the fixed effect *Reform vintage* × *Year*, we ensure that the coefficients are estimated by comparing treated firms solely to never treated firms in their respective data set. When we do not include this fixed effect, we allow de facto the coefficients to be estimated by using "forbidden comparisons" (Goodman-Bacon (2021)), where we compare the switching group in 2006 both to the never treated and to the group of firms treated before.

We exploit the full variation in odd columns of Table A.III and include the *Reform vintage* × *Year* fixed effects in even columns. Across all outcomes, both specifications give results that are quantitatively very similar, implying that the problems raised by the recent staggered difference-in-differences literature are unlikely to bias our results.

[1]This means that firms that belong to the never treated (during the reform period) group appear in both data sets.

APPENDIX C: NON-LINEAR APPROXIMATION

This appendix describes how we calculate a non-linear approximation of the policies' effects on the treated industries' Solow residual. Following Baqaee and Farhi (2019), we note that a non-linear approximation of the effect of the policies on the Solow residual—given the shocks realized in the economy—is a Reimann sum over the first-order approximations of the policies' effects each year. Then, the non-linear approximation of the culmulative effect at time T is

$$\Delta Solow_{I,T} \approx \sum_{t \leq T} \sum_{i \in I} \lambda_{it} \Delta \log A_{it} + \sum_{t \leq T} \sum_{\substack{i \in I \\ x \in \{K,L,M\}}} \lambda_{it} \alpha_i^x \frac{\tau_i^x}{1+\tau_i^x} \Delta \log x_{it}, \tag{C.1}$$

where t indexes a year, and the summation begins in the year of the first policy change. As before, since we did not find the policy had a significant effect on TFPQ (see Table VII), we set $\Delta \log A_{it} = 0$, causing the first term of equation (C.1) to drop out. We calculate λ_{it} exactly as we did in Section 6, except that we now calculate a separate value for each year, instead of only using the Prowess data from 2000. Similarly, the output elasticities are still given by the production function estimates.

To arrive at a time-varying estimate of the policies' effects on inputs, we use more flexible regressions specifications. For capital, we estimate

$$\begin{aligned} \log K_{ijtd} = &\sum_{s=1}^{5} \beta_{1,s} I_{jt}^{s \geq d} + \beta_{2,s} I_{jt}^{s \geq d} \times I_i^{High\,MRPK} + \beta_{3,s} I_{jt}^{s \geq d} \times I_i^{High\,MRPL} \\ &+ \mathbf{\Gamma} \mathbf{X}_{it} + \alpha_i + \delta_t + \epsilon_{ijt}, \end{aligned} \tag{C.2}$$

where d indexes the number of years since a reform occurred in industry j, and $I_{jt}^{s \geq d}$ is an indicator variable equal to 1 if it has been more than s years since a reform occurred in industry j. Therefore, $\beta_{1,s}$ captures the change in capital that occurs due to the reform between $s-1$ years after the reform and s years after the reform, and $\beta_{2,s}$ and $\beta_{3,s}$ allow these changes to be heterogeneous for high MRPK and MRPL firms. We allow effects to vary up to 5 years after the policies took place since the effects of the policies appear to plateau after five years (see Figures 2 and 3). Then, to estimate the firm-level change in capital due to the policy in year t, we calculate

$$\widehat{\log K_{ijtd}} = \sum_{s=1}^{5} \hat{\beta}_{1,s} I_{jt}^{d=s} + \hat{\beta}_{2,s} I_{jt}^{d=s} \times I_i^{High\,MRPK} + \hat{\beta}_{3,s} I_{jt}^{d=s} \times I_i^{High\,MRPL},$$

where $I_{jt}^{d=s}$ is an indicator variable equal to 1 if it is s years after an event in industry j and time t. We use an analogous approach to estimate the change in labor by year.

To estimate the baseline wedges in each year, we replace the outcome variable in equation (C.2) with $\log MRPK_{ijt}$ and $\log MRPL_{ijt}$. Then, under Assumption 1, the lower bound is given when the wedge at time t substituted into equation (C.2) is the sum of the estimated changes in the wedges that occurred between t and T. For the wedge on capital, after estimating equation (C.2) with $\log MRPK$ as the outcome variable, this is given by

$$\widehat{\log MRPK_{ijtd}} = \sum_{n=t}^{T} \sum_{s=1}^{5} \hat{\beta}_{1,s} I_{jn}^{d=s} + \hat{\beta}_{2,s} I_{jn}^{d=s} \times I_i^{High\,MRPK} + \hat{\beta}_{3,s} I_{jn}^{d=s} \times I_i^{High\,MRPL}.$$

The method for identifying the time-varying wedges for labor is analogous.

APPENDIX: TABLES

TABLE A.I

LIST OF INDUSTRIES AFFECTED BY THE 2001 AND 2006 REFORMS.

NIC 5-Digit Industry Classification	Reform Year
Manufacture of 'ayurvedic' or 'unani' pharmaceutical preparation	2001
Manufacture of allopathic pharmaceutical preparations	2001
Manufacture of medical impregnated wadding, gauze, bandages, dressings, surgical gut string, etc.	2001
Manufacture of homeopathic or biochemic pharmaceutical preparations	2001
Manufacture of other pharmaceutical and botanical products n.e.c. like hina powder, etc.	2001
Manufacture of rubber tyres and tubes n.e.c.	2006
Manufacture of essential oils; modification by chemical processes of oils and fats (e.g., by oxidation, polymerization, etc.)	2006
Manufacture of various other chemical products	2006
Manufacture of rubber tyres and tubes for cycles and cycle-rickshaws	2006
Manufacture of distilled, potable, alcoholic beverages such as whisky, brandy, gin, 'mixed drinks', etc.	2006
Coffee curing, roasting, grinding blending, etc. and manufacturing of coffee products	2006
Retreading of tyres; replacing or rebuilding of tread on used pneumatic tyres	2006
Manufacture of chemical elements and compounds doped for use in electronics	2006
Manufacture of country liquor	2006
Manufacture of matches	2006
Manufacture of rubber plates, sheets, strips, rods, tubes, pipes, hoses and profile-shapes, etc.	2006
Distilling, rectifying, and blending of spirits	2006
Manufacture of bidi	2006
Manufacture of catechu(katha) and chewing lime	2006
Stemming and redrying of tobacco	2006
Manufacture of other rubber products n.e.c.	2006
Manufacture of rubber contraceptives	2006
Manufacture of other tobacco products including chewing tobacco n.e.c.	2006
Manufacture of pan masala and related products	2006

Note: This table lists 5-digit NIC industries that changed to automatic foreign investment approval for investments up to (at least) 51% of a firm's capital and the year that the reform took place.

TABLE A.II

HETEROGENEOUS EFFECTS OF FOREIGN CAPITAL LIBERALIZATION AND MEAN REVERSION.

Dependent Variable	Revenues (1)	Capital (2)	Wages (3)	MRPK (4)
		Panel A: 1995–1997 Pre-treatment Period		
$Reform_{jt} \times I_i^{High\ MRPK}$	0.207	0.427	0.094	−0.215
	(0.066)	(0.095)	(0.058)	(0.059)
$Reform_{jt}$	0.054	0.152	0.162	−0.072
	(0.091)	(0.125)	(0.120)	(0.095)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	45,602	46,891	46,179	44,579
		Panel B: 1995–1998 Pre-treatment Period		
$Reform_{jt} \times I_i^{High\ MRPK}$	0.203	0.470	0.224	−0.285
	(0.066)	(0.081)	(0.058)	(0.077)
$Reform_{jt}$	0.020	0.075	0.063	−0.019
	(0.106)	(0.112)	(0.103)	(0.106)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	50,092	51,526	50,730	48,989
		Panel C: Only 2006 Reform		
$Reform_{jt} \times I_i^{High\ MRPK}$	0.195	0.425	0.249	−0.266
	(0.123)	(0.091)	(0.089)	(0.163)
$Reform_{jt}$	−0.047	−0.077	−0.085	0.102
	(0.204)	(0.115)	(0.107)	(0.149)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	58,391	60,096	59,162	57,017

Note: This table provides evidence that the results in Table V are not driven by mean reversion. Firms are classified as high MRPK if their average MRPK in a pre-treatment period is above the 4-digit industry median. In Panel A, the pre-treatment period is defined as 1995–1997. In Panel B, it is 1995–1998. In Panel C, the pre-treatment period is 1995–2000, but the treatment effect is only reported for the 2006 reform. In Panel C, the regressions control separately for being treated by the 2001 reform and its interaction with high MRPK. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.III

ACCOUNTING FOR POTENTIAL BIAS IN STAGGERED DIFFERENCE-IN-DIFFERENCES.

	Revenues		Capital		Wages		MRPK	
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.169	0.190	0.449	0.459	0.171	0.212	−0.263	−0.251
	(0.054)	(0.050)	(0.050)	(0.050)	(0.063)	(0.058)	(0.062)	(0.061)
$Reform_{jt}$	−0.095	−0.065	−0.016	−0.000	−0.058	−0.018	−0.079	−0.069
	(0.102)	(0.088)	(0.059)	(0.092)	(0.106)	(0.068)	(0.094)	(0.072)
Fixed Effects								
Firm	✓	✓	✓	✓	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓	✓	✓	✓	✓
Reform vintage × Year	–	✓	–	✓	–	✓	–	✓
Observations	86,617	86,617	89,288	89,288	87,906	87,906	84,714	84,714

Note: This table reports the effect of the reform on revenues, capital, wages, and MRPK for high versus low MRPK firms. *Reform vintage* × *Year* are fixed effects that ensure that the effect of the reform is estimated by comparing treated industries to industries that are never treated during the study period, removing the potential bias introduced by the staggered design.

TABLE A.IV

COMPOSITION OF CHANGE IN CAPITAL.

	Land	Plants and Equipment	Infrastructure	Other
Dependent Variable	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	−0.022	0.038	−0.001	−0.015
	(0.009)	(0.009)	(0.003)	(0.010)
$Reform_{jt}$	0.005	−0.009	−0.004	0.007
	(0.014)	(0.009)	(0.005)	(0.009)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	59,218	59,218	59,218	59,218

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization reforms on high and low MRPK firms in the Prowess data set (equation (5)). All dependent variables are the share of capital in a category. Firms are observed between 1995 and 2015. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.V

ROBUSTNESS TO HIGH-DIMENSIONAL FIXED EFFECTS.

Dependent Variable	Revenues (1)	Capital (2)	Wages (3)	MRPK (4)
		Panel A: (2-digit) Industry-by-Year		
$Reform_{jt} \times I_i^{High\,MRPK}$	0.248	0.542	0.284	−0.308
	(0.069)	(0.067)	(0.055)	(0.106)
$Reform_{jt}$	−0.137	−0.121	−0.105	0.029
	(0.145)	(0.121)	(0.082)	(0.131)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
2-digit Industry × Year	✓	✓	✓	✓
Observations	58,372	60,062	59,139	56,999
		Panel B: (5-digit) Industry-by-Year		
$Reform_{jt} \times I_i^{High\,MRPK}$	0.371	0.634	0.376	−0.280
	(0.067)	(0.076)	(0.060)	(0.112)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
5-digit Industry × Year	✓	✓	✓	✓
Observations	58,372	60,062	59,139	56,999
		Panel C: State-by-Year		
$Reform_{jt} \times I_i^{High\,MRPK}$	0.237	0.510	0.271	−0.299
	(0.083)	(0.073)	(0.071)	(0.112)
$Reform_{jt}$	−0.040	0.033	0.006	−0.031
	(0.133)	(0.089)	(0.095)	(0.106)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
State × Year	✓	✓	✓	✓
Observations	58,319	60,009	59,101	56,947

Note: This table reports estimates of the heterogeneous effects of the liberalization reforms on high MRPK firms in the Prowess data set (equation (5)). All dependent variables are in logs. Firms are observed between 1995 and 2015. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.VI

ROBUSTNESS TO ACCOUNTING FOR DERESERVATION.

	Revenues		Capital		Wages		MRPK	
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.261	0.230	0.654	0.483	0.370	0.284	−0.429	−0.279
	(0.074)	(0.077)	(0.044)	(0.114)	(0.065)	(0.058)	(0.077)	(0.141)
$Reform_{jt}$	0.061	−0.025	0.038	0.033	0.056	0.003	0.066	−0.010
	(0.100)	(0.125)	(0.079)	(0.070)	(0.106)	(0.097)	(0.122)	(0.105)
Fixed Effects								
Firm	✓	✓	✓	✓	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓	✓	✓	✓	✓
Dereservation Controls	–	✓	–	✓	–	✓	–	✓
Observations	26,111	58,391	26,986	60,096	26,539	59,162	25,406	57,017
Sample	Restricted	All	Restricted	All	Restricted	All	Restricted	All

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization reforms on high and low MRPK firms in the Prowess data set (equation (5)), accounting for dereservation policies. Firms are observed between 1995 and 2015. In odd columns, we restrict the sample to firms in industries not affected by a dereservation policy after 2000 (i.e., a change in regulation specific to small and medium-size firms). Data on dereservation events come from Boehm, Dhingra, and Morrow (2022). In even columns, we include the whole sample but interact $I_i^{High\ MRPK}$ with an indicator variable $Dereservation_{jt}$ that is equal to 1 after the industry has been dereserved. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the industry median. MRPK is approximated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.VII

EFFECT OF FOREIGN CAPITAL LIBERALIZATION, CONTROLLING FOR TARIFFS.

	Revenues		Capital		Wages		MRPK	
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.209	0.189	0.503	0.493	0.272	0.297	−0.319	−0.283
	(0.076)	(0.097)	(0.081)	(0.062)	(0.058)	(0.071)	(0.100)	(0.133)
$Reform_{jt}$	0.042	0.096	0.165	0.148	0.118	0.114	−0.090	−0.044
	(0.130)	(0.231)	(0.106)	(0.143)	(0.098)	(0.129)	(0.094)	(0.121)
Tariff Controls								
Output Tariffs	✓	✓	✓	✓	✓	✓	✓	✓
Input Tariffs	–	✓	–	✓	–	✓	–	✓
Fixed Effects								
Firm	✓	✓	✓	✓	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓	✓	✓	✓	✓
Observations	54,280	43,458	55,936	44,899	55,100	44,312	53,060	42,713

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization on high and low pre-treatment MRPK firms (equation (5)) over the period 1995–2015, controlling for the effects of tariff policies and allowing those tariff policies to have differential effects by high and low MRPK. All dependent variables are in logs. $Reform_{jt}$ is an indicator variable equal to 1 if the industry has liberalized access to international capital market. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. Tariff data from 1995 to 2010 are constructed following Goldberg, Khandelwal, Pavcnik, and Topalova (2010), and tariff levels are coded at the 2010 level from 2010 to 2015. Output tariff controls are the average tariff on an industry and its interaction with $I_i^{High\ MRPK}$. Input tariff controls are the average tariff on the inputs used by an industry and its interaction with $I_i^{High\ MRPK}$. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.VIII

RESULTS AFTER WINSORIZING THE DATA.

Dependent Variable	Revenues (1)	Capital (2)	Wages (3)	MRPK (4)
		Panel A: Winsorized 5% Across Industries		
$Reform_{jt} \times I_i^{High\ MRPK}$	0.118	0.495	0.195	−0.348
	(0.053)	(0.088)	(0.046)	(0.069)
$Reform_{jt}$	0.026	−0.003	0.019	0.003
	(0.087)	(0.077)	(0.082)	(0.095)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	58,391	60,096	59,162	57,017
		Panel B: Winsorized 5% Within Industries		
$Reform_{jt} \times I_i^{High\ MRPK}$	0.128	0.496	0.188	−0.368
	(0.050)	(0.085)	(0.049)	(0.064)
$Reform_{jt}$	0.014	−0.003	0.037	0.009
	(0.084)	(0.078)	(0.083)	(0.096)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	58,391	60,096	59,162	57,017

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization on capital constrained and unconstrained firms after winsorizing the top and bottom 5% of the sample for each outcome. In Panel A, the sample is winsorized *across* industries, while in Panel B, the sample is winsorized *within* 2-digit industries. All dependent variables are in logs. Firms are observed between 1995 and 2015. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.IX

EFFECTS OF FOREIGN CAPITAL LIBERALIZATION ON FIRM EXIT AND ENTRY.

	Number of Exits		Number of Entrants
Dependent Variable	(1)	(2)	(3)
$Reform_{jt}$	0.086	0.045	−0.031
	(0.085)	(0.039)	(0.030)
$Reform_{jt} \times I_i^{High\,MRPK}$		−0.013	
		(0.021)	
Fixed Effects			
5-Digit Industry	✓	✓	✓
Year	✓	✓	✓
Observations	6575	11,673	6575

Note: This table estimates the effect of the foreign capital liberalization on firm exit and entry in the Prowess data. In columns 1 and 3, an observation is a 5-digit industry-year cell. In column 2, it is a 5-digit industry-year-MRPK category cell. A firm is counted as exiting in a year if it is not observed in the data in that year and does not re-enter the data in a later year. A firm is counted as entering in a year if that is the year of the firm's incorporation. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. In column 2, MRPK is calculated as $Revenue/K$. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.X

EFFECTS OF CAPITAL LIBERALIZATION, ACCOUNTING FOR SPILLOVERS.

	Revenues		Capital		Wages		MRPK	
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Reform_{jt}$	0.106	−0.025	0.308	0.008	0.154	−0.007	−0.179	0.011
	(0.094)	(0.127)	(0.115)	(0.086)	(0.095)	(0.094)	(0.084)	(0.099)
$Reform_{jt} \times I_i^{High\,MRPK}$		0.227		0.525		0.279		−0.323
		(0.077)		(0.076)		(0.058)		(0.106)
Fixed Effects								
Firm	✓	✓	✓	✓	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓	✓	✓	✓	✓
Observations	58,391	58,391	60,096	60,096	59,162	59,162	57,017	57,017

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization on high and low MRPK firms, controlling for spillovers through the input-output matrix. All dependent variables are in logs. Firms are observed between 1995 and 2015. The regressions include controls for $Upstream_{jt}$, which measures the composite reform shock to an industry from upstream industries, and $Downstream_{jt}$, which measures the composite reform shock from downstream industries. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.XI

ROBUSTNESS TO MORE PARSIMONIOUS CONTROLS.

Dependent Variable	Revenues (1)	Capital (2)	Wages (3)	MRPK (4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.057	0.508	0.159	−0.470
	(0.051)	(0.045)	(0.048)	(0.046)
$Reform_{jt}$	0.079	0.022	0.081	0.099
	(0.039)	(0.035)	(0.037)	(0.036)
Fixed Effects				
Firm	✓	✓	✓	✓
Year	✓	✓	✓	✓
Observations	60,275	62,042	61,075	58,885

Note: This table reports estimates of the effect of foreign capital liberalization on high and low pre-treatment MRPK firms (equation (5)) over the period 1995–2015. All dependent variables are in logs. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is estimated with the *Revenue*/*K* method. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.XII

ROBUSTNESS TO USING DATA WITHOUT FILTERS.

Dependent Variable	Revenues (1)	Capital (2)	Wages (3)	MRPK (4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.240	0.561	0.268	−0.354
	(0.072)	(0.067)	(0.055)	(0.100)
$Reform_{jt}$	−0.026	−0.004	0.021	0.021
	(0.114)	(0.077)	(0.094)	(0.112)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	62,924	65,393	63,999	61,342

Note: This table reports estimates of the effect of foreign capital liberalization on high and low pre-treatment MRPK firms (equation (5)) over the period 1995–2015 when we do not remove firms with large contractions in sales from the data. All dependent variables are in logs. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is estimated with the *Revenue*/*K* method. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.XIII

EFFECTS OF FOREIGN CAPITAL LIBERALIZATION, ACCOUNTING FOR FIRM RISK.

	Revenues	Capital	Wages	MRPK
Dependent Variable	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.201	0.472	0.230	−0.256
	(0.100)	(0.098)	(0.074)	(0.105)
$Reform_{jt} \times Revenue\ Beta_i$	0.003	0.027	−0.003	−0.025
	(0.015)	(0.020)	(0.019)	(0.014)
$Reform_{jt}$	0.032	0.064	0.081	−0.018
	(0.119)	(0.086)	(0.089)	(0.111)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	50,087	51,456	50,740	48,912

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization on high and low MRPK firms, controlling for the firm's pre-treatment risk and its interaction with the reform. All dependent variables are in logs. Firms are observed between 1995 and 2015. $Revenue\ Beta_i$ is computed as the correlation between firm revenue growth up to 2000 and the average revenue growth in the economy. Firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.XIV

ROBUSTNESS TO ALTERNATIVE MRPK CUT-OFFS.

	Revenues		Capital		Wages		MRPK	
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Reform_{jt}$	0.019	−0.112	0.139	−0.178	0.095	−0.064	−0.087	0.103
	(0.087)	(0.146)	(0.080)	(0.105)	(0.084)	(0.120)	(0.103)	(0.133)
$Reform_{jt} \times I_i^{High\ MRPK\text{-}Mean}$	0.255		0.473		0.215		−0.257	
	(0.110)		(0.120)		(0.089)		(0.071)	
$Reform_{jt} \times I_i^{MRPK\ Tercile=2}$		0.245		0.631		0.310		−0.372
		(0.150)		(0.099)		(0.103)		(0.174)
$Reform_{jt} \times I_i^{MRPK\ Tercile=3}$		0.402		0.801		0.380		−0.447
		(0.090)		(0.142)		(0.076)		(0.142)
Fixed Effects								
Firm	✓	✓	✓	✓	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓	✓	✓	✓	✓
Observations	58,391	58,391	60,096	60,096	59,162	59,162	57,017	57,017

Note: This table reports estimates of the heterogeneous effects of foreign capital liberalization on high and low MRPK firms. All dependent variables are in logs. Firms are observed between 1995 and 2015. In even columns, firms are classified as high MRPK if their average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry mean (instead of median). In odd columns, firms are classified as belonging to the second or third tercile of average MRPK distribution within their 4 digit industry. MRPK is calculated as $Revenue/K$. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

TABLE A.XV

INDUSTRY-LEVEL VARIANCE OF MRPL IN PROWESS AND THE ASI.

	Variance(MRPL)			
Dependent Variable	Prowess		ASI	
Sample	(1)	(2)	(3)	(4)
Share of (4-digit) Industry Treated	−0.315	−0.325	−0.142	−0.120
	(0.138)	(0.143)	(0.302)	(0.271)
Fixed Effects				
Industry (4-digit)	✓	✓	✓	✓
Industry (2-digit) × Year	✓	✓	✓	✓
Controls				
Nb firms	–	✓	–	✓
Observations	1503	1503	2120	2120

Note: This table reports the effects of the reform on the log variance of MRPL in Prowess (columns 1 and 2) and the ASI (columns 3 and 4). 'Nb firms' is the log number of firms in an industry-year. Standard errors are two-way clustered at the 4-digit industry and year level. Industries are weighted by their size in 2000 (pre-treatment) capital.

TABLE A.XVI

REGRESSION ESTIMATES USED TO ESTIMATE THE EFFECT OF THE POLICY ON THE SOLOW RESIDUAL.

	Capital	Wages	MRPK	MRPL
Dependent Variable	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\,MRPK}$	0.540	0.242	−0.366	−0.129
	(0.081)	(0.061)	(0.108)	(0.080)
$Reform_{jt} \times I_i^{High\,MRPL}$	0.323	0.114	−0.246	−0.330
	(0.107)	(0.060)	(0.059)	(0.069)
$Reform_{jt}$	−0.129	0.008	0.144	0.201
	(0.046)	(0.109)	(0.112)	(0.115)
Fixed Effects				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	59,802	58,898	56,557	46,064

Note: This table reports the difference-in-differences estimates used to estimate the policy's effects on treated industries' Solow residual. All dependent variables are in logs. Firms are observed between 1995 and 2015. $I_i^{High\,MRPK}$ is coded as 1 if a firm's average MRPK in the pre-treatment period from 1995 to 2000 is above the 4-digit industry median, where MRPK is calculated using $Revenue/K$. $I_i^{High\,MRPL}$ is defined analogously for labor. Size × Year are quartile fixed effects for firms' average pre-treatment capital interacted with year fixed effects. Standard errors are two-way clustered at the 4-digit industry and year level.

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