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NOTES

A NOTE ON INFLATION, ECONOMIC GROWTH, AND INCOME INEQUALITY

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This paper develops a monetary endogenous growth model with capital and skill heterogeneity to analyze the relationship among inflation, growth, and income inequality. In the model inflation, growth, and inequality are jointly determined. We show that an increase in the long-run money growth rate raises inflation and reduces growth, but its effect on income inequality depends on the relative importance of the two types of heterogeneity. Inequality shrinks with the rise of inflation when capital heterogeneity dominates and enlarges when skill heterogeneity dominates. Therefore, our model supports a negative (positive) inflation–inequality relationship and a positive (negative) growth–inequality relationship when capital (skill) heterogeneity dominates. In any event, inflation and growth are negatively related.

Keywords: Inflation, Endogenous Growth, Income Inequality, Capital and Skill Heterogeneity

1. INTRODUCTION

This paper develops a monetary endogenous growth model with capital and skill heterogeneity to analyze the relationship among inflation, growth, and income inequality. The conventional practice in the literature is to study each pair of the three variables separately. Our decision to incorporate all three pairs (inflation–growth, inflation–inequality, and growth–inequality) is inspired by García-Peñalosa and Turnovsky (2006). They investigate the growth–inequality relationship based on the argument that an economy's growth rate and income distribution are both endogenous and are subject to common influences such as structural changes and macroeconomic policies. Recognizing that monetary policy is one important element in the set of macroeconomic policies, one is naturally led to develop a monetary dynamic general equilibrium model where changes in long-run monetary policy drive changes in various measures of an economy's macroeconomic performance, including inflation, growth, and inequality. In such an environment, the inflation–growth, inflation–inequality, and growth–inequality relationships are interrelated.

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Our model also differs from that of García-Peñalosa and Turnovsky in the dimension of heterogeneity. Whereas their model features only households' differing holdings of capital stock, we also consider differing skill endowments across households. Incorporating this second type of heterogeneity enables us to account for the observed positive inflation–inequality relationship. This is to be explained momentarily.

We first provide a brief overview of the empirical evidence on the relationship among inflation, growth, and income inequality. Early empirical work indicates that high-inflation countries tend to grow more slowly than low-inflation countries.[1] Gylfason and Herbertsson (2001) list seventeen studies, of which all but one find a significant decrease in the growth rate from increasing the inflation rate from 5 to 50%. More recent studies find a "threshold" rate of inflation, above which the effect on growth is strongly significant and negative, but below which the effect is insignificant and positive.[2] Using instrumental variables, however, the negative inflation–growth effect has been reinstated at all *positive* inflation rate levels for both developed and developing country samples [Ghosh and Phillips (1998); Gillman et al. (2003)].

Most studies on inflation and inequality indicate a positive relationship. The cross-country regression in Romer and Romer (1998) shows that a one-percentage-point rise in average inflation is associated with a rise in the Gini coefficient of 0.2 points. Al-Marhubi (1997) finds that this positive correlation is robust to controlling for political stability, central bank independence, and openness. Looking at a sample of 51 industrialized and developing countries from 1966 to 1990, Albanesi (2002) computes the OLS estimates of the relation between the inflation tax and inequality and finds that the estimated slope coefficient is 0.4561 for the full sample.

The empirical evidence on the relationship between growth and income inequality has been inconclusive. For a negative relationship, see, for example, Alesina and Rodrik (1994), Persson and Tabellini (1994), and Perotti (1996). For a positive or more ambiguous relationship, see Li and Zou (1998), Barro (2000), Forbes (2000), and Lundberg and Squire (2003), among others.

As discussed earlier, our model attempts to incorporate inflation, growth, and income inequality in a consistently specified framework. In our model growth is endogenously generated by a standard AK mechanism, money is introduced via a cash-in-advance constraint on consumption purchases, and heterogeneity across households pertaining to initial capital holdings and skill endowments translates into income inequality. We found that along the balanced growth path wealthier households that have higher capital shares tend to work less, whereas more skilled households that have higher skill shares tend to work more. As a result, the relative income share of an individual household can be written as a *convex combination* of its relative capital share and relative skill share.

We show that an increase in long-run money growth increases the inflation rate and reduces the aggregate growth rate unambiguously, but its effect on income inequality depends on the relative size of the two types of heterogeneity.

An increase in money growth reduces income inequality if capital heterogeneity dominates, and increases income inequality if skill heterogeneity dominates. This result highlights the importance of introducing skill heterogeneity. With capital heterogeneity only, the model predicts a negative relationship between income inequality and inflation, which runs counter to the empirical evidence.[3] Skill heterogeneity has the potential to reverse the inflation–inequality relationship to be in line with the evidence.

The rest of the paper is organized as follows. Section 2 describes the model. In Section 3 we derive the model's balanced growth path, followed by the analysis of the channel through which heterogeneities translate into income inequality. The relationship among inflation, growth, and income inequality is then studied in Section 5. The last section concludes.

2. THE MODEL

There is a continuum of firms with unit mass, indexed by $j \in [0, 1]$, all producing a homogeneous final good. Firm j's production function takes the Cobb–Douglas form,

$$Q_j = F(L_j K, K_j) = (K_j)^\alpha (L_j K)^{1-\alpha}, \quad 0 < \alpha < 1, \tag{1}$$

where Q_j, K_j, and L_j are the output, capital input, and effective labor input, respectively. The effective labor embodies both hours worked and workers' skill. The average stock of capital, K, represents the economywide stock of knowledge. Symmetry among firms implies an aggregate production function that is linear in K: $Q = F(LK, K) \equiv f(L)K = L^{1-\alpha}K$. Profit maximization by each firm yields the equilibrium wage and rental rate:

$$w(L)K = (1-\alpha)L^{-\alpha}K, \qquad r(L) = \alpha L^{1-\alpha}. \tag{2}$$

Here the wage rate is written as $w(L)K$.

There is a continuum of households with unit mass, indexed by $i \in [0, 1]$. Money is introduced by imposing a cash-in-advance (CIA) constraint on consumption purchase,

$$c_i = m_i, \tag{3}$$

where c_i is household i's consumption, and m_i is the real balance, with the initial stock being $m_{i0} > 0$. Assuming zero depreciation, the evolution of household i's capital stock is governed by

$$\dot{K}_i = I_i, \tag{4}$$

where I_i is the gross investment flow. The initial capital stock is $K_{i0} > 0$. Households are endowed with the same amount of time (normalized to one) but differ with respect to skill endowment. We use A_i to represent household i's time-invariant exogenous skill level.[4]

Define k_i as household i's capital share, $k_i \equiv K_i/K$, and a_i as its skill share, $a_i \equiv A_i/A$, where $K \equiv \int K_i$ and $A \equiv \int A_i$ are the aggregate (or mean) capital

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stock and skill level, respectively. The capital share k_i has a distribution with mean 1. Denote its variance by σ_k^2. Similarly, the distribution of a_i has unit mean. Denote its variance by σ_a^2. For simplicity we assume that k_i and a_i are uncorrelated; that is, their covariance $\sigma_{k,a} = 0$.

At every point in time, the household works h_i hours, rents out capital K_i to firms, receives real lump-sum transfer τ_i from the government, and invests in physical capital and real balance. Thus the budget constraint is

$$c_i + I_i + \dot{m}_i = rK_i + (wK)(A_i h_i) + \tau_i - \pi m_i, \tag{5}$$

where π is the inflation rate.

Let β be the time discount rate and let l_i be the leisure time enjoyed by household i. Thus $h_i \equiv 1 - l_i$. The household solves the problem

$$\max \int_0^\infty \frac{1}{\gamma}\left(c_i l_i^\eta\right)^\gamma e^{-\beta t}\,dt, \qquad \eta > 0, \quad \gamma < 0, \tag{6}$$

subject to (3)–(5).

Let μ_i and λ_i be the Lagrangian multipliers associated with (4) and (5) in the current-value Hamiltonian. The first-order conditions are

$$l_i : \eta m_i^\gamma l_i^{\eta\gamma-1} = \lambda_i wKA_i, \tag{7}$$

$$m_i : \dot{\lambda}_i - \beta\lambda_i = -\left[m_i^{\gamma-1} l_i^{\eta\gamma} - \lambda_i(1+\pi)\right], \tag{8}$$

$$K_i : \dot{\mu}_i - \beta\mu_i = -\lambda_i r, \tag{9}$$

$$I_i : \mu_i = \lambda_i. \tag{10}$$

Transversality conditions are $\lim_{t\to\infty} \mu_i K_i e^{-\beta t} = 0$ and $\lim_{t\to\infty} \lambda_i m_i e^{-\beta t} = 0$.

Define $l \equiv \int A_i l_i$ as the aggregate "effective leisure," and $L \equiv \int A_i h_i$ as the aggregate effective labor. Then labor market clearing requires $\int L_j = L = A - l$. The capital and goods market clearing conditions are $\int K_j = K$ and $\int (c_i + I_i) = Q \equiv \int Q_j$, respectively. Finally, the real money supply follows

$$\frac{\dot{m}}{m} = \theta - \pi, \tag{11}$$

where θ is the growth rate of the nominal money stock. For simplicity, we assume that the rate of real transfer is proportional to individual real balance; i.e., $\tau_i = \theta m_i$, $i \in [0, 1]$.

3. THE BALANCED-GROWTH EQUILIBRIUM

Equations (7)–(10) yield

$$(\gamma - 1)\frac{\dot{m}_i}{m_i} + \eta\gamma\frac{\dot{l}_i}{l_i} = \frac{\dot{\pi} + r'(L)\dot{L}}{1 + \pi + r(L)} + \beta - r(L), \tag{12}$$

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$$\gamma \frac{\dot{m}_i}{m_i} + (\eta\gamma - 1)\frac{\dot{l}_i}{l_i} = \beta - r(L) + \frac{w'(L)L}{w(L)}\frac{\dot{L}}{L} + \frac{\dot{K}}{K}, \tag{13}$$

implying that the growth rate of real balance holdings (and hence consumption) does not depend on i, nor does the growth rate of leisure:

$$\frac{\dot{c}_i}{c_i} = \frac{\dot{c}}{c} = \frac{\dot{m}_i}{m_i} = \frac{\dot{m}}{m}, \quad \frac{\dot{l}_i}{l_i} = \frac{\dot{l}}{l}. \tag{14}$$

Dividing both sides of the household budget constraint (5) by K_i and using $\tau_i = \theta m_i$, we obtain the growth rate for the individual capital stock,

$$\psi_i \equiv \frac{\dot{K}_i}{K_i} = r\,(L) + w\,(L)\,\frac{K}{K_i}A_i\left(h_i - \frac{1-h_i}{\eta}\frac{1}{1+\pi+r\,(L)}\right). \tag{15}$$

Aggregating over all households yields

$$\psi \equiv \frac{\dot{K}}{K} = \frac{\Sigma_i \psi_i K_i}{K} = r\,(L) + w\,(L)\left(L - \frac{A-L}{\eta}\frac{1}{1+\pi+r\,(L)}\right). \tag{16}$$

Using (16), we can rewrite (12) and (13) as

$$\dot{L} = \frac{\gamma\,(\theta-\pi) - \beta - w\left(L - \frac{A-L}{\eta}\frac{1}{1+\pi+r}\right)}{[(\eta\gamma-1)\,/\,(A-L) - \alpha/L]}, \tag{17}$$

$$\dot{\pi} = [(\gamma-1)\,(\theta-\pi) - \beta + r]\,(1+\pi+r) - \left[r' + \eta\gamma\frac{1+\pi+r}{A-L}\right]\dot{L}. \tag{18}$$

LEMMA 1. *There exists a unique balanced growth path, along which* $\dot{L} = 0$, $\dot{\pi} = 0$, *and* $\dot{k}_i = 0$, *for all* i.

Proof. Some algebraic work shows that, evaluated at the steady state, the Jacobian matrix associated with (17) and (18) has positive determinant and positive trace; hence both eigenvalues are positive. Therefore there exists a unique perfect foresight equilibrium path leading to the steady state. The steady state L^* is given by $g(L^*) = 0$, where

$$g(L) \equiv \frac{\gamma r(L) - \beta}{1-\gamma} - w(L)\left(L - \frac{A-L}{\eta\omega}\right) = 0$$

and

$$\omega \equiv 1 + \pi + r\,(L) = 1 + \theta + \frac{\beta - \gamma r\,(L)}{1-\gamma}. \tag{19}$$

L^* is unique because $\lim_{L\to 0} g(L) = +\infty$, $\lim_{L\to A} g(L) < 0$, and $g'(L) < 0$. To understand the evolution of k_i, note that

$$\dot{k}_i = \left(\frac{\dot{K}_i}{K_i} - \frac{\dot{K}}{K}\right)k_i = w\,(L)\left[A_i\left(h_i - \frac{1-h_i}{\eta\omega}\right) - \left(L - \frac{A-L}{\eta\omega}\right)k_i\right], \tag{20}$$

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which is linear in k_i. The aggregate transversality condition, $\lim_{t\to\infty} \lambda K e^{-\beta t} = 0$, requires that $\dot{\lambda}/\lambda + \dot{K}/K + [d(e^{-\beta t})/dt]/e^{-\beta t} < 0$, or $r(L) > \psi$ (the rate of return on capital must exceed the growth rate in the equilibrium). This implies that

$$L < \frac{A}{1+\eta\omega}.$$

The coefficient of k_i in (20) is thus positive. Recall that k_i is the capital share, which cannot exceed 1; we must have $\dot{k}_i = 0$, or $\psi_i = \psi$, $i \in [0, 1]$. ■

Note that the constancy of L thus implies that l_i and h_i are also constant for all i. Equations (12) and (13) imply that m grows at the same rate as K; that is, $\psi = \theta - \pi$, and $\psi = [r(L) - \beta]/(1-\gamma)$. In summary, along the balanced growth path L, π, l_i, h_i, and k_i, $i \in [0, 1]$, are all constant, and

$$\frac{\dot{m}_i}{m_i} = \frac{\dot{m}}{m} = \frac{\dot{c}_i}{c_i} = \frac{\dot{c}}{c} = \frac{\dot{K}_i}{K_i} = \frac{\dot{K}}{K} = \psi = \frac{r(L)-\beta}{1-\gamma}. \quad (21)$$

4. RELATIVE LABOR SUPPLY AND INCOME INEQUALITY

From $\psi_i = \psi$ we derive household i's effective labor supply:

$$A_i h_i = \left(L - \frac{A}{1+\eta\omega}\right) k_i + \frac{A}{1+\eta\omega} a_i.$$

Clearly $A_i h_i$ is increasing in a_i while decreasing in k_i. Define $n_i \equiv A_i h_i / L$ as household i's labor supply share, which also has a unit mean. Rearranging the above equation yields the relative labor supply function:

$$n_i - 1 = \left(1 - \frac{A/L}{1+\eta\omega}\right)(k_i - 1) + \frac{A/L}{1+\eta\omega}(a_i - 1). \quad (22)$$

Equation (22) implies that, other things being equal, wealthier households that have a higher capital share k_i tend to supply a smaller amount of effective labor, whereas more skilled households that have a higher skill share a_i tend to supply more effective labor. The negative effect of capital shares is a standard wealth effect and is emphasized by García-Peñalosa and Turnovsky. The additional positive effect on relative labor supply, which is missing in their model, comes from the skill heterogeneity. This opposite implication for the relative labor supply results from the fact that skill (human capital), unlike physical capital, is nonseparable from workers.

The individual income Y_i consists of capital income and labor income: $Y_i = rK_i + (wK)(A_i h_i)$. Thus the income share of household i is

$$y_i \equiv \frac{Y_i}{Y} = \frac{rK_i + wKA_i h_i}{rK + wKL}. \quad (23)$$

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Clearly y_i has mean one. Denote its variance by σ_y^2. The dispersion of this income share, σ_y^2, is our measure of income inequality.

LEMMA 2. *The relative income share of household i is a convex combination of its relative capital share and relative skill share,*

$$y_i - 1 = (1-\rho)(k_i - 1) + \rho(a_i - 1), \tag{24}$$

where

$$\rho = (1-\alpha)\frac{A/L}{1+\eta\omega} > 0,$$

and $\rho < 1$ *when the growth rate is positive.*

Proof. The expression of ρ is derived using (22) and (23). Obviously $\rho > 0$. Positive growth rate implies that $\rho < 1$.[5] ■

5. INFLATION, GROWTH, AND INCOME INEQUALITY

Now we examine the relationship among inflation, growth, and income inequality when the economy is subject to changes in long-run money growth.

PROPOSITION 1. *An increase in* θ *increases the inflation rate and reduces the aggregate growth rate unambiguously.*

Proof. Totally differentiating $g(L) = 0$ gives

$$\frac{dL}{d\theta} = \frac{(A-L)/\omega}{\frac{\gamma-(1-\alpha)}{1-\gamma}\eta\omega - \alpha\frac{A}{L} - (1-\alpha) + \frac{\gamma\alpha(1-\alpha)}{1-\gamma}L^{-\alpha}(A-L)/\omega} < 0.$$

From equation (21) and $\psi = \theta - \pi$, we obtain $d\psi/d\theta = [\alpha(1-\alpha)/(1-\gamma)]L^{-\alpha}dL/d\theta < 0$ and $d\pi/d\theta = 1 - d\psi/d\theta > 0$. ■

Some discussion is in order. The higher inflation caused by an increase in θ leads households to economize on real balances and substitute away from consumption toward leisure time, which is a credit good. As a result, aggregate labor supply goes down. The lowered labor supply reduces the rate of return to capital, which in turn reduces growth. The reduced growth then causes the inflation rate to rise by more than the money growth rate.

Next we study the effect on income inequality of changes in θ.

PROPOSITION 2.

(*i*) *If capital heterogeneity dominates skill heterogeneity in the sense that* $\sigma_a^2 < [(1-\rho)/\rho]\sigma_k^2$, *then an increase in* θ *reduces income inequality.*

(*ii*) *If skill heterogeneity dominates capital heterogeneity in the sense that* $\sigma_a^2 > [(1-\rho)/\rho]\sigma_k^2$, *then an increase in* θ *enlarges income inequality.*

(*iii*) *If the two types of heterogeneity cancel out in the sense that* $\sigma_a^2 = [(1-\rho)/\rho]\sigma_k^2$, *then* θ *is neutral for income inequality.*

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Proof. With $\sigma_{k,a} = 0$, equation (24) implies

$$\sigma_y^2 = (1-\rho)^2 \sigma_k^2 + \rho^2 \sigma_a^2. \tag{25}$$

And $d\sigma_y^2/d\theta = -2(1-\rho)(d\rho/d\theta)\sigma_k^2 + 2\rho(d\rho/d\theta)\sigma_a^2$. Because $d\omega/d\theta = 1 - [\gamma\alpha(1-\alpha)/(1-\gamma)]L^{-\alpha}dL/d\theta < 0$,

$$\frac{d\rho}{d\theta} = \frac{A(1-\alpha)}{(1+\eta\omega)^2 L}\left[-\frac{1}{L}(1+\eta\omega) + \eta\frac{d\omega}{d\theta}\right] > 0.$$

Given that σ_k^2 is fixed along the balanced growth path, the result follows. ■

Proposition 2 says that when income inequality is decomposed into inequality caused by capital heterogeneity and inequality caused by skill heterogeneity [see equation (25)], a higher money growth rate reduces the contribution of σ_k^2, whereas it raises the contribution of σ_a^2. Thus the overall effect depends on the relative size of the two types of heterogeneity. Alternatively, we can examine this effect by considering inequality of different income sources. Denote the variance of n_i by σ_n^2. Observe that from (23), we have

$$\sigma_y^2 = \alpha^2\sigma_k^2 + (1-\alpha)^2\sigma_n^2 + 2\alpha(1-\alpha)\sigma_{k,n}. \tag{26}$$

That is, the overall income inequality consists of capital income inequality, labor income inequality, and the covariance between the two income components. The relative labor supply function gives[6]

$$\sigma_n^2 = \left(1 - \frac{\rho}{1-\alpha}\right)^2 \sigma_k^2 + \left(\frac{\rho}{1-\alpha}\right)^2 \sigma_a^2,$$

$$\sigma_{k,n} = \left(1 - \frac{\rho}{1-\alpha}\right)\sigma_k^2 < 0.$$

We have the following observations. (i) An increase in θ does not affect capital income inequality, $\alpha^2\sigma_k^2$. (ii) Because $d\rho/d\theta > 0$ and $\rho > 1-\alpha$ (see footnote 5), a higher θ increases the contribution of both σ_k^2 and σ_a^2 to labor income inequality, σ_n^2. (iii) A higher θ makes capital and labor income more negatively related. Thus, the total effect of θ on σ_y^2 is thereby determined by the two opposite forces specified in (ii) and (iii). When there is only capital heterogeneity, labor income becomes more unequally distributed as θ increases. But this is always dominated by the enlarged negative covariance. As a result, a higher θ reduces income inequality unambiguously. With the additional skill heterogeneity, labor income will become even more unequally distributed. Therefore, as long as skill heterogeneity is large enough, the increase in labor income inequality can offset the more negative income covariance, leading to a more unequally distributed income as θ goes up.

We now present the relationship among inflation, growth, and income inequality in the following proposition.

PROPOSITION 3.

(*i*) *Changes in the long-run money growth generate a negative inflation–growth relationship unambiguously.*

(*ii*) *When* $\sigma_a^2 > [(1-\rho)/\rho]\sigma_k^2$, *we obtain a positive inflation–inequality relationship and a negative growth–inequality relationship.*

(*iii*) *When* $\sigma_a^2 < [(1-\rho)/\rho]\sigma_k^2$, *we obtain a negative inflation–inequality relationship and a positive growth–inequality relationship.*

Proof. This immediately follows from Proposition 1 and 2. ■

6. CONCLUSIONS

In this paper we develop a monetary endogenous growth model to analyze the relationship among inflation, growth, and income inequality. In the absence of skill heterogeneity, the model predicts that lower income inequality is associated with higher inflation, which runs counter to the evidence. Introducing skill heterogeneity has the potential to reverse the inflation–inequality relationship to be in line with the evidence.

Furthermore, the long-run growth–inequality relationship traced out by variations in money growth also depends on which type of heterogeneity dominates. This same insight carries over to other sorts of fundamental changes, such as variations in total factor productivity, labor supply elasticity, and the rate of time preference. The ambiguity concerning the empirical evidence on the growth–inequality relationship is therefore not surprising in light of our analysis. Our results suggest that, to obtain a definitive relationship between growth and inequality, one has to condition their relationship on an appropriate variable, such as the relative importance of capital and skill heterogeneity emphasized in our study.

NOTES

1. Fischer (1991) reports that the slow-growth countries have an average inflation rate slightly above 30%, whereas the fast-growth countries average only 12% inflation.

2. This threshold level has been found through testing to be at 1% inflation rate for industrialized countries and at 11% for developing countries [Khan and Senhadji (2001)].

3. Note that confining attention to this type of heterogeneity causes no problem in García-Penalosa and Turnovsky because their real model is not concerned with inflation and its relationship with growth and inequality.

4. For a treatment of endogenous accumulation of skills, see Jin (2007). It is shown that the main insights in the exogenous-skill setup are largely retained.

5. We can actually show that $1-\alpha < \rho < (1-\alpha)(A/L)/(1-\alpha+\eta\omega) < 1$.

6. $\sigma_{k,n}$ is negative because households with higher capital shares tend to supply smaller amounts of effective labor.

REFERENCES

Albanesi, Stefania (2002) Inflation and inequality. *Journal of Monetary Economics* 54, 1088–1114.

Alesina, Alberto and Dani Rodrik (1994) Distributive politics and economic growth. *Quarterly Journal of Economics* 109, 465–490.

https://doi.org/10.1017/S1365100508070491 Published online by Cambridge University Press

Al-Marhubi, Fahim (1997) A note on the link between income inequality and inflation. *Economics Letters* 55, 317–319.

Barro, Robert J. (2000) Inequality and growth in a panel of countries. *Journal of Economic Growth* 5, 5–32.

Fischer, Stanley (1991) Growth, macroeconomics, and development. In Olivier Blanchard and Stanley Fischer (eds.), *NBER Macroeconomics Annual*, pp. 329–364. Chicago: University of Chicago Press.

Forbes, Kristin (2000) A reassessment of the relationship between inequality and growth. *American Economic Review* 90, 869–887.

García-Peñalosa, Cecilia and Stephen J. Turnovsky (2006) Growth and income inequality: A canonical model. *Economic Theory* 28 (1), 25–49.

Ghosh, Atish and Steven Phillips (1998) Inflation, Disinflation, and Growth. IMF working paper 98/68, International Monetary Fund.

Gillman, Max, Mark Harris, and Laszlo Matyas (2003) Inflation and growth: Explaining a negative effect. *Empirical Economics* 29 (1), 149–167.

Gylfason, Thorvaldur and Tryggvi Herbertsson (2001) Does inflation matter for growth? *Japan and the World Economy* 13 (4), 405–428.

Jin, Yi (2006) Sectoral Labor Allocation, Economic Growth, and Income Inequality. Mimeo, The University of Kansas.

Kahn, Mohsin and Abdelhak Senhadji (2001) Threshold Effects in the Relationship between Inflation and Growth. IMF staff paper 48 (1), International Monetary Fund.

Li, H.Y. and H.F. Zou (1998) Income inequality is not harmful to growth, theory and evidence. *Review of Development Economics* 2, 318–334.

Lundberg, Mattias and Lyn Squire (2003) The simultaneous evolution of growth and inequality. *Economic Journal* 113, 326–344.

Perotti, Roberto (1996) Growth, income distribution, and democracy: What the data say. *Journal of Economic Growth* 1, 149–187.

Persson, Torsten and Guido Tabellini (1994) Is inequality harmful for growth? *American Economic Review* 84, 600–621.

Romer, Christina and David Romer (1999) Monetary policy and the well-being of the poor. In *Income Inequality: Issues and Policy Opinions*, pp. 21–49. Federal Reserve Bank of Kansas City, *Economic Review*, First Quarter.