A Note on the Derivation of Equation (1) in Global Value Chain Integration and Individual Labor Market Outcomes: An Investigation Using Taiwan's Panel Study of Family Dynamics

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Assume that the production function of sector *i* in region *d* takes the following form:

$$x_i^d = \frac{1}{v_i^d} L_i^d,$$

where v_i^d represents the labor requirement for producing one unit of output. The change in labor demand across sectors in region *d* can be expressed as:

$$\Delta L^d = \sum_{i=1}^{M} \Delta v_i^d x_i^d.$$

Further assuming $\Delta L^d = 0$, we have:

$$\Delta v_j^d x_j^d = -\sum_{i \neq j}^{M} \Delta v_i^d x_i^d. \quad \text{(P1)}$$

Adding $\Delta v_j^d x_j^d$ on the both sides of equation (P1) and rearranging, we obtain:

$$\Delta v_j^d x_j^d = \frac{1}{2} \Delta v_j^d x_j^d - \frac{1}{2} \sum_{i \neq j}^{M} \Delta v_i^d x_i^d,$$

which implies:

$$\Delta L_j^d \propto \Delta v_j^d x_j^d - \sum_{i \neq j}^{M} \Delta v_i^d x_i^d.$$