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Keywords:

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1. Introduction

Introduction text with references (e.g., 2015, 2010, 2017)

... (10), (15) ... (17) ... (1) ... (2) ... (3) ... (4) ... (5) ... (6) ... (7) ... (8) ... (9) ... (10) ... (11) ... (12) ... (13) ... (14) ... (15) ... (16) ... (17) ... (18) ... (19) ... (20) ... (21) ... (22) ... (23) ... (24) ... (25) ... (26) ... (27) ... (28) ... (29) ... (30) ... (31) ... (32) ... (33) ... (34) ... (35) ... (36) ... (37) ... (38) ... (39) ... (40) ... (41) ... (42) ... (43) ... (44) ... (45) ... (46) ... (47) ... (48) ... (49) ... (50) ... (51) ... (52) ... (53) ... (54) ... (55) ... (56) ... (57) ... (58) ... (59) ... (60) ... (61) ... (62) ... (63) ... (64) ... (65) ... (66) ... (67) ... (68) ... (69) ... (70) ... (71) ... (72) ... (73) ... (74) ... (75) ... (76) ... (77) ... (78) ... (79) ... (80) ... (81) ... (82) ... (83) ... (84) ... (85) ... (86) ... (87) ... (88) ... (89) ... (90) ... (91) ... (92) ... (93) ... (94) ... (95) ... (96) ... (97) ... (98) ... (99) ... (100) ...

2. Adaptive policy innovation: review of the literature

... (10) ... (1) ... (2) ... (3) ... (4) ... (5) ... (6) ... (7) ... (8) ... (9) ... (10) ... (11) ... (12) ... (13) ... (14) ... (15) ... (16) ... (17) ... (18) ... (19) ... (20) ... (21) ... (22) ... (23) ... (24) ... (25) ... (26) ... (27) ... (28) ... (29) ... (30) ... (31) ... (32) ... (33) ... (34) ... (35) ... (36) ... (37) ... (38) ... (39) ... (40) ... (41) ... (42) ... (43) ... (44) ... (45) ... (46) ... (47) ... (48) ... (49) ... (50) ... (51) ... (52) ... (53) ... (54) ... (55) ... (56) ... (57) ... (58) ... (59) ... (60) ... (61) ... (62) ... (63) ... (64) ... (65) ... (66) ... (67) ... (68) ... (69) ... (70) ... (71) ... (72) ... (73) ... (74) ... (75) ... (76) ... (77) ... (78) ... (79) ... (80) ... (81) ... (82) ... (83) ... (84) ... (85) ... (86) ... (87) ... (88) ... (89) ... (90) ... (91) ... (92) ... (93) ... (94) ... (95) ... (96) ... (97) ... (98) ... (99) ... (100) ...

² ... (17) ...

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Table 1
... 10 16

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
										010 10 18								
										010 10								
										01,211								
										01 11								
										015 9								
										015 9								
										011 10								
										01,26								
										01,2								
										01,210								
										01 1,2								
										016 1								

Handwritten musical score with various annotations and markings. The page contains several instances of circled numbers and alphanumeric codes:

- Top right: $\text{A}12$ and 18.
- Left side: $\text{A}15$, $\text{A}17$, and $\text{A}11$.
- Center: $\text{A}10$, $\text{A}11$, $\text{A}12$, $\text{A}12$, $\text{A}1$, $\text{A}15$, $\text{A}1$, and $\text{A}1$.
- Bottom left: $\text{A}15, \text{A}16$.
- Bottom center: $\text{A}1$.
- Bottom right: $\text{A}1$.

The score includes musical notation such as notes, rests, and dynamic markings like ff and q . There are also some illegible handwritten notes and symbols scattered throughout the page.

...), ... ff ... q ... M ...

4.1. The regulatory frameworks: who governs?

... 7 ...
... 201; ... 2013 ... 5 ...
... 201 ...
... 7 ...
... 2015, ...
... 5 ...
... 201, ...

q_i is the quantity of emissions from firm i in period t . M_t is the total quantity of allowances available in period t . α is the fraction of allowances that are recycled. β is the fraction of allowances that are retired. γ is the fraction of allowances that are used for other purposes. δ is the fraction of allowances that are destroyed. ϵ is the fraction of allowances that are stored. ζ is the fraction of allowances that are transferred. η is the fraction of allowances that are bought. θ is the fraction of allowances that are sold. φ is the fraction of allowances that are used for other purposes. χ is the fraction of allowances that are destroyed. ψ is the fraction of allowances that are stored. ω is the fraction of allowances that are transferred. ν is the fraction of allowances that are bought. μ is the fraction of allowances that are sold. λ is the fraction of allowances that are used for other purposes. κ is the fraction of allowances that are destroyed. ι is the fraction of allowances that are stored. \jmath is the fraction of allowances that are transferred. \mathfrak{k} is the fraction of allowances that are bought. \mathfrak{l} is the fraction of allowances that are sold. \mathfrak{m} is the fraction of allowances that are used for other purposes. \mathfrak{n} is the fraction of allowances that are destroyed. \mathfrak{o} is the fraction of allowances that are stored. \mathfrak{p} is the fraction of allowances that are transferred. \mathfrak{q} is the fraction of allowances that are bought. \mathfrak{r} is the fraction of allowances that are sold. \mathfrak{s} is the fraction of allowances that are used for other purposes. \mathfrak{t} is the fraction of allowances that are destroyed. \mathfrak{u} is the fraction of allowances that are stored. \mathfrak{v} is the fraction of allowances that are transferred. \mathfrak{w} is the fraction of allowances that are bought. \mathfrak{x} is the fraction of allowances that are sold. \mathfrak{y} is the fraction of allowances that are used for other purposes. \mathfrak{z} is the fraction of allowances that are destroyed. \mathfrak{A} is the fraction of allowances that are stored. \mathfrak{B} is the fraction of allowances that are transferred. \mathfrak{C} is the fraction of allowances that are bought. \mathfrak{D} is the fraction of allowances that are sold. \mathfrak{E} is the fraction of allowances that are used for other purposes. \mathfrak{F} is the fraction of allowances that are destroyed. \mathfrak{G} is the fraction of allowances that are stored. \mathfrak{H} is the fraction of allowances that are transferred. \mathfrak{I} is the fraction of allowances that are bought. \mathfrak{J} is the fraction of allowances that are sold. \mathfrak{K} is the fraction of allowances that are used for other purposes. \mathfrak{L} is the fraction of allowances that are destroyed. \mathfrak{M} is the fraction of allowances that are stored. \mathfrak{N} is the fraction of allowances that are transferred. \mathfrak{O} is the fraction of allowances that are bought. \mathfrak{P} is the fraction of allowances that are sold. \mathfrak{Q} is the fraction of allowances that are used for other purposes. \mathfrak{R} is the fraction of allowances that are destroyed. \mathfrak{S} is the fraction of allowances that are stored. \mathfrak{T} is the fraction of allowances that are transferred. \mathfrak{U} is the fraction of allowances that are bought. \mathfrak{V} is the fraction of allowances that are sold. \mathfrak{W} is the fraction of allowances that are used for other purposes. \mathfrak{X} is the fraction of allowances that are destroyed. \mathfrak{Y} is the fraction of allowances that are stored. \mathfrak{Z} is the fraction of allowances that are transferred.

4.5. O set mechanism

In the O set mechanism, firms are allowed to trade allowances. The total quantity of allowances available in period t is M_t . The quantity of allowances held by firm i in period t is $h_{i,t}$. The quantity of allowances traded by firm i in period t is $q_{i,t}$. The quantity of allowances retired by firm i in period t is $r_{i,t}$. The quantity of allowances stored by firm i in period t is $s_{i,t}$. The quantity of allowances transferred by firm i in period t is $t_{i,t}$. The quantity of allowances bought by firm i in period t is $b_{i,t}$. The quantity of allowances sold by firm i in period t is $s_{i,t}$. The quantity of allowances used for other purposes by firm i in period t is $u_{i,t}$. The quantity of allowances destroyed by firm i in period t is $d_{i,t}$. The quantity of allowances stored by firm i in period t is $s_{i,t}$. The quantity of allowances transferred by firm i in period t is $t_{i,t}$. The quantity of allowances bought by firm i in period t is $b_{i,t}$. The quantity of allowances sold by firm i in period t is $s_{i,t}$. The quantity of allowances used for other purposes by firm i in period t is $u_{i,t}$. The quantity of allowances destroyed by firm i in period t is $d_{i,t}$.

4.6. Non-compliance penalties

Firms that do not comply with the emissions cap face penalties. The penalty for firm i in period t is $p_{i,t}$. The penalty is proportional to the quantity of emissions in excess of the cap. The penalty is $p_{i,t} = \lambda (q_{i,t} - M_t)$, where λ is the penalty rate.

5. Adaptive policy innovations: implications for a nationwide ETS

The implications of adaptive policy innovations for a nationwide ETS are discussed in this section. The total quantity of allowances available in period t is M_t . The quantity of allowances held by firm i in period t is $h_{i,t}$. The quantity of allowances traded by firm i in period t is $q_{i,t}$. The quantity of allowances retired by firm i in period t is $r_{i,t}$. The quantity of allowances stored by firm i in period t is $s_{i,t}$. The quantity of allowances transferred by firm i in period t is $t_{i,t}$. The quantity of allowances bought by firm i in period t is $b_{i,t}$. The quantity of allowances sold by firm i in period t is $s_{i,t}$. The quantity of allowances used for other purposes by firm i in period t is $u_{i,t}$. The quantity of allowances destroyed by firm i in period t is $d_{i,t}$. The quantity of allowances stored by firm i in period t is $s_{i,t}$. The quantity of allowances transferred by firm i in period t is $t_{i,t}$. The quantity of allowances bought by firm i in period t is $b_{i,t}$. The quantity of allowances sold by firm i in period t is $s_{i,t}$. The quantity of allowances used for other purposes by firm i in period t is $u_{i,t}$. The quantity of allowances destroyed by firm i in period t is $d_{i,t}$.

$\frac{1}{2} \frac{d^2 q}{dt^2} + \frac{1}{2} \frac{d^2 M}{dt^2} + \frac{1}{2} \frac{d^2 J}{dt^2} + \frac{1}{2} \frac{d^2 V}{dt^2} = 0$

where q is the displacement of the mass m , M is the displacement of the mass M , J is the displacement of the mass J , and V is the displacement of the mass V . The equations of motion for the system are given by:

$$m \ddot{q} + k_1 q + k_2 (q - M) = 0$$

$$M \ddot{M} + k_2 (M - q) + k_3 M = 0$$

$$J \ddot{J} + k_4 J = 0$$

$$V \ddot{V} + k_5 V = 0$$

The characteristic equation for the system is:

$$m \lambda^4 + (k_1 + k_2) \lambda^2 + k_2 = 0$$

The roots of the characteristic equation are:

$$\lambda_1 = \pm \sqrt{\frac{-k_1 - k_2 \pm \sqrt{k_1^2 + 4k_1 k_2}}{2m}}$$

$$\lambda_2 = \pm \sqrt{\frac{-k_2 \pm \sqrt{k_2^2 - 4k_2 k_3}}{2M}}$$

$$\lambda_3 = \pm \sqrt{\frac{-k_4}{2J}}$$

$$\lambda_4 = \pm \sqrt{\frac{-k_5}{2V}}$$

The general solution for the displacement q is:

$$q(t) = A_1 \cos(\omega_1 t) + A_2 \sin(\omega_1 t) + A_3 \cos(\omega_2 t) + A_4 \sin(\omega_2 t)$$

where ω_1 and ω_2 are the natural frequencies of the system. The initial conditions are:

$$q(0) = q_0, \quad \dot{q}(0) = \dot{q}_0$$

$$M(0) = M_0, \quad \dot{M}(0) = \dot{M}_0$$

$$J(0) = J_0, \quad \dot{J}(0) = \dot{J}_0$$

$$V(0) = V_0, \quad \dot{V}(0) = \dot{V}_0$$

6. Conclusion

In this paper, we have studied the dynamic behavior of a system consisting of four masses m , M , J , and V connected by springs. The equations of motion for the system are derived and solved. The natural frequencies of the system are determined, and the general solution for the displacement q is obtained. The initial conditions are also specified.

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2012, 2012, V ()

2012, 2012, V ()

2012, 2012, V ()

2016, 2019, 2019, 1, 60.29 ()

2016, 17 ()

2011, 2011, 1, 2, 265, 207 ()

2015, 2015, 0, 768 ()

2016, 2016, 2016, 2016, 2277, 250 ()

2010, 2010, 1 (),

2008, 17 (),

2015, 75, 1, 7, 8

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2012, 107 ()

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