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Keeping Up with the Joneses: Implications for the Welfare Effects of Monetary Policy in Open Economies

by

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Abstract

A dynamic general equilibrium two-country optimizing model is used to analyze the welfare effects of monetary policy in open economies. The distinguishing feature of the model is that households' preferences feature a "keeping up with the Joneses" effect. This effect implies that households' utility depends upon the level of their consumption relative to the aggregate level of consumption. The model implies that, depending on the strength of the "keeping up with the Joneses" effect, an expansive monetary policy can be a "beggar-thyself" policy. Moreover, the welfare effects of monetary policy are asymmetric across countries.

Keywords: Monetary policy; Consumption externality; Welfare effects

JEL classification: F41, F42

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1. Introduction

Starting with the seminal paper on 'New Open Economy Macroeconomic' (NOEM) modeling by Obstfeld and Rogoff (1995) (henceforth OR), a rapidly growing literature has studied the welfare effects of monetary policy in open economies. In the prototype NOEM model developed by OR, the presence of a monopolistic distortion on the goods market implies that an expansive monetary policy has the potential to increase households' economic welfare, irrespective of whether this monetary policy is conducted by the home monetary authorities or by monetary authorities abroad.

Since the publication of the OR model, a number of authors have challenged this result (see Fendel (2002) for a survey of the literature). For example, Betts and Devereux (2001) have extended the OR model to incorporate pricing-to-market and have shown that this extension gives rise to a "beggar-thy-neighbor" effect of monetary policy, implying that households residing abroad are worse off when home monetary authorities conduct an expansive policy. Obstfeld and Rogoff (1995, 1996) have shown that monetary policy can be a "beggar-thy-neighbor" policy if one allows for distorting income taxes. In another extension of the OR model, Tille (2001) has demonstrated that the relative magnitude of the elasticity of substitution between goods produced in the same country and the elasticity of substitution between goods produced in different countries plays a key role for the welfare effects of monetary policy in open economies. Depending upon the relative magnitude of these substitution elasticities, an expansive monetary policy can be either a "beggar-thy-neighbor" or a "beggar-thyself" policy.

I show that an effect that has been extensively studied in the recent asset-pricing literature plays a central role for the welfare effects of monetary policy in open economies. The effect I study is the "keeping up with the Joneses" effect. The "keeping up with the Joneses" effect stipulates that the economic welfare of an individual household depends upon the

consumption of all other households in the economy (i.e., aggregate consumption). Specifically, the "keeping up with the Joneses" effect captures the idea that the utility the households' derives from consumption decreases if other households consume more. Hence, the household feels worse off if other households increase their consumption. Because of this negative link between individual and aggregate consumption, the "keeping up with the Joneses" effect formalizes the effect of envy and jealousy on human behavior. Envy and jealousy imply that the "keeping up with the Joneses" effect gives rise to a consumption externality: In a laissez-faire economy households do not take into account the effect of their consumption on the utility derived by other households. This implies that the laissez-faire level of consumption exceeds the socially optimal level of consumption. I explore the implications of this consumption externality for the welfare effects of monetary policy in open economies.

In doing this, I add a new aspect to the large and substantial literature on the economic consequences of the "keeping up with the Joneses" effect. So far, economists have mainly been concerned with the asset pricing implications of the "keeping up with the Joneses" effect. The list of significant contributions to this strand of research includes the work by Abel (1990), Gali (1994), Campbell and Cochrane (1999), and most recently Dupor and Lui (forthcoming). However, the policy implications of the "keeping up with the Joneses" effect, which are at the heart of my analysis, have rarely been explored so far. An exception is the recent paper by Ljungqvist and Uhlig (2000), who have explored in detail the implications of the "keeping up with the Joneses" effect for the optimal tax policy in a closed economy.

I organize the remainder of this short paper as follows. In Section 2, I lay out the theoretical model. In Section 3, I analyze in detail the steady state of the model because, in the model I construct, the "keeping up with the Joneses" effect influences the welfare effects of monetary policy through its effect on the steady state of the model, not through the

transitional dynamics after a monetary policy shock. In Section 4, I study the welfare effects of an unanticipated, one-time, permanent monetary policy shock. I find that, depending on the strength of the "keeping up with the Joneses effect", monetary policy can improve or deteriorate the welfare of households. Moreover, the welfare effects of monetary policy shocks are asymmetric across countries. In the case of an expansive monetary policy shock, the households residing abroad tend to be better off than the households residing in the country in which the expansive monetary policy shock takes place. In Section 5, I offer some concluding remarks.

2. The Model

The basic structure of the model is as in OR: The world is made up of two countries of equal size. The two countries are inhabited by infinitely-lived identical consumer-producer households, indexed by $j \in [0,1]$. Households over the interval $j \in [0,1/2]$ ($j \in (1/2,1]$) live in the home (foreign) country. There is no migration. All households have identical preferences and maximize their lifetime utility. Lifetime utility of home household *j* is defined as $U_t(j) = \sum_{s=t}^{\infty} \beta^{s-t} u_s(j)$, with $0 < \beta < 1$ being the households' subjective discount factor. The period-utility function, u_t, of household *j* is given by

$$u_t(j) = \log(C_t(j) - \alpha C_t^A) + \chi \log(M_t(j)/P_t) - \kappa y_t^2(j)/2, \qquad (1)$$

with $\kappa > 0$, $\chi > 0$, and $0 \le \alpha < 1$. In (1), $C_t(j)$ denotes the real index of goods consumed by household *j*, C_t^A denotes aggregate consumption in the home country, $y_s(j)$ denotes the output of the single differentiated perishable good produced by household *j*, and $M_t(j)/P_t$ denotes households' *j* holdings of real money balances. Households hold only the money issued by the central bank of the country in which they reside (i.e., there is no currency substitution). The consumer price index, P_t, is defined in terms of the minimum expenditure

required to buy one unit of the index $C_t(j)$. The consumption index, $C_t(j)$, is defined over a continuum of differentiated, perishable domestic and foreign consumption goods of total measure unity. These goods are indexed by z on the unit interval, so that the consumption index can be defined as $C_t(j) = \left[\int_0^1 c(j,z)^{(\theta-1)/\theta} dz\right]^{\theta/(\theta-1)}$, where $\theta > 1$ denotes the elasticity of substitution between the differentiated goods (produced in the domestic and foreign economy).

The key feature of the period utility function given in (1) is that household *j* not only derives utility from consuming the consumption index, $C_t(j)$, but also derives disutility from aggregate consumption. Specifically, in a symmetric equilibrium in which $C_t(j) = C_t^A$, the period utility function implies $\partial u_t(j)/\partial C_t(j) = 1/(C_t(j)(1-\alpha)) > 0$, $\partial u_t(j)/\partial C_t^A = -\alpha/(C_t(j)(1-\alpha)) < 0$, and $\partial u_t(j)/\partial y_t(z) = -\kappa y_t(z) < 0$. Using the definition of Dupor and Lui (forthcoming), the fact that $\partial u_t(j)/\partial C_t^A < 0$ implies that preferences exhibit jealousy, i.e., for any given level of individual consumption, $C_t(j)$, the utility of household *j* is lower the higher is the level of consumption of all other households populating the home economy.

In order to shed light on the "keeping up with the Joneses" feature of the utility function, I define the marginal rate of substitution between production and consumption as $MRS_t \equiv \partial u_t(j)/\partial y_t(z) / \partial u_t(j)/\partial C_t(z)$. Because $\partial MRS_t / \partial C_t^A = \kappa\alpha y_t(z) > 0$, preferences exhibit a "keeping up with the Joneses" effect. Thus, if the other households in the home economy increase their level of consumption, this raises the marginal utility of consumption of household *j* relative to the marginal disutility from production. Hence, an increase in aggregate consumption, C_t^A, decreases the level of utility household *j* attains and increases the marginal utility household *j* derives from the consumption of the consumption basket, $C_t(j)$.

Using the definition of the consumption index, assuming that the law-of-one-price holds for each differentiated good, and denoting the domestic currency price of the good produced by household j by $p_t(j)$, the domestic consumer price index, P_t, can be written as $P_t = \left[\int_0^1 p_t(j)^{1-\theta}\,dj\right]^{1/(1-\theta)} = \left[\int_0^{1/2} p_t(j)^{1-\theta}\,dj + \int_{1/2}^1 \{S_t p_t^*(j)\}^{1-\theta}\,dj\right]^{1/(1-\theta)}$. The nominal exchange rate, S_t, is defined as the price of a foreign currency unit in terms of domestic currency units and $p_t^*(z)$ denotes the foreign currency price of a differentiated product produced abroad (an asterisk denotes a foreign variable). With identical preferences at home and abroad and the law-of-one-price holding for each differentiated good, it follows that purchasing power parity holds: $P_t = S_t P_t^*$, where P_t^* denotes the aggregate foreign price level.

Home household j maximizes (1) subject to this period budget constraint:

$$P_t B_t(j) + M_t(j) = P_t(1+r_{t-1})B_{t-1}(j) + M_{t-1}(j) + p_t(j)y_t(j) - P_t C_t(j) + P_t T_t(j), \qquad (2)$$

where r_t denotes the real interest rate on bonds, $B_t(j)$, between t and $t+1$ and $T_t(j)$ denotes real transfers received by the household. Abstracting from government purchases of consumption goods, the budget constraint of the government implies that real transfers are financed by seignorage. The bond, which is denominated in terms of the consumption index, $C_t(j)$, is traded in an integrated international bond market. When maximizing (1) subject to (2), the household has to take into account that the demand curve facing each monopolist is given by $y_t(j) = (p_t(j)/P_t)^{-\theta} C_t^W$, where $C_t^W \equiv nC_t + (1-n)C_t^*$ denotes the world consumption demand.

By assuming that the usual transversality condition applies, one can derive the following first-order conditions that describe the optimal consumption choice, money holdings, and production decision of household *j*:

$$C_{t+1}(j) - \alpha C_{t+1}^A = \beta(1+r_t)(C_t(j) - \alpha C_t^A), \qquad (2)$$

$$\chi(M_t(j)/P_t) = (C_t(j) - \alpha C_t^A)(1+i_t)/i_t, \tag{3}$$

$$y_t(j)^{(\theta+1)/\theta} = [(\theta-1)/\theta\kappa](C_t^W)^{1/\theta}(C_t(j) - \alpha C_t^A)^{-1}, \tag{4}$$

where i_t denotes the nominal interest rate, which is linked to the real interest rate, r_t, through the Fisher parity condition, $1+i_t = (1+r_t)P_{t+1}/P_t$. Similar first-order conditions can be derived for households living in the foreign economy.

Each household has monopoly power on the market for the differentiated good it produces. It, therefore, treats the price it charges for its product as a choice variable. In consequence, one has to specify a price setting mechanism. As regards the price-setting mechanism, I follow OR in assuming that the domestic currency price of goods produced in the domestic economy, $p(h)$, and the foreign currency price of goods produced abroad, $p^*(f)$, are set one period in advance. It follows from this assumption that it takes one period to reach a steady state if a monetary policy shock hits the economy. It also follows from this assumption that output is demand determined in the period of time following the shock (i.e., in the short run).

Following the NOEM literature, I focus on equilibria in which the households in the home (foreign) economy behave symmetrically. In a symmetric equilibrium, the model can be analyzed in terms of a representative "Home" and a representative "Foreign" household. In particular, symmetry implies $C_t(j) = C_t^A$. Thus, dropping the household index, the first-order conditions (2)-(4) simplify to

$$C_{t+1}(1-\alpha) = \beta(1+r_t)(1-\alpha)C_t, \tag{2'}$$

$$\chi(M_t/P_t) = (1-\alpha)C_t(1+i_t)/i_t, \tag{3'}$$

$$\kappa y_t^{(\theta+1)/\theta} = [(\theta-1)/\theta\kappa](C_t^W)^{1/\theta}(1-\alpha)^{-1}C_t^{-1}. \tag{4'}$$

3. Steady-State Analysis

I follow OR in assuming that the world economy starts off in a symmetric steady state in which domestic and foreign households hold zero net foreign assets, $\overline{B} = 0$ and $\overline{B}^* = 0$, where barred variables denote steady state values (also note that $nB_t + (1-n)B_t^* = 0$). In this symmetric steady state in the world economy, the model implies $\bar{r} \equiv \delta = (1-\beta)/\beta$, $\overline{p}(h)/\overline{P} = \overline{p}^*(f)/\overline{P}^* = 1$, and $\bar{y} = \bar{y}^* = \overline{C}^W = \overline{C} = \overline{C}^*$. Moreover, by using these steady-state equations in the households' first-order condition (4'), one finds that, in this steady symmetric steady state, output is given by

$$\bar{y}^* = \bar{y} = \left(\frac{\theta - 1}{\theta \kappa} \frac{1}{1-\alpha} \right)^{1/2}. \tag{5}$$

In contrast, a benevolent social planner would solve the problem $\max_{\bar{y}} \left(\log((1-\alpha)\bar{y}) - \kappa \bar{y}/2 \right)$ when deriving the socially optimal steady-state output level. The result of the planners' problem is

$$\bar{y}^{OPT*} = \bar{y}^{OPT} = \left(\frac{1}{\kappa} \right)^{1/2}, \tag{6}$$

which, of course, is identical to the solution to the optimization problem solved by the social planner in the model developed by OR. Equations (5) and (6) reveal that the relative magnitude of the "keeping up with the Joneses" effect, represented by the parameter α, and the monopolistic distortion on the goods market, represented by the parameter θ, determines whether the laissez-faire output level, $\bar{y}$, is too low as compared to the socially optimal output level, $\bar{y}^{OPT}$. that would be realized if a social planner dictated the households' production decisions.

It follows from (5) that the monopolistic distortion on the goods market implies that, for a relatively moderate "keeping up with the Joneses" effect, the socially optimal level of output

tends to exceed the laissez-faire level of output. In fact, in the case of $\alpha = 0$, the model collapses to the model developed by OR and the output level realized in a laissez-faire economy is always below the output level realized in an economy dictated by a benevolent social planner.

Things are different if households' preferences feature a non-negligible "keeping up with the Joneses" effect ($0 < \alpha < 1$). In this case, when comparing the laissez-faire with the socially optimal level of output, one has to keep track of both the monopolistic distortion on the goods market and the consumption externality caused by the "keeping up with the Joneses" effect. It follows from (5) that the "keeping up with the Joneses" effect raises the steady-state laissez-faire output level. The reason is that, because households do not take into account that their consumption has spillover effects on the consumption of the other households in the economy, the "keeping up with the Joneses" effect implies that equilibrium consumption and, therefore, equilibrium production is sub-optimally high.

4. Welfare Analysis

I now turn to the analysis of the welfare effects of a one-time, unanticipated, permanent monetary policy shock. This shock may take place either at home or abroad. Following OR, I measure the welfare effects of monetary policy shocks by computing the total differential of the real part of the lifetime utility function in (1). The real part of this lifetime utility function can be obtained upon setting the utility effect of real balance holdings equal to zero. The total differential of the real part, U^R, of the lifetime utility function for a home household is given by:

$$dU^R = \hat{C} - \left(\frac{\theta - 1}{\theta\kappa}\frac{1}{1-\alpha}\right)\hat{y} + \frac{1}{\delta}\left[\hat{\bar{C}} - \left(\frac{\theta - 1}{\theta\kappa}\frac{1}{1-\alpha}\right)\hat{\bar{y}}\right], \tag{7}$$

where a hat over a variable denotes short-run percentage deviations from the steady state derived in Section 3 and a hat and a bar over a variable denote percentage changes in the steady-state value of the respective variable.

In order to find the short-run and steady-sate effects of the monetary policy shock on consumption and output, I log linearize the model around the steady state described in Section 3. The log-linear versions of the households' first-order conditions are given by:

$$\hat{C}_{t+1} = \hat{C}_t + \hat{r}_t\delta\,/(1+\delta)\,, \tag{8}$$

$$\hat{M}_t - \hat{P}_t = \hat{C}_t - \hat{r}_t\,/(1+\delta) - (\hat{P}_{t+1} - \hat{P}_t)/\delta\,, \tag{9}$$

$$(\theta+1)\hat{y}_t = \hat{C}_t^W - \theta\hat{C}_t\,. \tag{10}$$

Visual inspection of (8) – (10) reveals that the parameter α, i.e., the parameter that captures the "keeping up with the Joneses" effect, exerts no first-order effect on the log-linear dynamics of the model. In fact, (8) – (10) are identical to the log-linear first-order conditions that drop out of the prototype NOEM model developed by OR. From this result it follows that the "keeping up with the Joneses" effect does not affect the dynamic properties of the model. In consequence, the solutions for the short-run and steady-state effects of the monetary policy shock on consumption and output are identical to the solutions derived by OR. Hence, the welfare effect of the monetary policy shock can be computed by plugging the formulas for $\hat{C}$, $\hat{y}$, $\hat{\bar{C}}$, and $\hat{\bar{y}}$ that drop out of the OR model into (7). The result is:

$$dU^R = \frac{\hat{M}\left(\alpha(-1-\delta(1-\theta)+\theta(2+\theta(1+2\delta))-2-\delta(1+\theta)\right)}{2(\alpha-1)\theta\left(2+\delta(1+\theta)\right)} \tag{11}$$

$$+\frac{\hat{M}^*\left(\alpha(1+\delta(1+\theta)+\theta(2-\theta))-2-\delta(1+\theta)\right)}{2(\alpha-1)\theta\left(2+\delta(1+\theta)\right)}\,.$$

In the case $\alpha = 0$, the formula given in (11) simplifies to $dU^R = \left(\hat{M} + \hat{M}^*\right)/(2\theta)$, which is identical to the welfare effect of a monetary policy shock derived by OR. It is important to note that, in the case analyzed by OR, the welfare effect of a monetary policy shock, irrespective of whether it is a shock that originates at home or abroad, is always positive. In contrast, the formula in (11) reveals that if households' utility function exhibits a "keeping up with the Joneses" effect it makes a difference whether the monetary policy shock takes place at home or abroad. Moreover, in the general case $0 < \alpha < 1$ summarized in (11), the welfare effect of a monetary policy shock that takes place in the home country can be either positive or negative. If the effect of the "keeping up with the Joneses" effect is large enough (i.e., if the parameter α is sufficiently large), the expansive monetary policy can be a "beggar thyself" policy. Thus, under certain parameter constellations, an expansion of the home money supply can deteriorate the welfare of households that inhabit the home economy.

Because the welfare effects of monetary policy shocks are asymmetric across countries, it is instructive to compute the effect of monetary policy shocks on the welfare of home households *relative* to the welfare of foreign households:

$$dU^R - dU^{R*} = \frac{\alpha(1+\delta)(\theta^2 - 1)(\hat{M} - \hat{M}^*)}{(\alpha - 1)\theta(2 + \delta(1+\theta))}. \tag{12}$$

Equation (12) shows that if and only if $\alpha = 0$ or $\hat{M} = \hat{M}^*$, the welfare effects of a monetary policy shock are symmetric across countries. In all other cases, the welfare effects of a monetary policy shock are asymmetric across countries. To be more specific, when there is the consumption externality due to the "keeping up with the Joneses" effect at work, a monetary policy shock that takes place at home tends to benefit the households residing in the foreign country more than the households residing in the home country.

Figure 1 illustrates the effect on the international welfare differential, $dU^R - dU^{R*}$, of a unit monetary policy shock that takes place in the home country. The international welfare

differential is plotted as a function of the "keeping up with the Joneses" parameter, α, and the parameter that captures the significance of the monopolistic distortion on the goods market, θ. To compute the figure, I set $\delta = 0.04$ and restrict the parameter θ to the interval $1 < \theta \leq 11$. At the upper boundary of this interval, the monopolistic mark up, $\theta/(\theta - 1)$, is 10 percent, which is in the range of empirical estimates.

Figure 1 depicts that the international welfare differential, $dU^R - dU^{R*}$, is zero if $\alpha = 0$, which is the result reported by OR. Also, if the "keeping up with the Joneses" effect is of a moderate magnitude, the asymmetry in the welfare differential is small. In this case and in the case in which the monopolistic distortion on the goods market is sufficiently severe ($\theta \to 1$), the welfare implications of the model resemble the welfare implications of the OR model. In contrast, as the parameter α starts increasing, the asymmetry in the welfare differential becomes larger. Also, as the parameter θ starts increasing, the relative importance of the monopolistic distortion becomes declines, implying that the international welfare differential becomes more sensitive to variations in the consumption externality caused by the "keeping up with the Joneses" effect.

— Insert Figure 1 about here. —

In the prototype NOEM model developed by OR, there is room for monetary policy to improve households' welfare at home and abroad because the monopolistic distortion on the goods market implies that production is sub-optimally low in the pre-shock steady state. The expansive monetary policy raises world aggregate demand in the short run and, thereby, moves the world economy closer to the social optimum in a world in which the prices of goods exceed marginal production costs. However, if in addition to the monopolistic goods

market distortion a consumption externality due to the "keeping up with the Joneses" effect is at work, this simple line of argumentation breaks down.

The consumption externality caused by the "keeping up with the Joneses" feature of households' utility function implies that production tends to be too high in the pre-shock steady state. An expansive monetary policy tends to aggravate this effect of the consumption externality. The reason is that an expansive monetary policy triggers in the short run a decrease in the terms of trade (defined as the relative price of foreign goods in terms of home goods). This movement in the terms of trade implies that foreign goods become relatively expensive. As a result, the terms of trade movement gives rise to a cross-country expenditure switching effect. The expenditure switching effect, in turn, leads to a short-run boom in the home country and, thereby, magnifies the consumption externality caused by the "keeping up with the Joneses" effect. At the same time, the expenditure switching effect contributes to offset the effect of the consumption externality caused by the "keeping up with the Joneses" effect in the foreign economy. Thus, the expansive home monetary policy shock implies that the consumption externality caused by the "keeping up with the Joneses" effect becomes less severe abroad and more severe at home. In consequence, the households residing in the foreign country tend to be better off in the wake of an expansive home monetary policy shock than the households residing in the home country.

Finally, it is interesting to compare the implications of the "keeping up with the Joneses" effect for the welfare effects of monetary policy with the implications of a distorting income tax. To this end, one can make use of the result derived by Obstfeld and Rogoff (1996, p. 687) that (i) a distorting income tax has no first-order effect on the dynamics of log-linear version of their model, and, (ii) the formula for steady-state output that drops out of their model with a distorting income tax closely resembles the formula for steady-state output given in (5). They

show that the steady-state output in the model of OR model with a distorting income tax is given by

$$\bar{y}^* = \bar{y} = \left(\frac{(\theta - 1)(1 - \tau)}{\theta \kappa} \right)^{1/2}, \tag{13}$$

where the parameter τ denotes the income tax rate. A comparison of (13) with (7) reveals that the consumption externality due to the "keeping up with the Joneses" effect works like a "negative" distorting income tax. It follows that the implications of the "keeping up with the Joneses" feature of households' preferences for the welfare effects of monetary policy are similar to the implications of a distorting income tax for the welfare effects of monetary policy described by OR:

First, the symmetry of the welfare effect of monetary policy shocks across countries breaks down. Second, because a distorting income tax implies that monetary policy can be a "beggar-thy-neighbor" policy, it follows that the "keeping up with the Joneses" effect implies that monetary policy can be a "beggar thyself" policy. Third, equation (13) shows that, as in Ljungqvist and Uhlig (2000), a distorting income tax rate of magnitude $\tau = \alpha$ can be used to offset the effect of the "keeping up with the Joneses" effect on the welfare implications of the model. (However, setting $\tau = \alpha$ does not imply that the economy attains the social optimum.)

5. Conclusions

I have used a variant of the prototype NOEM model developed by OR to illustrate the implications of a "keeping up with the Joneses" effect in households' preferences for the welfare effects of monetary policy in open economies. The results of my analysis have revealed that the overall welfare effect of monetary policy reflects the impact of two distortions on the optimality of monetary policy. The first distortion is the monopolistic distortion on the goods market. The second distortion is the consumption externality caused

by the "keeping up with the Joneses" effect. My results have shown that an expansive monetary policy can be a "beggar-thyself" policy and that the welfare effects of monetary policy are asymmetric across countries: Households residing in the country in which the expansive monetary policy shock takes place are worse off than the households that reside in the foreign country.

In order to derive my results, I used a stylized NOEM model. I used a stylized NOEM model in order to keep the algebra required to solve for the welfare effects of monetary policy as simple as possible. Also, the fact that the structure of my NOEM model closely resembles the structure of the workhorse NOEM model developed by OR guarantees that my results do not hinge upon uncommon assumptions. In future research, it would be interesting to analyze the consequences of the "keeping up with the Joneses" effect for the welfare effects of monetary policy in more elaborate NOEM models.

For example, it would be interesting to study the welfare implications of the "keeping up with the Joneses" effect in the pricing-to-market NOEM model advanced by Betts and Devereux (2001). Another possibility would be to extend Tille's (2001) model to incorporate a "keeping up with the Joneses" effect. This would render it possible to study the interaction of the monopolistic competition on the goods market, the "keeping up with the Joneses" effect, and the consumption substitutability of goods for the welfare effects of monetary policy in open economies. Yet another possibility would be to extend the dynamic structure of the model by assuming that households' preferences feature a "catching up with the Joneses" rather than a "keeping up with the Joneses" effect. The characteristic feature of the "catching up with the Joneses" effect is that households' utility depends upon past aggregate consumption, not on current aggregate consumption.

While such more elaborate models would certainly have richer implications for the welfare effects of monetary policy in open economies, the basic mechanism through which

the "keeping up with the Joneses" effect would enter into these models would be the same as the one I have described in this paper.

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Figure 1 – The Effect of a Positive, Unanticipated, Permanent Unit Home Monetary Policy Shock on the International Welfare Differential, $dU^R - dU^{R*}$